ONTARIO ANNEX ADVISORY COMMITTEE

-WATER CONSERVATION AND EFFICIENCY
-WATER PRICING PHASE 2

****

-SCIENCE AND INFORMATION ONTARIO

Annex Advisory Panel Implementation Issues: Conservation

Sector Meetings
1. Developing Ontario's water conservation and efficiency program.final.ppt
2. REPORT-Conservation-Food&Beverage-Dec1-08.doc
3. REPORT-tourism-golfcourses-irrigationDec 9 08.doc
4. REPORT-Commercial-Industrial-Dec11-08.doc
5. REPORT-Conserv-OFIA-draft-Jan6&19-09.dc
6. REPORT-Conservation-ENGO-CA-Jan13-08.doc
7. REPORT-Conserv-municipal sector-Jan16-09.doc
8. REPORT-Conserv-public institutions-Jan23-09.doc
9. REPORT-Conserv-agriculture-Jan29-09.doc

Meeting with Ontario Power Generation
10. OPG Reponses to questions.doc
11. OPG Fossil Water Use_Jan 20-2009.ppt
12. OPG Nuclear Water Use-Jan20-2009.ppt
13. OPG Hydroelectric_Jan 20-2009.ppt

AAP Conservation Subgroup Meetings
14. AAP water cons and eff subgroup Jan 8 09.doc
15. AAP water cons and eff subgroup Jan 30 09.doc

AAP Report back February 11, 2009 Webex teleconference
16. Agenda
17. Water conservation and efficiency presentation
18. Water charges phase 2

AAP February 18, 2009 Meeting
19. Meeting Agenda
20 Document list for February 18 & 19 AAP Meeting
21. Possible Options for Inclusion In On Water Conservation Strategy
22. Supporting Information and Science
    - Watershed Mapping
    - Water Use Reporting
    - Consumptive Use

a. Percentage Volume & Percentage Takers
b. Worksheet on Methodology for Calculating Consumptive Water Use
c. Draft Provincial Methodology for Estimating Consumptive Use

23. First Nations Engagement Update

24. DRAFT notes February 18th meeting

ENGO
A. Carol Maas Report

Council of Great Lakes Governors Water Use Information Initiative

A. consultation schedule

B. 2004 examples of reports
C. State/Provincial Reporting Protocols to Regional Database

Great Lakes - St. Lawrence River Basin Sustainable Water Resources Agreement

Great-Lakes Basin-wide (Regional) Water Conservation Goals

As stated in the Great Lakes-St. Lawrence River Basin Sustainable Water Resources Agreement

a. Ensuring improvement of the waters and water dependent natural resources

b. Protecting and restoring the hydrologic and ecosystem integrity of the Basin

c. Retaining the quantity of surface water and groundwater in the Basin

d. Ensuring sustainable use of waters of the Basin

e. Promoting the efficiency of use and reducing losses and waste of water

Financial Incentives
Industrial and Commercial Sectors

- Some Canadian and U.S. municipalities
  - offer industrial customers financial incentives to implement water-efficient technologies
    - e.g. one-time rebate equal to one-year's worth of water savings
- United Kingdom
  - businesses can claim investments for water conservation as a tax-deductible expense under the Enhanced Capital Allowance scheme
- Australia
  - 1997 Tax Act allows agricultural businesses to accelerate the depreciation of the capital expenditure costs related to water conservation projects

Targets, Benchmarking and Performance Indicators

- Benchmarking water usage and comparing it against best practice is a necessary step to become water efficient
- MOE funded the Canadian Water and Wastewater Association to investigate and analyze findings on water conservation and efficiency performance indicators and benchmarks currently used in the municipal sector
- ICI sectors
  - Benchmarking water usage can be done either using kg or litres (lbs or gallons) of raw product or as finished product or as whole units such as L/bird
    - No accepted convention
    - Benchmarking may not be an industry standard; could be a year-to-year comparison for the whole site, process or product
    - Some international best practices programs include performance indicators and benchmarks

Targets, Benchmarking and Performance Indicators

- British Columbia
  - By 2020, water use will be 33% more efficient and 50% of new municipal water needs will be acquired through conservation
- Alberta
  - Water use efficiency and productivity measures being developed
    - performance measures will compare amount of water used in relation to productivity, population and economic growth
  - Targets will be determined relative to a 2015 target of a 30% improvement in water use efficiency and productivity over 2005 levels
    - firm targets to be determined by the Provincial Water Advisory Council
- Saskatchewan
  - Water availability and consumption data will be collected to help establish "ambitious yet achievable targets" for reduced consumption and improved water use efficiency
- Great Lakes St. Lawrence Cities Initiative
  - Reduce total water use by 15% in 15 years

Water Conservation Plans
Industrial and Commercial Sectors

Georgia

- All applications (except for agriculture) for water withdrawals must contain a water conservation plan
  - approved by the state and based on state guidelines
- Applicants must develop and implement effective water conservation programs in accordance with accepted standards for their industry and which address local water resource constraints, cost/benefit analysis, etc.
- Basic elements in any water conservation program: Water Loss, Water Demand Management, and Long Range Planning
- Permittee must submit a 5-year progress report that outlines actions and/or improvements made to conserve water and reduce water loss

Australia

- New South Wales State government in 2004 required all businesses using 50 M l/yr to submit Water Saving Action Plans
- Queensland government requires these plans as well as 25% reduction compared to 2004/05 consumption

Water Conservation Plans Industrial and Commercial Sectors

- City of Toronto offers a 20% reduction in water rates for high water volume industrial customers
  - must prepare a water conservation plan and implement water-efficiency technologies and practices that have up to a 5-year payback period
- Alberta requires the preparation of water conservation, efficiency and productivity plans for 7 priority sectors
  - Irrigation, municipal, power generation, oil and gas, mining, chemical and petrochemical, forestry

