ALBERTA WATER COUNCIL

AUGUST 2009

Recommendations for Improving Alberta's Water Allocation Transfer System

About the Alberta Water Council

The Alberta Water Council is a multi-stakeholder partnership with Members from governments, industry, and non-government organizations. All Members have a vested interest in water. The Alberta Water Council is one of three types of partnerships established under the *Water for Life* strategy; the others are Watershed Planning and Advisory Councils and Watershed Stewardship Groups.

The Alberta Water Council regularly reviews implementation progress of the *Water for Life* strategy and champions the achievement of the strategy's goals. The Council also advises the Alberta Government, stakeholders and the public on effective water management practices and solutions to water issues, as well as on priorities for water research. Where there is consensus, the Council may advise on government policy and legislation. However, the Government of Alberta remains accountable for the implementation of the *Water for Life* strategy and continues to administer water and watershed management activities throughout the province.

Alberta Water Council
#1400 Petroleum Plaza South Tower
9915 – 108 Street
Edmonton, AB T5K 2G8

Tel: 780.644.7380
Fax: 780.644.7382

Email: info@awchome.ca
Web: www.awchome.ca

COVER/INSIDE BOTTOM PHOTO CREDIT:
DAVID DODGE, CPAWS

Contents

Executive Summary

In support of achieving the three goals of *Water for Life*, the Alberta Water Council established the Water Allocation Transfer System Upgrade Project Team with the mandate to "recommend improvements to better utilize and enhance Alberta's water allocation transfer system." As per their Terms of Reference, the team kept their work within the confines of existing legislation, specifically the *Water Act*. Currently, there are a number of projects focused on water allocation in Alberta and this work serves as one of several inputs to the Government of Alberta.

After a year of examining Alberta's current water allocation transfer system, the Alberta Water Council is pleased to make a number of recommendations. If implemented, these improvements will greatly strengthen the water allocation transfer system. They will also ensure the system meets the social and economic needs of all Albertans, while still safeguarding the environment, now and in the future. The Council identified six areas for improvement and made a number of recommendations within each area that can be briefly summarized as follows:

1) **Protected Water:** Before a water allocation transfer system can function effectively, an amount of water must be set aside for environmental and non-consumptive purposes as determined in the public interest by the process established for creating a water management plan. This Protected Water will not be traded in the water allocation transfer market. This step is the foundation of, and contributes to certainty in, the water allocation transfer system. Setting the amount of Protected Water as a Water Conservation Objective for each of Alberta's seven major basins; developing Approved Water Management Plans; and regularly reviewing and improving such plans are additional activities required to ensure our water sources remain healthy and sustainable for future generations.
2) **A Water Allocation Transfer Market:** A robust market must be established to incent the transfer of all or a portion of a water allocation between users. An active water allocation transfer market must be fair to all participants. It must be transparent and administratively efficient with clear objectives, principles and criteria. Once transfers are approved for use in a basin, all existing water allocation licence-holders 'in good standing' can participate in a market subject to conditions or requirements around participation, specific to each basin.
3) **Unused Water for the Market:** Certainty about the amount of water available for transfer is also a foundational requirement of the water allocation transfer system. Unused water or water gains made through conservation and efficiency can be made available to meet the needs of new users. Although there are acceptable reasons to hold unused water in a licence, criteria need to be developed to clarify such situations. In addition, a decision tree is proposed for determining if an existing licence is transferable. The principles of 'in good standing' and 'reasonable prospect of use' are used to guide decision-making. Every potential transfer must be assessed to ensure it satisfies the 'does no significant harm' principle.

4) **Conserving Water:** Water conservation is a cornerstone of the *Water for Life* strategy. Improved conservation efforts will make more water available to meet ecosystem and economic goals of the province. Hence, an improved water allocation transfer system should promote water conservation, efficiency and productivity and should not be at cross-purposes to such initiatives. Additionally, to manage their risk, all water licence-holders should be prepared for, and develop, a Water Shortage Response Plan.
5) **Applying for a Transfer:** The water allocation transfer system requires an effective application and approval process. To facilitate this, three classes of applications are proposed based on the level of risk to society and the level of discretion to be exercised by the Director in the public interest. Simple transfers will be processed relatively quickly; transfers that are more complex will come under increasing scrutiny by the Director, by directly affected parties, and those who may achieve public interest standing.
6) **Data and Information Platforms:** An improved water allocation transfer system will require solid data and sound information to inform decision-making. An information platform must be accessible to all participants such that available volumes, prices and other pertinent information are known to both parties in a transaction.

In general, the Alberta Water Council found that with the improvements recommended in this report, the water allocation transfer system can continue to serve the province well. For the most part, there was agreement regarding where improvements were needed and what actions were required. However, despite sincere commitment and extensive discussion in the available time, consensus was not reached on some items.

Out of a total of 23 recommendations in this report, there are two recommendations that do not have unanimous support. Of the 15 member groups represented on the Council's Water Allocation Transfer System Upgrade Project Team, two member groups do not support Recommendation 16 and one member group does not support Recommendation 19. In addition, there are two recommendations that are supported by all team members, but are felt by some to not go far enough; specifically, two member groups believe that Recommendations 1 and 8 do not go far enough. Hence, for 21 of the 23 recommendations there is consensus support.

It will take a concerted effort and time to implement an improved and robust water allocation transfer system in Alberta. This system must be adaptive and should have performance indicators and periodic review and assessment built into it. However, as the province begins closing its basins to new allocations, time is of the essence. Unless otherwise noted, all recommendations in this report are directed to the Government of Alberta.

Acknowledgements

The Water Allocation Transfer System Upgrade Project Team would like to thank the Alberta Water Council for providing the team the opportunity to contribute advice to a significant area of provincial water policy. Members acknowledge their own sponsoring organizations and contacts that provided support and input towards the project. Sector contributions of in-kind meeting space, communications and other logistical support are also much appreciated. The team's work was greatly informed by the March 2009 *Water: How Alberta Can Do More with Less* three-day symposium. The team thanks symposium organizers and sponsors including the Alberta Association of Municipal Districts and Counties, Alberta Urban Municipalities Association, Alberta Water Council, Alberta Water Research Institute, Canadian Association of Petroleum Producers, City of Calgary and Ducks Unlimited Canada. Last but not least, the team thanks project manager and facilitator Christine Macken, editor Petra Rowell, and the Alberta Water Council office staff for assisting them in completing their work.

1. Introduction

The Alberta Water Council is pleased to present this report to the Government of Alberta, other stakeholders and the public. After a solid year of reviewing and discussing Alberta's water allocation transfer system in detail, this report puts forward a number of recommendations that will greatly strengthen and improve Alberta's current system. Carrying out this work in a multi-stakeholder, collaborative and consensus-based process ensures these improvements are to the benefit of all Albertans, now and in the future. Currently there are a number of projects focused on water allocation in Alberta and this work serves as one of several inputs for the Government of Alberta to consider in this matter.

1.1 The Task

Water for Life: Alberta's Strategy for Sustainability (2003), is a comprehensive long-term plan for the management of Alberta's water resources. The strategy is designed to achieve three interrelated goals:

- Safe, secure drinking water supplies,
- Healthy aquatic ecosystems, and
- Reliable, quality water supplies for a sustainable economy.

In order to achieve these goals, the strategy sets out a number of actions including the following: "Review the water allocation transfer system to ensure a viable market that moves water to support sustainable economic development." This report is one of several initiatives to address this action.

To undertake this work, the Alberta Water Council created the Water Allocation Transfer System Upgrade Project (WATSUP) Team, with representatives from 15 sectors. The WATSUP Team followed an approved Terms of Reference, which is available online at www.awchome.ca. The mandate of the team was to "recommend improvements to better utilize and enhance Alberta's water allocation transfer system."

A major part of the work of the WATSUP Team was to examine how water allocations and transfers are managed in other jurisdictions around the world. One of several initiatives undertaken was to organize the *Water: How Alberta Can Do More with Less* symposium, bringing together dozens of experts and practitioners from jurisdictions across Canada, North America, Europe, and Australia. The purpose of this event was to explore international examples, policies and practices for addressing water scarcity and to learn from the experience of jurisdictions around the world in establishing water markets. The WATSUP Team received additional information on water transfer systems in Australia and other jurisdictions, and concluded

that its mandate was to stay within the *first-in-time, first-in-right* system. Consequently, a more substantive review of systems in other jurisdictions was not conducted. Further details on WATSUP Team membership, methodology and the Alberta Water Council's consensus decision-making process are included in Appendices A, B and C, respectively.

This report is the culmination of the WATSUP Team's work. As such, it provides an overview of Alberta's current water allocation transfer system, discusses briefly the drivers for change, and makes recommendations in six key areas. These recommendations will improve the system such that Alberta has a robust, efficient process for facilitating water allocation transfers in a viable water allocation transfer market. Recommendations in this report, unless otherwise noted:

- Uphold the *first-in-time, first-in-right* principle,
- Work within and enhance the existing water allocation transfer system under the *Water Act,*
- Strive to reduce administrative burden, thus increasing efficiency of the system,
- Are implementable, and
- Contribute to the achievement of the *Water for Life* strategy and its goals.

This report has been prepared by the Alberta Water Council as advice to the Government of Alberta, stakeholders and the public. Alberta Environment is currently undertaking its own broader review of water management and the water allocation system in Alberta and may consider input from several sources and processes, including this one.

1.2 Where We Have Been

Prior to 1930, the Federal Government managed the province's water pursuant to the *Northwest Irrigation Act*. In 1930, the Government of Alberta was given this responsibility under the *Natural Resources Transfer Act.* In the past, water management focused on identifying that portion of annual volume required for conveyance and transboundary commitments. The remainder was then available to allocate to licence-holders for social and economic uses such as municipal drinking water or agricultural irrigation. In more recent years, water management has been expanded to address environmental instream flow needs (Figure 1).

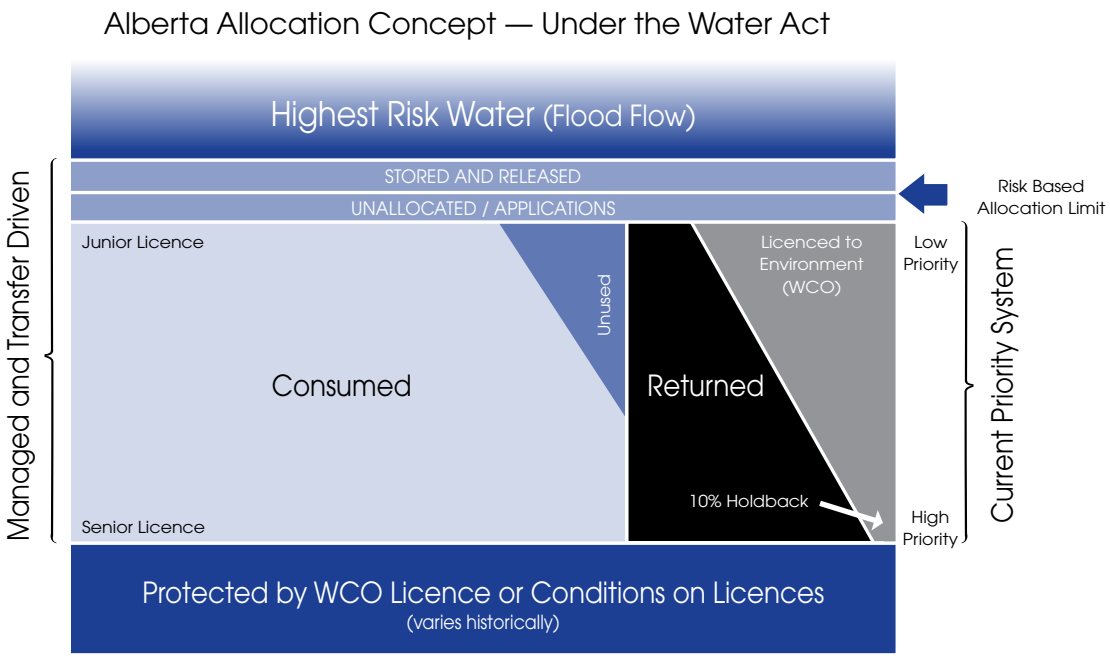


Figure 1 — The theory of annual volume-based water distribution showing flow for environmental protection and an allocated portion that may include water that is: (1) unused, (2) used but returned to the system, or (3) consumed with no return flow.

1.3 Drivers for Change

Based on geography and climate, Alberta's water supply has always provided a variable volume. Yet the historical system of water allocations is based on fixed volumes contained in licences. This system does not necessarily respond well to seasonal and annual variation, and in particular, to years of low flows. It also may not address future risk from factors such as increased growth, development or climate change.

First-in-time, first-in-right has been a key principle of granting and administering water allocations since 1894. During extensive public consultation for the *Water for Life* strategy, some stakeholders said "Alberta must preserve the 'first-in-time, first-in-right' (FITFIR) principle" (Figures 2 and 3) while others questioned whether it was the best system to allocate water (see http://environment/gov.ab.ca/info/library/7497.pdf at pages 10-12).

