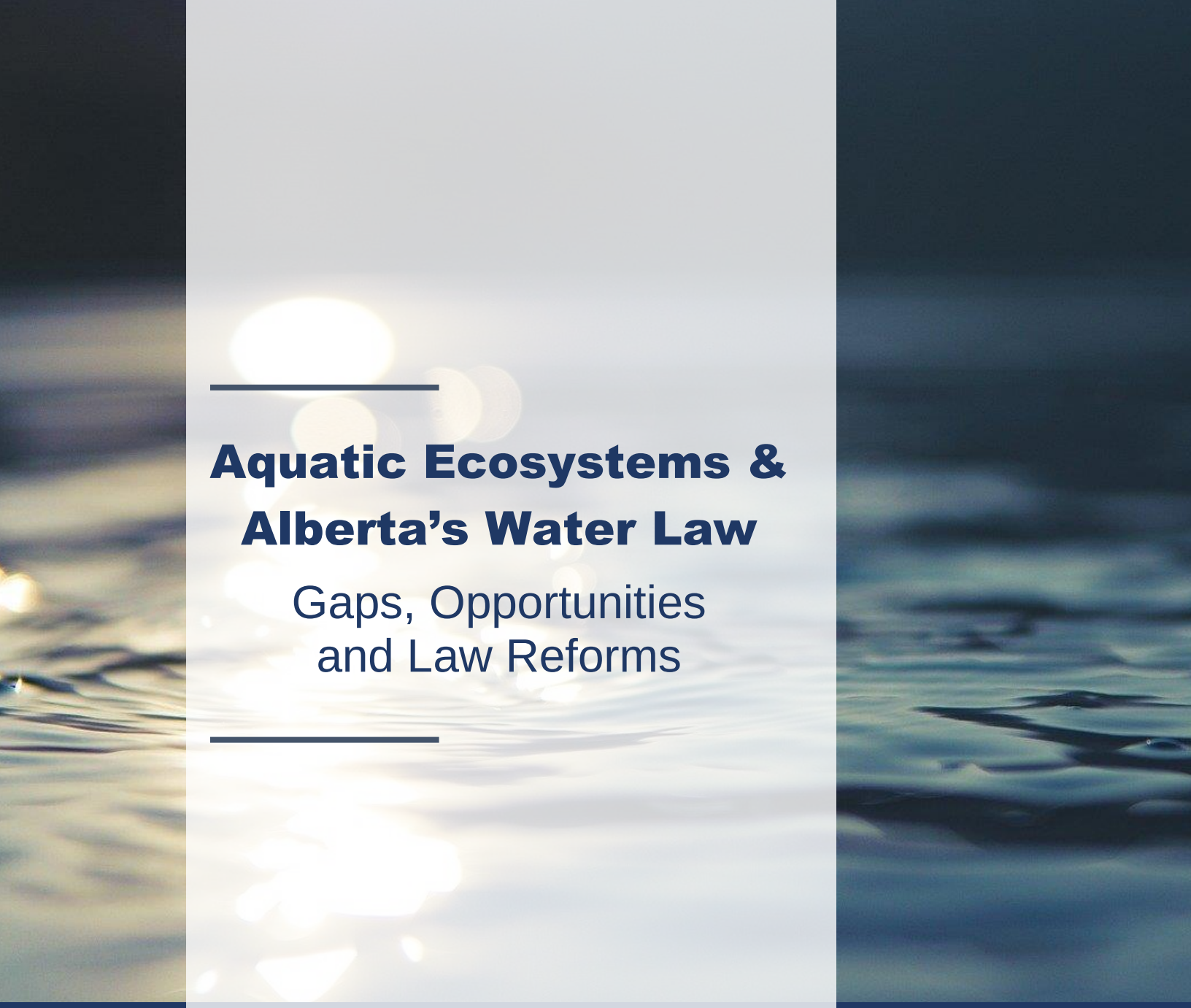

Aquatic Ecosystems & Alberta's Water Law

Gaps, Opportunities and Law Reforms

May 2022

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THE ENVIRONMENTAL LAW CENTRE (ALBERTA) SOCIETY

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I. Introduction

This report looks at the gaps and opportunities in Alberta's water law to ensure the province's aquatic ecosystems are protected. The report is framed within the ELC's proposed policy objective for aquatic systems.

> **Alberta's water resources are managed or restored to levels where resource use is sustainable, where aquatic species diversity and abundance is maintained, and aquatic ecosystems are resilient to climate variability.** [1]

It is within this policy objective framing that the report seeks to answer whether Alberta's water law is effective. The report focuses on four foundational pillars that are needed to ensure the regulatory system provides functional support and accountability for the ELC's proposed policy objective.

These key law and policy pillars are:

1. Legal protection of environmental flows;
2. Integration of land and water management;

[1] Jason Unger, *Future Flows: Climate resilience, environmental flows and Alberta's water law* (Edmonton: Environmental Law Centre, 2019), online: https://elc.ab.ca/?smd_process_download=1&download_id=53257.

3. Consideration and conservation of aquatic habitat; and

4. Adaptable water management that is responsive to water supply issues and evolving climate pressures.

Each pillar is reviewed with a focus on two areas: first, we review and highlight how existing legislation may be used to support these policy pillars, and second, we highlight law and policy reforms that may be necessary to reach the policy objective. Where applicable, the report identifies opportunities to harness the unrealized potential of the *Water Act,* identifies opportunities and gaps in Alberta's regional planning system and identifies central legislative barriers that require law reforms.

A. Focal legislation for aquatic environments in Alberta

The law and policy focus of this report is provincial legislation that has the most direct implications for water planning and management in the province. This includes the *Water Act* and the *Alberta Land Stewardship Act*. The report does not deal directly with federal legislation such as the federal *Fisheries Act.* Furthermore, this report focuses both on opportunities under existing legislation as well as on potential law reforms. Our focus is on what Alberta law should do to achieve the policy objectives stated above.

The *Water Act* is the province's central piece of legislation that deals with water diversion and use, and broadly regulates activities that impact on water. The *Water Act* regulates activities that either directly impact on water flow (both surface and ground) or have a risk of impacting the aquatic environment (e.g., erosion and sedimentation) whether occurring on land or in the water.

Several pieces of legislation augment and work alongside the *Water Act*. For instance, point source pollution is addressed by the *Environmental Protection and Enhancement Act* (*EPEA*) [2] which regulates various types of activities, with a focus on a risk basis, and is typically used to dictate standards and concentrations of authorized pollutants into a water body or groundwater. Other water relevant pieces include sector specific law and policy (such as the *Forests Act*, the *Agricultural Operations Practices Act*, the *Oil and Gas Conservation Act*, *Mines and Minerals Act* and their respective regulations and policies)[3]. In addition, water quality can be directly impacted by land use regulated by municipalities under the

[2] R.S.A. 2000, c. E-12.
[3] *Forests Act*, R.S.A. 2000, c. F-22, *Agricultural Operation Practices Act*, R.S.A. 2000, c. A-7, *Oil and Gas Conservation Act*, RSA 2000, c. O-6, *Mines and Minerals Act*, R.S.A. 2000, c. M-17.

Municipal Government Act).[4] Finally, operation of the provincial *Public Lands Act* will be relevant to both the beds and shores of Crown owned water bodies (see the ELC's publication: Water Law in Alberta: A Comprehensive Guide – Chapter 1 Land Ownership and Use) as well as to land use on public lands.[5]

The Alberta Government also passed regional planning legislation - the *Alberta Land Stewardship Act* (ALSA) – in 2009. ALSA enables the creation of binding regional and sub-regional plans which can have direct impacts on water management.

We focus this report on the *Water Act* as it often is relevant to the operations of all the relevant sectors insofar as it can drive, and indeed, determine whether an activity should proceed. This, however, requires that the department, and the government as a whole, earnestly consider and plan for how water will be managed in the future.

