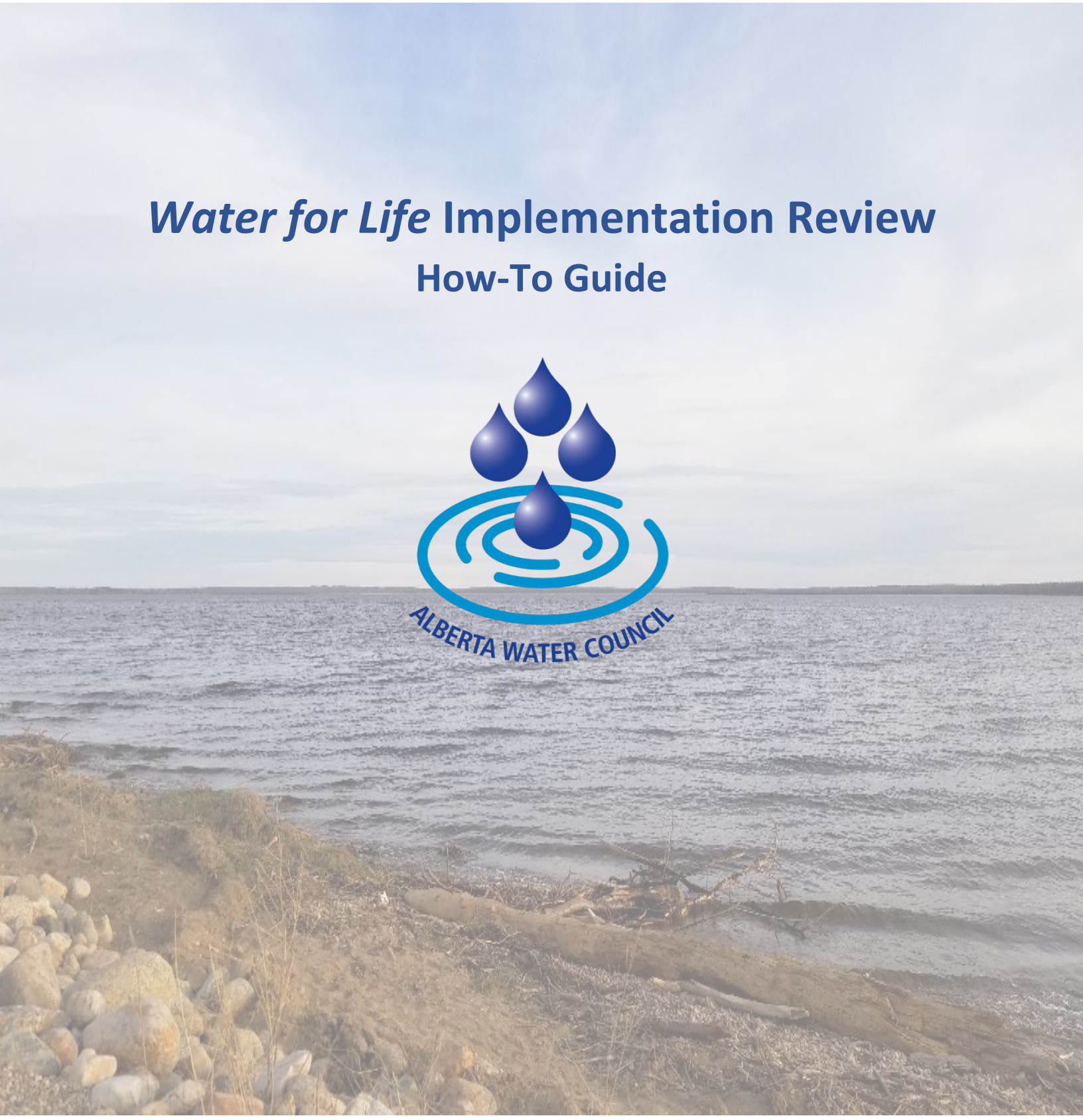
Water for Life Implementation Review

How-To Guide



Approved by the Alberta Water Council

November 2020

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Introduction

The Alberta Water Council (AWC) is a collaborative partnership that provides leadership, expertise, and sector knowledge and perspectives to help governments, Indigenous Peoples, industry, and non-governmental organizations to advance the outcomes of *Water for Life*. It advises the Government of Alberta (GoA) on matters pertaining to the successful achievement of the outcomes of the *Water for Life* strategy and on effective water resources management policies, practices, and tools.

The AWC may advise on government policy and legislation in some instances. However, the Government of Alberta remains accountable for the implementation of the *Water for Life* strategy and continues to administer and contribute to water and watershed management activities throughout the province.

One of the AWC's most important tasks is to regularly review the *Water for Life s*trategy's implementation progress. The review is done in a spirit of adaptive management, whereby 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 strategy in meeting them. Completing this strategic review helps set the priorities and future direction of the strategy and ensures it remains on track and relevant. It is part of the AWC's key role of stewarding the provincial water strategy.

The AWC has now completed several *Water for Life* implementation reviews. Along the way, the AWC's *Water for Life* Implementation Review Committee (hereafter, the "committee") has found that some tools and processes are more effective than others in determining the strengths, issues, and future opportunities for water management in Alberta. Therefore, the purpose of this How-To Guide is to provide information and support to subsequent committees so they can build on what others have learned before them. Documenting the process of completing an implementation review becomes increasingly important when considering likely staff and committee member turnover in the future.

