

Pigeon Lake Watershed Management Plan (PLWMP)

Healthy Watershed – Healthy Lake – Healthy Communities

2017 ALMS Workshop

Sept 29, 2017

Robert (Bob) Gibbs, PLWMP Chair

Pigeon Lake Watershed Management Plan 2017-
“Looking under the Hood”





Pigeon Lake Watershed Management Plan ²

- **Presentation**
 - **Context and Acknowledgements**
 - **Plan Organization**
 - **Plan Objectives and Recommendations**
 - **Status**
 - **Lessons**



PIGEON LAKE

Watershed Management Plan

Healthy Watershed Healthy Lake Healthy Communities

PLWMP

Healthy Watershed

Healthy Lake

Healthy Communities

PLWMP Initiatives

Guidance Documents: plwmp.ca

Stewardship & Education: plwa.ca



Lawn Fertilizers
Lake Healthy
Lawns



Model Land
Use By-Law



Clean Runoff



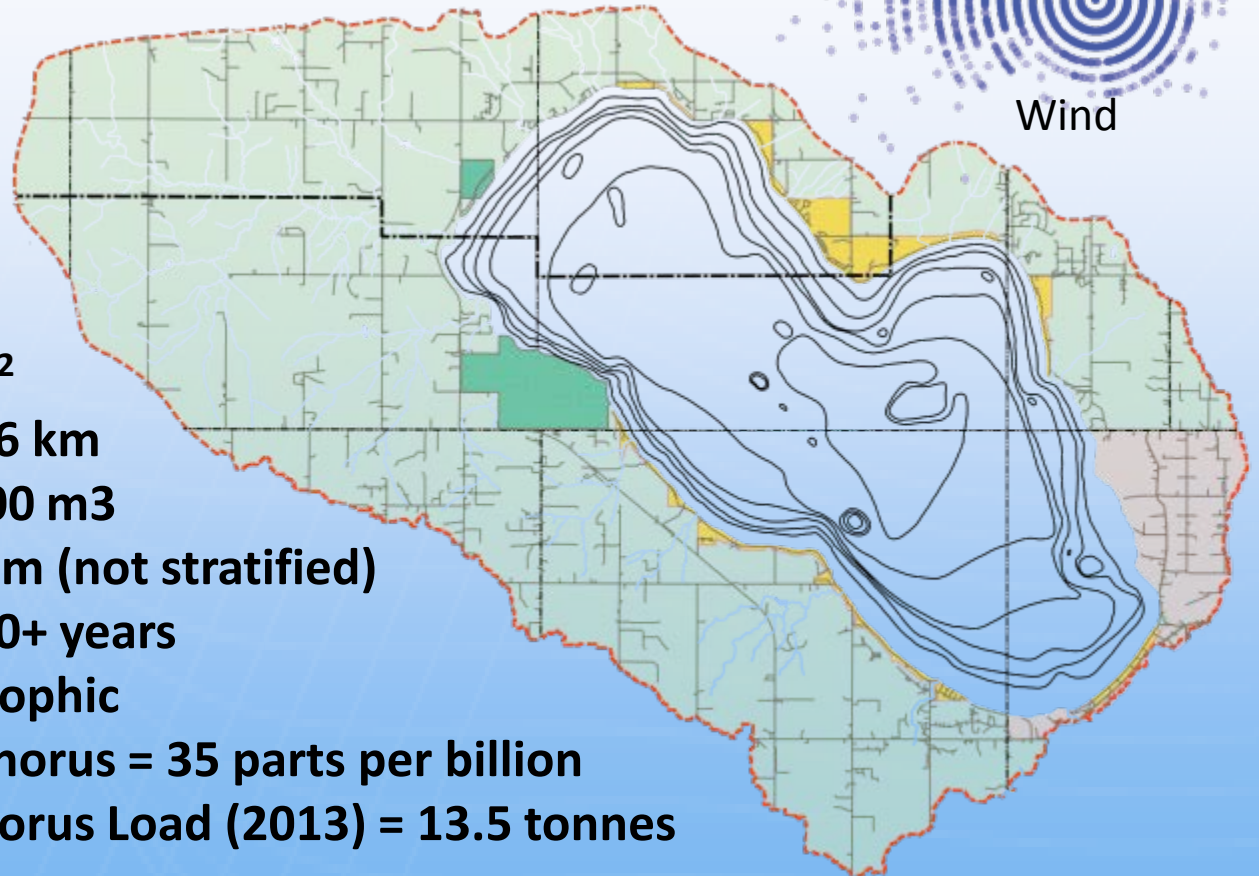
Watershed
Management
Plan 2017



Alliance of Pigeon Lake Municipalities



Snapshot of Pigeon Lake



- ❖ Lake = 96.7 km²
- ❖ Watershed = 187 km²
- ❖ Shoreline Length = 46 km
- ❖ Volume = 603,000,000 m³
- ❖ Average Depth = 6.2 m (not stratified)
- ❖ Residence Time = 100+ years
- ❖ Trophic Status = Eutrophic
- ❖ Average Total Phosphorus = 35 parts per billion
- ❖ Annual Total Phosphorus Load (2013) = 13.5 tonnes

Acknowledgements

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PLWMP Steering Committee

Tim Belec	President, Lakedell Agricultural Society
Doris Bell*	Former Deputy Mayor, SV of Crystal Springs
Glenn Belozer	Councillor, Leduc County, APLM Rep
Wiebe Buruma	Alberta Agriculture & Rural Development
Don Davidson (D/Chair)*	Mayor, SV of Grandview, APLM Rep
