Opportunities to Move Forward with Conservation Offsets in Alberta

Prepared for the Alberta Biodiversity Monitoring Institute

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Executive Summary

The Alberta Biodiversity Monitoring Institute (ABMI) requested the development of this white paper to look at barriers and opportunities to move forward with the use of conservation offsets in Alberta. There is general agreement that Alberta is well positioned to develop and implement a conservation offset program as there is supporting legislation, provincial policy, experience in other markets, and good baseline data and landscape level planning in many areas. Stakeholders are expecting the Government of Alberta to take a leadership role in the creation of the program, in consultation with them.

Based on a review and summary of key international, national, and provincial conservation offset initiatives, support mechanisms, stakeholder input and the authors' own experience and knowledge, key barriers to moving forward with a conservation offset program in Alberta are identified and recommendations provided to address the barriers.

The following is a summary of these recommendations.

1. The newly elected New Democratic Party in Alberta commit to the development and implementation of a 'formal' conservation offset program and accepts conservation offsets as a legitimate tool in its regulatory decision making processes.
2. The principles, program design elements/characteristics, and requirements in the current 'A Framework for Alberta Conservation Offset' draft form the basis of the program with the addition of a requirement to achieve verifiable conservation outcomes based on sound science, and traditional knowledge.
3. Alberta works with other jurisdictions and stakeholders to develop and implement an aligned, transparent, effective and efficient offset system based on a regional approach and the previous work summarized in this paper.
4. Alberta proactively identifies the location of potential offsets to address priority conservation needs.
5. Offsets will be secured through legal instruments so that their integrity is protected and that any disturbed offsets will be equivalently replaced.
6. Alberta will recognize voluntary offsets that meet specific criteria.
7. Alberta will establish a lead agency with responsibility, authority and resources to coordinate the development and implementation of a provincial program, including:
    a. Creating a roadmap, and developing and implementing a system that incorporates conservation offsets into the regulatory approvals system.
    b. Coordinating the establishment of a banking system/market to encourage the establishment of offsets prior to development and create business opportunities.

c. Coordinating the development of support and decision-making tools to assist in designing projects and enable effective participation in the offset market.
d. Identifying and coordinating funding requests to support the development of offset banks and pilots.
e. Working with professional occupation regulatory groups as third party offset verifiers.
f. Developing a research strategy to establish priorities and coordinate offset research.
g. Establishing scientific, traditional knowledge and stakeholder advisory committees to support the program.
h. Evaluating, integrating and confirming the inventories, data, models, etc. to support the program.

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Table of Contents

Introduction

The Alberta Biodiversity Monitoring Institute (ABMI) requested the development of this white paper to look at barriers and opportunities to move forward with the use of conservation offsets in Alberta. This paper is an opinion piece by the author and does not necessarily reflect the position of ABMI or any of the stakeholders that provided input into its development.

Land in Alberta is finite. Although short-term and/or temporary impacts maybe addressed through active management, permanent land conversion to accommodate such things as population growth is a societal choice. As industrial and other developments leave a footprint across much of Alberta's landscapes, a host of conservation efforts endeavor to reduce their environmental impacts. As industries pursue further access to markets, they are being increasingly required to meet society's desire for economic, social and environmental sustainability.

Conservation offsets support environmentally responsible development by compensating for ecosystem functions that are unavoidably lost due to development. They are used internationally, nationally and in a few situations in Alberta to achieve statutory and policy objectives related to the release of pollutants or emissions (eg. carbon), protection of endangered species, conservation of wetlands, biodiversity, and other ecosystem services both on private and public lands.

The term 'conservation offset' used in Alberta has a very high degree of overlap with other similar terms used nationally and internationally and are generally interchangeably. The Canadian government uses the term "conservation allowance," while in the United States they are referred to as 'compensatory mitigation'. 'Biodiversity offsets' is the term used in other jurisdictions. The current, '*A Framework for Alberta Conservation Offset*'[1] draft developed by the Alberta Government defines a conservation offset as:

> 'a measurable conservation outcome, resulting from actions designed to counteract significant impacts arising from project development after appropriate prevention measures consistent with the mitigation hierarchy have been taken'.[2]

With the appropriate framework and willing participants, conservation offsets have the potential to offer both conservation and business opportunities in Alberta. In 2012, Alberta Innovates Bio Solutions brought together key stakeholders and experts to set out a strategic framework, 'the Ecosystems Roadmap'. It was

[1] Government of Alberta, *A Framework for Alberta Conservation Offset* (Draft), February 11, 15.
[2] Ibid 1.

intended to catalyze innovation and competitiveness in the resource sectors, and create opportunities for Alberta to brand itself as a leader in land and environmental management. Part of this strategic framework was the development of tools such as conservation offsets. A summary of this initiative is included in Appendix C.

Conservation offsets can benefit both the environment (ecological resilience), and industry (improved access to markets and capital, regulatory goodwill, social licence to operate) if it can demonstrate strong environmental performance and the ability to adequately compensate for the unavoidable impacts of its developments. Offsets can also support government environmental leadership and market access initiatives related to selling provincial resources abroad. To support this, a conservation offsets program should be ecologically defensible, economically and administratively effective and supported by government, conservation organizations, industry, other stakeholders and local communities.

There are two major types of conservation offsets based on the approach used to achieve conservation gains. Restoration offsets focus on restoring, enhancing or establishing ecosystem function in areas previously impacted. Protection offsets focus on protecting biodiversity and other conservation values from future development and can be an important tool to protect what is irreplaceable or highly vulnerable. Offsets are tools designed to reduce the cost of achieving these environmental objectives, although there is a current lack of clarity about their relevance within federal and provincial regulatory regimes.

Developers or other organizations can undertake an offset project directly or they can purchase available offsets from a 'bank' of offsets if already created. Banks can be created by developers in anticipation of their own future needs or a third party who can subsequently sell offsets to developers who need them.

Approach and Scope

Based on a review and summary of some key international, national, and Alberta focused conservation offset initiatives, key stakeholder input and the authors own experience and knowledge, the paper identified barriers and makes recommendations for moving forward in a timely manner with a conservation offset program in Alberta. The primary audience for the paper is the Government of Alberta and its agencies which have the regulatory authority to develop and or consider the use of conservation offsets in their regulatory decision making processes.

Government and stakeholders may also find value in the paper in that it attempts to bring together the key aspects of previous and current work and potential support

mechanisms with respect to offsets and identifies potential roles in the development and implementation of a conservation offset program.

Background

To mitigate losses to ecosystem services, governments around the world are increasingly exploring and implementing new programs designed to enhance the aspects of conservation in project planning. Conservation offsets help mitigate the impacts of development on the environment in some jurisdictions. Through an offset program, environmental losses caused by development in one location, are compensated for at another location(s) so there is either no net loss or a reduced loss to the overall environmental condition. Most offset programs are based on the 'mitigation hierarchy'. This requires avoidance, reduction and mitigation of environmental impacts to occur (in that order of preference) and only the predicted unavoidable residual impacts from development can be offset.[3]

Some jurisdictions have established a public registry and exchange for buying, selling, creating, and retiring of offsets through a transparent and accountable system. Some developers have created habitat banks to create offsets prior to project development that are available to compensate for project impacts before they occur.[4] Creating incentives through offset programs can guide behaviour toward desired environmental, social and economic outcomes. If a market for conservation offsets develops, landowners may find that land previously considered non-productive can generate income through the sale of offsets. In the United States for example, landowners receive assistance to manage their land for the benefit of endangered species.[5]

Some financial institutions have also required confirmation of a net environmental gain for project impacts on critical habitat and no net loss for impacts to natural habitat through offsets in their environmental safeguard systems.[6] The International Finance Corporation Performance Standard PS6 is a major driver of corporate biodiversity management. With broad uptake and support from financial institutions,

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[3] Ibid

[4] *US Wetland Banking*, Forest Trends online at: http://www.ecosystemmarketplace.com/pages/dynamic/web.page.php?section=biodiversity_market&page_name=uswet_market

[5] US Fish and Wildlife Service, *Our Endangered Species Program and How it Works with Landowners* 2009, on line at: http://www.fws.gov/endangered/esa-library/pdf/landowners.pdf

[6] World Resource Institute, *Striking the Balance, Ownership and Accountability in Social and Environmental Safeguards*, online at: http://www.wri.org/sites/default/files/wri_striking_the_balance_report.pdf

industry, governments, and civil society, it is rapidly gaining recognition as global best practice.[7]

Application of PS6 is very site-specific, depending on the species, ecosystems, quality of baseline data and existing biodiversity management. The key steps comprise:

- Critical habitat assessment to determine the importance of each area for biodiversity features (e.g. threatened and restricted-range species and ecosystems, protected areas) in comparison to their global distributions or population sizes.
- Mitigation design and action plans for addressing impacts on critical and natural habitat.
- Offset design of compensatory offsets for residual impacts after appropriate avoidance, mitigation, and restoration measures are applied.
- Protected area assessments to demonstrate a net gain for any impacted legally protected areas or internationally recognized areas.
- Monitoring and evaluation design sufficient to demonstrate biodiversity gains in a statistically defensible way.

Existing conservation offset programs have been designed and implemented almost entirely within supportive regulatory regimes. Governments establish a clear vision, outcomes, objectives and priorities for conservation, supporting policies, plans, requirements and metrics to guide what actions achieve the desired results. This helps create legal certainty, clarifies the expectations of offset design, establishes a level playing field, provides confidence in the offsets, and potentially establishes new business opportunities and markets.

In the United States, a policy objective of no net loss of wetlands encouraged the development of offset initiatives as one tool to achieve the objective. This has subsequently been formalized through legislation where developers are required to offset any unavoidable damage they cause to wetlands.[8] As a result, a market has arisen in which developers can fulfil their obligations in the least expensive manner

[7] Performance Standard 6, Biodiversity Conservation and Sustainable Management of Living Natural Resources, online at: http://www.ifc.org/wps/wcm/connect/bff0a28049a790d6b835faa8c6a8312a/PS6_English_2012.pdf?MOD=AJPERES

[8] Committee on Wetland Losses under the Clean Water Act, Board on Environmental Studies and Toxicology, Water Science and Technology Board, Division on Earth and Life Sciences, National Research Council, Compensating for Wetland Losses under the Clean Water Act (Washington DC: National Academy of Sciences, 2001), 12 online at http://www.nap.edu/catalog/10134.

possible. Often this takes the form of buying "wetland credits" from wetlands mitigation banks. In Australia, an offset system was developed based on an objective of a net gain in native vegetation.[9] In both cases, commitments to specific measurable objectives were the foundation for the successful development and implementation of these programs.

There are three commonly accepted means by which conservation offsets are provided. The first is project specific, developer-led offsets (whether voluntary or required by a regulator) which are established in conjunction with a specific development project. This usually does not provide for the establishment of the offset prior to development, requires considerable investment and risk taking by the developer, and normally results in the temporary loss of ecosystem services.

The second, conservation offset banking where the 'bank' undertakes the development of offsets, and once accredited by the relevant authority, they are available, usually for a price, to developers who require offsets to meet the regulatory requirements of their proposed developments. This enables the establishment of offsets in advance of the impacts of development projects, avoiding or minimizing the temporary loss of ecosystem services. In some cases, a developer with on-going activities has played the role of the bank in anticipation of applying established offsets to its own developments later. Self-banking of fish habitat for example, while not commonly practiced, is allowed in Canada.[10] The design and implementation of an offset bank may require a substantial investment in land, research, restoration activities, and time for the validity of the offsets to be determined. Conservation banks are therefore long-term investments, which require a stable and certain legal and policy environment.

The third comprises other conservation activities including research, education, capacity building, or the payment of fees into a fund used for future environmental protection and enhancement. These are usually not considered a formal conservation offset as they do not offset specific ecological loss. They should however, contribute to the overall objectives of an offset program.

In Alberta, some offset initiatives have occurred without the benefit of a formal conservation offset program. These include:

[9] COAG Standing Council on Environment and Water, *Australia's Native Vegetation Framework* (Canberra: Australian Government, Department of Sustainability, Environment, Water, Population and Communities, 2012) page 4.

[10] K Hunt, P Patrick & M Connell*, Fish Habitat Banking in Canada: Opportunities and Challenges, Economic and Commercial Analysis Report* 180 (NP: Her Majesty the Queen in Right of Canada, 2011) at 6-7, 16-25.

- Shell Canada Ltd. established a conservation offset at Buffalo Hills in partnership with Ducks Unlimited by purchasing private land containing grasslands and wetlands. Shell also purchased boreal forest habitat to establish a conservation area under the management of the Alberta Conservation Association;[11]
- Kinder Morgan Canada's creation of a fund for environmental improvements in Jasper National Park to offset expansion of the Trans Mountain Pipeline through the park;[12]
- The Northern Gateway pipeline project approval included conditions requiring offsets (caribou habitat, wetlands, rare plants and ecological communities, fish and fish habitat);[13] and
- The Joslyn North Mine Project, where Total E&P Canada Ltd. offered lands on a neighbouring oil-sands lease as replacement for lost wildlife habitat while reclamation on the Joslyn North Mine Project proceeded.[14]

Although these companies saw benefits or were required to undertake these offsets, they could find themselves at a potential competitive disadvantage by doing so. These include the considerable investment that is required to develop the offset that their competitors do not face, and the risk that the conservation benefits may not materialize, or the benefits achieved are not recognized. One of the advantages of a regulated system is the establishment of a level playing field and the certainty it provides for industry and other stakeholders.

Offset Principles

It is important to have a common understanding of the key principles of a credible conservation offset system. Conservation offsets involve trade-offs that need to demonstrate real conservation outcomes. In order to make these decisions, there needs to be clear conservation priorities to allow a determination of what actually enhances ecosystem function. Conservation offsets can only succeed in a favorable policy environment and if they meet the needs of Government, stakeholders and the public.

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[11] The Shell True North Forest online at: http://www.shell.ca/en/environment-society/environment-tpkg/true-north.html

[12] Trans Mountain Legacy Fund online at: http://www.transmountainlegacyfund.com/

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

[14] ERCB Decision 2011-005/CEAA Reference No. 08-05-37519 online at: ERCB http://www.total.com/MEDIAS/MEDIAS_INFOS/4458/FR/full-report-of-joint-review-panel-january27-2011.pdf.

Through a review of past initiatives, there appears to be a high degree of consensus on the following principles of successful conservation offset programs.

Programs must adhere to the mitigation hierarchy. A conservation offset is a commitment to compensate for significant residual adverse environmental impacts identified after appropriate avoidance, mitigation and on-site rehabilitation measures are taken. Residual impacts can only be estimated upfront, and are not fully known until the end of the development's life. This makes it difficult to deal with issues of timing and the actions required to address the actual residual impacts. The ongoing evaluation of residual impacts throughout the life of the project, and the subsequent adjustment of the conservation offset or other measures to address them help reduce this uncertainty.

An offset must be additional to existing regulatory requirements. Although there is no consensus on what type of proof is adequate, for an offset to be additional, evidence must show that past disturbance will not be reclaimed, or undisturbed lands have an identified risk of being disturbed without the offset. The restoration of private and public land would be additional if the restoration is not already required through an existing authorization. Evidence that there is a risk of development on private land may be met through existing municipal zoning (eg. agriculture, rural-residential, or subdivision approval) or an approval allowing certain developments to occur. In the case of public lands evidence of an existing mineral right, or a public land disposition, may be considered sufficient evidence.

An offset must have permanence, in that the environmental benefit of the offset (magnitude, duration) fairly compensates for the residual impact of the development for the period that the development exists. Permanence of an offset would require an instrument to ensure its protection for at least as long as the associated disturbance exists. On private lands, conservation easements already exist in Alberta to do this. On public lands, the provincial government has the Public Land Reservation/Notification Program that identifies provincial commitments on public lands.[15] This includes protective notations which restrict future land use to protect initiatives like reclamation projects and industrial sample plots.

These mechanisms do not guarantee permanence as the Government has the authority to amend or cancel them if it is in the 'public interest' to do so. An existing public land disposition, or a new one may be needed to clarify the legal commitments, liabilities, conditions, etc. for these offsets. A commitment for compensation for disturbed offsets on both private and public lands may also be required to protect these investments.

[15] Government of Alberta, Sustainable Resource Development online at: http://esrd.alberta.ca/forms-maps-services/forms/lands-forms/guides-forms-completion/documents/ReservationNotationManual-Jan-2006.pdf

The offset must equivalently compensate for project impacts. Achieving equivalency is the primary feature that distinguishes offsets from other forms of environmental compensation. It is based on a comparison between the environmental attributes of the disturbed land and the offset land so that a fair trade-off between environmental losses and gains is achieved. There are three components to ecological equivalence; ecological condition, or the capacity of a site to maintain ecological function, similarity and representation of key features of the disturbed and offset site, and the timing and risk associated with when the benefits of the conservation offset will be realized.

Measuring the equivalency of different sites can be a difficult task. Most lands are not created equal. It is easier to be certain of equivalence if the offset is conducted in a similar ecosystem to that disturbed. Some offset programs require the offset area to be larger or ecologically "richer" than the area lost to development. Multiples are commonly used to develop a sufficient safety margin so that the offsetting activities more than compensate for the losses on the area developed. It is the ecological difference between the offset and the disturbed area, and the risk of offset failure that generally determines offset ratios. Offset ratios cannot protect against all uncertainties especially lack of restoration success.

The choice of multipliers for each offset will be case-specific, based on an assessment of a number of factors (e.g. impact type, severity and duration, site characteristics, uncertainties). Some systems like Alberta's Wetland Policy, have fixed multiplier ratios. While this reduces the ability to fine-tune ratios to better address site specific situations, it provides more certainty and reduces transactional costs.

Although, the importance of flexibility and case-by-case site-specific responses to environmental impacts may be appropriate to determine appropriate offsets in a voluntary system, it creates consistency and certainty issues in a regulated system. For a regulated system to be effective and efficient, stakeholders and decision makers need to understand and follow a standardized set of rules and processes for determining the requirement for an offset. Although the requirements for offsets need to be clear, they also need to be sufficiently flexible to allow site-specific solutions that find the best results. Sufficient clarity and rules are required to provide a reasonable level of predictability, equity and business certainty while supporting innovation.

Offsets are land based initiatives that may in themselves not achieve the ecological benefits desired. For example, an offset may successfully protect/restore habitat for a particular species, but that species may not exist in the area to occupy it. A species reintroduction program may be a better approach to an offset in this case or may be required in conjunction with the offset to achieve the desired outcomes.

Although not used in Alberta to date, the *Alberta Land Stewardship Act* also provides for the use of conservation directives to permanently protect, conserve, manage and enhance environmental, natural scenic, esthetic or agricultural values if identified through a regional plan.[16] The title holder whose land is the subject of the conservation directive has the right, to apply for compensation within twelve months after the conservation directive is in place for any amount of decrease in the market value of the land, losses, or injurious affection that resulted from the conservation directive.[17]

For well-functioning markets and stakeholder and public confidence, a system that relies on transparent and credible science based information about the state of ecosystem services, and relationships to management systems will promote information sharing and knowledge availability.

Exploring Previous Conclusions and Recommendations

A review of previous reports, studies and pilots indicate broad support for Alberta to pursue the development of a conservation offset program based on clear outcomes and objectives. There was also general agreement that Alberta is well positioned to implement a program, as there is supporting legislation, experience in other markets, and good baseline data and landscape level planning in many areas. A summary of the conclusions and recommendations of these initiatives is included in Appendix C.

These previous studies have suggested that the desired components of a conservation offset program are as follows:

- Clear definitions, targets and priorities need to be established linked to broader conservation objectives. The establishment of clear and measurable outcomes, objectives, strategies, targets, and priorities based on the principles of the mitigation hierarchy, additionality, equivalency, and permanence is required. This would include clarification on whether no net loss or another statement of the desired future is the desired goal of the program.
- Establish a lead agency with clear responsibility and accountability for a multi-year program with committed funding. The agency would also be responsible for collaboration between provincial and federal regulators and stakeholders to help ensure support and coordination of any regulatory requirements. An independent oversight committee of knowledgeable stakeholders could also play a role in supporting program effectiveness, and provide knowledge and advice.

[16] Government of Alberta, Alberta Land Stewardship Act, SA 2009, s 37.
[17] Government of Alberta, Alberta Land Stewardship Act, SA 2009, s 39.

