River Ecology and Environmental Flows

Relevance in IWRM

Empowered lives.
Resilient nations.

gef

River Basin Ecology and IWRM

What is IWRM?

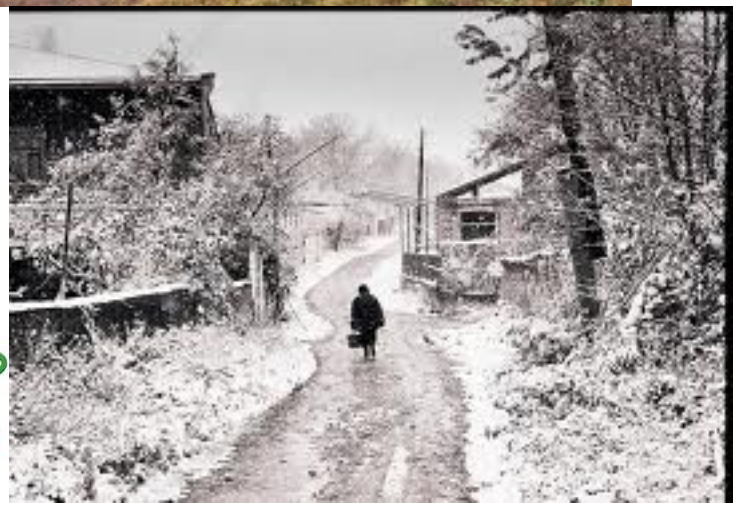
1. The river basin is the correct administrative unit for managing water resources.

River Basin Ecology and IWRM

2.Integrate land an water resources.

River Basin Ecology and IWRM

3. Integrate social, economic and environmental factors



River Basin Ecology and IWRM

4. Integrate surface water and groundwater
5. Public participation is necessary
6. Transparency and accountability are necessary

River Basin Ecology and Environmental Flows in IWRM

- The river is part of the ecosystem and the ecosystem is the river's body
- Humans and their activities are parts of the overall ecosystem.
- *Environmental flows are necessary to ensure the ecosystem thrives.*
- *Requires a flow regime to support it – not just a minimum flow.*

Building Institutions to Support Ecosystem Oriented Management

Best practice: River Basin Organization

Role:

- monitors the river basin as a whole to ensures that it is healthy
- flags areas and aspects where there is concern
- determines environmental flow regime
- determines how to ensure the env. flow regime

Building Institutions to Support Ecosystem Oriented Management

Best practice: Other organizations

Role: carry out most functions for management of the ecosystem

- ecological assessments
- biological monitoring
- land use monitoring and management

Building Institutions to Support Ecosystem Oriented Management

Best practice: Law and Policy

Role: to ensure management of the ecosystem is done effectively and that environmental flows are met

- Environmental policy emphasizing ecosystems
- Enforceable and enforced
- Water Policy for IWRM

Hydropower – Special Concern for Ecosystem Management

Hydropower changes the natural flow regime of the river, resulting in:

- ecosystem change
- destruction of habitats
- loss of species

While beneficial economically, hydropower plants must be carefully managed to avoid ecosystem damage.

International Experience and Best Practice for the South Caucasus

- IWRM
- EUWFD – river basin is an ecological unit
- RBM Plans – not about the river alone – about the river basin

Climate Change, Ecosystems and Environmental Flows

- river flow will reduce, both directly and indirectly resulting from climate change.
- environmental flow requirements will not change – and may become greater in some cases.
- Pollutant concentrations higher - more ecological damage

Managing water resources more difficult.

Adaptation to New Conditions

Public awareness will be more critical as the people will need to understand:

- new conditions
- need to adapt
- how to adapt

Transboundary Ecosystems and Environmental Flows

Transboundary Rivers have ecosystems too.

Environmental impacts in an upstream ecosystem impact the downstream parts of a river system.

Environmental impacts in a downstream ecosystem impact the upstream parts of a river system.

