

# ALBERTA WATER COUNCIL



## **Appendices C, D, E, F and G** Recommendations to Improve Lake Watershed Management in Alberta



## 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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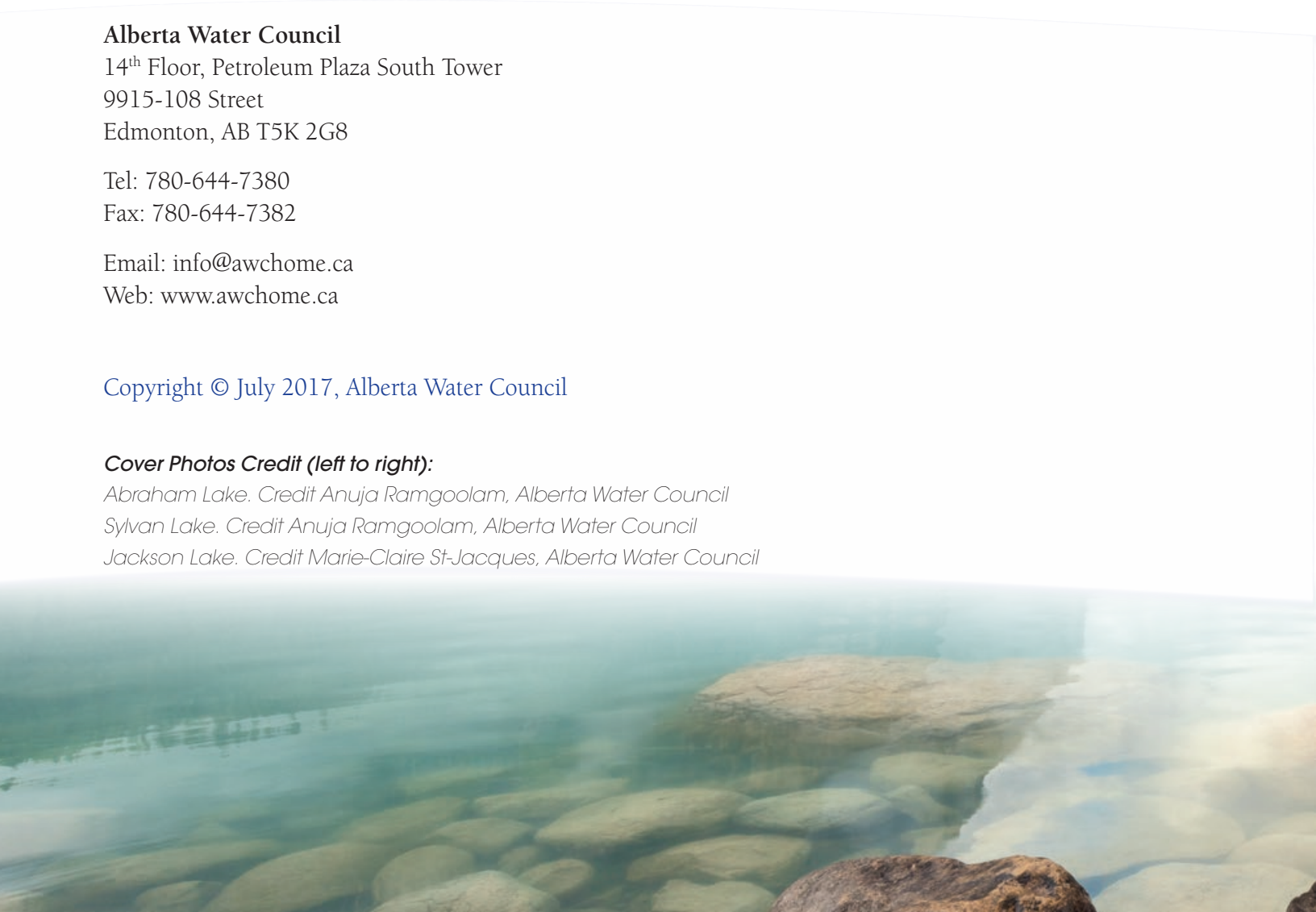
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## Acronyms

AAF	Alberta Agriculture and Forestry
AAMDC	Alberta Association of Municipal Districts and Counties
ABMP	Agricultural beneficial management practice
AEP	Alberta Environment and Parks
ALMS	Alberta Lake Management Society
ALSA	Alberta Land Stewardship Act
ALUS	Alternative Land Use Services
ASVA	Association of Summer Villages of Alberta
AUMA	Alberta Urban Municipalities Association
AWC	Alberta Water Council
BMP	Best or beneficial management practice
GIS	Geographic information system
GoA	Government of Alberta
IDP	Inter-municipal Development Plan
LUB	Land Use Bylaw
MDP	Municipal Development Plan
MGA	Municipal Government Act
NGO	Non-government organization
NRCB	Natural Resources Conservation Board
TEK	Traditional ecological knowledge
WID	Western Irrigation District
WPAC	Watershed Planning and Advisory Council
WSG	Watershed Stewardship Group

## Appendix C – Key Stakeholders in Lake Watershed Management

Category	Stakeholder	Roles and responsibilities relating to lake watershed management
Government of Alberta	Alberta Agriculture and Forestry	Promote best management practices near water bodies Regulate forest operations near water bodies, forest fire management, FIRESMART program
	Alberta Environment and Parks	Manage public lands including bed and shore of any permanent water body <i>Water for Life</i> Strategy Enforce environmental laws Manage land-use planning Set water quality guidelines Regulate water allocation and licensing Lead education and outreach programs
	Alberta Culture and Tourism	Promote recreation and tourism on Alberta lakes
	Alberta Energy Regulator	Regulate oil and gas activities near water
	Alberta Health	Oversee recreational water safety management plans and policy, and safe drinking water
	Alberta Innovates	Lead research group in Alberta tasked with delivering on research and innovation priorities.
	Alberta Municipal Affairs	Administer the <i>Municipal Government Act</i>
	Municipal Government Board	Leads decision making on subdivisions affected by water bodies, inter-municipal planning disputes and land annexations by municipalities
	Natural Resources Conservation Board	Review proposed major natural resource projects, including but not limited to forest industry projects, recreational or tourism projects, metallic or industrial mineral projects, and water management projects  Regulate manure management activities at confined feeding operations

Category	Stakeholder	Roles and responsibilities relating to lake watershed management
<b>Other government</b>	Agriculture and Agri-Food Canada	Fund Environmental Farm Planning and other stewardship activities through the Growing Forward II program
	Environment and Climate Change Canada and Department of National Defence	Manage federal lands and federal acts including <i>Migratory Birds Convention Act</i> and <i>Species at Risk Act</i>
	Fisheries and Oceans Canada and Transport Canada	Manage transboundary waters, navigation in lakes and rivers, and protection of fish habitat
	Health Canada	Manage water issues as they relate to human health
	Parks Canada	Manage lakes within national parks
	First Nations and Métis Communities	Provide safe drinking water from lakes and operate water and wastewater systems on reserves
	Municipalities and their associations (ASVA, AUMA and AAMDC)	Lead municipal policy, planning, permitting and regulation through Municipal Development Plans, Land Use Bylaws, subdivision application process, and municipal and environmental reserves
	<b>Individuals</b>	Landowners
<b>Industry</b>	Agri-Environmental Partnership of Alberta	Promote environmental best practices in agriculture, including operations near water
	Alberta Forest Products Association	Promote best practices near water, and water conservation, efficiency and productivity
	Canadian Association of Petroleum Producers	Promote best practices, and water conservation, efficiency and productivity
	Grazing Societies, Provincial Grazing Reserves, Alberta Grazing Leaseholders Association	Manage grazing leases on public lands, including lakeshores
	Irrigation districts	Manage reservoirs in southern Alberta
	TransAlta Corporation	Manage dams and reservoirs for hydro power

Category	Stakeholder	Roles and responsibilities relating to lake watershed management
<b>Non-governmental organizations (provincial)</b>	Alberta Conservation Association	Lead fish and fish habitat management and research
	Alberta Lake Management Society	Conduct lake monitoring, education and outreach
	Alberta Low Impact Development Partnership	Promote low impact urban growth and urban best practices
	Cows and Fish	Undertake riparian health assessments and inventories, riparian restorations projects, best practices, education and outreach
	Ducks Unlimited Canada	Lead wetland mitigation, inventories, and education and outreach
	Nature Alberta, Alberta Fish and Game Association, North American Waterfowl Management Plan (NAWMP) Partnership	Promote wildlife habitat, particularly lake and wetland habitat
<b>Non-governmental organizations (national)</b>	Safety Codes Council	Promote private sewage systems standards of practice
	Living Lakes Canada	Enhance the protection, restoration, rehabilitation and health of lakes, wetlands, rivers, other water bodies and watersheds
<b>Water for Life Partnerships</b>	Trout Unlimited Canada	Lead fish and fish habitat management and research, and education and outreach
	Alberta Water Council	Monitor and steward the implementation of <i>Water for Life</i> and provide advice on provincial-scale water issues
	Watershed Planning and Advisory Councils	Assess the condition of their watershed and lead collaborative watershed planning
	Watershed Stewardship Groups	Lead community-level action to safeguard lakes

## Appendix D – Key Legislation and Policy Relevant to Lake Watershed Management

### Federal

Agency Responsible	Item	Relationship to lake watershed management
Environment and Climate Change Canada	<i>Migratory Bird Act</i> (federal)	Regulates migratory bird management
	<i>Species at Risk Act</i>	Protects endangered or threatened species and manages species of special concern
Fisheries and Oceans	<i>Fisheries Act</i>	Provisions for the protection of fish habitat in lakes
Transport Canada	<i>Navigation Protection Act</i>	Protects the public's right of navigation in lakes and rivers by prohibiting obstruction of navigable waters

### Provincial

Agency Responsible	Item	Relationship to lake watershed management
Alberta Agriculture and Forestry	<i>Forests Act</i>	Regulates forest industry, forest fire management
	Forestry Operating Ground Rules	Restrict or prohibit operations in vulnerable areas such as riparian areas
	<i>Irrigation Districts Act</i>	Establishes the structure, governance, powers and duties for the formation and operations of irrigation districts
Alberta Agriculture and Forestry and Natural Resources Conservation Board	<i>Agricultural Operation Practices Act</i>	Regulates confined feeding operations and agricultural operations
Alberta Health	<i>Alberta Public Health Act</i> & Regulations	Public health and water quality issues for drinking water and recreational uses



Agency Responsible	Item	Relationship to lake watershed management
Alberta Environment and Parks	<i>Alberta Land Stewardship Act</i>	Legal basis for regional land-use planning
	<i>Environmental Protection and Enhancement Act</i>	Provides a framework to evaluate the impacts of proposed developments or activities on water quantity and quality
	<i>Fisheries (Alberta) Act</i>	Sets fish harvest limits and regulations in all waterbodies including lakes
	Framework for Water Management Planning	Provides guidance for a consistent approach to water management planning
	Land Use Framework	Sets out the seven land-use regions and calls for the development of a regional plan for each
	<i>Provincial Parks Act</i>	Provides guidance around specific activities and restrictions in provincial parks, wildland provincial parks and provincial recreation areas.
	<i>Public Lands Act</i> and Public Lands Administration Regulation	Provides for provincial ownership of the beds and shores of permanent water bodies, and prohibition of certain activities that may cause injury to Crown lands
	Strategy for the Protection of the Aquatic Environment	Details the GoA's commitment to maintaining, restoring or enhancing the condition of the aquatic environment
	<i>Water Act</i>	Regulates activities within water bodies through licenses, approvals, compliance and enforcement
	<i>Water for Life</i>	Provincial strategy for water management
	Wetland Policy	Provides strategic direction and tools required for the management of wetlands
	<i>Wildlife Act</i>	Regulates the protection of wetland-dependent and wetland-associated wildlife, and endangered species, including plants