- Develop/confirm scientifically valid, well-understood, simple metrics validated and verified in a clear, repeatable, efficient process and a robust transparent data, information management and monitoring system. This would include updates on environmentally sensitive area mapping and a determination on which areas could be potential sources of conservation offsets.
- Access to decision-making tools to assist stakeholders in designing and implementing projects to meet compliance and reporting requirements, and to enable effective participation in a market.
- Encourage the use of pilots to improve the program over time through shared learning. Pilots need to create a safe space to explore possible offset models, make mistakes, learn lessons, and share the risks without undue criticism.
- Create a mechanism to protect private conservation offsets on public land. Potential conflicts with future surface or sub-surface development on both private and public land also need to be addressed.
- Use the existing carbon market and set of protocols relate to land use and agricultural methods as a model and starting point for the development of a conservation offset market, quantification protocols, rules, templates, guidance documents, and tools. An appropriate currency 'stewardship unit' would also need to be defined.
- Develop a centralized conservation exchange (banking system) and clearinghouse with a public on line registry and trading platform to incent offsets in advance of development, and have established performance criteria. The system needs to include clear procedures and responsibilities for verifying, classifying and recording the creation, ownership, use and extinguishment of credits that is transparent and consistent to provide stakeholder and public assurance. The integration of conservation offsets with other environmental markets such as carbon, and wetlands should also be considered.
- Undertake research including:
    - Dynamics between ecosystem processes and human and natural disturbance
    - Validation, refinement and improvement of models and equivalency metrics
    - Stacking/bundling ecosystem services

The Canadian Context

The Canadian Biodiversity Strategy (1995) is a commitment under the 1992 United Nations Convention on Biological Diversity. Alberta is a signatory to the strategy,

and has agreed to use it and the Biodiversity Outcomes Framework for Canada (2006) as a guide to develop its own biodiversity policy and actions.[18]

In order to achieve long-term biodiversity outcomes, federal, provincial and territorial governments also endorsed the 2020 Biodiversity Goals & Targets for Canada.[19] These goals and targets describe the results to be achieved through collective efforts of both public and private players whose actions and decisions have an impact on biodiversity. They are summarized in Appendix A.

There are also a number of Federal Acts and initiatives that can influence the development and implementation of a conservation offset program in Alberta. A summary of these Acts and initiatives are included in Appendix B.

The Alberta Context

There is provincial legislation, policies, initiatives, mandates and authorities within various departments and agencies of the Alberta Government that can play a potential key role in developing and implementing a conservation offset program in Alberta. Many provincial acts currently give authority to regulators to require conservation offsets as conditions in approvals. There are also many other organizations outside of the provincial government that can play a supporting role in an offset program.

A Draft Framework for Alberta Conservation Offsets

On October 24, 2014, the Government of Alberta released a Draft Conservation Offset Discussion Paper proposing a conservation offsets policy framework for Alberta.[20] The draft framework describes the intent of the framework as being 'a common umbrella under which specific offset programs will be designed and implemented to ensure that the application of offsets for different environmental media and regions across the province are based on a consistent, effective and transparent governance system.' [21] A summary of the discussion paper is provided in Appendix D.

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[18] Government of Alberta, *Draft Lower Athabasca Region, Biodiversity Management Framework*, November 2014, 17.

[19] Government of Canada, *2020 Biodiversity Goals and Targets for Canada*, online at: http://www.biodivcanada.ca/9B5793F6-A972-4EF6-90A5-A4ADB021E9EA/2020BiodiversityGoalsTargetsForCanada.pdf

[20] Government of Alberta, *Draft Conservation Offset Discussion Paper*, 2014.

[21] Ibid 2.

As a result of feedback received on the discussion paper, the Government of Alberta is currently developing 'A Framework for Alberta Conservation Offset'.[22] The draft framework as of February 11, 2015 is included in Appendix E.

The draft framework indicates that Alberta accepts conservation offsets in its regulatory decision processes towards meeting resource management objectives on both private and public lands for mitigating project-specific impacts.[23] It recognizes that conservation offsets are enabled by a statute, policy, program or a planning process and is implemented through applicable regulatory authorization decisions.[24] The draft framework also provides overarching governance, including principles, program design elements/characteristics, and requirements to support consistent implementation, under which offset rules are developed under specific programs.[25]

The draft framework defines a conservation offset as:

> 'a measurable conservation outcome, resulting from actions designed to counteract significant impacts arising from project development after appropriate prevention measures consistent with the mitigation hierarchy have been taken'.[26] In lieu payments may be enabled under specific programs but are not considered an offset.[27]

The framework recognizes that conservation offsets need to be protected through legal instruments by which the integrity of the offset is assured and that disturbed offsets must be replaced.[28] It also indicates that offsets can be used within existing parks and protected areas to restore or enhance habitat in those areas.[29]

The framework supports conservation offset banking as a means to minimize time lag and risk in meeting resource management outcomes.[30] The decision to enable a bank rests with the specific offset program but must consider factors in the framework when considering establishing a bank.

Roles and Responsibilities

There are a number of Alberta Government departments and agencies that have legislative and policy authority to play a significant role in developing and

[22] Government of Alberta, *A Framework for Alberta Conservation Offset* (Draft), February 11, 15.
[23] Ibid 1.
[24] Ibid 1.
[25] Ibid 1 -6.
[26] Ibid 1.
[27] Ibid 5.
[28] Ibid 4.
[29] Ibid 6.
[30] Ibid 6.

implementing a conservation offset program in Alberta. Organizations outside of the Government of Alberta also have related legislative, advocacy, information, expertise, funding and/or research roles. More information on these organizations and others are summarized in Appendix F.

Inventories, Models, other Supports and New Initiatives

There are a number of existing inventories, models and other initiatives that can help support a conservation offset program in Alberta. This includes species spatial distribution, habitat associations, land cover, and predicted relative abundance distributions for a wide variety of species. These are summarized in Appendix G.

There are also a number of new initiatives in Alberta that can support the development and implementation of a conservation offset program. These include initiatives to improve ecosystem service assessments, development of validation and demonstration tools, improved monitoring and data, inventories and protocols, for ecosystem service losses, restoration and enhancement efforts. Examples are summarized in Appendix H.

Stakeholder Feedback on Draft

Stakeholder feedback on the draft of this document proved invaluable to the completion of the final paper. In addition to editorial, and clarity suggestions, the following key points were also made.

Alberta is well positioned to develop and implement a formal program, as there is general stakeholder support, enabling legislation, experience in other markets, good baseline data and regional and landscape level planning in many areas. The underlying basis for a conservation offset system must be to reduce ecological loss in the province. The system must not lose sight of this goal.

In Canada's nested regulatory environment, Alberta needs to create an offset system with clear and measureable outcomes and provide clarity on their limits and relevance within federal, provincial and municipal regulatory regimes. Stakeholders need assurance that their actions are going to be meaningful and recognized.

One of the key factors affecting ecological effectiveness and economic efficiency is the spatial scale used in the conservation offset program. Stakeholders generally support using the existing regionally planning process and allowing flexibility of the type and location of offsets within the region to achieve ecological and economic outcomes. Some feel that focusing on "no net loss" in Alberta is not an achievable outcome and some are concerned about the potential economic loss that offsets may create to the province.

There needs to be a lead agency responsible to develop and manage the program and related processes and protocols for specific conservation offsets and a banking system. This would require Government of Alberta leadership (as the main regulatory authority) and the need for a dedicated effort, focused attention and sufficient allocation of resources. This agency must work with stakeholders to develop and implement the program and create a roadmap to move forward based on what is working successfully in other jurisdictions. The agency also needs to coordinate, integrate and confirm which information sources will be used to support the offset program and identify priorities for land conservation initiatives so that resources can be focused when and where they are most needed.

Although moving to an offset market is where we want to be, there is complexity in these systems that would benefit from learning by doing, and moving in that direction over time. Companies that have taken the risk of undertaking voluntary conservation offsets should receive credit in a regulated system.

A risk-based approach should be taken recognizing the uncertainty in achieving the environmental objectives anticipated through offsets and addressing the liability associated with the loss of an offset site. One suggestion is the need to establish a legal mechanism on public lands to identify and protect conservation offsets as the exiting conservation easement mechanism does on private lands.

All stakeholder feedback is summarized in Appendix I.

Barriers to Moving Forward with a Conservation Offset Program

Through the background review and comments from stakeholders, the following key barriers were identified that will need to be addressed to move forward with a conservation offset program in Alberta.

The most significant is the lack of a formal Government of Alberta commitment to a conservation offset program and the establishment of a lead agency with the responsibility, accountability and resources to champion its development and implementation.

There is no apparent plan to move forward with a program, a lack of clarity on the objective of conservation offsets, and a lack of clarity on the limits and relevance of offsets within federal, provincial and municipal regulatory regimes. Stakeholders need assurance that their conservation actions are going to be recognized and the risk of incongruence between overlapping jurisdiction and potentially divergent federal and provincial policies are addressed.

There is also a lack of clear incentives or drivers for a program. If the potential benefits to the environment and/or the developer are perceived to be too low, and/or the costs/liabilities/risk to the developer and/or the economy is perceived as too high, then it is unlikely that an offset program will move forward.

There is no coordinated approach to develop/confirm scientifically valid, well-understood, simple metrics to validate ecosystem function and ecosystem services benefits and in comparing losses and replacement values. There a number of information sources in Alberta, that could support a conservation offset program, but they are not currently integrated.

Although trading exchanges, offset stacking, validation and other related aspects of a market system approach are desirable for the long-term, they are potentially complex. If a simple, efficient, effective, transparent, robust system is not created, it may have limited use.

Recommendations

There is general agreement that Alberta is well positioned to develop and implement a conservation offset program as there is supporting legislation, provincial policy, experience in other markets, and good baseline data and landscape level planning in many areas. Given this support, the following recommendations focus on how to move forward in a timely manner with the development and implementation of a program.

A critical first step, especially with the recent election of the New Democratic Party in Alberta is for the Government of Alberta to confirm its commitment and intention of moving forward with development and implementation of a 'formal' conservation offset program. This commitment should clarify that:

1. Alberta accepts conservation offsets as a legitimate tool in its regulatory decision processes to help meet global environmental commitments and provincial resource management objectives on both private and public lands.
2. Offset programs will achieve real, clear, verifiable conservation outcomes (no net loss, best alternate outcome, or another statement of the desired future), supported by actions, timelines and measures of success.
3. The principles, program design elements/characteristics, and requirements in the current 'A Framework for Alberta Conservation Offset' draft will form the basis of this commitment with the addition that offset design and implementation will be based on sound science, traditional knowledge and in consultation with stakeholders.

4. Alberta will work with the Federal Government, other provinces, municipalities and stakeholders to develop and implement an aligned, transparent, effective and efficient offset system based on a regional approach that will aggregate conservation benefits at a landscape level.
5. Offsets will be secured through legal instruments on private and public lands so that the integrity of the offset is protected and that any disturbed offsets will be equivalently replaced. This will include a requirement by the Surface Rights Board and the Government of Alberta to require compensation for the holder of a conservation offset for any negative impact of future development based on the value of the offset and/or the investment needed to recreate it.
6. Alberta will reconfirm, and/or amend the June 16, 2010 commitment (Appendix J) to recognize voluntary offsets that meet specific criteria in any future regulated system.
7. Alberta will establish a Lead Agency with responsibility, authority and resources to coordinate the development and implementation of a provincial conservation offset program through:
    i. Creating a roadmap including milestones, responsibilities, etc. that builds on the previous work and successes in Alberta and other jurisdictions summarized in this paper.
    ii. Working with provincial and federal regulators, municipalities and stakeholders to develop and implement an aligned system that incorporates effectively and efficiently conservation offsets into the regulatory approvals system.
    iii. Consultation with the Auditor General of Alberta and stakeholders, coordinate the establishment of a centralized conservation offset banking system/market (registry, exchange, trading platform) to encourage the implementation of conservation measures in advance of development and to create new business opportunities. As a starting point, an assessment of the lessons learned from Alberta's carbon offset market and Alberta's wetland assessment and classification system should be used. This should also support the integration of carbon, wetlands, and other offsets into one market.
    iv. Coordinating the development of support and decision-making tools to assist stakeholders in designing projects to meet offset, compliance and reporting requirements and to enable effective participation in the market.
    v. Identifying and coordinating funding availability to support the development of offset banks and pilots.
    vi. Working with Alberta's professional occupation regulatory groups to build awareness and understanding of conservation offsets and support the role of their respective members as third party verifiers.

vii. Developing a research strategy with research institutions, funders, and stakeholders to establish priorities and coordinate offset research at the national, provincial and regional scale.
viii. Establishing scientific, traditional knowledge and stakeholder advisory committees to support program effectiveness and provide knowledge and advice in the development of tools to assist in designing, and implementing offset projects.
ix. Confirm which information sources will be used to support offsets and an offset program and identify priorities for land conservation initiatives so that resources can be focused when and where they are most needed.

References

1. Alberta Association for Conservation Offsets Strategic & Business Plan, 2014-2015, November 5, 2014.
2. Alberta Association of Municipal Districts and Counties online at: http://www.aamdc.com/about
3. Alberta Barley Commission online at: http://www.albertabarley.com/
4. Alberta Beef Producers online at: http://www.albertabeef.org/;
5. Alberta Biodiversity Monitoring Institute online at: Alberta Biodiversity Monitoring Institute < http://www.abmi.ca/abmi/home/home.jsp>.
6. Alberta Biodiversity Monitoring Institute online at: http://www.abmi.ca/home/about-us/our-vision-mission.html
7. Alberta Biodiversity Monitoring Institute on line at: http://www.abmi.ca/home/projects.html
8. Alberta Biodiversity Monitoring Institute on line at: http://species.abmi.ca/
9. Alberta Biodiversity Monitoring Institute on line at: http://www.abmi.ca/home/publications.html?documenttype=Protocols&mode=detail
10. Alberta Canola Producers Commission online at: http://albertacanola.com/;
11. Alberta Conservation Association, Conservation Offsets: A Working Framework for Alberta, online at: Alberta Conservation Association < http://www.ab-conservation.com/go/default/assets/File/Publications/ACA%20Conservation%20Offsets%20Framework%20Aug%202011.pdf>.
12. Alberta Environmental Network online at: http://www.aenweb.ca/content/purpose-goals
13. Alberta Forest Products Association online at: https://www.albertaforestproducts.ca/;
14. Alberta Forest Products Road Map (2010), online at: albertaforestroadmap.ca.
15. Alberta Institute of Agrologists online at: http://www.albertaagrologists.ca/;
16. Alberta Innovates Bio Solutions online at: http://bio.albertainnovates.ca/
17. Alberta Innovates Bio Solutions, Ecosystem Services Roadmap: “A Pathway to Innovation and Competitiveness” Version 11 (Edmonton: Alberta Innovates Bio Solutions, 2012) online at: Alberta Innovates Bio Solutions <http://www.bio.albertainnovates.ca/media/45788/es_roadmap_v11_may_30_12.pdf>
18. Alberta Innovates Energy and Environment Solutions online at: http://www.ai-ees.ca/
19. Alberta Innovates Technology Futures online at: http://www.albertatechfutures.ca/Corporate.aspx

20. Alberta Innovates/Silvacom, Green Analytics, Assessing the Ecosystem Service Benefits of the Algar Leap Project.
21. Alberta Land Grant Program online at: http://esrd.alberta.ca/lands-forests/alberta-land-trust-grant-program/default.aspx
22. Alberta Land Institute online at: http://www.albertalandinstitute.ca/about/institute-overview/
23. Alberta Livestock and Meat Agency online at: http://alma.alberta.ca/index.htm
24. Alberta Pulse Growers online at: http://pulse.ab.ca/;
25. Alberta Society of Professional Biologists online at: https://www.aspb.ab.ca/
26. Alberta Water Council online at: http://www.albertawatercouncil.ca/AboutUs/tabid/54/Default.aspx
27. Alberta Wheat Commission online at: http://www.albertawheat.com/;
28. Association of Professional Engineers online at: http://www.apega.ca/;
29. Aquatic Environmentally Significant Areas online at: http://fieraconsulting.ca/?p=396
30. B04626, University of Edinburgh School of Business, Examining the Challenges of Stacking Carbon and Biodiversity Offsets in British Columbia and Alberta, 2013/14.
31. Business and Biodiversity Offset Programme, “To No Net Loss and Beyond, An Overview of the Business and Biodiversity Offsets Programme”, (Washington, DC: BBOP, 2009)
32. Canada Oil Sands Innovation Alliance online at: http://www.cosia.ca/about-cosia
33. Canadian Association of Petroleum Producers online at: http://www.capp.ca/;
34. Canadian Heavy Oil Association online at: http://www.choa.ab.ca/;
35. COAG Standing Council on Environment and Water, Australia’s Native Vegetation Framework (Canberra: Australian Government, Department of Sustainability, Environment, Water, Population and Communities, 2012).
36. Carbon Budget Model of the Canadian Forest Sector online at: http://www.nrcan.gc.ca/forests/climate-change/13107
37. Carbon Offset Solutions, “Alberta offset System – Approved Quantification Protocols and Guidance” online at: Carbon Offset Solutions <http://carbonoffsetsolutions.climatechangecentral.com/offset-protocols/approved-alberta-protocols>.
38. CENTURY Soil Organic Matter Model Version4 online at: ftp://ftp.daac.ornl.gov/data/model_archive/CENTURY/century_vemap_m4/comp/Century_Users_Manual_V4.pdf
39. Clean Air Strategic Alliance on line at: http://casahome.org/AboutCASA.aspx
40. Collaboration for Conservation Offset System for Alberta, Joint Industry, ENGO, and Association Presentation (Shell Canada, Suncor, Cenovus, ConocoPhillips, Devon, AltaLink, TransAlta, TransCanada, Alberta Forest

Products Association, Alberta Conservation Association, Pembina Institute, Ducks Unlimited, PowerPoint, October 2013.
41. College of Alberta Professional Foresters online at: http://www.capf.ca/;
42. Committee on Wetland Losses under the Clean Water Act, Board on Environmental Studies and Toxicology, Water Science and Technology Board, Division on Earth and Life Sciences, National Research Council, Compensating for Wetland Losses under the Clean Water Act (Washington DC: National Academy of Sciences, 2001), online at: http://www.nap.edu/catalog/10134.
43. Cumulative Environmental Management Association online at: http://cemaonline.ca/index.php/about-us
44. Ducks Unlimited Canada online at: http://www.ducks.ca/what-we-do/where-work/
45. Environmental Law Centre online at: http://www.elc.ab.ca/about-us.aspx
46. Environmentally Significant Areas online at: http://fieraconsulting.ca/?tag=environmentally-significant-areas-of-alberta
47. ERCB Decision 2011-005/CEAA Reference No. 08-05-37519 online at: ERCB http://www.total.com/MEDIAS/MEDIAS_INFOS/4458/FR/full-report-of-joint-review-panel-january27-2011.pdf.
48. Forest Research Institute online at: https://foothillsri.ca/content/about-24
49. Forest Trends, “US Wetland Banking”, online at: http://www.ecosystemmarketplace.com/pages/dynamic/web.page.php?section=biodiversity_market&page_name=uswet_market
50. Government of Alberta, A Framework for Alberta Conservation Offset (Draft), February 11, 2015.
51. Government of Alberta, Alberta Acid Deposition Management Framework, February 2008.
52. Government of Alberta, Alberta Agriculture, Food and Rural Development online at: http://www.agric.gov.ab.ca/app21/ministrypage
53. Government of Alberta, Alberta’s Biodiversity Policy Draft, 2015 online at: http://aenweb.ca/files/draft_albertas_biodiversity_policy_december_2014.pdf
54. Government of Alberta, Alberta Carbon Capture and Storage online at: http://www.solutionsstarthere.ca/68.asp
55. Government of Alberta, Alberta Climate Change Strategy , 2008) online at: http://esrd.alberta.ca/focus/alberta-and-climate-change/
56. Government of Alberta, Alberta Energy online at: http://www.energy.alberta.ca/
57. Government of Alberta, Alberta Energy Regulator online at: https://www.aer.ca/about-aer/who-we-are.
58. Government of Alberta, Alberta Energy Regulator (2012) online at: http://www.oilsands.alberta.ca/FactSheets/REP_Fact_Sheet.pdf

59. Government of Alberta, Alberta Forest Management Planning Standard, Alberta Sustainable Resource Development (2006).
60. Government of Alberta, Alberta Land Stewardship Act, SA 2009.
61. Government of Alberta, Alberta Land-Use Framework (Government of Alberta, 2008) online at: https://landuse.alberta.ca/Governance/Administration/Pages/default.aspx
62. Government of Alberta, Alberta's Strategy for the Management of Species at Risk, Alberta Sustainable Resource Development 2009 online at: http://www.assembly.ab.ca/lao/library/egovdocs/2008/alsrd/171462.pdf
63. Government of Alberta, Alberta Wetland Policy online at: http://www.waterforlife.alberta.ca/documents/Alberta_Wetland_Policy.pdf
64. Government of Alberta, Bow River Phosphorus Management Plan online at: http://esrd.alberta.ca/focus/cumulative-effects/cumulative-effects-management/management-frameworks/bow-river-phosphorus-management-plan.aspx
65. Government of Alberta, Climate Change and Emissions Management Act (SA 2003).
66. Government of Alberta, Draft Conservation Offset Discussion Paper, 2014.
67. Government of Alberta, Draft Lower Athabasca Region, Biodiversity Management Framework, November 2014.
68. Government of Alberta, Environmental Protection and Enhancement Act, SA 2000.
69. Government of Alberta, Environment and Sustainable Resource Development 2006, online at: http://esrd.alberta.ca/forms-maps-services/forms/lands-forms/guides-forms-completion/documents/ReservationNotationManual-Jan-2006.pdf
70. Government of Alberta, Environment and Sustainable Resource Development, Fish Sustainability Index, online at: http://esrd.alberta.ca/fish-wildlife/fisheries-management/fish-sustainability-index/default.aspx
71. Government of Alberta, Fish Conservation and Management Strategy for Alberta, Environment and Sustainable Resources (2014).
72. Government of Alberta, Forest Resources Improvement Regulation (AR 152/97).
73. Government of Alberta, GeoDiscover online at: www.geodiscover.alberta.ca.
74. Government of Alberta, Grassland Vegetation Inventory online at: http://www.albertapcf.org/native-prairie-inventories/gvi.
75. Government of Alberta, Integrated Resource Management System online at: http://oilsands.alberta.ca/2828.html
76. Government of Alberta, Land Stewardship Fund Regulation (AR 31/2011).
77. Government of Alberta, Launching Alberta's Energy Future (Government of Alberta 2008).