Susan Ellis*	Executive Director, PLWA
Robert Gibbs, (Chair)*	PLWA Director, WMP Committee Chair
Ruth Harrison	Former PLWA Board, AFGA, NSWA
Tom Karpa	Pigeon Lake Regional Chamber of Commerce
Ron LaJeunesse*	Deputy Mayor, SV of Crystal Springs
Arin MacFarlane Dyer*	Planner, Alberta Environment and Parks
Nicholaus Moffat	Parks Planner, Leduc County
Rex Nielsen	Itaska Councillor, APLM Rep
Kathy Rooyakkers	Reeve, County of Wetaskiwin
Sarah Skinner*	Watershed Planning Coordinator, BRWA
John Slater	Councillor, SV of MaMeO Beach
Harold Wynn	CAO, SV of Silver Beach and SV of Sundance

* Plan Writing and
Engagement Team Member

Plan Advisors

Jane Dauphinee	Senior Planner, Municipal Planning Services Ltd.
Theo Charette	Limnologist, CPP Environmental
Leta van Duin	ED, Alberta Low Impact Development Partnership
Bradley Peter	ED, Alberta Lake Management Society
Kim Barkwell	County Sustainable Ag Program Manager
Hugh Read	Editorial Assistance, Westbridge Communication Inc. & Grandview Beach Councillor
Chris Teichreb	Limnologist Albert Energy Regulator, (Former AEP)
Greg Nelson	Watershed Planner, AEP
Claire Klassen	Limnologist, Alberta Environment and Parks
Richard Casey	Limnologist, Alberta Environment and Parks
Terry Chamulac	Hydrologist, Alberta Environment and Parks



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- **What is it?**
 - **Roadmap and Work Plan**
 - **High Level Document**
 - **Subsidiary guidelines**
 - **Based on Science and Social**
 - **Objectives and Recommendations**
 - **Galvanize and Coordinate Actions**