Priority Based Allocation System in an Average Year

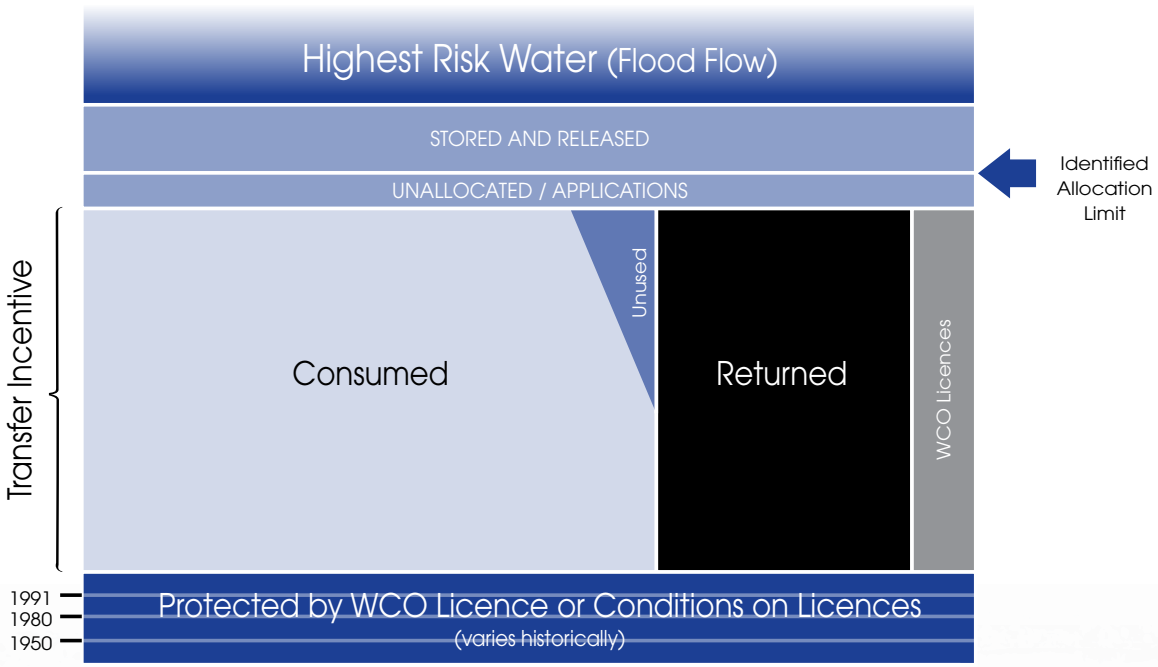


Figure 2 — The priority-based allocation system in an average year. Both senior and junior licences are able to divert their full allocations.

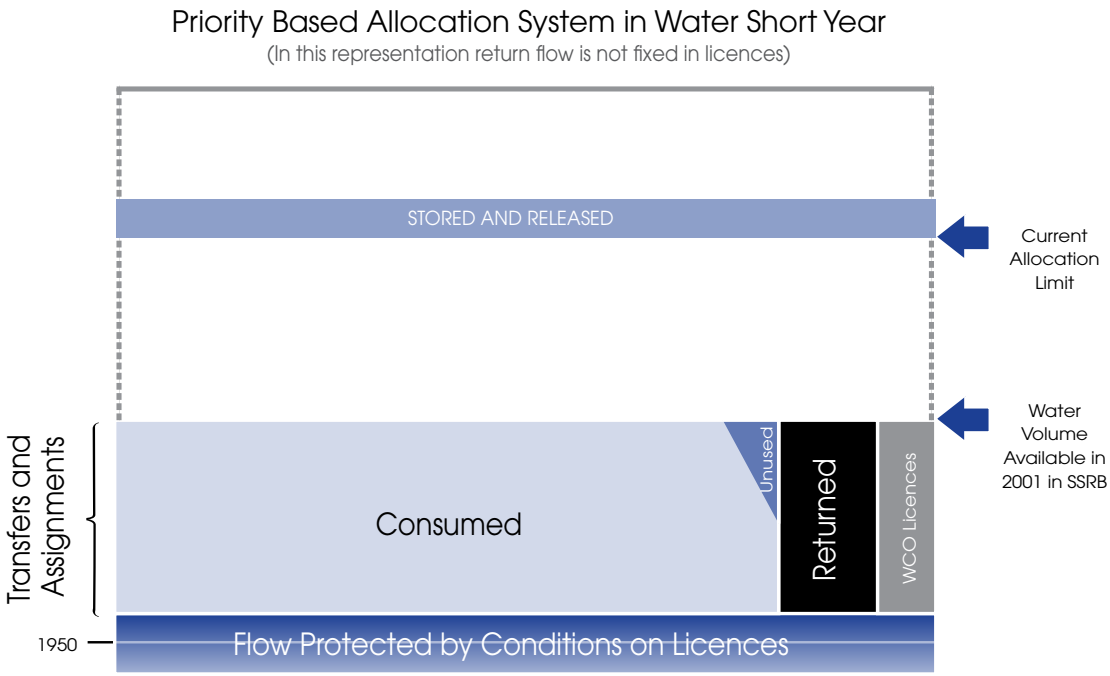


Figure 3 — The priority-based water allocation system in a water-short year. There is not enough dedicated water available to allow junior licensees to divert their allocations. Accordingly, there is a greater incentive for transfers and assignments.

To balance Alberta's variable water supply with our social, economic and environmental needs, and to live within the *first-in-time, first-in-right* principle, the *Water Act* (1999) allows for water allocation transfers between users.

However, the water allocation transfer system is not fully utilized. Under the *Water Act*, the Director may only consider transfers if their use has been authorized by an Approved Water Management Plan or a Lieutenant Governor-in-Council Order. To date, transfers have only been authorized under the *Approved Water Management Plan for the South Saskatchewan River Basin (Alberta)*. Approximately 28 transfers have occurred in this basin.

Finally, while the *Water Act* has some environmental protection mechanisms built into it, the tools are not adequately used; particularly the provision to licence water allocations for the environment. Accordingly, the base flow for environmental protection is largely dependent on discretionary policies. For a water allocation transfer system to be successful and sustainable, a base flow for environmental needs must be identified and protected.

The Alberta Water Council is aware that the Government of Alberta is undertaking a broader review of water issues in Alberta, and this report will be one of several inputs to the Provincial Government on the topic of water allocation. In addition, the Government of Alberta's *Land Use Framework* initiative and Cumulative Effects Management Framework are further pieces of work that may impact the implementation of the recommendations in this report.

Of the 15 member groups represented on the WATSUP Team, 13 member groups believe that the *Water Act* (1999) is flexible, provides for a comprehensive planning framework, and can accommodate a market structure. Thus, these 13 member groups propose that regulatory enhancements under the existing legislation, rather than major legislative changes, can address the risks and issues stated above. Improvements to the system can ensure the water allocation needs of current and future Albertans are met. Such improvements are the focus of discussion in the next six sections.

2. Protected Water

A proportionate volume of water set aside and protected in each basin is required to facilitate a healthy aquatic environment. Under the *Water Act*, the Province can determine and protect that portion of the annual flow required to maintain instream and other environmental needs. These Protected Waters may also benefit human non-consumptive recreational activities like canoeing and fishing. Reasons for identifying Protected Water include:

- It provides certainty to regulators and the public as to the amount and nature of water that will be defined and protected for the environment such that the public interest has been considered. Protected Water is kept outside of the water allocation transfer system.
- It can be managed strategically to address specific environmental needs within the basin.
- It is a prerequisite to a water market. It provides certainty to regulators and the public as to the amount and nature of remaining water available for allocation and transfer.

Setting a level of Protected Water will require a good understanding of basin hydrology. Specifically, Protected Water should be defined as an appropriate proportion of natural flow and determined through the consideration of science and community values. In setting the flow, it is important to be cognizant of such sustaining factors as riparian health, source water protection, protecting water quality, providing habitat for fish or wildlife, wetland restoration, and non-consumptive recreation purposes. Protected Water is not tradable in the water allocation transfer system. Although it may complement other management purposes, Protected Water is not intended to be managed for their outcomes. In particular, apportionment (the delivery of proportionate annual flows to adjoining jurisdictions) and future-use considerations, such as water for emergencies, drought risk management, or future growth opportunities, are operational processes. They fall outside of the concept of Protected Water and are managed under specific Crown Reservation and other resource management tools.

2.1 Water Conservation Objectives

The task of setting the level of Protected Water is the responsibility of the Provincial Government and other stakeholder planning bodies. However, once it is determined, Protected Water must receive effective legal protection. Using tools that currently exist under legislation, the level of Protected Water for environmental purposes may be identified by the government as a Water Conservation Objective (WCO). A WCO is a tool identified in the *Water Act* that can be used to balance the ecological, social and economic considerations contemplated by the recommendations in this report. Its definition covers the attributes of Protected Water set out above. A WCO is also attractive for its flexibility. It can be set and licensed for the needs of a basin, stream, tributary, reach, lake, or groundwater source.

Under the *Water for Life* strategy, Watershed Planning and Advisory Councils (WPACs) are tasked with developing and making recommendations to a *Director* (the person authorized to make *Water Act* decisions for a particular area) on a WCO for their watersheds.[1] However, anyone, including Watershed Stewardship Groups, other organizations or individuals, for a basin, sub-basin, stream, reach, lake, aquifer or wetland, can develop recommendations on a WCO for consideration by the Director. A WCO may be part of an Approved Water Management Plan or watershed management plan[2] developed in consultation with the public and submitted to Cabinet for approval. The development of such plans is guided by the Government of Alberta's *Framework for Water Management Planning*.

With the exception of the South Saskatchewan River Basin (SSRB), WCOs have not yet been set in Alberta's other major basins. Apart from a general understanding and accounting for licence priorities and apportionment commitments, there is no certainty in these basins as to the limits on future allocations and diversions. To create certainty, an interim-WCO should be determined by the Provincial Government in each basin as soon as possible. In doing so, a level of water can then be set aside as Protected Water and all water above that amount or level can be made available for diversion and/or transfer. Markets can then begin to operate. The interim-WCOs can then be refined and reviewed as subsequent water and watershed management plans, completed with public consultation, are approved. In setting the interim-WCO, the Provincial Government should consider all uses in the basin, with the understanding that the WCO can be increased if deemed appropriate in the future.

A WCO, in and of itself, is only a recommended amount of water. To be effective, it must receive legal protection for the level and priority at which it is set. WCOs should thus be tied to a licence and given a priority number. The priority of the WCO licence becomes the date on which the WCO is approved by the Province (under existing legislation, *first-in-time, first-in-right* principles are respected). It has no priority over licences issued prior to its approval but it does have seniority over any new licences issued after it. All 15 member groups represented on the WATSUP Team believe that WCOs are an effective regulatory instrument to protect the level of water to be set aside as Protected Water in each basin. However, two member groups expressed concern with the junior priority of the WCO in the South Saskatchewan River Basin and the fact that it may be assigned for other than environmental reasons, which does not satisfy the attributes of Protected Water in that basin.

---

1 Watershed Planning and Advisory Councils and Watershed Stewardship Groups are multi-stakeholder organizations undertaking watershed assessment, planning, stewardship and other activities to achieve the outcomes of *Water for Life* on a regional and local basis.

2 These terms are often used interchangeably. However, a *water management plan* is specifically included in the *Water Act* and described in the Provincial Government's *Framework for Water Management Planning*. The term *watershed management plan* is often used to indicate a broader planning process that incorporates water quantity, aspects of water quality and aquatic ecosystem health, for both the mainstem river and other waterbodies throughout an entire basin.

A basin-wide WCO may act as an umbrella under which a series of more site-specific WCOs are set to meet specific environmental needs for sensitive reaches or environmental restoration projects throughout a basin, sub-basin or waterbody. For example, a junior WCO licence could be used to provide long-term protection in a headwater region. Similarly, a Watershed Stewardship Group may recommend a WCO to protect the aquatic health of a lake within a major basin.

Final WCOs should be developed and included in Approved Water Management Plans for all seven major river basins. The Director, in consultation with stakeholders, should establish such plans for approval by Cabinet. Effort should be coordinated across the province to ensure that plan development is consistent and that water management plans are integrated with watershed management plans which may contain additional recommendations on water quality, source protection and aquatic ecosystem health within an ecological framework. Approved Water Management Plans, including WCOs, should be reviewed and revised from time to time to ensure they are achieving their stated objectives.

> **Recommendation 1:** Within 12 months of the receipt of this report by the Government of Alberta, where major basins are without an Approved Water Management Plan, the Director identify an amount of Protected Water as an interim-WCO under a water allocation licence, and;
>
> Water management plans, defining an appropriate level of Protected Water in a WCO, be developed and maintained for each of the seven major basins, in consultation with WPACs and other stakeholders, for subsequent approval by Cabinet, and:
>
> — In deciding the proportion of water to be defined as Protected Water, consideration be given to instream flow science, riparian habitat, water quality, fish and wildlife habitat, source water protection, seasonal streamflow and non-consumptive recreational purposes.
>
> — In all open basins, Protected Water should be set at a level of low risk to the river.

While all members of the WATSUP Team support Recommendation 1, and believe the provisions around Protected Water make good policy, two member groups did not believe that, in and of itself, the recommendation goes far enough to protect a healthy aquatic ecosystem. Hence these two member groups proposed the following addition:

> ***Non-Consensus Addition to Recommendation 1:*** *Within the first-in-time, first-in-right system, WCO licences be made senior to other water allocation licences.*

The Non-Consensus Addition to Recommendation 1 is supported by the Lake Environment Conservation Sector and the Environmental Sector. It is not supported by the other 13 member groups represented on the WATSUP Team, who are listed in Appendix A. This area was beyond the scope of the WATSUP Team's Terms of Reference.

The Director must consider all uses in the basin when setting the interim WCO. Approved Water Management Plans, including WCOs, should be reviewed and revised from time to time to ensure they are achieving stated objectives.

Recommendation 2: Once established, the level of Protected Water set in a WCO licence be publicly reviewed within 10 years of the date of the Approved Water Management Plan, and:

- The review be conducted through a transparent and inclusive process involving WPACs and other stakeholders for the seven major basins.
- If the review determines that instream needs are not adequately protected or other changing needs in a basin are not being addressed, a strategy be developed to protect and achieve the WCO.

Where a review determines that instream needs are not being adequately protected, mitigation will be required. Actions should be identified in a strategy that shows what needs to be done to achieve the WCO. In the case of the SSRB, WCO licences generally hold a junior priority and may not reflect the level of environmental protection that would have been defined if the basin had been open (see Appendix D for more information on this basin). Additional measures to minimize the risk to the WCO licence are required. A workshop to understand the issues and identify actions in a strategy for the SSRB is recommended.

Recommendation 3: For the SSRB, a strategy be developed as soon as practical and in consultation with WPACs and other stakeholders, to minimize the risk to the WCO licence by implementing initiatives to achieve, maintain and enhance the effectiveness of the WCO.

One mitigative measure that may be utilized by the Provincial Government, consistent with its governance role, is to become a participant in the water allocation transfer system and acquire licences to achieve the WCO. Other tools, discussed elsewhere in this report, may include the following:

- Strategic application of licence transfer holdbacks
- Return flow management where licences permit or terms are negotiated
- Cancellation of undeveloped licences
- Issuance of private licences
- Water conservation, efficiency, and productivity

Recommendation 4: The Government of Alberta participate in the water transfer market where necessary and acquire licences, preferably senior, to achieve the WCO in each major basin.