78. Government of Alberta, Lower Athabasca Regional Plan 2012-2022 (np: Government of Alberta, 2012) online at: Alberta Environment and Sustainable Resource Development https://landuse.alberta.ca/LandUse%20Documents/Lower%20Athabasca%20Regional%20Plan%202012-2022%20Approved%202012-08.pdf.
79. Government of Alberta, Natural Resources Conservation Board Act, RSA 2000.
80. Government of Alberta, Protecting Alberta's Environment Act RSA 2013.
81. Government of Alberta, Public Lands Act (SA 2000)
82. Government to Alberta, Public Lands Administrative Regulation (AR187/2011).
83. Government of Alberta, Responsible Actions: A Plan for Alberta's Oil Sands, 2009) online at: Alberta Energy http://www.energy.alberta.ca/Initiatives/3223.asp.
84. Government of Alberta, Responsible Energy Development Act RSA 2012.
85. Government of Alberta, South Athabasca Regional Strategic Assessment online at: http://www.alsa.ab.ca/MemberResources/View/tabid/151/ArticleId/269/South-Athabasca-Regional-Strategic-Assessment.aspx
86. Government of Alberta, South Saskatchewan Regional Plan 2014-2024, 2014), Alberta Environment and Sustainable Resource Development online at: https://www.landuse.alberta.ca/LandUse%20Documents/SSRP%20Final%20Document_2014-07.pdf.
87. Government of Alberta, Surface Rights Act RSA, 2000.
88. Government of Alberta, Sustainable Resource Development online at: http://esrd.alberta.ca/forms-maps-services/forms/lands-forms/guides-forms-completion/documents/ReservationNotationManual-Jan-2006.pdf
89. Government of Alberta, Environment and Sustainable Resource Development, The Alberta Wetland Classification System and Provincial Wetland Inventory online at: http://www.waterforlife.alberta.ca/documents/DraftWetlandClassificationSystem-Sep2014.pdf
90. Government of Alberta, Alberta Utilities Commission online at: http://www.auc.ab.ca/about-the-auc/what-we-do/Pages/default.aspx
91. Government of Alberta, Service Alberta, Land Titles online at: https://www.servicealberta.ca/589.cfm
92. Government of Alberta, Water for Life Renewal Strategy online at: http://environment.gov.ab.ca/info/library/8035.pdf
93. Government of Alberta, Wetland Policy, Alberta Environment and Sustainable Resource Development (2014) online at:

http://www.waterforlife.alberta.ca/documents/AlbertaWetlandPolicy-Sep23-2013.pdf.
94. Government of Alberta, Wildlife Regulation (AR 143/97).
95. Government of Alberta, Wildlife Sensitivity Maps, Alberta Environment and Sustainable Resource Development online at: bhttp://esrd.alberta.ca/forms-maps-services/maps/wildlife-sensitivity-maps/default.aspx
96. Government of Canada, *2020 Biodiversity Goals and Targets for Canada*, online at: http://www.biodivcanada.ca/9B5793F6-A972-4EF6-90A5-A4ADB021E9EA/2020BiodiversityGoalsTargetsForCanada.pdf
97. Government of Canada, Department of Environment Act, 1985.
98. Government of Canada, Environmental Assessment Act, 2012.
99. Government of Canada, Environment Canada, Environmental Damages Fund, online at: https://www.ec.gc.ca/edf-fde/default.asp?lang=En&n=BD1220D8-1
100. Government of Canada, Fisheries Act, 1985, RSC 1985.
101. Government of Canada, Fisheries and Oceans Canada, Recreational Fisheries Conservation Partnerships Program online at: http://www.dfo-mpo.gc.ca/pnw-ppe/rfcpp-ppcpr/index-eng.html
102. Government of Canada, National Energy Board, Report of the Joint Review Panel for the Enbridge Gateway Project, Volume 2: Considerations (Calgary: National Energy Board, 2013) online at: http://gatewaypanel.review-examen.gc.ca/clf-nsi/dcmnt/rcmndtnsrprt/rcmndtnsrprt-eng.html.
103. Government of Canada, Environment Canada, Operational Framework for Use of Conservation Allowances 2012) online at: http://www.ec.gc.ca/ee-ea/default.asp?lang=En&n=DAB7DD13-1&printfullpage=true.
104. Government of Canada, Fisheries and Oceans Canada, “Policy for the Management of Fish Habitat” (Ottawa: Communication Directorate, DFO, 1986).
105. Government of Canada, Fisheries and Oceans Canada, Fisheries Productivity Investment Policy: A Proponent’s Guide to Offsetting, November 2013 (Ottawa: Ecosystems Policy Program, Fisheries and Oceans Canada, 2013), online at: Department of Fisheries and Oceans <http://www.dfo-mpo.gc.ca/pnw-ppe/offsetting-guide-compensation/offsetting-guide-compensation-eng.pdf>.
106. Government of Canada, Species at Risk Act (2002).
107. Government of Canada, The Federal Policy on Wetland Conservation, 1991.
108. Habib, Thomas J et al, “Economic and Ecological Outcomes of Flexible Biodiversity Offsets” (2013) 27:6 Conservation Biology 1313.
109. Harper, DJ, & JT Quigley, ”No Net Loss of Fish Habitat: A Review and Analysis of Habitat Compensation in Canada” (2005) 36:3 Environmental Management 343.

110. Institute for Agriculture, Forestry and the Environment, Ecosystem Services Market Policy Framework: Integrated Solutions for Greening Alberta's Growth (Edmonton: Institute for Agriculture, Forestry and the Environment, 2010)
111. Institute of Chartered Accountants of Alberta online at: http://www.albertacas.ca/;
112. Karen Haugen-Kozyra, The Prasino Group, Conservation Offsets in Southern Alberta- Advice on Implementation, 2012.
113. Karen Haugen-Kozyra, Conservation Offsets in Southern Alberta – Advice on Implementation Based on Alberta's Carbon Offset Market-Based Instrument (np: KHK Consulting and The Prasino Group, 2012, online: The Prasino Group <http://www.prasinogroup.com/pdfs/Conservation%20Offsets%20in%20Southern%20Alberta.pdf>.
114. Kimberly Good, Haddock, Rachelle, Miistakis Institute, Southeast Alberta Conservation Offset Pilot, Linking Decisions and Assumptions with Generally Accepted Offset Principles, 2014.
115. Land Stewardship Centre online at: http://www.landstewardship.org/what-we-do/
116. K Hunt, P Patrick & M Connell, Fish Habitat Banking in Canada: Opportunities and Challenges, Economic and Commercial Analysis Report 180 (NP: Her Majesty the Queen in Right of Canada, 2011).
117. Law Society of Alberta online at: http://www.lawsociety.ab.ca/;
118. Multisar online at: http://www.multisar.ca/
119. Performance Standard 6, Biodiversity Conservation and Sustainable Management of Living Natural Resources, online at: http://www.ifc.org/wps/wcm/connect/bff0a28049a790d6b835faa8c6a8312a/PS6_English_2012.pdf?MOD=AJPERES
120. Poulton, David W, Stacking of Multiple Environmental Credits – An Alberta Discussion Paper, 2014.
121. Poulton, David W, Conservation Offset Policy for Alberta: A Comparative Analysis, 2014.
122. Shell Canada and Daishowa Marubeni International, Managing for Ecosystem Service Benefits Through Integrated Land Management and Conservation Offsets at Carmon Creek, February 2015.
123. Explorers and Producers Association of Canada online at: http://explorersandproducers.ca/; Canadian Energy Pipeline Association online at: http://www.cepa.com/;
124. State of Victoria, Department of Natural Resources and Environment, Victoria's Native Vegetation Management: A Framework for Action (np: State of Victoria, Department of Natural Resources and Environment, 2002).

125. The Institute for Agriculture, Forestry and the Environment – Agri-Envionmnetal Partnership of Alberta Forum presentation, March 10, 2010.
126. The Shell True North Forest online at: http://www.shell.ca/en/environment-society/environment-tpkg/true-north.html
127. Trans Mountain Legacy Fund online at: http://www.transmountainlegacyfund.com/
128. Tom Habib, ESA Advisory meeting presentation, March 6, 2015.
129. United States Department of the Interior. (2003) Guidance for the Establishment, Use, and Operation of 613 Conservation Banks, Fish and Wildlife Service, Washington, D.C. 20240
130. United States Fish and Wildlife Service, "Our Endangered Species Program and How it Works with landowners", 2009, online at: http://www.fws.gov/endangered/esa-library/pdf/landowners.pdf
131. Weber, Marian, ESA Advisory meeting Power point presentation, March 6, 2015.
132. Weber, Marian, Experimental Economic Evaluation of Offset Design Options for Alberta: A Summary of Results and Policy Recommendations (np, Alberta Innovates Technology Futures, 2011).
133. Weber, Marian, et al, Experimental Economic Evaluation of Offset Design Options – Research Report (np: Alberta Innovates Technology Futures, 2011).
134. Weber, Marian; Hauer, Grant; Farr, Dan, Economic-Ecological Evaluation of Temporary Offset Contracting in Alberta's Boreal Forest, 2015.
135. Western Stock Growers Association online at: http://www.wsga.ca/
136. World Resource Institute, "Striking the Balance, Ownership and Accountability in Social and Environmental Safeguards", online at: http://www.wri.org/sites/default/files/wri_striking_the_balance_report.pdf

Appendix A: 2020 Biodiversity Goals and Targets for Canada

Goal A.

By 2020, Canada's lands and waters are planned and managed using an ecosystem approach to support biodiversity conservation outcomes at local, regional and national scales.

Target 1.

By 2020, at least 17 percent of terrestrial areas and inland water are conserved through networks of protected areas and other effective area-based conservation measures.

Target 2.

By 2020, species that are secure remain secure, and population of species at risk listed under federal law exhibit trends that are consistent with recovery strategies and management plans.

Target 3.

By 2020, Canada's wetlands are conserved or enhanced to sustain their ecosystem services through retention, restoration and management activities.

Target 4.

By 2020, biodiversity considerations are integrated into municipal planning and activities of major municipalities across Canada.

Target 5.

By 2020, the ability of Canadian ecological systems to adapt to climate change is better understood, and priority adaptation measures are underway.

Goal B.

By 2020, direct and indirect pressures as well as cumulative effects on biodiversity are reduced, and production and consumption of Canada's biological resources are more sustainable.

Target 6.

By 2020, continued progress is made on the sustainable management of Canada's forests.

Target 7.

By 2020, agricultural working landscapes provide a stable or improved level of biodiversity and habitat capacity.

Target 8.

By 2020, all aquaculture in Canada is managed under a science-based regime that promotes the sustainable use of aquatic resources (including freshwater and land based) in ways that conserve biodiversity.

Target 9.

By 2020, all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem-based approaches.

Target 10.

By 2020, pollution levels in Canadian waters, including pollution from excess nutrients, are reduced or maintained at levels that support healthy aquatic ecosystems.

Target 11.

By 2020, pathways of invasive alien species introductions are identified, and risk-based intervention or management plans are in place for priority pathways and species.

Target 12.

By 2020, customary use by Aboriginal peoples of biological resources is maintained, compatible with their conservation and sustainable use.

Target 13.

By 2020, innovative mechanisms for fostering the conservation and sustainable use of biodiversity are developed and applied.

Goal C.

By 2020, Canadians have adequate and relevant information about biodiversity and ecosystem services to support conservation planning and decision-making.

Target 14.

By 2020, the science base for biodiversity is enhanced and knowledge of biodiversity is better integrated and more accessible.

Target 15.

By 2020, Aboriginal traditional knowledge is respected, promoted and, where made available by Aboriginal peoples, regularly, meaningfully and effectively informing biodiversity conservation and management decision-making.

Target 16.

By 2020, Canada has a comprehensive inventory of protected spaces that includes private conservation areas.

Target 17.

By 2020, measures of natural capital related to biodiversity and ecosystem services are developed on a national scale, and progress is made in integrating them into Canada's national statistical system.

Goal D.

By 2020, Canadians are informed about the value of nature and more actively engaged in its stewardship.

Target 18.

By 2020, biodiversity is integrated into the elementary and secondary school curricula.

Target 19.

By 2020, more Canadians get out into nature and participate in biodiversity conservation activities.

Appendix B: Summary of Federal Acts and Initiatives

Federal *Fisheries Act*

Canada's most extensive experience with conservation offsets has been in the area of fish habitat. The federal *Fisheries Act* and associated policy guidelines prohibit the destruction of selected identified fish habitat, directly or indirectly.[31] Some of this responsibility is shared with Environment Canada who administers the pollution prevention provisions of the Act. The Act also recognises that harm to fish habitat cannot always be avoided or mitigated. Development of proponent led fish habitat banks are allowed but require authorization.[32] The terms and conditions related to the creation, operation and maintenance of the bank are included as conditions of the authorization or contained in a supplemental agreement that will be referenced in the authorization.

In 2013, the Canadian government amended the fish habitat protection provisions of the Act that potentially could increase the use of offsets.[33] The Act allows the Minister of Fisheries and Oceans to enter into agreements with third parties to undertake initiatives and make investments to enhance fisheries protection. The Act also requires that all fines collected for fisheries protection offenses are directed to the Environmental Damages Fund to be used for initiatives that advance protection and enhancement of Canada's fisheries. These funds are allocated in the geographic region where the fines were levied with priority of funds given to restoration projects that address the damage caused by the original incident.[34]

Fisheries Productivity Investment Policy

The Fisheries Productivity Investment Policy provides guidance to ensure that proponents of projects that cause serious harm to fish undertake effective measures to offset that harm consistent with the fisheries protection provisions of the *Fisheries Act*. In addition, through the Recreational Fisheries Conservation Partnerships Program (RFCPP), Fisheries and Oceans Canada is making $10 million available over two years to support conservation activities through partnerships with local groups who undertake projects to restore and protect recreational fisheries habitat.

The program can fund projects that mitigate streamside practices to improve the quality of recreational fisheries habitat, enhance habitat, manage the areas

[31] Government of Canada, *Fisheries Act*, 1985, RSC 1985, s 35.
[32] Government of Canada, Fisheries Act, 1985, RSC 1985, s 35. .
[33] Government of Canada, *Fisheries Act*, 1985, RSC 1985, s 6.
[34] Government of Canada, Environment Canada, Environmental Damages Fund, online at: https://www.ec.gc.ca/edf-fde/default.asp?lang=En&n=BD1220D8-1

bordering streams, lakes and wetlands, and enhance connectivity of water bodies through the removal of anthropogenic barriers to fish passage or enhancing fish-ways.[35]

Operational Framework for Use of Conservation Allowances

In 2012, Environment Canada (EC) released its Operational Framework for Use of Conservation Allowances (offsets).[36] The framework lays out a set of guidelines and principles for the use of offsets, based on the principle of no net loss. The benefits of the offset must support management objectives, and balance project impacts (the habitat affected is replaced by the same quantity and quality of the same type of habitat with additional habitat offsetting required to account for uncertainty and time lags).

The framework sets the parameters, based on existing legislated authorities, practice and policy, for how and when conservation offsets should be used or recommended by EC. The framework applies where EC has a role related to the review or approval of proposed land or resource use activities. This includes activities on federal lands, activities that are subject to federal legislation or affect Aboriginal and/or treaty rights, or when EC has environmental protection or conservation objectives that would be affected by the proposed activity.

The framework also requires offsetting measures to provide additional benefits that cannot address environmental damage for which another person or organization is responsible. However, the restoration of orphaned sites can be an appropriate offset. Offsetting measures must also generate self-sustaining benefits over the long term and at least as long as the impacts from the associated development project.

The framework guidelines provide a hierarchy of preferred offsetting options, which includes in descending order of preference:

- Create similar habitat at or near the development site within the same ecological unit,
- Create similar habitat in a different ecological unit that supports the same stock or species,
- Increase the productive capacity of existing habitat at or near the development site and within the same ecological unit,

[35] Fisheries and Oceans Canada, *Recreational Fisheries Conservation Partnerships Program* online at: http://www.dfo-mpo.gc.ca/pnw-ppe/rfcpp-ppcpr/index-eng.html

[36] Government of Canada, Environment Canada, *Operational Framework for Use of Conservation Allowances* 2012) online at: http://www.ec.gc.ca/ee-ea/default.asp?lang=En&n=DAB7DD13-1&printfullpage=true.

- Increase the productive capacity of a different ecological unit that supports the same stock or species, and
- Increase the productive capacity of existing habitat for a different stock or a different species of fish either on or off site.

Federal Policy on Wetland Conservation

Canada's Federal Policy on Wetland Conservation (FPWC) established in 1991, provides a framework for mitigating proposed impacts to wetlands that are connected to federal actions. The FPWC commits all federal departments to the overall goal of no net loss of wetland functions on federal lands and waters, in areas affected by the implementation of federal programs where the continuing loss or degradation of wetlands has reached critical levels, and where federal activities affect wetlands designated as ecologically or socio-ecologically important to a region.[37]

As administrator of the framework, EC's role includes evaluation of applications, review of proposed conservation offsets, entry into offset agreements or approval of permits, providing advice to other federal departments or provincial authorities, and the review of monitoring reports and compliance promotion activities.

Others

Opportunities for the consideration of conservation offsets may also arise through processes administered under the *Migratory Birds Convention Act*, (MBCA),the *Species at Risk Act* (SARA), the *Canadian Wildlife Act* (CWA) and the *Canadian Environmental Assessment Act* (CEAA). For example, offset proposals can be considered under SARA, provided the permitting requirements are met and the offset helps meet the goals of the Act.[38] In cases where an allowance activity is aligned with SARA's goals, EC could include an offset as part of permit conditions that make the proposed impact acceptable.

Some stakeholder feel that conservation offsets should not be used for species at risk because they are high risk. Currently there is no policy that clarifies the test to be satisfied for mitigating impacts with respect to SARA.

The development of a conservation-offset program could also be supported through agreement with the Federal Government under the *Department of Environment Act*. Under the Act, the Minister of Environment has authority to enter into agreements

[37] Government of Canada, *The Federal Policy on Wetland Conservation*, 1991, page 5.
[38] Government of Canada, *Species at Risk Act* (2002) , s73.

with Alberta or its agencies to carry out programs for which the Minister is responsible. [39]

Through the Canadian Environmental Assessment Agency, the Minister of the Environment and the National Energy Board may consider any mitigation measures they feel appropriate for the "elimination, reduction or control of the adverse environmental effects of a designated project". This includes "restitution for any damage to the environment caused by those effects through replacement, restoration, compensation or any other means." Such mitigation measures may include a range of possible actions, including conservation offsets.[40]

[39] Government of Canada, *Department of Environment Act, 1985,* s 7.
[40] Government of Canada, *Canadian Environmental Assessment Ac*t, 2012 , s 53.