The information provided in this guide is for consideration only. Subsequent committees should not be limited by the suggestions provided here. The sections below provide guidance regarding the timing of reviews, the information required to complete the review, the organization and analysis of the collected information, and the structure of the final report.

Timing of Reviews

The decision to begin a review cycle should be carefully considered. If the review begins too soon after the previous review, little will have changed, and the report will sound much like the previous one. Conversely, conducting the reviews too far apart may allow the strategy to become

unfocused and result in slower-than-optimal progress. Therefore, review cycles need to be far enough apart to allow for goal setting and implementation based on previous recommendations, while not allowing too much time between reviews. The length of time required to complete the review (approximately 12 months) must also be considered in this decision. Finally, in conducting the review, it is important to set a "snapshot" date; that is, the date that progress will be evaluated, usually December 31.

In the past, the schedule for implementing a review varied from two-to-four years. In 2020, the committee identified the need to adhere to a set schedule of reviews. They also identified the option of undertaking comprehensive reviews less often, with more specific reports on individual *Water for Life* elements produced in the interim between comprehensive reviews. Having regularly scheduled and more frequent reports will provide more opportunities for engaging the AWC board and its sectors in dialogue about the barriers and opportunities concerning *Water for Life* strategy implementation as well as emerging issues. The committee will also have to consider which individual elements gets reported on earlier than others, and this may depend on the AWC's Business Plan, capacity, and other priorities.

Given the above considerations, it is recommended that a five-year review cycle be implemented, with the "snapshot" date taking place on December 31 of the reporting year. That said, some flexibility can still be included in this schedule. Sometimes it is worth waiting for a key milestone to be met or a new program to begin operation before conducting an implementation review. Implementation reviews should therefore be regular in their occurrence, with some flexibility around the date to accommodate the circumstances of the time.

Table 1: Suggested *Water for Life* Implementation Review Timetable

Comprehensive *Water for Life* reviews every five years	**Interim element reports**
2016–2019 review in 2020	
2020–2024 review in 2025	2023 report on a specific element of *Water for Life* (e.g., healthy aquatic ecosystems)
2025–2029 review in 2030	2028 report on a specific element of *Water for Life* (e.g., knowledge)
2030–2034 review in 2035	2033 report
	And so on…

Information Gathering

To complete a comprehensive *Water for Life* implementation review, accurate information must be collected and summarized to inform the committee's work. In conducting previous reviews, the committee has found the following sources of information to be helpful:

Document Review

Previous committees have conducted a survey of literature available to them. This collection of information includes foundational documents, such as the renewed *Water for Life* strategy (2008), related *Water for Life* Action Plan (2009), Our Water, Our Future: A Plan for Action, previous implementation review reports and recommendations, and other documents that may relate to *Water for Life*. It also includes reports generated during the period under review, such as AWC project team reports and their recommendations (see also the AWC Recommendations Tracking reports), key Watershed Planning and Advisory Council (WPAC) and Watershed Stewardship Group (WSG) reports, as well as information produced by the GoA and other water-related organizations. In addition to reviewing relevant documents, the committee should seek to understand other relevant work that has been undertaken which could inform their own report and recommendations.

Stakeholder Survey

As part of the review process, the committee should seek broad input from the sectors represented on the AWC and perhaps others. Previous committees have gathered this information through an electronic survey, which has worked relatively well before and is recommended for future reviews. Here are a few tips to help make the next survey process easier:

1. The survey process will take four to five months from start to finish. This should include at least two months for sectors to complete and submit their responses, especially if the committee requests a single, coordinated response for each sector, or if AWC sector representatives are vetting their sector's comments.

2. It is important to properly introduce the survey and frame the *Water for Life* strategy. The introduction should explain the six elements of *Water for Life* (i.e., three goals and three key directions), remind readers why they are completing the survey, and state that they likely will not be involved with all elements of the strategy (in other words, focus their responses in the relevant areas). Committee members should also request some time on the Council's agenda to remind board members about the survey and prepare them for the information-gathering process.

3. Limit the number of questions being asked. Previous surveys asked about each element of the strategy individually and received repetitive responses to those questions. Sectors know what

their most pressing issues are and what changes they would like to see. Asking three or four open-ended questions will be more effective than asking about each element directly. Suggested topics for the questions include:

a) how the sector is involved with *Water for Life*,
b) what they feel the strengths of the current strategy are,
c) what their barriers to participating in *Water for Life* are, and
d) what future challenges they see the strategy having to deal with.

Committee members should be prepared to organize diverse responses into meaningful categories or themes.

4. Encourage AWC sectors to submit a single unified response per sector rather than submitting multiple individual responses from within a sector. Benefits of requiring a coordinated sector response include reducing the number of responses the Committee needs to review, forcing sectors to discuss the issues internally and provide thoughtful feedback, and having a point person in each sector to contact for additional context or information. The drawbacks include the additional work required by each sector to collect and summarize their input, the additional time required by sectors to coordinate their response, and a reduced diversity of responses from within a sector. Both methods are valuable, and different sectors will prefer different approaches or processes for collecting and analyzing survey information.

5. Be explicit when conducting the survey about how the collected information will be used. Specifically indicate whether a summary of survey responses will be made public. Consider presenting the information in a way that reflects different concerns by different sectors, or if possible, different geographic areas.

