

ALBERTA WATER COUNCIL



Review of *Water for Life*
Implementation Progress:
2012-2015



About the Alberta Water Council

The Alberta Water Council (AWC) is a multi-stakeholder partnership with members from governments, industry and non-government organizations. All members have a stake in water. The AWC 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 AWC regularly reviews the implementation progress of the *Water for Life* strategy and champions the achievement of the strategy's goals. The AWC also advises the Government of Alberta, stakeholders and the public on effective water management practices, solutions to water issues and priorities for water research. 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.

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Contents

Acronyms	2
List of Tables	2
Executive Summary and Recommendations	3
1.0 Introduction	8
2.0 Approach	10
3.0 Review of <i>Water for Life</i> Goals and Key Directions	12
3.1 Safe, Secure Drinking Water	15
3.2 Healthy Aquatic Ecosystems	24
3.3 Reliable, Quality Water Supplies for a Sustainable Economy	31
3.4 Knowledge and Research	37
3.5 Partnerships	43
3.6 Water Conservation	51
4.0 Overall Assessment of <i>Water for Life</i> Implementation Progress	56
Appendix A — Committee Members and Acknowledgments	60
Appendix B — <i>Water for Life</i> Implementation Review Committee Terms of Reference	62

Acronyms

AEMERA	Alberta Environmental Monitoring, Evaluation and Reporting Agency
AEP	Alberta Environment and Parks
AER	Alberta Energy Regulator
ALMS	Alberta Lake Management Society
AWC	Alberta Water Council
AWRIS	Alberta Water Research and Innovation Strategy
BMFs	Biodiversity management frameworks
BMP	Best management practice
CEP	Conservation, efficiency and productivity
GoA	Government of Alberta
HAE	Healthy aquatic ecosystems
IFN	Instream flow needs
IRMS	Integrated Resource Management System
LUF	Land-use Framework
NPSP	Non-point source pollution
PAs	Provincial Authorities
WCO	Water Conservation Objective
WPAC	Watershed Planning and Advisory Council
WSG	Watershed Stewardship Group

List of Tables

Table 1: Status of Safe, Secure Drinking Water Actions	16
Table 2: Status of Healthy Aquatic Ecosystem Actions	24
Table 3: Status of Reliable, Quality Supplies for Sustainable Economy Actions.	32
Table 4: Status of Knowledge and Research Actions	38
Table 5: Status of Partnerships Actions.	45
Table 6: Status of Water Conservation Actions	52
Table 7: Progress on <i>Water for Life</i> Goals and Key Directions	57

Executive Summary and Recommendations

A core task of the Alberta Water Council (AWC) is to review the implementation progress toward achieving the three goals of the Government of Alberta's (GoA's) *Water for Life* strategy:

- safe, secure drinking water
- healthy aquatic ecosystems
- reliable, quality water supplies for a sustainable economy

The strategy also identifies three key directions: knowledge and research, partnerships and water conservation as a means to achieve these goals.

Since 2003, the AWC has completed four reviews of implementation progress. The last review looked at the renewed strategy for the period of 2009–2011. Due to reorganization within the GoA and the release of *Our Water, Our Future: A Plan for Action* in 2014, not all AWC recommendations from that review had been addressed. This fifth review provides insight into the 2012–2015 period and informs the GoA, *Water for Life* partners and Albertans as they continue implementing the strategy.

The AWC's *Water for Life* Implementation Review Committee followed the approved "How-To" Guide and employed additional techniques to fill information gaps. For this assessment, the committee:

- interviewed staff from the GoA and Provincial Authorities (PAs)
- circulated a sector survey to AWC sectors and Watershed Stewardship Groups via the Land Stewardship Centre of Canada
- received presentations from guest speakers
- facilitated a panel discussion with subject matter experts on the management of healthy aquatic ecosystems (HAE) in Alberta

Based on its assessment of the results, the AWC makes 12 recommendations which appear later in this section and throughout the report.

Since the origin of *Water for Life* in 2003, Alberta has faced many changes and challenges to water management. However, the strategy's principles, goals and key directions remain valid, universally accepted and relevant. Although there has been progress in some areas, gaps and weaknesses exist in others; for instance, more work is required to advance actions under the goal of HAE. To maintain its resiliency and relevance, *Water for Life* should continue to address priority concerns and adapt to emerging challenges.

The AWC's Review of Implementation Progress of *Water for Life* 2009–2011 highlighted a need to develop, implement and track performance metrics for actions. Performance metrics to assess the progress of actions remain outstanding; it is vital to track progress over time to improve implementation, reporting and evaluation.

Water for Life does not have as high a profile as it once did; more work to promote the strategy is necessary to keep governments, partners and the public engaged in water management decisions and activities. The participation of Indigenous peoples and incorporation of traditional knowledge and practices in water management planning activities also remains a gap.

Over time, *Water for Life* has evolved from a bottom-up approach where desired outcomes stemmed from consultation. Now that the strategy has been in place for more than a decade, this approach has shifted to be more top-down, where mid-level policy, regional plans, frameworks and watershed plans are defining desired water management outcomes. Despite this, integration between *Water for Life* and other systems, policies and strategies remains unclear for some Albertans.

Finally, following its 2013 Water Conversation with Albertans, the GoA published *Our Water, Our Future: A Plan for Action*, which identified actions in four topic areas: drinking water and wastewater, hydraulic fracturing and water, healthy lakes and water management. Although outside the formal scope of the AWC review, it seems clear that the next iteration of the *Water for Life* action plan needs to integrate overlapping actions from the Water Conversation action plan and other priorities such as climate change adaptation, to address provincial water management concerns in a more comprehensive manner.

Based on its assessment the AWC makes the following recommendations, each of which includes a proposed timeline for implementation:

Recommendation 1

The Government of Alberta work with the federal government, Indigenous communities, rural and small municipalities and regional service providers to continue developing and investing in sustainable, regional drinking water and wastewater solutions (short-term).

Recommendation 2

The Government of Alberta work with partners to:

- a. define source waters (including headwaters) in Alberta (short-term)
- b. inventory source waters (including headwaters) in Alberta (medium-term)
- c. monitor and assess source water quality, quantity and risks, and incorporate findings into policy, planning and decision-making processes (long-term)

Recommendation 3

The Government of Alberta work with partners to:

- a. establish aquatic ecosystem health criteria (short-term)
- b. undertake aquatic ecosystem health assessments for the seven land-use planning regions (medium-term)
- c. incorporate findings into policy, planning and decision-making processes (long-term)

Recommendation 4

The Government of Alberta establish a transparent and accountable system for managing flows to advance *Water for Life's* goal of healthy aquatic ecosystems (short-term).

Recommendation 5

The Government of Alberta clearly and periodically communicate how the regional planning process sustains healthy aquatic ecosystems, mitigates impacts to them and restores degraded aquatic ecosystems (short-term).

Recommendation 6

The Government of Alberta work with partners to develop provincial water reuse policy, taking a watershed-based approach (short-term).

Recommendation 7

The Government of Alberta work with partners to:

- a. improve Albertans' understanding of the water management system by promoting awareness and knowledge (short-term)
- b. ensure that science and research inform policy and decision makers, partners and the public through effective knowledge transfer (short-term)
- c. continue to engage partners and the public in research, citizen science, monitoring, and education initiatives (short-term)

Recommendation 8

The Government of Alberta and partners improve the accessibility and availability of *Water for Life* documents and water-related information (short-term).



Recommendation 9

The Government of Alberta:

- a. clarify commitments to *Water for Life* partnerships (short-term)
- b. continue to provide core resources and support to *Water for Life* partnerships (long-term)
- c. confirm how partnerships' policy advice and plans (i.e., from AWC and WPACs) integrate into policy, planning and decision-making processes (short-term)

Recommendation 10

Water for Life partnerships continue to investigate and leverage additional resources to support their work (long-term).

Recommendation 11

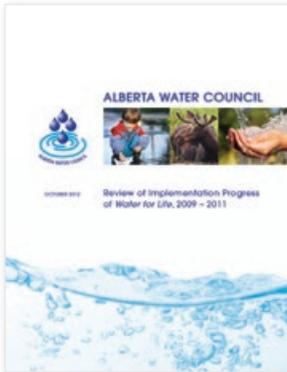
The Alberta Water Council continue to provide the forum for advancing water conservation, efficiency and productivity (medium-term).

Recommendation 12

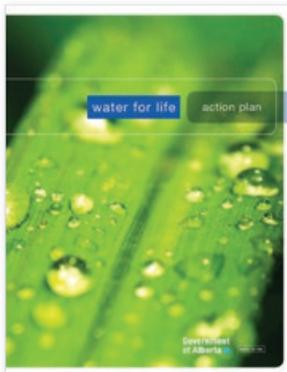
The Government of Alberta continue to work with partners to develop and monitor performance metrics and publicly report progress made towards achieving *Water for Life* goals.

1.0 Introduction

Population growth, economic development and climate change and variability mean it is more important than ever to manage Alberta's water resources responsibly to ensure healthy, secure and sustainable water for communities, the environment and the economy. Our quality of life depends on water, and Albertans have a responsibility to contribute to its sustainable management. With shared responsibility in mind, the Government of Alberta (GoA) developed the *Water for Life* strategy as a roadmap to guide water management and decision making in the province.¹



After extensive consultation, the GoA released *Water for Life: Alberta's Strategy for Sustainability*² in 2003. The strategy identified knowledge and research, partnerships and water conservation as key directions to advance the three goals of safe, secure drinking water; healthy aquatic ecosystems; and reliable quality water supplies for a sustainable economy.