Appendix C: Summary of Past Recommendations and Conclusions

Alberta Innovates Bio Solutions (AIBS) Ecosystems Roadmap

AIBS developed an Ecosystem Services Roadmap suggesting a strategic direction for the enhancement of ecosystem services and the application of market-based approaches to strengthen the competitiveness of resource-based sectors through environmental excellence.[41]

The Roadmap suggests that there is a lack of access to data and information on ecosystem services, processes and variables that influence ecosystem well-being and that there is also a need to better understand the dynamics between ecosystem processes and human and natural disturbance variables.[42]

To assist in addressing these gaps, the Roadmap proposes that on-the-ground applied proofs of concept be carried out to enhance ecosystem services through conservation offsets in the Lower Athabasca and South Saskatchewan regions. This should be done through a multidisciplinary, multi-stakeholder manner across sector boundaries with a focus on quantifying the trade-offs between different ecosystem services (i.e. carbon versus biodiversity).[43]

Alberta Innovates Technology Futures (AITF)

AITF undertook modelling of the ecological and economic impacts of various offset scenarios in the boreal forest. The modelling indicated that an offset system based primarily on positive management actions would have the largest negative impact on economic activity. One based on averted losses would cause minimal economic disruption and produce substantial ecological benefits.[44] While the study used a coarse filter approach to offset service area, it recognized that a finer grain approach might be needed for some species.[45]

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[41] Alberta Innovates Bio Solutions, Ecosystem Services Roadmap "A Pathway to Innovation and Competitiveness" (2012), page 4, online at: Alberta Innovates Bio Solutions http://bio.albertainnovates.ca/media/45788/es_roadmap_v11_may_30_12.pdf

[42] Ibid, 4.

[43] Ibid, 5.

[44] Marian Weber et al, Experimental Economic Evaluation of Offset Design Options – Research Report (Alberta Innovates Technology Futures, 2011), 127.

[45] Ibid, iii.

Assessing the Ecosystem Service Benefits of the Algar Leap Project.

The purpose of the project was to contribute to the Ecosystem Services Roadmap by developing a proof of concept for using advanced data and analytical process for assessing the ecosystem services within the Algar Landscape Ecological Assessment and Planning (LEAP) project.[46]

In this area restoration of linear disturbances was the focus for improving late seral stage conditions and habitat quality for multiple wildlife species. The report recommended that further validation, refinement and improvement (eg. cultural values, wetlands) to the models used and the application of the models to other study areas where monitoring data is available should be pursued. It concluded that until a market is established it would be necessary to estimate the value of these services using alternative, nonmarket approaches.[47] A robust data and information management system based on collaboration, cooperation, transparency and data sharing among all stakeholders will be required to achieve efficiency, effectiveness and increased transparency in an ecosystem service approach.[48]

If a market-based option is pursued in Alberta, it should be based on the principles of the mitigation hierarchy, additionality, equivalence, permanence, geographic location and limits. It should also include the establishment of ecological objectives for the landscape, model and projecting ecosystem change, on-the-ground restoration implementation, and monitoring to measure changes in ecological conditions. [49]

The paper also suggests the following steps as a starting point in establishing a conservation offset project.[50]

- Apply the mitigation hierarchy at the development site to identify residual impacts for which offsets would be required,
- Undertake a baseline assessment of the development site to identify, quantify and map relevant habitat characteristics,
- Calculate residual loss by habitat type taking into consideration relevant habitat characteristics,
- Calculate potential gains from alternative offset sites taking into consideration risk factors (through use of multipliers),

[46] Alberta Innovates/Silvacom, Green Analytics, Assessing the Ecosystem Service Benefits of the Algar Leap Project, 3.
[47] Ibid 75.
[48] Ibid 2.
[49] Ibid 71.
[50] Ibid 71.

- Compare potential offset options to select the most appropriate offset project matching losses at the development site with potential gains at the alternative offset sites, and
- Undertake offsets and appropriate monitoring over time.

Collaboration for Conservation Offset System for Alberta, Joint Industry, ENGO, and Association Presentation

A group of forestry and oil and gas companies and environmental community organizations made a joint presentation to the provincial government in 2013 on a collective desire to engage in the development of a conservation offset program for Alberta.[51] They recommended the implementation of a system in Alberta within a reasonable timeframe with the intent of improving the program over time through shared learning by doing.[52]

The proposed program should set out how to counterbalance development activities in collaboration with federal regulators to ensure coordination of regulatory requirements (eg. Wetland Policy, caribou range action plans, EPEA, fisheries).[53] Presenters felt that there was an opportunity to optimize conservation outcomes, address regulatory and economic barriers, and felt that Alberta with ALSA and the experience of setting up other ecosystem markets (eg. carbon) is ready to implement.[54]

The program should be incentive based that focusses on results and outcomes and a regulated offset system through market based instruments. They felt that a pilot collaborative process through development of Wetland Policy offset tools, as a prototype would be a good first step.[55]

The presentation ultimately led to the formation of AACO.

Conservation Offsets Policy for Alberta: A Comparative Legal Analysis

This thesis provided recommendations on what was required to move forward with an effective and efficient offset system based on the necessary legal elements, a

[51] Collaboration for Conservation Offset System for Alberta, Joint Industry, ENGO, and Association Presentation (Shell Canada, Suncor, Cenovus, ConocoPhillips, Devon, AltaLink, TransAlta, TransCanada, Alberta Forest Products Association, Alberta Conservation Association, Pembina Institute, Ducks Unlimited, PowerPoint, October 2013.
[52] Ibid 9.
[53] Ibid 10.
[54] Ibid 14
[55] Ibid 25

viable conservation offset regime, and institutional, information, and resource needs.[56] It concluded that Alberta already has most of the components necessary for a functional offset system including well-established regulatory and permitting structures for land-use decisions, and a strong community of professional scientists who can provide validation of an offset system and verification of particular offset measures. [57]

The thesis recommended the following components for an Alberta Offset System:

- The establishment of a quantifiable and verifiable ecosystem objective such as 'no net loss' , another positive statement of future state or a threshold below which environmental degradation will not be allowed. [58]
- The development of a suitable currency 'Stewardship Unit' that reflects the ecosystem objective and the values they represent, that are practically measurable, and specific enough to capture particular ecosystem assets or functions, but general enough to be fungible. [59]
- A clear framework of recognized actions, which proponents can undertake and regulators can monitor. Such protocols should include a clear prescription for action, expected ecological outcomes and the rationale therefore, and a formula for the calculation of offset credits be designed to reflect the underlying values of the system. [60]
- A legal mechanism to secure private conservation action on public land.[61]
- Incentives for action and a formula for the calculation of offset credits to give both proponents and regulators more certainty and a set of parameters to monitor against expectations.[62]
- Use the set of protocols under the *Specified Gas Emitters Regulation* respecting carbon management that relate to agricultural methods as a starting point for the development of conservation offset protocols.[63]
- A process for verification that actions are properly executed, and the expected results achieved, monitored by third parties trained and accredited through existing institutions. [64]
- Monitoring of results at the landscape in addition to the project level. [65]

[56] David W. Poulton, Conservation Offset Policy for Alberta: A Comparative Analysis, 2014, 153.
[57] Ibid 153.
[58] Ibid 143.
[59] Ibid 145.
[60] Ibid 146.
[61] Ibid 154.
[62] Ibid 146
[63] Ibid 146
[64] Ibid 147

- Consider financial incentives or limited offset duration based on temporary conservation easements to encourage offsets on private lands.[66]
- Multiplier standards that are customized to fit particular landscape conditions, and the particular offset activities and objectives.[67]
- If a banking system is considered it needs to include clear procedures and responsibilities for verifying, classifying and recording the creation, ownership, use and extinguishment of credits. The recording of ownership, use and extinguishment of offsets requires a central information registry that is consistent and transparent in its operation.[68]
- Establishment of a central agency responsible for the development of the offset policy.[69]
- Establishment of an independent oversight committee of knowledgeable stakeholders as an extra check on the system's effectiveness, and provide knowledge and advice.[70]

Conservation Offsets in Southern Alberta- Advice on Implementation

The paper evaluated an offset pilot that focussed on grasslands in southeast Alberta, testing the use of habitat offsetting to encourage landowners to convert marginal cropland to native perennials.

The paper suggested the following approaches to address the challenges experienced in the pilot.

- Use the existing carbon market as a model/mechanism to set hierarchical and develop rules and tools to generate conservation offsets including guidance documents, to quantification protocols, to templates for project monitoring and reporting.[71]
- Establish an accreditation program for third party verifiers to assess conservation offsets according to criteria, qualification protocols, rules etc.[72]
- Use the ABMI ecological intactness index to define 'stewardship units' for quality, adjusted hectares based on changes in ecological condition. This would satisfy the functional equivalence requirements of the ISO 14064

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[65] Ibid 148
[66] Ibid 149.
[67] Ibid 149
[68] Ibid 150.
[69] Ibid 152.
[70] Ibid 152.
[71] Karen Haugen-Kozyra, The Prasino Group, Conservation Offsets in Southern Alberta- Advice on Implementation, 2012, 4.
[72] Ibid 14.

platform or "ecological equivalence" in evolving conservation offset requirements.[73]
- Create a guide to design biodiversity offsets based on existing BBOP documents and other offset guidance.[74]

Economic-Ecological Evaluation of Temporary Offset Contracting in Alberta's Boreal Forest

The paper concludes that offset program design elements can have a significant impact on costs and benefits of alternative offset policies, and on their distributional impacts.[75]

An offset program where firms can trade avoided impacts and reclamation opportunities allows the market to reveal where the lowest opportunity cost options are while maintaining ecological benefit.[76] The paper suggests an appropriate strategy for maintaining biodiversity would identify landscape objectives based on trade-offs and design offset programs to achieve these objectives at least cost.[77]

Examining the Challenges of Stacking Carbon and Biodiversity Offsets in British Columbia and Alberta

The study synthesized current research on the challenges of stacking carbon and biodiversity offsets, with a focus on the challenges and solutions specific to British Columbia and Alberta.[78]

The study concludes that stacking ecosystem services has the potential to more effectively account for and value the larger suite of services that ecosystems provide based on a synthesize of current research on the challenges of stacking carbon and biodiversity offsets.[79]

The study also concludes that clear definitions, targets and priorities need to be established before any effective policies on biodiversity offsetting and stacking are

[73] Ibid 7.
[74] Ibid 9.
[75] Marian, Webber; Hauer, Grant; Farr, Dan, Economic-Ecological Evaluation of Temporary Offset Contracting in Alberta's Boreal Forest, 2015, 23.
[76] Ibid 24.
[77] Ibid 25
[78] B04626, University of Edinburgh School of Business, Examining the Challenges of Stacking Carbon and Biodiversity Offsets in British Columbia and Alberta, 2013/14, 2.
[79] Ibid 2.

implemented. A balance between rigour and practicality needs to be struck when designing and implementing biodiversity offsets and that additional research on stacking carbon and biodiversity offsets is needed within the Alberta context.[80]

Experimental Economic Evaluation of Offset Design Options for Alberta: A Summary of Results and Policy Recommendations

The objective of the study was to evaluate a suite of offset design options and recommendations in terms of their ecological and economic impacts, and institutional feasibility.[81] The study focused on forested public lands (primarily boreal forest) in Alberta and addresses impacts from oilsands development. It recommended the following (which can also apply on private lands):

- Use the ABMI ecological intactness index to define tradable 'stewardship units' and to quantify equivalence metrics based on changes in ecological condition.[82] The index should be used in conjunction with biodiversity outcomes defined through a regional planning or other process including matching by eco-site or species-specific habitat requirements.
- Over the next 5-10 years develop a centralized conservation exchange and clearinghouse with electronic trading platforms to support markets for offsets.[83]
- Implement the biodiversity strategy and disturbance management plan for the LARP by developing an offset program based on tradable credits (either temporary or permanent) for reclamation and avoided disturbance on public and private lands that provides security against a company's future reclamation requirements.[84]
- Adopt the AIBS ecosystem services roadmap and recommendations for offset pilots to facilitate development of the offset policy including a short-term pilot phase to take advantage of opportunities to pilot offsets in both the SSRP and LARP. This would include assembling interested stakeholders and clarify offset pilot project objectives, geographical area, information and how monitoring, evaluation and gaps that will be addressed in the pilots.[85]
- Evaluate the offset pilots in order to make a decision about whether to move forward with a regulated offset program. This would include the development of decision support tools to assist companies in designing projects to meet offset requirements, and in reporting and meeting compliance. During this

[80] Ibid 2.
[81] Marian Weber et al, Experimental Economic Evaluation of Offset Design Options – Research Report (Alberta Innovates Technology Futures, 2011), i.
[82] Ibid, ii.
[83] Ibid, iii.
[84] Ibid, iv.
[85] Ibid, v.

phase an exchange and clearinghouse for settling offset contracts may be developed.[86]
- The Government of Alberta confirm a lead agency with clear responsibility and accountability for developing the program with sufficient human and financial resources.[87]

Managing for Ecosystem Service (ES) Benefits

An ES assessment was used to measure the change in ES resulting from the use of two land and resource management options, integrated land management (ILM) and conservation offsets (CO) by Shell and Daishowa Marubeni International (DMI) in the Carmon Creek area of Alberta.[88]

The assessment focused on comparing the supply of selected ES, timber supply, carbon storage, water purification (measured as phosphorus and nitrogen loadings) and biodiversity intactness, under three alternative scenarios. These scenarios were: business as usual (BAU) in which it is assumed that Shell and DMI did not coordinate their activities on the landscape; using ILM in which the companies coordinate activities; and an ILM/CO combination in which ILM facilitates the establishment of CO. A cost-benefit analysis (CBA) was conducted on the results of the ES assessment to value the supply of ES under each of the scenarios in relation to the cost of pursuing them.

The key findings of the ES assessment and CBA were:[89]

- The pursuit of ILM reduced the area cleared for roads as Shell and DMI used the same roads to access natural resources.
- The pursuit of ILM allowed DMI to access and harvest timber from an area surrounding Shell's industrial footprint, which would have otherwise been uneconomical to harvest due to access issues.
- The pursuit of ILM in combination with CO resulted in a reduction in the total area cleared and hence the greatest increase in the supply of ES, as:
    - There were reduced roads as DMI and Shell used the same road to access resources.
    - Reserve areas more than offset Shell's industrial footprint.
    - Roads were not built in reserve areas further reducing the total area cleared for roads.

[86] Ibid, vi.
[87] Ibid, vi.
[88] Shell Canada and Daishowa Marubeni International, *Managing for Ecosystem Service Benefits Through Integrated Land Management and Conservation Offsets at Carmon Creek*, February 2015, 2.
[89] Ibid 2.

- The cost of pursuing the BAU scenario exceeded the cost of pursuing ILM and CO, with the value of doing so significantly magnified when the monetary value of ES was taken into account.

The study concluded that assessing the spectrum of costs associated with alternative land management actions, such as ILM, is critical when considering the true value proposition of such activities and the degree to which they may result in a positive return on investment.[90]

As the value of some ES is not reflected in market prices, the degree to which conservation and land management activities are undertaken will be limited as the financial incentive needed to undertake such activities is lacking.[91] While additional data on the value of non-market services associated with some ES will help persuade select leading companies and organizations to pursue conservation related activities, the implementation of market-based instruments such as CO will be key to providing the incentive necessary to pursue conservation activities, such as ILM, on a significant scale in Alberta.[92]

Southeast Alberta Conservation Offset Pilot, Linking Decisions and Assumptions with Generally Accepted Offset Principles

The objective of this report was to show how an offset pilot on privately owned agricultural lands with new industrial development activity within critical habitat for sage grouse recovery aligned with generally accepted offset principles as described by the BBOP.[93]

The report concluded that a clear demand for the offset, adherence to the mitigation hierarchy, clear, uniform principles and standards, guidance and certainty around processes, scientifically valid, well understood, simple metrics that can be certified, validated and verified by a credible third party in a clear, relatively efficient process are essential elements to a successful offset.[94]

Stacking of Multiple Environmental Credits – An Alberta Discussion Paper
This paper was intended to stimulate discussion on credit "stacking" where more than one type of ecosystems services credit (eg. carbon, biodiversity, water quality)

[90] Ibid 13.
[91] Ibid 13.
[92] Ibid 14.
[93] Kimberly Good; Haddock, Rachelle, Miistakis Institute, Southeast Alberta Conservation Offset Pilot, Linking Decisions and Assumptions with Generally Accepted Offset Principles, 2014, 3.
[94] Ibid 14.

may be generated on a single restored site that potentially could produce a credit in different offset markets.[95]

The paper suggests that an approach to stacking should be based on the following principles and considerations:

- Ecosystem services which are most easily severable from each other.[96]
- Ecosystem credits which encompass a bundle of ecosystem services should not form part of a stack of credits.[97]
- The unbundling and stacking of ecosystem service credits should not be used where it will increase habitat loss.[98]
- The use of stacking should encourage the management of the offset site for its full range of ecosystem services, rather than promoting certain values at the expense of others.[99]
- Each stacked credit should have its additionality measured using clear and comparable baselines.[100]
- Rules for stacking or bundling, and all aspects of accounting, should be the same for both development and offset sites.[101]
- Stacking is best done when the full suite of credits for an offset project are conceived of, recognized, and sold at the same time as a guarantee of additionality. [102]
- Stacking should only be allowed where the incremental payment from the sale of the second credit is necessary to drive both the primary conservation action, as well as any additional action for the second credit. [103]
- The risk of double-counting increases where different types of credits are overseen by different agencies particularly if the agencies are poorly co-ordinated.[104]
- There should be complete transparency of all aspects of stacking, with the administrator and regulator of each type of credit fully aware of the treatment of the other types.[105]

[95] David W. Poulton, Stacking of Multiple Environmental Credits – An Alberta Discussion Paper, 2014, 1.
[96] Ibid 12.
[97] Ibid 13
[98] Ibid 13.
[99] Ibid 13.
[100] Ibid 14.
[101] Ibid 14.
[102] Ibid 14.
[103] Ibid 14.
[104] Ibid 14.
[105] Ibid 15.

- Where stacking is allowed there should not only be good communication between the relevant agencies, but they should use the same, or at least reconcilable, accounting methodology for debits and credits, to maintain a basis for comparison of the multiple types of credits.[106]

The Alberta Conservation Association. A Working Framework for Albertans

The paper recommends the development of a private and public land conservation offset system based on a 'like-for-like' exchange of land to achieve "no-net loss" or a net gain in biodiversity value based on "ecosites" and permanence of the offset.[107]

It suggests that a supporting banking system and public on line registry be established, and that offsets should be in place prior a proponent receiving final regulatory approvals to proceed with the development.[108] The developer could purchase these offsets directly or from another developer if surplus to their needs. If these offsets were outside the same natural sub-region or disturbed by new development, the disturbance would be compensated for through a higher offset ratio for the disturbance.[109]

The paper also suggests that on private land a conservation easement (held by a Land Trust, registered on title and on a public on-line registry) would be used to ensure permanence.[110] On public land, a similar approach would be taken with appropriate legislative protection in place to ensure permanence.[111] Offset land should be assessed and a restoration plan developed if required to show how the offset lands will be restored back to native vegetation with professional signoff to provide the "inventory" of offset ecosites available.[112]

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[106] Ibid 15.
[107] Alberta Conservation Association, Conservation Offsets: A Working Framework for Alberta (Sherwood Park: Alberta Conservation Association, 2011), 6, online at: Alberta Conservation Association http://www.ab-conservation.com/go/default/assets/File/Publications/ACA%20Conservation%20Offsets%20Framework%20Aug%202011.pdf.
[108] Ibid 9.
[109] Ibid 7.
[110] Ibid 9.
[111] Ibid 8.
[112] Ibid 9.

Appendix D. Summary of Draft Conservation Offset Discussion Paper

In October 2014, the Alberta Government released a draft Conservation Offset Discussion Paper proposing a conservation offsets policy framework for Alberta.

The stated intent of the framework is to provide a common umbrella under which specific offset programs will be designed and implemented to ensure that the application of offsets for different environmental media and regions across the province are based on a consistent, effective and transparent governance system.[113] It is also intended to support consistent implementation and regulatory certainty, while reducing duplication of common offset program elements, such as third-party verification and registration infrastructure.[114]

The paper broadly defines conservation offsets as actions taken at one location to balance (fully or in part) residual impacts that remain after all reasonable efforts to avoid and minimize negative impacts have been taken at another location where project development is proposed.[115] It is intended to apply any time conservation offsets are enabled as a regulatory tool to achieve desired outcomes for any environmental media, including air, land, water and biodiversity at provincial, regional or sub-regional scales. [116]

The proposed framework is based on the following principles:[117]

Integrated – Will be aligned with and support the province's Integrated Resource Management System.