GoA Staff Interviews and Roundtable Discussions

At one time within the GoA, each element of the *Water for Life* strategy had a person or small group of people responsible for monitoring and advancing that element. A series of interviews were then conducted with these provincial element coordinators to inform the review report. These interviews were one of the best sources of information for review reports.

The GoA has since moved away from having element coordinators, and *Water for Life* outcomes have become more embedded in the day-to-day work of many different staff. As individual interviews are quite labour intensive, a more efficient method to facilitate a discussion with these staff about progress on *Water for Life* outcomes is to facilitate six roundtable discussions, one for each of the three *Water for Life* goals and the three key directions. The GoA should identify the appropriate attendees for these roundtables, and AWC staff should work with AEP staff to ensure participation from all relevant departments. Roundtables might also be a useful approach for getting input from WPACs and WSGs.

Note that individual interviews with other key members of provincial government staff or other organizations might still be used in some cases when it makes sense to do so. For example, members of the provincial government's education staff have been interviewed as part of previous review reports. Interviews with other key stakeholders or surveys of sectors not represented on the Council could also be appropriate.

To make the roundtable and interview processes as productive as possible, questions and any other relevant materials should be prepared and provided to participants beforehand (see Appendix A for sample interview and roundtable questions). The Committee should be clear that the information received or heard in discussions will not be attributed to any individuals. However, notes summarizing the discussions from the roundtables and interviews should be sent to the participants for review to ensure their accuracy before being considered "final" by the Committee.

In conducting the roundtables and interviews, committee members usually participate in the sessions related to their expertise and area of work. Additionally, two AWC project managers should be present at each roundtable – one to facilitate, and the other to take notes, summarize responses, and manage logistics. In the future, previous roundtable and interview notes and pre-event questionnaires should be shared with the committee members and GoA participants. Doing so will help ensure continuity, remind both committee members and GoA staff of their previous positions, and provide a valuable starting point for their conversations.

Performance Indicators

In the past, review committees reported on the achievement of *Water for Life* outputs (e.g., reports and tools) but struggled with reporting on the achievement of outcomes (e.g., safe, secure drinking water supplies). Several implementation review reports have recommended that a suite of *Water for Life* performance indicators be developed as a tool to support and improve the AWC review process.

It should be noted that the intention of these performance indicators is not to audit the performance of the GoA or other water stewards in the province; their purpose is to provide a structured, quantitative framework for the AWC to evaluate *Water for Life* implementation progress. Their use will make reviews more comparable, making progress over the long term easier to track and report.

In 2020, work was initiated on this task of identifying potential indicators as part of the 2016-2019 review, with questions about potential measures included in the stakeholder survey and GoA roundtable discussions. Additionally, a report was commissioned to provide background information and recommendations to the committee before a list of potential indicator areas (Appendix B) was selected and tested with stakeholders. It is important to note that while there is data available to use for some these indicators immediately (e.g., number of fish species at risk),

others (e.g., number of drinking water advisory person days annually) will take more work to flesh out specific metrics, data collection processes, and associated data sources.

Once a final suite of indicators confirmed, they should be monitored, assessed, and reported in future *Water for Life* review reports. Information conveyed by indicators can be enhanced using information graphics or by report card or dashboard reporting.[1] Over time, reports and performance indicator trends should highlight gaps and opportunities in *Water for Life* implementation progress and water management in general. This will should inform the committee review process and provide direction for the recommendations they provide to the GoA and other appropriate bodies on how to meet key outcomes. Additionally, indicators should continue to be reviewed, refined, and improved, ensuring that they fit with and effectively measure the achievement of *Water for Life* outcomes and priority actions as they are implemented, as well as current and evolving water management challenges as they are identified.

Success Stories or Case Studies

Previous review reports have included short sidebars to accompany the main text that highlight specific initiatives and the work of stakeholders in advancing the *Water for Life* strategy during the period under review. These stories serve several purposes. They allow readers to see themselves in the review, they provide a positive tone to the report, and they engage the reader throughout the document. This information may be available through the results of the stakeholder survey along with some follow-up conversations to elicit more detail. It is also possible for Committee members to provide an opportunity to highlight a story from within their own sector for inclusion in the report. Whatever steps the committee decides to take, they should allow ample time for stakeholder review and feedback on the sidebars. This process should also be started as early as possible—ideally, immediately after the survey results are received.

Other Information Sources

The sources listed above have provided the foundation for previous review reports. However, this list is not exhaustive and could be expanded. The committee might require access to specific information or data about key performance indicators. Additionally, reviewing the reports and actions being completed under complementary strategies or frameworks, such as the *Land-use Framework* and other complementary documents, may provide some valuable insights into the *Water for Life* strategy's progress. A review of the progress that the WPACs have made on their state of the watershed reports and watershed management plans should also be included in the final report, along with a brief analysis of barriers and opportunities for these groups. Taking

[1] For a good example, see the Edmonton Metropolitan Region Growth Plan KPI Dashboard.

time, early in the process, to consider what additional information to gather will prove beneficial and will likely set the tone as the Committee prepares its report and recommendations.

Organizing Information

One of the most challenging aspects of reviewing the strategy is deciding how to organize the collected information. Being able to conduct a clear analysis, while maintaining a view of the interconnectedness of the strategy's three goals and three key directions, is a key challenge of the review process. The number of information sources and their level of detail also contribute to making the organization of information an important task.