Agency Responsible	Item	Relationship to lake watershed management
Municipal Affairs	<i>Emergency Management Act</i>	Addresses the province's emergency preparedness and response authority at both the municipal and provincial levels.
	<i>Municipal Government Act</i>	Enables municipalities to function, administer, plan, and direct development within their jurisdictions
	<i>Safety Codes Act &amp; Regulations</i>	Regulates private sewage systems
Natural Resources Conservation Board	<i>Natural Resources Conservation Board Act</i>	Regulates the review process for proposed projects affecting natural resources

## Municipal

Item	Relationship to lake watershed management
Area Concept Plan	Outlines a planning framework and future land use concept to guide subsequent development plans
Area Structure Plan	Statutory plan that outlines the development of a small part of a community or neighbourhood
Area Redevelopment Plan	Similar to Area Structure Plans, but apply primarily to already developed areas within a municipality
Inter-municipal Development Plan	Addresses planning and development issues common to neighbouring municipalities
Land Use Bylaw	Provides a framework for future subdivisions, development, and other land use practices of an area, usually surrounding a lake
Municipal Development Plan	Provides guidelines for long-term growth and development

# Appendix E – Key Tools and Resources for Lake Watershed Management

Category	Program/Tool Name	Lead	Relationship to lake watershed management	Link
Beneficial Management Practices (BMPs)	Beneficial Management Practices: Environmental Manual for Crop Producers in Alberta	Alberta Agriculture and Forestry	Provides a range of beneficial environmental practices for crop production, including BMPs to address water quality issues	<a href="http://www1.agric.gov.ab.ca/\$department/deptdocs.nsf/all/agdex9483">www1.agric.gov.ab.ca/\$department/deptdocs.nsf/all/agdex9483</a>
	Best Management Practices User Manual for Aggregate Operators on Public Land	Alberta Environment and Parks	Guides operators in the planning, development, operation and reclamation of pits or quarries operating on public land	<a href="http://esrd.alberta.ca/forms-maps-services/publications/documents/BestMgmtPracticesManualAggregateOpPL-2010.pdf">esrd.alberta.ca/forms-maps-services/publications/documents/BestMgmtPracticesManualAggregateOpPL-2010.pdf</a>
	Green Acreages Guide	Land Stewardship Centre	Provides guidance on how to manage small acreages, hobby farms and recreational properties in a sustainable manner	<a href="http://www.landstewardship.org/green-acreages-guide">www.landstewardship.org/green-acreages-guide</a>
	Green Communities Guide	Land Stewardship Centre	Helps growing communities plan and implement stewardship strategies	<a href="http://www.landstewardship.org/green-communities-guide">www.landstewardship.org/green-communities-guide</a>
	Public Lands Operational Handbook	Alberta Environment and Parks	Provides guidance for planning industrial and commercial operations	<a href="http://aep.alberta.ca/forms-maps-services/publications/documents/PublicLandsOperationalHandbook-2004.pdf">aep.alberta.ca/forms-maps-services/publications/documents/PublicLandsOperationalHandbook-2004.pdf</a>

Category	Program/Tool Name	Lead	Relationship to lake watershed management	Link
<b>Beneficial Management Practices (BMPs)</b>	Stepping Back from the Water guide	Alberta Environment and Parks	A guide on BMPs for new development near water bodies in Alberta's settled region	<a href="http://environment.gov.ab.ca/info/library/8554.pdf">environment.gov.ab.ca/info/library/8554.pdf</a>
	Conservation Easements	Alberta Environment and Parks	Voluntary legal agreements between a landowner and a qualified organization to protect, conserve, or enhance environmental, natural scenic or aesthetic value	<a href="http://landuse.alberta.ca/CONSERVATIONSTEWARDSHIP/CONSERVATIONSTEWARDSHIPTOOLS/Pages/default.aspx">landuse.alberta.ca/CONSERVATIONSTEWARDSHIP/CONSERVATIONSTEWARDSHIPTOOLS/Pages/default.aspx</a>
<b>Conservation</b>	Conservation Directives	Alberta Environment and Parks	New tool under ALSA that allows Albertans to retain ownership of their land, and the GoA to ensure a specific area can be protected; can only be expressed in a regional plan	<a href="http://landuse.alberta.ca/CONSERVATIONSTEWARDSHIP/CONSERVATIONSTEWARDSHIPTOOLS/Pages/default.aspx">landuse.alberta.ca/CONSERVATIONSTEWARDSHIP/CONSERVATIONSTEWARDSHIPTOOLS/Pages/default.aspx</a>
	Conservation Offsets	Alberta Environment and Parks	Enable industry to offset adverse effects of their activities and development by supporting conservation efforts on other lands	<a href="http://landuse.alberta.ca/CONSERVATIONSTEWARDSHIP/CONSERVATIONSTEWARDSHIPTOOLS/Pages/default.aspx">landuse.alberta.ca/CONSERVATIONSTEWARDSHIP/CONSERVATIONSTEWARDSHIPTOOLS/Pages/default.aspx</a>

Category	Program/Tool Name	Lead	Relationship to lake watershed management	Link
<b>Conservation</b>	Transfer of development credits	Alberta Environment and Parks	Tool that helps address urban growth pressures on the land by offering an incentive to redirect development away from specific landscapes to protect open spaces	landuse.alberta.ca/CONSERVATIONSTEWARDSHIP/CONSERVATIONSTEWARDSHIPTOOLS/Pages/default.aspx
<b>Education and Outreach Programs</b>	Alberta Water Quality Awareness Day	Alberta Lake Management Society	Province-wide program to increase awareness of water quality and watershed health through hands-on water quality testing	alms.ca/about-awqa
	Caring for our Watersheds	Agrium	Watershed-focused educational competition for students	caringforourwatersheds.com
	Clean, Drain, Dry Your Boat Campaign	Alberta Environment and Parks	Aquatic invasive species outreach	aep.alberta.ca/recreation-public-use/invasive-species/aquatic-invasive-species/default.aspx
	Living by Water	Nature Alberta	Home site consultations designed to raise awareness of environmentally-friendly practices on lakefront properties	naturealberta.ca/programs/living-by-water
	Respect Our Lakes	Alberta Environment and Parks	Educational program to raise awareness about lake and lakeshore regulations, science and management	aep.alberta.ca/water/programs-and-services/respect-our-lakes/default.aspx

Category	Program/Tool Name	Lead	Relationship to lake watershed management	Link
Education and Outreach Programs	Riparian Health	Cows and Fish	Provides resources and support to assess the health of riparian areas	<a href="http://cowsandfish.org/riparian/health.html">cowsandfish.org/riparian/health.html</a>
	ACA Conservation, Community and Education Grants	Alberta Conservation Association	Provides funding for conservation activities by individuals, organizations and communities that contribute to healthy fish and wildlife populations, to a healthy environment for fish and wildlife in Alberta, and to the understanding, appreciation and use of that environment.	<a href="http://www.ab-conservation.com/grants/aca-conservation-community-and-education-grants/">www.ab-conservation.com/grants/aca-conservation-community-and-education-grants/</a>
	Alberta Community Partnership Program	Alberta Municipal Affairs	Provides support for regional collaboration and capacity building activities, including project implementation costs	<a href="http://www.municipalaffairs.alberta.ca/alberta-community-partnership">www.municipalaffairs.alberta.ca/alberta-community-partnership</a>
Grants and financial incentive programs	Alberta Community Resilience Program	Alberta Environment and Parks	Multi-year provincial grant program supporting the development of long-term resilience to flood and drought events	<a href="http://aep.alberta.ca/water/programs-and-services/alberta-community-resilience-program/default.aspx">aep.alberta.ca/water/programs-and-services/alberta-community-resilience-program/default.aspx</a>

Category	Program/Tool Name	Lead	Relationship to lake watershed management	Link
<b>Grants and financial incentive programs</b>	Alberta Ecotrust Collective Action Grants	Alberta Ecotrust	Grants of up to \$100,000 for collaborative initiatives on environmental issues	<a href="http://albertaecotrust.com/what-we-do/environmental-grants">albertaecotrust.com/what-we-do/environmental-grants</a>
	Alternate Land Use Services Program	Participating counties	Provides a monetary incentive to residents who are using their land for agricultural production for establishing stewardship projects on their property that increase the environmental goods and services (nature's benefits) that their land produces.	<a href="http://www.alus.ca/category/alberta">www.alus.ca/category/alberta</a>
	ECOAction Community Funding Program	Environment and Climate Change Canada	Supports community-based projects that have measurable, positive impacts on the environment.	<a href="http://ec.gc.ca/default.asp?lang=En&amp;n=56D4043B-1&amp;nnews=4266C302-A8E4-429F-9688-1E23D53D5DF2">ec.gc.ca/default.asp?lang=En&amp;n=56D4043B-1&amp;nnews=4266C302-A8E4-429F-9688-1E23D53D5DF2</a>
	Environmental Damages Fund	Environment and Climate Change Canada	Provides a mechanism to direct funds received through fines, court orders and voluntary payments to priority projects that benefit the natural environment.	<a href="http://www.ec.gc.ca/edf-fde/default.asp?lang=En&amp;n=BD1220D8-1">www.ec.gc.ca/edf-fde/default.asp?lang=En&amp;n=BD1220D8-1</a>

Category	Program/Tool Name	Lead	Relationship to lake watershed management	Link
Grants and financial incentive programs	Green Acreages Program	Participating counties	Provides financial assistance for acreage, hobby farm, and recreational property owners towards implementation of stewardship practices that will help conserve, enhance and restore natural assets on their property.	<a href="http://www.parklandcounty.com/Residents/Environment/www_parklandcounty_com_GreenAcreages.htm">www.parklandcounty.com/Residents/Environment/www_parklandcounty_com_GreenAcreages.htm</a>
	Growing Forward 2	Agriculture and Agri-Food Canada & Alberta Agriculture and Forestry	Grants to improve on-farm water management, agricultural watershed enhancement, irrigation efficiency, etc.	<a href="http://www.growingforward.alberta.ca">www.growingforward.alberta.ca</a>
	Riparian Conservation Program	Alberta Conservation Association	Implements on-the-ground restoration projects, outreach and education in partnership with landowners, industry, government, watershed groups and other stakeholders.	<a href="http://www.ab-conservation.com/programs/land/projects/riparian-conservation/">www.ab-conservation.com/programs/land/projects/riparian-conservation/</a>



Category	Program/Tool Name	Lead	Relationship to lake watershed management	Link
Grants and financial incentive programs	TD Friends of the Environment	TD Friends of the Environment Foundation	Grants for community projects dedicated to preserving the environment	fef.td.com
	Watershed Resiliency and Restoration Program	Alberta Environment and Parks Alberta Agriculture and Forestry	Grants for non-structural watershed mitigation efforts that promote the long-term ability of watersheds to mitigate the effects of future flood and drought events	aep.alberta.ca/water/programs-and-services/watershed-resiliency-and-restoration-program/default.aspx
	Watershed Stewardship Grant Program	Land Stewardship Centre of Canada	Grants of up to \$10,000 are awarded to watershed stewardship groups	www.landstewardship.org/watershed-stewardship-grant-program/