The need for partnerships to achieve outcomes led to the creation of the Alberta Water Council (AWC), Watershed Planning and Advisory Councils (WPACs) and Watershed Stewardship Groups (WSGs). A regular and important task of the AWC is to review *Water for Life* implementation progress: “The review is done in a spirit of adaptive management, where the regular evaluation of progress serves to highlight strengths, identify weaknesses and recommend areas where additional focus would allow the strategy to advance more effectively. The review is completed at a strategic level, focusing on changing water issues and concerns in the province and the effectiveness of the *Water for Life* strategy in meeting them.”³

- 1 Government of Alberta. 2003. *Water for Life: Alberta's Strategy for Sustainability*.
- 2 For more information on *Water for Life* and related documents. Available online at <http://aep.alberta.ca/water/programs-and-services/water-for-life/strategy/downloadable-information-about-the-water-for-life-strategy.aspx>. Accessed June 2016.
- 3 Alberta Water Council. 2009. *Water for Life Implementation Reviews: A Brief "How-To" Guide*. Available online at: www.albertawatercouncil.ca/LinkClick.aspx?fileticket=FfE7EpyT9kc%3D&tabid=102. Accessed June 2016.

The AWC has reviewed the strategy's implementation progress five times. The first three reviews, along with other AWC recommendations,⁴ informed the GoA as it renewed the strategy in 2008 and released the associated action plan in 2009. The AWC's fourth review provided a snapshot of implementation progress towards the goals of *Water for Life: A Renewal* including actions for the period 2009–2011. This fifth review report provides insight into the period 2012–2015 to inform the GoA, *Water for Life* partnerships⁵ and others as they continue advancing the strategy's goals and outcomes.

The AWC undertook this review through its *Water for Life* Implementation Review Committee, whose work is guided by a standing Terms of Reference.⁶ This committee's goal is to “Review progress being made with respect to implementation of the *Water for Life* strategy and release periodic reports containing the findings of the reviews.”⁷ Membership on the committee⁸ includes at least two members from each of the four broad categories on the AWC board:

- Industry
- Non-government organizations
- GoA and PAs
- Government

4 Alberta Water Council. 2007. *Water for Life* Renewal Recommendations. Available online at: www.awchome.ca/LinkClick.aspx?fileticket=5ih4tMoufss%3d&tabid=106. Accessed June 2016.

5 *Water for Life* partnerships includes the Alberta Water Council, Watershed Planning and Advisory Councils and Watershed Stewardship Groups.

6 See Appendix A.

7 Alberta Water Council. 2009. *Water for Life* Implementation Reviews: A Brief “How-To” Guide. Available online at: www.albertawatercouncil.ca/LinkClick.aspx?fileticket=FfE7EpyT9kc%3D&tabid=102. Accessed June 2016.

8 See Appendix B.

2.0 Approach

For this assessment, the *Water for Life* Implementation Review Committee followed the AWC's approved "How-To" Guide and applied some additional techniques to gather information as outlined below.

A literature review of *Water for Life* and other related documents⁹ including *Our Water, Our Future: A Plan for Action*¹⁰ was undertaken. The committee summarized key points from each document and noted additional areas of concern.

The committee developed and circulated a survey to the AWC's 24 sectors¹¹ and WSGs through the Land Stewardship Centre of Canada for input. The survey questioned participants about their contributions to advancing *Water for Life* and how much progress they thought was being made in achieving the goals and key directions of the strategy.

Interviews were conducted with staff from the GoA and PAs that are closely engaged in *Water for Life*. The interviews provided in-depth information on various aspects of *Water for Life* goals, key directions and actions for further clarity.

9 Documents reviewed included *Water for Life: Alberta's strategy for sustainability* 2003, *Water for Life: a renewal* 2008, *Water for Life Action Plan* 2009, *Water for Life* progress report 2011, AWC's Reviews of Implementation Progress of *Water for Life* for the periods of 2004-2005, 2005-2006, 2006-2008 and 2009-2011, AWC's *Water for Life* Recommendations for Renewal 2008, *Our Water, Our Future: A Plan for Action* 2014, and the Alberta Land Use Framework 2008.

10 The *Our Water, Our Future: A Plan for Action* identified several water management concerns that emerged as priorities but were not included as part of this review, as the timelines were too close to the snapshot timeline of the AWC's work. The AWC focused on evaluating actions that had a reasonable chance of being implemented. Future *Water for Life* implementation reviews will focus on the next *Water for Life* Action Plan renewal, the *Our Water, Our Future: A Plan for Action* and other priorities in water management.

11 For a list of AWC sector and member organizations see: <http://awchome.ca/AboutUs/Members/tabid/56/Default.aspx>

Guest speakers¹² from the GoA also presented material on climate change and flood mitigation. These presentations yielded information on current and emerging challenges in water management and the work underway in the GoA to address them.

Following initial analysis, further information was obtained on implementation progress of the healthy aquatic ecosystems (HAE) goal via a panel discussion with GoA subject matter experts.¹³

Using the information from the literature review, sector survey, interviews, guest speakers and panel discussion, the AWC developed a number of recommendations, which appear throughout the body of this report.

12 See Appendix A.

13 See Appendix A.

3.0 Review of *Water for Life* Goals and Key Directions

Past *Water for Life* reviews focused on the implementation progress of the goals and key directions of the strategy and actions¹⁴ used as benchmarks to assess progress. This report presents a similar analysis for 2012–2015. The goals and key directions are interconnected and coordinated progress in all six areas is required to protect and manage Alberta's water resources.

The outcomes and actions noted in this report are from the 2008 renewed *Water for Life* strategy and the 2009 action plan. The rationale for progress on each action was developed using findings from the literature review, survey, interviews and panel discussion. Timeframes for action completion were classified in the original documents into short-term (by 2012), medium-term (by 2015) and long-term (by 2019). The AWC used the following progress indicators in its assessment:

Being re-evaluated: Implementation of this action has been halted while the action is re-evaluated in light of new information, new direction, relevancy, or dependence on the completion of other actions.

Limited Progress: A minimum amount of work has been taken towards completing this action usually due to extenuating circumstances, or the dependence on the completion of other actions, and the action will not be completed within the timeframe given.

Some Progress: Some work has been done towards completing the action but it is uncertain whether the action will be completed within the timeframe given.

Progressing-on-track: On track and likely to be completed within the indicated timeframe.

Completed: The action has been completed.

¹⁴ To view previous *Water for Life* Implementation Progress Review reports, see www.albertawatercouncil.ca/Projects/WaterforLifeImplementationReview/tabid/102/Default.aspx.

In assessing implementation progress now, the original timeframes identified in the *Water for Life* action plan (2009) for some actions no longer apply as the actions have become regular GoA business (i.e., dedicated GoA staff are assigned to these actions, which are included in annual work plans). Actions that have become “regular business” are identified in the status boxes in the following sections.

Implementation timelines in this report serve as a guideline for when recommended actions should be in place, acknowledging that most of this work can start soon and may be ongoing in nature. The AWC recognized the challenge of providing recommendations with prescriptive timelines to the GoA without a complete understanding of all priorities, but thought that some guidance was required. In some instances, long-term implementation may imply continuous work (e.g., incorporating the findings of a watershed management plan into parallel policy and decision-making processes).

The following timelines were used to indicate urgency as a guide to implementing recommendations:

Short-term: Recommendation should be implemented within the next three years.

Medium-term: Recommendation should be implemented within the next five years.

Long-term: Recommendation should be implemented within the next 10 years.

Recommendations—considerations for implementation

While these recommendations should be implemented within the suggested timeframes, AWC recognizes other implementation considerations:

- *Prioritization.* There are many challenges to managing Alberta’s water resources, so there is a need for the GoA to periodically assess, select and focus action on key priorities (i.e., take a risk-based approach to selecting priority areas).
- *A Watershed Approach.* Implementation should strive towards a watershed-based or place-based method as appropriate.
- *Scalability.* It is beneficial to consider approaches that can be changed in size or scale as required by the situation.

3.1 Safe, Secure Drinking Water

Goal: Albertans are assured their drinking water is safe.

Description: Assuring quality drinking water is a GoA priority while recognizing dependence on aquatic ecosystems for source water and other water uses that support the economy.

Outcomes for this goal are:

- a comprehensive strategy to protect Alberta’s drinking water
- timely access for all Albertans to information about drinking water quality in their communities
- adherence of Alberta’s drinking water infrastructure to emerging standards and management for long-term sustainability ¹⁵

Table 1 summarizes the status of actions taken to achieve this goal. The “status” column shows the AWC’s assessment for the current review and the associated rationale explains why that status category was assigned. Asterisks in the “status” column indicate that the action is now part of regular GoA business. These attributes apply to Tables 1 through 6.

¹⁵ Government of Alberta. 2009. *Water for Life* action plan.

