

# **Minister's Advisory Group**

## **Recommendations for Improving Alberta's Water Management and Allocation**



**August 2009**

# Contents

Letter from David Percy, Co-chair  
Minister's Advisory Group on Water Management and Allocation *i*

1. Protected Water **1**
  2. Reallocation of Water **4**
  3. A Systems Approach **11**
  4. Governance of Water Management and Allocation **12**
  5. Future Studies **14**
- Appendix A – List of Members **15**  
Appendix B – Definitions **16**

Honourable Rob Renner, Minister of Environment  
425 Legislative Building  
10800-99 Avenue  
Edmonton, Alberta T5K 2B6

August 5, 2009

Dear Minister Renner:

The Minister's Advisory Group on Water Management and Allocation is pleased to provide its recommendations on how to improve Alberta's water management and allocation system. The Advisory Group (see Appendix A for list of members) was established in March 2009 and was tasked with:

- 1) understanding the current water management and allocation system in Alberta,
- 2) understanding the current and future pressures and issues on the system provincially and specifically for each of the seven major basins as defined in the *Water Act*, and
- 3) making recommendations in a report to the Minister of Environment on how to improve the system to meet such pressures and issues.

The Advisory Group was directed by the Minister to provide high-level observations and conclusions leading to strategic recommendations. It was recognized that the Advisory Group had a limited time to consider these complex issues and that it would provide broad guidance on directions for change without considering detailed questions of implementation. On that basis, the Group's report is attached for your consideration.

#### Summary of Advice

There is an urgent need to:

- Establish levels of Protected Water for the purpose of protecting the environment and aquatic ecosystems in all major river basins in the Province. The government should not allocate water for consumptive uses where allocations would reduce Protected Water below the stipulated levels. Where existing licences prevent the stipulated levels of Protected Water from being met, the government should establish and implement a plan to achieve legal protection for the stipulated levels within a reasonable period.  
[Recommendations #1, 2, 3]

- Invigorate the current process for transferring existing water allocations. The goal is to allow water to be transferred to its most highly valued uses, while ensuring that transfers protect or enhance the environment and respect the rights of other water users. [Recommendations #4, 5, 6, 7, 8, 9]

Alberta's water management and allocation system must achieve a number of more particular goals. In order to address the identified urgent needs, the Group recognised that it is necessary to:

- Provide an expedited process for establishing Protected Water and in particular for setting interim Water Conservation Objectives in those basins that do not already have them. [Recommendations # 2, 3]
- Remove barriers to the transfer of water allocations except those that are genuinely required to protect the environment and the rights of other water users. [Recommendations #4, 5, 6, 7, 9]
- Facilitate participation in the process for transferring water allocations. [Recommendations #7, 9]
- Establish clear roles for regional and local stakeholder and advisory groups, such as Watershed Planning and Advisory Councils, and clear relationships between water allocation decisions, Water Management Plans and the Land-use Framework. [Recommendations #12, 13, 14]
- Increase the strategic use of existing and new storage as a beneficial tool in water management and allocation. [Recommendation #10]
- Take into account the inter-connection of groundwater and surface water, allowing the integrated, systematic management of groundwater and surface water. [Recommendation #11]

The Advisory Group urges the consideration of longer term issues identified but not dealt with in this report, including:

- Assessing additional mechanisms for unlocking existing unused water allocations.
- Examining alternative innovative regional governance approaches, including the use of basin commissions or authorities.
- Examining the relationship between irrigation districts, irrigation farmers and the transfer system by engaging in consultation with the Minister of Agriculture and Rural Development.

- Investigating whether the Province could accept money or other benefits in a transfer rather than simply holding back 10% of the water. This could be a consideration in cases where the monetary value of the water could be applied to improve instream flow conditions with significantly greater benefit to the river system than the 10% holdback provided for in the Water Act. [Recommendation #15]

Overall, the Advisory Group believes that the current system as outlined in the *Water Act*, including the system of prior allocation (commonly called first-in-time, first-in-right or FITFIR), continues to be a reasonable basis for allocating and reallocating water in Alberta at this time. The *Water Act* contains tools that if used more completely or with relatively straightforward changes would enable transfers to happen more quickly, easily and transparently in all major basins. This would allow water to move to more highly valued uses and permit licencees to better manage risk. The group concluded that more study would be required to determine whether the province should move away from the prior allocation system.