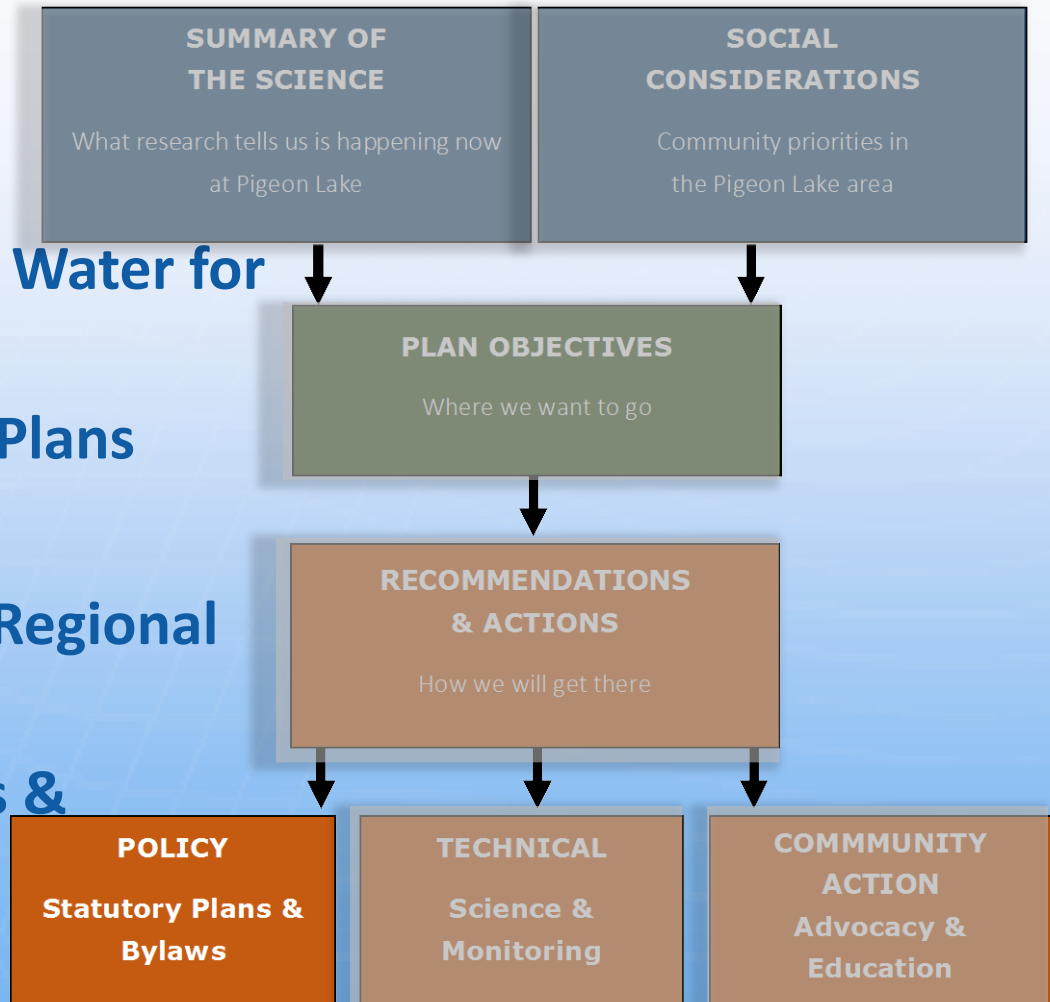




Pigeon Lake Watershed Management Plan ⁷

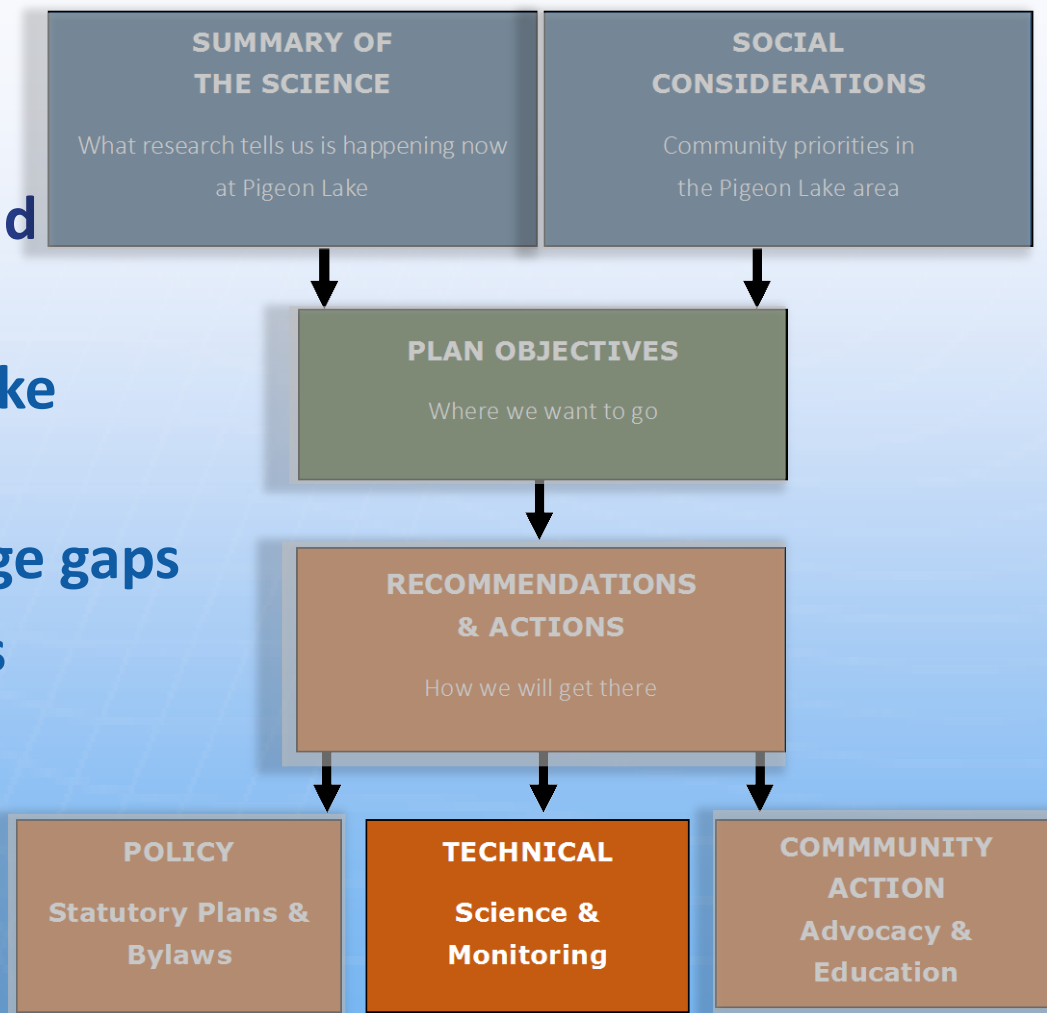
- **Policy: Governments**

- Framed within the GoA Water for Life Policy
- Contribute to Regional Plans
 - Inter-municipal Plans
 - North Saskatchewan Regional Land Use Plan
- Consistent Local Bylaws & Statutory Plans
- First Nations



Pigeon Lake Watershed Management Plan ⁸

- **Technical:** Scientists and Professionals
 - Investigation of in Lake Options
 - Addressing knowledge gaps
 - Guidance documents