Previous review committees have found it helpful to simplify the process by considering each action in the *Water for Life* action plan as fitting under one goal or key direction. This makes progress easier to track and information easier to organize. Each committee should consider how they would like to organize the information they collect.

In the future, there will be an increased reliance on other complementary strategies, such as the regional land-use planning and cumulative effects management, in advancing the *Water for Life* strategy. A structured format for organizing and analyzing the information will need to be in place or the interconnectedness of water stewardship in the province will make the picture too cloudy to understand and analyze. Generally, considering each individual element separately, as well as overarching themes and general trends for the entire review process is effective.

In writing the final review report, much of the complexity of the strategy and the interconnectedness of its elements can be easily re-introduced, provided the writer has a solid understanding of how the elements of *Water for Life* and interconnected. Based on the experience of the committee, it is imperative that a knowledgeable writer draft the final report—someone who can articulate the content with appropriate tone and clarity. New review committees should carefully consider who is to the best person to draft the final report. A suggested report format is included in Appendix C. A general plan with key tasks and timelines for completing a review report is included in Appendix D.

Sharing Results

AWC staff and committee members should be prepared, upon completion of the review report, to spend some time communicating the results and findings to interested audiences. New priorities and key directions will need to be incorporated into partners' operational plans and acted on by more than only the provincial government. A concerted and coordinated effort should be made to effectively communicate the results of the review to stakeholders. Additionally, all review reports are, and will continue to be, posted on the AWC website, and uptake of recommendations is tracked through the AWC Recommendations Tracking process.

Appendix A: Sample questions for GoA roundtables or individual interviews

- What is your name and contact information, current role, or area of expertise and how does it relate to *Water for Life*? Which goal or key direction (i.e., element) of *Water for Life* does your work most align with?
- Given the desired outcome for this *Water for Life* goal or key direction, how well do you think the *Water for Life* implementation is proceeding?
- Has the goal or key direction been achieved, or has there been progress on the goal or key direction?
- Have there been any significant contributions (e.g., initiatives, reports, research, funding) toward progress in the period under review? (Please provide links, copies, etc.)
- Given the progress made on this *Water for Life* goal or key direction to date, what do you think future priority strategies and actions should be?
- How do you currently, or how would you in the future, measure progress on this goal or key direction?
- Is your area of work affected by other areas of *Water for Life* work? If yes, how well does integration between these two areas occur?
- Thinking more broadly (beyond single goals and key directions), do you have any thoughts on the *Water for Life* strategy, its implementation, or any other advice for the Implementation Review Committee as they prepare their recommendations and report?

Appendix B: Potential areas to investigate further for the development of *Water for Life* implementation review performance indicators

	***Water for Life* Goal: Outcomes**	**Indicator**
1	Overarching *Water for Life* Strategy: *Albertans will be assured…*	**Indicator:** Percentage of Albertans surveyed indicating that they have a high level of assurance that 1) their drinking water is safe, 2) aquatic ecosystems are maintained and protected, and 3) water is managed effectively for a sustainable economy
		Description: The *Water for Life* strategy identifies several desired outcomes that Albertans are ”assured.” Assurance, or confidence that something is true, is a reflection of public perception (e.g., Is the water seen as safe?) and actual conditions (e.g., Is the water actually safe?). This measure is meant to better understand public perception; the remaining indicators focus on actual conditions. Perception, which is important as a reflection of public support for water management, can be influenced by and can inform future public communication and education efforts such as the Alberta Environment and Parks (AEP) Water Literacy program. The best way to measure assurance is to ask Albertans directly through a survey. Additionally, surveys might include open-ended questions on why they think their water is safe or managed effectively and what words like “safe” or ‘”sustainable” means to them.
2	Safe, Secure Drinking Water: *Albertans will be assured their drinking water is safe.*	**Indicator:** Number of drinking water advisory person days annually
		Description: *Water for Life* will have been successful if there are no human health issues arising from Alberta’s drinking water or drinking water management systems. While advisories may be issued for precautionary maintenance-related situations, or because of bacteriological risk (i.e., boil water advisories), they are an important tool for mitigating risks. Hence, their numbers, causes, geographic extent, duration, impact, and extent of population affected should be better understood such that these aspects inform future management actions. In the future, additional measures of drinking water safety that are more indicative of operations could also be reported on in a “state of” Alberta’s drinking water report including number of drinking water safety plans audited or updated, number of operators trained, number of deficiencies during inspections, and number of unsatisfactory chemical and bacteriological water quality results.
3	Safe, Secure Drinking Water: *Adherence of Alberta’s drinking water infrastructure to emerging standards and management for long-term sustainability.*	**Indicator:** Percentage of Albertans served by a regional drinking water network (and, inversely, those not on a regional network but on a local municipal system or a private system)
		Description: It is challenging for smaller communities to maintain the appropriate standard of drinking water infrastructure and treatment that larger urban centres (where the cost is spread across a larger number of ratepayers) can. Hence, there has been substantive investment, federally, provincially, and municipally, in developing regional networks over the past 15 years, where it makes sense to do so. However, more work is needed to improve understanding of where small or remote communities including Métis Settlements and First Nations reserves still face challenges acquiring and maintaining appropriate infrastructure that meets emerging standards.
4	Safe, Secure Drinking Water*: A comprehensive strategy (source to tap) to protect*	**Indicator:** Percentage of Alberta’s population whose drinking water supply management is supported by a voluntary source water protection plan (SWPP) or source water protection “activities” (and, inversely, percentage with a supply not protected by a plan or activities)
		Description: While regulatory tools are in place to manage public drinking water treatment facilities, efforts to manage impacts above intake pipes are becoming more important as our