Table 1: Status of Safe, Secure Drinking Water Actions

Actions:	Time Frame	Last Review	Status	Rationale
1.1 Provide and maintain the availability and accessibility of information to Albertans on private water systems <ul style="list-style-type: none"> ■ Deliver the “Working Well” education extension program for private well owners ■ Develop and deliver online and print information resources for private water supply owners 	Short-term by 2012	Progressing-on-track	Progressing-on-track*	Programs such as “Working Well” along with print materials and videos are available to private system operators.
1.2 Review and improve the management of small public drinking water systems <ul style="list-style-type: none"> ■ Develop operating standards ■ Develop and deliver information resources ■ Conduct an initial audit based on a completed provincial inventory 				

Actions:	Time Frame	Last Review	Status	Rationale
<p>1.3 Work co-operatively with First Nations, Métis communities and the Federal Government to ensure safe drinking water in Aboriginal communities</p> <ul style="list-style-type: none"> ■ Provide ongoing operator training and certification ■ Provide opportunity for participation in regional systems ■ Facilitate water needs assessments with participating First Nation communities 	Medium-term by 2015	Progressing-on-track	Some progress	<p>More progress was expected. Alberta Environment and Parks (AEP) is working with Technical Services Advisory Group (TSAG) and Indigenous and Northern Affairs Canada to review facilities on First Nation reserve lands. Water needs assessments have been completed for some First Nations in Treaty Seven. The GoA is working to advance related actions under the United Nations Declaration on the Rights of Indigenous Peoples.¹⁶ Boil water advisories are still a concern for some Indigenous communities¹⁷ in Alberta.¹⁸</p>

16 United Nations. 2016. *United Nations Declaration on the Rights of Indigenous People*. Available online at www.un.org/esa/socdev/unpfii/documents/DRIPS_en.pdf. Accessed June 2016.

17 Lui, E. 2015. *On Notice for a Drinking Water Crisis in Canada*. Available online at http://canadians.org/sites/default/files/publications/report-drinking-water-0315_0.pdf. Accessed June 2016.

18 Alberta Venture. 2016. *Reserves in Alberta are at the Forefront of a National Drinking Water Crisis*. Available online at <http://albertaventure.com/water/reserves-in-alberta-are-at-the-forefront-of-a-national-drinking-water-crisis-heres-what-theyre-doing-to-end-it/>. Accessed June 2016.

Actions:	Time Frame	Last Review	Status	Rationale
<p>1.4 Develop a waterborne disease surveillance system and undertake waterborne contaminant research</p> <ul style="list-style-type: none"> <li data-bbox="133 678 444 909">■ Provide ongoing drinking water quality testing and laboratory-based surveillance through the public health laboratories <li data-bbox="133 917 444 1190">■ Conduct domestic well water surveys of specific contaminants in identified areas (e.g., Beaver River and North Saskatchewan River Basins) <li data-bbox="133 1199 444 1474">■ Undertake applied research in priority water contaminants and develop a public health risk management support system 	<p>Medium-term by 2015</p>	<p>Some progress</p>	<p>Progressing-on-track</p>	<p>Surveillance system to predict and prevent microbial outbreaks developed. Domestic well water survey completed for 11 regions. Research to develop laboratory methods for pesticides and pharmaceuticals detection and monitoring is ongoing with academic institutions. Funding has been invested in protocol development for waterborne contaminant testing; protocol now available.</p>



Actions:	Time Frame	Last Review	Status	Rationale
<p>1.5 Design and implement regional drinking water and wastewater solutions</p> <ul style="list-style-type: none"> ■ Review delivery of the provincial drinking and wastewater program including new funding support programs and governance 	Long-term by 2019	Some progress	Progressing-on-track	Grants administered by Alberta Transportation to assist municipalities in forming regional systems. A new program is underway to determine if water and wastewater goals are being achieved. The Growing Forward 2 federal-provincial-territorial partnership provides financial assistance to rural and small municipalities, First Nations, Métis settlements, water co-operative associations and water commissions for strategic studies to develop or enhance rural and small water supply pipelines and related infrastructure.
<p>1.6 Develop innovative approaches to build and ensure long-term operational capacity in smaller Alberta communities</p> <ul style="list-style-type: none"> ■ Develop operator consortiums ■ Provide ongoing operator training and certification 	Long-term by 2019	Some progress	Progressing-on-track	Developed operator consortia involving 15 water treatment plants. Template and guide created to assist municipalities organize consortia. Drinking Water Safety Plan training course delivered to municipalities. Number of certification manuals updated. Growing Forward 2 Program training funds provided. TSAG Circuit Rider Training Program provided for First Nation operators.

Actions:	Time Frame	Last Review	Status	Rationale
<p>1.7 Update water quality programs to support source protection information and planning</p> <ul style="list-style-type: none"> ■ Work with WPACS to incorporate drinking water source protection into watershed planning ■ Develop information on sector best management practices 	Long-term by 2019	Some progress	Some progress	Source water assessment as part of water risk assessments; may not be completed by 2019. WPACs contribute to the protection of drinking water through activities such as watershed management planning and education and outreach (e.g., the Battle River Watershed Alliance has created source water protection materials). Nutrient Beneficial Management Practices Evaluation Project completed.
<p>1.8 Facilitate upgrades to drinking water facilities and wastewater facilities to meet standards and, where possible, integrate with regional systems</p> <ul style="list-style-type: none"> ■ Develop a management framework to facilitate the safe use of reclaimed water for domestic applications in Alberta 	<p>Medium-term by 2015</p> <p>Long-term by 2019</p>	Progressing-on-track	Progressing-on-track*	Infrastructure deficit remains a concern for some communities. Investigating reclaimed water use. Exploring challenges in meeting federal requirements for municipal wastewater effluent regulations. Alberta Municipal Affairs supports municipalities through a number of programs (e.g., Municipal Sustainability Initiative, Small Communities Fund).



Actions:	Time Frame	Last Review	Status	Rationale
1.9 Facilitate upgrades to drinking water quality in provincial parks and recreation areas	Long-term by 2019	Progressing-on-track	Complete*	Upgrades have been finished for a number of provincial parks and recreation areas.
*Indicate actions that are now part of regular business and that dedicated GoA staff are assigned to these actions that are included in annual work plans				

Assessment: Alberta has built a solid foundation for achieving this goal through research, use of education materials, investments in training and the cultivation of vital partnerships. Actions that are still in progress or have not become part of ongoing GoA business are still valid and their completion will advance this goal. Most Albertans enjoy safe, secure drinking water but further action is needed to meet drinking water requirements in some Indigenous¹⁹, rural and small communities. Increased effort would ensure that the province has protected source waters (including headwaters) measures in place now and in the future.

Bridging the gap — drinking water and Indigenous communities

Providing drinking water and wastewater systems in Indigenous communities remains a high priority for governments. Several GoA processes are in use or are being piloted for hosting dialogues and seeking insights, feedback and, where applicable, traditional knowledge, from Indigenous communities on water issues (e.g., the Treaty Seven Water Sub-Table; Treaty Eight Consultation, Development and Environment Table).

¹⁹ Health Canada. 2016. *Drinking Water Advisories in First Nation Communities*. Available online at www.hc-sc.gc.ca/fniah-spnia/promotion/public-publique/water-dwa-eau-aqep-eng.php. Accessed June 2016.

Working with regional service providers

Cities and their associated regional service providers (e.g., EPCOR) provide drinking water to many Albertans and protect source waters. For instance, the City of Edmonton completed its Source Water Protection Plan in 2012 and the City of Calgary will complete its plan in 2017. It is important that the work of regional service providers be recognized and incorporated into decision making.

A number of challenges associated with this goal include:

- providing safe and secure drinking water in Indigenous, rural and small communities due to constraints related to expertise and capacity
- funding infrastructure upgrades in some communities that have aging facilities and growing populations and development needs
- coordinating efforts and allocating resources towards understanding source water protection (including headwaters) and adapting to risks (e.g., climate change and variability, point and non-point source pollution)
- resourcing and organizing the research and monitoring of contaminants and waterborne diseases and managing cost and effort of water treatment

To meet these challenges, the GoA needs to continue working with partners such as municipalities and others to:

- address drinking water issues in Indigenous communities by clarifying roles and responsibilities of involved governments and identifying opportunities to improve drinking water quality where possible
- identify regional drinking water and wastewater network solutions that embrace full-cost accounting and asset management

- improve source water protection (including headwaters) by resourcing and integrating planning, implementation and reporting efforts
- enhance research and monitoring efforts to better understand potential risks to drinking water from contaminants, point and non-point source pollutants and climate change and variability

The next *Water for Life* action plan update should address identified challenges under this goal, and refresh safe, secure drinking water priorities to reflect needs and concerns in the province. The AWC makes two recommendations on this matter:

Recommendation 1: The Government of Alberta work with the federal government, Indigenous communities, rural and small municipalities and regional service providers to continue developing and investing in sustainable, regional drinking water and wastewater solutions (short-term).

Recommendation 2: The Government of Alberta work with partners to:

- a. define source waters (including headwaters) in Alberta (short-term)
- b. inventory source waters (including headwaters) in Alberta (medium-term)
- c. monitor and assess source water quality, quantity and risks, and incorporate findings into policy, planning and decision-making processes (long-term)

3.2 Healthy Aquatic Ecosystems

Goal: Albertans are assured that Alberta’s aquatic ecosystems are maintained and protected.