We also consider use of the *ALSA* as it provides some novel opportunities to evolve certain aspects of water management.

II. Legal protection of environmental flows

"Environmental Flows" are often used synonymously with ecological flows or instream flow needs and which have been described by the Instream Flow Council as the flow needed "to preserve the process and functions of the river ecosystem"[6] The Instream Flow Council further highlights that environmental flows are comprised of five components: "hydrology, geomorphology, biology, water quality and connectivity."[7]

In this section we set out different approaches, under existing water laws and with reforms, to reach a higher level of transparency and accountability around maintaining and restoring environmental flows in the province.

There are a variety of tools found in the *Water Act* that have not met their potential in maintaining and restoring environmental flows. This includes proactive use and licencing of instream flows to meet water conservation objectives (WCOs) and a robust and strategic engagement of water management planning under the Act.

[4] *Municipal Government Act*, RSA 2000, c. M-26.
[5] *Public Lands Act*, RSA 2000, c. P.
[6] Instream Flow Council "FAQ", online: https://www.instreamflowcouncil.org/faq/.
[7] *Ibid*.

Admittedly, in some parts of the province where allocations of water are high, such as the South Saskatchewan River Basin (SSRB), opportunities for effective use of the *Water Act* for the protection of the aquatic environment are more limited as the structure of the Act and historically issued licences ensures that environmental flows have such low priority as to be of minimal value (discussed further below). For these areas, law reforms are required to ensure accountability for aquatic ecosystems (outlined below). It is recognized that law reform may be more challenging in water short areas due to the political entrenchment of vested interests in the status quo of water diversions.[8]. In this regard, alternative approaches to law reform are highlighted.

An effective and accountable environmental flow regime can be realized by ensuring legally enforceable protection for specified ecosystem-based flows. A continued focus on discretionary action and licencing conditions in inadequately to ensure clear accountability around maintaining environmental flows.

As described in *Water Law in Alberta: A Comprehensive Guide – Chapter 2 Use and Flow of Water*, Alberta's *Water Act* adheres to a historic "prior allocation" approach in licencing water diversions, meaning that the earlier the licence is issued in time, the higher the priority the licencee has. It is within this legal prioritization system that attaining a significant level of priority for environmental flows is required to assure a level of accountability to maintain and protect these flows.

What does accountability look like within the current system? Accountability for flows operates to provide legally enforceable flows for instream needs.[9]

Under the *Water Act*, a level of accountability is feasible in much of the province through the issuance of a Crown reservation order or the use of water conservation objectives (WCO) and the issuance of Crown licences to protect the priority of WCO licenced flows. This is discussed further below in relation to recommended law reforms.

Importantly, for the more heavily allocated southern portion of the province, where accountability and legal priority for environmental flows is more elusive, there is an outstanding question about when and

[8] This is reflected in recent announcements of public funding in support of irrigation expansion, further entrenching reliance on specific water supplies and justified due to being within historic water allocation decisions. The government of Alberta has committed over $350 million dollars to increased storage and efficiency projects over the last couple of years. See David Opinko, "Province announces $118M to modernize irrigation in Southern Alberta farmland" Lethbridge News Now, Nov 12, 2021, online: https://lethbridgenewsnow.com/2021/11/12/province-announces-118m-to-modernize-irrigation-in-southern-alberta-farmland/ and Eloise Therien, "'Historic' $815M irrigation investment announced for southern Alberta agriculture", Global News October 9, 2020, online: https://globalnews.ca/news/7390080/815m-irrigation-southern-alberta-agriculture/.

[9] These flows should be managed and reflected at an appropriate time step to ensure that the structure and function of the aquatic system is maintained. See Locke, A. and Paul, A. *A Desk-Top Method for Establishing Environmental Flows In Alberta Rivers and Streams, Government of Alberta* (Edmonton: Government of Alberta, 2011).

how the Director could curtail diversions on historic licences as the conditions on these licences provided a very general discretion to limit diversions at the government's discretion. For example, see Future Flows: climate resilience, environmental flows and Alberta's water law where licence conditions are highlighted (pages 19-21).

A. Legal protection of flows under the *Water Act*

i. Crown reservation orders

The *Water Act* allows the Minister to issue an order to reserve unallocated water for any purpose and prescribe a priority number for the reserved water - a Crown reservation order.[10] Crown reservation orders have been issued in the past; however, there has never been a reservation order limiting the purpose of the reserve water to instream flows solely for aquatic ecosystems (outlined further below). An order can constrain how the Director manages the water and therefore having a more narrowly prescriptive order would provide additional clarity and accountability for environmental flows.[11]

Crown reservation orders are an unrealized tool for specifying use for instream flows. The Minister has discretion to identify scientific flows, reserve them and allocate them with the priority of the date the order was issued. In terms of priorities among licences, the use of Crown reservations is a mechanism of reserving a priority for that water that is subject to the order. In this way the water subject to the reservation will have a priority over licences issued after the order is made.

To date, the main Crown reservation order that remains in place in Alberta is the *Bow, Oldman and South Saskatchewan River Basin Water Allocation Order* which reserves water for specific purposes, allowing the Director to issue licences for use by First Nations, for water conservation objectives and for storage if it is for the protection of the aquatic environment, and for improving availability of water to existing licence holders and registrants.[12]

A more focused and limited order could be issued in different basins and sub-basins in the province for the purpose of maintain instream flows. Alternatively, the order could reserve water for allocation to limit the uses to those that are least consumptive or least impairing (in terms of return water quality).

It is important to note that the accountability of such a system still relies on government discretion in relation to the exercise of priority. The administration of priority among users is at the discretion of the

[10] *Water Act* at s.35.
[11] *Ibid*.
[12] AR 171/2007.

Director and similarly enforcement of priority among users via water management orders is discretionary.[13] This means that even where a specific amount of water is allocated pursuant to the Crown Reservation Order there is reliance on the Crown to "call" their priority over those with later priority. This applies similarly to licences that are issues for the protection of water conservation objectives as discussed below.

ii. Water conservation objectives

Water conservation objectives (WCOs) are a tool under the *Water Act* that can be used for the conservation of the quality and flow of water. The purposes of the water conservation objective can include:[14]

> (i) protection of a natural water body or its aquatic environment, or any part of them,
>
> (ii) protection of tourism, recreational, transportation or waste assimilation uses of water, or
>
> (iii) management of fish or wildlife.

The WCO can include "water necessary for the rate of flow of water or water level requirements".[15] It is important to note that a WCO can, but need not, be based in science, as a variety of potential purposes are outlined in the Act.

WCO's can gain priority over other licenced uses where the government issues a licence for that purpose.[16] It is interesting to note that the *Water Act* provided a specific window for Crown licenced priority by providing that the priority of a WCO licenced within 5 years of the *Water Act* coming into force would be the date the Act came into force. That is to say, a Crown licence issued for a WCO in 2004 would have had a priority of Jan 1, 1999 (when the Act came into force).

The apparent purpose of the legislative approach provision was to ensure that WCOs could be given the highest priority feasible, as a new water protection tool under the Act. Notwithstanding this legislative intention the author is not aware of any WCOs being licenced within the time frame, nor have licences been issued from Crown reserves for the purpose of protecting instream flows. This was a harbinger of things to come in terms of setting and licencing of WCOs (with the exception of licencing some water holdbacks as part of the water licence transfer system, discussed further below).

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[13] See *Water Act* at ss. 27-32.
[14] *Water Act* at s.1 (hhh).
[15] *Ibid*.
[16] *Water Act* at s.51(2).