	Alberta's drinking water.	population and land use activities grow. Although SWPPs are not a regulatory requirement, this voluntary activity does indicate that an assessment has been done to identify and mitigate upstream risks to downstream drinking water facilities. Voluntary SWPPs can be integrated into statutory regional and municipal planning processes. With a large portion of the province's population residing in large urban centres with SWPPs, we need to ensure smaller, rural centres also have the tools and resources to undertake source water protection planning. However, while having such a plan can enhance management, the absence of a plan does not mean that source water is not being protected and vice versa. For example, a well user could have high degree of control over a source well, but not have a SWPP. SWP "activities" may be more difficult to track unless it is clear that they are directly related to assessing or managing risks to sources of drinking water. Hence SWP "activities" need to be further defined. Annual reporting on plan implementation activities is also important.
5	Safe, Secure Drinking Water: *Timely access for all Albertans to information about drinking water quality in their communities.*	**Indicator:** The percentage of well owners who have attended the Working Well workshop and a qualitative description of the water quality and quantity issues identified in workshops; the annual number of drinking water tests submitted to Alberta Health (ProvLab) by private system owners with a summary of the results of such testing (e.g., percentage unsatisfactory, contaminants identified)
		Description: Alberta has three distinct drinking water management systems: 1) Large public AEP regulated systems (e.g., City of Edmonton), 2) Smaller systems for public consumption (rural community halls, some rural schools, work camps, etc.), and 3) Unregulated private systems, including landowners with groundwater wells (i.e., approximately 600,000 Albertans), dugouts, or cisterns. While the state of large (reported in real time on Alberta's Regulated Drinking water website) and small public drinking water systems is well understood, less is known about private systems. Additionally, as most urban residents can easily get information about drinking water quality in their community, this indicator is intended to focus on the drinking water information needs and issues encountered by private (non-public) system owners. Specifically, what does safe, secure drinking water mean to these users, what water quality and quantity issues are they encountering, and what information do they need to address these issues? While the number of Working Well workshop attendees and number of water quality tests submitted are imperfect indicators and are influenced by a number of factors (e.g., GoA program budgets, well owner proximity to test centres), they are the only programs currently generating information on this population. Hopefully by taking a deeper dive into this data, including qualitative descriptions of the issues, it will help further refine a better indicator for this segment of the Alberta population.
6	Healthy Aquatic Ecosystems (Water Quality): *Establishment of priorities for sustaining aquatic ecosystems to be implemented through watershed plans.*	**Indicator: Phase I –** Number (percentage) of Alberta's watersheds or waterbodies with management objectives (for contaminants of concern such as nutrients, pesticides, metals, pathogens, salts) set in a watershed, sub-basin, or lake management plan; regional or municipal plan; or water quality management framework. **Phase II** – Percentage of sites classified as "excellent" water quality; number of exceedances from guidelines provincially, as well as by watershed or waterbody
		Description: The presence of "plans and frameworks" are important for documenting shared outcomes for a management area, as well as responsibility and authority for agreed-to management actions to achieve such outcomes. While the *Water for Life* strategy originally envisioned aquatic ecosystem outcomes and objectives embedded in water and watershed management plans, the reality today is that such outcomes can be embedded in a number of both statutory and non-statutory water and land-use planning documents. Achieving water quality objectives is the foundation of "sustaining" aquatic ecosystem health, and several provincial programs monitor contaminants in rivers (Long-Term River Network), lakes (ALMS LakeWatch program) and groundwater (e.g., Groundwater Observation Well Network). While these programs do not include all waterbodies, they are a starting point. Additional elements of aquatic ecosystems (e.g., wetlands, small tributaries) can be added in the future as new monitoring programs and data become available. Whether looking at