Jurisdictional Scan - Highlights

Best Management Practices Industrial and Commercial Sectors

- **Saskatchewan**
  - Industry associations strongly support the development of industry-specific BMPs for water conservation in partnership with industry associations
- **State of Michigan**
  - Voluntary water conservation and efficient use practices should be developed and adopted by the various industry sectors
  - Water use conservation measures were prepared for the following water use sectors:
    - Agricultural Irrigation - Michigan Department of Agriculture
    - Public Water Supply - Michigan Section AWWA
    - Non-agriculture Irrigation - Michigan State University
    - Turfgrass Irrigation - Michigan Turfgrass Foundation
    - Aggregates Industry - Michigan Aggregates Association
    - General Model; Electric Utilities; Chemical Manufacturing; Pharmaceutical Manufacturing; Pulp and Paper; Beverage Industry; and Wet Process Cement Manufacturing - by the Michigan Chamber of Commerce
- **Arizona**
  - Department of Water Resources required to establish conservation requirements based on the latest commercially available conservation technology consistent with reasonable economic return

Best Management Practices Industrial and Commercial Sectors

General findings

- Water conservation practices specific to industry are the least likely to be required by statute
  - Tremendous variability among industries in terms of how water savings can be accomplished
  - Water saving potential is highly industry specific and site specific
- Experiences indicate that the key to industrial water conservation is:
  - To develop industry-specific and/or site-specific best management practices (led by industry or government); or
  - To require that industries develop water conservation practices to the greatest extent possible, based on technical and economic feasibility
- Most common strategy for industrial water conservation is to conduct an on-site audit
  - Water use and water-related costs are calculated and the feasibility of implementing more water-efficient processes or technologies is analyzed
- Although initial investments may be large, water savings can often result in investment paybacks of a year or less

Best Management Practices - Ontario

- When making decisions on Permits to Take Water, water conservation will be considered
  - including whether water conservation is being implemented or is proposed to be implemented in the use of the water
    - in accordance with best water management standards and practices for the relevant sector if these are available
- A series of guides to *Resource Conservation and Cost Savings Opportunities* for specific sectors were developed by MOE in the late 1990s, such as
  - Meat and Poultry Sector
  - Dairy Processing Sector
  - Automotive Parts Manufacturing
  - Soap, Detergents and Related Products Sector

Canadian Provinces

Water for Life: Alberta's Strategy for Sustainability, 2004

- Key direction: water conservation
- Short-term (2004 to 2007)
  - Outcome: Albertans understand the value of water to the economy and quality of life
  - Action: Establish a public education and awareness campaign on water conservation
- Medium-Term (2007 to 2010)
  - Outcome: All sectors are demonstrating best management practices and improving efficiency and productivity associated with water use
  - Action: Prepare water conservation and productivity plans for all water using sectors
- Long-term (2010-2014)
  - Outcome:
    - Water is managed and allocated to support sustainable economic development and the strategic priorities of the province
    - Albertans have the knowledge, tools and motivation to implement actions that will maintain or improve the province's water resources
  - Action: Establish an ongoing monitoring program to ensure that all sectors are achieving water conservation and productivity objectives

Canadian Provinces

Saskatchewan Water Conservation Plan (2006)

- Goals and objectives
  - All users understand value the economic, social and environmental benefits that water provides and recognize the need to conserve it
    - Public education is undertaken by government to reduce water use
    - Partner with the public, communities and municipal, agricultural and industrial sectors
  - Citizens, communities and industry have meaningful information about the amount of water they use and how to reduce their own consumption
    - All water users understand measures that can be taken to reduce their consumption
    - Water users understand the standards by which their own use can be measured
  - Saskatchewan's water resources are used wisely
    - Government departments and agencies lead by example to reduce water use
- Partnering with industries
    - Pursue the requirement of water auditing as a condition of provincially issued environmental operating permits and water use permits
    - Investigate water use reduction targets in a manner similar to effluent discharge limits
    - Develop BMPs in partnership with industry association so that the information can be used my their membership

Canadian Provinces

British Columbia's Living Water Smart Plan (2008)

- By 2020, water use in B.C. will be 33 percent more efficient
- Adapting to climate change and reducing our impact on the environment will be a condition for receiving provincial infrastructure funding
- By 2012, the provincial government will:
  - Establish flow requirements in legislation for ecosystems and species
  - Require more efficient water use in the agriculture sector and secure access to water for agricultural lands
  - Address the changing water drought risk and other effects of climate change
- The provincial government has also committed to:
  - Mandate purple pipes in new construction for water collection and reuse by 2010
  - Establish a water efficiency labelling system for water-consuming products
  - Develop tools to incorporate traditional ecological knowledge in decision making

Highlights

Jurisdictional Scan

- British Columbia, Saskatchewan, Alberta have water conservation and efficiency plans
- Great Lakes-St. Lawrence Cities Initiative Water Conservation Framework
  - Goal: 15% reduction in total water usage over 15 years (2000-2015), through the development/implementation of municipal water conservation plans
  - also aims to enable cities to work together on water conservation by promoting, sharing and showcasing best management practices
- U.S. Great Lakes States do not have formal state-wide conservation and efficiency plans; some have various conservation and efficiency measures
- Some other U.S. States have aggressive water conservation efforts
- Alliance for Water Efficiency - North American non-profit organization advocates water efficient products and programs; provides information and assistance
- USEPA WaterSense - certifies and labels water efficiency products & services
- Active water conservation programs elsewhere e.g., UK, Australia

What We've heard to date

Monitoring and Reporting

- Establish methodologies for calculating and reporting of water conservation and efficiency performance measures
  - e.g., municipal residential per capita water use, municipal water loss
  - e.g., standard water consumption information on consumers water bills (similar to the electricity bills)