The identification and licencing of WCOs are a major area of unrealized potential under the *Water Act*. Since the passing of the *Water Act* there have been numerous recommendations to establish WCOs across the province. The multi-stakeholder Alberta Water Council (AWC) recommended getting WCOs in place as did the government's own 2009 Action Plan. The AWC recommended accelerating action on the setting of WCOs in the reviews it conducted in 2012.[17] The AWC also recommended (in its report on water allocation) that the Government set interim WCOs for all basins by 2010 to be considered "protected water" and that the WCOs be formalized and reviewed on a ten year cycle.[18] Further the AWC recommended that the Government of Alberta itself participate in the water transfer market "where necessary and acquire licences, preferably senior, to achieve the WCO in each major basin".[19]

The government's 2009 Water for Life Action Plan called for WCOs to be completed for all basins by 2015.[20] Notwithstanding this apparent government intent, the use of WCOs as proactive planning tool has failed to materialize. [21]

a) WCOs, licence renewals and water allocation transfers

Beyond the priority gained for a WCO when it is licenced to the Crown, there are other ways that WCOs are relevant. Specifically, renewal of a licence under s.60(3)(c) of the Act may be refused where a WCO is not being met. This is particularly relevant for those areas of Alberta where a significant number of licences were issued following the coming into force of the *Water Act*.

Specific to the South Saskatchewan River Basin, WCOs have also been used (and licences issued) where water conservation holdbacks are mandated by government where there is a water allocation transferred between two parties. Unfortunately, for a heavily allocated basin this is of minimal utility unless there are significant numbers of transfers of high volumes, resulting in significant holdbacks. A

[17] Alberta Water Council, Review of Implementation Progress of Water for Life, 2009-2011 (Edmonton, Alberta Water Council, 2012), online: https://www.awchome.ca/uploads/source/Publications/Water_for_Life/WFLIR_Review_Report_09-11.pdf at recommendation #2.
[18] Alberta Water Council, *Recommendations for Improving Alberta's Water Allocation Transfer* System, (Edmonton: Alberta Water Council, 2009), online: https://www.awchome.ca/uploads/source/Publications/Project_Team_Reports/WATSUP_web_FINAL.pdf at recommendation 1.
[19] *Ibid*. at recommendation 4.
[20] Government of Alberta, *Water for Life: Action Plan* (Edmonton: Government of Alberta, 2009), online: https://open.alberta.ca/dataset/2a91e8c6-ea9a-44c4-a76d-cd35a9a296f7/resource/49531a5a-e16c-4250-a9a4-0028fa500854/download/2009-waterforlife-actionplan-nov2009.pdf.
[21] A WCO can be established by the Director with the requirement that public consultation occurs. The nature of this public consultation is discretionary (within reason) under the Act (s.15(2)).

2018 review of the water management plan undertaken by the Bow River Basin Council in this region found that the holdbacks did not contribute significantly to protecting the aquatic system.[22]

b) WCOs and transparency in meeting flows

A key challenge with the use of WCOs relates to transparency in how WCOs are monitored, reported, and licenced. This includes the lack of tracking and reporting around how often a WCO is met and a lack of centralization and public reporting on the licencing of WCOs for this purpose. For example, there is a WCO set in the Approved Water Management Plan for the South Saskatchewan River Basin (Alberta), however, how often the WCO is being met or not has not been publicly reported. This, in turn, makes it very difficult to evaluate whether government discretion is being exercised appropriately to protect instream flows. It also makes it difficult to assess whether specific areas of the province should have WCOs revisited (for instance in upstream reaches).

The government has been slow to identify WCOs and has largely ceased pursuing water management plans since 2006 (with the one exception of the Battle River basin plan). Instead, the government has relied on other policies, such as the Surface Water Allocation Directive. While this Directive is instructive and useful in shaping how discretion is exercised it still doesn't bring the same accountability and transparency of a legally protected flow.

Recommendations:

1. *Prioritize reaches and basins for Crown reservations orders and WCOs.*
2. *Ensure WCOs are set at ecologically appropriate levels (i.e., place based at appropriate reach level).*
3. *Ensure that the meeting of WCOs are tracked and publicly reported.*
4. *Initiate a strategy and action plan for providing priority protected water in basins where instream flows are at risk (i.e., a triage approach for prioritizing reaches).*

iii. Water management plans

With the passage of the *Water Act,* a system by which Albertans could plan for the future allocations and decisions around water was codified. Yet, it can be said that this planning function has been

[22] Basin Advisory Committees for the Bow River, Oldman River, Red Deer River and South Saskatchewan (sub-basin) River, *Review of the Implementation of the Approved Water Management Plan for the South Saskatchewan River Basin,* (October 2018) at p. 12, online: https://www.brbc.ab.ca/brbc-documents/publications/285-final-report-review-of-the-implementation-of-the-approved-wmp-for-the-ssrb.

significantly underutilized (see a summary of plans under Table 1). Indeed, it can be said that the two plans approved under the Act are plans of necessity rather than proactive plans to set a future course of water management. It seems to be the case in Alberta that water planning is viewed as only necessary when we have hit a wall (i.e., over-allocation of the resource or water quality issues), not in trying to avoid hitting it in the first place.

Table 1: Water Management Plans in Alberta

Basin	Approved under the *Water Act*	Date
South Saskatchewan River[23]	Yes	2006
Battle River[24]	Yes	2014
Cold Lake-Beaver River[25]	No (preceded *Water Act*)**	1985 (updated in 2006)
Wapiti River[26]	No (non-approved plan)**	2020
Lesser Slave[27]	No**	2009

** Plans are not Lieutenant Governor in Council approved and fail to include section 11 mandatory content.

These plans can be an effective way to ensure accountability for instream flows as they reflect a key mechanism by which WCOs can be set and be licenced. Further, the plans can be used in a more prescriptive fashion in regard to how and when licences are issued by the Director under the Act by providing mandatory considerations (or "matters and factors"). As a matter of administrative law these matters and factors, while merely a consideration during authorizations, do ensures, if sufficiently detailed and prescriptive, a level of accountability and transparency in decision making while allowing for flexibility in how licences may be issued.

[23] Alberta Environment, *Approved Water Management Plan for the South Saskatchewan River Basin (Alberta)*, (August 2006), online: https://open.alberta.ca/dataset/7541cb1e-b511-4a98-8b76-af33d7418fa1/resource/483eb9b0-29fd-41d4-9f81-264d53682b9a/download/2006-ssrb-approvedwatermanagementplan-2006.pdf.
[24] Government of Alberta *Approved Water Management Plan for the Battle River Basin (Albert),* (July 2014), online: https://open.alberta.ca/dataset/2a67ce8f-7e5f-4e2d-8d8a-f58b825c3be4/resource/2d71fd51-63d4-4843-b73b-a2910fdb383d/download/2014-watermanagementplanbattleriverbasin.pdf.
[25] Alberta Environment, Cold Lake-Beaver River Basin Water Management Plan (2006), online: https://open.alberta.ca/dataset/b0a85512-e6e5-4ecf-ad23-0363a4ddcd1e/resource/4b59f65e-da7b-4161-9943-b291960023c3/download/2006-coldlake-beaverriver-basinmgmtplan-2006.pdf.
[26] Alberta Environment and Parks, Water River Water Management Plan (June 2020), online: https://open.alberta.ca/dataset/20b0b1ce-c960-43da-8e18-7ba1c860533a/resource/4760a424-ab0e-43fb-9119-f580899f848b/download/aep-wapiti-river-water-management-plan-2020.pdf.
[27] Lesser Slave Watershed Council, *Water Management Plan-Phase 1: Lesser Slave Lake and Lesser Slave River Basins* (July 2009), online: https://d3n8a8pro7vhmx.cloudfront.net/lswc/pages/24/attachments/original/1485743163/Phase-1-Water-Management-Plan-July-2009.pdf?1485743163.