Transparent – The role and governance of conservation offsets will be clearly articulated, and to the extent practical, their contribution to environmental outcomes will be publicly reported on.

Flexible – Approaches to environmental offsetting will be guided by specific media or place-based circumstances and needs as prescribed by media-specific offset programs.

Place based – Offsets will reflect regional circumstances, including how they can best meet broader provincial, as well as regional and sub-regional, environmental management outcomes and priorities.

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[113] Government of Alberta, Draft Conservation Offset Discussion Paper, 2014, 2.
[114] Ibid2.
[115] Ibid 1.
[116] Ibid, 2.
[117] Ibid 3.

Continuous improvement - Through program review and evaluation to ensure best available information is available to support effective media-specific offset programs.

Relevant – Will be informed, modified and enhanced through meaningful and consistent stakeholder and Aboriginal engagement.

Cost-effective - To the extent practical, offsets will provide flexible and cost-effective opportunities to meeting environmental outcomes.

Stackable – Offsets that contribute simultaneously to the environmental outcomes of other offset programs.

The paper also identifies the following elements as part of all offset programs:[118]

Provincial Policy Direction – Will be guided by clear priorities that contribute to desired outcomes and actions to be taken based on identified risks or threats, and the range of tools that can be used in order to achieve environmental outcomes.

Management Objectives – The use of conservation offsets may be enabled as part of specific management intent (e.g. protect and maintain, accept loss, enhance and create).

Environmental Offset Obligations – Offset programs will clearly identify any regulatory obligations for which offsets can and/or should be used to demonstrate compliance in relevant statutory consent processes (e.g., regulatory approvals and authorizations).

Offset Program Coordinator – Offset programs will be governed by a dedicated program coordinator that will oversee program implementation and evaluation.

Protocols - Where offsets are being used to meet a regulatory obligation, they will only be recognized when created, measured and verified against approved protocols.

Public Registry – Where offsets are being used to meet a regulatory obligation, they will be tracked through appropriate means (e.g. serial numbers) on a public registry.

[118] Ibid 4.

In Lieu Fund – Where in-lieu-payment is accepted as an alternative mechanism to an offset, such payments will be managed through a dedicated fund that will ensure that funds are allocated to actions that contribute to the management objectives.

The paper also proposes that the ability for regulated entities to use conservation offsets as a compliance mechanism for meeting environmental obligations will be set in an approved policy, regional/sub-regional plan or management framework to minimize one-off approval-based approaches that currently exist.[119] Future regulations developed under ALSA will incorporate the elements and design characteristics proposed under the policy, which will also drive a potential need for offsets, and the ability to use offsets through a range of legislation, including ALSA, EPEA, the *Water Act*, and the *Public Lands Act*.[120]

The paper also indicates that protocols may be developed for deferred projects, reclamation of legacy disturbances, which have not had reclamation requirements, accelerated timeline for reclamation, and improvement beyond accepted practices.[121]

The intent of the framework is not to prescribe the delivery mechanism by which an offset obligation can be met. There will be a choice between an offset or payment into a fund that contributes to the overall management objectives.[122]

Offsets will be considered eligible if they meet the following general conditions: [123]

- Occur in Alberta.
- Result from actions not otherwise required by law, and be beyond business as usual and sector common practices.
- Be real, demonstrable, quantifiable, and verifiable using replicable means.
- Have clearly established ownership.
- Be counted once for compliance purposes.
- Be implemented according to a government-approved quantification protocol.
- Be verified by a qualified person(s) meeting the requirements for an auditor, and
- Be registered on a prescribed registry.

[119] Ibid 2.
[120] Ibid 2.
[121] Ibid 2.
[122] Ibid 4.
[123] Ibid 6.

The Offset Program will provide clear definitions and rules for the following offset dimensions.[124]

- Significant Residual Impact – What is the impact to be offset?
- Relevant Offset Actions – What type of actions count as offsets?
- Equivalency and Proportionality – Relationship between the offset and the impact.
- Geographic Scale- Proximity between impact and offset.
- Temporal Scale and Duration – When and for how long an offset is required.
- Additionality – The actions that represent a change from current "business as usual" state for of particular regulated or unregulated activity (e.g., oil and gas, agriculture).

Conservation Offsets Programs in Alberta will generally be part of a management approach that follows a mitigation hierarchy. [125]

Avoid: impacts are avoided through a selection of practicable alternatives such as proposal re-design, re-engineering or relocation of infrastructure.

Minimize: impacts are minimized by changing the site design, layout or process.

Measures are taken to compensate for the residual significant impact, which cannot be entirely mitigated, and may include offsets or in-lieu fees.

Significance test: The significance of residual adverse impacts to land, air, water and biodiversity will be established for according to:

- Geographic extent of impact
- Duration of impact
- Reversibility
- Time lag between disturbance and reclamation (for land impacts)
- Other factors as required

Although offset requirements will be prescribed at the project level, determination of the significance of residual impacts will be guided by the management objectives under which that particular offset program is established, including any relevant triggers and limits.

In Alberta, the following two categories of actions will be considered as part of a relevant offsets package:[126]

[124] Ibid 7.
[125] Ibid 7.

- Direct offsets: These actions directly address an adverse environmental impact. For example, reductions in pollutant releases to air sheds or water bodies, restoration of degraded habitat, securement of unprotected habitat.

- Indirect offsets: are other actions that improve knowledge, awareness and management of environmental outcomes, including contribution to education or research programs.

In assessing the relevance of a proposed offset package, statutory decision makers will consider the following: [127]

- Contribution to the achievement of environmental policy outcomes and management objectives guiding each specific offset program.
- Inclusion of socio-economic considerations, such as Aboriginal values.

Conservation offsets may be established on both private and public lands. Lands used for a conservation offset may or may not conflict with current or future disturbance – that is, some type of disturbance may co-exist with the intention of the offset (e.g. traditional land uses). [128]

- A conservation offset can be established in lands where resource rights exist provided that those rights will not require a non-compatible disturbance for the duration of the offset. This could include allowing resource right holders to defer a project.
- Conservation easements on land titles will be required on private lands in order to provide security for the conservation offsets.
- Conservation offsets on public lands will require a private contract between the Crown and a private party willing to create and maintain an offset. The parties responsible for creating the offset would be responsible for land management to ensure the offset meets the intended objective. This includes any associated liability.
- Media-specific offset programs will need to identify and determine a process by which an offset project could trigger the First Nations Consultation Process and design the offset program to satisfy that process.

Offsets should be proportional to:[129]

- The significant residual impacts they are meant to compensate for, and

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[126] Ibid 8.
[127] Ibid 8.
[128] Ibid 9.
[129] Ibid 9.

- The value of the environmental asset being impacted.

In general, proportionality can be achieved when the majority of an offsets package comprises direct offset actions that compensate based on "like for like", such as:[130]

- Significant residual impacts related to air emissions will require direct offsets that provide emission reductions for the same air pollutant.
- Significant residual impacts to Woodland Caribou habitat will require direct offsets that either restore or secure the same type of habitat.

Another key consideration is the equivalence ratio between a significant residual impact and the proposed direct offset actions, which must account for the risk of offset failure. Equivalency and proportionality between offsets and impacts will be prescribed by the approved provincial policy, regional/sub-regional plan or management framework under which conservation offsets are enabled. Ideally, offsets are "like for like" that is, impacts to an environmental asset should be offset by actions that benefit the same kind of asset and within the geographic scale of impact.[131]

Offsets will be expected to be in place for a length of time that matches that of the significant residual impact they compensate for. In this context, both temporary and permanent offsets will be considered in the design of any particular conservation offsets program. A conservation offsets package should be implemented at the start of the life cycle of a project or activity, whenever possible. A "time lag" may occur between the time when an offset is implemented and the time of successful environmental performance. Where management objectives are influenced by time lags, equivalency ratios will be adjusted accordingly in the design of any particular conservation offsets program. [132]

Base case scenario for regulated parties include all current requirements under a statutory consent, as well as any other requirements under relevant policies, plans, legislation, codes and regulations. In the case of non-regulated parties that will voluntarily participate as providers of conservation offset credits under a specific offset program, a base case scenario will be established for different activities as part of protocol development. Additionality protocols will include a provision to review base case scenarios every five years, unless technological advances or statutory changes take place in a shorter period. [133]

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[130] Ibid 9.
[131] Ibid 10.
[132] Ibid 10.
[133] Ibid 11.

Appendix E: A Draft Framework for Alberta Conservation Offsets

1. Introduction

Alberta's landscapes, air sheds and watershed face multiple demands that affect provincial resource management outcomes. Conservation offset is one of the tools Alberta is exploring to ensure outcomes are met while accommodating and allowing development activities. An offset is a measurable conservation outcome, resulting from actions designed to counteract significant impacts arising from project development after appropriate prevention measures consistent with the mitigation hierarchy have been taken[134].

Offset use is not new in Alberta; some well-established examples are the carbon offset program and the wetland replacement (compensation) program.[135] However, the Land Use Framework and subsequent enactment of the *Alberta Land Stewardship Act* expanded the potential application of offset to a wider range of resource management issues. For example, conservation offsets are mentioned in regulatory decisions (e.g. Jackpine Joint Review Panel) and in regional plans.

Policy Statement

Alberta accepts conservation offsets in its regulatory decision processes towards meeting resource management outcomes.

Enabling Authority

Conservation offset is broadly enabled by a statute, policy, program or a planning process. This broad authority is implemented through applicable regulatory authorization decision.[136] However, an absence of this broadly enabled authority does not preclude a requirement to offset in a case specific authorization decision as might be deemed necessary under a regulatory decision process.

Scope of Application

Conservation offset can be used to meet management objectives at varying scales - provincial, regional and sub-regional, as well as for mitigating project-specific impacts. The rules associated with using conservation offsets are defined under specific offset programs.

[134] Mitigation hierarchy follows that an impact should be avoided, but if avoidance is not possible, the impacts should be minimized, and impacts that remain are addressed through an offset or an in lieu payment.

[135] The wetland replacement program is part of the Framework, but the carbon offset program is excluded and operates within the existing regulatory process outlined under the *Climate Change Emission Management Act* and associated Regulations.

[136] For example, the Wetland Policy requires a wetland offset (replacement) when there is an impact to a wetland; this requirement is implemented as terms and conditions in the authorization that approved the impact.

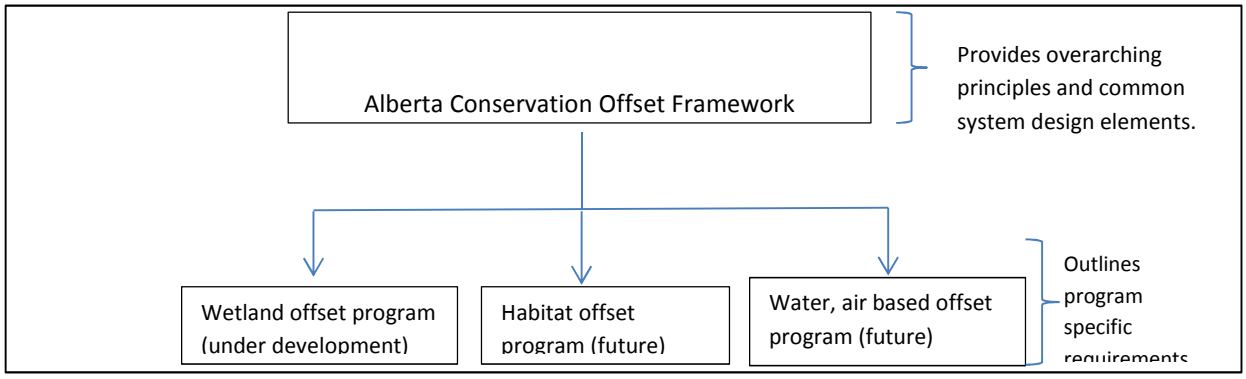
2. Conservation Offset Framework Intent and Overview

The Framework provides overarching governance, including program design elements to support consistent implementation, under which specific offset programs rules are developed and offset programs operate. Figure 1 shows the relationship between the Framework and offset programs. The Wetland Offset Program is the first program to be developed and implemented under this Framework. The design elements are – Alberta approved quantification and verification protocols, regulatory obligation, third party certification of offset, etc.

Note on terminology: Conservation Offset, Biodiversity Offset, Conservation allowance

The Framework uses "Conservation Offset", consistent with Alberta's planning and regulatory context. Other terms – biodiversity offset, conservation allowance – are also used elsewhere, internationally and by the Government of Canada.

Figure 1 Conservation Offset Framework



3. Framework Principles

The Framework principles are:

- ***Integrated*** **–** media or place-specific Offset Programs are aligned and support the Integrated Resource Management System.

- ***Transparent*** –oversight and accountability for conservation offsets and their contribution to environmental outcomes, is clearly articulated, and publically reported.

- ***Place-based*** – offsets reflect regional circumstances, including how offsets can best meet broader provincial, as well as regional and sub-regional, management outcomes and priorities.

- ***Continuous improvement –*** the Framework is reviewed, evaluated and updated regularly.

- ***Relevant –*** media or place-specific Offset Programs rules are developed, modified and enhanced through engagement with stakeholder and Aboriginal peoples.

- ***Cost-effective –*** offsets will be designed to provide cost-effective opportunities towards meeting the desired outcomes.

- ***Stackable –*** Where appropriate programs may be designed to allow for a single offset to be used to meet multiple objectives.

4. Common Elements of an Offset Program

Common elements for an offset program are described below.

- ***Provincial Policy*** – directs where action may be taken to address risks or threats to desired outcomes, and the types of tools that can be used address those risks or threats.

- ***Management Objectives*** –direct how conservation offsets are implemented within a management context (e.g. regional plan, air shed, and watershed) in support of achieving desired outcomes.

- ***Management Tools –*** are used to meet management objectives. These tools include conservation offset, in lieu payment and existing regulatory decision tools. To accept in lieu payment, an offset program must have appropriate governance to administer and manage the payments, including a program guide that specifies how the payment collected are to be expended towards meeting program specific objectives.

- ***Obligations –***relevant obligations for which an offset can and/or must be used to meet those obligations are identified

- ***Program Coordinator –*** Offset Programs are managed by dedicated

Program Coordinators who oversee program implementation. Specific roles … evaluation, others?

- ***Protocols -*** Offsets used to meet a regulatory obligation will only be recognized when created, measured and verified against Alberta approved protocols.

- ***Delivery Mechanism –*** is how an entity chooses to fulfill its regulatory obligation. The choice and extent of specific mechanisms (offset, in lieu payment) and their delivery (proponent led or third party) are defined within a specific Offset Program.

- ***Public Registry*** – projects completed using protocols are registered in a public registry.

Administrative and Market Infrastructure – a common infrastructure for registering and tracking offsets from all Offset Program is anticipated. This common infrastructure measures and tracks impacts (demand for offset) and supply of offset in a centralized registry. In the future additional functionality that provides clearinghouse functions that can strategically coordinate multiple buyers and sellers of offset is desired.

Table 1 Program Elements for Wetland Offset Program

Program Element	Wetland Offset Program
Policy Direction	Wetland Policy Outcome: Minimize wetland loss or degradation. Approach: An impact to permanently occurring wetland requires an authorization and replacement.
Management Objective	Value based ratios define replacement requirements – 8:1 for impact to A value wetland, 1:1 for D value wetland
Specification of obligation	Attached to specific authorization that generated the impact.
Demonstration of obligation compliance	Provide an offset Pay in lieu – payments are collected into a Fund administered by ESRD.
Offset Program Coordinator	Dedicated staff at ESRD coordinate and oversees this program.
Offset protocols	Under development
Offset Public Registry	Potentially link with Emission Offset Registry.

5. Offset Eligibility Requirements

A conservation offset must meet these requirements to be used towards regulatory obligation:

- be quantifiable, and verifiable using replicable means;
- have clearly established ownership;
- be implemented according Alberta approved protocols;
- be verified by a qualified entity; and
- be counted once towards meeting offset obligation

Early Action

Conservation projects that meet the early action criteria can apply to the appropriate offset program to be accepted as an offset into that program. If the project is accepted as an offset, Alberta will require an authorization holder that project be used first when fulfilling an obligation for an offset.

Considerations for Conservation Offsets in public and private land

Resource Rights

Conservation offsets may be established on both private and public lands, including lands where resource rights exist. A resource right holder may exercise those rights if the holder provides suitable offset for disturbing offset lands. This suitable offset could include project deferral by rights holder.

Conservation Offset Securement

Securement refers to legal conditions by which the integrity of the offset is assured. These conditions may take the form of contract between parties, conservation easement, or statutory tools. A conservation offset provider must specify legal conditions associated with that offset.

6. Offset Program Design Characteristics

An Offset Program must have definitions and rules for the following:

- ***Impact –*** What is the impact to be offset
- ***Baseline and Eligible Actions (additionality) –*** What type of actions count as offset
- ***Equivalency–*** relationship between the impact and offset

- ***Offset Service Area-*** defines the geographic scale over which impacts and offsets are accounted

- ***Temporal Scale and Duration –*** when and for how long an offset is required

- ***Monitoring*** – tracking of offset success and program monitoring

7.1 Impact

Impact determination must consider triggers or limits specified in applicable policies and/or management objectives for which an offset program is established; and a significance test that defines the extent of impact that is required to be offset. The significance test must consider:

- the geographic extent of impact
- duration of impact
- impact to management outcomes
- time lag between impact and restorative action

7.2 Baseline and eligible actions (Additionality)

An offset supply is generated by undertaking eligible actions beyond a baseline. Baselines are defined in the protocols for eligible actions and reviewed every five years as part of protocol review. The types of eligible actions are:

- Restoration or improvement of degraded habitat
- Conservation and protection of habitat at risk of loss or degradation
- Creation or construction of habitat
- Avoided releases to the environment
- Deferred projects - foregone future disturbances associated with resource rights that have been allocated
- Reclamation of legacy disturbances which do not currently have reclamation requirements
- Accelerated timeline for reclamation

<u>In Lieu Payment</u>
In lieu payments may be enabled under specific programs but in lieu is not an offset. However, payments may be expended for specified purposes consistent with in lieu payment program guide for that program. The specified purposes may include purchases of offset, investment in education or research program that improve knowledge, awareness and management of environmental outcomes and actions.

Conservation areas, parks and protected area

Alberta has an established network of conservation areas, parks and protected areas to help meet desired biodiversity and socioeconomic objectives. But there are also opportunities to enhance those objectives by restoring or improving habitat in those areas. Conservation offsets those areas are accepted when undertaking an offset project results in restoration or improvement of degraded habitat; or conservation and protection of habitat at risk of loss or degradation.

In assessing the proposal for eligible actions, statutory decision makers must consider how those actions contribute to resource management outcomes, including Aboriginal values and any required consultation process.

7.3 Equivalency

An offset program must consider the relationship between an impact and an offset. While tools and methods may vary between offset programs, a program must consider these factors in assessing equivalence:

- same method and tools must be used to assesses both impact and offset;
- baseline against which losses from impacts and gains from offset are to be measured must be identified and may be either of:
  - current - losses and gains (e.g. habitat, air quality) are calculated relative to the present conditions
  - projected – losses and gains (e.g. habitat, air quality) are made on the basis of likely future changes
- appropriate risk management approach (e.g. mitigation ratio) must be specified.

7.4 Offset Service Area

A service area defines the geographic scale over which impacts and offsets are accounted. The area boundary is defined to meet equivalence requirements and considers socioeconomic and institutional context. These are specific factors that an offset program must consider in defining an offset service area:

- equivalency between impacts and offsets is met
- unless otherwise specified in an offset program, service area boundaries are as defined by the regions set out in the Land Use Framework

7.5 Duration and Temporal scale

Conservation offsets must be in place for a length of time that matches the impact they are intended to offset. Thus, both temporary and permanent offsets will be considered in an Offset Program. Implementing conservation offsets prior to impact is desired, however, offset programs may allow a lag between an impact and an offset where such lag can be demonstrably justified (e.g. relates to management objectives related to the program). This Framework accepts conservation offset banking to minimize time lag and to minimize risk in meeting resource management outcomes. While the decision to enable a bank rests within an offset program, it must consider these factors when evaluating an application to establish a bank:

- Purpose for which the bank is generating offsets, including reference to specific regulatory requirement (e.g. wetland offset associated with Water Act approval)
- Size and location of the bank
- Ownership, legal protection mechanism and long term stewardship, including its funding
- Objectives in relation towards meeting local, regional or provincial resource management outcomes
- Description of factors considered during site selection
- Description of baseline conditions
- Conceptual design plans for physical works to be undertaken to establish a bank
- Performance standards and monitoring plan
- Bank service area

7.6 Monitoring

An offset program must include tracking the success of offset over time and monitoring of the program itself. This monitoring must report on the extent to which the program meets its objectives and any applicable management objectives that the program was designed to meet.