2.2 Water Allocation Transfers and Holdbacks

In a basin closed to new licences, water allocation transfers to move water between users may be approved consistent with an Approved Water Management Plan. Transfers can also benefit the aquatic ecosystem if some portion of the transfer is retained for environmental purposes. In Alberta, the Provincial Government can hold back up to 10% of a transfer, usually for the purpose of achieving a WCO.

Currently, holdbacks are placed under Crown Reservation. However, the Director is authorized to create WCO licences from water holdbacks (and has done so in the SSRB). These new WCO licences have the same priority as the licence from which the holdback was taken. If fully utilized, holdbacks can be accumulated to improve the WCO status. Holdbacks may be applied to site-specific WCO licences to protect sensitive parts of the basin.

Recommendation 5: For each water allocation transfer, the Government of Alberta retain the full 10% holdback authorized under the *Water Act* unless there are circumstances where the Director determines other opportunities would achieve a greater environmental benefit, and:

- Water conservation holdbacks be applied to the basin WCO licence until the WCO is achieved.
- Water conservation holdbacks be applied to site-specific WCO licences on a reach, tributary or stream for the purpose of addressing the needs of sensitive parts of a basin, where appropriate to do so.

2.3 Private Licences for Achieving the WCO

WCOs are an instrument of Crown policy and the *Water Act* recognizes this by restricting their issue to the Crown. However, the *Approved Water Management Plan for the South Saskatchewan River Basin (Alberta)* recommends that private parties be able to acquire licences to assist the government in meeting a WCO. The rationale is that the Crown sets the objective and all stakeholders should help fulfill it under a water market system. This is sensible, provided the purpose of the WCO licence cannot be changed if it is subsequently transferred. The potential role of private parties in managing WCO licences has not been assessed.

Recommendation 6: Allow private parties to acquire and hold licences under the transfer provisions of the *Water Act* for the purpose of achieving WCOs. The purpose of such WCO licences cannot be changed if they are subsequently transferred.

Recommendation 7: Assess the potential of private parties to manage WCO licences or Crown water held in reservations for WCOs.

Any legal entity (*i.e.* individuals and organizations) should be able to purchase water allocation transfers on the market and apply the use and priority to an environmental purpose other than a WCO. These licences would be for non-consumptive purposes such as instream flow protection, and would provide the ability to meet specific environmental objectives within a basin. Acquisition of these licences should not be permitted for non-consumptive uses such as waste assimilation. This recommendation would be reviewed in conjunction with the 10-year WCO review to determine if it is effective and meeting desired objectives. Because the concept of allowing non-government organizations to hold licences for instream flow purposes is new in Alberta, a conservative approach is suggested. This approach would see a cap on the volume of water that could be held in these types of licences.

> **Recommendation 8:** Allow legal entities to acquire licences, beyond those required to achieve the WCO, for non-consumptive use including instream flow use in a basin up to a cumulative limit of 2% of the 'allocatable water' available to the market above the Protected Water level (WCO).

While all WATSUP Team members support Recommendation 8, two member groups believe this approach should not be limited and propose the following alternative:

> ***Alternative Non-Consensus Recommendation 8:*** *In an open and fair market system, legal entities, subject to the same rules as all other participants, should be able to acquire an unlimited amount of licences for instream flow use.*

Alternative Non-Consensus Recommendation 8 is supported by the Lake Environment Conservation Sector and the Environmental Sector. Alternative Non-Consensus Recommendation 8 is not supported by the other 13 sectors represented on the WATSUP Team (listed in Appendix A) who preferred a more cautious approach until this new concept is further tested in Alberta.

3. A Market for Transferring Water Allocations

Once Protected Waters have been identified and preserved in a non-tradable WCO licence pursuant to an Approved Water Management Plan, focus can shift to making more efficient use of the water that remains for allocations and transfers. Markets can be an effective and efficient tool for incenting the reallocation of scarce resources. Under clear rules and standards, the market allows eligible participants to enter into agreements to reallocate water, transferring it to those with higher value water needs.[3] Australia and several Western American States provide case studies on how water allocation transfer markets have been a useful, but not perfect, tool to enable the efficient allocation, reallocation, transfer, change of use, and movement of water. This advice from experts also came with many lessons and cautions to avoid replicating some of the social and environmental damage a market can inadvertently create. A water allocation transfer market in Alberta should:

- Provide clear and consistent rules for all players so that society (including water users and the greater public interest) and the aquatic ecosystem are measurably no worse off than under a non-market system.
- Provide an efficient means of reallocating water from lower-value to higher-value uses.
- Stimulate innovation; water in a market is considered a financial asset with opportunity costs if it is not used productively and efficiently. It is in the best economic interest of each licence-holder to conserve or improve the productivity and efficiency of their water use as either a costs savings or as an ability to generate revenue.
- Place an economic value on water that would change Albertans' image of water as free and abundant and possibly drive a conservation ethic.
- Allow water users to manage both short and longer term risk through the use of transfers, thereby providing increased certainty for businesses, municipalities, and the environment.
- Minimize conflict by allowing lower value users to obtain fair value for their existing investment.
- Enable each licence-holder to make market choices based on their own private cost and benefits, making it more efficient and effective than government who may not have access to this information.

3 That is, water can move from one use to another higher value use that offers more benefit to society overall. A more economically beneficial use is one that translates into a higher Gross Domestic Product, more money circulating in a community, more tax dollars, *etc*. Typically, as water moves up the value chain it is used more efficiently and productively, which supports the outcomes of the *Water for Life* strategy.

3.1 Market Objective and Principles

The overarching objective for implementing a water allocation transfer market in Alberta is to incent "the efficient reallocation of water." This objective serves Alberta in two specific ways: 1) to manage risk and 2) to allow parties to acquire new water allocations.

To ensure it meets its objective, the water allocation transfer market should uphold a number of principles. Principles would apply province-wide; however, specific applications may vary between basins depending on their limits and characteristics. Market principles should include the following:

- The water allocation transfer market will ensure that water is reallocated efficiently.
- Protected Water identified in an interim WCO or Approved Water Management Plan and held by the Government of Alberta or private party in a WCO licence is not available for transfer.
- Market rules are clear, transparent and consistent with due process for all participants.
- Market rules provide flexibility to move water to higher value uses.
- No transfers may occur between major basins.
- *All transfers are subject to the 'does no significant harm' principle.*

Recommendation 9: That the Government of Alberta develop a water allocation transfer market with the primary objective to reallocate water efficiently, having already set aside a level of Protected Water, and;

The market be subject to the principles of efficiency, transparency, due process, flexibility and 'does no significant harm.' The onus is on the proponent of any application for a licence, transfer or other change to prove 'no significant harm' to the aquatic environment.

Because of its significance, the last bullet warrants some discussion. Every potential water allocation licence and transfer must be assessed by the Director for its potential to meet the 'does no significant harm' principle. This term provides the Director with appropriate discretion and implies that if there is environmental harm or harm to a third party, it should be measurable and the Director can speak to it. Ensuring a licence or transfer does no harm is consistent with the concept of maintaining the *hydrologic integrity* or *aquatic ecosystem health* of Alberta's watersheds.[4]

4 *Hydrologic integrity* is used here in the context of sustaining aquatic ecosystem health such that basin hydrology, hydrogeology, the aquatic ecosystem and other physical, biological and chemical components are fully functioning and resilient to disturbance. If one or more components become impaired, its function may be altered and the integrity of the system compromised. A compromised system may not be able to meet social, economic and environmental water needs. Thus, hydrologic integrity is a critical foundation of the water allocation transfer system.

The Government of Alberta should develop clear criteria to test that the principle of 'does no significant harm' is met. Such criteria can be included in the legislation or be a mandatory consideration in the *Matters and Factors* section of an Approved Water Management Plan, as was done for the SSRB's plan (Appendix E). *Matters and Factors* include a number of conditions for a Director to consider when reviewing a request for a transfer. These guide the Director's decision-making.

At a minimum, the *Matters and Factors* that **must** be considered by the Director in assessing significant harm under a transfer application are those presently contained in Section 82 of the *Water Act*. They are:

With respect to the applicable area of the Province, the matters and factors that must be considered in approving a transfer of an allocation of water under a licence, as specified in an applicable approved water management plan,

- *a) must consider, with respect to the applicable area of the Province, the matters and factors that must be considered in approving a transfer of an allocation of water under a licence, as specified in an applicable approved water management plan,*
- *b) may consider any existing, potential or cumulative*
  - i) *effects on the aquatic environment and any applicable water conservation objective,*
  - ii) *hydraulic, hydrological and hydrogeological effects, and*
  - *iii) effects on household users, traditional agriculture users and other licensees, that result or may result from the transfer of the allocation, and*
- *c) may consider*
  - *i) effects on public safety,*
  - *ii) with respect to irrigation, the suitability of the land to which the allocation of water is to be transferred for irrigated agriculture,*
  - *iii) the allocation of water that the licensee has historically diverted under the licence, and*
  - *iv) any other matters applicable to the transfer of the allocation that the Director considers relevant.*

In addition to the *Water Act* requirements and where *Matters and Factors* have not been further detailed in an Approved Water Management Plan, the Director should, at a minimum, have a set of criteria to determine if the 'does no significant harm' principle has been met. As the science and knowledge of aquatic ecosystem health is improved, criteria for determining 'significant harm' may be further developed and refined with time.

Recommendation 10: In addition to the *Water Act* requirements, and at a minimum, the Director, shall use the following criteria to determine 'no significant harm' to the environment or a third party:

- The size of the transfer, diversion point and rate relative to the size of the stream.
- Changes to timing.
- *Environmental Protection and Enhancement Act* (EPEA) water quality effluent standards in terms of what concentration can be released into a stream given its flow.

Recommendation 10 is not intended to erode the existing standards in Section 82 of the *Water Act*.

3.2 Market Criteria

The water allocation transfer market should also operate under a number of criteria that optimize it. Criteria provide the metrics upon which performance measures can be developed to assess if objectives are being met. Alberta's water allocation transfer market should:

- Maximize productive and allocative efficiency. This means a) water is available to new entrants, b) there is an incentive for innovation and increased productivity and c) there is security of access to water. This ensures efficient use.
- Minimize administrative and transaction costs. The system is optimized to ensure a) the minimum need for government involvement while still providing an assurance role, b) it includes a simple, clear and transparent process for willing buyers and sellers to come together, c) there is access to information on transfers to help with price seeking, and d) the system overall is not prohibitively expensive to build or to operate, or the system is built to provide some cost recovery to offset the system.
- Ensure environmental effectiveness by following the concept of 'no significant harm.'
- Ensure a fair, equitable, and transparent process with equal access to education and system mechanics. Paid prices are determined in the market through the buyers and sellers and made public to all.
- Facilitate change and innovation.

- Be robust under extreme pressure and continue to work in severe conditions such as a drought. As such, it a) accommodates both temporary and permanent transfers and is designed to operate effectively with other mechanisms; b) is robust enough to accommodate groundwater and potentially other sources of licensed water; and c) ensures compliance among licensees.

Recommendation 11: That the water allocation transfer market meets the following criteria: maximizes productive and allocative efficiency, minimizes administrative and transaction costs, assures healthy aquatic ecosystems and economic development, facilitates change and innovation, and is robust.

3.3 Market Governance and Administration

An improved water allocation transfer system must have a clear governance structure with a high level of provincial oversight, enforcement mechanisms, transparency and protection of public interests. It must have an administrator and an ultimate accountable authority. This authority could be the Provincial Government or an arm's length delegated board or agency. In both cases, the Provincial Government would retain ultimate responsibility and accountability for overall policy-making, regulatory approvals, and compliance with the system.

An improved water allocation transfer system would also need an application and approval process that is administratively streamlined and timely, with efficient ease of transfers in the market. There would need to be rules and conditions for the applicant, as well as for those that can intervene in a decision-making process.

The Provincial Government (via the Director) should retain responsibility for regulatory decision-making and approvals for water allocation transfers. However, once the regulatory approval is granted, operational functions associated with the market could be delegated to a Crown agency or market administrator. This could be accomplished either by secondment of these functions to the agency or by enabling the agency to have permanent access to data currently collected within government, such as flow forecasting, water modeling, monitoring and evaluation, and water assessment. The Provincial Government would retain responsibility for enforcement of statutory requirements.

As the Alberta water allocation transfer system becomes more fully utilized, the number of transfers may increase substantially and, as a result, monitoring will be critical to ensure that water quantity and quality objectives are being met. The overall monitoring and enforcement processes will need to be improved to support the market. And finally, accountability requires transparency. There needs to be a public record and public access to information about the market such as who is buying and selling, the paid price, the volume, *etc*.

Recommendation 12: Develop a market governance structure with clear accountability and authorities including delegation of operational responsibilities to a market administrator or Crown agency to oversee the water allocation transfer market. The administrator would be responsible for oversight and accountability, monitoring, and transparency of the market. The Government of Alberta is responsible for regulatory decision-making and enforcement and statutory requirements.

3.4 Who Can Participate in the Market?

All water allocation licence-holders 'in good standing' can participate in a transfer market subject to conditions or requirements around participation, specific to each basin. As well, any potential water user with a legitimate purpose for a proposed diversion can enter the market. All licensees with licences 'in good standing' may offer transfers into the market in river basins where there is an Approved Water Management Plan that authorizes the Director to approve licence transfers. Licence transfers may occur only within major river basins and licence transfers cannot occur between major basins.

3.5 What can be Transferred in the Market?

It is critical to establish and define what can be transferred in the market to provide certainty and to encourage trading. Once an Approved Water Management Plan authorizes transfers in a basin, subject to the 'does no significant harm' principle, all water licences that exist in that basin, except WCO licences, are transferable within that basin. This includes the following:

- All water licensed under an Approved Water Management Plan and thus available for diversion.
- Surface water including all named rivers, their tributaries and all natural surface water with hydrological connection to the named rivers and tributaries.
- Groundwater that interacts hydrologically within the geographic bounds of a basin is transferable subject to the 'does no significant harm' principle. This is also called 'groundwater under the influence' and does not include deep groundwater.