Education and Information Sharing

- Market the water conservation message, including education and outreach and linkages to energy conservation and climate change
- Create new or enhance existing water efficiency leader awards programs

Targets, Benchmarks and Indicators

- Establish performance indicators, benchmarks and potential targets
- Understand the ecological needs for water, using in-stream flow needs as an indicator for example
- Increase water conservation and efficient measures in Ontario government facilities

What We've heard to date

Capacity Building

- Develop sector-specific best practices and tool boxes
- Encourage and/or require water conservation plans with possible regional, area and/or watershed differences and links to Ontario Low Water Response Program
- For municipalities include: distribution leakage, full cost pricing, and metering of all municipally-supplied customers

Incentives

- Set water conservation and efficiency as a criteria for infrastructure funding
- Provide incentives to develop and implement water conservation measures/plans
  - e.g., funding to develop and implement water conservation plans or specific measures such as metering, leak detection and repair

Water Efficient Standards and Technologies

- Update existing and set new water-efficient standards for water-using devices
- Introduce water efficiency labelling
- Promote development and implementation of innovative water-efficient technologies
- Address water restoration
  - e.g., permeability of surfaces, stormwater management

August 2007 Stakeholder Workshop Summary of Themes

- MOE should be a leader in water conservation in partnership with other ministries, stakeholders, agencies, and regulated sectors
- Consider Ontario leadership vs. level playing field with other jurisdictions
- Reflect regional, watershed and sectoral differences
- Include short and long term goals and objectives
- Consider voluntary incentives vs. mandatory requirements
- Improve water rates e.g., full cost recovery, increasing block rates
- Move to full municipal metering of all customers
- Support innovation and water efficient technologies
- Provide education and outreach - focus on biggest opportunities to reduce water use
- Ensure knowledge translation and capacity development
- Address ecological needs for water and water restoration

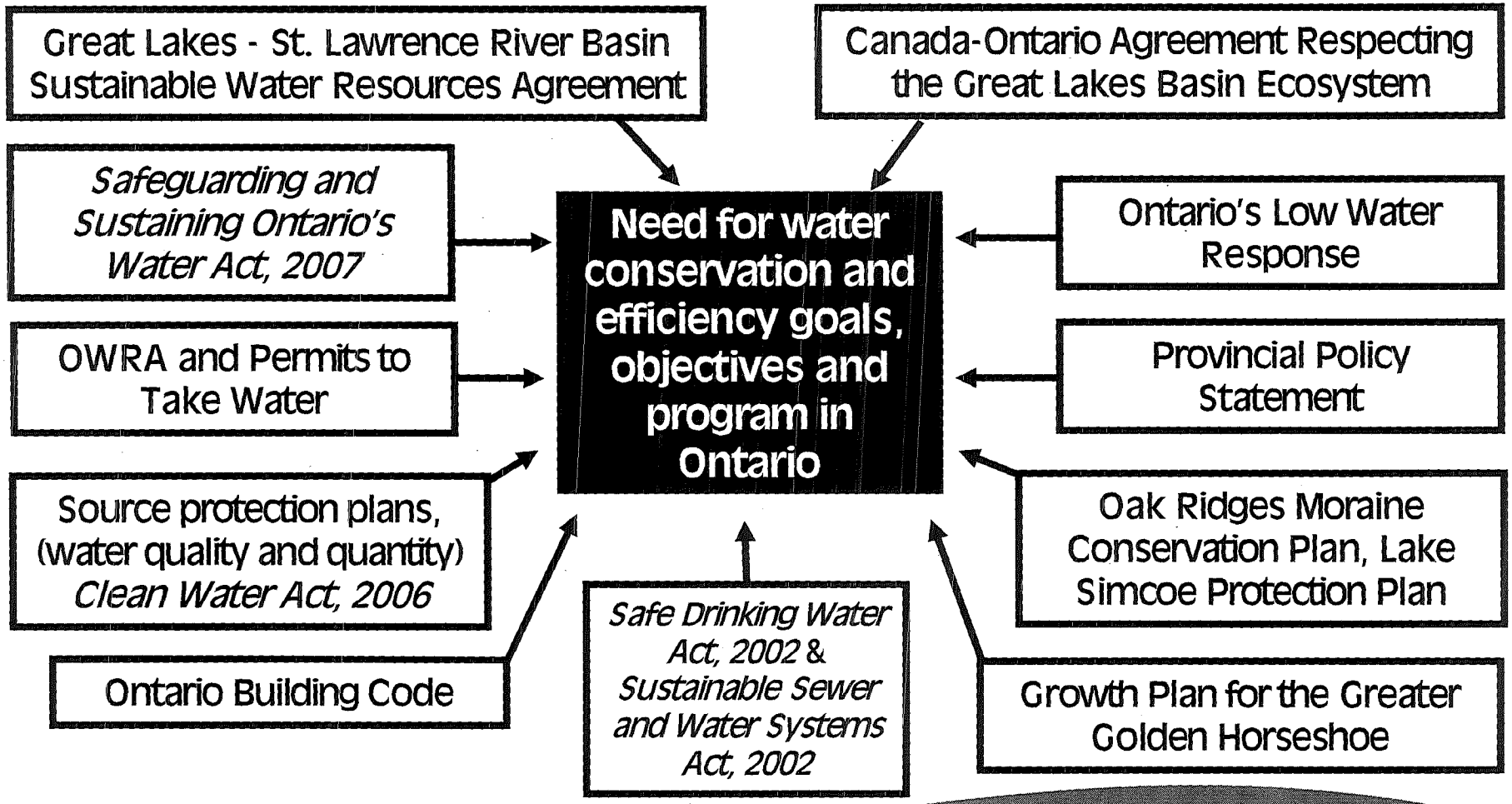
Stakeholder Perspectives

- Overall stakeholders expect a provincial water conservation and efficiency strategy that delivers tangible results (e.g., water and energy savings) and is cost effective for both water managers and water users
- Main challenges in developing a strategy:
  - Broad public perception in Ontario that there is an abundance of water and therefore little need for aggressive conservation efforts
  - Unique water use issues within individual water use sectors (even within individual municipalities and businesses) such that a one-size-fits all approach is inappropriate
  - Focus efforts on water conservation and efficiency measures in the various water use sectors that will yield the most promising, cost-effective results and measurement of those results