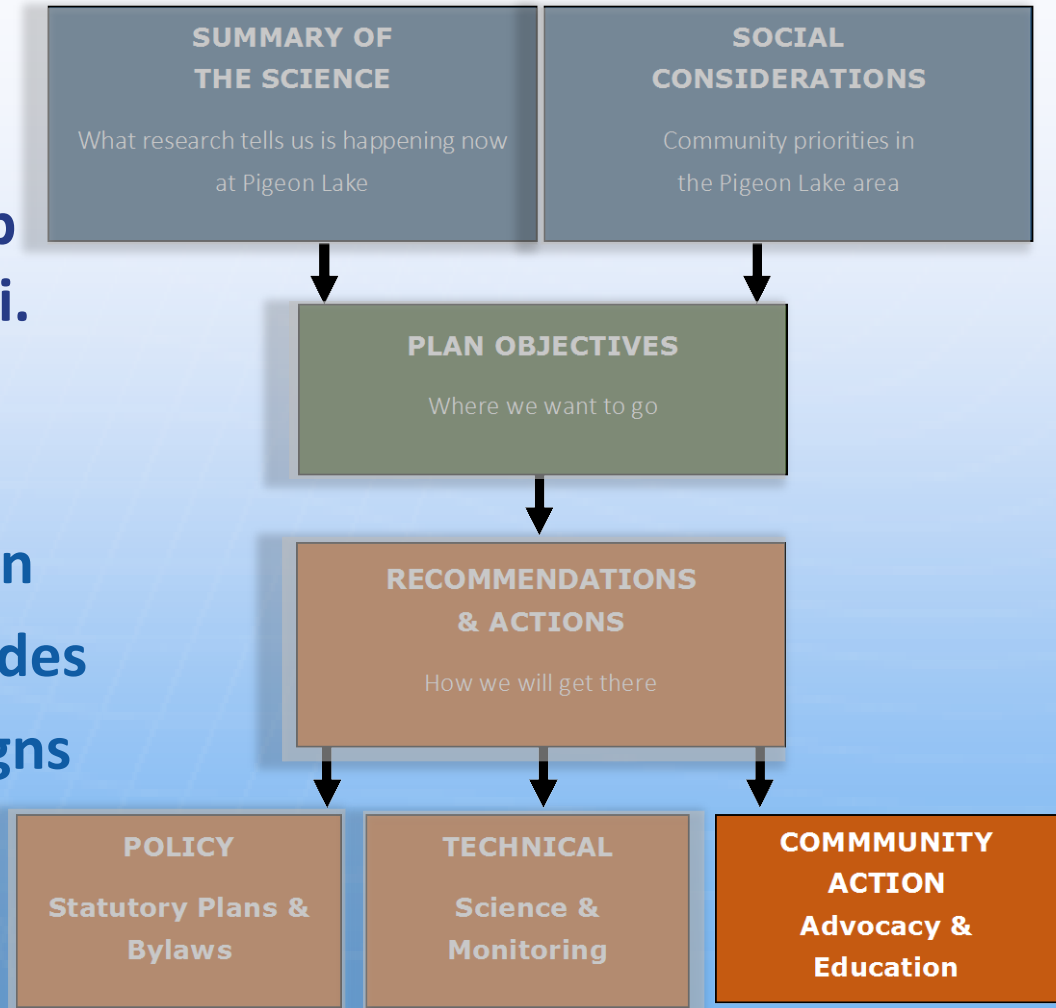




Pigeon Lake Watershed Management Plan ⁹

Community Action:
Everyone with Stewardship
Groups Municipalities, Agri.
Extension

- Volunteer Action
- Advocacy and Education
- Beneficial Practices guides
- On the ground campaigns





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“SMART” Recommendations

PIGEON LAKE & IN-LAKE MANAGEMENT

OBJECTIVE 6: Improve knowledge about phosphorus and cyanobacteria dynamics affecting the lake to reduce phosphorus loading and the intensity of algae blooms.

OBJECTIVE 7: Investigate the feasibility and safety of in-lake options to reduce bloom formation and/or mitigate the effects of blooms and also to build local defences against harmful invasive species.