Examination of these issues is an important next step in enhancing the water management and allocation system in Alberta.

The recommendations made in this report do not limit the ability of the government to implement future changes in these areas.

In conclusion, the Advisory Group thanks you for the opportunity to provide advice on this important topic.

Sincerely,

David Percy, Co-chair  
Minister's Advisory Group on Water Management and Allocation

# 1. Protected Water

There are finite limits to the amount of water available for all uses, consumptive and non-consumptive, in Alberta. The *Water Act* needs to specifically protect the water required for environmental needs.

***Recommendation #1 - Protected Water for watercourses must be established in accordance with science and community values and must then be legally protected.***

Protected Water is more precisely defined in Appendix B. In broad terms, it refers to water needed for the protection of the environment by taking into account the health of the river system, the riparian environment, source water protection, headwater protection and water quality. Protected Water can encompass the improvement of environmental standards and the health of the river. Protected Water can also include other non-consumptive values, such as recreation, navigation, waste assimilation, and aesthetics.

The central concept of Protected Water requires establishing a quantity of water or rate of flow that is not available for allocation to other uses. Initially, the government must decide (a) who should establish the quantity of water to be protected in a given watercourse, and (b) the process to be used in reaching a decision. The current *Water Act* contains a number of mechanisms for protecting water, including Water Conservation Objectives (WCOs).

It is relatively simple to establish Protected Water in river basins that are not close to full allocation. The government can use a variety of techniques to set aside the amount of water required to fulfil the requirements of Protected Water in a particular basin and issue licences only for the remaining water.

It is much more difficult to establish effective Protected Water in a river basin that is fully allocated or approaching full allocation. This is the challenge in the South Saskatchewan River Basin (SSRB). The WCO defined under the SSRB Water Management Plan will be a junior licence (August 2007) and does not reflect the level of protection that would have been defined if the basin had not been so heavily allocated at the time that the Management Plan was completed. As discussed under Recommendation #2, there is potential for the government to manage this WCO in a manner that mitigates environmental risks. The concept of Protected Water can and must be realized in this basin.

***Recommendation #2 - Protected Water must be established on an interim basis for each river basin as a matter of urgency.***

In river basins that are not yet approaching full allocation, interim levels of Protected Water should be established as quickly as possible in order to avoid the difficulty of protecting water in the future as more licences are issued in those basins.

WCOs established in the *Water Act* can be used immediately to identify interim levels of Protected Water in each basin. WCOs are very flexible. They can be developed for a specific reach of the river and each tributary; these can be combined to have a very positive impact on the river. WCOs can also be used creatively to meet specific environmental needs within a basin. They can be defined to protect headwaters, lakes, wetlands and important regions of groundwater recharge.

Once a final level of Protected Water is established, it is critical that it should be fully safeguarded under the *Act* through the issue of a licence or another appropriate legal mechanism.

In the SSRB the existing WCO should be applied and optimized in a strategic manner. A number of actions could be combined to accomplish this goal including:

- Defining a comprehensive strategy whereby the existing WCO would act as an 'umbrella' for a series of subsidiary WCOs to be set across the basin. These subsidiary WCOs would be licenced to meet specific environmental needs. For example, a high proportion of natural flows in headwater regions could be set aside as Protected Water. This would provide long term protection and also preserve flow for downstream users. It would not impact existing licencees.
- Licensing holdbacks for Protected Water created in the transfer process for specific rather than general WCO purposes. These specific purposes should fall within the comprehensive WCO plan for the basin. This avoids a piecemeal approach to the accumulation of holdbacks.
- Taking Water Conservation Holdbacks at the maximum amount authorized under the Water Management Plan.
- Acquiring water allocations (preferably senior) in the name of the Province through the transfer process to meet specific WCO purposes.
- Allowing private organizations, water trusts or individuals to acquire licences for the purpose of achieving the desired WCO.

They could then either hold the licences themselves or have them issued to the Province to hold for a WCO purpose.

- Assessing the potential role of water trusts as a vehicle for acquiring licences through the transfer process for WCO purposes on an arms length basis.