Case Study: Bobs and Crow Lakes Stewardship Plan

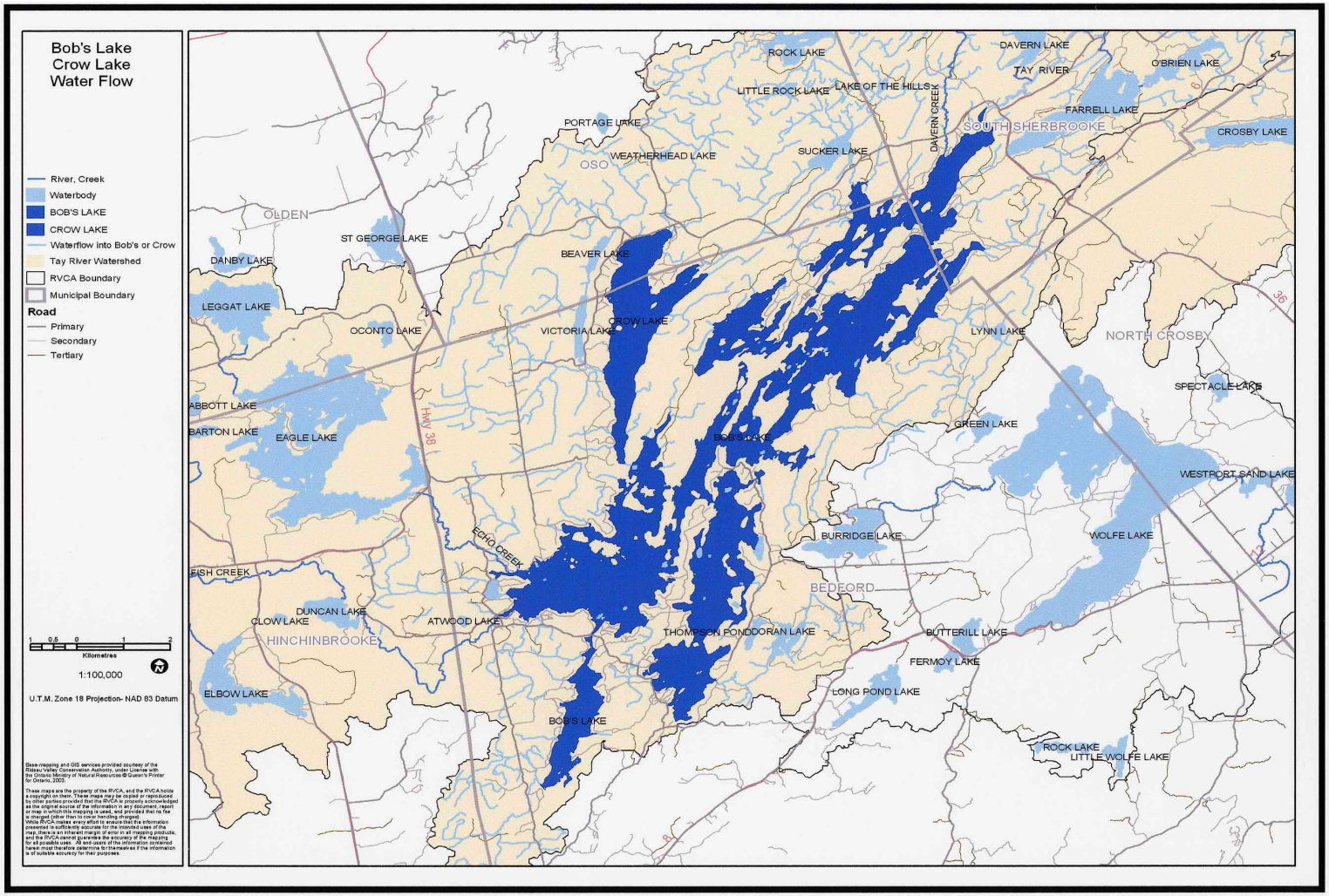
Stewardship Plan – a plan to ensure the qualities of an area are conserved