Description: This goal seeks to ensure that Alberta’s aquatic ecosystems are sustained for future generations.

Outcomes for this goal are:

- protection of aquatic ecosystems in critical areas
- establishment of priorities for sustaining aquatic ecosystems to be implemented through watershed plans
- management and allocation of water to sustain aquatic ecosystems and ensure their contribution to Alberta’s natural capital and quality of life are maintained²⁰

Table 2 summarizes the status of actions taken to achieve this goal.

Table 2: Status of Healthy Aquatic Ecosystems Actions

Actions	Time frame	Previous Status	Status	Rationale
2.1 Finalize and implement a new wetlands policy for Alberta	Short-term by 2012	Some progress	Some progress	<i>Alberta Wetland Policy</i> completed and implemented in the White Area and the Green Area. Related implementation tools are either under development or completed. Wetland inventory created but further information is required to understand the state of wetlands.
■ Complete an Alberta wetlands inventory	Medium-term by 2015			
■ Apply research and knowledge to develop and model indicators of wetland health	Medium-term by 2015			

²⁰ Government of Alberta. 2009. *Water for Life* action plan.

Actions	Time frame	Previous Status	Status	Rationale
2.2 Protect critical aquatic ecosystems and develop a provincial action plan	Short-term by 2012	Some progress	Limited progress*	Amended <i>Fisheries (Alberta) Act</i> and a provincial aquatic invasive species (AIS) program will manage AIS. No provincial action plan or criteria created yet to protect Alberta's critical aquatic ecosystems. Regional planning and watershed planning processes are expected to manage and restore the aquatic ecosystems. Ongoing monitoring of some metrics by Alberta Lake Management Society (ALMS); (e.g., surface water quality, sediment and non-fish biota).
<ul style="list-style-type: none"> Define criteria and identify critical and significantly impacted aquatic ecosystems 	Short-term by 2012			
<ul style="list-style-type: none"> Maintain or improve the health of critical and impacted aquatic ecosystems through legislation, watershed and regional planning, and conservation organizations 	Medium-term by 2015			
<ul style="list-style-type: none"> Monitor, report and adjust where necessary, to ensure the health of aquatic ecosystems are maintained or improved 	Long-term by 2019			

Actions	Time frame	Previous Status	Status	Rationale
<p>2.3 Establish science-based methods and tools to determine ecological requirements for HAE</p> <ul style="list-style-type: none"> ■ Complete instream flow needs methods and tools including a desktop approach ■ Complete the Alberta fish community index for assessing watershed health 	Short-term by 2012	Complete	Complete	<p>Instream Flow Needs (IFN) desktop method developed. Fish Conservation and Management strategy released in 2014. An assessment of the Alberta fish community index as a watershed health indicator completed (e.g., Beaver River Community Index in 2012).</p>
2.4 Establish the Bow Habitat Station as a center of aquatic ecosystem learning that focuses on public outreach and education	Short-term by 2012	Complete	Complete	An interactive educational facility was located in Calgary and open to the public with exhibits and aquariums.
2.5 Set Water Conservation Objectives on all major basins	Medium-term by 2019	Limited progress	Limited progress*	Water Conservation Objectives (WCOs) are part of regular GoA business and have been incorporated into the regional planning process, but have only been set for some basins.

*Indicate actions that are now part of regular business and that dedicated GoA staff are assigned to these actions that are included in annual work plans

Assessment: The completion and implementation of the Alberta Wetland Policy is a substantial accomplishment in advancing the goal of HAE. Although progress has occurred on several initiatives to advance HAE, the perception remains that Alberta's growth and development may outpace the benefits of these efforts, and aquatic ecosystems may continue to deteriorate. Overall, the use of tools to sustain healthy ecosystems, restore degraded ones and mitigate impacts has been limited or behind schedule. The AWC's Recommendations for Improving Alberta's Water Allocation Transfer System restated the need to identify "protected water" in 2009.²¹ WCOs have not been set for all basins, but are just one of a suite of tools that can safeguard HAE. Actions that are still in progress or have not become part of ongoing GoA business remain valid and their completion would advance this goal. In compliance with the *Alberta Land Stewardship Act*, the Land-Use Framework (LUF) sets out the legal basis for regional planning²² in Alberta. Through the LUF, the GoA incorporates a number of frameworks, plans and policies to attain desired HAE outcomes. For example, biodiversity management frameworks (BMFs)²³ are one way to achieve desired HAE outcomes. WPAC Watershed Management Plans are another means to manage impacts on aquatic ecosystems as they bring together many partners with jurisdiction over land use. Given that regional planning is the vehicle for achieving desired outcomes for the near future, there is a need to better articulate how this system works to achieve HAE goals of *Water for Life*.

21 Alberta Water Council. 2009. *Water Allocation Transfer System Upgrade Project Report*. Available online at www.awchome.ca/Portals/0/pdfs/WATSUP_web_FINAL.pdf. Accessed June 2016.

22 The purpose of regional planning is to support the numerous policies and strategies that guide natural resource development, support economic growth and protect our environment. Regional plans will integrate policies and strategies at the regional level and provide the policy direction and clarity for decision makers at the federal, provincial and local levels. For more information see <https://landuse.alberta.ca/REGIONALPLANS/Pages/default.aspx>

23 As part of the LUF and regional planning, BMFs include objectives for a region and context for managing cumulative effects of development on the environment. Monitoring and reporting on performance indicators would inform planning and decision making to determine if objectives are being met. For more information see http://cpaws-southernalberta.org/upload/SSR_Phase2_BMF_Previewworkshop_Package_March_11_2015.pdf

Challenges to achieving this goal include:

- implementing available tools (e.g., IFN)
- knowledge gaps (e.g., non-point sources of pollution)
- increased number of native aquatic species at risk due to habitat loss or degradation
- developing performance metrics to measure aquatic ecosystem health
- insufficient data to track changes in aquatic ecosystems over time
- resourcing for fisheries staff, enforcement and compliance programs
- management frameworks that do not reflect scientific HAE criteria at a regional scale
- a perceived lack of urgency on setting WCOs in all major basins or using alternative tools to achieve similar outcomes
- relying on regional planning to achieve HAE goals when the process is behind schedule²⁴
- evolving planning context and needed clarity on how existing plans, policies and tools feed into these parallel processes

To meet these challenges, the GoA needs to continue working with partners to:

- clearly articulate how management systems and approaches (e.g., Integrated Resource Management System [IRMS], water policy, regional plans and management frameworks, watershed plans) are working to achieve *Water for Life* HAE goals and publicly report on progress
- revisit the AWC's Provincial Ecological Aquatic Criteria for Healthy Aquatic Ecosystems²⁵ to refine HAE criteria and the significant areas map, and identify critical areas for each watershed

²⁴ Refer to Section 3.5, Action 5.2 of this report.

²⁵ Alberta Water Council. 2009. *Provincial Ecological Aquatic Criteria for Health Report*. Available online at www.awchome.ca/Portals/0/pdfs/PEACH_Report_FINAL.pdf. Accessed June 2016

- protect IFN in major basins (and tributaries with moderate to high allocations during sensitive seasonal low-flow periods) in accordance with the *Water Act*, using appropriate means
- incorporate findings from HAE assessments into decision-making processes such as regional, municipal and watershed planning to sustain and restore HAE and mitigate threats
- clarify who is accountable for resourcing and undertaking riparian management
- better integrate land and water management to reduce HAE degradation from point and non-point source pollution
- protect source waters and other types of aquatic ecosystems
- improve compliance and enforcement of legislation pertaining to water bodies by strengthening and coordinating federal, provincial and municipal regulators
- understand contaminant and nutrient loading impacts on HAE
- examine the impacts of climate change and variability on HAE
- establish a flow management system that is transparent and accountable and meets environmental, social and economic needs
- enhance water supply and demand management by considering best available technologies, best management practices (BMPs), continuous improvement and water conservation, efficiency and productivity (CEP) measures

The next *Water for Life* action plan update should address identified challenges under this goal, and refresh HAE priorities to reflect needs and concerns in the province. The AWC makes the following recommendations with respect to this goal:

Recommendation 3: The Government of Alberta work with partners to:

- a. establish aquatic ecosystem health criteria (short-term)
- b. undertake aquatic ecosystem health assessments for the seven land-use planning regions (medium-term)
- c. incorporate findings into policy, planning and decision-making processes (long-term)

Recommendation 4: The Government of Alberta establish a transparent and accountable system for managing flows to advance *Water for Life's* goal of healthy aquatic ecosystems (short-term).

Recommendation 5: The Government of Alberta clearly and periodically communicate how the regional planning process sustains healthy aquatic ecosystems, mitigates impacts to them and restores degraded aquatic ecosystems (short-term).

Managing flows — the need to safeguard aquatic ecosystems

Water that is left in a river system or released into it, for the specific purpose of managing the condition of an ecosystem, is commonly referred to as environmental flows. River systems tend to have natural patterns of flow that support ecological processes (e.g., large flows such as floods may support some fish spawning while low flows may encourage habitat for certain aquatic species). As river systems have limits to how much they can be altered, it is important to manage flows not only for social and economic benefits but also to protect aquatic ecosystem health and advance *Water for Life's* goal of HAE.