		individual parameters or results collated in an index, we need something to compare trends to. National and provincial guidelines exist for some parameters. Where they are lacking, appropriate guidelines (i.e., regional, specific to aquatic life) need to be developed.
7	Healthy Aquatic Ecosystems (Lakes): *Albertans are assured that Alberta's aquatic ecosystems are maintained and protected.*	**Indicator:** The number of cyanobacterial advisories and the number of beach advisories due to fecal contamination occurring annually, provincially, by watershed and by lake
		Description: Lake management was identified by the GoA in the water conversations as an issue important to Albertans. Blue-green algae (cyanobacteria) occurs naturally in most Alberta lakes, and the reporting of algal blooms is influenced by monitoring efforts and an increasingly educated public. As such, it is not necessarily an indicator of aquatic ecosystem health (in the absence of having a pre-disturbance benchmark to compare it to). However, cyanobacteria advisories impact human health and safety because of their occurrence in waterbodies that are often used for recreational purposes (e.g., swimming, boating, fishing). Similarly, the number of beach advisories due to fecal contamination (from livestock, wildlife, human, and other sources) can affect human recreational use. Hence, increasing numbers of advisories can inform regional and municipal planners of where future issues might arise between residential, recreational, and other uses. This indicator might also inform changes due to climate change: with longer ice-free times and higher summer water temperatures, algal blooms would more likely increase rather than decrease, and severity and duration of blue-green algae would also be more likely to increase.
8	Healthy Aquatic Ecosystems (Instream Flow Needs): *Management and allocation of water to sustain aquatic ecosystems and ensure their contribution to Alberta's natural capital and quality of life are maintained.*	**Indicator: Phase I -** Percentage of watersheds in Alberta where Instream Flow Needs (IFN) are met (i.e., allocations do not exceed IFN at any time of the flow cycle)
		Description: Maintenance of healthy aquatic ecosystems (HAE) requires understanding the relationship between flows and biology, water quality, geomorphology, and connectivity. Additionally, HAE requires a spectrum of natural flows (e.g., high flows, base flows). Smaller tributaries in particular may be sensitive to low flows that can also affect shallow groundwater. Stakeholders have indicated that more clarity is needed in understanding and communicating what IFN values are, how they are calculated, where and when IFN of small waterbodies are stressed, and if the current suite of management tools for IFN and allocations is working to "sustain" HAE. As well, we need to better understand actual water use, which is often less than the amount allocated. Currently water use data is incomplete and not easily available to the public, affecting confidence that water allocations are managed with the precision necessary in some pressured watersheds. Additionally, flows are not static and, in fact, often vary significantly throughout the year and from year to year, which must be reflected in IFN calculations and allocation decisions.
9	Healthy Aquatic Ecosystems (Land Cover, Land Use): *Protection of aquatic ecosystems in critical areas.*	**Indicator:** Percentage of natural land cover (and, inversely, percentage of land use by type) provincially and by watershed
		Description: Land-use activities and the non-point source pollution they generate have a large and growing influence on the health of affected waterbodies. Although contaminant export coefficients are challenging to determine, from a coarse filter perspective, the busier the landscape, the more likely water quality issues are occurring. However, we need to better understand the relationship between land use, water quality, and aquatic ecosystem health, as well as understanding how effective land management tools (land use planning, environmental buffers, development setbacks, etc.) are working to protect waterbodies and aquatic ecosystems, particularly in critical areas, such as headwaters, source waters, wildlife habitat, riparian shores, groundwater recharge and discharge areas, etc. In the interim, most WPACs provide land cover and land- use information in their state of reports. Additionally, measures such as pesticide application rates, livestock intensity, and impervious surfaces, etc. are often used to narrow in on land use pressures influencing water quality and aquatic ecosystem health in each watershed. A caution, however, is that while we can report on the extent of land cover and land use, the AWC itself does not have the mandate to effect

		changes in these measures although many of its sector members do have a role in land-use decision making.
10	Healthy Aquatic Ecosystems (Biotic Integrity): *Albertans are assured that Alberta's aquatic ecosystems are maintained and protected.*	**Indicator: Phase I -** Number of fish species identified by provincial and federal governments and their agencies as "at risk," "may be at risk," or "status undermined;" Number of fishing licences sold as a measure of harvest pressure; percentage of waterbodies with invasive species or disease. **Phase II** – Measures of benthic invertebrate health, non-sport fish assemblages, or age classes
		Description: Fish can be used as an umbrella species to assess aquatic ecosystem health and, in general, we have good fisheries information, at least for our recreational sport fish. The presence of invasive species or disease might also be used as they impact aquatic ecosystem health (e.g., whirling disease impact to fisheries) and/or infrastructure (e.g., zebra mussel threat to irrigation infrastructure). Provincial programs to monitor invasive species and disease prevalence, such as whirling disease, are in place. However, these are measures of decline. In the future, we want to be able to use a measure of health. For example, benthic invertebrates can provide information on the health of a water body. Additionally, they have lower dispersal rates, so are more indicative of local impacts on aquatic ecosystems. Unfortunately, Alberta currently does not have a lot of benthic invertebrate monitoring programs being utilized (although this is changing with programs like ALMS and WaterSHED). Ideally, work by local groups (e.g., WPACs, WSGs and citizen science programs) will ensure that more of this type of information is generated. In time, we might also consider exploring the use of indices of biotic integrity to assess aquatic ecosystem health.
11	Reliable Quality Supplies for a Sustainable Economy: *Albertans will be assured that water is managed effectively to support sustainable economic development. Management and allocation of water to support sustainable economic development and the strategic priorities of the province and implementation of a broad range of water management tools.*	**Indicators:** Several possibilities to be further explored including: 1. Number of basins closed to new licence applications 2. Number of basins subject to Temporary Diversion Licence (TDL) closures due to water shortage conditions (TDLs can still be issued within closed basins) 2. Number of parties seeking but unable to obtain water (e.g., application for a licence or for a transfer in a closed basin is rejected due to insufficient supply): Note, discrete data related to this reporting is not currently compiled by the department, and AEP is unable to determine the number of parties who are seeking water but have not applied to the department for a water licence or transfer (e.g., due to an existing basin closure). Such data would have to be collected by industry. However, AEP can report on the number of rejected applications due to various rationales. 3. Number of parties with allocations that were unable to divert as much as they wanted to each year: Again, industry and licensees would have to report this (possibly through the Water Use Reporting System) as AEP does not collect information related to the amount of desired water use by individual licensees within their licence allocation. However, reporting could be provided on a number of licences impacted by water management activities undertaken by the department to address water shortage conditions (e.g., orders to suspend licence withdrawals and suspension of TDLs). 4. Number of basins where water mastering is triggered annually, including the number of licences and volume of water affected: Note, typically water mastering is viewed by the department as an event where a priority has been called by a senior licensed water user that requires the department to actively administer the priority call. This is a rare event. However, water management actions taken by the department to address water shortage conditions (e.g., suspension of TDLs) is more common on an annual basis. 5. For closed basins, occurrence of rationing in districts below normal allocation at the farm gate and the number of acres affected by rationing; significant shortages in irrigation season or year-end reservoir storage; and the volume of "other purposes" agreements provided by irrigation districts: Note, AEP does not compile data related to the routine internal operations of irrigation districts (IDs). The IDs would be the keeper of any information