***Recommendation #3 – An overall Provincial plan must be developed to show how levels of Protected Water will be achieved or maintained in all river basins.***

A Provincial plan for achieving Protected Water might include the following:

1. Cabinet or the Minister could issue a Direction to set interim WCOs throughout the Province on a set schedule.
2. Alberta Environment could set interim WCOs based on the best currently available data and taking into account that:
  - Protected Water may be set at a level that does not allow other uses so that some vital reaches of rivers remain in a “pristine” or “wild” state.
  - Population growth and economic development forecasts will impact future demand for water.
3. WCOs would be refined through planning processes and adjusted over time based on experience and further data. This is an appropriate role for Watershed Planning and Advisory Councils (WPACs) as they lead the watershed planning process across the Province. It is also open to other organizations or individuals, including Watershed Stewardship Groups, to develop recommendations for a WCO for a basin, sub-basin, reach, lake, aquifer or wetland for consideration by the Director.
4. Strategies are developed to achieve WCOs that are flexible and meet the needs of the river basin.
5. Government commits to complete the process, including providing the required budget.
6. The government commits to conduct a formal ten year review and make adjustments as required, with a possible five year initial review for an interim WCO.

The Advisory Group acknowledges that these suggestions provide only a framework for implementing Protected Water and that further discussion will be required.

## 2. Reallocation of Water

***Recommendation #4 - Although some transfers of water allocations have occurred over the last eight years under the Water Act, the transfer mechanism must now be made to work in all parts of Alberta. In those basins where no new water licences are being issued, it is critical that the transfer mechanism operates without unreasonable cost or delay in order to enable water to move to more highly valued uses. In other basins, the transfer mechanism should be made available to allow users to obtain higher priority allocations and better manage risk.***

The *Water Act* provides for transfers and short term assignments of allocations held under a water licence. Several dozen have occurred over the last eight years in the South Saskatchewan River Basin. The requirement of a Water Management Plan approved by Cabinet means that this is the only basin in which transfers can occur. The transfer system must now be allowed to work in all parts of the Province. The transfer of water allocations through transfers must not interfere with Protected Water, as described above, and must be subject to a level of scrutiny by the Director that is commensurate with the risk involved, as discussed in Recommendation #6.

The transfer system enables the intrinsic value of water to be realized by allowing allocations to move to the purposes most valued by water users. Transfers are the only way for new users to acquire water rights or for existing users to increase their water allocation in the SSRB, which was closed to new allocations in August 2006. It is vital for the government to require all those who seek new or increased water rights to use the transfer system, even if they are public bodies, such as municipalities or the Province itself.

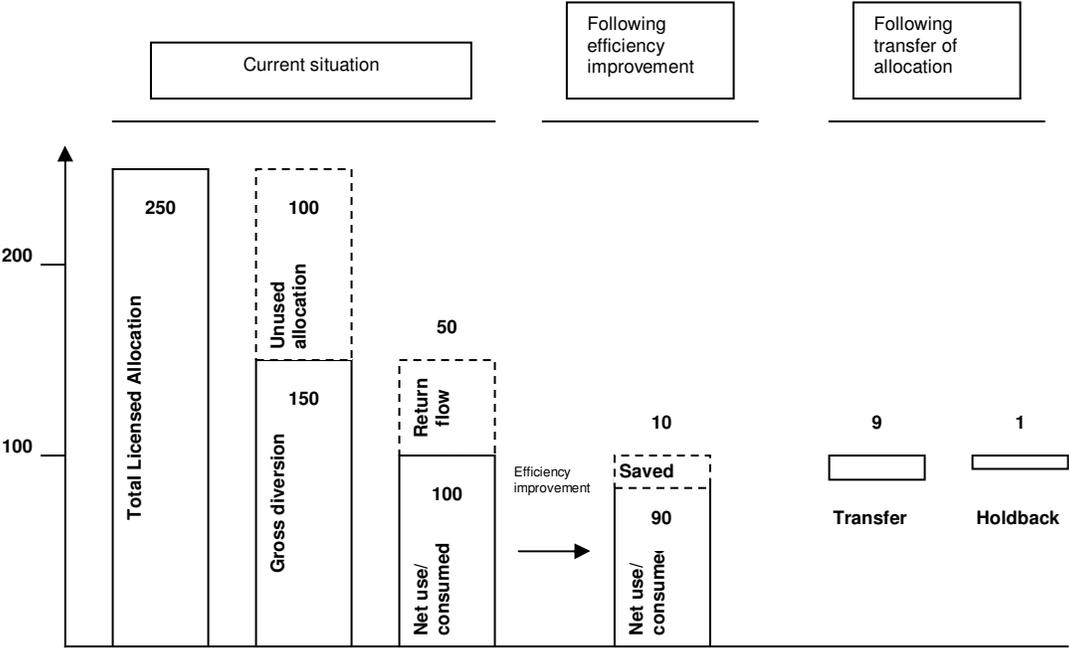
The transfer should apply to all river basins in Alberta, including those where there are only a few licences and a few buyers. While there may be limited demand for transfers in some northern river basins today, the availability of the tool will provide an alternative to issuing new licences and allow users to manage the risk of shortage by obtaining access to senior allocations.