For the SSRB, the matters and factors that must be considered for impacts on aquatic environments, instream objectives or water conservation objectives, are limited to language that is largely adopted from the language of the Act. Namely, authorizations should only be issued if there are "no significant adverse effects". Neither the Water Management Plan (WMP) or the *Water Act* itself attempt to define what is a "significant adverse effect" which means that the discretion of the Director is not substantively changed or directed by the Plan. That is to say, the matters and factors outlined the SSRB WMP do little to further direct decision making to a planned future state. Rather, it focuses on avoiding an undefined and vague significant effect with little measurement or understanding of how that line of significance might be drawn.

Recommendations:

1. *Engage in water management planning in basins with the intention of having approved WMPs in every basin.*

2. *Ensure "matters and factors" for decision making pursuant to water management plans are sufficiently prescriptive to ensure accountability for aquatic ecosystem planning outcomes.*

For a summary of creating accountability for environmental flows in the context of the *Water Act,* see Table 2 below.

Table 2: Summary of Policy Directions and Action to increase Accountability for Environmental Flows

Licence type / Environ'l Flow features	Deemed licences (issued prior to *Water Act*)	Licences issued under *Water Act*	Licences to be issued in the future
Source of environmental flow accountability	• Conditions on licences	• Conditions on licences and relative priority to Crown held instream licences • Water conservation objectives • Water management planning	• Conditions on licences • Crown reservation orders • Water conservation objectives • Crown WCO licences • Water management planning
Policy needs & needs for administrative action	• Policy direction on IFN/WCO consideration for the exercise of administrative discretion under historic licence conditions	• Setting of WCOs • Transparency and reporting in WCOs • Water Management Planning and reinvigoration of substantive "matters and factors" to direct decisions under the Act	• Crown reservation orders specific to environmental flows • Issuance of Crown WCO licences • Transparency and reporting in WCOs • Water Management Planning and reinvigoration of substantive "matters and factors" to direct decisions under the Act
Accountability level & issues	• Low • Litigation risks • Practical and political inertia against exercising discretion	• Medium • Clarity of discretion exists for properly conditioned licences • Practical and political inertia against exercising discretion	• Medium-high • Crown reservation orders carry a higher measure of transparency and accountability • Substantive approach to water management planning matters and factors can embrace forward thinking/planning

B. Law Reforms: Legal protections of instream flows

The historic approach of Alberta's water law was to allocate the water for private uses in a fashion that secured private property rights and economic development. Indeed, the purpose of moving away from the common law riparian rights doctrine of water diversion and use towards a government-controlled allocation system was based in providing water to irrigate lands that were not riparian lands (as reflected in the federal *North West Irrigation Act* of 1894).[28]

Licenced diversions of water that occurred prior the passage of the *Water Act* have been granted a significant level of power and leverage by way of the legislation.[29] There is no indication that licences issued under the *Water Resources Act,* the predecessor to the *Water Act*, were intended to be permanent, nevertheless, the legislature determined, at the time of the passage of the *Water Act,* to grant paramountcy to the conditions of past licences over the conditions and discretion in the Act and to make them permanent. While there remain discretionary provisions in these past licences that allow government to curtail or augment diversions, we would argue, as a practical matter, this discretion is unlikely to be used.

The paramountcy granted to historically issued licences creates a difficult water management paradigm from an aquatic ecosystem perspective as these licences were granted in a time where flows for maintaining aquatic systems were likely not a major consideration. As time has passed the services and values of aquatic systems has evolved: we have gained knowledge of aquatic systems, we have broadened our perceptions of the environment as a public good with both human and intrinsic value, and we have come to recognize that there will be significant uncertainty in the variability of water supply due to the impacts of climate change. This includes increased temperature resulting in less snowfall and more rain events, and decreased contributions from glaciers, all resulting in increased risks to aquatic systems.[30] This evolution of science and societal environmental ethos runs headlong into a

[28] See David Percy, "Water Rights in Alberta" (1977) *Alberta Law Review* vol.15:142, online: https://era.library.ualberta.ca/items/027adb18-6495-4e14-b4b8-8bd11ba5ef11/view/0d3d2d99-0c35-44df-b995-a916bc8da110/ALR_15_1_142.pdf.
[29] *Water Act*, at s.18.
[30] See Vionnet, V., Marsh, C. B., Menounos, B., Gascoin, S., Wayand, N. E., Shea, J., Mukherjee, K., and Pomeroy, J. W.: Multi-scale snowdrift-permitting modelling of mountain snowpack, The Cryosphere, 15, 743–769, https://doi.org/10.5194/tc-15-743-2021, 2021 and Tesemma Z., Shook K., Princz D., Razavi S., Wheater H., Davison B., Li Y., Pietroniro A. and Pomeroy J.W. 2020, *Diagnosis of Historical and Future Flow Regimes of the Bow River at Calgary Using a Dynamically Downscaled Climate Model and a Physically Based Land Surface Hydrological Model* Centre for Hydrology Report #18 (Saskatoon, University of Saskatchewan 2020), online: https://research-groups.usask.ca/hydrology/documents/reports/chrpt18_historicalfutureflowregimesbowriver_finalreport_2020.pdf.

wall of vested rights and government deference to deemed licence holders, many of the largest of whom, irrigation districts, have been supported by large sums of public investment.[31]

Historically, Alberta's water law and policy largely ignored issues around flows to sustain aquatic ecosystems and the complexity of variable supply and climate variability (as can be evidenced through reading of historic legislation and past issued licences). If you obtained a licence prior to the passage of the *Water Act* there was, arguably, a baked-in expectation that the water allocation reflected a vesting of a right (akin to a property right) with minimal opportunity to restrict diversions to serve environmental outcomes.

To overcome the lack of legal protection for instream flows in heavily allocated basins is likely to require an augmentation of the "prior allocation" or "first in time, first in right" system. If the passage of the *Water Act* illustrates one thing, however, it is that changing this historic system is politically challenging (as exemplified by the "deemed licence" provisions of the *Water Act*). Moving toward a supply based budgeting of water diversions make more sense where the objective is to ensure environmental flows are met. This requires moving forward with a new paradigm of water allocation, where community use is able to adapt to variable supply, leaving the environment flows in place.

In the absence of law reforms, it is still important to understand the discretion available to government under deemed licences to manage for environmental flows. When licences were issued under predecessor water legislation in Alberta, there were typically conditions that retained discretion within government to augment or amend diversions as the government saw fit. The deeming of these past licences as permanent and the granting of these licences a legal priority in the case of a conflict with the *Water Act* may have resulted in a system whereby exercising discretion under the conditions of these deemed licences has become viewed as "risky". In this regard, the deemed licences may have garnered a perception of greater power over government than is justified by the breadth of discretion that exists in their conditions. The difficulty is that the conditions are variable and have rarely been utilized (as far as the author is aware). This has left us with a lack of clarity around what might be feasible in terms of instream flow protection. In this regard, there would be value in producing guiding policy to contextualize the government's position on this discretion around conditions on deemed licences. This guiding policy could enable a new era of decision making around deemed licences, although it is clearly accompanied by risks of litigation and political risk.

[31] Most recently grants of over $350 million and interest free loans ~$500 million have been extended to the irrigation sector. See note 7.

Recommendation:

1. *Review, evaluate and publish policy on exercising discretion for environmental flows for "deemed licences" under section 18 of the Water Act.*

III. Integration of land and water

Integration of land and water management to foster water based objectives creates challenges for land use managers. Land management and activities on the land base are intricately linked to water quality and the aquatic environment. Land use may have direct impacts related to point and non-point source pollution of surfaces water, altered hydrogeology, sediment transfer and augmentation of surface water temperature. The challenge is that legislation often struggles to treat land management and land use as a water issue.

Barriers to effective land-water management include unintegrated legislation mandates, siloed legislative authority and department operations, insufficient resources allocation at all government levels (particularly municipal) to understand water implications of land use decisions, and overlapping and unclear authority to ensure appropriate decision making occurs and is enforced.