Participants can transfer all or part of a licence, by volume or percentage, as long as the transfer meets all criteria set out by the Province or other existing provisions. In particular, the transfer must at a minimum meet the principle of 'does no significant harm' to the aquatic ecosystem or to other licence-holders applied by the Director during the application process. Volume is an important component of a licence to protect the aquatic environment and should be retained in any transfer of the licence. However, changes in the timing of the diversion are permitted if there is no increase of diversion volume, and/or a higher efficiency is identified. Changes must be registered.

The purpose and location of an allocation can also be changed through a transfer application as this encourages water to move from one use to another. That is, the point of diversion (appurtenance) can be 'unbundled' from a licence in order to enable a market to function quickly and effectively.[5] The new point of diversion becomes significant only for the purposes of determining what, if any, conditions are to be placed on the transferee. The *Water Act* provides the following:

- *A change to the purpose identified in a licence may be considered, subject to the terms of the applicable section of the Water Act, through an application for transfer where there are changes to the appurtenance of the licence (land or undertaking).*
- *The Water Act requires that the appurtenance of a licence to land or undertaking be described in each licence. Therefore, a licensee is restricted to using or delivering water only within the lands or undertaking described in a licence, and may not apply for an amendment to deliver water to any other lands or through any other undertaking.*

3.6 Market Tools

The current tools for moving water include temporary and permanent transfers, assignments, and amendments to a licence. The units of trade in the market are acre-feet or cubic meters. The price for a water allocation is determined at the market clearing price, based on supply, demand and personal and private valuations of the water licence.

How amendments and assignments are used in the future could impact market efficiency. The use of these tools could result in fewer transfers in the market. Assignments, as defined in legislation, should be registered with the Director or market administrator within three months

5 If water licences are unbundled from land, there will need to be a water licence registry similar to the Land Titles Registry. Otherwise, the transaction costs become very high as the buyer would need to conduct a due-diligence review of each trade to ensure that the seller actually held the rights they are purporting to sell. This could follow a guideline similar to Land Titles: all permanent transfers and temporary transfers of three years or more would be registered. Temporary transfers of less than three years can just occur in the marketplace.

of occurrence to ensure that the objectives of the market are achieved and to ensure transparency for buyers and sellers.

Currently, there is no public review when someone applies for an amendment. An amendment requires only public notice. The use of amendments rather than transfers for a change of use can circumvent the water allocation transfer market and also preclude the application of any holdbacks. Thus, for the public interest, applications for amendments to change the purpose of a water allocation licence greater than a cumulative 2% of its original licensed allocation should be processed as applications for water allocation transfers.

> **Recommendation 13:** To encourage the market to meet its objective, the *Water Act* be changed to require an applicant to use a transfer (not an amendment) to change the purpose of a water allocation licence greater than a cumulative 2% of the *original* licensed allocation.

The change of a licenced purpose has the potential to impact other users. For example, it may impact return flows or seasonal use. Therefore, it should be subject to review under the transfer system. However, there may be situations where the amount of water involved is modest, is required by the same licencee and is related to the original purpose of the licence. Recommendation 13 is intended to accommodate such exceptions, while still requiring most changes to be made by transfer of the licence to a new licenced purpose.

The team also considered the concept of options as a tool to create more opportunities in the market. An option is a contractual agreement between parties whereby the party wishing to acquire water will be able to apply for a transfer of a licence if the option conditions are met at a future date. They are an essential element in most markets. Options can be used to enable a new or expanding business to gradually assemble enough water licences to initiate the business. They may also be an essential ingredient in an effective drought protection plan for an individual, corporation or community. It was not felt that there was a need to regulate the use of options. They simply give rise to a transfer application which will then be considered under the regulated transfer process.

4. Moving Unused Water to the Market

All of the recommended improvements to the water allocation transfer system and water allocation transfer market are for naught if no water is made available for new users. Two sources of available water include (1) unused water and (2) water made available through conservation. In this section, a brief overview of the current water allocation system is provided, followed by a discussion of unused water. Section five discusses freeing up water through conservation.

4.1 The Current Transfer System

In order for an effective water allocation system to function in Alberta, a defined process must be in place. Because Alberta has been managing its water resource for many decades, many aspects of the current water allocation system are working well. Today, a person must apply for a water allocation licence through Alberta Environment.

A licensee does not become the owner of the water but acquires the privilege of becoming responsible for an allocation under the terms of the licence. A licence is the record of the allocation of Crown-owned water from a specified source to a fixed location or project facility. Components of a licence may include the name of the holder, the volume, timing, rate and location of diversion and purpose or use.

The priority assigned, or order in which the allocation was requested, is also recorded on the licence. Conditions that limit access to the water allocation (such as minimum water flows or levels and timing) and monitoring and reporting requirements, may be added to a licence. Licences are for an annual amount and are not able to be held over year after year, unless a licensee has their own storage option.

A licensee may request changes (amendments) to elements of the licence, including the name of the person responsible (but not the location or an increase in volume). A licence-holder may also transfer all or a part of his allocation. Briefly, to participate in a transfer, the licence under consideration must be 'in good standing.'[6]

6 Before a water allocation can be transferred, the licence has to be 'in good standing' at the time the Director considers the application (that is, it already exists 'in good standing' or the licence-holder brings the licence into 'good standing' prior to the time when the Director considers the application to transfer.) 'In good standing' is used, but not defined in Alberta's *Water Act*. Examples of a licence not 'in good standing' are where it is: (1) in breach of the *Water Act*, (2) subject to an investigation under the *Water Act*, (3) subject to enforcement and prosecution, (4) in breach of terms and conditions of the licence, or (5), in non-compliance with the terms and conditions of the licence.

There must be a written agreement between the transferor and transferee, with consent of the landowner if the transferee does not have title. A transfer must not impair the rights of households, traditional agriculture, or other licences as per the *Water Act*. The current process for applying for a transfer is outlined below (Figure 4).

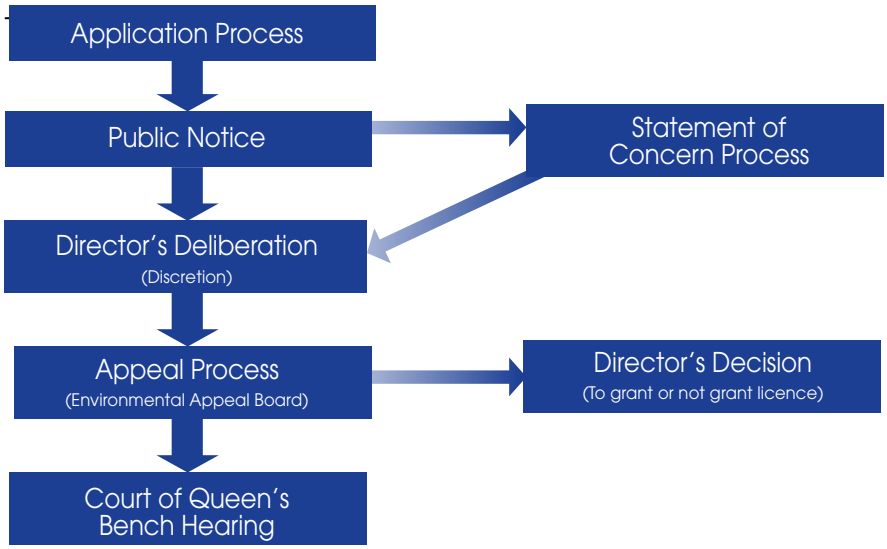


Figure 4 — An overview of the current application and appeal process for a licence transfer.

4.2 Defining Unused Water

Some licensees hold large volumes of unused water, which in some cases is water beyond their regular operational needs. This water is held as part of a licensee's risk management strategies for use in emergencies, variable or low-flow periods, drought situations, for re-filling storage capacity, dilution or conveyance needs or to allow for future economic growth. This volume of unused or rarely used water has implications for both the environment and the amount of water available for diversion and transfer on the market.

> *For the purposes of this report, unused water is defined as that portion of a licence that is not currently being utilized (remains in the river) where the licensee cannot show any reasonable prospect of use, within a reasonable period of time.*

If the water has never been used, a licence containing unused water may be subject to cancellation. That is, the Crown may cancel individual licences under certain circumstances. For example, a licence may be cancelled if it is no longer 'in good standing', if the licensee has no works or no anticipation of works, or if there is no historic use of the water. Water recovered by the Province may go towards making water available for diversion, meeting the WCO for the basin, or meeting a specific WCO for a sensitive stretch of a river. It may also be put into a Crown reservation or put to another best use as determined by the Director. Such decisions balance the protection of the investment in the facilities where the allocation was initially granted with society's interest in reallocating unused quantities to other social or economic priorities.

Leaving water unused may be a lost opportunity as it could be moved to a higher value use (*e.g.* specialty cropping, economic development, new businesses, *etc.*) and benefit users who need it. It may also lead to speculation and issues of unfairness and market uncertainty as those licensees with significant amounts of unused water could be perceived to have an unfair advantage in the water transfer system. There are significant interests in how these issues surrounding unused water are resolved. Municipalities, for example, have made significant investments in water treatment infrastructure. Similarly, the Provincial Government, irrigation districts, and water users have made significant investments in water distribution systems. Individual irrigators have invested in on-farm technologies to improve their water use.

Unused water that currently remains in the river may also be important for its contribution to ecosystem protection. If large quantities of previously unused water are suddenly allowed to be transferred (*i.e.* diverted), it could result in intensified water use with a potential risk to ecosystem health. Therefore, the Provincial Government needs to avoid the unintended consequence of a system that could cause environmental harm if unused water was drawn from waterbodies beyond existing environmental limits.

4.3 Qualifying Unused Water

In order to move unused water into the market and 'create' more water available for population growth and economic development, while respecting established environmental limits, an improved water allocation transfer system must:

- Make the rules governing the use or re-allocation of unused water clear, concise, and understandable.
- Allow existing licence-holders of unused water to manage water shortage risk to their existing operations.
- Enable rapid decision-making about which unused water licence allocations are available to the market.

To meet these requirements, a Tradable Licence Decision Tree (Figure 5) is proposed to determine if a licence is eligible to apply for a transfer. Four categories of tradable licences are possible. Examples of criteria that may be used in this analysis include licensees having a Water Shortage Response Plan, being 'in good standing', and meeting the 'does no significant harm' principle.

Recommendation 14: To improve its understanding of the amount of unused licensed volume in each major basin, the Government of Alberta, in consultation with stakeholders, develop a decision tree to review existing licences to clarify if they are 'in good standing' and are tradable, and:

1) To determine the water that would be available for transfer, the Government of Alberta broaden the existing definition of 'in good standing' to the following four categories of licences: Licences that are **fully active** (water has been diverted within the previous three years). If there is no water use record, the licence would be subject to an 'in good standing' review. If the licence was 'in good standing' it would be eligible for transfer and would proceed through the application process. A transfer would be subject to a 10% holdback, where the WCO has not yet been met.
2) Licences that are '**in good standing**' (have been inspected). These licences would be eligible for transfer and the 10% holdback would apply in instances where the basin WCO has not been met.
3) Licences that were active up to a certain date but **not used within the previous three years**. The licence would be subject to an 'in good standing' review. The Director would apply the 'reasons for wanting to hold water' policy, referred to below. A transfer would be subject to either a 10% or 25% holdback.
4) Licences where all or a portion of the allocation was **never diverted**. Licence would be subject to an 'in good standing' review, and the 'reasons for wanting to hold water' policy. The 25% holdback would apply to a transfer or the licence could be cancelled.

There are several reasons to discourage the holding of unused water, including the following:

- To enable unused water to be converted to meet the WCO objective,
- To provide water for reallocation to new purposes,
- To facilitate new allocations/increase Crown Reservations,
- To prevent speculation and protect market integrity, and
- To improve water management through improved data accuracy and inputs to risk management models. (The models need to know the volume of water being used or not used).

There may also be good reasons for a licensee to hold unused water. These might include, but are not limited to, the following:

- Risk management (*e.g.* drought management, variable production/operational needs),
- Growth expansion for short (5 years), medium (10 years) or long term (25 years),
- Storage,
- Conveyance flow,
- To meet the WCO/IFN or other environmental objectives, and
- Where there is a commercial arrangement or contract in place to build something.

As part of the decision tree analysis, the legitimate reasons for a licensee to hold unused water should be clarified. These reasons might then be included in a policy statement sanctioned by the government. It is important that the Director make it clear when it is, and when it is not, appropriate to hold unused water.

> **Recommendation 15:** That the Government of Alberta develop criteria that clarify the circumstances when licensees would be permitted to hold unused water. This list of reasons would form the policy informing the Director regarding what should be taken into consideration when determining reasonable prospect of use. If a licensee cannot demonstrate a reasonable prospect of use, the licence or a portion thereof should be cancelled and the volume put towards a Crown Reservation to be allocated at the discretion of the Director.

Another tool to move unused water into the market is an amnesty program. An amnesty program would provide a short (five-year) transition window to incent licensees to move licences that would otherwise be cancelled, into the market. This would enable existing licence holders to demonstrate their case under the 'five years to comply and file an application' rule. Charitable entity licence holders, small farmers and occasional livestock holders, and municipalities would have the time to do such things as donate unused water to a trust, prepare for a partial transfer, or enable them to keep their licence for planned future use.

To ensure fairness to all licence holders, unused water that is made available for transfer through this one-time amnesty program would be subject to a higher (25%) holdback. If not transferred within five years, the licence would be cancelled and the water applied to the WCO until it is met or held by the Crown for future allocation. At the end of five years, the Provincial Government should review the amnesty program to determine if it achieved its objectives.

Recommendation 16: That the Government of Alberta establish a five-year amnesty program to facilitate the movement of unused water with no reasonable prospect of use to the water allocation transfer system. The program starts from the date of an Approved Water Management Plan, or from the date of an approved interim WCO in basins that have yet to develop a water management plan, or from the date set by the Minister, and is subject to the following:

- The Director will apply a 25% holdback on transfers of unused water until the WCO is met after which the Director may use his discretion as to whether a holdback is required.
- Transfers of unused water will be subject to the 'does no significant harm' criteria.
- If an application for unused water to be transferred is not made within five years and approved within 10 years, the licence will be cancelled and, depending on the Director's discretion, be applied to the WCO until it is met and then held by the Crown for future allocation.