Source: International Rivers. 2016. Environmental Flows. <https://www.internationalrivers.org/environmental-flows>. Accessed September 2016.

3.3 Reliable, Quality Water Supplies for a Sustainable Economy

Goal: Albertans will be assured that water is managed effectively to support sustainable economic development.

Description: This goal of *Water for Life* ensures that Albertans have the knowledge and tools to implement plans that continue to maintain and improve the management of the province's water resources. Outcomes for this goal are:

- implementation of a broad range of water management tools
- increased awareness for all Albertans of the holistic value of water, as part of both the economy and improved quality of life
- establishment of water management objectives and priorities that support sustainable economic development, to be implemented through watershed plans
- management and allocation of water to support sustainable economic development and the strategic priorities of the Province²⁶

Table 3 summarizes the status of actions taken to achieve this goal.

²⁶ Government of Alberta. 2009. *Water for Life* action plan.

Table 3: Status of Reliable Quality Water Supplies for a Sustainable Economy Actions

Actions	Time frame	Previous Status	Status	Rationale
3.1 Develop and implement a viable governance system that supports sustainable management of water	Short-term by 2012	Progressing-on-track	Some progress	Review of the allocation system completed in 2013. Short-term actions of <i>Our Water, Our Future; A Plan for Action</i> underway (e.g., water storage, water reuse policy). Development of a publicly accessible <i>Water Act</i> Temporary Diversion License Electronic Review System (WATERS) completed. Investigation of support system applications by the GoA for water approvals is ongoing.
<ul style="list-style-type: none"> Review and renew Alberta's current water allocation system to meet future needs including the environment and other protected uses 	Short-term by 2012			
<ul style="list-style-type: none"> Develop and implement an enhanced water rights transfer system that supports sustainable economic development 	Medium-term by 2015			
<ul style="list-style-type: none"> Develop a publicly-accessible, automated decision support system for temporary diversion licenses 	Short-term by 2012			
<ul style="list-style-type: none"> Investigate further support system applications for water approvals 	Medium-term by 2015			

Actions	Time frame	Previous Status	Status	Rationale
3.2 Address the water management and policy risks associated with a changing future water supply resulting from the impacts of changing climate regimes	Medium-term by 2015	Progressing-on-track	Some progress	GoA has completed hydro-climate scenarios for Lower Athabasca and South Saskatchewan regional planning areas. Actions of <i>Our Water, Our Future; A Plan for Action</i> will support understanding the impacts of climate change on the South Saskatchewan Basin. More work needed to comprehend climate change impacts in other areas and investigate adaptation measures.
<ul style="list-style-type: none"> Develop future hydro-climate scenarios for major watersheds 	Short-term by 2012			
<ul style="list-style-type: none"> Develop strategies to deal with the management of changing future water supplies through the provincial Climate Change Adaptation Strategy and through implementation of the Land-use Framework and watershed planning 	Medium-term by 2015			

Actions	Time frame	Previous Status	Status	Rationale
3.3 Institute mandatory water use public reporting for water licenses	Medium-term by 2015	Progressing-on-track	Progressing-on-track*	Water Measurement Guidebook completed in 2009 and part of water-user reporting website. GoA has amended reporting conditions of existing licences. Electronic public reporting is now part of regular business; this tool will enable self-service queries, and the capability to view water use data is being tested.
■ Implement a water measurement pilot project using the water measurement guide	Short-term by 2012			
■ Amend reporting conditions of existing water licenses	Short-term by 2012			
■ Implement electronic public reporting	Medium-term by 2015			
3.4 Assess future water supply demands and management options within watershed management planning. Options could include conservation, storage (based on provincial inventory) and water allocation transfers	Long-term by 2019	Some progress	Some progress	GoA is examining provincial approaches and policies for water reuse, CEP and pilots related to water management, storage and optimization. Water management frameworks under regional planning will consider recommendations for establishing management objectives in river basins. ²⁷ <i>Water Act</i> water management plans have been developed in specific areas as needed.
*Indicate actions that are now part of regular business and that dedicated GoA staff are assigned to these actions that are included in annual work plans				

27 Concerns surrounding protected waters are dealt with in Section 3.2 and Recommendation 4.

Assessment: Alberta has been using a diversity of tools to manage water supply to meet *Water for Life* objectives, even in closed basins. However, there is concern that water management may become more challenging in areas where growth and development are driving demand, and where climate change and variability influence water supply. Changes to water supply and demand may make it harder to meet Alberta's environmental, social and economic needs. A better understanding of current and future water supply and demand would inform decisions for water management options such as reuse or storage to meet the needs of various water users. Actions remain valid and have continued to advance this goal since the last review. Some actions have become part of regular GoA business.

Challenges in meeting this goal include:

- meeting increased demand for water from a finite, variable supply particularly in times of drought or where additional water withdrawal would exceed the WCO
- lack of knowledge about water sources such as groundwater and best available technologies for reuse of effluent
- insufficient understanding of current and future water use and demand in light of climate change and variability, population growth and development impacts²⁸

²⁸ Challenges concerning improving our understanding of supply and demand are addressed Section 3.4.

To meet these challenges, the GoA needs to continue working with partners to:

- ensure instream flows provide water for economic activities without harming aquatic ecosystems
- provide incentives for adoption of BMPs in the water allocation system with a focus on water-short areas
- develop a provincial policy for water reuse that takes a watershed-based approach and includes municipal uses and stormwater and industrial wastewater
- enhance storage including natural storage in wetlands, lakes, groundwater and reservoirs
- strengthen research and monitoring efforts to improve our understanding of current and future water supply and demand in light of population growth, development and climate change and variability
- The next *Water for Life* action plan update should address identified challenges under this goal, and refresh priorities to reflect current needs and concerns in the province. Progress on the actions in Table 3 needs to continue, and the AWC recommends:

Recommendation 6: The Government of Alberta work with partners to develop provincial water reuse policy, taking a watershed-based approach (short-term).

3.4 Knowledge and Research

Goal: Albertans will have access to the knowledge needed to achieve safe drinking water, healthy aquatic ecosystems, and reliable quality supplies for a sustainable economy.

Description: Comprehensive information and accessible knowledge are fundamental to understanding the complex nature of water and water management. From the beginning of the *Water for Life* strategy in 2003, the GoA has committed to investing in water research and knowledge and providing Albertans with access to a variety of information about water across the province and in their communities.

Outcomes for this key direction are:

- an understanding by *Water for Life* partners of the state of Alberta's drinking water, aquatic ecosystems, and the quality and quantity of surface and groundwater resources
- easy access to knowledge and information regarding Alberta's water resources and applicable research to make informed water and related air, land and resource management decisions
- incorporation of education tools and strategies into all *Water for Life* actions²⁹

Table 4 summarizes the status of actions taken to achieve this goal.

²⁹ Government of Alberta. 2009. *Water for Life* action plan.

Table 4: Status of Knowledge and Research Actions

Actions	Time frame	Previous Status	Status	Rationale
4.1 Develop and implement an education framework to support <i>Water for Life</i>	Short-term by 2012	Currently being re-evaluated	Some progress*	GoA is developing a water literacy strategy as part of an Environmental Education Framework; the AWC's Recommendations to Improve Water Literacy in Alberta will inform this work. The Respect Our Lakes Program is in progress. Supporting and facilitating relevant <i>Water for Life</i> education work by many partners is ongoing.
<ul style="list-style-type: none"> ■ Develop print- and web-based public information resources on the following topics: watershed management, wetlands, groundwater, and water conservation 	Short-term by 2012			
<ul style="list-style-type: none"> ■ Develop and support teacher resources and programs on watershed management, wetlands, groundwater, and water conservation 	Short-term by 2012			
<ul style="list-style-type: none"> ■ Support and facilitate partnerships on education programs related to watershed management, wetlands, groundwater, and water conservation 	Short-term by 2012			

Actions	Time frame	Previous Status	Status	Rationale
4.2 Enhance the Water Information Centre for accessible web-based public information	Short-term by 2012	Progressing-on-track	Some progress	Enhancements to the data management system made to facilitate public access to websites. AEP Data Management Office established in 2014 and Enterprise Data Management Strategy created. Alberta Water Portal provides useful information on a variety of topics. Flood Hazard Identification and Mapping Program continues to produce studies and mapping. GoA continues to provide river forecasting services. Need to share more data that integrates land and water management approaches.
<ul style="list-style-type: none"> ■ Establish a data management support and reporting system integrated with Land-use Framework and cumulative effects information systems 	Medium-term by 2015			
<ul style="list-style-type: none"> ■ Complete flood risk maps and warning systems for all communities where a flood risk exists 	Long-term by 2019			

Actions	Time frame	Previous Status	Status	Rationale
4.3 Develop qualified water expertise and apply research findings	Medium-term by 2015	Some progress	Some progress	Alberta Innovates funding has supported various water research and innovation initiatives. 2014 Alberta Water Research and Innovation Strategy: A Renewal guides this work. Alberta Energy Regulator (AER) in partnership with AEP continues to champion the use of the findings of its Provincial Groundwater Inventory Program into water management.
<ul style="list-style-type: none"> Work with Alberta Water Research Institute (AWRI) to identify and resource key expertise in Alberta (e.g. Instream Flow Needs specialists, hydrogeologists) 	Short-term by 2012			
<ul style="list-style-type: none"> Apply research findings from the AWRI and other research partners to support water management decision making 	Long-term by 2019			

Actions	Time frame	Previous Status	Status	Rationale
4.4 Enhance the provincial water monitoring and evaluation program to include information on wetlands, groundwater, aquatic health, water quality and quantity	Long-term by 2019	Some progress	Progressing-on-track	IFN desktop created. AEP and ALMS have a number of water monitoring programs. Groundwater monitoring has been enhanced; AER water use reporting directives. Provincial Groundwater Inventory Program is ongoing. The GoA has not developed criteria to evaluate aquatic ecosystem health. More resourcing needed to enhance monitoring, evaluation and reporting efforts transferring knowledge to key players.
■ Ensure aquatic health instream flow needs are complete for major basins	Medium-term by 2015			
■ Implement the system for monitoring, evaluation, and reporting on aquatic ecosystems	Medium-term by 2015			
■ Complete mapping and modeling of Alberta's groundwater resources	Long-term by 2019			
■ Implement a long-term water quality and effluent monitoring and evaluation system	Long-term by 2019			
■ Implement a long-term water supply monitoring and evaluation system	Long-term by 2019			

*Indicate actions that are now part of regular business and that dedicated GoA staff are assigned to these actions that are included in annual work plans.