This section highlights how the land-water challenges can be addressed under the *Water Act* and under the *Alberta Land Stewardship Act* as well as how some law reforms may assist in integrating land and water management. We remain focused on these two statutes as they have broad implications across both provincial and municipal jurisdiction and cover both private and Crown owned lands.

A. Integration of land and water under the *Water Act*

The unrealized potential of the *Water Act* in relation to integration of water and land management lies in the broad scope of land based activities regulated through approvals under the Act, as well as, the ability to integrate water quality objectives into water conservation objectives (WCO) and water management plans.

i. Water quality and approvals

Land alteration can and often does lead to impacts on water. Many land based activities (but not all) will require a *Water Act* approval. The discretion inherent in the Director's decision to issue an approval allows consideration of "existing, potential or cumulative effects on the aquatic environment" among other matters. In addition, "matters and factors" in a water management plan must be considered where the Director is considering an application for an approval. There is a need to alter the paradigm of water approvals to reflect the health of any receiving water body where the approval may give rise to impairments of water bodies, particularly if the land use activity is likely to contribute ongoing pollutants or sediment to a water body. This could be reflected in specific decision making criteria and mitigation efforts being in place for riparian areas and beyond.

ii. Water quality and quantity connection: WCOs and licencing of diversions

Often the availability of water will dictate land use. In this regard, water licencing can be seen as a tool to manage water quality in specific instances. This can occur by ensuring that water quality objectives are clearly articulated in WCOs and in the conditions on licences.

The definition of WCO includes the *quality* of water "necessary for the protection of…the aquatic environment…or management of fish and wildlife".[32] While WCOs typically have focused on the amount of water, there is relevant jurisdiction to establish water quality objectives as part of the WCO. These WCOs are then embedded in conditions on authorizations in the Act to ensure water quality is not undermined. This could be a central enforcement approach in the operation of surface water quality frameworks that have been promulgated under the *Alberta Land Stewardship Act* (discussed further below).

Further, in embedding water quality in a WCO the Director gains the ability to become more adaptive to decreased water quality. Specifically, the Director may refuse to renew an authorization where a WCO is not being met. Admittedly, a refusal to renew a licence under this section is sufficiently open ended that the Director must use it cautiously and be supported by a reasonable review of the evidence of how a WCO is not being met. That is to say, the refusal to renew, if apparently arbitrary or without a factual justification, would likely attract challenge. This in turn necessitates clear water quality policy to guide data collection and to guide decision making in this regard.

[32] *Water Act*, s. 2(hhh).

iii. Water management plans

In making authorization decisions under the Act, a Director must consider matters and factors set out in an approved water management plan. The potential of water management plans to foster better integration of land and water has not been realized in Alberta to date. Not only are there limited approved plans in place (see Table 1 above) but those that are in place fail to appropriately deal with issues of the activities on land impacting water quality.

Under the *Water Act,* water management plans "may adopt an integrated approach to planning with respect to water, land and other resources".[33] The matters and factors that may be placed in water management plans can therefore connect land use and water decisions under the Act. Again, the scope of the *Water Act* approvals and licencing is such that this becomes a meaningful tool for water quality management. The difficulty again is to have guiding policy to assist the Director in understanding the objectives of the water management plan when it comes to water quality and how that is reflected in authorization decisions.

For instance, if the provincial government put forth policy around land activities with a focus on how they impact loading of water bodies with pollutants/substances of concern this could be integrated into approval decisions. This in turn could be used to direct decisions under the *Water Act* that have impacts on both water quantity and water quality (which are inherently linked). This includes such things as impairment of riparian areas.

Neither of the plans approved under the *Water Act* (i.e., the SSRB and the Battle River plan) embrace water quality matters and factors into their approved plans. The SSRB does have matters and factors related to water allocation transfer decisions and their impacts on the assimilative capacity but beyond that water quality is largely left to be inherently addressed in the WCO that is set in that basin.

For the Battle River basin, where water quality is a significant concern, there is more discussion of water quality in the plan; however, the matters and factors that must be considered in authorization decisions remain vaguely focused on avoiding "significant adverse effects" and maintaining assimilative capacity. Interestingly the plan does include a factor around effects on the riparian environment; however, this too is accompanied by a vague guideline of "no significant adverse effects" without further definition.

An example of a riparian guideline in a water management plan related to water quality could be "authorizations within riparian areas should include mitigation and restoration conditions".

[33] *Water Act* at s.9(2).

Overall, these aspects of the Act have been underutilized. The government, however, has taken further steps around water quality in the *Alberta Land Stewardship Act* (ALSA), as discussed below.

Recommendations:

1. *Pursue water management planning with a focus on detailed land use matters and factors to be considered in making decisions regarding Water Act approvals.*

2. *Linkage of matters and factors in water management plans should be integrated with assessments of pollutant loading from land use change and development and implementation of loading budgets for surface waters at relevant scales (under the Alberta Land Stewardship Act).*

B. Integrating land and water under the Alberta *Land Stewardship Act*

The *Alberta Land Stewardship Act* is focused on the creation of regional plans, which in turn can have bearing on how decisions are made within a region. These regional plans could play a significant role in how we manage water bodies within the province as regulatory details in these plans can create binding requirements on all parties and supersede government regulations and authorizations (although the regional plans do not supersede other Acts, such as the *Water Act*).[34]

The Government of Alberta has undertaken water relevant regulatory details in the two plans that have been approved by Cabinet to date (i.e., SSRP and the Lower Athabasca Regional Plan (LARP)). These regulatory details relate to surface water quality management frameworks which are aimed at managing water quality within the region.

A regional plan may "set or provide for one or more thresholds for the purpose of achieving or maintain an objective for the planning region" and to undertake relevant monitoring and action and direction in relation to those objectives. [35] Sub-regional and issue specific plans are also enabled. Compliance with regional plans is also a powerful tool of integrating objectives and thresholds into decision making with provincial departments, tribunals and municipal authorities. Roles for reaching policy objectives in the plans can be delegated under the Act.[36]

[34] *Alberta Land Stewardship Act*, RSA 2000, c. A-26.8 at ss.13-17.
[35] *Ibid*. at s. 8.
[36] *Ibid*. at s. 8(2)(m).

This report looks at two specific approaches under the *Alberta Land Stewardship Act*. First, the ability to use regional planning processes to implement a load management system, thereby integrating land use and water management and second, the use of surface water quality frameworks.

i. Integrating land and water management: Regional plans and opportunities for budgeting of pollutant loads from land use changes

Regional plans under the ALSA offer a central opportunity to centralize or magnify water management when undertaking land use planning. This integration of land and water is made feasible through establishing a system of setting thresholds and objectives around land use and its impacts on water. These thresholds and objectives can then be used to direct decision making around land use within basins and to manage loading of water bodies.

Specifically, section 8(2) of *ALSA* states that a regional plan may:

> (b) set or provide for one or more thresholds for the purpose of achieving or maintaining an objective for the planning region;
>
> …
>
> (d) describe or specify the monitoring required of thresholds, indicators and policies, who will do the monitoring and when, and to whom the monitoring will be reported
>
> (e) describe or specify the times and means by which, and by whom, an assessment or analysis will be conducted to determine if the objectives or policies for the planning region have been, are being or will be achieved or maintained;
>
> (f) describe or specify the actions or measures or the nature of the actions or measures to be taken to achieve or maintain the objectives and policies in the regional plan, and by whom they are to be taken or co-ordinated, if
>
> > (i) an adverse trend or an adverse effect occurs;
> >
> > (ii) an objective or policy is or might be in jeopardy or a threshold is or might be exceeded or jeopardized;

(iii) an objective or policy has not been achieved or maintained, is not being achieved or maintained, or might not be achieved or maintained;

(g) describe and convey to a person named in the regional plan authority to achieve or maintain an objective or policy, which may include delegating authority under any enactment or regulatory instrument to the person named;

These provisions may be used to move towards a system where decisions on land use and impacts on riparian areas are based on loading budgets for substances or matters of concern (e.g., nutrients, coliforms, and pesticides).