***Recommendation #5 –The Minister must clarify the amount of water the licensee is entitled to transfer. The Water Act does not deal clearly with this and it must ultimately be resolved for the transfer system to achieve its full potential.***

The Minister must decide three issues relating to the nature of a licensee’s entitlement to water. First, are licensees entitled to the gross amount of water stipulated in their license or only to the net amount of water that they consume under the terms of the licence? Secondly, are licencees entitled to hold the amounts of water stipulated in their licences even where those amounts exceed their foreseeable future needs or should the excess water or unused allocation be unlocked and made available to others? Third, while savings should be encouraged, when savings have been made by a licensee through increased efficiency in water use, should the licensee be allowed to retain (and transfer) all or only a portion of the saved water?

The operation of the transfer system in the SSRB has raised all three questions. The first asks whether licencees are entitled to transfer water that would normally return to the river as return flow, or whether the licensee must continue to allow normal return flow to go back into the river. The second asks whether the entitlement of a licensee is limited to the amount of water which it is likely to put to use in the foreseeable future. The third is controversial when the increase in efficiency has occurred in part through investments paid for by the government.

These situations can best be described by reference to an irrigation example (see diagram below).



The first situation deals with the important issue of return flow. Suppose that an irrigation district generally diverts 150,000 acre-feet [gross diversion] of its licenced allocation, but it never consumes more than 100,000 acre-feet in a given year [net use]. It returns a minimum of 50,000 acre-feet to the river in the form of return flow.

The issue for the Minister is whether the irrigation district is legally entitled to transfer up to 150,000 acre-feet to a new user [its gross diversion] or whether it can transfer only 100,000 acre-feet [the amount of its net use]. If licencees are entitled to transfer their gross diversion, the flow of the river will gradually diminish because of reduced amounts of return flow.

The *Water Act* addresses this problem in two ways. Generally, it allows the Director to consider the effect of a transfer on the aquatic environment. More specifically, it allows the Director to take into account the amount of water historically diverted by the licensee. This allows the Director to ensure that the licensee does not transfer more than the amount of water it has historically diverted, but it does not prevent the licensee from transferring more water than it has historically used.

If transfers are to be more widely employed, it is important to decide whether licencees are entitled to transfer amounts up to their net use or up to their gross diversion.

The second and the third situations both relate to unused water. The second situation occurs where licences are for amounts of water significantly in excess of the licensee's foreseeable future needs [unused allocation]. The third situation arises where there are water savings made by a licensee through investments in increased efficiency in water use.

The problem of unused water, whether resulting from an excess over foreseeable future needs or from savings made by the licensee, must be addressed on the basis of the following principles:

- Any change to the existing rules must be fair and transparent.
- Changes should create incentives for existing licencees to make unused water available to others, rather than requiring unused water to be taken away against the wishes of the licensee.
- Changes must not penalise licencees whose investments in efficiency have created water that is surplus to their immediate needs. Water that has been saved since 1999 through the licensee's own investment should remain with the licensee and be available for transfer by the licensee. The Minister must decide whether the same principle applies when the saved water has been created wholly or partly through government investments.