Two member groups do not support the amnesty program. They propose the following:

Alternative Non-Consensus Recommendation 16: *That the Government of Alberta cancel the unused water portion of licences and prioritize the reallocation of this water to meet Protected Water objectives.*

Alternative Non-Consensus Recommendation 16 is supported by the Lake Environment Conservation Sector and the Environmental Sector. Alternative Non-Consensus Recommendation 16 is not supported by the other 13 member groups represented on the WATSUP Team, who are listed in Appendix A. However, there is a high onus and expectation that the Province will manage the risks to the environment that will arise from the market. This area was beyond the scope of the WATSUP Team's Terms of Reference.

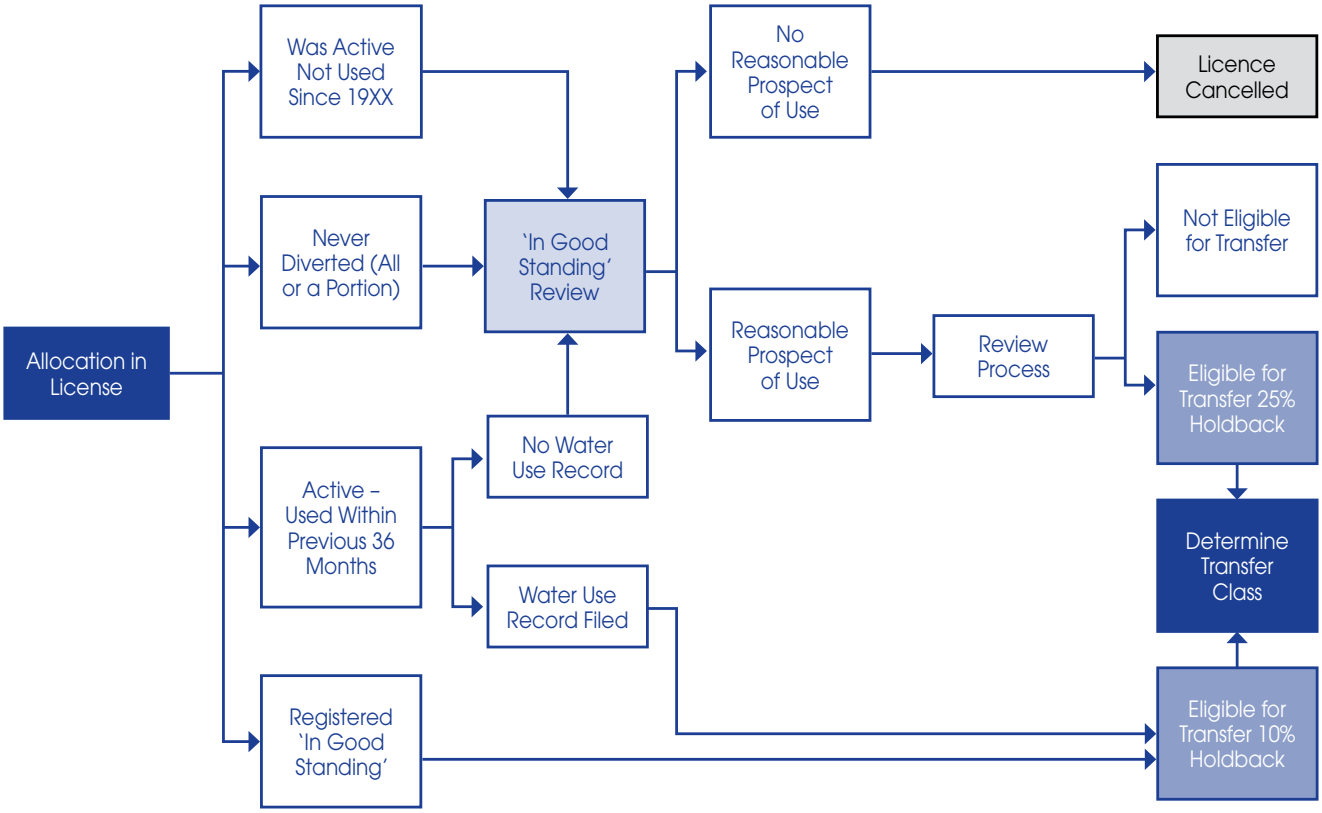


Figure 5 — The Water Allocation Tradable Licence Decision Tree.

5. Finding Water for the Market through Conservation

Water conservation is a key direction identified to achieve the *Water for Life* goals. The Alberta Water Council has done extensive work promoting sector use of water conservation, efficiency and productivity (CEP) plans. These plans will be a primary tool for achieving water conservation. The water allocation transfer system should incorporate CEP principles. As well, all recipients of a water transfer should be encouraged to participate in CEP sector planning.

Gains made through water conservation may make water available for increased use by the licensee. The water allocation transfer market also incents licensees to conserve water in order to make it available for a transfer, and hence, financial gain. However, the licensee must demonstrate to the Director that water proposed for transfer is not degraded or polluted water. Additionally, the water allocation transfer system should discourage water waste. *Waste* does not equal *use* and does not make a licence eligible for transfer.

5.1 Return Flow

Although managed differently by different users, return flow is defined as part of a water allocation that is diverted, used according to the terms and conditions of the licence, and eventually returned to the river. Return flows are important and, if of good quality, can contribute to aquatic health. They can also impact the amount of water available for diversion downstream or by junior licensees. Thus, it is important to have accurate, comprehensive data on the amount and timing of return flows.

Where it is not stated explicitly, it is unclear in many existing licences if there is an expectation of return flow, based on historical use. Commitments for return flows need to be clarified; however, there is no intent to change existing licences. The Province needs to know what and where return flows exist and the impact on the river if return flows are changed.

New licences should be subject to return flow requirements and should clearly identify both the diversion right and the consumptive right. That is, the Provincial Government should clearly state in all new licences the amount they expect to come out of the river, where it will be measured, and what return flows will be.

Return flows inherent in a licence may be important to achieving the WCO, apportionment, or other downstream objectives. However, recent water conservation efforts may affect return flows as reused or reclaimed water may be kept out of the system for long periods. On the other hand, water reuse can reduce the requirements for fresh water (see the City of Calgary example in Appendix F). The water allocation transfer system should encourage water conservation and water reuse, and regulatory requirements on return flow should not act as a hindrance or disincentive to conservation and efficiency efforts.

Recommendation 17: To ensure that the water allocation transfer system contributes to the hydrological integrity of a basin, the Government of Alberta maintain and improve the system to measure and track the volume, quality and timing of return flows, with recognition of licence size and the significance of return flows, and;

For all new licences, a diversion right, a consumptive right, and return flows be identified and made clear to the licensee, and;

For all existing licences, return flow, including entitlement to the net consumptive volume of a licensed allocation, be determined by the Government of Alberta according to the terms of the licence in consultation with the licensee, and;

The water allocation transfer system encourage water conservation and water reuse, and regulatory requirements on return flow not act as a hindrance or disincentive to conservation and efficiency efforts.

The Government of Alberta should manage withdrawals and return flows in such a manner that there is no significant harm to river health.

Licensees should be permitted to increase their use of return flow subject to the implementation of strong initiatives to achieve the WCO in all major basins and enforcement of the 'does no significant harm' principle.

Principles around conservation and return flows should include:

- The Province should design the water allocation transfer system such that it encourages water conservation (*i.e.* water conserved can be transferred).
- There are circumstances where increased use of return flow is beneficial and in keeping with *Water for Life* goals. For instance, return flow water may be used by a licensee to increase productivity. It can be recycled and treated for industrial purposes or to support municipal growth. It can be made available to downstream or new users who otherwise would have to apply for a new allocation. Increased use of return flow can result in less fresh water being taken from a river.

5.2 Water Shortage Response and Drought Planning

To address the risk of times of water shortages, all licensees should be encouraged to do their due diligence and prepare a Water Shortage Response Plan. In the period leading up to the closing of the SSRB to new water licences, all applicants were required to have a Water Shortage Response Plan to show they could survive the frequent cut-offs that would occur because of the junior priority of their licence. This is particularly important for licensees delivering water for human consumption. The purpose of such a plan is for the licensee to evaluate and clearly understand their risk and statistical probability of not having water under certain conditions based on their licence's seniority. The Water Resource Management Model can provide a hydrological chart for the SSRB that shows the probability of impacts on junior licences. Once that risk is understood, the licence holder can then take actions to reduce their risk. For example, a junior licence holder may learn that there is a high probability that they will be without water for three weeks in July in approximately one in every ten years. The junior licence holder may then consider, if they are so able, how they can continue to operate without water for those three weeks. In most cases, however, other preparations must be made to address the risk of being without water, such as arranging for a temporary assignment of a senior licence.

With a water market, a junior licencee has the option of going to the market and setting up a commercial arrangement to get water during those high-risk periods by negotiating an agreement with a senior licence holder. In this way, the junior licence holder can manage the risk to their operations. A guidebook and template currently exist for preparing Water Shortage Response Plans, however the Province should include additional guidance regarding how these types of risk-management arrangements might be created.

In the event of a severe and formally declared drought, where water is unavailable for community water supply, a Drought Mitigation Plan may be activated by the Government of Alberta. This type of plan has a number of tools at its disposal to meet critical needs, including using temporary authorities, temporary transfers, or assignments. Temporary authorities can be issued to non-licence-holders as outlined in a Drought Mitigation Plan and as judged on social merit. Remedial actions in the Drought Mitigation Plan could include reducing water allocations to irrigated agriculture, limiting water use in urban areas, limiting diversion to hydro dams, initiating media campaigns to conserve water, and conducting extra monitoring of urban wastes, *etc*.

Finally, in order to support human consumption and safe waste disposal, the Province could invoke the suspension of *first-in-time, first-in-right* provisions for a time with re-prioritization within the severe drought period to ensure basic human services remain with available water. Emergency field operations may also be required to meet compliance requirements. The objective of preparing Water Shortage Response Plans is to prevent the need for declaring an emergency drought situation since junior licensees and those with critical needs for continuous water supplies will have taken all commercially reasonable efforts to ensure sufficient water is available to them.

Recommendation 18: That all licensees delivering water for 'community supply' are required to prepare a Water Shortage Response Plan, and:

The Government of Alberta encourage all licensees to have Water Shortage Response Plans to assess their risk of not having water and to address situations of water scarcity and drought. Licensees may consider the use of short-term assignments or temporary transfers to address drought or other water scarcity situations.

6. Transfer Application and Approval Process

Following the determination of its eligibility, a licensee may apply to transfer all or a portion of their licence. The transfer application and approval process required to make the water allocation transfer system work should be user-friendly and meet the needs of all participants. It should be cost-effective and less administratively burdensome so that water is moved in a timely and efficient manner. This will become of greater importance if the number of transactions increases as the system grows.

6.1 Three-Class Application Approval Process

To streamline the process, the degree of scrutiny employed by the decision-maker should match the complexity of the transfer. To achieve this, a filter should be applied at the point of application where three classes of applications are proposed. These three classes of applications are based on the potential transfer's level of risk to society and the level of discretion exercised by the Director in his decision-making:

Recommendation 19: That the Government of Alberta develop a three-tiered application and approval process for water transfers as follows:

— Class 1, no discretion required on part of Director

— Class 2, minimal discretion on part of Director

— Class 3, full discretion on part of Director

One member group did not support Recommendation 19 and proposed the following:

Alternative Non-Consensus Recommendation 19: *The Government of Alberta develop a three-tiered application and approval process for water transfers that does not erode the rights of persons to file Statements of Concern or appeal the Director's decision.*

Alternative Non-Consensus Recommendation 19 is supported by the Environmental Sector. Alternative Non-Consensus Recommendation 19 is not supported by the other 14 member groups represented on the WATSUP Team, who are listed in Appendix A.

Class 1 applications are for routine water allocation transfers and do not require the Director to exercise any discretion, except to determine that the application is complete and meets all pre-established criteria. All technical, safety, public consultation and environmental studies and requirements have been met and there is little to no significance to the environment or competing interests. Because there is no exercise of discretion anticipated on the part of the Director, there is limited scope for an appeal. Statements of Concern would not be accepted from third parties. For example, applications for transfers maintaining the same volume, purpose, timing, rate of diversion, return flow and point of diversion would be considered routine and would be processed using the Class 1 application.

Class 2 applications are used where *discretionary* water allocation transfers would require a minimal amount of the Director's discretion and hence carry a minimal amount of risk to the parties, to the transfer and to society. For example, a transfer that maintains all of these components, except that its diversion point is moved downstream, would be a Class 2 application. Such transfers would be subject only to an environmental assessment at the new diversion point and therefore would have some risk to society and potentially to other users. Therefore, the parties to the transfer and those who can demonstrate a public interest would have a right to file Statements of Concern and to appeal the Director's decision.

Class 2 approvals would have a specified time limit for filing Statements of Concern, objections and appeals, with clear criteria for who is eligible to object and who has standing to appeal (the criteria for appeals should be appropriate for the class of transfer). Any Statement of Concern dealing with issues covered by an Approved Water Management Plan would not receive standing to appeal.

Class 3 applications are for *complex* water allocation transfers that require the Director to exercise his discretion in accordance with the laws and Approved Water Management Plans. There is potentially greater risk associated with the transfer for the parties to the transfer, other licensees and water users and society as a whole. Significant time may be required for administrative and technical evaluation due to landowner objections, community or environmental concerns, or objections from competing companies or where the appurtenances are to be changed. Thus, there are implications for other users.

For Class 3 approvals, the grounds for filing Statements of Concern, objections and appeals are broad. Anyone would have the right to submit a Statement of Concern and if considered 'directly affected' by the Director (or by the Environmental Appeals Board on appeal), could appeal the Director's decision to approve the transfer.