Further, these provisions may allow for a nesting of water quality load budgeting at a municipal level, thereby maintaining a significant level of local autonomy to plan and respond to water quality challenges. However, such an approach would need to be sufficiently resourced to be successful. Constraints on municipal revenue generation are such that there is an important role for a provincial funding structure (and potentially coordinated with a federal water agency, where applicable).

ii. Surface water quality frameworks and regional planning

As part of its regional planning process under the *Alberta Land Stewardship Act* the Government of Alberta has undertaken a new approach to attempt to manage for cumulative environmental effects of our development.

This takes the form of "environmental management frameworks" under the approved regional plans and is reflected in the regulatory details of those plans. Surface water quality management frameworks (SWQMF) are a subset of policy tools referred to as "environmental management frameworks" (EMF) focused on monitoring and managing pollution in surface water. The EMF operates by establishing quantitative triggers and limits and links them to management responses in an effort to keep pollution levels below prescribed levels. The EMFs attempt to deal with regional environmental quality and cumulative effects.[37]

The frameworks may at some point lead to management actions that integrate land and water; however, the overall structure and process of the frameworks does not proactively seek to manage load

[37] See Alberta Environment and Sustainable Resource Development, "Environmental Management Frameworks", online: ESRD https://landuse.alberta.ca/CumulativeEffects/EnvronmentalMgmtFrameworks/Pages/default.aspx . See for example the *South Saskatchewan Region: Surface Water Quality Management Framework for the Main stem Bow, Milk, Oldman and South Saskatchewan Rivers (Alberta)*(SWQMF), Alberta Environment and Sustainable Resource Development, online: http://esrd.alberta.ca/focus/cumulative-effects/cumulative-effects-management/management-frameworks/documents/SSRP-SurfaceWaterQuality-Jul21-2014.pdf.

of pollutants of rivers because as a starting point it relies on the dilutive capacity of mainstem rivers. The process provided by these frameworks aim at responding to exceedance of set triggers and limits in monitoring data through a process of investigation and further management action (both voluntary and regulatory) as opposed to restricting initial inputs.

A significant concern with this approach is that it is likely to allow for current and future impairment of surface waters (particularly tributaries) and fails to mitigate water quality impacts proactively at the source. In this way, it reflects a status quo approach to relying on dilutive capacity of water bodies only requiring a management response once thresholds or objectives are exceeded. Even where triggers and thresholds are exceeded it is unclear what response will be mustered, who will be engaged and how effective the management response will be.

In this regard, the distinction between the surface water quality management frameworks and a land use planning system focused on assessing and management of pollutant loading of water bodies can be seen: the frameworks rely on dilution and do not adopt a proactive approach to direct land use based on loading (i.e., determining an appropriate maximum load of pollutants), and thereby are likely to fail in proactively avoiding cumulative effects. By connecting land use with surface water pollutant loading we move toward a system of proactive planning and management of sources of water quality impacts.

Ideally these frameworks would be applied in a triage approach, with frameworks targeting known impaired tributaries, and thereby more proactively dealing with land use impairment of water bodies. In this regard the ELC recommends rescaling the frameworks so that management actions are initiated in impaired tributaries.

For a full description of the SWQMF system, see the ELC's A Primer on Surface Water Quality Framework.

Recommendations:

1. *Rescale Surface Water Quality Management Frameworks using a triage approach for known impairments and create a system of monitoring and evaluation for the application of frameworks at relevant tributary and/or sub-basin scales.*

2. *Using regional planning to direct relevant departments and municipalities to integrate surface water quality assessments, land use change and maximum daily load budgets to guide future development and to guide restoration of ecosystems services.*

C. Law Reforms: Integrating land and water

Planning around water and land for the purposes of meeting water based objectives remains in various silos; among levels of government and various governmental departments. Existing laws have mechanisms, if embraced, that could be used for properly integrating land and water planning, yet these laws have not met their potential. Addressing the lack of integration could be addressed through legislative revisions to alter how land and water are governed.

One approach is to delegate authority around specific tasks: such as monitoring, decision making, mandatory plans and considerations for other government departments and tribunals. Delegating authority for goal oriented water based planning can be a key approach to be taken to addressing this integration problem. This delegated authority should be granted independence, sufficient resources for technical and scientific capacity, and with specific codification of how the authority would guide provincial and municipal land and water decisions.

Alternatively, municipalities, if supplied the proper budgetary resources and with robust water quality policy direction, could take an increased role ensuring water quality is maintained. As land use planners, municipalities already undertake this role in varying degrees. Formalizing this role, budgetary allocations and policy direction in this regard could facilitate greater integration of land and water management.

Recommendation:

1. *Enable and delegate authority to an independent authority to direct planning around water outcomes. This direction would then drive decision making at provincial and municipal levels.*

IV. Consideration and conservation of aquatic habitats

Protection and regulation of aquatic habitats attracts both provincial and federal jurisdiction, due to the overlapping jurisdiction granted by the Canadian Constitution. The federal government has jurisdiction over coastal and inland fisheries whereas the provincial government has jurisdiction over water more generally, the beds and shores of water bodies, land regulation and general jurisdiction over non-fisheries biodiversity and habitat.[38] In this report, we focus on provincial opportunities to become more proactive in protecting and regulating of aquatic habitat that serve provincial based habitat objectives (which should minimize conflict with fisheries objectives of the federal government).

A. Habitat under the *Water Act*

The *Water Act* has a variety of relevant provisions related to conservation of aquatic habitat. This includes the use of authorization powers where impacts on aquatic habitat are likely as well as the development of a strategy for the protection of aquatic habitat. Particularly, there is unrealized potential of a "Strategy for the Protection of Aquatic Environment" (that is, sections 7 and 8 of the Act).

i. A Strategy for Protection of the Aquatic Environment

The *Act* required that a framework for water management planning – including a strategy for the protection of the aquatic environment- "to be established by the end of 2001".[39]

Section 8 of the Act states that the strategy may include:

> (a) identification of criteria to determine the order in which water bodies or classes of water bodies are to be dealt with,
>
> (b) guidelines for establishing water conservation objectives,
>
> (c) matters relating to the protection of biological diversity, and
>
> (d) guidelines and mechanisms for implementing the strategy.

[38] *Constitution Act,* 1867 30& 31 Vict. C3, at ss.91&92.
[39] *Water Act*, ss 7 & 8.

The published strategy is comprised of 12 pages within the *Framework for Water Management Planning* (the *Strategy*).[40] Notably, the *Strategy* is devoid of most relevant matters that make an effective strategy.[41] At a minimum, an effective strategy needs to identify key goals and objectives (or targets), barriers and threats, and to set out tactics and actions for achieving those objectives. In addition, clearly identifying of roles and responsibilities and setting of performance measurement is required. A clear strategy also has relevance for budgetary support because if a strategy provides no meaningful direction to decision makers, it has limited value.

The *Strategy* lists certain elements that are important to aquatic ecosystems and highlights knowledge and data needs that must be met; however, it is little more than an enumeration of legislative and policy tools that ***may*** be used to reach the stated objective that "protection will occur through maintaining, restoring and enhancing current conditions". [42] The implementation section of the *Strategy* (at pp. 34-37) is little more than an enumeration of policies and procedures.

Notably the *Strategy* fails to reflect many aspects of the *Act* in any meaningful way. It fails to set criteria for identifying water bodies to be dealt with, it does not set guidelines for the setting of WCOs, it fails to substantively deal with matters of biological diversity and fails to provide guidelines for implementing the strategy. Granted dealing with these matters in the strategy is discretionary under the Act whereas they ought to have been prescribed.

A good example of the contents and scope of a strategy and related action plan can be seen in the Oregon Conservation Strategy or the Chehalis Basin Strategy: Aquatic Species Restoration Plan.