	RECOMMENDATIONS	Type	Roles	Time Frame	Success Measure
6a	Advancement of Science: Identify knowledge gaps relating to the formation of cyanobacteria blooms and techniques for meaningful reductions. Prioritize specific investigations and research projects. Fund and implement ongoing research for Pigeon Lake.	Technical & Scientific	Lead: PLWMP Support: APLM, Technical Specialists, PLWA, GoA	Ongoing	Coordinated Published program.
7a	Invasive Species: Complement the Government of Alberta’s province-wide efforts with local initiatives to improve education and build local defenses to keep out aquatic invasive species. Measures include monitoring, public education, signage, and other initiatives	Community Action	Lead: PLWA Support: APLM, Mun, Technical Specialists, PLWMP, GoA	Ongoing	Effective local program
7b	In-Lake Management: Evaluate potential management options including project description, costs and financing; effectiveness in reducing phosphorus and algal blooms; reapplication frequency; environmental, social, and economic risks; and regulatory concerns. Implement where feasible.	Technical & Scientific	Lead: APLM. Technical Specialists	Ongoing	Coordinated published program.

THE LAND

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Increase land cover types with lower nutrient release rates

5 Actions



Improve phosphorus management for all land uses

7 actions



Promote clean runoff practices to reduce the transport of nutrients

6 actions

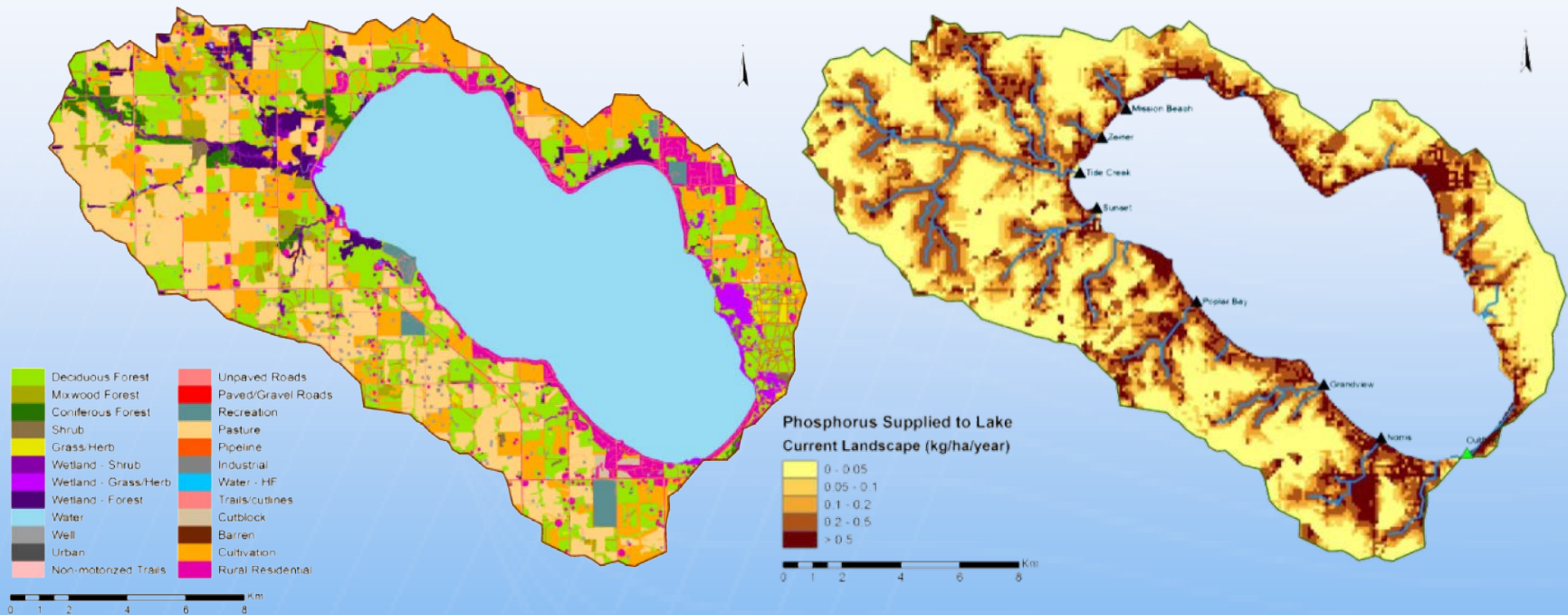


Protect Groundwater that feeds into Pigeon Lake.