Efforts to Develop Ontario's Water Conservation and Efficiency Strategy are Underway

- Inter-ministry Water Conservation and Efficiency Work Group established
- Passage of *Safeguarding and Sustaining Ontario's Water Act, 2007*
  - provides regulation-making authority under OWRA to establish water conservation and efficient use of water
    - e.g., preparation of a water conservation plan
  - modernizes and updates OWRA re: water takings
    - e.g., PTTW conditions such as water conservation measures
- Research projects, jurisdictional scan, business case
  - e.g., industrial water conservation project by University of Guelph, Canadian Manufacturers and Exporters Association, and 4 municipalities
- Idea and information gathering from sectors and interested parties

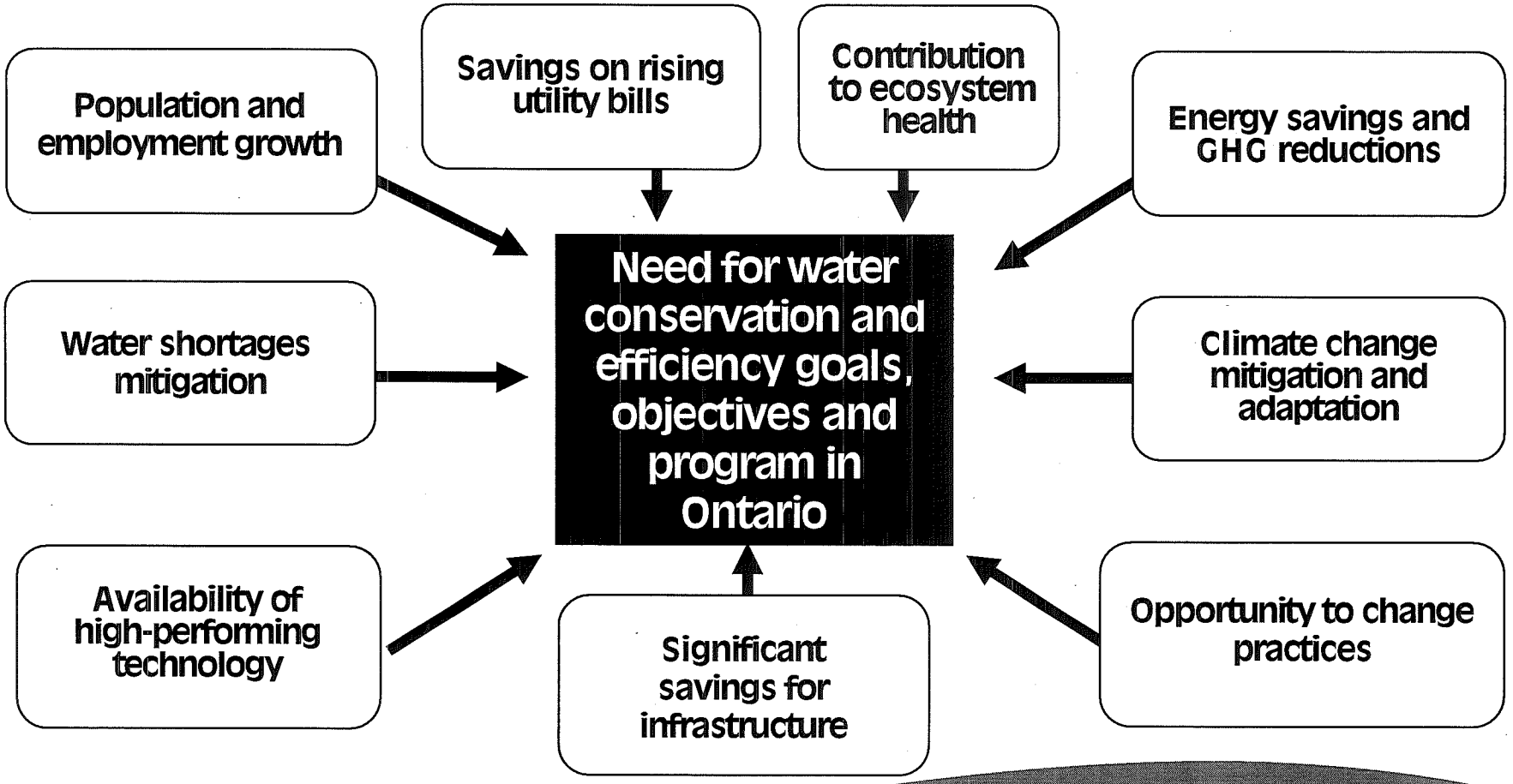
Ontario has a Strong Foundation on which to build a Water Conservation and Efficiency Strategy: Existing Related Initiatives



Great Lakes - St. Lawrence River Basin Sustainable Water Resources Agreement, 2005

- Agreement is a timing driver for the development of a provincial water conservation and efficiency strategy
- Agreement, among other provisions, provides for **stronger water conservation and efficiency measures** and requires:
  - Within 2 years of signing the Agreement
    - Development of Regional water conservation and efficiency objectives (completed)
  - **Within 2 years of diversion ban:**
    - **Water conservation and efficiency goals, objectives, program by each province and state, consistent with Basin-wide goals (in Agreement) and objectives**
      - **Program can be either voluntary or mandatory and must be for all, including existing, Basin water users**
    - Promotion of Environmentally Sound and Economically Feasible Water Conservation Measures
  - Annually:
    - Assessment of programs by each state/province and public reporting
  - Every 5 years:
    - Regional Body review of state/provincial water management and conservation programs
    - Review of basin-wide conservation objectives