The appropriate class of application to be used for each transfer can be determined by applying appropriate criteria. The following are examples of criteria the Director may adopt for each class:

Class 1:

- There is no significant harm to the environment and minimal direct effects on other licence-holders.
- The application is administratively complete.
- The rate of diversion is the same or less, or the applicant has arranged for compensating flow in the river during forecast critical periods.
- The licence will remain at the same diversion point.

Class 2:

- If diversion is upstream, the applicant has arranged for compensating flow and there is no significant harm.
- The rate of diversion is increased during forecast critical periods.

Class 3:

- The diversion point is moved upstream without compensating flow.
- In-depth review is required to determine whether potential impacts can be mitigated.

The Director considering an application must be unfettered and his decision must be in the public interest. The process for determining the transfer class and reviewing applications is outlined in Figure 6. To ensure the application and approval process is working, an independent random assessment of Class 1 and 2 applications for transfers should be carried out periodically to ensure applications are sound.

Recommendation 20: To ensure the integrity of the application process, a random review and assessment be conducted for Class 1 and 2 applications for transfers to ensure the applications were sound and factually correct and any deficiencies corrected.

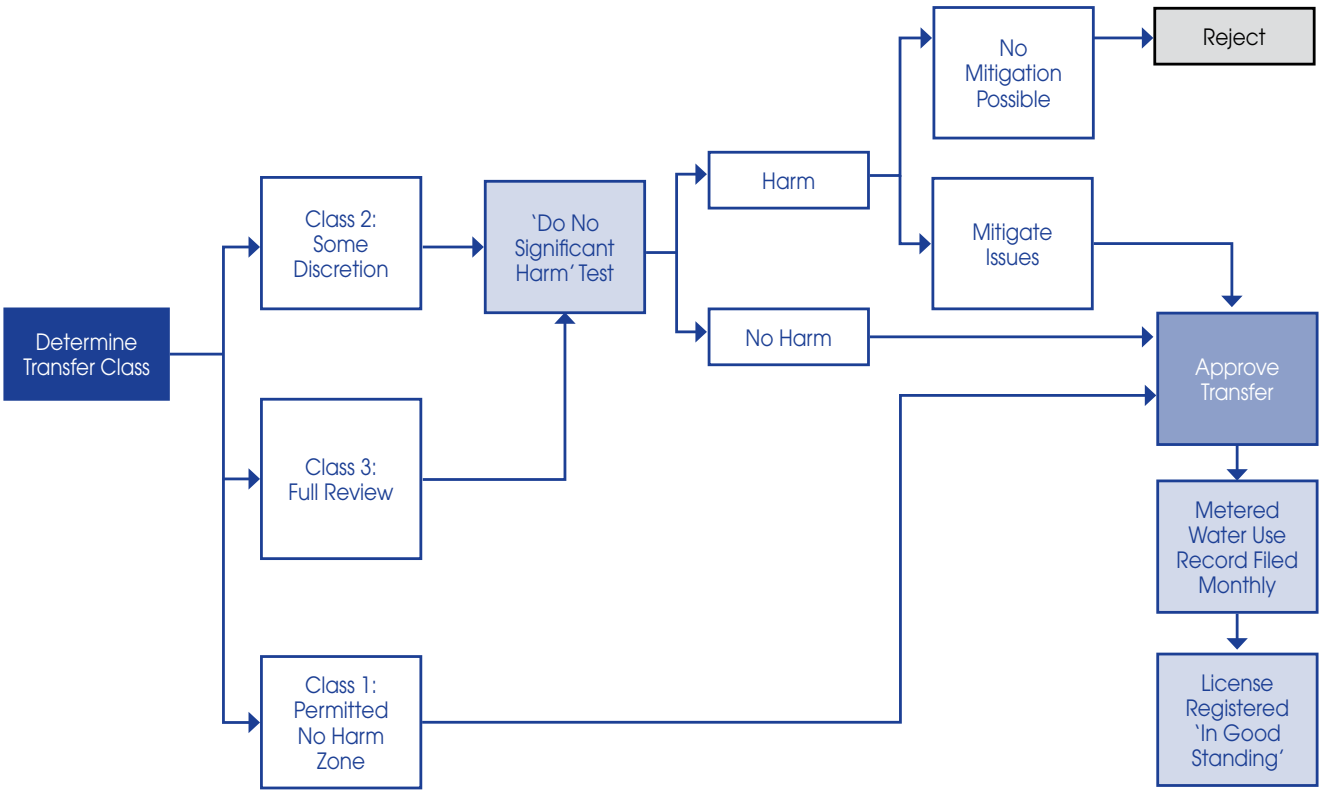


Figure 6 — The water allocation transfer class application decision tree.

6.2 Appeals

Where the Director has exercised some degree of discretion or significant discretion in his decision-making (Class 2 and 3), such decisions should be appealable. Facilitation, mediation or negotiated settlements are the first course of action to resolve any objections. If resolution cannot be found, unresolved matters or objections should proceed to a hearing.

The Environmental Appeals Board's decisions may be appealed on application to the Court of Queen's Bench on questions of law or jurisdiction. While the Court of Queen's Bench is not a legislated process under the *Water Act*, persons have the ability to ask for judicial review of all three classes and the courts have the discretion to overturn the Director's decision (see *the Environmental Protection and Enhancement Act*, Section 102). The Director should have the right for his peers to hear the appeal and make a decision.

6.3 Statement of Concern

A Statement of Concern is a mechanism by which anyone can submit a letter to the government to object to an application for a transfer. As such, they can be a useful tool to bring relevant information to the Director's deliberations. This ensures that water allocation transfers minimize the risks to other licensees, water users, the environment and society as a whole. The legislation also requires that a person must have filed a Statement of Concern in order to appeal.

Through regulation and incidental amendment to the *Water Act*, a person should be able to file a Statement of Concern when a notice of an application for a transfer appears in a newspaper or on a website. However, to minimize undue delays and bureaucracy, there must be clear grounds, criteria, and content requirements for those filing Statements of Concern. A standard format and administrative protocol could be established to ensure that people do not submit irrelevant information to the Director.

The Provincial Government could assess the feasibility of introducing a fee for submitting a Statement of Concern (perhaps in an amount equivalent to submitting a claim at provincial court) to cover the administrative costs of processing these documents.

6.4 Standing for Appeals

In the case of a Class 2 or 3 water allocation transfer, the Director may determine if a person submitting a Statement of Concern is 'directly affected' and has a legitimate right to appeal and if so, requires follow up with notification *etc*. Currently one must be 'directly affected' (generally defined as having a property or economic interest) and have standing before one is able to appeal the Director's decision to approve a transfer. The public should seek the right to appeal from the Director, who determines whether the party is 'directly affected' based upon a technical review. Public disclosure and the ability of affected parties to have input make this a delicate balance. Those parties who are deemed to not be 'directly affected' can appeal the Director's exercise of discretion regarding a determination of 'directly affected' to the Environmental Appeals Board as a preliminary issue.

In judicial review, courts sometimes grant 'public interest standing' to parties who may not otherwise have standing to appeal administrative or other decisions. To determine whether a person has 'public interest standing', the court applies a three-part test. One part is whether the party attempting to appeal has a genuine interest in the decision. Another test determines whether there is another party that is better suited or able to represent the public interest. The three-part test used by the court is as follows:

1) Whether the matter raises a serious or justifiable issue and there is no other forum for addressing the concern and there is no other mechanism for getting it before the court,
2) Whether the applicant has a genuine interest in the outcome or subject matter of the litigation, and
3) Whether there are persons other than the applicant who are more directly affected and who can reasonably be expected to litigate the issues raised by the applicant.

Recommendation 21: Develop criteria for determining who has standing to appeal an approval of Class 2 and 3 transfers.

The Provincial Government should investigate whether the 'public interest standing' might be considered a threshold test for WSGs and WPACs and other environmental groups to appeal the Director's decision to allow a transfer.

6.5 Public Notification and Timing

Information such as an approval pending, application made, application advertised, application being reviewed, approved, appealed and decision on an appeal could be registered on a central website. However, reasons for information being made available to who, for what purpose, should be clear. A website could allow for search tools and automatic notifications that may represent basins, municipal districts and counties, name of applicant, *etc*.

The application and approval process has to be tied to a timeline so that there is an issue, period to appeal, and decision, in a timely manner. Timing does not start until the complete application is submitted. In general, an approval of a transfer should be delivered in 30 days from advertising, and 60 days if there was a valid appeal. The Environmental Appeal Board's decision after the appeal process has been completed should be considered final. The other avenue of appeal would be judicial review in the courts on questions of law or jurisdiction.

Appropriate information necessary for the Director to make a decision and for the effective operation of the water allocation and transfer system should be fully transparent and available online to the extent reasonably practical, and in a timely fashion

Recommendation 22: To inform the market, the Government of Alberta should publish information on transfer decisions to increase public awareness and transparency.

7. Data and Information Platform

Managers and participants in the market need to have ready access to data and information to ensure decision-making is based on sound knowledge. Market data and information must be generated and made available in a platform that is easy to understand and use for both market users and administrators, and hence enable their participation in the market. This 'accounting' of water, like any accounting system, should have sufficient checks and balances to ensure the information is reliable and timely.

7.1 Information Needs

Currently some of the required data and information are available. However, a better understanding of river basin hydrology and hydrogeology is necessary. There is also a need to be more predictive in the system, such that the available water versus the water being used is known. This will allow managers to maximize system efficiency and effectiveness, ensure compliance and build public confidence and legitimacy in the system to encourage transfers.

The degree to which these components of the system are required may depend in part on the degree of potential water scarcity (*e.g.* not all components listed above will be practicable for northern rivers), although a minimum level of knowledge is needed in all cases to sufficiently determine the degree of scarcity and for base monitoring of the system. Specifically, the following information is needed to support Alberta's water allocation transfer system:

1) Water managers need to understand the hydrologic cycle to ensure hydrological integrity and compliance and optimize operations through monitoring and modelling. Also, when designing a property rights framework, all elements of the hydrologic cycle must be considered – otherwise uncontrolled switching will occur between components if, for example, only one component (*e.g.* flow) is regulated. This requires the following information:
   - Climate and weather data including precipitation and its contribution to overland flow and stormwater runoff,
   - Quantity and quality of flows throughout the system, including diversions and return flows,
   - Interception of overland and shallow groundwater flows by diversion structures,
   - Travel times for water in the system,
   - On-stream and off-stream water storage volumes,
   - Losses due to evaporation, deep percolation and seepage from the system,
   - Losses due to evapotranspiration associated with land-use and vegetation change,
   - Instream flow needs,
   - Groundwater levels, aquifer connectivity and sustainable aquifer yield,

- Connection between groundwater and surface water sustainability,
- An accounting system of water allocation and metering of actual use, and
- Physical system inputs — Size of channels, *etc*., to know what the system can move.

2. To ensure that the entire allocation system is understood, governed credibly, and has the confidence of the public, it requires the following information:
   - Comparisons of authorized allocations, acutal diversions and return flows by place and type in order to understand the scope of current and potential use,
   - The level of Protected Water and how is it measured (time, place, *etc*.), and
   - Legal and regulatory understanding.
3. To manage the market transfer system to efficiently allocate water the following information is needed by system participants:
   - Licence transfer information (the conditions on the licence),
   - Buyers and sellers,
   - Where the water is (location),
   - How much is available (volume),
   - When is it available (timing),
   - Transfer rules (*e.g.* diversion rate),
   - Trade history information — volumes, prices, names, locations, *etc*., and
   - Any policies or procedures that would affect transfers.

The price paid for water allocation transfers needs to be identified for the public record to help establish a base or floor price for the market. Establishing what water is worth by observing past trades provide sellers with an assurance that they are getting a fair price. A published database of transfer decisions would also provide a basis for looking at provincial consistency between regulators.

7.2 Information Platform

There are a number of potential platform options for making the above information available. The design should be simple, from both an administrative and user's perspective, to ensure the platform is easy to understand and use. The SSRB has developed a 'licence viewer' that allows people to see licences, requirements of the licences, location, etc. Other jurisdictions with such systems, such as Australia and the United States, could be surveyed to inform the design of an improved provincial information platform. A survey of existing licensees could be conducted to look at potential buyer and seller needs for an information platform. The system needs to be simple, transparent and cost effective.

Recommendation 23: That the data and information needs of the water allocation transfer system be identified and measures taken to build the appropriate systems where there are current gaps; however, this work shall not interfere with or delay implementation of other recommendations in this report.

- To ensure a robust data and information system, the Government of Alberta develop a staged approach (by sector, basin or size of licence) to apply metering and reporting requirements on all licences.
- The Government of Alberta establish a comprehensive electronic licence inventory and make it available electronically to the public and the market administrator.
- That the body established to oversee the market construct and populate an accessible electronic market information platform that provides as close to real time information on recent purchases, offers for transfer, and bids for transfer. It should be as simple and easy to access as is commercially reasonable to do:
  a) Determine the types, level, and uses of information required to support the market platform and ensure that such information is accessible to market managers and participants.
  b) Balance the need for commercial confidentiality by determining how much public information on nature, size and implications of transfers is needed for market transparency.
  c) Upgrade current decision-making tools and models to support the information needs of the water allocation transfer system and market participants.

Market participants need to know what is available for trade, what is being traded, the price, *etc*. Different levels of data may be needed for different users, including the market administrator, market participants and the public. Put together, these information pieces form an accounting of the water supply for an individual, a basin, or the province. Like any accounting system, this water allocation accounting system should have a review and assessment system as described in Table 1.

Table 1 — Water allocation review needs.

Water Allocation Transfer System Review and Assessment Needs:

Annual Water Review

The purpose of an annual review is to ensure both temporary and permanent trades are accounted for and notifications are made to field inspectors of water allocation changes. The annual review may occur on a single notification date per season (May 1st) until real-time accounting can be performed

Real Time Water Review

Real time forecasting from snow pack, rate of release, diversions to and from water storage systems, and water in transit in main rivers. This information is needed for supply management and climatically driven demand anticipation, supported by in-field measurement.

Monthly Water Assessment

Monthly water assessments will identify who is withdrawing from a river or surface water supply and who is not. This information will allow the Director to determine whether licensees are diverting and are within the approved stage of withdrawal for any annual allocation within individual entitlements. Note: Daily assessments are preferable; however, this is not feasible now and should be worked towards for the future.