7 actions

Watershed Phosphorus Sources

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Source: Alberta Biomonitoring Institute (ABMI)

THE LAND

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POLICY

- Land Conservation
- Intensive Livestock Operations
- Roads and Road Allowances
- Beaver Management
- Groundwater Conservation
- Statutory Plans:
 - Retention of natural vegetation
 - Wetlands
 - Lakeshore Environmental Area
 - Subdivision drainage
 - Erosion and sediment control
 - Groundwater Impact Assess
 - Wastewater Collection
 - Septic Fields
 - Wastewater System Inspections



THE LAND

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TECHNICAL

- Mapping: watershed priority areas
- Water Quality Guideline



THE LAND

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COMMUNITY ACTION

- Land Restoration
- Lawn Fertilizers / Pesticides
- Watershed Stewardship
- Agricultural Operations
- Recreational Operations
- Oil and Gas Operation
- Clean Runoff Action
- Water Wells
- Industrial Groundwater Extraction

THE SHORE

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DRAFT OBJECTIVE 5

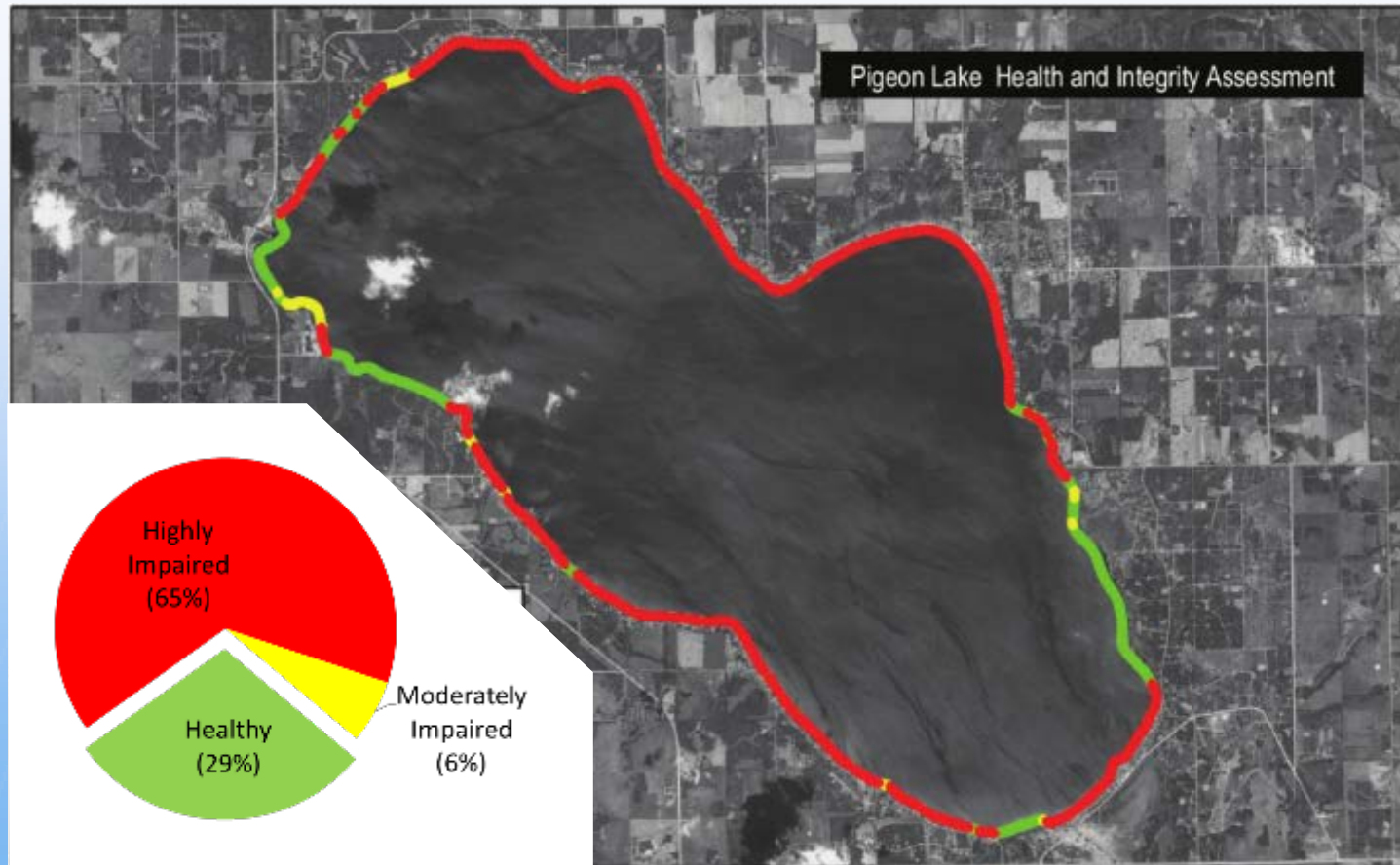
**Improve the health and resilience of
the shoreline and near-shore areas**