Category	Program/Tool Name	Lead	Relationship to lake watershed management	Link
<b>Guidelines</b>	Canadian Environmental Quality Guidelines	Canadian Council of Ministers of the Environment	Provide science-based goals for the quality of aquatic and terrestrial ecosystems	<a href="http://www.ccme.ca/en/resources/canadian_environmental_quality_guidelines/">www.ccme.ca/en/resources/canadian_environmental_quality_guidelines/</a>
	Environmental Management Frameworks	Alberta Environment and Parks	Include management frameworks for surface water quality and groundwater for the management of long-term cumulative effects at the regional level	<a href="http://landuse.alberta.ca/CumulativeEffects/EnvironmentalMgmtFrameworks/Pages/default.aspx">landuse.alberta.ca/CumulativeEffects/EnvironmentalMgmtFrameworks/Pages/default.aspx</a>
	Environmental Quality Guidelines for Alberta Surface Waters	Alberta Environment and Parks	Includes guidelines for water quality and sediment quality	<a href="http://esrd.alberta.ca/water/education-guidelines/documents/EnvironmentalQualitySurfaceWaters-2014.pdf">esrd.alberta.ca/water/education-guidelines/documents/EnvironmentalQualitySurfaceWaters-2014.pdf</a>
	Operating Rule Curves	Alberta Environment and Parks	Guidelines for long-term reservoir operation	
<b>Modelling Tools</b>	Alberta Irrigation Management Model	Alberta Irrigation Projects Association and Alberta Agriculture and Forestry	Decision support tool software package that assists irrigation producers with their irrigation scheduling decisions	<a href="http://agriculture.alberta.ca/acin/imm/aimm.jsp">agriculture.alberta.ca/acin/imm/aimm.jsp</a>

Category	Program/Tool Name	Lead	Relationship to lake watershed management	Link
<b>Modelling Tools</b>	Alberta Phosphorus Management Tool	Alberta Agriculture and Forestry	Tool to help agricultural producers identify areas with high phosphorus export risk and BMPs to mitigate this risk	<a href="http://www1.agric.gov.ab.ca/\$department/deptdocs.nsf/all/irrr14541">www1.agric.gov.ab.ca/\$department/deptdocs.nsf/all/irrr14541</a>
	Bow River Water Quality Model	Alberta Environment and Parks	Water quality scenarios developed to support the Bow River Phosphorus Management Plan	
	FLUX, PROFILE and BATHTUB	US Army Corps of Engineers	Water and nutrient balances, models of eutrophication-related responses	<a href="http://el.erdc.usace.army.mil/el/models/emiinfo.html">el.erdc.usace.army.mil/el/models/emiinfo.html</a>
	Human Footprint Map	Alberta Biodiversity Monitoring Institute	Map of human footprint related to the energy, forestry, and agriculture industries, as well as urban development	<a href="http://www.abmi.ca/home/products-services/Products/Human-Footprint-Map.html">www.abmi.ca/home/products-services/Products/Human-Footprint-Map.html</a>
	Land use modelling tools	ALCES Landscape & Land-Use Ltd.	Landscape and land use simulators for tracking the overlapping land uses and natural disturbance regimes of terrestrial and aquatic landscapes	<a href="http://www.alces.ca/home/ALCES_Group">www.alces.ca/home/ALCES_Group</a>

Category	Program/Tool Name	Lead	Relationship to lake watershed management	Link
<b>Modelling Tools</b>	Model Process for Subdivision Approval and Private Sewage: The Suitability and Viability of Subdivisions Relying on Private Sewage Treatment Systems	AAMDC	Guidance document to assist municipalities in considering applications for developments relying on private sewage treatment systems	<a href="http://www.aamdc.com/docman/aamdc-reports-public-reports/model-process/579-model-process-guidance-document/file">www.aamdc.com/docman/aamdc-reports-public-reports/model-process/579-model-process-guidance-document/file</a>
	Nutrient modelling tools	WPACs, ALMS, AEP, Academia	Nutrient modelling studies have been conducted for a number of Alberta lakes	
	Riparian Setback Matrix Model	Aquality Environmental Consulting Ltd.	Model used to establish setbacks for development, and determine the size of environmental reserves and conservation easements.	<a href="http://jay-white-nrl1.squarespace.com/rsmm">jay-white-nrl1.squarespace.com/rsmm</a>
<b>Monitoring</b>	Central Alberta Recreational Lake Monitoring Program	Alberta Environment and Parks	Water quality monitoring of major recreational lakes within the Central Region	<a href="http://exts2.aep.alberta.ca/CR-RecLakes/default.aspx">exts2.aep.alberta.ca/CR-RecLakes/default.aspx</a>

Category	Program/Tool Name	Lead	Relationship to lake watershed management	Link
<b>Monitoring</b>	Lake Watch	Alberta Lake Management Society	Assists citizen scientists in collecting physical data about their local lake or reservoir	<a href="http://alms.ca/about-lakewatch">alms.ca/about-lakewatch</a>
	Long-term Lake Network	Alberta Environment and Parks	Ongoing sampling of five lakes representing different lake-types across the province	
	National Parks lake monitoring	Parks Canada	Lakes sampling component of National Parks ecological monitoring	<a href="http://www.ec.gc.ca/indicateurs-indicators/default.asp?lang=en&amp;n=CDE1612B-1">www.ec.gc.ca/indicateurs-indicators/default.asp?lang=en&amp;n=CDE1612B-1</a>
	Regional Aquatics Monitoring Program (RAMP)	Multi-stakeholder committee	Monitors the aquatic environment for potential effects related to industrial development, including lakes	<a href="http://www.ramp-alberta.org/RAMP.aspx">www.ramp-alberta.org/RAMP.aspx</a>
	Provincial Parks Lake Monitoring	Alberta Environment and Parks	Routine data collection for a suite of recreational lakes and reservoirs	
	Southern Alberta Lakes and Reservoirs Monitoring Program	Alberta Environment and Parks	Data collection for lakes and reservoirs located within the Southern Region	

Category	Program/Tool Name	Lead	Relationship to lake watershed management	Link
<b>Monitoring</b>	Guide to Watershed Planning	Alberta Environment and Parks	Outlines best practices for watershed management planning and outlines a process for a consistent approach to watershed management planning	<a href="http://aep.alberta.ca/water/programs-and-services/water-for-life/partnerships/documents/GuideWatershedPlanningAlberta-2015.pdf">aep.alberta.ca/water/programs-and-services/water-for-life/partnerships/documents/GuideWatershedPlanningAlberta-2015.pdf</a>
	Aquatic Invasive Species Reporting	Alberta Environment and Parks	Monitoring of some aquatic invasive species	
<b>Planning</b>	Handbook for State of the Watershed reporting	Alberta Environment and Parks	Outlines the process elements for developing a state of the watershed report	<a href="http://aep.alberta.ca/water/programs-and-services/water-for-life/partnerships/documents/8044.pdf">aep.alberta.ca/water/programs-and-services/water-for-life/partnerships/documents/8044.pdf</a>
	Lake Stewardship Reference Guide	Association of Summer Villages of Alberta	A reference guide to understanding lake issues along with the associated approvals and policies involved	<a href="http://www.asva.ca/lake-stewardship-guide.html">www.asva.ca/lake-stewardship-guide.html</a>
	Model Land Use Bylaw	Pigeon Lake Watershed Association	A template for municipalities to develop Land Use Bylaws that incorporate lake management elements	<a href="http://www.plwmp.ca/model-land-use-bylaw">www.plwmp.ca/model-land-use-bylaw</a>

Category	Program/Tool Name	Lead	Relationship to lake watershed management	Link
<b>Planning</b>	Workbook for Developing Lake Watershed Management Plans in Alberta	Alberta Lake Management Society	Provides detailed guidance on the process to develop a lake watershed management plan	<a href="https://alms.ca/wp-content/uploads/2014/02/ALMS_WMPWorkbook.pdf">alms.ca/wp-content/uploads/2014/02/ALMS_WMPWorkbook.pdf</a>
	LakeWatch Reports	Alberta Lake Management Society	Lake-specific yearly reports of lakes monitored under LakeWatch program	<a href="https://alms.ca/reports-2">alms.ca/reports-2</a>
<b>Reporting</b>	Lake Water Quality Data and Data Reports	Alberta Environment and Parks	Provides online access to data for lakes sampled by AEP and partners (e.g., ALMS)	<a href="https://ems.alberta.ca/reports/viewreport234.aspx?RName=RPT23">ems.alberta.ca/reports/viewreport234.aspx?RName=RPT23</a>
	Provincial Parks Lake Monitoring Reports	Alberta Environment and Parks	Lake-specific assessment of recent and historical information collected through the Provincial Parks Lake Monitoring Program	
	Water Quality Conditions and Long-Term Trends in Alberta Lakes	Alberta Environment and Parks	Evaluation of long-term water quality trends for a comprehensive set of Alberta lakes	<a href="https://environment.gov.ab.ca/info/library/8544">environment.gov.ab.ca/info/library/8544</a> .pdf

## Appendix F – Lake Watershed Stewardship Groups and Lake Planning Initiatives

This table summarizes information about existing lake Watershed Stewardship Groups and key pieces of work they have produced, such as lake-specific state of the watershed reports and lake watershed management plans. Many of these groups also lead other activities that have not been recorded for the purpose of this project, such as education and outreach programs or lake monitoring.

Lake	Lead Organization	Lake-specific State of the Watershed Reports	Lake Watershed Management Plans and other Planning Initiatives	Website
<b>Arm Lake</b>	Arm Lake (East) Cabin Owners Association			
<b>Baptiste and Island Lakes</b>	Baptiste and Island Lakes Stewardship Society	Baptiste Lake State of the Watershed (2008) State of the Island Lake Watershed (2011)	in progress	<a href="http://www.bails.ca">www.bails.ca</a>
<b>Battle Lake</b>	Battle Lake Watershed Synergy Group		Battle Lake Watershed Development Planning Pilot Project - specific to effects of oil and gas development on the lake (2006)	<a href="http://synergyalberta.ca/group/battle-lake-watershed-synergy-group">synergyalberta.ca/group/battle-lake-watershed-synergy-group</a>



Lake	Lead Organization	Lake-specific State of the Watershed Reports	Lake Watershed Management Plans and other Planning Initiatives	Website
<b>Big Lake</b>	Big Lake Basin Task Force		Big Lake Stormwater Management Plan (2004)	
<b>Buffalo Lake</b>	Buffalo Lake Management Team		Buffalo Lake Integrated Shoreland Management Plan (2009)	<a href="http://www.blmt.ca">www.blmt.ca</a>
<b>Chain Lakes</b>	Friends of Chain Lakes Society Ponoka County		Chain Lakes Watershed Management Plan (2012)	
<b>Clear Lake</b>	Clear Lake Stewardship Association			
<b>Cold Lake</b>	Cold Lake - Beaver River Basin Advisory Committee	Cold Lake - Beaver River State of the Basin Reports on groundwater and surface water quality and quantity (2006)	Cold Lake Beaver River Basin Water Management Plan (2006)	
<b>Crane Lake</b>	Crane Lake Advisory and Stewardship Society			
<b>Ghost Lake</b>	Ghost Watershed Alliance Society			<a href="http://www.ghostwatershed.ca/GWAS/Home.html">www.ghostwatershed.ca/GWAS/Home.html</a>