It is notable that some of the government's 2009 Action Plan had specific areas of action that would assist in this area; however, these actions were not fulfilled. Specifically, Action 2.2 in the Action Plan set out specific approaches to identifying and protecting "critical aquatic ecosystems and develop a provincial action plan to improve the health of significantly impacted ecosystems". Much of this work was to be completed by 2015. Table 3 below identifies the actions and the ELC assessment of how these actions failed to be fulfilled.

[40] Alberta Environment (Edmonton: Alberta Environment, 2001), online: https://open.alberta.ca/dataset/8a08440e-efed-4f38-8516-1c097b8a2442/resource/f5ef848b-49e0-4fed-8a1d-4cfb6bb3d93e/download/2001-watermanagementplan-framework-2001.pdf.
[41] For an example of a more comprehensive strategy see the Oregon Conservation Strategy, online: https://www.oregonconservationstrategy.org/download-chapters/.
[42] *Ibid*. at page 27.

Alberta's environmental law has few areas where a statutory strategy is required and this reflects a significant missed opportunity. An effective strategy is one that can be picked up by people in the department or a regulator to get a clear understanding of how "protection of the aquatic environment" is going to be achieved. Instead Alberta's strategy is a vague listing of tools, easily ignored. It would be difficult for anyone to claim that it is an effective strategy when the goals, outcomes, inputs and tactics are not defined.

A revised strategy would be useful if it was sufficiently directive, has specific targets and objectives for line departments and is linked with water management planning and regional plans.

Recommendation:

1. *Revisit the Strategy for the Protection of Aquatic Environment to detail outcomes, targets, measures, tactics and roles and responsibilities for the protection of aquatic habitat.*

Table 3: Alberta Government's Action 2.2 regarding Healthy Aquatic Ecosystem and ELC assessment of state of action

Action 2.2.	Short-term by 2012	Medium-term by 2015	Long-term by 2019	ELC assessed State of Actions
Protect Alberta's critical aquatic ecosystems and develop a provincial action plan to improve the health of significantly impacted aquatic ecosystems				• "critical" systems not protected. • Protection not defined. • "significantly impacted" not defined or identified. • No action plan for improvement.
• **Define criteria and identify critical and significantly impacted aquatic ecosystems**				• Identification of critical and significantly impacted aquatic ecosystems not completed. • No provincial policy guiding identification process.
• **Maintain or improve the health of critical and impacted aquatic ecosystems through legislation, watershed and regional planning, and conservation organizations**				• Foundational work not completed. • No action plan to maintain or improve. • Regional planning not engaged sufficiently to "Maintain and improve". • Certain NGOs are working on issues but no provincial direction or actioning.
• **Monitor, report, and adjust, where necessary, to ensure the health of aquatic ecosystems are maintained or improved**				• Foundational work not completed to "maintain and improve"

ii. Aquatic habitat and the Alberta *Land Stewardship Act*

Aquatic habitat could be served by regional plans in various ways. Regulatory details regarding aquatic biodiversity management frameworks (BMFs)and water based landscape management of ecological footprint could be pursued. Further, regional plans can dictate how aquatic ecosystem health are to be measured, evaluated and considered as part of government and tribunal decision making.

Unfortunately, these steps have not been taken in the existing regional plans. Further, while BMFs attracted extensive consideration and consultation for the existing plans they have yet to be finalized or published in any region of Alberta. These frameworks were contemplated in the two approved plans to date. For the Lower Athabasca Region, the BMF for public lands was to be completed in 2013.[43] For the South Saskatchewan Region, the BMF was to be completed by the end of 2015.[44]

Further, the Lower Athabasca Regional Plan was to lead to integrated land management on public land through the use of the "regional landscape management plan" to manage industrial footprint.[45] Again this was intended to be completed at the end of 2013. A progress report was subsequently issued indicating a new timeline for these tools; however, even the revised timeline has not been met.[46]

Aquatic biodiversity management frameworks can be facilitated under regional plans including direct and prescriptive approaches to managing land and water based impacts that may impair aquatic habitat (including connectivity, riparian management and mitigation and offsetting of instream impacts).

Recommendation*:*

1. *An aquatic biodiversity management framework should be created with input from relevant experts to ensure aquatic habitat sustainability and resilience.*

[43] Lower Athabasca Regional Plan 2012-2022, online: https://landuse.alberta.ca/LandUse%20Documents/Lower%20Athabasca%20Regional%20Plan%202012-2022%20Approved%202012-08.pdf at 28.
[44] South Saskatchewan Regional Plan 2014-2024, online: https://open.alberta.ca/dataset/460ac866-4416-4d77-a25a-a02fab85a6ec/resource/8261ce03-aa0f-4621-8e2d-c610a72ac37c/download/south-saskatchewan-regional-plan-2014-2024-february-2017.pdf.
[45] *Supra* note 43 at 18.
[46] See Alberta Government *Land-use Framework Regional Plans Progress Report: a review of our progress in 2014*.

B. Law Reforms: Conservation of aquatic habitat

Strategies for the protection of aquatic environment and regional planning are only part of the regulatory picture regarding aquatic habitat. Habitat protections are largely missing in Alberta law, relying instead on discretion under the *Water Act* or proxy provisions of the *Public Lands Ac*t.

The *Water Act* requires an authorization for any activity that "causes, may cause or may become capable of causing an effect on the aquatic environment" (except where the activity is exempt by regulation or is licenced under the Act).[47] Notable in this section is that the "effect" need not be significant, as is common in Alberta environmental law. Nevertheless, the permitting of effects to the aquatic environment is not constrained by the Act or regulation, relying instead on the Director's discretion.

Further, while the *Wildlife Act* has some provision for planning, the focus of the *Wildlife Act* is the conservation and management of individual organisms (primarily game animals) and, to an extent, the residence of animals.[48] Again, habitat focused provisions are largely lacking in the substantive parts of the Act and regulations. Nor does the *Fisheries (Alberta) Act* deal with habitat (granted this is primarily federal jurisdiction addressed via the federal Fisheries Act). The province may rely on provisions under the *Public Lands Act* to manage aquatic habitat impacts. The Crown owns the beds and shores of permanent and naturally occurring bodies of water, and naturally occurring streams, rivers and lakes within the province.[49] The legislation regulates activities within the bed and shore by prohibitions in the Act. Section 54 states:

> (1) No person shall cause, permit or suffer
>
> > (a.1) loss or damage to public land,
> >
> > (a.2) activities on, or the use of, public land that is likely to result in loss or damage to public land,
> >
> > …
> >
> > (d) the doing of any act on public land that may injuriously affect watershed capacity,
> >
> > (e) the disturbance of any public land in any manner that results or is likely to result in injury to the bed or shore of any river, stream, watercourse, lake or other body of water or land in the vicinity of that public land, or

[47] *Water Act* at ss.1 & 36.
[48] *Wildlife Act*, R.S.A. 2000, c. W-10.
[49] *Public Lands Act*, R.S.A. 2000, c. P-40 at s.3.

(f) the creation of any condition on public land which is likely to result in soil erosion.

These provisions have seen some enforcement primarily through the use of administrative penalties, however they should not be equated to habitat specific protections.[50] While using these provisions as proxies for habitat protections has some utility, they are ill equipped for protection of habitat insofar as they are general and broad in relation to occupation and destruction of public land,. For example, injury to "watershed capacity" or "injury to the bed and shore" may be factually distinct from destruction or alteration of aquatic habitats. Further, in the case of a prosecution, it is likely that the "harm" to public lands that influences sentencing discounts the relevance of the public land as habitat.

Overall, there is no regulatory framework focused on monitoring, evaluating, and protecting high valued aquatic habitat.