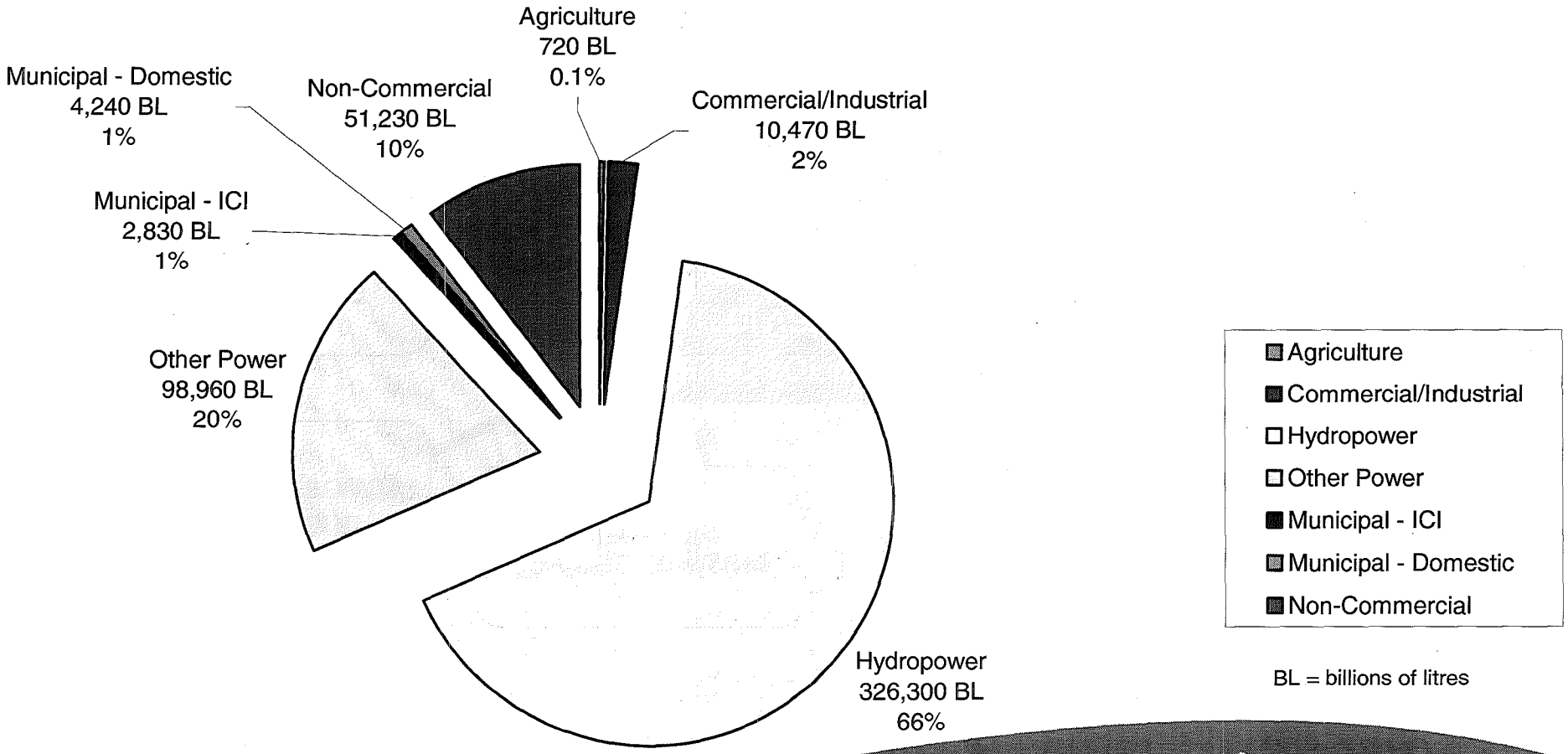
Drivers for Water Conservation and Efficiency



Quick Facts

Water Use in Ontario

Total Permitted Volume of Water Takings in Ontario (BL/yr) 2006



BL = billions of litres

Purpose

1. Discuss drivers for water conservation and efficiency in Ontario
2. Outline Ontario's commitment to develop a water conservation and efficiency strategy
   - Summary of findings from initial multi-stakeholder input
   - Water conservation and efficiency initiatives in other jurisdictions
   - Great-Lakes Basin-wide (regional) goals and objectives