Assessment: Substantial gains were made and are expected to continue with the implementation of the Alberta Water Research and Innovation Strategy 2014: A Renewal (AWRIS), the work being done under the Provincial Groundwater Inventory Program and the collection and dissemination of information by *Water for Life* partnerships. The actions in progress are still valid and their completion will advance this goal. However, there are gaps in information around water allocation and actual use, groundwater availability and the potential risk of contamination from surface and groundwater interaction. Knowledge building and information sharing need to improve. The GoA needs to ensure participation in mandatory water use reporting so that data and information are accessible to all.

Challenges to achieving this goal include:

- insufficient commitment to applying research to decision making
- knowledge transfer and translation to scientific information to Albertans, partners and policy makers
- a need for evaluation, presentation and sharing of environmental data with partners and the public
- resources to improve monitoring and reporting of water quality and quantity issues
- lack of public understanding of the water allocation and the supply and demand management system

To meet these challenges, the GoA needs to continue working with partners to:

- ensure data and information are publicly available, timely and accessible
- use data and information to improve the water literacy of Albertans
- support and resource research and monitoring in priority water areas such as groundwater
- increase the capacity for scientific research in Alberta priority areas

- encourage and facilitate opportunities for citizen science³⁰
- align research and monitoring work with priority water concerns
- publicly report on successes and progress made
- continue to resource and implement the AWRIS
- ensure that data, information and knowledge inform policy development and decision making
- improve the accessibility and user-friendliness of the *Water for Life* website to serve as a one-stop portal for all of the strategy's documents, funding sources, partnerships and updates

The next *Water for Life* action plan update should strive to address identified challenges under knowledge and research, and refresh priorities to reflect needs and concerns in the province. The AWC recommends:

Recommendation 7: The Government of Alberta work with partners to:

- a. improve Albertans' understanding of the water management system by promoting awareness and knowledge (short-term)
- b. ensure that science and research inform policy and decision makers, partners and the public through effective knowledge transfer (short-term)
- c. continue to engage partners and the public in research, citizen science, monitoring and education initiatives (short-term)

Recommendation 8: The Government of Alberta and partners improve the accessibility and availability of *Water for Life* documents and water-related information (short-term).

³⁰ The term "citizen science" describes a range of ideas, from a philosophy of public engagement in scientific discourse to the work of scientists driven by a social conscience. Citizen science typically refers to research collaborations between scientists and volunteers, particularly (but not exclusively) to expand opportunities for scientific data collection and to provide access to scientific information for community members. For more information see: www.birds.cornell.edu/citscitoolkit/about/definition

3.5 Partnerships

Goal: *Water for Life* partnerships are empowered, informed and fully engaged in watershed stewardship.

Description: As part of the GoA's commitment to shared responsibility, *Water for Life* partnerships ensure that citizens, Indigenous communities and stakeholders³¹ have opportunities to contribute to the three outcomes of the water strategy. Outcomes for this key direction are:

- timely and strategic advice given to governments, industry and non-government organizations by the AWC
- maintaining WPACs as leaders in watershed assessment and planning
- continued work by WSGs to take community-level action to safeguard Alberta's water resources³²

Table 5 summarizes the status of actions taken to achieve this goal.

31 As an example, TransAlta signed a five-year agreement with the GoA in 2016 to manage water on the Bow River at its Ghost reservoir to aid in potential flood mitigation efforts, and in the Kananaskis Lakes system for drought mitigation efforts. For more information, see www.alberta.ca/release.cfm?xID=416497AD8E5AF-C609-3404-6A349ADE5BB730BD. Accessed September 2016.

32 Government of Alberta. 2009. *Water for Life* action plan.

Table 5: Status of Partnership Actions

Actions	Time frame	Previous Status	Status	Rationale
5.1 Continue to resource and support <i>Water for Life</i> partnerships	Long-term by 2019	Progressing-on-track	Some progress	Annual grants provided to the AWC and WPACs for core operations and some project-specific needs. GoA has explored granting alternatives but challenges remain in terms of funding sustainability. WSG projects funded through the Watershed Stewardship Grant program. GoA staff contribute expertise to some AWC, WPAC and WSG projects and boards. Regional planning teams established for Lower Athabasca, South Saskatchewan, and North Saskatchewan regions; no cross-ministry teams established.
<ul style="list-style-type: none"> Work with partners to develop a sustainable funding approach 	Short-term by 2012			
<ul style="list-style-type: none"> Establish regional cross-ministry support teams for watershed and regional planning 	Short-term by 2012			

Actions	Time frame	Previous Status	Status	Rationale
5.2 Integrate watershed management with the Government of Alberta's Land-use Framework regional planning and cumulative effects management system	Long-term by 2019	Progressing-on-track	Limited progress	Watershed Management Planning Guidebook produced in 2015; a watershed planning framework was not developed but is being considered through regional planning. <i>Alberta Land Stewardship Act</i> regulations updated with regional plan approval by Cabinet. Regional planning is behind schedule; only two plans are complete (the Lower Athabasca and South Saskatchewan regions). Several groups are looking at how to integrate water and land use planning. Guide to Reporting on Common Indicators Used in State of the Watershed Reports created in 2012.
<ul style="list-style-type: none"> Develop a watershed management planning framework and a guidebook for implementation 	Short-term by 2012			
<ul style="list-style-type: none"> Review and update legislation as required 	Long-term by 2019			
<ul style="list-style-type: none"> Develop core indicators and reporting tools for watershed and regional planning 	Short-term by 2012			
5.3 Establish Watershed Planning and Advisory Councils for the Athabasca and Peace watersheds	Short-term by 2012	Complete	Complete	WPACs have been established for these watersheds. The Athabasca Watershed Council was established in 2010, and the Mighty Peace Watershed Alliance in 2011.

Actions	Time frame	Previous Status	Status	Rationale
5.4 Develop watershed management plans for the Milk, Oldman, South Saskatchewan, Bow, Red Deer, North Saskatchewan, Battle, Cold Lake-Beaver, and Lesser Slave Lake	Medium-term by 2015	Progressing-on-track	Some progress	WPAC watershed plans are in various stages of development and implementation (see Appendix C online at http://awchome.ca/Projects/CompletedProjects/WFLIR/tabid/102/Default.aspx). Ten out of 11 WPACs are either developing or implementing plans. Integrating water management frameworks in WPAC plans remains a challenge; clarity is needed on how WPAC plans will align and integrate with other plans (e.g., regional plans and municipal development plans).
<ul style="list-style-type: none"> Integrate priority water management frameworks into watershed management plans (e.g., Industrial Heartland and mineable oil sands) 	Medium-term by 2015			
5.5 Complete and implement watershed management plans for all major watersheds	Long-term by 2019	Progressing-on-track	Some progress	Six WPACs have completed one or more phases of their watershed management plan. Several WPAC plans are being used by AEP; (e.g., Bow River Phosphorus Management Plan). It remains a challenge to engage Indigenous peoples in <i>Water for Life</i> and water-related decision making and activities.
<ul style="list-style-type: none"> Assess the effectiveness of watershed management planning system achieving desired outcomes 	Long-term by 2019			

Actions	Time frame	Previous Status	Status	Rationale
5.6 Complete transboundary bilateral agreements with neighbouring jurisdictions	Short-term by 2012	Progressing-on-track	Some progress	In 2008, Alberta members of a Montana-Alberta Joint Initiative Team were appointed. This team worked from 2009–2012 on modelling over 300 scenarios to improve the access to the shares of water of the St. Mary and Milk Rivers. The shares are set in the 1909 Boundary Waters Treaty. A series of reports documenting the joint team's work is progressing: a background technical report was completed in 2009 and a joint report and recommendations is being developed and was submitted to the Governor of Montana and Alberta Premier in 2016. Bilateral Water Management Agreement with the Northwest Territories signed in 2015. Negotiations are ongoing for agreements with British Columbia and Saskatchewan.
■ Montana regarding the water of the St. Mary and the Milk River	Short-term by 2012			
■ British Columbia, Saskatchewan, and the North West Territories, as part of the Mackenzie River Basin Transboundary Waters Master Agreement	Short-term by 2012			

*Indicate actions that are now part of regular business and that dedicated GoA staff are assigned to these actions that are included in annual work plans

Assessment: One action is complete, and the remaining ones will advance the outcome of this key direction when accomplished. Despite some challenges with capacity and representation, partnerships are working well to leverage resources and generate multi-sector policy advice, watershed information, stewardship action and public knowledge via education and outreach.³³ The GoA and *Water for Life* partnerships could benefit from defining how policy advice and watershed planning feed into policy development, regional and municipal planning and other legislated decision-making processes. GoA should also continue to provide direction and clarity to *Water for Life* partnerships on desired outcomes, roles and responsibilities. Recommendations from the AWC Moving from Words to Actions project³⁴ that support the communication and coordination among and between *Water for Life* partnerships have been implemented.