Water Assessment Data Management

Data from water assessments needs to be converted into real time measurement planning tools. The data would be sent to the Water Resources Management Model to monitor and predict climatic shifts and potential impacts on available volume of water for trade in river basins.

8. Implementation

Implementation of the recommendations made within this report will take substantial time, resources, funding and political support. However, this should not deter the Province from making these changes that, in the long term, will benefit all Albertans.

8.1 Considerations during Transition to the Market System

The work of the WATSUP Team was conducted under the current legislative and regulatory regime for water use management, namely the *Water Act*.

A number of legal and policy issues may still need to be considered both within and outside the Act. In addition, it is the responsibility of government to ensure the market and its objectives are congruent with other Provincial Government policy and legislation. Hence, the Government of Alberta should consider all relevant legal and policy considerations early to ensure effective and efficient transition to a water allocation transfer and market system. The current review of environmental legislation and the creation of new legislation to support the *Land Use Framework* and Cumulative Effects Management Framework provide timely linkages. A partial, but not exhaustive, list of outstanding policy issues includes:

- Ensuring equity and managing 'speculation' during a transition period from the old to the improved system.
- Developing guidelines for groundwater transfers.

8.2 Timeline and Review

Ultimately, the Provincial Government is responsible for ensuring the wise use of the water resource. Hence, the Government of Alberta is accountable for implementing and administering the water allocation transfer system in a timely manner. The Alberta Water Council, in its annual reporting of the implementation progress of the *Water for Life* strategy, will also incorporate reporting on the implementation of the recommendations in this report.

The water allocation transfer system must be adaptive and responsive to changing needs with time. General reporting on the activity in the transfer system should occur annually. Additionally, performance indicators should be developed, with a full-scale review and assessment conducted every 10 years to ensure the system is effective and meeting the desired objectives. This review should inform managers of where change is needed to meet new issues or to adapt to changing parameters.

8.3 Information and Awareness

In order to stimulate interest and confidence in the market, information on improvements to the transfer system should be made public. Additionally, information on the objectives and how the market functions should be made known to potential users. Comprehensive and audience-specific communications, education and outreach campaigns, and other learning opportunities should be developed and implemented to improve understanding of how the water allocation transfer system and market works so that it is understood and usable by all Albertans.

9. Conclusion

As per their Terms of Reference, the WATSUP Team was asked to "Develop recommendations to better utilize and enhance Alberta's water allocation transfer system to contribute to *Water for Life* goals." Working within the context of the *Water Act*, the WATSUP Team reviewed the current system and, for the most part, came to agreement on where improvements were needed and what actions were required. As noted in the introduction, there are two items where two member groups felt that a recommendation did not go far enough, and two other items where unanimous agreement was not reached. In general, the Alberta Water Council believes that with the improvements recommended in this report, the water allocation transfer system can continue to serve the province well.

In particular, the Alberta Water Council puts forward a balanced approach to meeting the social, economic and environmental needs of Alberta's water allocation transfer system. To provide 'clear ecological objectives', they propose that a level of Protected Water be established as an interim WCO licence in every major basin of the province and that water management plans be developed for all major basins as soon as possible. The use of holdbacks and market-based assembly of senior WCOs can be used to further protect Alberta's major basins.

Once the level of Protected Water is established and set aside as a WCO licence, the focus can be shifted to meeting adequate water supplies for drinking water and economic development. A water allocation transfer market provides the incentive for licensees to make water available. A market must have clear objectives, principles and criteria. It also must have water! The Council makes several recommendations on how to make water available to the market, including a decision tree for identifying transferable licences, principles and criteria to ensure that water transfers 'do no significant harm' and policy criteria for holding unused water.

An effective market will also incent licensees to conserve water. Water conservation is a cornerstone of the *Water for Life* strategy. Demand management will free up water for increased efficiency, greater productivity and/or other users. Conservation and risk management becomes increasingly important in times of water shortage and drought.

Recommendations on how to streamline the water allocation transfer process through a three-tier application and approval system are made. Additionally, a solid information platform is required to bring together those seeking a water allocation with those willing to transfer a water allocation such that both parties are well-informed in their decision-making.

Overall, this report and its recommendations endeavour to make the system more inclusive and transparent through recommendations around public consultation and notification. However, while a great deal of ground was covered, this work was only a high-level overview. Like many complex issues, there is much more work to be done to ensure a water allocation transfer system is viable. Like many *Water for Life* initiatives, partnerships will be important for completing this work. As well, public awareness and support for an enhanced water allocation transfer system are paramount.

While many of these recommendations will take time to implement, they can be considered powerful tools for moving Alberta beyond the status quo and equipping the province to deal with its changing water needs. They will also result in considerable improvement to the environment. The Council believes this work is of value and informs future actions and those who undertake them.

Glossary

Allocatable Water	All water above the WCO available for allocation. Water that could be issued to licences for purposes other than WCO, subject to any Crown Reservation rules.
Amendment	Minor changes to the original terms of a licence may be made through an amendment to that licence. For example, a change in the name of the holder (person responsible) of the licence can be made as an amendment as well as changes to monitoring or reporting conditions.
Assignment	In times of shortage, a junior licence holder or registrant can enter into a temporary written agreement to borrow a senior priority (priority call) of another licence holder or registrant. However, the junior licence holder must take their allocation in accordance with the junior licence's terms and conditions, *i.e.* amount, rate, timing, instream objectives, *etc.* Only unused portions of a licence can be assigned, which could be all or only a portion of the licence. Assignments are governed by Section 33 of the *Water Act*. No Director pre-approval is required; however the assignment may be blocked by the Director if any other senior licensee, household, registrant or the environment is adversely affected by the assignment.
Crown Reservation	The Minister may hold any unallocated water in a river basin as a Crown Reservation, with priority from the date the reservation was approved.
Community Water Supply	A water supply for household purposes provided to two or more households in a municipality or community from a licensed well or other water supply source.
Healthy Aquatic Ecosystems	An aquatic environment that sustains its ecological structure, processes, functions, and resilience within its range of natural variability.
Household Supply	The use of a maximum of 1250 cubic metres of water per year per household for the purposes of human consumption, sanitation, fire prevention and watering animals, gardens, lawns and trees. Generally, water for 'household purposes' cannot be licensed unless it is licensed as a community water supply.
Hydrological Integrity	Used here in the context of sustaining aquatic ecosystem health such that basin hydrology, hydrogeology, the aquatic ecosystem and other physical, biological and chemical components are fully functioning and resilient to disturbance. If one or more components become impaired, its function may be altered and the integrity of the system compromised. A compromised system may not be able to meet social, economic and environmental water needs.
Licensee	A person responsible to comply with a licence.
Reasonable Prospect of Use	A reasonable time period within which water held in a licence should be used for sector-specific uses.

Transfer	All or part of an allocation in a licence can be transferred to a new user. Once a licence is transferred from the transferor to the transferee, the transferee becomes the licence-holder and diverts the water in accordance with the terms of the new licence issued by the Director. The original licence is cancelled if all of the allocation is transferred, or reduced in volume to reflect the transferred amount if only a portion is transferred. The new licence issued may contain new terms to address impacts from the transfer. The transferee either can appeal those new terms or can withdraw the transfer application if not in agreement with them. **Temporary Transfer** The licence reverts back to the transferor from the transferee automatically upon the occurrence of an agreed-upon triggering event, *i.e.* expiration of two years. The date when the allocation reverts back to the original licensee is recorded on the licence and no further application is required. **Permanent Transfer** The new licence arising from the transfer remains in place; however it can be transferred again through the application process.
Water	Water is defined in the *Water Act* as "all water on or under the surface of the ground, whether in liquid or solid state." The same statutory rules and thresholds apply to groundwater and surface water.
Water Allocation	An allocation is the volume, rate and timing of a diversion.
Water Allocation Licence	The authorization of the allocation of crown-owned water from a specified source of water to a fixed location or project facility.
Water Allocation Transfer	A water allocation transfer occurs after the holder of an existing water withdrawal licence agrees to provide all or part of the amount they are allocated to another person or organization and Alberta Environment approves the transfer. When this occurs, the allocation is separated from the original land and a new licence, with the seniority of the transferred allocation, is issued and attached to the new location. Under the *Water Act*, Alberta Environment can place conditions on the new licence. Water allocation transfers can occur only if authorized under an Approved Water Management Plan, or by the Lieutenant Governor in Council.
Water Conservation, Efficiency and Productivity	From *Water Conservation, Efficiency and Productivity: Principles, Definitions, Performance Measures and Environmental Indicators.* (2007, Alberta Water Council)*:* Water Conservation: Any beneficial reduction in water use, loss, or waste; Water management practices that improve the use of water resources to benefit people or the environment. Water Efficiency: Accomplishment of a function, task, process, or result with the minimal amount of water feasible; An indicator of the relationship between the amount of water needed for a particular purpose and the quantity of water used or diverted. Water Productivity: The amount of water that is required to produce a unit of any good, service, or societal value.

Water Conservation Holdback	The Director may withhold up to 10 percent of the water from a licence being transferred to protect the aquatic environment or to implement a Water Conservation Objective. This holdback applies to permanent and temporary transfers, but only to the volume of water being transferred.
Water Conservation Objective (WCO)	As outlined in Alberta's *Water Act*, a Water Conservation Objective is the amount and quality of water set by a Director for the protection of a natural water body or its aquatic environment; the protection of tourism, recreational, transportation or waste assimilation uses of water; or the management of fish or wildlife, arrived at after consideration of science, ecosystem or IFN needs and socio-economic considerations.
WCO Licence	WCO licences (like the 10% holdback or for a specific reach or stream) have a location, conditions, and a priority date. WCO licences are subject to the rules of *first-in-time, first-in-right* and are presently held by the Provincial Government.
Water for Diversion	Water for diversion includes all licensed amounts available for transfer (sale or purchase) in an open market system under an Approved Water Management Plan.
Water Waste	Some examples of 'water waste' include allowing water to leave an individual's property by drainage onto adjacent properties or public or private roadways due to excessive irrigation of a landscaped area and/or uncorrected leaks; using water to wash down sidewalks, driveways, parking areas, tennis courts, patios or other hard surfaces, except to alleviate immediate safety or health hazards; and the overfilling of swimming pools, spas, ponds and artificial lakes.

Appendix A — Project Team Members

Committee Member (Alternate)	Sector	Affiliation
Maureen Bell (Lindsay Telfer)	Environmental	Water Conservation Trust of Canada
Rod Bennett	Alberta Agriculture and Rural Development	Alberta Agriculture and Rural Development
Paul Fesko (John Jagorinec)	Large Urban	City of Calgary
David Hill	Science and Research	Alberta Water Research Institute
Bob Jones (Don Johnson)	Rural	Alberta Association of Municipal Districts and Counties
Mike Kelly	Power Generation	TransAlta Corporation
Gillian Kerr	Alberta Environment	Alberta Environment
Derek Lovlin	Watershed Planning and Advisory Councils	Watershed Planning and Advisory Councils
Stuart Lunn	Mining	Alberta Chamber of Resources
Dave McGee	Alberta Environment	Alberta Environment
Tara Payment	Oil and Gas	Canadian Association of Petroleum Producers
Ron Pearson	Fisheries Habitat Conservation	Trout Unlimited Canada
Rich Smith	Livestock	Intensive Livestock Working Group
Judy Stewart	Lake Environment Conservation	Alberta Lake Management Society
John Trefanenko	Small Urban	Alberta Urban Municipalities Association
Jim Webber	Irrigation	Alberta Irrigation Projects Association
Dave Martz (corresponding)	Wetland Conservation	Ducks Unlimited Canada
Keith Murray (corresponding)	Forestry	Alberta Forest Products Association

Appendix B — Project Team Methodology

The WATSUP Team, representing 15 sectors, met regularly to gain an understanding of all interests and desired outcomes. The initial focus of their work was to understand the operation and complexities of the existing system, including the regulatory and legal framework, ecosystem and economic development considerations, and the challenges and weaknesses, in order to *develop recommendations to better utilize and enhance Alberta's water allocation transfer system.*

The team heard from experts, including Dr. David Percy (legal context); Professor Henry Vaux (the California system); and Professor Mike Young (the Australian system). They also broke into two sub-groups. The Symposium Planning Sub-Committee organized a two-day event titled, *WATER — How Alberta Can Do More with Less,* which was held in Calgary March 4th and 5th to learn about other jurisdictions (United States, Australia, Spain and Canada). Proceedings are available through the Alberta Water Council and Alberta Water Research Institute websites.

The Straw-Dog Sub-Committee drafted recommendations to improve the various components of the existing water allocation transfer system framework, while staying within the confines of the current *Water Act*. Throughout their work, they presented their findings back to the larger team for consideration. The larger team then incorporated what they learned from their discussions, experts, and the symposium into their analysis, assessing the implications of various options and solutions.

While the focus was on making high-level recommendations, the devil is in the operational details. Many of these finer points will need to be sorted out by those charged with implementing any changes. Finally, it is important to note that the water allocation transfer system is a complex topic and that it takes time to ensure all member groups are comfortable with and understand directions proposed in this report. Every opportunity to engage and hear the opinions of all participants was made, within the confines of balancing workload and resources.

Appendix C — Alberta Water Council's Consensus Decision-Making Process

The WATSUP Team followed a consensus-based process, as outlined in the Alberta Water Council's process guidelines (see http://www.awchome.ca/Portals/0/pdfs/Process_Guidelines.pdf.). This included stating in the report where there were areas of both consensus and non-consensus. The relevant extract from AWC's process guidelines is as follows:

3. General Process Guidelines

The Council has established certain practices and procedures that apply to all aspects of its work and which all participants are expected to follow; these pertain to decision making and confidentiality.

3.1 Decision Making

3.1.1 Consensus

The Board and all of its project teams, working groups and committees operate by consensus in which participants work collaboratively to find solutions that are in the best interests of everyone. Consensus is reached when everyone agrees they can live with the outcome, although the decision may not achieve all the desired outcomes of every sector. Those who have been part of the process of reaching consensus are expected to uphold those agreements and champion them to their sector stakeholders and others.