The federal *Fisheries Act* does provide targeted and broad habitat protection for fish habitat under section 35(1) of the Act.[51] This section states that **"**No person shall carry on any work, undertaking or activity that results in the harmful alteration, disruption or destruction of fish habitat". Activities that cause harmful alteration, disruption or destruction of fish habitat can be authorized in various ways under the Act.[52] Further, the Act sets out specific regulatory frameworks for "ecologically significant areas".[53]

This federal role in fisheries does not, in the author's opinion, diminish the role of the province in overall aquatic habitat protection. Indeed, any activity in areas frequented by fish will need to engage both the provincial and federal regulatory system, as the water-fish nexus exemplifies the double aspect of jurisdiction. The provinces' role is broader than the federal role which is focused on fisheries alone.

Recommendation:

1. *Government of Alberta bring forward habitat protection legislation for aquatic and terrestrial species and ecosystems. This law should include provisions to ensure conservation and restoration of biophysical aspects of aquatic systems.*

[50] See *MacArthur and Weder v. Director, Peace Region, Alberta Environment and Parks*, 2018 ABPLAB 4 (CanLII), https://canlii.ca/t/j2hdx, *Sanarov et al. v. Director, Regional Compliance, Lower Athabasca Region, Regulatory Assurance Division, Alberta Environment and Parks*, 2020 ABPLAB 15 (CanLII), https://canlii.ca/t/jbwcp.
[51] *Fisheries Act,* R.S.C., 1985, c. F-14.
[52] *Ibid* at s.35(2).
[53] *Ibid*. at s. 35.2.

V. Adaptability and climate pressures

Alberta's history of water law, in adopting a "prior allocation" or "first in time, first in right" approach to diversions, has focused on providing those who divert and use water significant certainty. Allocations were largely made in the absence of ecological flow requirements and recognized the risks of variable supplies in terms of human diversion and use but not in relation to impacts on aquatic ecology. There are some opportunities to address the need to adapt to variable supply in some parts of Alberta however elsewhere there are more limited opportunities, where law reform is required.

A. *Water Act* and climate

There are opportunities under the Act to address the issue of adaptability of water management and to mitigate the effects of water supply for aquatic environments. These opportunities are more limited in those areas of the province that are heavily allocated under licences issued prior to the passage of the *Water Act*.

For a deeper discussion of the issue around flexibility and climate adaptability of the *Water Act* see Future Flows: Climate resilience, environmental flows and Alberta's water law (ELC, 2019).[54]

i. Climate, WCOs and planning

Opportunities under the *Water Act* that have been underutilized are focused on the use of water conservation objectives (WCOs) and water management planning. WCOs, if set at an appropriately level to account for water supply challenges, and if granted a licence priority, can provide accountability for instream flows in those basins where there is sufficient unallocated water. WCOs, in this way, can be used to protect "base flows".

Water management planning under the *Act* provides an opportunity for the government to plan for water allocations, WCOs and water quality moving forward. WMPs set out the matters and factors that a Director must consider in making authorization decisions under the Act. As highlighted above, the statutory plans (i.e., those approved by cabinet) have attracted minimal use. Further, the plans to date have been the result of responding to specific challenges of passing sufficient water on to Saskatchewan

[54] *Supra* note 1 https://elc.ab.ca/?smd_process_download=1&download_id=53257.

and Manitoba and have not dealt with addressing current and future supply, climate variability and adaptability.[55] More simply, the plans fail to plan for climate change.

Significantly the two water management plans approved under the *Water Act* did not address various factors affecting supply, including climate related impacts on supply. The appendix to the *Approved water management plan for the South Saskatchewan River Basin (Alberta)* (SSRWMP) notes that climate change was outside the scope of planning process "due to the absence of "high-confidence" research conclusions on future of water supply and demand".[56] This reliance on uncertainty to avoid climate considerations reflects clearly that the regulatory system is not prepared to deal with uncertainty in an adaptive and responsive way.

Recommendation:

1. *Pursue water management planning and including detailed approaches to the matters and factors around climate variability and future supply that must be considered in the Director's decision making.*

[55] For the *Approved water management plan for the South Saskatchewan River Basin (Alberta)* (SSRWMP) this means responding to a heavily allocated basin in an arid or semi-arid area of the province where there are high volume historic licences and a requirement to allow flows to continue to Saskatchewan and Manitoba under the Master Agreement on Apportionment between Government of Canada, Government of Alberta, Government of Saskatchewan and Government of Manitoba, dated October 13, 1969. Online: https://www.ppwb.ca/about-us/what-we-do/1969-master-agreement-on-apportionment/master-agreement-on-apportionment.
[56] *Ibid*. at p.40.

B. *ALSA* and Climate

Regional planning has a role to play in being adaptive to climate impacts on species. Climate variability may result in variability in flows but also in water temperature and sediment transport.[57] Various species are currently negatively impacted by our land use decisions today. The combined effect of climate change and land use will likely impact sensitive species in the future. [58]

The mix of variables and interactions on species, water quality and habitat may require altered land use practices to mitigate climate impacts on aquatic systems. [59] This includes the potential need for protected areas based on aquatic ecosystem needs.[60]

Regional planning in this regard will need to be adaptive and reflect the needs of aquatic ecosystems moving forward.

C. Law reform and climate

Law reforms related to managing water to be responsive to variable climate are markedly similar to those related to ensuring accountability for instream flows to protect aquatic ecosystems. Namely, the water management legislation in Alberta needs to be more responsive and adaptive. For a fuller discussion of this see the ELC's *Future Flows: Climate resilience, environmental flows and Alberta's water law*.[61]

Law reforms that can facilitate this will be focused on water supply and ensuring water budgets account for instream flows in a manner that is not overburdened by the power dynamics of the prior allocation system and deemed licences under the Act (as described above). This means reimagining how water is managed and, perhaps more importantly how land uses and activities proceed (or not) depending on the increased risks they play on the aquatic environment.

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[57] See Dibike, Y., et al. "Effects of projected climate on the hydrodynamic and sediment transport regime of the lower Athabasca River in Alberta, Canada." *River Research and Applications* 34.5 (2018): 417-429.
[58] Murdoch, Alyssa, Chrystal Mantyka-Pringle, and Sapna Sharma. "The interactive effects of climate change and land use on boreal stream fish communities." *Science of the Total Environment* 700 (2020): 134518.
[59] See Tesfa Worku Meshesha, Juney Wang, Nigus Demelash Melaku "Modelling spatiotemporal patterns of water quality and its impacts on aquatic ecosystem in the cold climate region of Alberta Canada, (2020) *Journal of Hydrology* Volume 587.
[60] Heino, Jani, Raimo Virkkala, and Heikki Toivonen. "Climate change and freshwater biodiversity: detected patterns, future trends and adaptations in northern regions." (2009) *Biological Reviews* 84.1: 39-54.
[61] *Supra* note 1.

Recommendation:

1. *A provincial dialogue regarding water management and allocation in the context of climate change should be undertaken, addressing directly issues of licenced and deemed licence diversion rights, adaptive capacity and accountability for ecosystems needs.*

Conclusion

Alberta's water law has significant unrealized potential. Water management planning and the setting aside of water for environmental flows are areas where significant opportunities still lie. Elsewhere there are significant legislative barriers in ensuring that water management can accommodate environmental flows in the face of future (over the next 50-100 years) variability in water supply. Specifically, in historically heavily allocated basins we must seek out innovative tools to overcome a reliance on intensive water uses and clarify how government discretion can still be used to foster protection and accountability for environmental flows.

Alberta can take steps to ensure that aquatic ecosystems are an integral part of how we manage water by ensuring legal protections for instream flows, by embracing steps to accommodate and adapt to variable supplies, to integrate land and water management and to bring forward specific habitat protection legislation. Realizing the objectives of sustaining, and where needed, restoring aquatic ecosystems takes significant forethought, robust water planning and ensuring there is legal accountability related to water quantity and water quality embedded in government decision making.