		related to reduced delivery to their water users (e.g., at the farm gate) and any information related to the operations of their reservoir infrastructure or deliveries for purposes other than irrigation. However, AEPs Water Infrastructure Operations Branch should be able to provide information related to the operations and storage volumes related to government-owned headworks infrastructure. 6. Number of restrictions on licences based on flows 7. Number of interprovincial and international transboundary river water quantity outflow obligations met
		Description: If *Water for Life* is successful in achieving this outcome, everyone would have the water they need, when and where they need it. To date, there are a few anecdotal examples of parties not being able to acquire water; however, there is no specific program to capture such data. In particular, it is challenging to identify those who do not apply for a license (or even doing a project where an approval is required) because they know they are in a closed basin and will not be approved. Additionally, very few licence applications are rejected outright, but all "yes" decisions are *conditional* in order to manage the risks associated with that operation. Conditions may also largely address what will be available to a new (junior) licensee during a period of low supply, lessening the need for actual water mastering. Despite these caveats, we need to build a better understanding of where water supply issues may or may not be occurring. Additionally, Alberta must manage its surface water quantity in a manner that meets its transboundary commitments, which it has to date. However, we should improve our understanding of times when apportionment is a concern, such as the drought of 2001.
12	Reliable Quality Supplies for a Sustainable Economy: *Increased awareness for all Albertans of the holistic value of water —as both a part of the economy and improved quality of life.*	**Indicators:** No separate indicator for this outcome but note that questions about how Albertans value water could be added to the Water Literacy survey and the measure of assurance (Indicator #1)
13	Reliable Quality Supplies for a Sustainable Economy: *Establishment of water management objectives and priorities that support sustainable economic development to be implemented through watershed plans.*	**Indicators:** Number (percentage) of Alberta's watersheds/ waterbodies with water quantity management objectives set in a watershed, sub-basin, or lake management plan, regional or municipal plan, or water quantity management framework. **Phase II** – Percentage of sites meeting objectives. **Description:** Similar to indicator #6, objectives must first be set before we can measure if we are achieving them.
14		**Indicator:** Number of WPACs with up-to-date (< 10 years old) state of the watershed assessments that report on the state of Alberta's drinking water, aquatic ecosystems, and the

	Research and Knowledge: *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.*	quality and quantity of surface and groundwater resources; cumulative number of sub-watershed or lake watershed state of the watershed assessments completed by Watershed Stewardship Groups
		Description: WPACs and WSGs have the mandate to report on the state of Alberta's watersheds. WPACs, governments, industry, researchers, and academia all play a role in generating state of information. If these entities are generating the right information, and making it publicly accessible in the appropriate format, it should be easy to incorporate it into regularly updated watershed assessments. Iterative watershed assessment is an important component of the adaptive management approach. Greater effort is needed to ensure the right kind of information is being generated (regardless of who generates it) and that information is publicly accessible and easily translated into knowledge.
15	Research and Knowledge: *Albertans will have access to the knowledge needed to achieve safe drinking water, healthy aquatic ecosystems, and reliable quality supplies for a sustainable economy.* *Incorporation of education tools and strategies into all Water for Life actions.*	**Indicators:** No separate indicator for this outcome but tie to the Water Literacy survey in Indicator #1 by adding questions that ask Albertans if they feel they have access to the information they need and to identify gaps in education tools and strategies related to *Water for Life*
16	Partnerships: *Water for Life partnerships are empowered, informed, and fully engaged in watershed stewardship.*	**Indicator:** Number of sectors actively engaged in *Water for Life* partnerships; percentage of sectors satisfied that partner processes give them an opportunity to discuss water resources management challenges and opportunities; dollars and in-kind support leveraged by partnerships and dollars spent on stewardship activities by *Water for Life* partnerships
		Description: The effectiveness of *Water for Life* partnerships can be measured by looking at who they engage, what resources are brought to the table by participants, and in turn, what resources translate into in regards to achieving *Water for Life* outcomes.
17	Partnerships: *Timely and strategic advice given to governments, industry, and NGOs by the AWC.*	**Indicator:** Annual/cumulative number of provincial policy areas examined through the AWC's multi-stakeholder lens
		Description: The *Water for Life* partnerships exist to improve decision making related to the water resource. After 15 years of implementation, we now need a better picture of how partner policy and planning products are informing decisions. Currently, we can measure the number of areas the AWC examines, but in the future, we need to further our understanding