Challenges in achieving this goal include:

- involving Indigenous peoples in watershed planning
- clarifying the roles and responsibilities of WPACs
- the ability of implementers to address AWC recommendations given limited time, resources and evolving priorities
- changing roles and responsibilities of some agencies and organizations (e.g., AER, WPACs) since the last *Water for Life* review
- coordination among governments and organizations involved in watershed management initiatives
- implementing recommendations to the GoA by *Water for Life* partnerships due to their advisory nature
- resource limitations

33 See Appendix C and D for lists of *Water for Life* partnership activities online at <http://awchome.ca/Projects/CompletedProjects/WFLIR/tabid/102/Default.aspx>

34 Alberta Water Council. 2011. *Moving from Words to Action*. Available online at: www.awchome.ca/Projects/WordstoActions/tabid/133/Default.aspx. Accessed June 2016.

To meet these challenges, the GoA needs to continue working with partners to:

- ensure that AWC advice supports and provides direction to respective implementers and proponents regarding water management challenges
- clarify how watershed management plans integrate into statutory regional and municipal management processes
- continue to seek greater inclusivity in membership and participation (e.g., Indigenous peoples and incorporation of traditional knowledge)
- reaffirm the commitments to *Water for Life* partnerships; ensure sustainable resources are aligned to priority initiatives and enable partnerships to plan and deliver desired outcomes
- promote partnerships in public messaging and within the GoA to articulate roles in achieving desired outcomes
- consider other funding mechanisms to support partnerships and investigate voluntary versus legislated mechanisms

The next *Water for Life* action plan update should strive to address identified challenges under partnerships and refresh priorities to reflect needs and concerns in the province. The AWC recommends:

Recommendation 9: The Government of Alberta:

- a. clarify commitments to *Water for Life* partnerships (short-term)
- b. continue to provide core resources and support to *Water for Life* partnerships (long-term)
- c. confirm how partnerships' policy advice and plans (i.e., from AWC and WPACs) integrate into policy, planning and decision-making processes (short-term)

Recommendation 10: *Water for Life* partnerships continue to investigate and leverage additional resources to support their work (long-term).

3.6 Water Conservation

Goal: All sectors understand how their behaviors impact water quality, quantity and the health of aquatic ecosystems, adopt a “water conservation ethic” and take action.

Description: To maintain a healthy aquatic ecosystem, a sustainable economy and safe secure drinking water, Albertans need to be aware about how they use water.

Outcomes for this key direction are:

- Demonstration in all sectors of best management practices, ensuring overall efficiency and productivity of water use in Alberta improves by 30 per cent from 2005 levels by 2015. This will occur when :
 - demand for water is reduced
 - water use efficiency and productivity are increased³⁵

Table 6 summarizes the status of actions taken to achieve this goal.

³⁵ Government of Alberta. 2009. *Water for Life* action plan.

Table 6: Status of Water Conservation Actions

Actions	Time frame	Previous Status	Status	Rationale
6.1 Develop tools to integrate environmental, economic and social values into water management decision-making	Medium-term by 2015	Some progress	Some progress—being re-evaluated	AEP working with partners to develop ecosystem services concepts. Some work was done but other activities being undertaken no longer apply due to changes in GoA priorities.
<ul style="list-style-type: none"> Develop a policy framework for ecosystem service markets with the Alberta Institute for Agriculture, Forestry and the Environment 	Short-term by 2012			
<ul style="list-style-type: none"> Implement a market-based ecosystem services incentive program 	Medium-term by 2015			
<ul style="list-style-type: none"> Integrate economic instruments and full cost accounting tools into priority water policy and planning initiatives 	Medium-term by 2015			

Actions	Time frame	Previous Status	Status	Rationale
6.2 Develop and implement an enhanced education program to encourage water conservation	Short-term by 2012	Currently being re-evaluated	On track	AEP developed education and outreach programs to promote water conservation. AWC hosted the Water Reuse Symposium in 2014. Municipalities offer water efficient fixture incentive programs. Water recycling requirements developed for in situ oil sands operations. Reusing effluent for hydraulic fracturing to encourage water conservation.
■ Engage Albertans in water conservation activities through Education and Outreach programs	Short-term by 2012			
■ Develop information and education resources to help Albertans understand the uses of water in Alberta and opportunities for conservation	Short-term by 2012			
6.3 Work with key water sectors to:		Progressing-on-track	On-track	Sectors developed and provided their CEP plans and implementation reports to the AWC in October 2015. An AWC project team ³⁶ is evaluating the contributions of implemented CEP actions to the goals of <i>Water for Life</i> , the specific aspirational target of improving efficiency and productivity by 30% from 2005 levels by 2015, sector-specific targets and approved CEP desired outcomes.
■ Develop Conservation, Efficiency and Productivity Plans	Short-term by 2012			
■ Implement Conservation, Efficiency and Productivity Plans	Medium-term by 2015			
■ Establish an ongoing monitoring program to ensure all sectors are achieving water conservation, efficiency and productivity outcomes	Long-term by 2019			

*Indicate actions that are now part of regular business and that dedicated GoA staff are assigned to these actions that are included in annual work plans

36 For more information on the AWC's Evaluating Water Conservation, Efficiency and Productivity Project Team go to <http://awchome.ca/Projects/CEP/tabid/209/Default.aspx>

Assessment: Some actions remain valid and continue to advance this key direction since the last AWC review. Other actions are no longer under consideration by the GoA and require re-evaluation. Some progress has been made in education and outreach through various programs used to encourage water conservation. The AWC's 2014 Water Reuse Symposium³⁷ brought together water-using sectors and others to share water reuse knowledge, challenges and solutions to inform development of a water reuse policy for Alberta. Through the AWC's multi-stakeholder process, Alberta's seven major water-using sectors voluntarily developed and implemented water CEP plans. This work has been viewed favourably by the sectors involved. CEP work should continue and future efforts can focus on different areas.

Challenges to achieving this goal include:

- CEP work is aimed at improving industrial, agricultural and municipal water use, but the impacts on aquatic ecosystems are not known
- further water CEP will require large investments of financial and human resources
- development and population growth continue to stress water supplies
- innovative policy and regulation on water CEP are needed
- educating Albertans about the benefits of improving water CEP could result in behaviour changes over time

³⁷ To view proceedings from the 2014 AWC's Water Reuse Symposium, go to <http://awchome.ca/Projects/CurrentProjects/ReuseSymposium/tabid/164/Default.aspx>

To meet these challenges, the GoA needs to continue working with partners to:

- share success stories, lessons learned and progress on CEP planning, implementation and reporting
- promote continuous improvement, best available technologies and economic feasibility and develop a provincial approach for water and effluent reuse and recycling
- develop education programs, incentives and disincentives to encourage water conservation and promote these tools using various means that are relevant to the target audience
- continue promoting water CEP in light of climate change and variability
- separate conservation (i.e., using less water in daily activities around the home, business, or work place) from efficiency and productivity (i.e., the industry component specifically related to water allocation and use)

The next *Water for Life* action plan update should build on the good start made under this key direction. Priorities for water conservation should be re-examined to reflect needs and concerns in the province. Hence, the AWC recommends:

Recommendation 11: The Alberta Water Council continue to provide the forum for advancing water conservation, efficiency and productivity (medium-term).

4.0 Overall Assessment of *Water for Life* Implementation Progress

Water for Life is based on a solid foundation of protecting water quality and quantity and ensuring its availability for people, the environment and the economy. However, gaps remain and new concerns will challenge the strategy's ability to deliver desired outcomes. Over time, the strategy has evolved from a bottom-up approach where desired outcomes were identified through consultation. Now that *Water for Life* has been in place for over a decade, this has shifted to a top-down approach where mid-level policy, regional plans and watershed plans are defining, embedding and achieving outcomes. To enhance its success, *Water for Life* must be better integrated with other initiatives to address new concerns and bridge gaps. After assessing the progress of each action, the AWC looked at implementation progress for the period of 2012–2015 through a strategic lens and organized findings into the five themes described below.