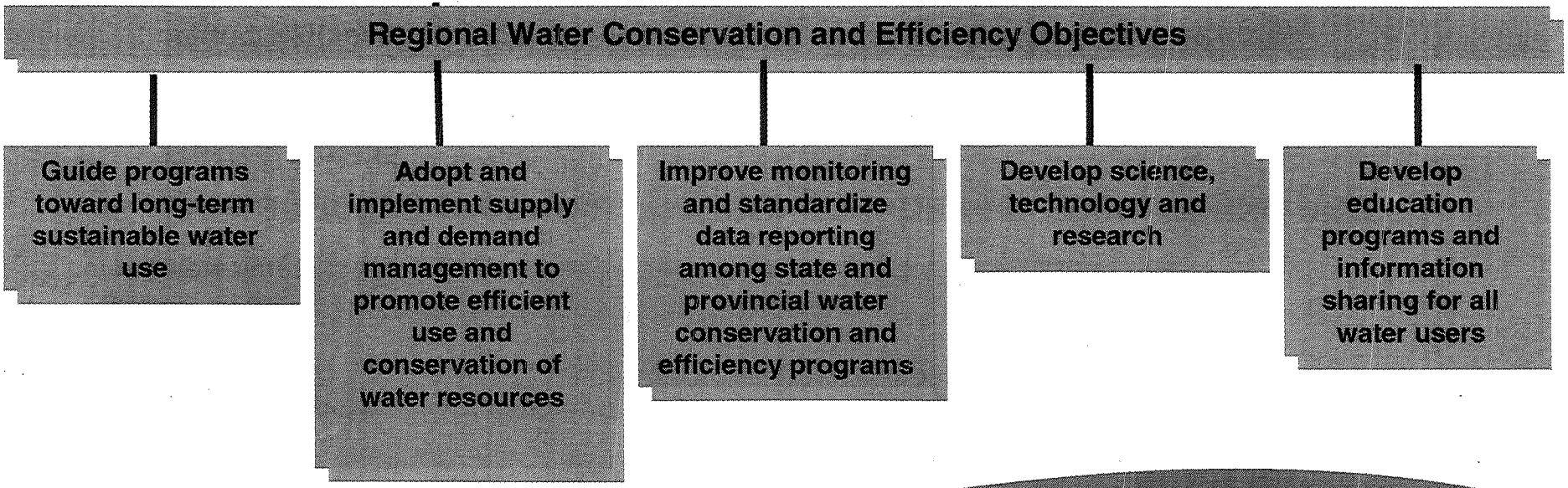
Developing Ontario's Water Conservation and Efficiency Strategy

Presentation and resource material for meeting with the food processing and beverage production sectors

December 1, 2008

Great-Lakes Basin-wide (Regional) Water Conservation Objectives

- Agreement committed the 10 GL jurisdictions to develop the Regional water conservation and efficiency objectives
- These were cooperatively created by the jurisdictions and with public input, and adopted by the Regional Body in December 2007
- 5 overarching objectives:



Regional water conservation and efficiency objectives

Guide programs toward long-term sustainable water use

- Use adaptive programs that are goal-based, accountable and measurable.
- Develop and implement programs openly and collaboratively, including with local stakeholders, Tribes and First Nations, governments and the public.
- Prepare and maintain long-term water demand forecasts.
- Develop long-term strategies that incorporate water conservation and efficient water use.
- Review and build upon existing planning efforts by considering practices and experiences from other jurisdictions.

Regional water conservation and efficiency objectives

Adopt and implement supply and demand management to promote efficient use and conservation of water resources

- Maximize water use efficiency and minimize waste of water.
- Promote appropriate innovative technology for water reuse.
- Conserve and manage existing water supplies to prevent or delay the demand for and development of additional supplies.
- Provide incentives to encourage efficient water use and conservation.
- Include water conservation and efficiency in the review of proposed new or increased uses.
- Promote investment in and maintenance of efficient water infrastructure and green infrastructure.

Regional water conservation and efficiency objectives

Improve monitoring and standardize data reporting among state and provincial water conservation and efficiency programs

- Improve the measurement and evaluation of water conservation and water use efficiency.
- Encourage measures to monitor, account for, and minimize water loss.
- Track and report program progress and effectiveness.

Regional water conservation and efficiency objectives

Develop science, technology and research

- Encourage the identification and sharing of innovative management practices and state of the art technologies.
- Encourage research, development and implementation of water use and efficiency and water conservation technologies.
- Seek a greater understanding of traditional knowledge and practices of Basin First Nations and Tribes.
- Strengthen scientific understanding of the linkages between water conservation practices and ecological responses.

Regional water conservation and efficiency objectives

Develop education programs and information sharing for all water users

- Ensure equitable public access to water conservation and efficiency tools and information.
- Inform, educate and increase awareness regarding water use, conservation and efficiency and the importance of water.
- Promote the cost-saving aspect of water conservation and efficiency for both short-term and long-term economic sustainability.
- Share conservation and efficiency experiences, including successes and lessons learned across the Basin.
- Enhance and contribute to regional information sharing.
- Encourage and increase training opportunities in collaboration with professional or other organizations in order to increase water conservation and efficiency practices and technological applications.
- Ensure that conservation programs are transparent and that information is readily available.
- Aid in the development and dissemination of sector-based best management practices and results achieved.
- Seek opportunities for the sharing of traditional knowledge and practices of Basin First Nations and Tribes.

State of Wisconsin Draft Water Use Efficiency and Conservation Objectives

- State of Wisconsin is the first state/province to develop its water conservation and efficiency objectives
- Draft objectives were posted for public comment at: http://dnr.wi.gov/org/water/dwg/WIGLObjectives.htm
- The draft objectives are:
  - broad and comprehensive
  - flexible, allowing for adaptive management and recognizing that single policy or management approaches may not be appropriate in all situations
- Final objectives expected end of 2008
- The objectives will serve as a foundation for future development of a water use efficiency and conservation program
  - including administrative rule making

Appendix contents

1. Definitions
2. Regional Water Conservation and Efficiency Objectives - Introduction
3. MOE-funded Research Projects
4. Jurisdictional Scan – additional information

Definitions

- Water conservation
  - A reduction in the use, loss or waste of water or an increase in the efficiency of water use

    Source: Ontario Permit to Take Water Manual
- Environmentally Sound and Economically Feasible Water Conservation Measures
  - Those measures, methods, technologies or practices for efficient water use and for reduction of water loss and waste or for reducing a Withdrawal, Consumptive Use or Diversion that:
    - are environmentally sound;
    - reflect best practices applicable to the water use sector;
    - are technically feasible and available;
    - are economically feasible and cost-effective based on analysis that considers direct and avoided economic and environmental costs; and
    - consider the particular facilities and processes involved, taking into account the environmental impact, age of equipment and facilities involved, the process employed, energy impacts and other appropriate factors.