Lake	Lead Organization	Lake-specific State of the Watershed Reports	Lake Watershed Management Plans and other Planning Initiatives	Website
<b>Gull Lake</b>	Gull Lake Watershed Society			<a href="http://www.gulllakewater.net">www.gulllakewater.net</a>
<b>Hubbles Lake</b>	Hubbles Lake Stewardship Society			<a href="http://www.facebook.com/Hubbleslakestewardshipsocietytying">www.facebook.com/Hubbleslakestewardshipsocietytying</a>
<b>Jackfish Lake</b>	Jackfish Lake Management Association	Jackfish Lake State of the Watershed Report (2016)		<a href="http://www.facebook.com/JackfishLakeManagementAssociation">www.facebook.com/JackfishLakeManagementAssociation</a>
<b>Lac La Biche</b>	Stewards of Lac La Biche Watershed			<a href="http://laclabichestewards.ca">laclabichestewards.ca</a>
	Lac La Biche County	Lac La Biche State of the Watershed Report (2004)	Lac La Biche Watershed Management Plan (2009)	
<b>Lac La Nonne</b>	Lac La Nonne Enhancement and Protection Association			<a href="http://www.lepa-ab.com">www.lepa-ab.com</a>
	Lac La Nonne Watershed Stewardship Society	Lac La Nonne State of the Watershed Report (2006)		<a href="http://www.lacianonnewatershed.com">www.lacianonnewatershed.com</a>
<b>Lac Sante</b>	Lac Sante Watershed Society			

Lake	Lead Organization	Lake-specific State of the Watershed Reports	Lake Watershed Management Plans and other Planning Initiatives	Website
<b>Lac St. Cyr</b>	North Saskatchewan Watershed Alliance	Lac St. Cyr Water Quality Assessment (2013)		
<b>Lac Ste. Anne and Lake Isle Lake Isle</b>	Lac Ste. Anne and Lake Isle Water Quality Management Society NSWA/Summer Villages	State of the watershed initiated in 2015 and to be completed in 2016-17		<a href="http://www.lawaterquality.com">www.lawaterquality.com</a>
<b>Lacombe Lake</b>	Lake Isle Aquatic Management Society Lacombe Lake Watershed Stewardship Society			<a href="http://lakeisle-aquaticmanagementsociety.ca">lakeisle-aquaticmanagementsociety.ca</a>
<b>Lake Newell</b>	Eastern Irrigation District		Lake Newell Reservoir Land Use Policy (2016)	<a href="http://www.eid.ca/documents/policy/Lake_Newell_Reservoir_Land_Use_Policy.pdf">http://www.eid.ca/documents/policy/Lake_Newell_Reservoir_Land_Use_Policy.pdf</a>

Lake	Lead Organization	Lake-specific State of the Watershed Reports	Lake Watershed Management Plans and other Planning Initiatives	Website
<b>Lesser Slave Lake</b>	Lesser Slave Watershed Council		Lesser Slave Lake and Lesser Slave River Basins Water Management Plan (2009) Lesser Slave Lake Watershed Management Plan (in progress)	
<b>Little Beaver Lake</b>	Friends of Little Beaver Lake Society			
<b>Marie Lake</b>	Marie Lake Air and Watershed Society			
<b>Mayatan Lake</b>	Mayatan Lake Management Association	Mayatan Lake State of the Watershed Report (2012)	Mayatan Lake Watershed Management Plan (2016)	<a href="http://www.mayatanlake.ca">www.mayatanlake.ca</a>
<b>Moose Lake</b>	Moose Lake Watershed Society Moose Lake Water for Life Committee	State of the Watershed Environmental Inventory Report for Moose Lake (2005)	Moose Lake Water Management Plan (2007)	<a href="https://www.facebook.com/pages/Moose-Lake-Watershed-Society/219944464704576">www.facebook.com/pages/Moose-Lake-Watershed-Society/219944464704576</a>
<b>Muriel Lake</b>	Muriel Lake Basin Management Society			

Lake	Lead Organization	Lake-specific State of the Watershed Reports	Lake Watershed Management Plans and other Planning Initiatives	Website
<b>Pigeon Lake</b>	Pigeon Lake Watershed Association	Pigeon Lake State of the Watershed Report (2008)	in progress – reports completed on 3 management topics: Model Land Use Bylaw Phosphorus Budget Cosmetic Fertilizers & Soil Management	<a href="http://www.plwa.ca">www.plwa.ca</a>
<b>Pine Lake</b>	Pine Lake Restoration Society		Pine Lake Restoration Project reports (1994, 1996, 2002)	<a href="http://www.pinelakealberta.com/restoration-society">www.pinelakealberta.com/restoration-society</a>
<b>Sandy Lake</b>	Sandy Lake Restoration Society			<a href="http://www.landstewardship.org/resources/agency/183/">www.landstewardship.org/resources/agency/183/</a>
<b>Skeleton Lake</b>	Skeleton Lake Stewardship Association	Skeleton Lake State of the Watershed Report (2008)	Skeleton Lake Watershed Management Plan (2010)	<a href="http://www.skeletonlake.com">www.skeletonlake.com</a>
<b>Spring Lake</b>	Spring Lake Environmental Advisory Committee			<a href="http://www.springlakealberta.com">www.springlakealberta.com</a>

Lake	Lead Organization	Lake-specific State of the Watershed Reports	Lake Watershed Management Plans and other Planning Initiatives	Website
<b>Sylvan Lake</b>	Sylvan Lake Watershed Stewardship Society			slwss.org
	Sylvan Lake Management Committee	Sylvan Lake Water Quality Assessment and Watershed Management Considerations (2005)	Sylvan Lake Management Plan: 2000 Update Sylvan Lake Cumulative Effects Management Plan Phase 1 (2014) and Phase 2: Implementation Plan (2015)	
<b>Wabamun Lake</b>	Wabamun Watershed Management Council	Wabamun Lake State of the Watershed Report (2013)		www.wwmc.ca
	Parkland County		Wabamun Lake Subwatershed Land Use Plan in progress	wlslup.mindmixer.com
<b>Wizard Lake</b>	Wizard Lake Watershed and Lake Stewardship Association	Wizard Lake State of the Watershed Report (2013)		www.wizardlake.ca

## Appendix G – Stakeholder Workshop Results

### Lake Watershed Management Workshop Agenda

**Thursday, September 24, 1:00 p.m. – 4:30 p.m.**

Sunrise Inn and Suites, 3101 43 Ave, Stony Plain

**What is it?** The AWC Lake Watershed Management Team is inviting interested parties to attend a workshop on lake watershed management in Alberta as a portion of the annual Alberta Lake Management Society (ALMS) workshop.

**Who should attend?** Anyone who has been involved in lake management and stewardship, in particular those who have experience in developing and implementing lake watershed management plans.

**What will the information be used for?** Input gathered at the workshop will inform the team and the drafting of their report and recommendations for the AWC. Once approved by the AWC, this report will be provided to the Ministry of Environment and Parks and will provide input to the department as it moves forward with developing a provincial lake policy as per the *Our Water, Our Future: A Plan for Action*.

Time	Item	Who
12:55	5 minute warning and seating instructions	Petra
1:00 – 1:05	Opening introduction, project context and terms of reference	Co-chairs
1:05 – 1:25	Presentation: Alberta lakes and current state	Marie-Claire
1:25 -1:30	Facilitator instructions to participants:	Petra
1:30 – 2:30	Table Discussions: <b>Challenge 1. Sector Roles and Responsibilities</b>	Team members to help prompt the discussion, if needed, at each table.  Petra a roaming facilitator to help where needed.
2:30 – 3:00	Dotmocracy instructions and coffee break	Petra
3:00 – 4:00	Table Discussions: <b>Challenge 2. Working with Others</b>	Team members to help prompt the discussion, if needed, at each table.  Petra a roaming facilitator to help where needed.
4:00 – 4:20	Table Discussions: <b>Challenge 3. Tools and Resources</b>	Team members to help prompt the discussion, if needed, at each table.  Petra a roaming facilitator to help where needed.
4:20 – 4:30	Final Wrap-Up	Co-chairs
4:30	Collect all flip chart sheets and questionnaires	Petra, Marie-Claire

### Room set-up

- 20 round tables in a large ballroom split into sectors
- Team members spread out across tables (1 team member per table)

### Table/Sector Discussion Questions

- **Challenge 1. Roles and Responsibilities**

*(5 minutes context presentation, 45 minutes discussion, 10 minutes plenary)*

What is your sector's current role in lake watershed management? What should it be in the future? What barriers are preventing you or your sector from effectively performing your role? What are the opportunities to improve your ability to undertake your sector's role?

- **Challenge 2. Working with Others**

*(5 minutes context presentation, 45 minutes discussion, 10 minutes plenary)*

How does your sector currently work with others to support the implementation of lake watershed management plans? How would you like to work with other sectors in the future? What barriers are preventing you or your sector from working with others and what are the opportunities for working with other sectors?

- **Challenge 3. Tools and Resources**

*(5 minutes context presentation, 10 minutes discussion, 10 minutes plenary)*

What new tools and resources are needed to improve lake watershed management in Alberta? (Think broadly: "tools" could include new agencies or organizations, new policies or legislation, stewardship initiatives, planning tools, research and monitoring efforts, etc.)



## Lake Management Stakeholder Workshop – Key Themes

This section provides a summary of the eight emerging key themes from the Lake Watershed Management Stakeholder Workshop. Participants to the workshop included representatives from GoA, municipalities, WPACs, WSGs, ENGOs and research/monitoring.

**Note:** Participants identified the following as important players who were absent from the workshop and who should be part of the discussion on lake watershed management:

- Academia
- Agriculture
- Indigenous peoples
- Health
- AUMA and AAMDC

### Key Themes

#### 1. A designated provincial body for lake management

Sixty-six percent of respondents to the dotmocracy indicated that GoA should be the lead for coordinating lake watershed management processes and resources, against 16% for a new entity or collaboration and 9% for municipalities. The survey results also indicated general agreement across all sectors for GoA as a lead; a few participants suggested co-leadership by GoA and municipalities or GoA and WPACs, if WPACs were to be given more authority.

There was a general recognition that municipalities are for the most part responsible for managing land around lakes (as per the MGA), while GoA is responsible for management decisions regarding the water, bed and shore, along with any land management decisions that impact those areas. Within GoA, participants also indicated the need for better communication and coordination among the various groups involved in different aspects of lake management, such as approvals, enforcement, planning, and education. Considering this, participants highlighted the need for a designated body within the GoA that would be responsible for coordinating lake management in close partnership with municipalities to ensure good decisions are made for land management around lakes. This designated body could be responsible for:

- Ensuring provincial-municipal coordination for plan implementation, approvals, enforcement and compliance (e.g. joint inspections, referrals). One suggestion was to institutionalize this collaboration through a MOU between the provincial and municipal governments.
- Leading a centralized team of lake management planners who would be supported by specialists in different fields to coordinate all aspects of lake management

- Centralizing the communication of implementation activities
- Coordinating a knowledge hub/online portal to centralize and share information from all players in lake watershed management such as reports, plans, policies, successes and failures

## ***2. Connecting lake watershed planning with land use planning***

The disconnect between lake watershed planning and land use planning was highlighted by most sectors as a key challenge. Participants noted there is currently no mechanism for consideration of existing lake watershed management plans in land use decision-making processes. Suggestions to improve the linkages between lake watershed plans and land use planning included:

- A clear process that would require Environment and Parks approval officers to consider existing lake watershed management plans when making approval decisions for municipality development
- Lake watershed management plans could be made sub-regional plans that would then have to be followed in MDPs and IDPs
- The MGA could be amended to require municipalities to protect surface water and groundwater in the plans that they develop and make clear linkages to watershed plans
- Some municipalities felt that it is part of their current role to implement recommendations from watershed advisory groups, but there is a lot of variation among different municipalities. Most respondents would like to see more accountability for the implementation of watershed management plans by municipalities through the MGA.