Theme 1—Resilient and Relevant

Several water management challenges and changes have emerged since *Water for Life* was published in 2003. However, the strategy's principles, goals and key directions remained valid, universally accepted and relevant with the renewal in 2008. Progress has been made on all aspects of the 2009 *Water for Life* action plan. *Water for Life* principles permeate and guide water management work throughout the province. References to the strategy are made in several major plans and policies. Some actions have become part of regular GoA business and give relevance to the work of the GoA, PAs and the *Water for Life* partnerships. For some groups, the strategy has engaged and empowered them to continue their work in water management.

Theme 2—Address Gaps and Weaknesses

Gaps and weaknesses remain in *Water for Life* implementation due to a number of challenges. It was apparent from this assessment that gaps identified in previous reviews have not been addressed. Some gaps include actions around providing safe, secure drinking water supplies in some Indigenous, rural and small communities; protecting source water (including headwaters); developing criteria and performance metrics for assessing HAE; and others. An overall gap is the lack of performance metrics to assess the progress of *Water for Life* actions.

The *Water for Life* strategy's three goals and three key directions are each supported by several actions, and progress was varied as illustrated in Table 7.

Table 7: Progress on Water for Life Goals and Key Directions

Action/Key Direction	Being re-evaluated	Actions making limited progress	Actions making some progress	Actions progressing on track	Actions completed	Total # of actions for each goal and key direction
Safe secure drinking water	0	0	2	6	1	9
Healthy aquatic ecosystems	0	2	1	0	2	5
Reliable quality water supplies	0	0	3	1	0	4
Knowledge and research	0	0	3	1	0	4
Partnerships	0	1	4	0	1	6
Water conservation	1	0	0	2	0	3
Total #(%) of actions	1(3%)	3(10%)	13(42%)	10(32%)	4(13%)	31

Theme 3—Integrate with Land-use Framework, Integrated Resource Management System and other Priorities

Integration between *Water for Life* actions and other initiatives is unclear. Water is an integral part of regional planning discussions, but the process for integrating AWC provincial policy advice and WPAC watershed plans with regional plans remains uncertain. How WPAC plans are intended to be incorporated with municipal planning processes is also unclear. Thorough consideration of how water and land use policies, plans and practices integrate is imperative if water resources are to be managed effectively.

Theme 4—Increase Adaptability

Water for Life and its associated action plan must stay on course to address outlined concerns, but be flexible enough to take on new priorities and emerging challenges. Flooding was not at the forefront during the last *Water for Life* review and work in response to the 2013 floods took a reactive rather than proactive approach to mitigation. Additionally, there was no mandate in the 2009 *Water for Life* action plan to act on other concerns (e.g., lake management, hydraulic fracturing). This resulted in the creation of the *Our Water, Our Future: A Plan for Action*³⁸ as a means to address some of these challenges.

Since the 2008 *Water for Life* strategy renewal, some progress has led to the completion of some actions and integration of others into regular GoA business. Other actions are either being re-evaluated or are no longer under consideration by the GoA. The next *Water for Life* action plan update would be an opportunity to focus on addressing gaps and challenges while incorporating new priorities and concerns into water management priorities for Alberta.

³⁸ Government of Alberta. 2014. *Our Water, Our Future: A Plan for Action*. Available online at: <http://aep.alberta.ca/water/water-conversation/documents/WaterFuture-PlanAction-Nov2014A.pdf>. Accessed June 2016.

Theme 5—Track and Communicate Progress

The AWC's Review of Implementation Progress of *Water for Life* 2009–2011 highlighted a need to develop, implement and track clear and measurable performance metrics for goals and outcomes. Performance metrics are important in monitoring and assessing implementation over time and may expedite implementation progress; these metrics have yet to be developed.

Water for Life does not have as high a profile among partners and the public as it once had. More could be done to keep governments, partners and the public informed and engaged in water management decisions and activities. *Water for Life* partnerships are working hard to involve partners and the public, but more could be done to share success stories and lessons learned and to report on progress.

Recommendation 12: The Government of Alberta continue to work with partners to develop and monitor performance metrics and publicly report progress made towards achieving *Water for Life* goals.

Appendix A — Committee Members and Acknowledgments

The Alberta Water Council acknowledges the contributions of the committee members who volunteered their time and expertise on this project, and the organizations they are affiliated with:

Committee Members

Arin MacFarlane-Dyer	Alberta Lake Management Society
Brett Purdy	Alberta Innovates
Chris Ward	City of Edmonton
Earl Graham	Alberta Association of Municipal Districts and Counties
Gordon Thompson	North Saskatchewan Watershed Alliance
Jacque Browne	Alberta Environment and Parks
Jason Unger	Environmental Law Centre
Jim Hackett	ATCO Power
Kelly Buziak	Alberta Environment and Parks
Kristen Lorenz	Alberta Agriculture and Forestry
Mark Brostrom	City of Edmonton
Ron McMullin	Alberta Irrigation Projects Association
Tasha Blumenthal	Alberta Association of Municipal Districts and Counties
Petra Rowell	Alberta Water Council
Anuja Ramgoolam	Alberta Water Council
Marie-Claire St-Jacques	Alberta Water Council

The AWC also acknowledges the contributions of the following contributors:

Interviewees

Brett Purdy	Alberta Innovates
Debra Mooney	Alberta Health
Lee Kruszewski	Alberta Economic Development and Trade
Michael Seneka	Alberta Environment and Parks
Rob Harris	Alberta Environment and Parks
Robert Stokes	Alberta Environment and Parks
Thorsten Hebben	Alberta Environment and Parks

Guest Speakers

Andy Lamb	Alberta Environment and Parks
Nicole Spears	Alberta Environment and Parks

Panel Discussion Subject-Matter Experts

Andy Ridge	Alberta Environment and Parks
Edith Vanderpuye	Alberta Environment and Parks
Ernie Hui	Alberta Environment and Parks
Michael Seneka	Alberta Environment and Parks
Thorsten Hebben	Alberta Environment and Parks
Travis Ripley	Alberta Environment and Parks

The AWC would also like to thank participants who took the time to fill out the sector survey.

Appendix B — *Water for Life* Implementation Review Committee Terms of Reference

Approved by the Alberta Water Council on June 17, 2008.

CONTEXT:

This standing committee was established to assess and report, on behalf of the Alberta Water Council, the progress that is occurring with respect to the implementation of the *Water for Life* strategy. The review reports provide feedback and recommendations to the Government of Alberta and other stakeholders, and thus assist the Council in achieving an important component of its mandate. The committee will operate in a manner that is consistent with the rules, policies and procedures adopted by the Alberta Water Council, including the use of consensus to make decisions in a multi-stakeholder process.

GOAL:

Objectively review progress being made with respect to implementation of the *Water for Life* strategy and release periodic reports containing the findings of the reviews.

OBJECTIVES:

- Review and assess the status, effectiveness and progress of the *Water for Life* strategy.
- Identify opportunities and provide advice and recommendations based on this assessment.

KEY TASKS:

- Develop a process, budget and timeline for producing periodic review reports, to be approved by the AWC Board.
- Oversee the drafting of the review reports, including the development of advice and recommendations on implementation progress.

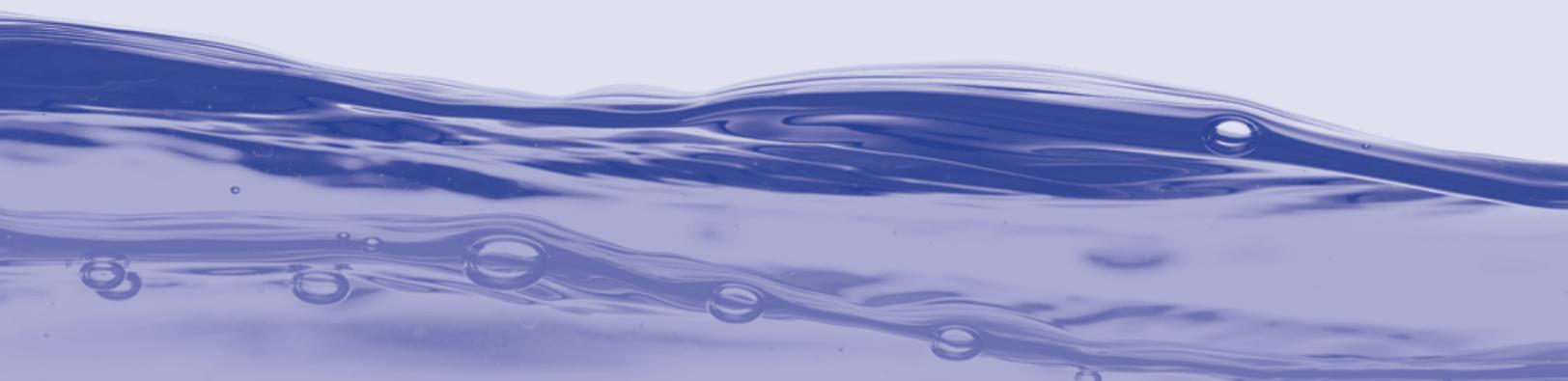
MEMBERSHIP:

Membership on the committee includes at least two but not more than three members from each of the four broad categories on the AWC Board:

- Industry
- Non-government organizations
- Government of Alberta and Provincial Authorities
- Government

Members are expected to remain on the committee for at least two reporting periods. Membership will be reviewed after each reporting period to ensure continuity and diversity.

Appendices C and D are published online
www.awchome.ca/Projects/WFLIR/tabid/102/Default.aspx





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