    Source: Great Lakes-St. Lawrence River Basin Resources Agreement

Regional Water Conservation and Efficiency Objectives

INTRODUCTION

Efficient and responsible water use is a cornerstone of sound water management policy, whether the resource is considered abundant or scarce. Efficient use and conservation of our water resources can:

- Ensure equitable access to and long-term availability of water;
- Protect public health and enhance quality of life;
- Minimize impacts of water use to support healthy aquatic ecosystems of the Great Lakes
- and St. Lawrence River Basin;
- Minimize costs related to water and wastewater infrastructure;
- Preserve social and cultural heritage;
- Prevent or minimize conflicts among water users;
- Enhance economic viability and competitiveness of the region;
- Support reductions in energy use and greenhouse gas emissions;
- Improve the ability to manage an uncertain future and growing demand for water; and,
- Demonstrate that the region's citizens are prudent stewards of the resource.

These Basin-wide goals and objectives are intended to complement other water conservation and efficiency efforts consistent with water quality objectives. They will accelerate intergovernmental and other partnerships including, for example, partnerships with Basin Tribes and First Nations to build a greater understanding and consideration of traditional knowledge and practices. Whether accomplished through voluntary, mandatory, or a combination of measures, to be successful, these goals and objectives need to be broadly supported.

Regional collaboration and assistance among all governments, stakeholders and the public will be necessary to ensure that the States and Provinces are collectively able to meet these Basin-wide goals and objectives.

MOE-funded Research Projects

1. Municipal outdoor water efficiency manual and training
   - MOE funded the Ontario Water Works Association to develop a new guidance manual and provide training to help Ontario municipalities reduce unnecessary outdoor water use
   - Manual distributed to municipalities and available to public; 3 seminars held in Fall 2008

2. Climate change and water conservation
   - MOE funded 3 Clean Air Partnership's webinars for the Alliance for Resilient Cities, geared towards water-related issues including the challenge of climate change for water supply

3. Municipal "calculator" to evaluate water conservation measures, energy savings & CO2 reductions
   - MOE funded the POLIS Project on Ecological Governance to develop a municipal tool to forecast and assess the energy conservation and CO2 emission reduction co-benefits of water conservation measures
   - To be completed by March 31, 2009

4. Municipal water use and conservation performance measures
   - MOE funded the Canadian Water and Wastewater Association to investigate and analyze findings on water conservation and efficiency performance indicators and benchmarks currently used in the municipal sector
   - To be completed January 2009

5. Industrial water conservation and efficiency
   - MOE to fund the University of Guelph, working with project partners, to examine industrial manufacturing water conservation and efficiency initiatives
   - To be completed May 2009

Jurisdictional Scan - Canada

- Environment Canada
  - Promotes the wise use of freshwater resources
    - Water conservation/efficiency at www.ec.gc.ca/water
    - Prepared water conservation guidelines for federal facilities
    - Conducts periodic surveys on municipal and industrial water use and pricing
    - In discussions with CSA and others re: water efficiency labelling in Canada
- Canada Mortgage and Housing
  - Efficient water use and conservation technologies are important components of CMHC's Healthy HousingTM commitment to environmental stewardship
  - Funds and highlights recent Canadian and international research and efforts in this field
    - *e.g. Household Guide to Water Efficiency*, 2004
- CCME
  - 1994 National Action Plan to Encourage Municipal Water Use Efficiency
    - Voluntary, momentum lost
  - Water Conservation and Economics Task Group
    - Commissioned 3 reports: jurisdictional scan, economic instruments, performance measures and benchmarking
    - EPPC currently considering Task Group's final recommendations including:
      - creation of a National Water Conservation and Efficiency Outreach and Education Team
      - "Generic Provincial Water Conservation and Efficiency Tool Kit"

Jurisdictional Scan – Canadian Provinces

- Saskatchewan Water Conservation Plan (2006) - Goals and objectives:
  - All users understand value the economic, social and environmental benefits that water provides and recognize the need to conserve it
    - Public education is undertaken by government to reduce water use
    - Partnerships by government with the public, communities and the municipal, agricultural and industrial sectors are established to conserve water resources
  - Citizens, communities and industry have meaningful information about the amount of water they use and how to reduce their own consumption
    - All water users understand measures that can be taken to reduce their consumption
    - Water users understand the standards by which their own use can be measured
    - The collection of water use records by the municipal, agricultural and industrial sectors is expanded
    - Sound information will guide government's policy development on water use
  - Saskatchewan's water resources are used wisely
    - Government departments and agencies lead by example to reduce water use
    - All users conserve water and reduce its use
    - Cost structures for water reflect the need for conservation initiatives, production and capital improvements

Jurisdictional Scan – Canadian Provinces

- Saskatchewan Water Conservation Plan (2006) - continued
  - Partnering with industry, agriculture and communities
    - Partnering with industries includes:
      - Pursue the requirement of water auditing as a condition of provincially issued environmental operating permits and water use permits
      - Investigate water use reduction targets in a manner similar to effluent discharge limits
      - Develop BMPs in partnership with industry association so that the information can be used my their membership
  - Public education and extension, such as
      - Creating awareness of the need to conserve water through a broad education initiative led by the Saskatchewan Watershed Authority
      - Integrate education and extension activities within specific conservation initiatives
      - Co-ordinate the water conservation education and extension activities of government agencies, municipalities, and private sector stakeholders

Jurisdictional Scan – Canadian Provinces

- Saskatchewan Water Conservation Plan (2006) - continued
  - Government leadership and policy, such as:
    - Working towards 100% metering of all municipal domestic water users
    - Develop methods to track other water usage to provide a better understanding of consumption, efficient use and sustainable allocation and the ability to track progress towards conservation targets
    - Demonstrate efficient water use at government facilities
    - Apply the LEED program to the construction of government buildings and apply LEED principles to renovations of existing buildings
    - Work to include water conservation measures in environmental reporting at all registered ISO 14000 SaskPower facilities and when investing in new technologies at power generating facilities
    - Revise water allocation policies to encourage water conservation, address in-stream flow needs and encourage sustainable water-based economic development