		of how often policy advice is acted on, as well as how and when the GoA, municipalities, industry, and NGOs consider water and watershed management in a policy, plan, or regulatory decision.
18	Partnerships: *Maintaining WPACs as leaders in watershed assessment and planning.*	**Indicator:** Number of watershed management plans that are current (less than 10 years old); see also indicator #14 (number of up-to-date state of reports)
		Description: Similar to the AWC, we currently can measure the number of assessment and planning products the WPACs produce; however, we need to progress toward being able to measure the impact these outputs have on achieving the *Water for Life* goals.
19	Partnerships: *Continued work by WSGs to take community-level action to safeguard Alberta's water resources.*	**Indicator:** Number of deliverables successfully completed via reporting of the Alberta Stewardship Network grant program
		Description: The Land Stewardship Centre administers the Alberta Stewardship Network Grant program and reports annually on grants awarded, projects completed, deliverables met, etc.
20	**Conservation:** *All sectors understand how their behaviours impact water quality, quantity, and the health of aquatic ecosystems, adopt a "water conservation ethic," and take action.*	**Indicator:** Percentage of municipalities with water security plans, drought management plans, or water conservation programs
		Description: While Alberta has had few recent examples of water shortages, we know that such shortages will likely occur in the future. To be prepared for such occurrences, municipalities are developing water security and/or drought management plans. Many municipalities also have water conservation programs, using education, per capita water conservation goals, water fixture rebates, and other tools to promote conservation. These plans and programs are useful indicators for community resilience that can be easily measured today. In the future, it would be beneficial to also look at other sectors' resilience and preparedness.
21	**Conservation:** *Demonstration in all sectors of best management practices, ensuring overall efficiency and productivity of water use in Alberta improves by 30 percent from 2005 levels by 2015. This will occur when:* *demand for water is reduced* *water use efficiency and productivity are increased*	**Indicator:** Number of major water-using sectors providing current updates on their sector's Water Conservation Efficiency and Productivity plan implementation
		Description: Water conservation, efficiency, and productivity planning has been a key activity of the AWC and the seven major water-using sectors over the past decade; this activity should continue to be monitored to ensure that plans are both kept up to date by all seven sectors and also contribute to all *Water for Life* outcomes. While plans have been developed and a 30 percent target achieved, it is challenging to understand what impact this has on other elements of *Water for Life*, such as reliable supplies and healthy aquatic ecosystems. Therefore, additional measures should be developed to somehow capture this aspect of conservation.

Appendix C: Suggested implementation review report format

SECTION	DESCRIPTION
About the Alberta Water Council	Standard text on the inside cover of all Council reports
Table of Contents	Table of contents
Executive Summary	A condensed version of the "meat and potatoes" of the report for those without the time to read the entire document
Background	A summary of *Water for Life* and the content of previous reviews, including a description of where *Water for Life* is today
Introduction	An explanation of *why* the review is being completed and *how* the council has completed it
General Assessment and Recommendations	An overview of themes found during the review. Themes should not focus on any one specific element but should impact the strategy broadly. Any recommendations made in this section should be discrete, achievable actions. Other types of statements the Committee feels need to be highlighted should be given a different title (e.g., challenge, strength, focus, opportunity). This section will become increasingly important as more reviews are completed, and recommendations and analysis in this section should be crafted carefully.

Element Reviews: **Drinking Water** **Healthy Aquatic Ecosystems** **Reliable, Quality Water Supplies** **Knowledge and Research** **Partnerships** **Water Conservation**	Element reviews should focus on each piece discretely. They should all follow (more or less) the same format: • a review of the element's goal and outcomes • an assessment of implementation progress of related actions (completed, in-progress, etc.) • an analysis of specific progress toward the outcomes, with an emphasis on progress since the last review report • an "Area of Focus" with specific, actionable recommendation(s) that will address future challenges to the element, including an explanation of why the "Area of Focus" was selected further guidance on the recommendation(s) as required.
Conclusion	A re-emphasis of the key points and findings of the review
Appendix A: Committee Members	A list of the committee members and the sector to which they belong
Appendices B and C	A list of AWC, WPAC, WSG, and other important water related projects completed during the period under review

Appendix D: Timeline for completing a *Water for Life* implementation review

The following timeline has used 2025 as the report production year; however, any year could be substituted in its place.

Date	Method	Key steps
May 2024		• Deadline to confirm suite of performance indicators • "Snapshot" date. Progress since the last review is measured up to this date.
June 2024	Board meeting; Email to board	• AWC board agrees to strike committee • Call for *Water for Life* Implementation Review committee members
July to September 2025	Committee meetings	• Complete administration: budget, work plan, orientation, process, etc. • Determine what information needs to be collected and how it will be collected • Introduce sector survey to board members at their February meeting • Launch survey
Winter 2024-25	Committee meetings	• Set up any interviews and roundtables • Begin gathering success stories • Conduct analysis of *Water for Life* performance indicators
Spring and Summer 2025	Committee and board meetings	• Close sector survey • Begin analysis and drafting report including recommendations • Update board at June meeting
Late Summer and early Fall 2025	Committee meetings	• Finish drafting report

		• Seek sector feedback
November 2025	Board meeting	• Seek board approval of Committee's *Water for Life* Implementation Review Report
December 2025 onwards	AWC staff	• Share the report's findings with stakeholders and interested parties