- Community initiated, based and run
- Grants from government to help finance
- Most work done by volunteers
- Initiated 2003, completed 2006

http://bobsandcrowlakes.ca/about-2/lake-stewardship-plan/

Case Study: Bobs and Crow Lakes Stewardship Plan

Bobs and Crow Lakes Stewardship Plan



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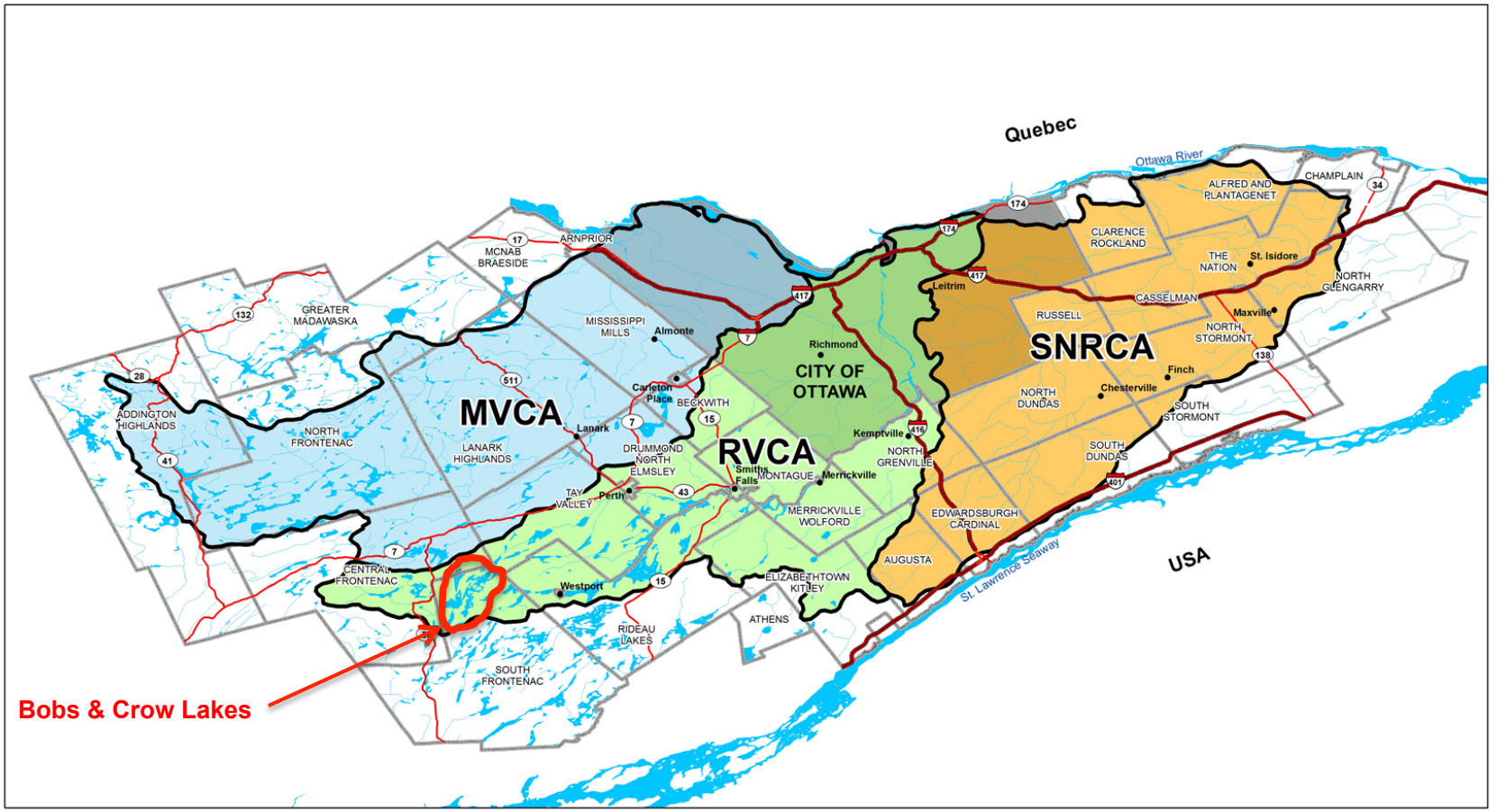
Bobs and Crow Lakes Stewardship Plan