Appendix F: Summary of Roles and Responsibilities

Land-use Secretariat (LUS)

The LUS was established through the Alberta Land Use Framework[137] and the *Alberta Land Stewardship Act* (ALSA).[138] The LUF establishes seven land use regions requiring a land use plan for each based on Alberta's major watersheds, rural municipal boundaries and a cumulative effects management approach.[139] It also commits to developing a strategy to encourage conservation and stewardship on private and public lands and an information, monitoring and knowledge system to contribute to continuous improvement of land-use planning and decision-making.[140]

The framework sets out an approach to managing the province's land and natural resources to achieve long-term economic, environmental and social goals. It is based on a set of three policy outcomes: a healthy economy supported by our land and natural resources; healthy ecosystems and environment; and people friendly communities with ample recreation and cultural opportunities.[141] It also states that our land and natural resources continue to provide economic benefits, that lands should be managed to ensure healthy ecosystems and that Albertans accept the responsibility to steward their land, air, water and biodiversity so that they are passed on to the next generation in as good or better condition than we received them. [142]

ALSA provides the legal basis for the government to develop regional plans across Alberta and establish a conservation-offset program.[143] ALSA also allows a qualified organization to hold a conservation interest in private land (conservation easement) for the "protection, conservation, and enhancement" of the environment, scenic or esthetic values, or agricultural purposes.[144]

ALSA also provides for the use of conservation directives that can be used to permanently protect, conserve, manage and enhance environmental, natural scenic, esthetic or agricultural values if identified through a regional plan on public or private lands.[145]

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[137] Ibid 19
[138] Government of Alberta, *Alberta Land Stewardship Act*, SA 2009, s 57.
[139] Government of Alberta, Alberta Land-Use Framework (Government of Alberta, 2008), 26.
[140] Ibid 20.
[141] Ibid 23.
[142] Ibid 15
[143] Government of Alberta, *Alberta Land Stewardship Act,* SA 2009, s 3, s 45.
[144] Ibid, s 28.
[145] Government of Alberta, Alberta Land Stewardship Act, SA 2009, s 37.

The LUS leads the development of regional plans in conjunction with other departments and in consultation with Albertans. It supports policy reconciliation and effective management of cross-regional policy matters, and assists provincial departments, municipalities and other local authorities in reconciling their respective roles in the implementation of the framework.[146]

The Lower Athabasca (LARP) and South Saskatchewan Regional Plans (SSRP) have been approved by the Alberta Government and include and/or commit to develop environmental management frameworks for air quality, surface and ground water quality and quantity and for biodiversity.[147] This is also anticipated for the remaining five plans. Management frameworks are an approach to support cumulative effects management that outline monitoring, evaluation and reporting requirements, set threshold values, and establish a management response process to address identified air, surface and ground water, and biodiversity issues.[148]

The LARP and SSRP also commit to better management of land disturbance through the development of linear footprint management plans. These plans will provide detailed, place-specific resource management direction and actions for managing the cumulative effects of linear footprint, land disturbances and motorized public access on public land. This will include coordinated industry planning of major access corridors and associated development infrastructure, reuse of existing linear disturbance and progressive and timely reclamation of linear disturbances and land not required for further development.[149]

In addition, the SSRP commits to the exploration and facilitation of economic tools, such as the development of market-based instruments for ecosystem services that are voluntary in nature (private lands) and which provide business opportunities for private landowners. The SSRP also indicates that this will provide guidance to the Land Trust Grant Program to provide funding to land trusts for purchase of conservation easements and the administration and management of new conservation projects on private lands.[150]

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[146] Government of Alberta, *Alberta Land-Use Framework*, 2008) online: https://landuse.alberta.ca/Governance/Administration/Pages/default.aspx

[147] Government of Alberta, Lower Athabasca Regional Plan 2012-2022, pages 45 – 60; Alberta Government, South Saskatchewan Regional Plan 2014-2024, 68, 78, 81.

[148] Alberta Government, Draft Lower Athabasca Region, Biodiversity Management Framework, November 2014, 7.

[149] Government of Alberta, Lower Athabasca Regional Plan 2012-2022, page 45; Alberta Government, South Saskatchewan Regional Plan 2014-2024, 61.

[150] Alberta Government, South Saskatchewan Regional Plan 2014-2024, 67.

Alberta Environment and Parks (AEP)

AEP is responsible for the *Climate Change and Emissions Management Act*, *Environmental Protection and Enhancement Act (EPEA)*, *Water Act, Public Lands Act, Wildlife Act* and associated regulations, policies, and other initiatives. As a result of the *Responsible Energy Development Act*, discussed below, AEP is only responsible for non-energy matters under these acts.

EPEA supports and promotes the protection, enhancement and wise use of the environment and 'ensures that the use of resources and the environment today does not impair prospects for their use' by future generations.[151] The Act also requires an operator to conserve, reclaim and unless exempted by the legislation, obtain a reclamation certificate for satisfactory conservation and reclamation.[152] It also allows setting of environmental objectives for the management of environmental impacts such as emissions. [153] The Act also establishes the Environmental Protection and Enhancement Fund that can be used for funding environmental protection, enhancement and emergency response.[154]

The legislation defines "mandatory and non-mandatory activities" and the requirement (or exemption) for an environmental impact assessment.[155] The purpose of the environmental assessment process is to predict the environmental, social, economic and cultural consequences of a proposed activity and to assess plans to mitigate any adverse impacts resulting from the proposed activity. [156] An assessment generally requires information on the proposed development site, baseline environmental conditions, a description of potential positive and negative environmental, social, economic and cultural impacts of the proposed activity, and plans to mitigate the potential negative impacts, to monitor environmental impacts, and contingency plans in order to respond to unpredicted negative impacts. [157]

Once an environmental impact assessment report is complete, the appropriate approval authority (Alberta Energy Regulator, Natural Resources Conservation Board, Alberta Utilities Commission) is advised so that the report can be considered in their respective approval process.

[151] Alberta Environmental Protection and Enhancement Act, SA 2000, s 2.
[152] Ibid s 137.
[153] Ibid s 14.
[154] Ibid s 30.
[155] Ibid s 39.
[156] Ibid s 40.
[157] Ibid s 49.

Alberta's 2008 Climate Change Strategy aims to ensure environmental protection while maintaining Albertan's quality of life and allowing continued economic growth. The key target of the strategy is to cut projected greenhouse gas emissions in half by 2050, compared to 'business as usual.'[158] The strategy is based on action in three key areas, conserving and using energy efficiently, implementing carbon capture and storage, and greening energy production. Within each theme, specific actions to reduce greenhouse gas emissions are identified including carbon capture and storage.[159] The strategy is currently being revised.

There are currently three existing 'offset' programs in Alberta established through the Alberta Acid Deposition Management Framework, the *Climate Change and Emissions Management Act*, and the *Specified Gas Emitter Regulations*, and through the provincial Wetland Policy.

The Alberta Acid Deposition Management Framework is one of the only existing formal offset initiatives in Alberta. It is based on four defined increasing levels of acid deposition from industrial emissions. These four levels define three Acid Deposition Management Zones, (continuous improvement, emission minimization, and emission reduction) that require increasing reduction of depositions respectively.[160]

Once deposition exceeds a specified target load in the zone, a management plan to reduce deposition is required. The target load becomes an environmental objective under EPEA.[161] In developing the management plan, all options can be considered including emissions trading, and mandated implementation of offsets.

A second existing offset program in Alberta is established through the *Climate Change and Emissions Management Act*, and the *Specified Gas Emitter Regulations* (SGER), which establishes the policy and design criteria for what a carbon offset is and how it can be used for compliance in Alberta. This includes the description and nature of emission offsets, credits and sink rights, the terms and conditions for emission offsets, management of public registries, maximum prices, penalties and compliance options, and payment into the Climate Change and Emissions Management Fund.[162] The fund is used to reduce emissions or improving Alberta's ability to adapt to climate change, including opportunities for removal of gases from the atmosphere through sequestration by sinks, and natural removal

[158] Government of Alberta, *Alberta Acid Deposition Management Framework*, February 2008, 2.
[159] Government of Alberta, *Alberta Climate Change Strategy*, 2008) online at: http://esrd.alberta.ca/focus/alberta-and-climate-change/
[160] Government of Alberta, *Alberta Acid Deposition Management Framework*, February 2008, 2
[161] Government of Alberta, *Alberta Environmental Protection and Enhancement Act*, SA 2000, s 14.
[162] Government of Alberta, *Alberta Climate Change and Emissions Management Act* (SA 2003), s 5, 10.

and storage of carbon. Standards, codes of practice, guidelines, etc. can be created under the Act.[163]

A Carbon Capture and Storage Development Council has also been established which assess and recommend appropriate timelines, policy and regulatory requirements for achieving specific emission reduction milestones through carbon capture and storage, examining and proposing a suite of tools and incentives, and support research and demonstration projects.[164]

The third existing offset program in Alberta is through the provincial Wetland Policy. The goal of the policy is to conserve, restore, protect, and manage Alberta's wetlands to sustain the benefits they provide to the environment, society, and economy. To achieve this goal, the policy focuses on the following outcomes:

- wetlands of the highest value are protected,
- wetlands and their benefits are conserved and restored in areas where losses have been high,
- wetlands are managed by avoiding, minimizing, and if necessary, replacing lost wetland value, and
- wetland management considers regional context.[165]

Individual wetlands 'will be assessed' and assigned an overall value based on relative abundance on the landscape, supported biodiversity, ability to improve water quality, importance to flood reduction, and human uses. Where development activities have the potential to impact wetlands, the wetland policy promotes avoidance and minimization, as the preferred courses of action. Where impacts cannot be avoided or minimized, and permanent wetland loss is incurred, wetland replacement is required. The amount of wetland replacement required will reflect differences in relative wetland value.

The policy enables a broad range of wetland management initiatives at the regional level including the establishment of wetland conservation areas, or the identification of priority areas for wetland restoration.[166] In areas of low current abundance and high historical loss, the policy places additional value on existing wetlands and promote both conservation and restoration as wetland management priorities. The policy focuses in order of descending priority on:

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[163] Ibid s 62.

[164] Government of Alberta, Alberta Carbon Capture and Storage online: http://www.solutionsstarthere.ca/68.asp

[165] Government of Alberta, *Wetland Policy*, Alberta Environment and Sustainable Resource Development (2014) online : http://www.waterforlife.alberta.ca/documents/AlbertaWetlandPolicy-Sep23-2013.pdf, 2.

[166] Ibid 6.

- avoidance of negative wetland impacts,
- minimization of negative wetland impacts, and
- wetland replacement to account for negative wetland impacts that could not be avoided or minimized as a last resort.[167]

Impacted wetland replacement requirements will be based on ratios (midpoint of 3:1, upper end 8:1) depending on the wetland values being replaced.[168] The policy also provides for a cost of in-lieu fee payment for wetland replacement based on the average cost of wetland restoration work (not including peat lands), the cost of monitoring restoration success over the long term, an administrative fee, and the average value of land within the area of original wetland loss.

The *Public Lands Act* allows the classification and use of public land, and the establishment of programs and initiatives for conservation and resource management including protection, enhancement, education and research.[169] The *Public Lands Administration Regulation* allows the establishment of disturbance standards setting the maximum acceptable footprint on different classes of public land.[170] Lands can be reserved from disposition or if an approval is issued, amending or renewed, it can include any terms and conditions required by the approval officer.[171]

An approval can also be issued for the restoration and reclamation of public land including anything that is reasonably necessary for proper reclamation in addition to any requirements under EPEA or a regional plan.[172]

As mentioned earlier, the Public Land Reservation/Notification Program provides a cumulative inventory of land use commitments on public land. A reservation/notification requires the agreement of the land manager and represents a commitment on the public land. There are three reservation/notations that may be applicable to conservation offsets on public land:

- Consultative Notation Company (CNC) indicates that a company or an individual has an interest in the land and will be consulted prior to any commitment or disposition of land. It does not impose any land use restrictions.

[167] Ibid 12.
[168] Ibid 19.
[169] Government of Alberta, *Public Lands Act* (SA 2000), s 11.
[170] Government of Alberta, Public Lands Administrative Regulation (AR187/2011), s 3.
[171] Government of Alberta, *Public Lands Act* (SA 2000), s 15.
[172] Ibid s 23.

- Consultative Notations (CNT) indicate that a government agency has an interest in the land and will be consulted prior to any commitment or disposition. It does not impose any land use restriction. Protective Notation (PNT) which restricts proposed future land use to protect initiatives like reclamation projects and industrial sample plots, which could be used to protect conservation offset projects.[173]

The Act also establishes the Land Stewardship Fund[174] for purchasing an interest in land for conservation purposes or to administer land used for conservation purposes.[175] Proceeds from the sale of public land to municipalities, organizations, private individuals etc. are held in this fund.[176] Applications for funds are considered by the department on an annual basis.

In 1996 Alberta signed the national Accord for the Protection of Species at Risk, an agreement to work with other provinces/territories and the federal government to develop laws and programs for protection of species at risk and their habitats. The Government of Canada, under SARA, and the Government of Alberta, under the *Wildlife Act*, both play roles in preventing the extirpation or extinction of species and providing for the recovery of species that are extirpated, endangered or threatened in Alberta. The Minister can designate endangered species, and require the preparation and the adoption of recovery plans for them, which may include population goals and identification of critical habitats and of strategies to enable populations to recover (eg. Grizzly Bear, Woodland Caribou).

Alberta's Strategy for the Management of Species at Risk (2009-2014) provides the framework for species at risk management in Alberta. The goal of the strategy is to ensure that populations of all wild species are protected from severe decline and that viable populations are maintained, and where possible, restored.[177]

The Fish Conservation and Management Strategy for Alberta (2014) commits to maintaining fish populations, including species diversity, genetic diversity, and ecosystem diversity to ensure that Alberta's fisheries are managed in a sustainable way, continue to provide benefits to Albertans and have all fish populations in a

[173]Government of Alberta, Environment and Sustainable Resource Development 2006, online at: http://esrd.alberta.ca/forms-maps-services/forms/lands-forms/guides-forms-completion/documents/ReservationNotationManual-Jan-2006.pdf

[174] Government of Alberta, *Public Lands Act* (SA 2000), s 11

[175] Government of Alberta, *Land Stewardship Fund Regulation* (AR 31/2011) , s 2

[176] Government of Alberta, *Public Lands Act* (SA 2000), s 11.

[177]Government of Alberta, *Alberta's Strategy for the Management of Species at Risk*, Alberta Sustainable Resource Development 2009 , online at: http://www.assembly.ab.ca/lao/library/egovdocs/2008/alsrd/171462.pdf

healthy state throughout the province. The guiding principles of the strategy include no net loss of the productivity of habitats, biodiversity of fish fauna to be maintained and depletion avoided, and management will be conducted based on fundamental ecological principles. In addition to Specific species management plans, waterbody management plans that direct the management of the fisheries in a water body can also be developed.[178]

The Water for Life Renewal Strategy enhances the original 2003 Water for Life: Alberta's Strategy for Sustainability Plan by outlining new actions that address the potential impact from climate change and the need for further integration of water and land management. The key aspects of the strategy are to reduce Alberta's demand for water by 30% from 2005 levels by 2015, ensure the integration of watershed planning with regional planning, and improve watershed management, water monitoring, evaluation and public health reporting.

Key goals and actions of the strategy include healthy, aquatic ecosystems by improving the health of impacted aquatic ecosystems, setting water conservation objectives for major basins, implementing the new wetland policy, and increased research and knowledge by enhancing provincial water monitoring, evaluation and information programs.[179]

As mentioned earlier, environmental management frameworks are included or committed to in both the LARP and SSRP and are anticipated in future regional plans. Management frameworks are an approach to support cumulative effects management that outline monitoring, evaluation, reporting requirements, set threshold values, and establish a management response process.[180]

Air quality management frameworks include ambient air quality triggers and limits. Surface water quality, quantity and groundwater management frameworks establish indicators of water quality and quantity with triggers and limits.[181]

Biodiversity management frameworks help ensure that land use at various scales is managed so developments do not, collectively result in unacceptable impacts to biodiversity and ecosystem function in the region. They support the Canadian Biodiversity Strategy (1995), the provincial biodiversity policy that is currently under

[178] Government of Alberta, *Fish Conservation and Management Strategy for Alberta*, Environment and Sustainable Resources (2014), 9, 10.
[179] Government of Alberta, *Water for Life Renewal Strategy* online at: http://environment.gov.ab.ca/info/library/8035.pdf
[180] Government of Alberta, *Lower Athabasca Regional Plan 2012-2022*, 45 – 60; *South Saskatchewan Regional Plan 2014-2024*, 68, 78, 81.
[181] Ibid 73; 177, 178.

development, and wildlife species management and recovery plans. The frameworks set regional objectives, identify indicators that represent the broad range of biodiversity in the region, and establish threshold values for those indicators.

Indicators (species, terrestrial and aquatic habitat) in the frameworks represent the range of biodiversity in the region and are selected because they are responsive to changes in land use activity and land use management, are relevant and representative of regional biodiversity and specific vulnerable aspects, and are feasible and cost effective to measure and monitor.[182] The use of triggers as an early warning system in the frameworks identifies undesirable changes in biodiversity condition. Should monitoring show indicators trending in an undesirable direction, the framework establishes a need for a management response to reverse the trend. [183]

Alberta Agriculture and Forestry (AF)

The primary focus of AF is to promote a strong, competitive, sustainable agriculture, food and forest industry. The Department is responsible for the management of programs designed to facilitate the development of all components of the agriculture, food and forest industry, to sustain the natural resource base of the industry and to encourage the development of rural communities.[184]

The forest industry and the provincial government have developed an Alberta Forest Products Road Map that identifies the best course of action to achieve sustainable and innovative growth in forest products, forest industry based rural communities and the bio-economy. The road map identifies markets, value chains, barriers, and opportunities that industry must respond to in order to reach the ultimate goals of sustainable forest industry growth. It also identifies the need for the Government of Alberta to identify the ecological services provided by the forest, enable effective and economical markets for these services and allow companies wishing to leverage these market opportunities to do so.[185]

The Alberta Forest Management Planning Standard (AFMPS) provides the requirements for preparing and implementing Forest Management Plans (FMPs) by

[182] Government of Alberta, *Draft Lower Athabasca Region, Biodiversity Management Framework,* November 2014, 26.
[183] Ibid 46.
[184] Government of Alberta, Alberta Agriculture, Food and Rural Development online: http://www.agric.gov.ab.ca/app21/ministrypage
[185] *Alberta Forest Products Road Map* (2010), online: albertaforestroadmap.ca, 19

forest companies in Alberta[186]. FMPs focus on how activities (establishing, growing and harvesting timber), will be managed in order to reduce the negative impacts on other resource users and resource values.[187] Alberta has established minimum performance standards in the AFMPS for how biodiversity is addressed based on five criteria: ecosystem, genetic and species diversity, maintenance and enhancement of forest ecosystem conditions and productivity, forest ecosystem contributions to global ecological cycles (eg. carbon).[188]

Alberta Energy (AE)

AE manages the sustained and 'responsible development of the province's oil, natural gas and other mineral resources in a manner that ensures long-term benefits' to Albertans. It allows or restricts the sale of Crown mineral rights for development based on a balance between demand for mineral development and the conservation of sub surface and surface resources.[189] AE leads the implementation of the following provincial initiatives.

Launching Alberta's Energy Future- Provincial Energy Strategy aims for Alberta to be "a global energy leader, recognized as a responsible world-class energy supplier, and a solid global environmental citizen. The Strategy outlines three fundamental energy challenges facing Alberta:

- making sure that we have a secure energy supply for Alberta,
- offering competitive exports for Alberta's economic benefit, and
- taking care of the environment.