- Changes must not cause significant harm or compromise Protected Water, as described above.
- If statutory changes are required to alter the rights of existing licencees to unused water, they should be implemented by a single statutory amendment to avoid continued uncertainty in the market.
- Any statutory change must provide the opportunity for existing licencees to demonstrate their need for the unused water before it is made available to others.

The Advisory Group acknowledges that the responses to these questions will require careful consideration and further study. However, they must be resolved in order for the transfer system to work effectively.

***Recommendation #6 - A number of operational barriers established in the Water Act should be removed to allow the transfer system to operate more effectively. More specifically, a tiered approval process should be implemented, and the requirement to have a Cabinet-approved Water Management Plan before transfers are allowed should be abolished.***

Under the *Water Act*, a transfer application is subject to very strict safeguards. The *Act* requires the Director to examine at least seven factors before deciding whether to approve a transfer application. In addition, the *Act* requires the Director to consider all matters and factors stipulated in the relevant approved water management plan. The SSRB Water Management Plan sets out 14 factors which the Director must address before approving a transfer.

This process imposes significant costs on the applicant in providing the necessary information to the Director, and consumes time while the Director examines all the necessary factors before making a decision. As a result, some transfer applications have taken many months from the time of initial application to the time of final approval.

Experience has shown that some applications to transfer allocations of water are uncontroversial and should be approved quickly. In addition, the *Act* provides for the short term transfer of allocations through assignments with minimal supervision by the Director. Assignments have no requirement for a holdback of water and can take effect instantly. As a result they have proven popular and have operated well. Therefore we recommend that the *Water Act* be modified to remove operational barriers and add mechanisms to make transfers more effective and efficient, including:

- Using tiered approval processes that reflect the range of risk and complexity in applications for transfers. The level of review should increase in intensity according to the complexity of the application. The procedure for considering simple, low risk transfers should be relatively cursory. The need to consider a high number of matters and factors should be restricted to complex, high risk situations.
- Abolishing the requirement to have a Water Management Plan, approved by Cabinet, before transfers are allowed. At the present time, this requirement restricts transfers to the SSRB and prevents them from occurring elsewhere in the province. Transfer applications should be allowed once the required levels of Protected Water have been established in a particular basin, so that the Director is provided with clear environmental protection baselines to guide the exercise of his or her discretion. As suggested in Recommendation 2, levels of Protected Water should be established on an interim basis for all river basins.

***Recommendation #7 –The operation of the transfer system should be streamlined by developing consistent and simplified documentation for all licences, instituting a public registry system, and clarifying the rights held by licensees.***

The transfer process must be simple, transparent and fast, while respecting the principle of Protected Water and the requirements of the *Water Act* as described above. Some administrative practices should be updated or implemented that could significantly improve the transfer process. Improvements for consideration include:

- A review of existing licences and their terms on a basin by basin basis, starting with the most water short basins. The Licence Viewer developed by Alberta Environment for the SSRB is a useful starting point for the development of a system that should be rolled out across the Province.
- The standardisation and simplification of licences so that they contain common core elements and identify clearly and simply the conditions attached to the allocation. Water licences have been issued in Alberta for over 110 years. They include terms and conditions that have varied considerably over the decades. The terms and conditions are sometimes lengthy and complex and of varying degrees of legality. This obscure documentation makes it difficult for a licensee to assess the nature of the rights that they want to transfer, or for a potential acquirer to assess the rights that they are obtaining.

- The institution of an accessible registry system to provide a clear account of the nature and priority of all licences in a given basin and to publicly record all transfers.
- Clarification of the rights conferred by water licences. Transfers depend upon the clarity of rights, to the point that the right received could be used as an instrument in financing.

***Recommendation #8 - Water Shortage Response Plans must be required of holders of all significant licenses. The Director should be authorised to establish the criteria for determining which licences are to be considered significant.***

A Water Shortage Response Plan (WSRP) will require all significant licencees to understand the risks associated with water shortages. Understanding these risks will enable them to create a plan of action in the event that shortages occur. Where the WSRP indicates an unacceptable level of risk, the licencee can use the transfer or assignment process to obtain a higher priority allocation during periods of water shortages. WSRPs must be simple and cost little to develop; the *scope* of the plan must be proportional to the risk involved. Holders of licences for water to be used for municipal, residential and livestock purposes are considered to be the most in need of a WSRP. These user groups are expected to participate in the transfer system to manage the risks identified in their plans.