Consensus is possible only when the conditions regarding a quorum are met. For the Board, a quorum exists when 55% of Directors or their Alternates are present and all four broad categories are represented (Government of Alberta and Provincial Authorities, government, industry, and non-government organizations). Further, when a decision that could significantly affect a particular sector is pending, a representative from that sector must be present when the decision is made.

For project teams, working groups and committees, at least one representative from each broad category must be present to have quorum and for consensus to be achieved. One or more representatives indicating a lack of support for a decision means that consensus is not reached

In working toward consensus:

- All working group, project team and committee members must have a reasonable opportunity to participate in discussions and review proposals before they are brought forward as recommendations to the Board.
- Participants in Council work are responsible for bringing forward their sector's perspective, including any potential concerns, as early in the process as possible.
- Those who do not support the direction or decision are expected to explain what they cannot agree to, provide the rationale for their position, and offer alternative solutions or changes that would make the idea acceptable.

The chair of the Board or team will ensure that everyone has an opportunity to be heard, and that silence is not taken as agreement. When consensus is reached, the agreement will be noted in the minutes.

3.1.2 When consensus is achieved

When a team reaches consensus on their work, they will usually submit a report to the Board for approval outlining their thoughts and recommendations. Formats and types of reports will vary widely, but they should all be well-written and have the consensus support of the team.

Because teams are composed of those sectors that have an interest in the issue being considered, reports being submitted for approval should generally have the support of the Board, as written.

From time-to-time, minor edits to team reports such as wording changes, formatting adjustments or grammatical edits may be necessary. Directors and Alternates may suggest these minor changes at the Board meeting. If the Board has consensus agreement to incorporate the suggested minor changes, a new version of the report will be prepared by Council staff and the communication plan will be executed. The report will not come forward to the Board again for review.

If the Board feels that there is consensus support for the content of a report, but more substantive changes are required, Council staff will coordinate the necessary revisions and a new version of the document will be tabled at the next Board meeting for approval. The communication plan would be executed after the report is approved.

3.1.3 When consensus cannot be achieved

a) When a team is unable to reach consensus

If a team is unable to reach consensus, the co-chairs and project manager can propose a path forward for the team to discuss. Options will depend on the issue and the circumstances. One option is tabling the matter for future discussion, particularly if there are other related items under consideration. Another option would be to take it to the Board for advice and direction.

If the team feels they cannot resolve the issue, they will develop a non-consensus report to take forward to the Board. It should contain:

- the areas of consensus
- the areas of non-consensus
- alternative solutions or changes that would make the original idea acceptable to the various sectors.

The Board may decide to ask the team to try again to reach consensus or the Board may make a decision based on the team's input.

Appendix D — The South Saskatchewan River Basin

The only Approved Water Management Plan that closes a major basin to new allocations for water licences (except for First Nations, WCOs and storage projects) in Alberta is the *Approved Water Management Plan for the South Saskatchewan River Basin (Alberta)*. In this basin, there is a shortage of water and water that could be made available is tied up in existing licences of varying type and priority. Approximately 62% of the mean annual discharge of this river is allocated.

This basin also presents a challenge to the concept of effectively securing water for environmental protection. Development of the recommendations for the SSRB was predicated upon respect for existing licences or the *first-in-time, first-in-right* principle. Although a WCO was set in August 2007, it is a junior licence and it is not always achieved.

Although closed to new applications for allocation, the Plan authorizes the Director to consider applications to transfer licensed water allocations between users in the basin (Section 2.7.1). The development of a robust water allocation transfer market may provide mitigative measures required to improve environmental protection and free up the movement of existing unused water between users.

The SSRB Plan applies to all named rivers, their tributaries and all natural surface water with hydrological connection to the named rivers and tributaries. Groundwater that readily flows naturally under the ground to these surface water bodies is also considered surface water (Section 1.1). Groundwater that does not meet the above definition is not governed by this Plan; therefore, the Director is not authorized to consider transfer applications for that category of water.

There are several recommendations discussed in this report that could be applied specifically to the SSRB to improve the ability to achieve social, economic and environmental objectives in this basin. For example, the Province could develop a comprehensive strategy to implement and achieve the SSRB basin-wide WCO. This strategy may also identify where site-specific WCOs may be required to meet specific environmental objectives for certain tributaries, mainstem reaches or other waterbodies within the basin. The use of the 10% holdback on all transfers may also benefit the WCO in this basin.

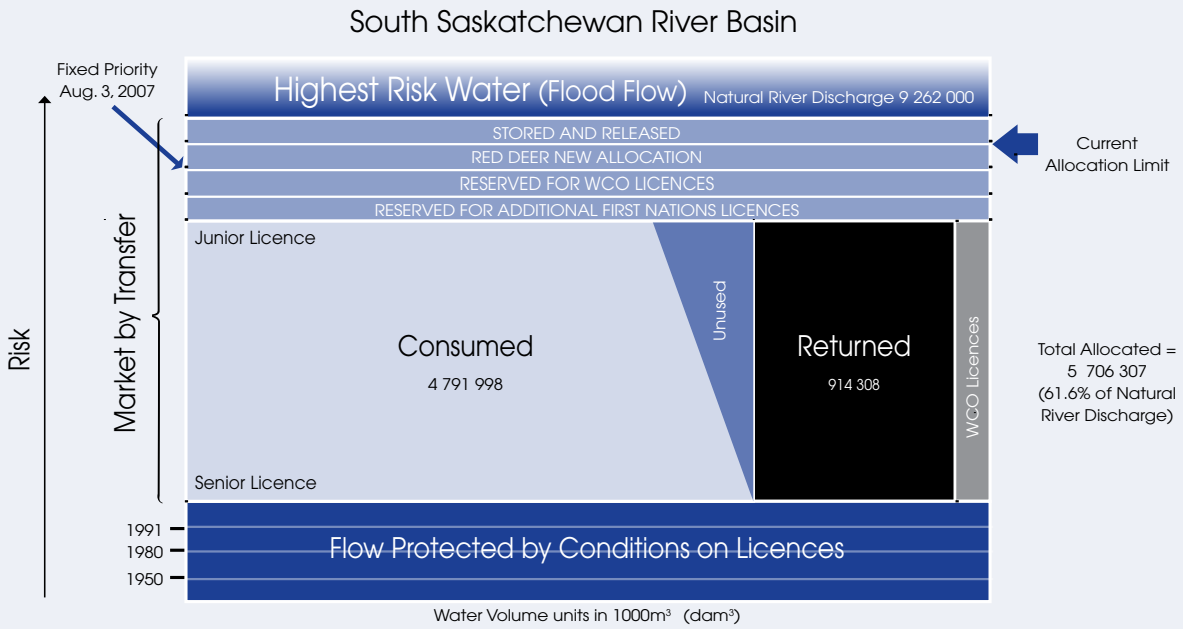


Figure 7 — The South Saskatchewan River Basin basin, illustrating the vulnerability of the WCO as a junior priority.

Appendix E — SSRB Matters and Factors for 'Do No Significant Harm'

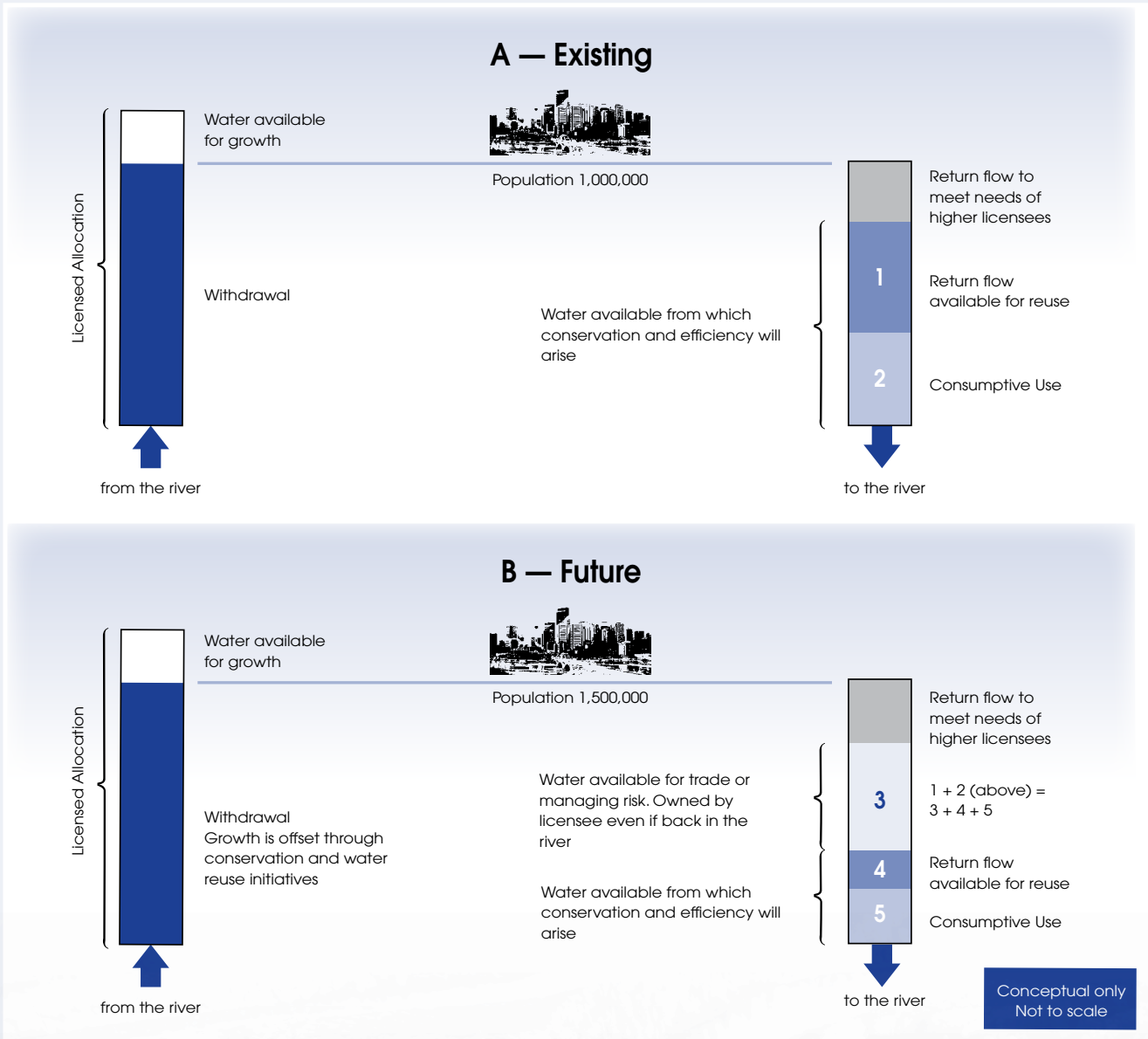
The *Matters and Factors* and corresponding *Guidelines* from the *Approved Water Management Plan for the South Saskatchewan River Basin (Alberta)*, below, must be considered in assessing whether any significant harm will result from the approval of a transfer:

Matters and Factors:	Guidelines:
Existing, potential and cumulative effects on the aquatic environment	– No significant adverse effect on the aquatic environment
Existing, potential and cumulative effects on any applicable instream objective and/or WCO	– No significant adverse effect on existing instream objectives and/or Water Conservation Objectives
Efficiency of use	– Industry standards and best practices
Net diversion	– Quality and timing of return flow should be benign or beneficial for environment – Only net use portion of the allocation is transferable, (subject to moratorium concessions) unless new user has a non-consumption operation
Existing, potential and cumulative hydraulic, hydrological and hydrogeological effects	
Existing, potential and cumulative effects on household users, traditional agriculture users and other higher and lower priority licensees	– From the *Water Act*, Section 82(3)(b): *the transfer of the allocation, in the opinion of the Director, does not impair the exercise of rights of any household user, traditional agriculture user or other licensee other than the household user, traditional agriculture user or other licensee who has agreed in writing that the transfer of the allocation may take place*
With respect to irrigation, the suitability of the land to which the allocation of water is to be transferred for irrigated agriculture	– The land must be suitable for irrigated agriculture: Class 4 or better in accordance with the standards of Alberta Agriculture, Food and Rural Development
The historic volume, rate and timing of the diversion under the original and proposed licence	
Location of the existing diversion and the proposed new diversion	

Water quality (including public health and safety and assimilative capacity)	– No significant adverse effect on public health and safety – No significant adverse effect on assimilative capacity
Linkages between surface and ground water and the effects or changes in overall use	– No significant adverse effect on groundwater quantity or quality
Existing, potential and cumulative effects on the operation of reservoirs or other water infrastructure	– No significant adverse effect on operations unless the reservoir or infrastructure licensee agrees it is feasible to adjust operations to mitigate effects
Master Agreement on Apportionment (Alberta's commitments to Saskatchewan)	– The terms of the *Apportionment Agreement* will be respected
First Nation Rights and Traditional Uses	– Government of Alberta First Nation consultation policies and guidelines on Land Management and Resource Development – Agreements with First Nations

The *Water Act* (82) (5) (c) (iv) also provides that the Director may consider any other matters applicable to the transfer of the allocation that the Director considers relevant.

Appendix F — City of Calgary Water Scenarios



Scenario A

A City of 1,000,000 has a water allocation. This water is used for people and business and then treated and returned to the river. Some of the water returned is used by senior licensees and this amount is not available for reuse. The amount returned is typically less due to consumption. Sometimes it could be more due to inflow and infiltration from groundwater and rain into the pipes conveying wastewater to the plants or through manhole lids from rain. The water for growth is also held. Originally, it was there for growth based on the old models of water supply and wastewater treatment. It is a safeguard against climate change.

Scenario B

The city has grown to 1,500,000, yet it is still withdrawing the same amount of water. More people, same water, equates to increased productivity. The only way to offset growth is to conserve water or reuse it. Water withdrawals previously used for some industry users are now supplied from treated effluent. Drinking water is no longer used in parks. The new model for a city supply is integrated urban water management. It includes some rainwater harvesting, and tries to match quality with the use. The overall package of conservation and reuse frees up some water under its licence. This water is available for trade in the market, assignment on a yearly basis or just held to manage risks.

Notes

ALBERTA WATER COUNCIL
Website: www.albertawatercouncil.ca