The strategy commits to managing the environmental footprint of energy development 'by respecting limits determined by a cumulative effects approach through regional plans'.[190]

Responsible Actions: A Plan for Alberta's Oil Sands aims *to* provide a platform to balance development with environmental protection, social responsibility, and economic success. It outlines a strategic approach to responsible development of the oil sands resource including a goal to 'increase the conservation and protected areas to maintain biodiversity in the oil sands region'. It commits, as one means to do this the establishment of a conservation offset program to secure high-value

[186] Government of Alberta, *Alberta Forest Management Planning Standard*, Alberta Sustainable Resource Development (2006), 7.
[187] Ibid 11.
[188] Ibid 12, 13.
[189] Government of Alberta, Alberta Energy online: http://www.energy.alberta.ca/
[190] Government of Alberta, *Launching Alberta's Energy Future* ,2008), 32.

conservation lands in the oil sands regions and throughout Alberta to support provincial biodiversity, wetland and environmental management objectives.[191]

Service Alberta - Land Titles

Service Alberta is responsible for registering land ownership rights in Alberta. The *Land Titles Act* provides the legislative framework for the department to register land related documents that both create and terminate legal rights in property.[192]

Someone who owns surface rights to land owns not only the surface but also the air space above it (subject to the rights of others, such as airlines) and any sand, gravel, peat, clay or marl, which can be excavated by surface operations.[193] Surface rights do not include ownership of minerals. Someone who owns mineral rights to land may own a specific mineral, several specified minerals or all of the minerals (except gold and silver, which, with few exceptions, are the property of the Crown).[194]

If the land described on a certificate of title is surface only, the legal description will be followed by a "mineral reservation", a phrase such as "excepting there out all mines and minerals". If the title includes both surface and minerals, it will not have a mineral reservation.[195]

A registered owner of land, by agreement, can grant to a qualified organization a conservation easement for all or part of the land for the protection, conservation and enhancement of the environment.[196] These easements run with the land and may be enforced and is considered to be a condition or covenant under the *Land Titles Act.*[197]

The Alberta Energy Regulator (AER)

The AER is an independent, quasi-judicial agency that regulates the safe, responsible, and efficient development of Alberta's energy resources (oil, natural gas, oil sands, coal, and electricity) and the pipelines and transmission lines that move these resources to market.[198] This includes the use of public land with respect to energy resource activities under the PLA, energy resource activities under the EPEA, the Water Act and under the *Mines and Minerals Act* with respect to the

[191] Government of Alberta, *Responsible Actions, A Plan for Alberta's Oil Sands*, 2008), 19.
[192] Government of Alberta, Service Alberta, Land Titles online at: https://www.servicealberta.ca/589.cfm
[193] Ibid
[194] Ibid
[195] Ibid
[196] Government of Alberta, *Alberta Land Stewardship Act*, SA 2009, s 29.
[197] Ibid, s 34.
[198] Government of Alberta, Alberta Energy Regulator online: https://www.aer.ca/about-aer/who-we-are

exploration, abandonment, closure and reclamation of facilities and operations. This includes the monitoring of site conditions, the effects of activities on the environment, and to enforce compliance. [199] AER has authority to consider and decide on applications and other matters in respect of facilities and operations for the recovery and processing of energy resources (coal, oil sands, oil and gas). [200]

The Government of Alberta has created a Policy Management Office to support the alignment and integration between the Government of Alberta and the AER. Its focus is working with the regulator to ensure that policy is government driven, that regulatory decision making is not delayed by policy gaps and that a common risk management and measurement mechanism is in place to ensure the measurements and outcomes are reported to Albertans.[201]

Alberta Environmental Monitoring, Evaluation and Reporting Agency (AEMERA)

The *Protecting Alberta's Environment Act* establishes AEMERA at arm's length from government monitoring the condition of the environment.[202] Its purpose is to monitor, evaluate and obtain credible and relevant scientific data and other information on key air, water, land and biodiversity indicators.[203] It also develops standards respecting environmental monitoring, and enables the establishment of scientific and advisory committees or panels related to environmental monitoring. [204]

The Natural Resources Conservation Board (NRCB)

The NRCB is a Quasi-judicial provincial regulatory agency that reviews applications for large non-energy related industrial projects. The Board also regulates Alberta's confined livestock feeding industry. In considering development applications, the Board may "grant an approval on any terms and conditions that the Board considers appropriate".[205] This authority determines whether "projects are in the public interest, having regard to the social and economic effects of the projects and the effect of the projects on the environment".[206]

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[199] Government of Alberta , *Responsible Energy Development Act* RSA 2012, s 2
[200] Ibid s 2.
[201] Government of Alberta, Alberta Energy Regulator (2012) online at: http://www.oilsands.alberta.ca/FactSheets/REP_Fact_Sheet.pdf
[202] Government of Alberta, *Protecting Alberta's Environment Act* RSA 2013, s 2.
[203] Ibid s 3.
[204] Ibid s 3, 18, 19
[205] Government of Alberta, *Natural Resources Conservation Board Act*, RSA 2000, s 9.
[206] Ibid s 2.

The Alberta Utilities Commission (AUC)

The AUC has jurisdiction over the siting of major utility facilities including electric transmission facilities, electric power plants and natural gas transmission pipelines.[207]

Surface Rights Board (SRB)

The *Surface Rights Act* establishes the SRB and its powers to grant rights of entry to private and Crown lands for mineral development.[208] No oil and gas operator can enter land for the removal of minerals until the operator has obtained the consent of the owner/occupant or a right of entry order by the Board and compensation for the right of entry is paid.[209] This includes access and other infrastructure related to the operation.[210]

The Board, in determining the amount of compensation payable, may consider:

- what amount the land required would be expected to realize if sold in the open market by a willing seller to a willing buyer based on the highest approved use of the land,
- the loss of use by the owner or occupant of the area,
- the adverse effect on the remaining land of the owner or occupant,
- the nuisance, inconvenience, noise, and damage to land caused by the operations, and
- any other factors that the Board considers appropriate (eg. loss or damage to livestock or other personal property).[211]

Alberta Innovation and Advanced Education

Alberta Innovation and Advanced Education align economic development activities in the province with post-secondary education, entrepreneurship, industry training, research and innovation. It helps align initiatives that strengthen the province's skilled workforce, increase business start-ups, support the commercialization of technology, and focus on solving challenges through a world-class research and innovation system.

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[207] Government of Alberta, Alberta Utilities Commission online: http://www.auc.ab.ca/about-the-auc/what-we-do/Pages/default.aspx

[208] Government of Alberta, *Surface Rights Act* RSA 2000, s 3.

[209] Ibid s 12

[210] Ibid s 3.

[211] Ibid s 25

Other Organizations

The Land Stewardship Centre facilitates partnerships, provide services and develop resources that help engage, inform and enable people and organizations to become better stewards. It works directly with individuals and organizations that own, have a vested interest in, or who use and are responsible for managing land and its associated natural resources.[212]

One of the services of the centre is the Conservation Easement Registry, which is a searchable, online database containing information on registered conservation easements in Alberta. It assists land trusts, government agencies and private landowners in planning, delivering and reporting on the status of conservation easement projects. It also supports the planning and developmental needs of natural resource companies, municipalities, developers, land agents and others by identifying registered conservation easement project locations.[213]

Ducks Unlimited Canada (DUC) delivers conservation programs at the local, regional and national levels, aimed at contributing to a healthier environment for waterfowl.[214] DUC is a part of the North American Waterfowl Management Plan (NAWMP). The objective of this international conservation program is restoring waterfowl populations to 1970 average levels. Waterfowl population goals were established and key habitats identified to reach those goals. The overall planning, design and management of NAWMP is done through habitat joint ventures. DUC also works with farmers, ranchers, partners and government to reward landowners for the environmental benefits of their operations. To date, 8,880 habitat projects have completed in Canada conserving 6.2 million acres of wetlands and associated habitat.

The Alberta Association of Municipal Districts and Counties is an independent association comprising Alberta's 69 counties and municipal districts.[215] Its purpose is to help rural municipalities achieve strong, effective local government. The AAMDC focuses on the following main policy areas: water, planning and development, industry and resource development, health, environment, energy, agriculture, community services, transportation and infrastructure, and finances and taxation.

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[212] *Land Stewardship Centre* online at: http://www.landstewardship.org/what-we-do/
[213] Land Stewardship Centre online at: http://www.landstewardship.org/conservation-easement-registry/
[214] *Ducks Unlimited Canada* online at: http://www.ducks.ca/what-we-do/where-work/
[215] *Alberta Association of Municipal Districts and Counties,* online at: avaihttp://www.aamdc.com/about

The Alberta Association for Conservation Offsets (AACO) was formed in 2014 as a vehicle for collaboration among a number of diverse entities and interests sharing an interest or expertise in the field of conservation offsets and related issues and repeated expressions of interest from the Government of Alberta in conservation offsets as a tool of land stewardship.[216] The mission of AACO is to support the design, development and implementation of a credible, transparent and outcome-based system of conservation offsets that considers the needs of environment and people, while allowing for flexible business solutions.

Its objectives are:

1. To build shared understanding respecting the use of conservation offsets in Alberta and Canada and related issues;
2. To contribute to building capacity to develop a credible, transparent and outcome-based domestic system of conservation offsets.
3. To develop options for an environmentally, economically and socially robust and consistent conservation offset framework.
4. To act as a forum for the sharing among members of expertise and experience with respect to conservation offsets and related matters.
5. To research and facilitate the formulation of options and solutions on issues respecting conservation offsets.
6. To work with government on development and implementation of conservation offsets.

The Environmental Law Centre is an environmental non-profit, public policy and law organization that provides objective information on how laws and legal tools can be used to protect the environment and provides advice on changing environmental legislation and regulations.[217] The centre provides advice and public education about a broad range of environmentally related topics and works with policy-makers at all levels of government to create better processes for making environmental decisions. The centre also promotes cutting-edge legislation and support the right of all Albertans to have a say in their future.

The Alberta Conservation Association has been delegated a number of responsibilities related to the conservation, protection and enhancement of fish and wildlife populations and their habitats as a delegated administrative organization.[218] These include implementation and support of projects and improvements that retain, enhance or create wildlife, fish or endangered species habitat, implementation and support of restoration and species re-introduction projects, and implementation and

[216] *Alberta Association for Conservation Offsets Strategic & Business Plan*, 2014-2015, November 5, 2014.
[217] Environmental Law Centre on line at: http://www.elc.ab.ca/about-us.aspx
[218] Government of Alberta, *Wildlife Regulation* (AR 143/97), schedule 2.

support inventories of populations and habitats of wildlife, fish and endangered species.

Alberta Innovates Bio Solutions (AI Bio) has a legislative mandate to provide leadership and coordination for research and innovation that supports the growth and diversification of Alberta's agriculture, food, forest, and life science sectors. AI Bio supports a broad range of investments including sustainable production, ecosystem services and biodiversity, and biological GHG management. Goals under these business lines related to offsets are sustainable agriculture and forest production, growth and diversification through integrated land use and management, and effective management of GHG emissions arising from biological systems.[219]

Alberta Innovates Tech Futures helps technical industries find solutions, develop products and move technologies to market.[220] It builds on Alberta's established platform technologies (nanotechnology, information communications technologies, genomics) to enhance the technical capacity within Alberta's high-tech companies. It helps support commercialization and the growth of new ventures, invests in, and attracts the required research and entrepreneurial talent in these areas.

Alberta Innovates Energy and Environment Solutions focuses on sustainable energy production, water, and environmental management.[221] It works with partners to identify critical technology gaps and apply world-class innovation management strategies and research to develop solutions for the challenges facing Alberta's energy and environment sector.

Multiple Species at Risk (Multisar) strives to conserve habitat for species at risk in the Grassland Natural Region and improve awareness of them on the landscape. Multisar helps landholders interested in conserving species at risk through habitat assessment, wildlife inventories and providing recommendations to landholders on the use of beneficial management practices (BMPs).[222]

The Alberta Biodiversity Monitoring Institute (ABMI) is an arm's-length, not-for-profit, scientific organization that monitors biodiversity throughout Alberta. ABMI collects data on more than 2000 species and habitats at permanent sites in a 20 km grid pattern throughout Alberta. This field data is supplemented by aerial photography and satellite imagery, to monitor change in species, habitats, and human land use.

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[219] Alberta Innovates Bio Solutions online at: http://bio.albertainnovates.ca/
[220] Alberta Innovates Technology Futures online at: http://www.albertatechfutures.ca/Corporate.aspx
[221] Alberta Innovates Energy and Environment Solutions online at: http://www.ai-ees.ca/
[222] Multisar online at: http://www.multisar.ca/

ABMI then refines, analyzes, and synthesizes data to assess and communicate the state of biodiversity across Alberta.[223]

The Forest Resource Improvement Association of Alberta is established under the *Forest Resources Improvement Regulation.*[224] The purpose of the Association is to establish programs or initiatives for the enhancement of forest resources in Alberta, to promote integrated resource management, and for the reforestation of public land using the reforestation levies collected by the Association.[225]

The Foothills Research Institute works toward sustainable land and resource management. It looks at the impact of primarily industrial use on the local ecology, economy, society, and culture. It shares these results with stakeholders, government agencies, and the public and produces manuals, handbooks, and other tools. The institute also demonstrates the tools it develops and techniques it has implemented.[226]

The Alberta Land Institute works with policy makers and land users, to develop, design, evaluate and support the implementation of innovative and informed land-use policy. This is done by leveraging the multi-disciplinary research capacity of the University of Alberta and other partners in relevant land-use issues, facilitates pilot-scale testing and demonstration of land-use management programs and tools to determine their potential effectiveness and long-term sustainability. It also develops evidence-based policy recommendations and options on how to address land-use challenges, brokers' relationships by connecting practitioners, policy makers and academic partners, exchanges information, and develops skills and knowledge to support effective land management.[227]

Land trusts are not-for-profit, non-government organizations established to promote biodiversity conservation on private land. Grants through the Alberta Land Trust Grant Program are available to land trusts for the purchase of conservation easements and the administration and management of conservation projects on private land. Any land trust currently operating in Alberta is eligible to apply for a grant but must provide additional funding and demonstrate that their project aligns with the government's overall conservation objectives.[228]

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[223] Alberta Biodiversity Monitoring Institute online at: rhttp://www.abmi.ca/home/about-us/our-vision-mission.html

[224] Government of Alberta, *Forest Resources Improvement Regulation* (AR 152/97), s 2

[225] Ibid , s 3.

[226] Forest Research Institute online at: https://foothillsri.ca/content/about-24

[227] Alberta Land Institute online at: http://www.albertalandinstitute.ca/about/institute-overview/

[228] *Alberta Land Grant Program* online at: http://esrd.alberta.ca/lands-forests/alberta-land-trust-grant-program/default.aspx

The Alberta Livestock *and Meat Agency* (ALMA) is a provincial government agency established to help advance the Alberta Livestock and Meat Strategy a roadmap designed to drive positive change within Alberta's livestock and meat industry. The agency develops policy that drives its investment, directs its strategies and influences public policy related to regulations, legislation, programs, and issues of importance to the livestock and meat sectors. As well, ALMA identifies solutions and fosters collaboration and alignment between industry and government priorities.[229]

The Clean Air Strategic Alliance (CASA) was established in March 1994 as a new way to manage air quality in Alberta.[230] CASA is a multi-stakeholder partnership. It is composed of representatives selected by industry, government and non-government organizations. CASA's mandate is to implement the Comprehensive Air Quality Management System (CAMS) for Alberta, conduct strategic air quality planning for Alberta through shared responsibility and us of a consensus-building, collaborative approach, and prioritize concerns with respect to air quality in Alberta, and develop specific actions or action plans and activities to resolve those concerns.

CASA supports three air quality management goals, protecting the environment by preventing short and long-term adverse effects on people, animals and the ecosystem, optimizing economic efficiency, and promoting pollution prevention and continuous improvement.

The Institute for Agriculture, Forestry and the Environment was formed to assist the government in achieving its objectives of "green growth" by:

- improving environmental outcomes,
- enhancing competitive opportunities for agriculture and forestry through innovation in policy, processes and through a decision support system for selection, evaluation and implementation of market-based approaches to ecosystem services.[231]

It provided recommendations on advancing market based instruments in Alberta including an Ecosystem Services Market Policy Framework with policies and actions based on the following principles:

- Outcome or performance based, focused on results rather than activities.

[229] Alberta Livestock and Meat Agency online at: http://alma.alberta.ca/index.htm
[230] *Clean Air Strategic Alliance* on line at: http://casahome.org/AboutCASA.aspx
[231] The Institute for Agriculture, Forestry and the Environment – Agri-Envionmnetal Partnership of Alberta Forum presentation, March 10, 2010

- Focus on measurable results that enhance the provision of ecosystem services, beyond what is required otherwise.
- Support and encourage improvement in the provision of all ecosystem services and in business performance.
- Avoid the creation of incentives that may have unintended consequences for the environment or the competiveness of a sector.
- Ensure that, where possible, all players influencing a specific ecosystem service are incorporated into the market.
- Enable creativity and innovation in systems, processes, technology and institutions that add value to Alberta's resource-based industries and the way they enhance ecosystem services, while generating improved economic returns.
- Seek simplicity in the selection and implementation of policy tools.
- Achieve multiple desired outcomes through bundling and integration of ecosystem services on a landscape basis, thereby ensuring that businesses have access to a range of tools and options to facilitate their effective participation in the market.

The Alberta Environmental Network (AEN) is a non-profit, non-partisan organization comprised of groups throughout the province dedicated to helping preserve and protect Alberta's environment. The AEN's purpose is to facilitate the sharing of information and resources among member groups, and to assist them in taking common action. AEN also promotes awareness of environmental issues & activities with stakeholders and the public. AEN facilitates members in meetings and consultation with government and/or industry.[232] It should be noted that the AEN does not include all environmental groups in Alberta. There are also organizations that have an interest in the environmental aspects of development that do not necessarily identify themselves as environmental groups.

The Alberta Water Council is a multi-stakeholder partnership with members from governments, industry, and non-government organizations.[233] Its primary task is to monitor and steward implementation of the *Alberta's Water for Life* strategy and to champion achievement of the strategy's three goals:

- Albertans are assured their drinking water is safe
- Albertans are assured that Alberta's aquatic ecosystems are maintained and protected

[232] *Alberta Environmental Network* online at: http://www.aenweb.ca/content/purpose-goals
[233] *Alberta Water Council* online at: http://www.albertawatercouncil.ca/AboutUs/tabid/54/Default.aspx

- Albertans will be assured that is managed effectively to support sustainable economic development

The Cumulative Environmental Management Association (CEMA) is a multi-stakeholder, non-profit association operating in the Regional Municipality of Wood Buffalo.[234] CEMA is an advisor to the provincial and federal governments and makes recommendations to manage the cumulative environmental effects of regional development on air, land, water and biodiversity based on research related to land, air, water and reclamation.

CEMA is comprised of more than 50 members who sit on one of four caucuses: Aboriginal, Government, Non-Government Organizations and Industry. The membership includes First Nations and Métis Groups, municipal, provincial and federal governments, environmental advocacy groups, educational institutions and oil sands operators.

Alberta has a number of organizations that regulate and support the activities of members within their respective professions. These include the Association of Professional Engineers, the Institute of Chartered Accountants of Alberta, the Law Society of Alberta, the College of Alberta Professional Foresters, the Alberta Institute of Agrologists, and the Alberta Society of Professional Biologists. [235]

There are also a number of industry organizations in Alberta that advocate for and support the economic competitiveness and safe, environmentally and social responsible performance of their industries. These include the Canadian Association of Petroleum Producers, Explorers and Producers Association of Canada, Canadian Energy Pipeline Association, Canadian Heavy Oil Association, Alberta Forest Products Association, Alberta Beef Producers, the Western Stock Growers Association, Alberta Canola Producers Commission, Alberta Pulse Growers, Alberta Wheat Commission, and the Alberta Barley Commission.[236]

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[234] *Cumulative Environmental Management Association* online at: http://cemaonline.ca/index.php/about-us

[235] Association of Professional Engineers online at: http://www.apega.ca/; Institute of Chartered Accountants of Alberta online at; http://www.albertacas.ca/; Law Society of Alberta online at: http://www.lawsociety.ab.ca/; College of Alberta Professional Foresters online at: http://www.capf.ca/; Alberta Institute of Agrologists online at: http://www.albertaagrologists.ca/; Alberta Society of Professional Biologists online at: https://www.aspb.ab.ca/

[236] Canadian Association of Petroleum Producers online at: http://www.capp.ca/; Explorers and Producers Association of Canada online at: http://explorersandproducers.ca/; Canadian Energy Pipeline Association online at: http://www.cepa.com/; Canadian Heavy Oil Association online at: http://www.choa.ab.ca/; Alberta Forest Products Association online at: https://www.albertaforestproducts.ca/; Alberta Beef Producers online at: http://www.albertabeef.org/; Western Stock Growers Association online at: http://www.wsga.ca/; Alberta

Some companies have also collectively initiated offset projects to support their social licence and environment or sustainable development policy. These initiatives have included restoring/reclaiming impacted landscapes, purchasing and protecting environmentally sensitive lands, delaying/cancelling development plans and quantifying the environmental impact of their efforts.