***Recommendation #9 – Provision should be made for a Facilitator position to improve the operation of the transfer system and to accelerate knowledgeable participation in the transfer system by water users.***

The transfer system must enable participants to conclude a transfer quickly and with certainty. A Facilitator can contribute to the development of the transfer system by:

- Developing the documentary infrastructure to enable transfers to occur. This could include suggesting a consistent approach to licence records and establishing public water registries containing all licence records as suggested in Recommendation #7.
- Providing unbiased, consistent and accurate access to information about transfers and providing a point of contact for all information concerning transfers.
- Establishing a “Bulletin Board” to allow buyers to find willing sellers providing information about volumes of water offered for sale/purchase, its location, priority and price.

- Providing education to licencees, potential users: and the public on the transfer process.

At the present time, no one in government is in charge of "making the transfer system work". The Facilitator could be a "sunset" position, ending once the transfer system is designed and implemented, and knowledgeable private brokers have had the chance to emerge, as in the real estate market.

The Facilitator is one way of making the transfer system work. If the Facilitator approach is not implemented then other means must be found to develop the transfer system and to encourage knowledgeable participation by water users.

### 3. A Systems Approach

***Recommendation #10 – The strategic use of existing and new storage should be included as a beneficial tool in water management and allocation.***

Water storage should be used as a tool to match water needs with available supply in river systems. Storage is actively used today with positive results and could be further adapted to provide additional benefits. Storage may be achieved through many creative means. For example, existing dams can be improved to expand capacity, flow regulation can be modified to achieve a variety of needs, and new capacity can be created using both on and off stream storage.

Water storage provides a means for meeting Protected Water requirements during periods of high consumptive demand while also increasing the likelihood of meeting diverted water requirements. This is the case for the Oldman Dam operations where hydro-electric generation is a secondary objective. Similarly, storage should be an important consideration in the provision of Protected Water in Northern Alberta.

Storage greatly increases management possibilities and is a beneficial management tool. It needs to be actively considered and used innovatively as an option or element of the water management and allocation system.

***Recommendation #11 – Groundwater must be part of water/shed management planning. More and better quality data are needed to develop an understanding of groundwater and its interconnection to surface water, allowing the integrated, systematic management of groundwater and surface water.***

The current understanding of groundwater is limited. The government needs to collect more information to better understand the interconnections between surface water and groundwater. In situations where there is an established hydrological connection, the allocation and transfer process should be managed in an integrated manner.

## 4. Governance of Water Management and Allocation

***Recommendation #12 – The government should confirm the importance of regional and local expertise and knowledge in water management planning by clearly stating the responsibilities and authorities of the Watershed Stewardship Groups, the designated Watershed Planning and Advisory Councils, the Alberta Water Council, water trusts, First Nations and any other designated groups.***

It is essential that the roles and authorities of regional and local groups be clearly stated and supported by the government, in particular clarifying the relationship of these groups to the regulatory and planning provisions within the *Water Act*. The current lack of clarity, combined with uncertain future funding from government, results in an increasing level of frustration in the regional organizations, which are primarily driven by volunteers. This volunteer network is at risk if these issues are not addressed.

As discussed earlier, there is a need for local and regional input in establishing Protected Water in each river basin, both for setting the interim WCOs and over the longer term. WPACs can provide input and continuity over time. The success of the WPACs in performing these duties will depend on clarification of their roles and responsibilities and securing the resources necessary to support their work.

The government should revisit the language describing the roles of local groups in water management and allocation. For example, the terms “shared governance,” “partnerships” and “stakeholder consultations” should be clarified to enable full and effective participation by various stakeholders at the level most appropriate to their interests.

***Recommendation #13 - The government must clarify the relationship between water management planning under the Water Act, including water allocations and transfers, and regional planning under the Land-use Framework created by the Alberta Land Stewardship Act.***

It is essential that the relationship between water management planning and regional planning under the Land-use Framework be more clearly defined. The watershed management plans currently being developed in most basins are dynamic, living documents that will evolve over time under

the stewardship of the WPACS. It is not clear how the regional plans currently under development will evolve and who will provide stewardship. The regional advisory committees should consider the valuable role that existing local and regional water management organizations can play both as advisors to the committees and as potential partners in implementing the regional plan.