## ***3. Accountability for plan implementation***

The lack of accountability for the implementation of lake watershed management plans was highlighted as a top barrier by 30% of the dotmocracy respondents.

Although there is a need for greater accountability in implementation, there was no clear direction for who should be the lead in developing and implementing individual lake watershed management plans. Dotmocracy results were split across municipalities (30%), WSGs (14%), a new entity or collaboration (14%), and to a lesser extent WPACs, ALMS or a collaboration between some of the

above. Survey results were also divided; many respondents suggested a shared responsibility among GoA, municipalities, WPACs and WSGs where they exist.

The advisory status of both WPACs and WSGs was identified as a key barrier to effective plan implementation. WPACs and WSGs would like greater recognition and credibility as advisors for lake watershed management planning, and as the bodies designated to provide advice and carry out planning around watersheds under the *Water for Life* Strategy. There is a need for greater guidance on how the implementation of advisory plans can best be achieved, given that there is currently nothing compelling decision-makers to implement them. Suggestions to improve plan implementation fell in two main categories:

- Establishing clear linkages between advisory plans and land use planning: need for clarity from GoA as to how State of the Watershed reports and watershed plans are to be used in land use planning by municipalities and GoA (related to Theme 2 above).
- Greater authority of WPACs and WSGs for plan implementation: several survey respondents suggested a model similar to Ontario's Conservation Authorities, giving WPACs and WSGs the authority to implement plans and multiyear funding to support them in long-term planning.

#### **4. Need for consistency in lake watershed management**

Many sectors pointed to the lack of consistency in lake watershed management planning, both in the development of plans and in how land use decisions are made around lakes. Several respondents indicated the MGA currently is open to interpretation and does not compel municipalities to follow planning guidelines. Thirty-eight percent of the dotmocracy respondents felt that improving lake management tools under the MGA review was the top opportunity to improve lake watershed management.

Specific suggestions were made to improve consistency in each of those two areas:

##### **Greater consistency in lake watershed management plans**

- GoA should provide guidance on “how” to create a lake management plan, identify requirements, develop a set process for making, reviewing and approving plans; this could expand on the ALMS Workbook with guidance on what needs to be done as part of the plan to facilitate implementation.

- GoA should provide clarity on jurisdictions and who is responsible for what in terms of plan implementation
- Having one dedicated paid staff to support WSGs could help them build relationships with municipalities and GoA, and ensure consistency in planning process from development to implementation

#### **Greater consistency in land use decisions among municipalities**

- GoA to provide overarching standards for development around lakes and guidelines for bylaws and enforcement (opportunity to do this through regional planning)
- Need for a mechanism to hold municipalities accountable for poor development decisions
- Requirements for intermunicipal development plans and consistent bylaws across municipalities around a lake

#### **5. Greater, more coordinated enforcement**

Both GoA and municipalities indicated the desire to take on more active enforcement of existing regulations and bylaws, and all sectors highlighted the lack of enforcement as a key challenge. Twenty-one percent of the dotmocracy respondents selected the lack of enforcement as the top barrier to effective lake watershed management. Better enforcement was identified as an important element to support plan implementation, but few concrete suggestions were made on how to improve enforcement. Suggestions included:

- Provincial-municipal coordination for enforcement of existing laws and policies (related to Theme 1 above)
- Graduated sanctions

#### **6. Education and stewardship**

Education and outreach programs were identified as one of the top 4 opportunities to improve lake watershed management through the dotmocracy. Specific suggestions from the discussions and surveys included:

- Greater education of our decision-makers with regards to lake management to inform their decisions

- Expanding incentive programs for voluntary stewardship such as ALUS and Green Acreages program
- Ensure consistent messaging and greater collaboration among all sectors involved in education and outreach work

### **7. Research and monitoring**

Research and monitoring was identified as one of the top 4 opportunities to improve lake watershed management through the dotmocracy. Specific suggestions to enhance knowledge about our lakes included:

- Improving the connection between science and policy: ENGOs and research /monitoring respondents both indicated interest to work more closely with municipalities and lake groups to inform planning with science.
- Focusing on holistic watershed and landscape management, systems thinking
- Developing a meaningful process for inclusion of traditional knowledge and local ecological knowledge in decision-making
- Facilitating increased access to existing data
- Increasing baseline data collection and long-term monitoring programs

### **8. Capacity needs**

All sectors highlighted the lack of capacity as a key barrier to carrying out their role in lake watershed management, with both human and financial resources often being allocated to other priorities. Specifically:

WPACs, WSGs, ENGOs and research/monitoring would like to see stable, multiyear funding to support long-term initiatives in lake watershed management

- Volunteer burnout and high turnover are key challenges for WSGs
- The levels of capacity and expertise to make informed lake management decisions vary significantly among municipalities and summer villages
- Provincial and municipal governments lack the capacity to participate on every lake management initiative

## Workshop Detailed Results

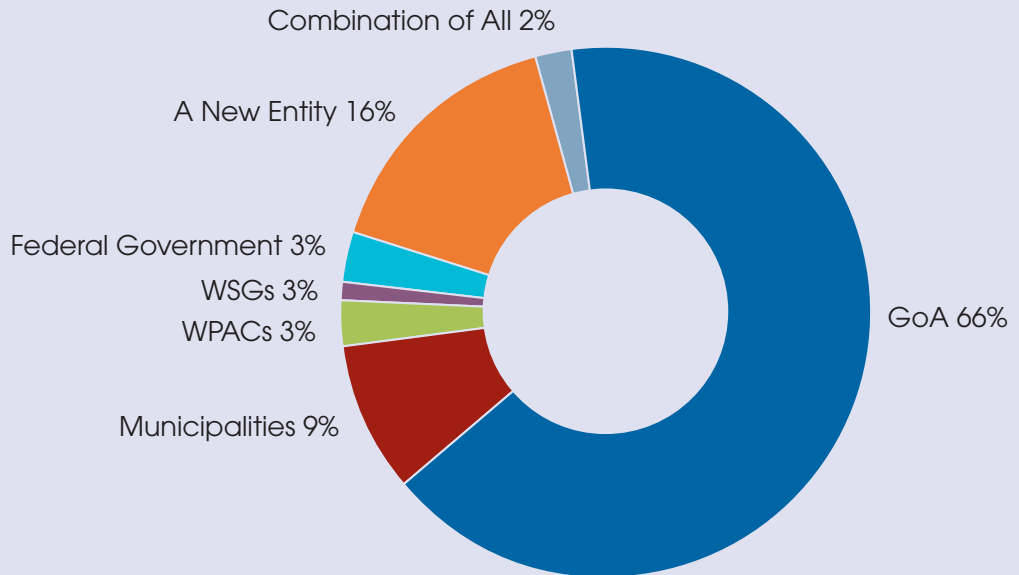
This section includes the results of the dotmocracy exercises, discussion notes and participant survey.

### Dotmocracy results

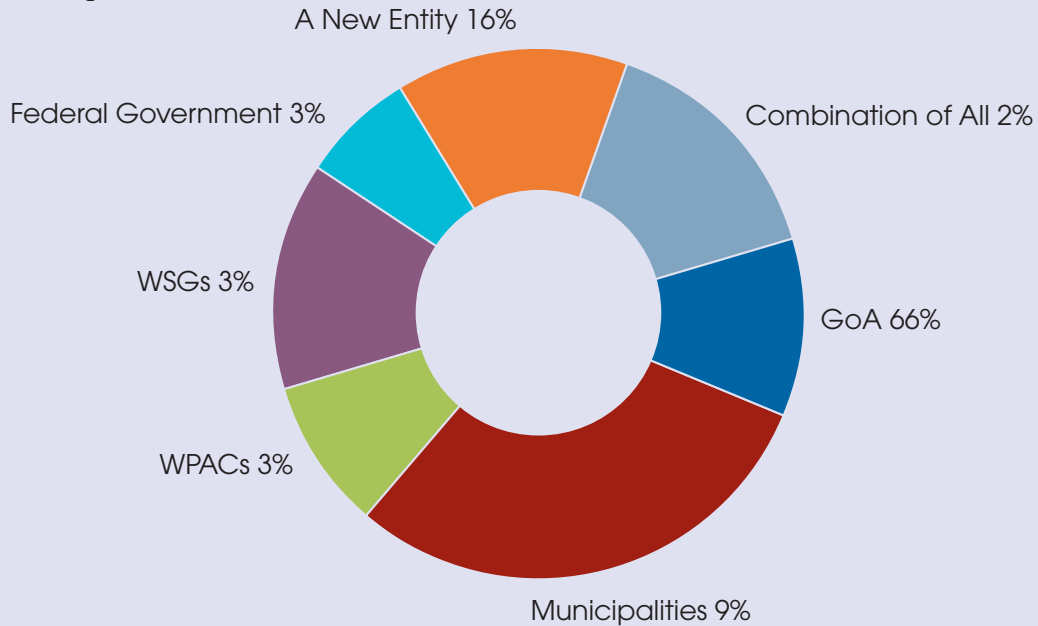
Participants were given the opportunity to vote on 4 multiple choice questions through a dotmocracy exercise. The full results are displayed below for each question.

***Q1. Although partnerships and collaborations are important, who should be the lead in Alberta for:***

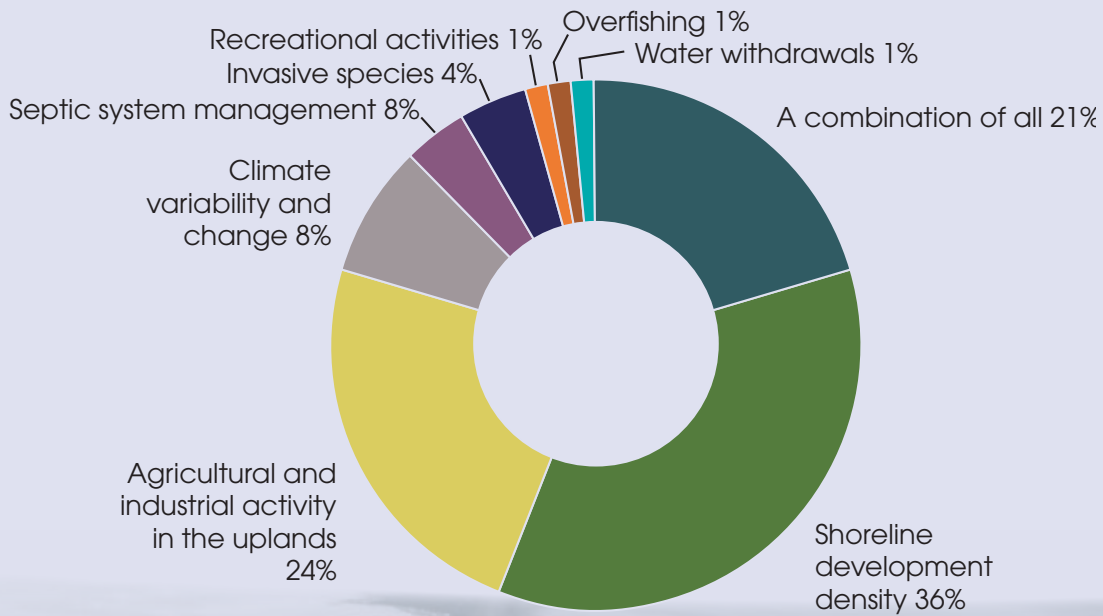
***a. Coordinating lake watershed management processes and resources?***