Increasingly, companies are looking to link conservation activities more closely to their impacts and exploring how they can demonstrate a net positive effect from their operations in collaboration with stakeholders, governments and experts. An example is the Canada Oil Sands Innovation Alliance, which is an alliance of oil sands producers focused on accelerating the pace of improvement in environmental performance in Canada's oil sands through collaborative action and innovation.[237]

Canola Producers Commission online at: http://albertacanola.com/; Alberta Pulse Growers online at: http://pulse.ab.ca/; Alberta Wheat Commission online at: http://www.albertawheat.com/; Alberta Barley Commission online at: http://www.albertabarley.com/

[237] Canada Oil Sands Innovation Alliance online at: http://www.cosia.ca/about-cosia

Appendix G: Summary of Inventory, Models and Classification Systems

A Fish Sustainability Index has been developed in Alberta for assessing, summarizing and communicating the health and status of fish populations relative to an altered state. It provides a watershed/landscape-level, provincial overview of the sustainability of fish populations and aquatic ecosystems and to address consequences of land-use decisions and mitigation options in support of habitat protection efforts.[238] It uses information already gathered by standardized fisheries data collection and methods of analysis.

ABMI uses fine-resolution aerial photography and satellite imagery to measure the state of human footprint and land cover and uses monitoring data to develop models to better understand biodiversity.[239] ABMI has also developed an Ecosystem Services and Biodiversity Intactness Index to assess the supply and condition of ecosystem services and species in a given area using statistically derived relationships between species responses and habitat and human footprint.[240] The index is based on scientifically validated models and is capable of accounting for changes in condition on any site through mapping, measuring, and assessing the intactness of biodiversity and habitat across Alberta. It consolidates ecological information into useful indicators (water purification, carbon storage, pollination, forage production, timber production, and biodiversity).

ABMI systematically collects information on species and their habitats to understand distribution of biodiversity and to inform sustainable resource development and biological conservation in Alberta.[241] It provides information on spatial distribution, habitat associations, biodiversity responses to human footprint, and predicted relative abundance distributions for a wide variety of species in Alberta. ABMI also provides land cover maps including native vegetation, human footprint types and temporal change in human footprint.

ABMI has also developed a number of protocols for field data collection and evaluation including: Terrestrial Field Data Collection Protocols , Ecological Recovery Monitoring of Certified Reclaimed Wellsites in Alberta: Field Data Collection Protocols for Forested Lands , Wetland Field Data Collection Protocols ,

[238] Government of Alberta, Environment and Sustainable Resource Development, Fish Sustainability Index, on line at: http://esrd.alberta.ca/fish-wildlife/fisheries-management/fish-sustainability-index/default.aspx
[239] Alberta Biodiversity Monitoring Institute on line at: http://www.abmi.ca/home/projects.html
[240] Alberta Biodiversity Monitoring Institute on line at: http://www.abmi.ca/home/projects.html
[241] Alberta Biodiversity Monitoring Institute on line at: http://species.abmi.ca/

Manual for Estimating Species and Habitat Intactness at the Regional Scale , Manual for Species Modeling and Intactness , Terrestrial protocols.[242]

The CENTURY Soil Organic Matter Model Version 4 was developed to deal with a wide range of cropping system rotations and tillage practices for system analysis of the effects of management and global change on productivity and sustainability of agro ecosystems. It integrates the effects of climate and soil driving variables and agricultural management to simulate carbon, nitrogen, phosphorous, sulfur and water dynamics in the soil-plant system.[243] Simulation of complex agricultural management systems including crop rotations, tillage practices, fertilization, irrigation, grazing, and harvest methods is included in the model. The model can simulate the dynamics of grassland systems, agricultural crop systems, and forest systems. The grassland/crop and forest systems have different plant production sub models, which are linked to a common soil organic matter sub model. These models simulate the flow of C, N, P, and S through plant litter and the different inorganic and organic pools in the soil.

The Carbon Budget Model of the Canadian Forest Sector is an aspatial, stand and landscape level-modeling framework that simulates the dynamics of forest carbon stocks (above and below ground biomass, and soil organic carbon).[244] Users apply much the same information as they require for their forest management planning (e.g., forest inventory, tree species, growth and yield curves, natural and human-induced disturbance information, forest harvest schedule and land-use change information), supplemented with information from national ecological parameter databases. The model calculates carbon stocks and stock changes in the past (monitoring) or into the future (projection) and can also create, simulate and compare various forest management scenarios in order to assess impacts on carbon. The model currently contains a set of default ecological parameters appropriate for Canada.

The Environmentally Significant Areas[245] and Aquatic Environmentally Significant Area[246] mapping initiatives identify, at a landscape level, specific geographic areas

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[242]Alberta Biodiversity Monitoring Institute on line at: http://www.abmi.ca/home/publications.html?documenttype=Protocols&mode=detail

[243] CENTURY Soil Organic Matter Model Version4 online at: ftp://ftp.daac.ornl.gov/data/model_archive/CENTURY/century_vemap_m4/comp/Century_Users_Manual_V4.pdf

[244] Carbon Budget Model of the Canadian Forest Sector online at: http://www.nrcan.gc.ca/forests/climate-change/13107

[245]Environmentally Significant Areas online at: http://fieraconsulting.ca/?tag=environmentally-significant-areas-of-alberta

[246]Aquatic Environmentally Significant Areas online at: http://fieraconsulting.ca/?p=396

with particular combinations of biological diversity, rare or unique characteristics, important wildlife and fish habitat, or features that are important to the long-term maintenance of biological diversity.

The intended use for the maps is to inform land-use and watershed planning of areas requiring special consideration during planning processes. The identification of environmentally significant areas does not consider how these areas are being or how they should be managed. The process is intended to provide objective, credible information on significant environmental areas for which planning and management decisions can then be made.

In the grassland areas of the province the Alberta Government has developed a Grassland Vegetation Inventory (GVI) system which allows for the classification of grassland vegetation communities into ecological units (ecological range sites) similar to forest communities, by grouping vegetation data into similar functional units that respond to disturbance in a similar and predictable manner.[247]

Wildlife sensitive maps have been developed in Alberta for a number of sensitive species based on the known or partial extent of a species range in Alberta. These maps identify the locations of key wildlife areas important for the viability and productivity of Alberta's wildlife populations and provide the best information currently available on the extent of wildlife sensitivities.[248] Mitigation strategies are generally applicable in these areas and specific operating conditions may apply to industrial activities within them to help mitigate the effects of development on populations and habitat. These maps also identify the area under Federal Emergency Order in Alberta in relation to the protection of the Greater Sage-Grouse.

The Alberta Wetland Classification System and Provincial Wetland Inventory provide a listing of wetlands in the province and a wetland classification system. [249] The AWCS provides a standardized provincial wet land classification system to enable a broader understanding of wetlands ecosystems applies classification keys that are associated with wetland hydrologic, biogeochemical and biotic processes, is compatible with existing wetland classification systems and inventories, as well as legislation and policies that may affect wetlands. The classification system provides key indicator species for characterizing wetlands that applies classification keys that

[247]Grassland Vegetation Inventory online at: http://www.albertapcf.org/native-prairie-inventories/gvi.

[248] Wildlife Sensitivity Maps, Alberta Environment and Sustainable Resource Development on line at: bhttp://esrd.alberta.ca/forms-maps-services/maps/wildlife-sensitivity-maps/default.aspx

[249] Government of Alberta, Environment and Sustainable Resource Development, The Alberta Wetland Classification System and Provincial Wetland Inventory online at: http://www.waterforlife.alberta.ca/documents/DraftWetlandClassificationSystem-Sep2014.pdf

are associated with wetland hydrologic, biogeochemical and biotic processes that is readily applicable for wetland identification, mapping and environmental assessment.

It recognizes five classes of wetlands in Alberta: bogs, fens, marshes, shallow open water, and swamps. Wetland classes are further divided into forms based on vegetation structure, which are further subdivided into types based on the length of time that surface water is at or above the surface along with basic water characteristics such as acidity and salinity.

The AWCS merges information from existing wetland classification systems to provide a holistic classification system for the province. The AWCS is tailored specifically to Alberta, and provides key indicator species for characterizing wetlands. It is useful and readily applicable for wetland identification, mapping and environmental assessment.

Appendix H: Summary of New Initiatives

The Provincial Wetland Value Assessment System is currently under development. It will provide a GIS-level assessment of value for all wetlands in the province. The resulting data layer will augment the Alberta Wetland Inventory, further enabling wetland policy decisions and providing a common foundation for land use planning activities in the Province. [250]

A Wetland Value Assessment Tool being developed will augment the provincial wetland value assessment system, incorporating ground level data (e.g., species composition, water quality information, etc.) into the regulatory decision-making process. [251]

A Wetland Database and Reporting Tool will act as a repository for all information pertaining to wetlands in Alberta. This will include data on wetland losses, wetland restoration, enhancement, and construction efforts, as well as wetland assessment and monitoring data. Regulatory approval information, linking wetland approvals to wetland replacement projects will also be incorporated.[252] To enable prioritization of wetland restoration activities, the Government of Alberta will also develop an inventory of drained wetlands and wetland restoration opportunities in the province.[253]

ABMI is currently leading a three-year program to demonstrate the value of an ecosystem services assessment for the design and implementation of new markets, evaluating the sustainability of forestry and agriculture industries, and land use planning to achieve desired ecological outcomes. The objective of the initiative is to develop robust validation and demonstration of protocols and models to assess ecosystem services and biodiversity through case studies, pilots, applied research, deliver of application, models and outreach tools.[254] These would be used to support land use planning, sustainably reporting and policy for market based options.

The Government of Alberta is developing an Alberta Biodiversity Policy that will set overarching provincial direction and ensure alignment when developing biodiversity management frameworks for the regions. The intention of the policy is to state the province's commitment to the conservation of biodiversity and the sustainable use of

[250] Government of Alberta, Alberta Wetland Policy, 21: Online at: http://www.waterforlife.alberta.ca/documents/Alberta_Wetland_Policy.pdf
[251] Ibid 21
[252] Ibid 21
[253] Ibid 21
[254] Tom Habib, ESA Advisory Meeting PowerPoint Presentation, March 6, 2015.

biological resources.[255] The policy, when completed, will provide provincial level context for biodiversity management frameworks, and provide high-level guidance for other activities that could affect biodiversity.

The South Athabasca Regional Strategic Assessment (SARSA) is a future orientated cumulative effects based strategic initiative intended to provide guidance to the development of regional strategies and initiatives being led by the Alberta Government.[256] This is done through examining potential alternate oilsands development scenarios and then to identify the 'best" strategy to take in given the goals, objectives, and potential trade-offs in consideration of the constraints and conditions of the region.

The SARSA is intended to provide a context for assessment of individual project developments by identifying the potential cumulative effects of developments include establishing goals, objectives, targets and thresholds and provide a standard against which the significance of proposed projects within the region can be assessed.

It is looking at five themes economy, air, water, land and biodiversity, quality of life and environmental health and establishing measures against which the environmental performance of on-going projects can be evaluated. It has the potential to streamline subsequent project-based EA and regulatory decision-making processes.

The Impacts of Beef Production on Biodiversity initiative combines existing biodiversity and landscape data from ABMI and AESRD, supplemented with targeted field sampling of biodiversity in ungrazed or lightly grazed grasslands, and producer information on grazing management system to develop detailed statistical models on the relationship between grazing systems and biodiversity.[257]

The goal of the Development of Information and Science to Support the Provision of Ecosystem Services on Agricultural Lands project is to target production efficiencies that reduce the environmental footprint of livestock production and improve competitiveness through market-based approaches that encourage the agriculture

[255] Government of Alberta, Alberta's Biodiversity Policy Draft, 2015 online at: http://aenweb.ca/files/draft_albertas_biodiversity_policy_december_2014.pdf

[256] Government of Alberta, South Athabasca Regional Strategic Assessment, online at: http://www.alsa.ab.ca/MemberResources/View/tabid/151/ArticleId/269/South-Athabasca-Regional-Strategic-Assessment.aspx

[257] Tom Habib, ESA Advisory meeting presentation, March 6, 2015.

industry to provide ecosystem services that benefit producers, the environment, and society on agricultural lands.[258]

This will be done through the development of a decision support system to be used for policy development and evaluation, and to support credible and transparent market transactions for buying and selling ecosystem services (water quality, carbon sequestration, water storage/flood risk and drought management, habitat for wildlife/biodiversity). The system will be tested in joint water quality and native prairie restoration/species related objectives in two watersheds.

The Ecosystem Services on Agricultural Lands initiative is intended to develop capacity for the agricultural sector and policy makers to understand opportunities associated with ecosystem services and markets by developing the information and science required to evaluate and implement ecosystem service programs.[259] This includes evaluation of the cost and potential supply of ecosystem services from beneficial agricultural management practices.

The Grasslands Case Study: bundling ecosystem service and biodiversity credits initiative uses existing ES models plus additional information to assess the costs and benefits of converting cropland to perennial cover.[260] It will focus on biodiversity, water purification, and carbon sequestration.

The Boreal Conservation Offset Case Study is being undertaken in collaboration with the second phase of the Algar seismic line restoration project. The study will provide a report for potential offset credit buyers, sellers and the regulator on restoration, validation, and verification protocols for assessing conservation credits created through restoration of seismic lines in the boreal forest.[261]

The Bow River Phosphorus Management Plan is a strategic plan to address sources of phosphorus in the middle reach of the Bow River between the Bearspaw and Bassano Dams.[262] It is the culmination of work by contributing parties from government and non-government, urban and rural sectors, and subject matter experts to define the issue, establish goals and objectives, and recommend strategies and actions to manage phosphorus in the Bow River.

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[258] Marian Weber, ESA Advisory meeting Power point presentation, March 6, 2015.
[259] Tom Habib, ESA Advisory meeting presentation, March 6, 2015.
[260] Ibid
[261] Ibid
[262] Government of Alberta, Bow River Phosphorus Management Plan, online at: http://esrd.alberta.ca/focus/cumulative-effects/cumulative-effects-management/management-frameworks/bow-river-phosphorus-management-plan.aspx

The implementation phase of the project will involve taking the identified strategies and actions and converting them to specific on-the-ground activities (e.g., an individual or group will do a specific activity by a specific time). Education, outreach, and performance measurement will be integral components of the implementation strategy.

Appendix I: Summary of Stakeholder Comments

Stakeholder feedback on the draft of this document proved invaluable to the completion of the final paper. In addition to editorial, additional information, and clarity suggestions, the following key points were made.

Alberta is well positioned to develop and implement a formal program, as there is general stakeholder support, enabling legislation, experience in other markets, good baseline data and regional and landscape level planning in many areas. Despite this, there is a general perception that there is no urgency on the part of the Alberta Government to implement a conservation offset program.

The underlying basis for a conservation offset system must be to reduce ecological loss in the province. The conservation offset system must not lose sight of this goal. Many stakeholders feel that losing sight of the original intent to reduce overall greenhouse gas emissions is a key issue with the current carbon offset system although it is recognized that many industry players have reduced greenhouse gas emissions per unit of production.

In a nested regulatory environment like Canada's, where international commitments, federal legislation, provincial, and municipal regulatory requirements all come into play, Alberta needs to create an aligned system where there is congruency and consistency with overlapping jurisdictions, strategies, policies, processes, etc.

An offset system must have clear and measureable outcomes and objectives specific to each environmental media and provide clarity on their limits and relevance within federal, provincial and municipal regulatory regimes. Conservation offsets are broad ranging, at different scales and stakeholders need assurance that their actions are going to be meaningful and recognized. Offsets are just one of many possible tools with which to achieve conservation outcomes and objectives. Tools are only useful if there is a clear picture of what is being built with them. Additional regulatory and policy enablers may be needed.

Congruency could be supported through an agreement with the Federal Government through the *Department of Environment Act* where the Minister has authority to enter into agreements with Alberta or its agencies to carry out programs for which the federal minister is responsible. This agreement should be based on Canada's global environmental commitments and approach to the Aichi targets.

One of the key factors affecting the offset ecological effectiveness and economic efficiency, is the spatial scale used in the conservation offset program. If the scale is too narrow, costs of offsetting will be too high, while if it is too wide, ecological outcomes may not be achieved. Regional approaches to address such scale issues are therefore critical. Flexibility of this type and location of offsets from a regional vs.

project by project approach could help achieve ecological and economic outcomes more effectively and efficiently and facilitate the movement towards an offset banking system. Stakeholders generally support using the existing regionally planning process to achieve this.

Some feel that focusing on “no net loss” in Alberta is not an achievable outcome. Some stakeholders are also concerned about the potential economic loss that offsets may create related to the forestry, agriculture and oil and gas industries and subsequently to the province. One suggested approach is the concept of “Best Alternate Outcome (BAO)” that focuses on achieving the least amount of ecological loss of function/value. The perception is that the Alberta wetland policy has moved in this direction by considering quality adjusted habitat through wetland function. To achieve the above there needs to be a lead agency responsible to develop and manage the program and related processes and protocols for conservation offsets and a banking system. This would require Government of Alberta leadership as the main regulatory authority and the need for a dedicated effort, focused attention and allocation of resources to get things up and running.

This agency must work with stakeholders to develop and implement the program to help ensure understanding, recognition and communication of the potential and actual benefits achieved. Many stakeholders also bring considerable knowledge on how to plan, develop, monitor, evaluate, communicate and improve the effectiveness of conservation offsets.

This agency should lead the creation of a roadmap and milestones based on examples of what is working successfully (processes, best management practices, prototypes, models, agency structure, the creation of offset banks, etc.) in other jurisdictions especially in the United States. We should take the best examples that already exist and build on them.

Although there are a number of existing inventories, registries, models and other initiatives that can help support a conservation offset program in Alberta, the agency would needs to coordinate and integrate this information and confirm which sources are key to support offsets and an offset program. It should also identify priorities for land conservation initiatives so that resources can be focused when and where they are most needed.

Moving to a market or multiple market (carbon, acid deposition, wetlands) including a formal banking system, trading exchanges, registries, stacking of credits, etc. is where we want to be. However, there is complexity in these systems that would benefit from learning by doing, and moving in that direction over time. The system needs to be easy for people to participate in and the true costs of operating it must be included as one the key elements of its design. Pilots and studies that

investigate the “true costs” and who will bear these cost will be beneficial for the various kinds of offsets.

Voluntary offsets should be framed in the context of learning by doing and evolution towards a mandatory system especially if this learning helps remove the barrier associated with uncertainty about costs, etc. Companies that have taken the risk of undertaking voluntary conservation offsets should receive credit in a regulated system.

A risk based approach should be taken within this program, recognizing the uncertainty in achieving the environmental objectives anticipated through offsets. This approach also needs to address the liability associated with the potential loss of an offset site from future development impacts and how to protect against such losses. One suggestion is the need to establish a legal mechanism (surface disposition) for public lands to identify and protect conservation offsets as the exiting conservation easement mechanism does on private lands.

Appendix J: Voluntary Offsets Confirmation Letter

ALBERTA
SUSTAINABLE RESOURCE DEVELOPMENT

Office of the Minister
MLA, Grande Prairie - Smoky

AR25042

June 16, 2010

Mr. Todd N. Zimmerling
Managing Director
Alberta Conservation Association
PO Box 40027
Baker Centre Postal Outlet
Edmonton, AB T5J 4M9

Dear Mr. Zimmerling:

Thank you for advising me of the concerns being raised by the oil and gas industry with respect to their continued funding of voluntary conservation offsets until regulations under the *Alberta Land Stewardship Act* are completed. I welcome the opportunity to provide the following information.

I understand that the oil and gas industry is concerned that voluntary conservation offsets may not be recognized under the new regulations. I would like to confirm that voluntary conservation offsets will be recognized under the new regulations if they meet the following criteria:

- Conservation offsets are recorded as a conservation easement on the land title of the acquired conservation lands;
- Meet a 1:1 development to conservation lands offset ratio (acre for acre);
- Both the conservation and developed lands are located within the same natural region and sub-region according to the Natural Regions Framework of Alberta; and
- Offsets can include wetlands if the offset is consistent with the Alberta Wetlands Policy when it is released by the Alberta government.

.../2

Alberta

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I trust that this clarification will address your concerns and those of the oil and gas industry.

I appreciate the ongoing efforts of the Alberta Conservation Association and the oil and gas industry in helping balance economic development with the need for conservation of our lands and natural resources.

Sincerely,

Mel R. Knight
Minister

cc: Sherry Sian, Canadian Association of Petroleum Producers