Bobs and Crow Lakes Stewardship Plan

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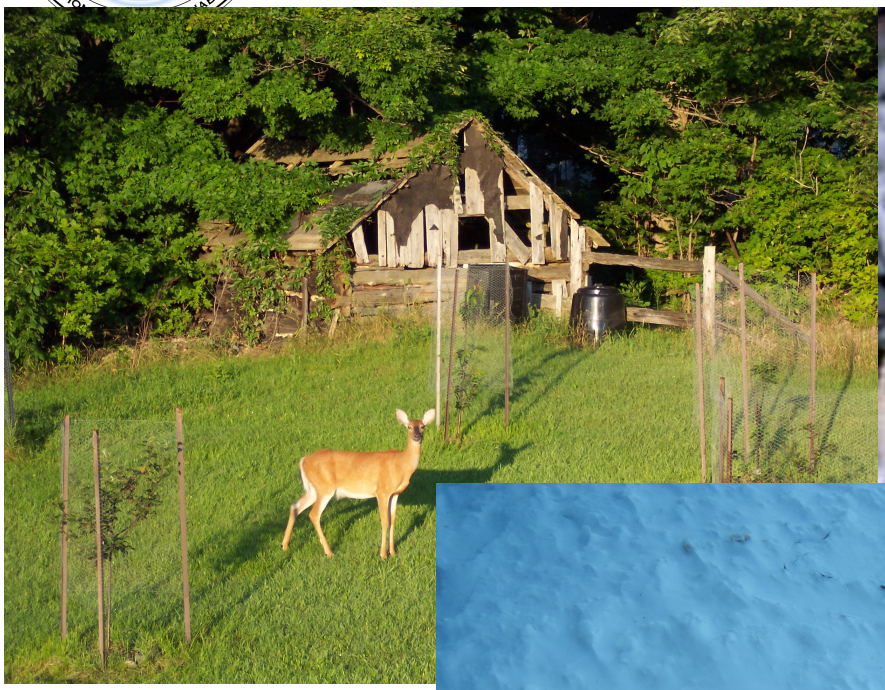
Ecosystem in Motion



Bobs and Crow Lakes Stewardship Plan

Initial survey:

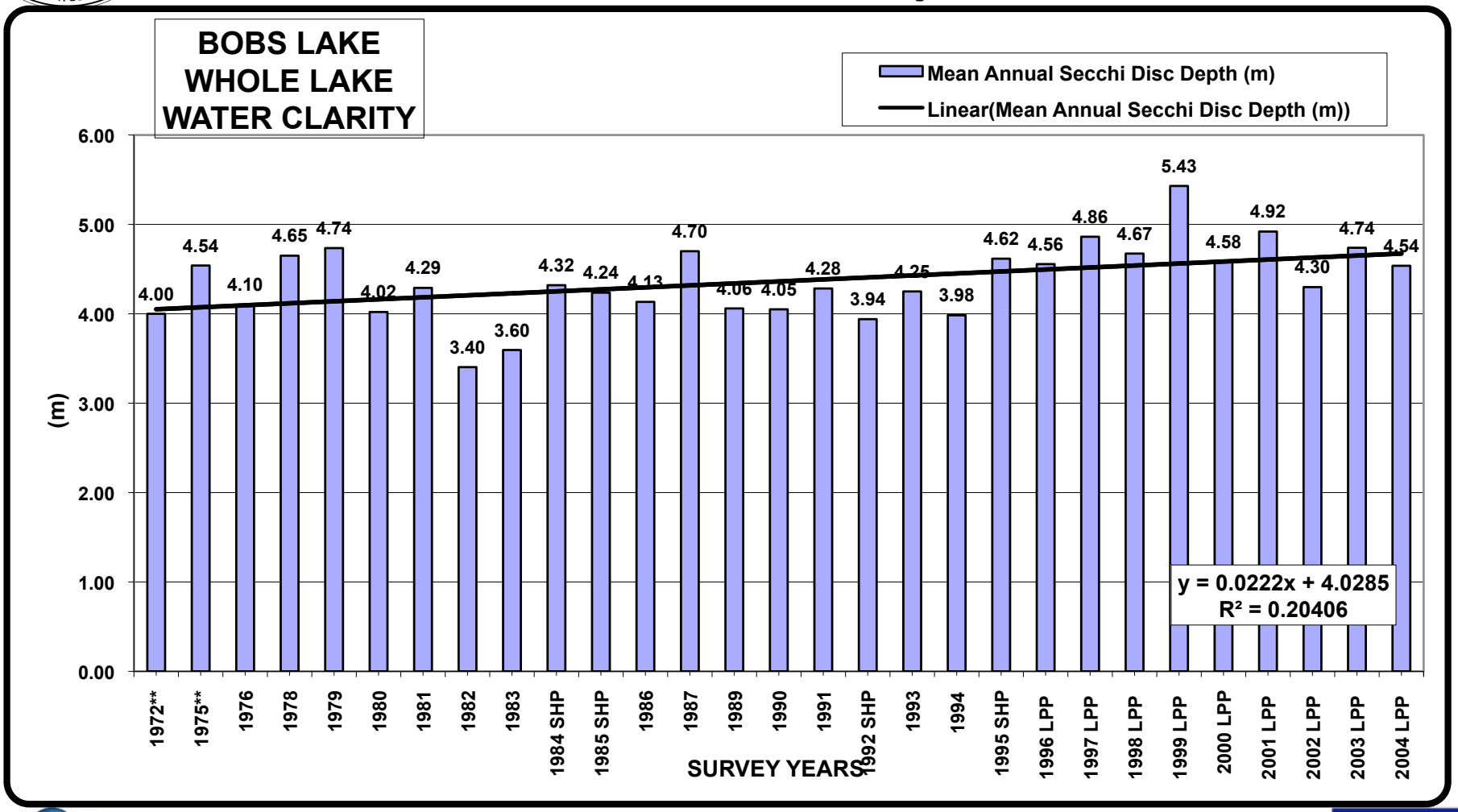
- All landowners and other stakeholders surveyed
- What is important to maintain?
- What are problems that need to be addressed?