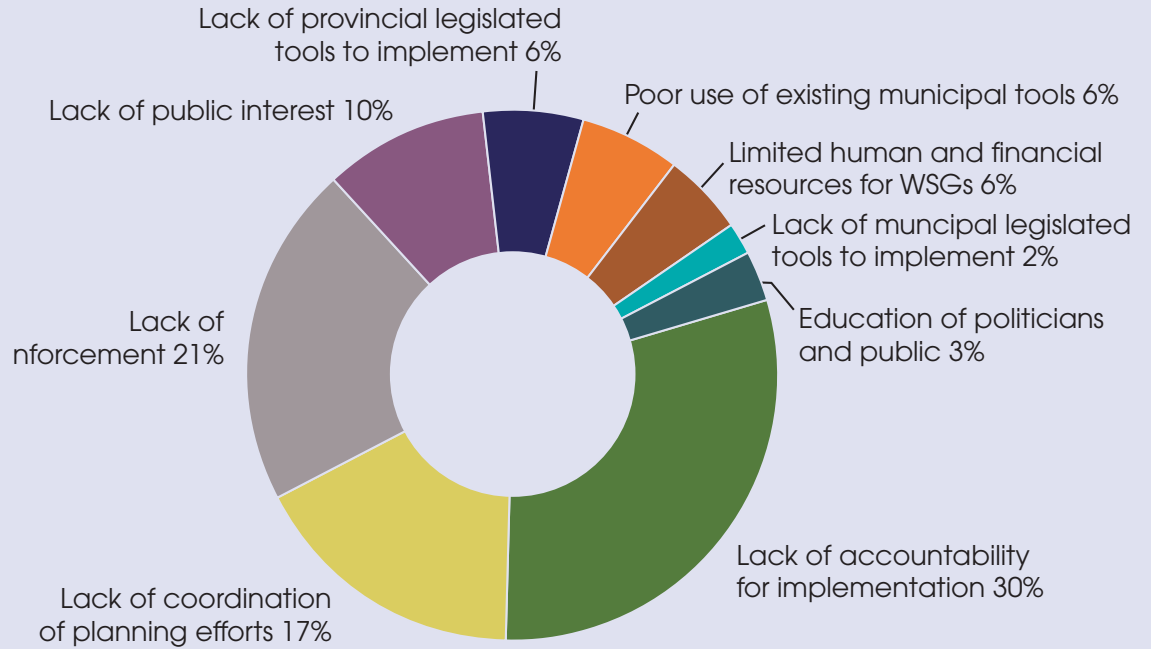
**b. Developing and implementing individual lake watershed management plans?**



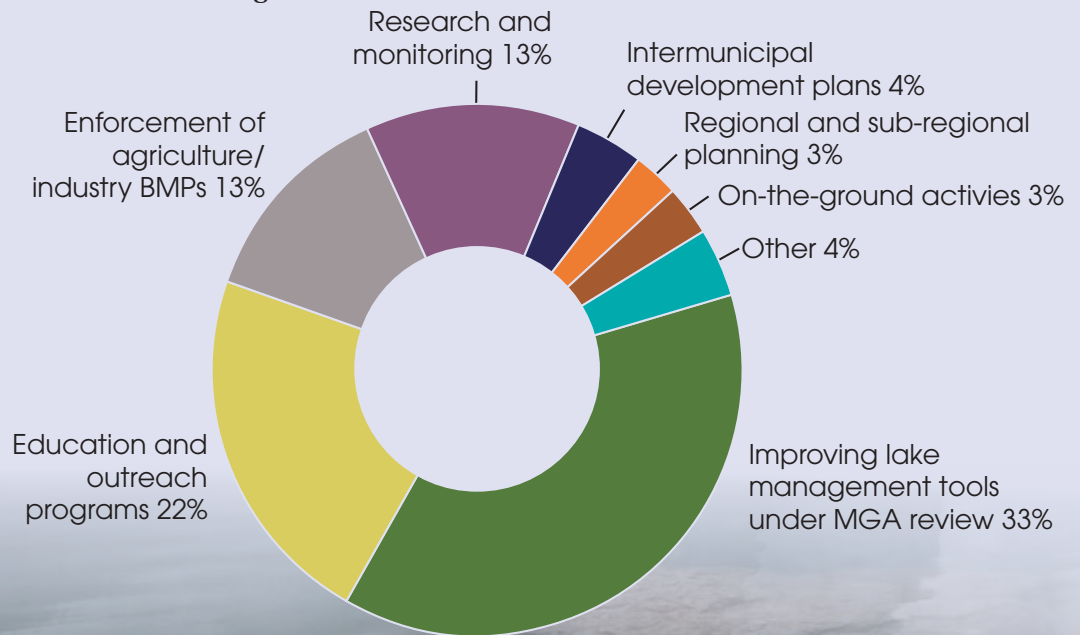
**Q2. What do you think is the biggest pressure on lake health that should be addressed in a lake watershed management plan?**



**Q3. What is the biggest barrier to effective implementation of lake watershed management plans in Alberta?**



**Q4. Which of the following provides the biggest opportunity to improve lake watershed management?**





## Results from discussion sessions

Results summarized from flipcharts and plenary discussions for each of the three challenges discussed.

### Challenge 1 – Roles and responsibilities

- What is your sector's current role in lake watershed management?
- What should it be in the future?
- What barriers are preventing you or your sector from effectively performing your role?

### Government of Alberta

#### *Current role in lake watershed management*

- GoA's role is mainly around the bed and shore and the water itself, and the land is mostly managed by municipalities through the MGA. GoA's role includes:
  - Monitoring and reporting on water quality and quantity
  - Water manager, as per the *Water Act* and EPEA
  - Public health issues
  - Establishing boundaries on the permitted use of lakes (e.g. putting in docks, aquatic vegetation removal, erosion protection)
- Partnerships. Provides direction and financial support to different partnerships (AWC, WPACs and WSGs) as per *Water for Life* strategy.
- Enforcement and compliance (although not always effective)
- Planning. Regional and sub-regional planning, as well as technical support on lake watershed management plans developed by WSGs and WPACs
- Education and outreach through programs such as Respect our Lakes
- Management of provincial parks
- Technical support: data, analysis, studies
- Financial support
- Provide direction for local authorities to manage the land through the MGA

### *Desired future role*

- Integration of planning. Connect watershed land-use planning (municipal) and lake watershed planning (GoA, WPAC, WSG).
- Need a succinct body within the GoA that is responsible for leading lake management, in close partnership with municipalities
  - Confidence in GoA as managers is currently low because public doesn't see us in an active management role; a designated body could help
  - Centralized communication of implementation activities
  - Centralized lake management planners/contact points supported by specialists in different fields
  - Improved coordination among levels of government (e.g. joint inspections, referrals)
- Improve how decisions are made regarding activities that impact water quality and bed and shore
- More active enforcement
- Maintain financing and support for agencies like ALMS
- Approval officers in Environment and Parks could have a set-out policy on how they must follow a lake watershed management plan when considering approvals for municipality development
- Possibility to create binding plans that must be followed in MDPs and IDPs
- Improve consistency among municipalities by providing overarching guidance
  - Provide support on development decisions to municipalities; develop consistent standards for developments
  - Hold municipalities accountable for poor decisions
  - MGA is key: nothing compels municipalities to follow planning guidelines

### *Barriers preventing your sector from effectively performing your role*

- Limited resources
- Lack of clarity on the roles of all players in system
- Working in silos

- Lack of public awareness of environmental social issues on lakes
- Inconsistent messaging
- Loopholes in existing legislation/policy
- Summer villages are too small, no capacity, no expertise or consistent objectives

## Municipalities

### *Current role in lake watershed management*

- Defined by MGA, but lack of clarity.
- Section 60 of the MGA enables municipalities to have jurisdiction over water bodies
- Regulation and enforcement. MGA gives municipalities the authority to enact and enforce bylaws that will support the legislation.
- Land use planning. Includes the implementation of recommendations from watershed advisory group (e.g. into area structure plans)
- Education and stewardship. Educating current and future landowners, and providing incentives for stewardship initiatives through programs such as ALUS or Green Acreages.
- Communication with the public. Provide the main contact with the public, eyes and ears of the community, source of information for the public (contacts, policies) facilitate communication with other levels of government.

### *Desired future role*

- Regulation and enforcement. Willingness to enforce existing bylaws.
- Land use planning. Working with WSGs for consistent implementation of recommendations in watershed management plans; greater say in what happens around the lake (e.g. septic fields); not only planners but doers.
- Leaders in land conservations. Environmental easements/conservation, environmental reserves, incentives.
- Education. Move half of enforcement funding towards education/communication activities.
- More collaboration. More active role in bringing the right people together.

***Barriers preventing your sector from effectively performing your role***

- Lack of consistency. Inconsistency in policies, bylaws and enforcement by different municipalities
- Varying goals and priorities across municipalities. Varying levels of interests by different municipal councils for lake issues.
- Lack of resources. Funding for human resources and programs.
- MGA is open to interpretation. Municipalities have the right to not choose to take on full management.
- Jurisdiction is unclear. Need for direction on what to do and how to do it.
- Short-term vision. Difficulty in thinking on longer term than 4-year horizon.

***Opportunities to improve your ability to undertake your sector's role***

- ALSA. Enforce the application of consistent development regulations through order in Council
- Regional planning
- Knowledge hub. A place to share updates and information (reports, plans, policies, successes, failures, etc.)
- Well educated and motivated citizens

**Watershed Planning and Advisory Councils*****Current role in lake watershed management***

- Planning. Develop State of the Watershed reports and Integrated Watershed Management Plans, which incorporate lake management. Support watershed stewardship groups, including lake groups, with planning activities.
- Education. Host information sessions on lake management issues.
- Collaboration. Help bring together GoA, municipalities and others.

***Desired future role***

- Increased recognition/credibility as advisors around lake management planning. Recognition by all GoA departments as the bodies designated to provide advice and carry out planning around watershed (including lakes) under the *Water for Life* strategy.
- Information providers. People come to us for information.
- Facilitator of collaboration. Act as main body for multi-stakeholder dialogue.