9 recommendations and actions



Shoreline Status

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THE SHORE

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POLICY

- Statutory Plans:
- Land Use Prohibitions
- Setbacks
- Shoreline Modification
- Aquatic Vegetation

TECHNICAL

- Shoreline / riparian health assessment
- Mapping: critical habitat

COMMUNITY ACTION

- Shoreline Guidance Updates
- Shoreline Owner Action
- Algal Biomass
- Noxious Weeds

THE LAKE

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DRAFT OBJECTIVE 6

Improve knowledge about phosphorus and cyanobacteria dynamics affecting the lake to reduce phosphorus loading and the intensity of algae blooms.

- 1 recommendations and actions

DRAFT OBJECTIVE 7

Investigate the feasibility and safety of in-lake options to reduce bloom formation and/or mitigate the effects of blooms plus invasive species local defensives

- 2 recommendations and actions



THE LAKE

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POLICY

- ---

TECHNICAL

- Advancement of science
- In-lake management options

COMMUNITY ACTION

- Local defenses for aquatic invasive species (AIS)

WORKING TOGETHER²¹

DRAFT OBJECTIVE 8

Improve regional collaboration, partnerships and organizational effectiveness to promote collective action for a healthy watershed, healthy lake and healthy community.



9 recommendations and actions



WORKING TOGETHER

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POLICY

- Statutory Plans: Integrate WMP across watershed
- SV Municipal development Plans
- First Nations Engagement
- WMP Updates
- Local Organizational Assets

TECHNICAL

- Plan and environmental monitoring
- Phosphorous Budget

COMMUNITY ACTION

- Incentives to promote voluntary action
- Communication and Engagement Plan

STATUS

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- ✓ Clear public support through surveys
- ✓ Now endorsed by Alliance of Pigeon Lake Municipalities
- ✓ Will go to PLWA Board and other regional groups for endorsements
- ✓ Currently under review by 12 individual Councils for adoption by resolution
 - ✓ Future move to include in required updates to Statutory Plans
- ✓ Go to GoA for recognition under the North Saskatchewan Land Use Framework
- ✓ Basis for moving forward with watershed stewardship initiatives

LESSONS

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- **Process of Culture Change requires a Systematic Multi-Layer Approach:**
 - **Policy Layers (provincial and local) backed up by effective local stewardship education and action.**
- **Language and Attention Span: simplify language and be brief.**
- **Watershed Management Plan is best positioned as incorporated into:**
 - **MGA Statutory Plans under MGA (MDP's, IDP's, LUB's),**
 - **Alberta Land Stewardship Act LUF's.**
- **Community Action and Stewardship actions supported by and active Watershed Stewardship Group are critical.**

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