- 80% return on survey

Bobs and Crow Lakes Stewardship Plan

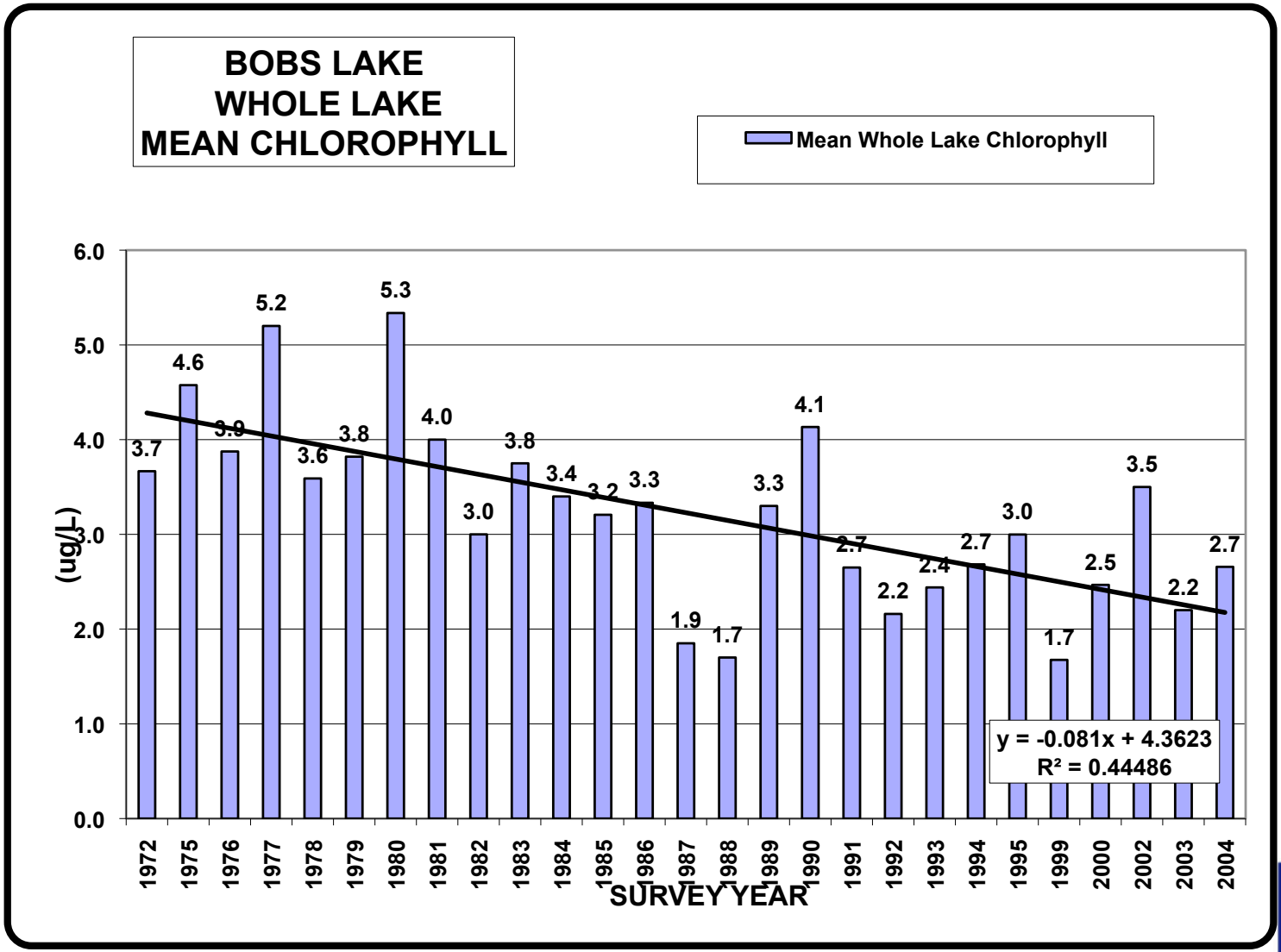
Concerns on increasing pressures on the system from:

- changes in land use
- increasing population density
- residential, recreational, commercial uses
- fishing, health of fish spawning grounds

Bobs and Crow Lakes Stewardship Plan



Bobs and Crow Lakes Stewardship Plan



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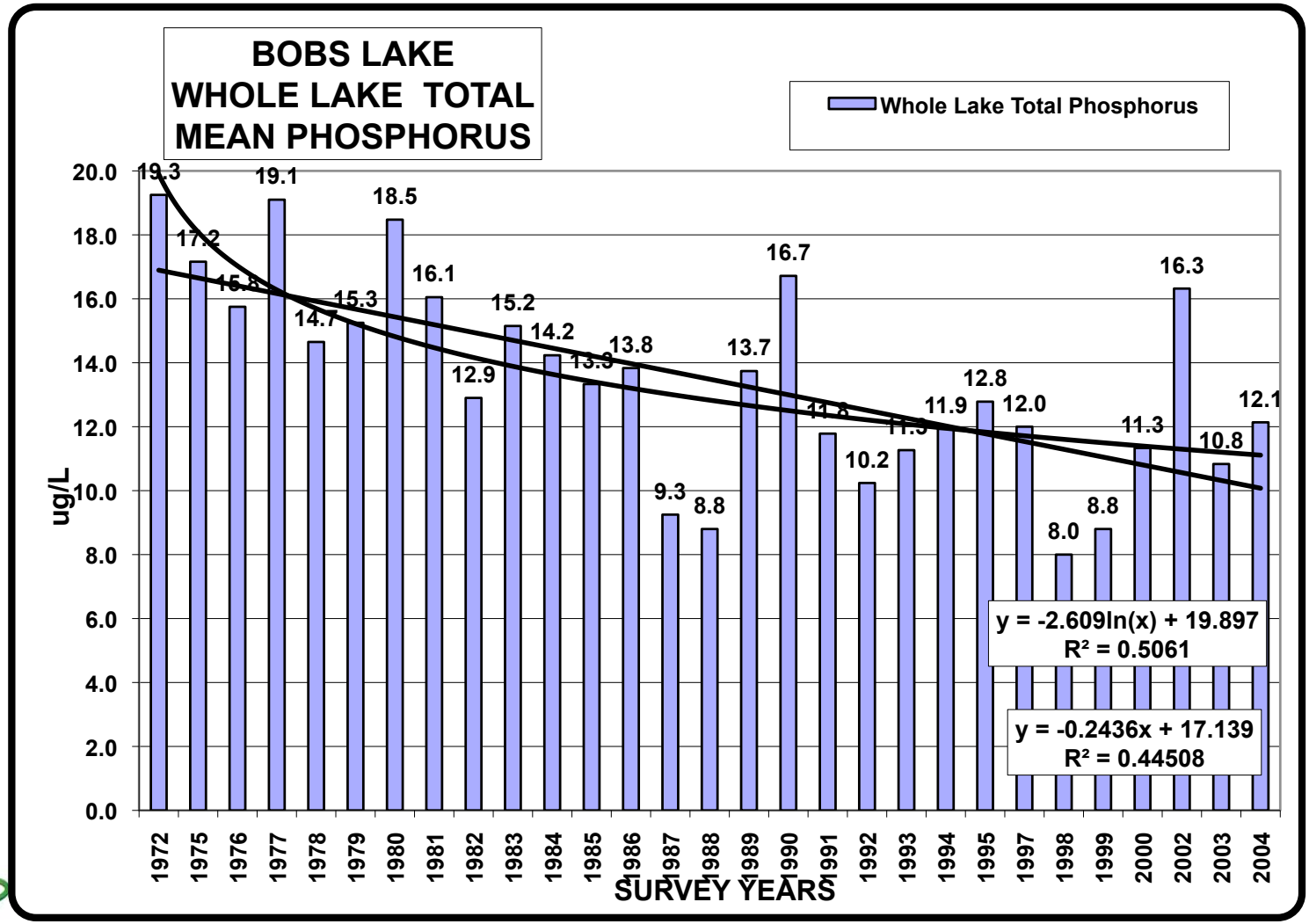

Bobs and Crow Lakes Stewardship Plan

Opportunities:

- stakeholders fully engaged
- willing volunteers
- Grants available and encouraged
- municipal authorities (4 different municipalities, each with own by-laws)
- RVCA engaged (impact on overall river basin)
- MoE, MNR engaged

Requirement	South Frontenac				Central Frontenac		Tay Valley		
	Residential	Residential Island	Resort Commercial	Rural	Residential Waterfront	Rural	Residential	Tourist Commercial	Rural
Lot Area	1 ha	2 ha	0.8 ha	0.8 ha	1 ha	0.5 ha	0.4 ha	2 ha	1 ha
Lot Frontage (shoreline)	91 m	91 m	76 m	76 m	91 m	46 m	60 m	60 m	60 m
Lot Coverage									
Main Building	5%	5%	40%	20%	15%	15%	10%	20%	20%
Accessory Building	5%	5%	5%	5%	2%	2%	10%	-	
Shoreline Setback	30 m	30 m	30 m	30 m	30 m	30 m	30 m	30 m	30m
Interior Side Yard									
Main Building	3 m	3 m	3 m	3 m	3m	3 m	6 m	10 m	6 m
Accessory Building	3 m	3 m	1.5	3 m	1 m	1 m	1 m	10 m	6 m
Maximum Height									
Main Building	11 m	11 m	11 m	11 m	10 m	10 m	9 m	9 m	9 m
Accessory Building	6 m	6 m	4.5 m	6 m	6m	6 m	6 m	9m	9m

Bobs and Crow Lakes Stewardship Plan

Results:

- 4 municipalities / townships agree to change by-laws on development
- no high density development
- restrictions on minimum sizes of land for building
- promotion of and incentives for ‘naturalizing’ waterfronts
- changes to septic system regulations and inspections
- new regulations on boat cleaning (invasive species)

Bobs and Crow Lakes Stewardship Plan

Lessons:

- existing laws and regulations in place and enforceable
- acceptance of changes in law – power of community
- availability and capacity of government institutions for assistance in information processing and other
- support for changes from RVCA, MOE and MNR