### ***Barriers preventing your sector from effectively performing your role***

- Lack of municipal buy-in into planning work
- Voluntary model
- Lack of clarity regarding role. Unclear role of SOW and IWMP in land use planning.
- Lack of funding
- Work in silos. Lack of inclusion and no transfer of knowledge in GOA multi-stakeholder activities.
- Data and data manipulation challenging in house

### ***Opportunities to improve your ability to undertake your sector's role***

- Increased collaboration. More time for networking and sharing of ideas between WPACs, greater collaboration between AWC and WPACs.
- Access to existing data. Increased access to GoA data
- Consolidate information. Funding to build a comprehensive resource site for Alberta's WPACs to house planning and advisory information.
- Access to GIS capacity and software
- Build partnerships to undertake lake management planning (e.g. EDF grant partnerships ALMS and RDRWA)
- Renewal of *Water for Life*
- More communication between *Water for Life* partners

## **Watershed Stewardship Groups**

### ***Current role in lake watershed management***

- Planning and advocacy. Providing recommendations for lake management through the development of a plan, and advocacy for the plan; role is not to implement but advise.
- Bring stakeholders together, build lake community and facilitate identification of common interests
- Educate and advocate with local stakeholders
- Advocacy, engagement education, representation of lake community
- Information gathering, sharing and research
- Lobby government, push for more enforcement

### *Desired future role*

- Recognized role in lake watershed management
  - Equal partners or as advisory group with status that municipalities have to listen to
  - Custodian of lake watershed management plan: develop and implement the plan
  - Role to promote regulatory improvements and best practices
  - Whistle blowers
  - Collaborate with government body
- Continue to represent and communicate with lake community as a community-driven initiative
- Increase education

### *Barriers preventing your sector from effectively performing your role*

- No authority and credibility: How to get issue on table of policy makers to move it forward, lack of political power influence
- Reliance on volunteers: high turnover, loss of knowledge and contacts
- Lack of stable funding for WSGs
- Tragedy of the commons
- Lack of data/understanding
- Lack of communication
- Lack of enforcement
- Complexity of process

### *Opportunities to improve your ability to undertake your sector's role*

- Education, training, motivation
- Legislated management plans
- One dedicated paid person to support WSGs

## Environmental Non-Profit Groups

### *Current role in lake watershed management*

- Raising awareness and public outreach
- Networking/network weaving (broker partnerships)
- Riparian protection and lake restoration
- Training in monitoring
- Monitoring and reporting
- Demonstration of BMPs
- Source water protection planning (TSAG)
- Facilitate planning exercises and implementation
- Build buy-in for policy or other change
- “Gap-fillers”

### *Desired future role*

- Continued involvement as “gap-fillers” but with recognition/funding for non-fundable activities
- Expand involvement to plan implementation rather than only plan development
- Difficulties in putting forth “balanced” opinions/perspectives across the sector. Do we represent a public voice? Or special interest?
- Working with and receiving funding from municipalities

### *Barriers preventing your sector from effectively performing your role*

- Lack of implementation of ENGO recommendations
- Lack of enforcement of existing regulations, plans, actions/promises
- Mismatch between funding and community-driven process
- Funding: consistent, amount, timing, length (multiyear)
- Morale, high staff turnover, junior staff always

### *Opportunities to improve your ability to undertake your sector’s role*

- Hoping for more collaboration between all groups with the new government
- Ongoing collaboration with governments, WSGs, other ENGOs, industry
- Opportunity for governments to act on ENGO recommendations
- Need to clearly identify what ENGOs are providing to lake management efforts

## Research and Monitoring

### *Current role in lake watershed management*

- Data collection, analysis and reporting
- Determine baseline conditions
- Identify gaps and emerging issues
- Provide technical advice, tools, methods and expertise
- Regulatory monitoring (ensure compliance)
- Sharing and collaboration

### *Desired future role*

- Becoming more involved in informing municipal planning
- Holistic watershed and landscape management
- Systems thinking
- Provide quality research to create good policies
- Work with social scientists
- Communication, extension and engagement
- Restoration techniques and methods
- Research remediation (economics and effectiveness)
- Sharing and collaboration

### *Barriers preventing your sector from effectively performing your role*

- Funding
- Lack of communication and coordination (work in silos)
- Lack of public data/validated data
- Lack of unbiased research
- Uneducated policy and decision-makers
- Perceived credibility
- Various interests/priorities
- Lack of recognition of importance of lakes



### *Opportunities to improve your ability to undertake your sector's role*

- Collaboration
- Change in government (change priorities and direction)
- Identify and utilize available resources
- MGA review
- Increased public interest with increasing issues
- Integration: work with other organizations (WPACs, WSGs, ANPC, ARAs)
- Utilize traditional knowledge

### **Challenge 2: Working with others**

- How does your sector currently work with others to support the implementation of lake watershed management plans?
- How would you like to work with other sectors in the future?
- What barriers are preventing you or your sector from working with others and what are the opportunities for working with other sectors?

### **Government of Alberta**

#### *How your sector currently works with others*

- Facilitate multi-stakeholder planning groups – bring the right people in at the right time
- Stakeholder engagement
- Collaborate with other groups (WPACs, WSGs) for development of lake management plans
- Provide data and planning expertise to municipalities (but ad hoc, depends on time availability)
- Existing lake management plans are sometimes used when making approvals, but not consistently
- Provide funding to WPACs and WSGs, and board representation on some
- We don't necessarily do individual lake management plans (and we shouldn't)

### *Desired future*

- Need a body to coordinate communication at subregional level between GoA and municipalities to ensure good decisions around land management; municipalities are the main decision-makers in relation to land management, but GoA has its say when land management decisions impact water.
- Existing water groups (e.g. *Water for Life* cross-ministry group) can provide feedback on lake management plans – would result in information sharing within GoA
- Province should provide guidance on “how” to create a lake management plan: develop a set process for making plans, and reviewing/approving them, identify requirements
- Provide jurisdictional clarity: who is responsible for what
- Support development/issue planning
- In Ontario, conservation authorities are separate from Government so there are less conflicts of interest
- Approvals staff to follow lake and watershed management plans when making decisions
- Collaborate with others on education and outreach

### *Barriers preventing your sector from working with others*

- Capacity (staffing, time, money), competing priorities
  - Capacity: can't be on every board
  - Constant change in GoA (staff turnover, reorganizations)
- GoA being reactive rather than proactive
- Not enough evidence on what the problems are, lack of baseline information
- Communication silos within GoA and within Environment and Parks: policy and planning vs operations vs strategies vs provincial programs

### *Opportunities for working with other sectors*

- Creating partnerships with local operators
- Participating in events like ALMS Workshop
- Legislation review to include environmental issues
- Instrument (like MOU) that institutionalizes collaborations
- Central lake group to avoid communication silos

## Municipalities

### *How your sector currently works with others*

- Work with watershed groups to support implementation of watershed management plans through:
  - Development of IDPs and implementation of recommended bylaws
  - Communication through regional associations (municipal, watersheds, lake management committee)
  - Providing funding

### *Desired future*

- Educational sessions by experts on what works and what doesn't
- Will groups like AUMA and AAMDC work with local lake management issues?
- Would like to work more closely with universities (take advantage of studies and information)

### *Barriers preventing your sector from working with others*

- Difficult to focus on one issue long enough to make improvements
- Distracted by issue of the day

## Watershed Planning and Advisory Councils

### *How your sector currently works with others*

- Invite other groups to attend forums organized by WSGs
- Multi-stakeholder nature of WPACs allows for work with others on lake WMPs
- Provision of scientific knowledge
- Some WPACs complete SOWs and WMPs for lake groups; others obtain stakeholder feedback and provide input to other planning initiatives (advisory role)
- Data gaps, assisting with prioritizing areas; coordination of stakeholders

### *Desired future*

- Stronger involvement and cooperation with industry and agriculture
- Support others in their lake management efforts (e.g. municipalities)
- Obtain clear direction from GoA regarding expectations/roles/responsibilities/legislation
- Capacity to make lake watershed management plans into sub-regional plans under ALSA
- Barriers preventing your sector from working with others
- Enforcement: no use in developing new policy when there is no enforcement of present policy
- Funding and political will

### **Watershed Stewardship Groups**

#### *How your sector currently works with others*

- Not very well
- Engage others to educate ourselves and community, collaborate at workshops
- Push back against municipal urbanization
- Collaborate with ALUS, Green Acreages program, ALMS, NAIT, etc.
- Lake watershed management plan implementation: work with NSWA as expert, advocate bylaw changes with county and GoA, hold workshop with community members

#### *Desired future*

- Create superboard of WSGs and others
- Legal power provided to WPAC and WSG to implement and enforce
- Cooperation with local municipality for action
- Progressive discussions with developers
- Partnership with First Nations
- While not implementers, WSGs have strong role to advocate and educate
- Role in regional planning

### ***Barriers preventing your sector from working with others***

- Lack of direction/clarity on where to go for support
- Efforts are fragmented across multiple organizations
- Reliance on volunteers: time commitment burdens volunteers, lack of volunteers, lack of time
- Lack of public awareness

### ***Opportunities for working with other sectors***

- Understanding change processes
- Social media
- Collaborating with other WSGs
- Exploring how lake watershed management plans could become sub-regional plans and be incorporated into bylaws

## **Environmental Non-Profit Groups**

### ***How your sector currently works with others***

- Funding agency to communities or funding partners
- Research and monitoring
- Advice on technical components, process, governance, bylaws
- Public outreach and communication of plan
- On-the-ground actions: fencing, riparian restoration, fisheries restoration
- Coming up with alternative practices and communicating to municipalities, private landowners and GoA
- Partnerships (current and ongoing) to deliver on promises or to fill gaps in resources
- Work with municipal associations, AUMA, counties, watershed groups, residents/landowners, industry, FN, Chambers of Commerce, forestry, GoA departments

### *Desired future*

- Same as above
- Building relationships with GoA to help lakes of concern to First Nations
- Directed activities and clarity to support GoA/municipal efforts on lake management
- Plan authors need to be well-connected to existing resources and players
- Contribute to developing intermunicipal agreements around lakes
- Ensuring First Nations are part of the discussion

### *Barriers preventing your sector from working with others*

- Lack of clarity in deliverables for each ENGO
- Need consistent language (i.e. does riparian mean wetlands) for all lake management partners
- Lack of respect for/distrust of agencies
- Frequent turnover, loss of information

### *Opportunities for working with other sectors*

- Validate the value of partners

## **Research and Monitoring**

### *How your sector currently works with others*

- Help public (WSGs, WPACs, GoA, municipalities, summer villages) obtain technical information and monitor
- Support development of plan and direction
- Evaluate effectiveness
- Historical and recent ecological conditions
- Connect stewardship groups to science
- Value of research (topics) determined by others
- Secrecy and little collaboration within research and monitoring sector because of competition for funding

*Desired future*

- Initiate new research
- Establish standardized requirements and baseline parameters for monitoring
- Sustainable funding for monitoring
- Work with partners for science to be integrated into policy, land use plans
- Comprehensive monitoring programs

*Barriers preventing your sector from working with others*

- Funding and competition for resources
- Lack of promotion for collaboration
- Separation of academic research and applied research/monitoring
- Lack of clear direction
- Lack of involvement in lake management implementation
- Separation of pure science and traditional knowledge
- Decreasing respect of public for scientific research, public distrust

**Challenge 3: Tools and resources**

What tools and resources are needed to improve lake watershed management in Alberta? This could include:

- Agencies and organizations
- Policies and legislation
- Regulations and enforcement
- Research, monitoring and assessment
- Education and outreach

**Government of Alberta**

- Baseline data and data management
- Template/framework to ensure consistency in lake management plans. Does this already exist? Why isn't it being used?
- Incentives (like Blue Flag program for beaches and marinas that meet criteria for water quality, environmental education, environmental management, and safety and services)

- Provincial lake policy identifying a clear leader and supporting guidelines, clear roles and responsibilities
- Municipal-provincial coordination including education, enforcement, compliance
- Consistent messaging/outreach
- Tools to monitor implementation of plans
- Enhancing MGA to protect water in municipal plans: aquifers, wetlands, surface water, etc.
  - State who municipalities need to work with when preparing plans
  - Checks and balances in approval processes
  - A way to hold municipalities accountable
  - Make MGA less discretionary, more prescriptive
  - More clarity on appeal processes
  - “Hammers” need to be effective

### Municipalities

- Long-term monitoring programs
- Developing new standards
- BMPs
- Marketing, education
- Water literacy for decision-makers
- Need a clear responsibility chart: actions for municipality/province and associated timelines

### Watershed Stewardship Groups

- One paid dedicated person recognized as go-to authority that would be responsible for building relationships between WSGs and municipalities, and ensuring consistency in processes for plan development/implementation
- Forward looking simulation (SWAT model)
- Education
- Better enforcement



- Fill data gaps
- Funding
- Expansion of ALUS
- Provincial legislation/policy that links MGA and water/watershed
- Expert agency to support WMP: methods and standards, house information
- Provincial Nutrient Management Act of Manitoba
- Tool box: riparian setbacks, etc.