***Recommendation #14 - The Minister should actively facilitate the systematic coordination of water related initiatives and regulatory processes across the government.***

All three levels of government, as well as many different departments of the provincial government, are involved in water regulation and water related initiatives, each with their own mandates and deliverables. It is inevitable that water management strategies will not be consistent across all these groups. However, to the extent possible within the Alberta government, every effort should be made to align water management strategies with *Water for Life* and related water policies. Some situations have arisen where decisions by provincial regulators have discouraged investments in water conservation and efficiency. As a specific example, the Energy Resources Conservation Board approval processes are streamlined for those applicants that propose using existing technologies and practices. This approach penalizes those applicants that would otherwise propose advances in technology or water management practices that would conserve water through recycling and reuse. Barriers to implementing best in class water management practices must be removed.

## 5. Future Studies

***Recommendation #15 - The Advisory Group urges the consideration of longer term issues identified but not fully addressed in their deliberations, including:***

- Assessing additional mechanisms for unlocking unused water allocations.
- Examining alternative innovative regional governance approaches, including the use of basin commissions or authorities.
- Examining the relationship between irrigation districts, irrigation farmers and the transfer system by engaging in consultation with the Minister of Agriculture and Rural Development.
- Investigating whether the Province could accept money or other benefits in a transfer rather than simply holding back 10% of the water. This could be a consideration in cases where the monetary value of the water could be applied to improve instream flow conditions with significantly greater benefit to the river system than the 10% holdback provided for in the Water Act.

In allowing the Director to take a holdback of 10% at the time of a transfer, the *Act* creates an important mechanism to reclaim water that can contribute to meeting a WCO. However, this provision creates a solution in which the Director either takes the holdback or does not. In some situations the monetary value of the holdback may be large but its impact on the river is minimal. Thus in a recent transfer, the value of the water held back was in the region of \$1.5 million, but the 10% holdback made little difference to the river system.

# Appendix A - List of Members

MEMBER	TITLE	AFFILIATION	ADDRESS	PHONE
David Percy (Co-chair)	Dean of Law	University of Alberta	487 Law Centre Edmonton, AB T6G 2H5	780 492-5590 (law centre)
Mr. Jim Ellis (Co-chair)	Deputy Minister	Alberta Environment	10th fl Petroleum Plaza 9915 - 108 Street Edmonton, AB T5K 2G8	780 427-6236
Dr. Henning Bjornlund	Canada Research Chair in Water and the Economy	Economics Department, University of Lethbridge		403 317-2884
Mike Kelly	Director, Water Resource Development	Retired, TransAlta Corporation	Box 1900, Station M, 110-12 <sup>th</sup> Avenue SW Calgary, AB T2P 2M1	403 267-3835
Ron Pearson	Member	Trout Unlimited Canada; Alberta Chapter	1475 Tolmie Street Vancouver, BC V6R 4B4	604 221-0533 780 717-3897
Jim Csabay	Director	Alberta Irrigation Projects Association / CWRA / SMRID	P.O. Box 975 Coaldale, AB T1M 1M8	403 345-3845
P. Kim Sturgess	CEO	Alberta WaterSMART	3608 - 33 St NW Calgary, AB T2L 2A6	403 210-5276 403 813-6182
Rob Lougheed			54508 RR 214 Ft. Saskatchewan, AB T8L 4S9	780 998-9160 780 222-9160
Dr. Joseph Doucet	Enbridge Professor of Energy Policy, School of Business	University of Alberta	3-20H Business Building, U of A, Edmonton, AB 2R6	780 492-4257
Judy Smith	Manager of Environment for Athabasca Oil Sands Project	Shell Canada Ltd. / Alberta Chamber of Resources	400-4 <sup>th</sup> Avenue SW P.O. Box 100, Station M Calgary, AB T2P 2H5	403-691-2113