### Environmental Non-Profit Groups

- Mechanism to give legal authority to a plan
- Scientific tools (tributary monitoring, paleolimnology) determining natural state and current condition. Apply science to plans!
- Meaningful process for inclusion of traditional knowledge and local ecological knowledge
- Mapping of environmentally significant areas
- Add a list of what needs to be done in a lake management plan into ALMS workbook to make acceptance and implementation easier
- Regulations are part of education: this tells people what they can and can't do
- New regulations around nutrients in soils (agriculture and development)
- Funding for projects and staff
- Make lakes a priority in whole municipal budget
- Educate decision makers: need to monetize environmental services

### Research and Monitoring

- Sustainable funding
- Tougher policy and bylaws
- Improve monitoring:
  - Standard parameters for monitoring
  - Better database and sharing, centralized and accessible data
  - Increase in research and monitoring, notably long-term monitoring

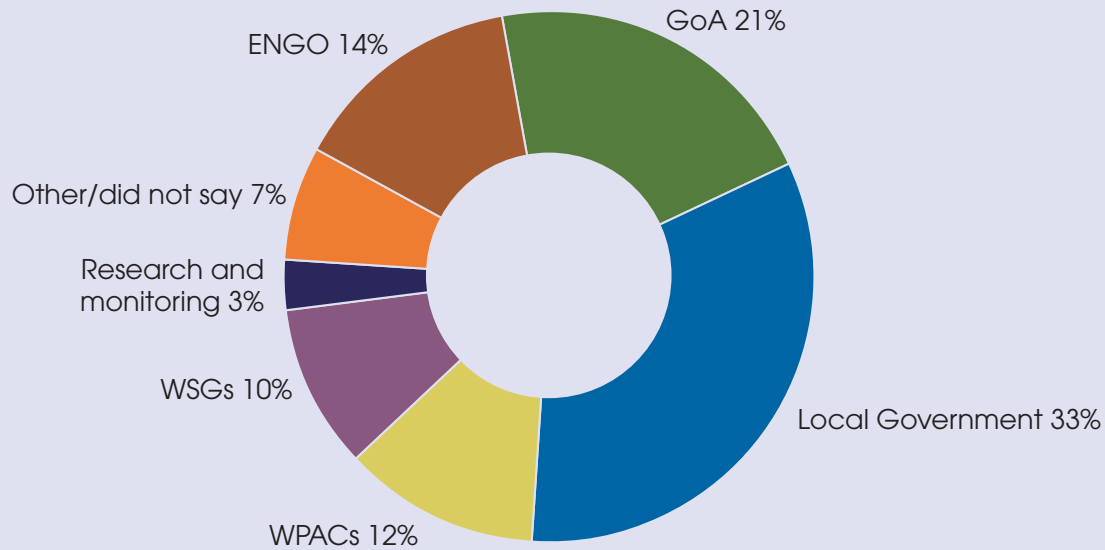
- Integration of data and policy
- Sector regulations (agriculture, industry)
- Septic regulations
- Public engagement and education, including education of our policy makers
- Timely and effective policies
- One enforcement/regulatory body

**Plenary: what is the single most important new tool for your group?**

- Baseline data and data management, including long-term monitoring
- Ensuring decision-makers and up to speed and well-educated about the topic
- Improving enforcement of existing laws and policies and develop graduated sanctions
- A clear leader for the development of plans
- Providing access to low-cost means for dispute resolution
- Regulating nutrients as a non-point source pollutant
- Maintaining and restoring riparian areas
- Education
- Review of the MGA: should be amended to require municipalities to protect surface water and groundwater in the plans that they develop
- Clarify the roles and responsibilities around lake management

## Survey results

*Distribution of survey respondents across sectors (58 respondents in total)*



### ***1. Although partnerships and collaborations are important, who should be the lead in Alberta for:***

#### ***a) coordinating lake watershed management processes and resources?***

- General agreement across all sectors for GoA as a lead (AEP, Planning Branch)
- A few respondents suggested co-leadership by GoA/municipalities or GoA/ WPACs (if WPACs were given regulatory power)
- Desire for GoA to provide ground rules/parameters as a guide for lake watershed management

***b) developing and implementing individual lake watershed management plans?***

- Respondents are divided:
  - WPACs if given more authority
  - Municipalities with help from ALMS or under supervision of GoA
  - GoA
  - WSGs if they exist for a given lake
  - Mixed approach: GoA for priority lakes, WPACs for regionally important lakes, municipalities in locally important lakes

**Challenge 1: Roles and Responsibilities**

**2. Are you currently involved in lake watershed management? If yes, please explain how.**

	GoA	Local government	WPAC	WSG	ENGO	Research and monitoring
Education and awareness	X	X	X	X	X	
Stewardship programs		X				
Monitoring, assessment and technical information		X			X	X
IWMP development	X	X	X		X	
Lake WMP development			X	X		
Policy and planning	X	X				
Regional and subregional planning	X					
Support/provide advice to WSGs	X		X			

13 respondents indicated they were not currently involved in lake watershed management.

### 3. How would you like to be involved in the future?

The majority of respondents indicated they would like to continue their current involvement in the future. A few indicated desired new roles:

- ENGO: support meaningful Aboriginal engagement in lake management planning
- GoA: Take a leadership role in coordinating planning processes
- WPACs:
  - stronger ties to those leading lake watershed management plans
    - if have resources, would like to lead development of lake plans
    - help set water quality objectives and prioritize where plans are needed

### 4. What barriers, if any, are preventing you from being involved, now or in the future?

	GoA	Local government	WPAC	WSG	ENGO	Research and monitoring
Lack of time and human capacity	X	X	X	X	X	X
Lack of financial resources			X	X	X	
Lack of clarity on the planning process and roles of different levels of government	X				X	
Other priorities	X				X	
Inefficient and long approval processes		X				
Lack of authority and credibility due to advisory nature of body			X	X		
Lack of leadership from key agencies for implementation and enforcement of plans			X	X		

## Challenge 2: Working with Others

5. Do you currently work with others in lake watershed management? If so, how?

6. How would you like to work with others in the future?

	Current	Future
<b>GoA</b>	<p>Collaboration with WPACs, WSGs and municipalities</p> <p>Stakeholder engagement to determine issues and develop necessary policy</p> <p>Through regional planning</p>	<p>Have capacity to sit on lake management boards</p> <p>Proactively provide guidelines to MDs, WPACs and others developing plans</p> <p>Work with municipalities on compliance issues</p>
<b>Local government</b>	<p>With other municipalities, GoA, WPACs, WSGs and landowners</p> <p>Through IDPs</p>	<p>More work with academics, researchers and industry</p> <p>More collaboration for development of IDPs</p>
<b>WPAC</b>	<p>Consult with others for IWMP development</p> <p>Provide advice, data gathering and reporting</p> <p>Bring stakeholders together</p> <p>Ad hoc collaboration with WSGs; mechanism for collaboration is not clear</p>	<p>More direct engagement with municipalities and others on planning processes</p> <p>Would like to see a collaboration between WPACs and municipalities for lake planning, coordinated by GoA</p>
<b>WSG</b>	<p>Partner with others to host workshops</p> <p>Work with GoA, municipalities, WPAC and ALMS for the development of lake management plan</p> <p>Participate in County policy development events</p>	<p>Would like more communication with province, and more recognition of their role in lake watershed management planning</p> <p>Greater collaboration with municipalities and industry</p>

	Current	Future
ENGO	Partner on extension events Sharing of data and information resources Provide training Through Steering Committees and Technical Advisory Committees Monitoring and sampling lakes with individual volunteers	Continue with current work, with a greater variety of stakeholders A network of lake management experts would be useful to facilitate the delivery of information Encourage landowners to take ownership of lake issues and solutions on their own properties

The vast majority of respondents indicated they work with others.

**7. What barriers, if any, are preventing you from working with others, now or in the future?**

	GoA	Local government	WPAC	WSG	ENGO	Research and monitoring
Lack of time and human capacity	X	X	X	X	X	N/A
Lack of financial resources	X	X	X	X	X	
Legislation	X					
Other priorities	X	X				
Unclear roles/responsibilities	X		X			
Lack of authority				X		

Other barriers noted

- WPACS: Lack of top-down messages from the GoA about our role
- Municipalities: Council direction
- GoA: other GoA priorities
- WSGs: nothing compels GoA and municipalities to take into account WSG recommendations and implement advice

## 8. If you have been involved in developing a lake watershed management plan, what barriers have you encountered in developing and implementing the plan?

Government of Alberta:

- Lack of enforcement

Unclear process on how recommendations are implemented

- Lack of structure or direction as to what is in the plan; lack of consistency between plans

Local government:

- Reluctance of other municipalities to participate and their perception that they are being bullied
- Lack of enforcement
- No designated ownership for plan implementation
- Lack of connection between lake management plan and municipal plans makes implementation difficult

WPACs/WSGs:

- Unclear who should implement and enforce lake outcomes identified in plan
- Need greater support from County and GoA for implementation of plans
- Lack of municipal support; municipal decisions regarding lake development are discretionary
- Lack of awareness by municipal government to inform decision-making



### Challenge 3: Tools and Resources

#### 9. What new tools and resources do you think are needed to improve lake watershed management in Alberta?

*More outreach and education on the regulations, legislation and roles*

- Umbrella website/web portal for lake watershed management for data, events, information sharing
- Meaningful process for inclusion of Aboriginal traditional knowledge in plan development and implementation
- Strengthening the MGA:
  - Recognition of ecologically significant areas
  - Clear direction on development around lakes
- More accountability for municipalities through the MGA or a MOU between AEP and Municipal Affairs to ensure watershed management plan implementation occurs
- A dedicated government body responsible for completion of plans, ensuring implementation and education of public
- Baseline and ongoing data collection
- Standard processes/framework for lake management plan development and implementation
- Provincial lake watershed management policy with clear processes and roles
- Give WPACs the authority to implement WMPs
- Requirements for council/decision-maker education
- More enforcement of existing regulations
- Requirements for consistent bylaws across municipalities around a lake
- Better access to data
- More data on the state of our lakes (shoreline, etc.)

## Other

### 10. Do you see any other opportunities or have any additional ideas on how to improve lake watershed management in Alberta?

Inclusion of local and traditional ecological knowledge

- Inclusion of Aboriginal groups
- Need a dedicated team for lake management within GoA
- Need a consistent approach for planning, education, decision-making, compliance, approvals, enforcement
- Several respondents recommended a model similar to Ontario's Conservation Authorities
- Multiyear funding for WPACs

**Appendices C, D, E, F and G are  
published online**

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