## Appendix B – Definitions

Term	Definition
Diverted Water/ Gross Diversion	The total amount of water that can be diverted from a water source.  Gross Diversion = Net use + return flow + conveyance losses + evaporative losses (see diagram)
Holdback	If the Director is of the opinion that withholding water is in the public interest to protect the aquatic environment or to implement a water conservation objective, and the ability to withhold water has been authorized in an applicable approved water management plan or order of the Lieutenant Governor in Council, the Director may withhold up to 10% of an allocation of water under a licence that is being transferred.
Land-use Framework and Regional Plans	A comprehensive strategy to better manage public and private lands and natural resources to achieve Alberta’s long-term economic, environmental and social goals. The framework provides a blueprint for land use management and decision-making that addresses Alberta’s growth pressures. The Land-use Framework creates a balance among economic, social and environmental interests in the land. It is a significant step forward in the evolution of land-use planning and decision-making in Alberta. The Land-use Framework leaves local decision-making authority with the same officials who currently exercise it, but in the future, these decisions will have to be aligned with provincial policy set out in the regional plans. <i>[Government of Alberta –SRD]</i>
Net consumptive use	The amount of water taken from a source that is not entirely or directly returned to that source.  Net consumptive use = Gross diversion - return flow (see diagram).
Protected Water	A portion of water set aside (i.e. not allocated) in the public interest. This may include water in watercourses, exceptional water bodies and wetlands, and groundwater sensitive to contamination.
Public Interest	Includes consideration of: (1) The maintenance (protection) of the environment with an emphasis on factors which sustain and balance the availability of water for consumptive purposes. These would include riparian health, source water protection, headwater protection and water quality. This may include the consideration of the environmental standard desired (e.g. the desired river health) as this may be greater than the current state of the environment. (2) Non-consumptive values (recreation, navigation, waste assimilation, or aesthetics). (3) The social and economic circumstances of the immediately affected community and the greater regional effects.

Term	Definition
Return flow	Water that has been diverted under the terms of a <i>Water Act</i> licence for a specific purpose but does not get consumed in the process and is returned to the environment. Typically, this is water that results from a temporary use, such as water cycling through a cooling pond, but it can also result from consumptive uses, such as municipal wastewater, that are treated and returned to the environment [ <i>Alberta Environment Glossary of Terms Related to Water and Watershed Management in Alberta</i> ] (see diagram).
Total licenced allocation	The total licenced allocation is the total volume of water specified in a licence. This total allocation is determined with consideration of the return flow, evaporative losses and conveyance losses.  Total licenced allocation = Gross Diversion + unused allocation (see diagram).
Water	All water on or under the surface of the ground, whether in liquid or solid state [ <i>Water Act</i> ]
Water allocation	An allocation is a “right” to divert water and includes the “volume, rate and timing of a diversion of water” [ <i>Water Act</i> ].
Water Allocation Transfer	Transfer of an allocation of water held under a licence.  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 <i>Water Act</i> , 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 [ <i>Alberta Environment Glossary of Terms Related to Water and Watershed Management in Alberta</i> ].
Water Conservation Objective [WCO]	“the amount and quality of water established by the Director under Part 2, based on information available to the Director, to be necessary for the (i) protection of a natural water body or its aquatic environment, or any part of them, (ii) protection of tourism, recreational, transportation or waste assimilation uses of water, or (iii) management of fish or wildlife, and may include water necessary for the rate of flow of water or water level requirements;” [ <i>Water Act</i> ].  The WCO is a regulatory instrument that can be used to protect the level of ‘protected water’ in each basin. Considerations in establishing the WCO includes the instream objectives such as maintenance of aquatic life and protection of a natural water body.

Term	Definition
Water licence	A water licence provides the authority for diverting and using surface water or groundwater. The licence identifies the water source; the location of the diversion site; an amount of water to be diverted and used from that source; the priority of the “water right” established by the licence; and the conditions under which the diversion and use must take place [ <i>Water for Life: Alberta’s Strategy for Sustainability</i> ].
Water Management Plan	A plan with respect to conservation and management of water developed under Part 2 [ <i>Water Act</i> ]
Watershed Planning and Advisory Council [WPAC]	Multi-stakeholder, non-profit organizations that assess the conditions of their watershed and develop plans and activities to address watershed issues. Currently, nine watersheds have organizations formally recognized as WPACs [ <i>Government of Alberta</i> ]

Cover Image:  
Athabasca Falls  
courtesy of Government of Alberta Photo Gallery