Jurisdictional Scan – Canadian Provinces

Water for Life: Alberta's Strategy for Sustainability, 2004

- 3 goals
  - Safe, secure drinking water supply
  - Healthy aquatic ecosystems
  - Reliable, quality water supplies for a sustainable economy
- Key direction: water conservation. Albertans will be leaders in conservation by using water efficiently and effectively
- Short-term (2004 to 2007)
  - Outcome:
    - A broad range of water management tools and techniques are implemented
    - Albertans understand the value of water to the economy and quality of life
  - Actions
    - Establish system for actual water use reporting and monitoring by all sectors
    - Determine and report on the true value of water in relation to the provincial economy
    - Complete an evaluation and make recommendations on the merit of economic instruments to meet water conservation and productivity objectives
    - Establish a public education and awareness campaign on water conservation in Alberta

Jurisdictional Scan – Canadian Provinces

- Water for Life: Alberta's Strategy for Sustainability, 2004 - continued
- Medium-Term (2007 to 2010)
  - Outcome
    - Water management objectives and priorities to support sustainable economic development are established through watershed plans
    - All sectors are demonstrating best management practices and improving efficiency and productivity associated with water use
  - Actions
    - Prepare water conservation and productivity plans for all water using sectors
    - Implement economic instruments as necessary to meet water conservation and productivity objectives
- Long-term (2010-2014)
  - Outcome
    - Water is managed and allocated to support sustainable economic development and the strategic priorities of the province
    - Target: 30% improvement in water use efficiency and productivity from 2005 levels by 2015 (firm targets to be determined by the Provincial Water Advisory Council)
    - Albertans have the knowledge, tools and motivation to implement actions that will maintain or improve the province's water resources
  - Actions
    - Establish an ongoing monitoring program to ensure that all sectors are achieving water conservation and productivity objectives

Jurisdictional Scan – Other Great Lakes Provinces and States

Jurisdiction	Conservation Program	Local Conservation Efforts
Ilinois	• For Lake Michigan water, conservation required and outdoor rules apply during growing season. System owners and end users both required to conserve. Promotion through printed materials. Permittees cannot exceed unaccounted-for-flow of 8 percent.	• Municipal permittees required to adopt ordinances and building code requiring conservation. Required to submit yearly audit form showing unaccounted-for-flow.
Indiana	• None, except during drought.	• Local governments support conservation efforts during drought.
Michigan	• None	• Local governments use drought measures as necessary.
Minnesota	• Permits require all users to be efficient. • Public water suppliers that service more than 1,000 people must have a Water Emergency and Conservation Plan approved by Dept. of Natural Resources. Plans first required in1996 and updated every 10 years. • Water Emergency and Conservation Plan approvals may also include approval for increased water volumes and for new wells planned over the ten year life of the plan. To qualify for the ten year permit approval certain benchmarks or conservation measures are required. • Agricultural irrigators also must have conservation plans.	• Local demand management measures are required to obtain approvals for new municipal wells or increases in authorized water volumes.
New York	• As of 1989 new water supply permits applicants required to have conservation programs. Goal to maintain unaccounted-for-flow water below 15%. Publicity and consumer education required.	• Local entities may provide additional support.
Ohio	• None, except during drought.	• Local entities may provide additional support.
Pennsylvania	• Since 1979 public water suppliers using surface water required to have conservation program. Guidelines for Designing a Water Conservation Program available. Various conservation efforts used.	• Local entities may provide additional support.
Quebec	• None, but provincial ministries provide financial support to local efforts and NGOs. RESEAU-Environment promotes conservation through a variety of methods.	• A range of conservation occurs at local scale, e.g. infrastructure replacement, restrictions on water use, and education programs.
Wisconsin	• None, but conservation plans recommended as part of wellhead protection plans. System losses regulated by Public Service Commission. Plumbing flows regulated by Department of Commerce.	• Local entities may provide additional support.

Jurisdictional Scan – USEPA

- *U.S. Energy Policy Act of 1992* mandates the replacement of old plumbing devices to more water-efficient devices. It establishes maximum water use levels for:
  - toilets (1.6 gal/flush - 6 litres)
  - urinals (1 gal/flush - 3.8 litres)
  - showerheads (2.5 gal/min - 9.5 l/min)
  - faucets (2.5 gal/min – 9.5 l/min)

Ontario Building Code - Buildings constructed after Jan. 1, 1996 required to install:

- Toilets (6 litres)
- Urinals (3.8 litres)
- Showerheads (9.5 litres/minute)
- Faucets (8.35 litres/minute)

- Through USEPA and the *Safe Drinking Water Act*, federal government has initiated water conservation efforts in partnership with state and local governments
  - USEPA required to publish guidelines for the development of water conservation plans which are designed to be used by public water systems (see slide 33)
  - States may require water systems to submit a water conservation plan consistent with the USEPA guidelines or any other guidelines as a condition of receiving a loan for infrastructure improvements for drinking water systems
  - In the 2003 survey of Great Lakes public water systems, less than 40% of respondents used the USEPA or any other guidelines

Jurisdictional Scan – Other U.S. States

California

- Californians are leaders in the USA in water use efficiency measures such as conservation and recycling
- In many regions, population increase has not resulted in a proportionate increase in water use
  - e.g. In 2003, Los Angeles reported that water conservation plays an important part in keeping the City's water use equivalent to levels 20 years ago

California Urban Water Conservation Council

- Created to increase efficient water use statewide through partnerships among urban water agencies, public interest organizations, and private entities
- Nearly 100 urban water agencies, environmental groups and businesses signed a historic Memorandum of Understanding (MOU) in December 1991. The number of signatories has grown to 337. They have pledged to develop and implement 14 comprehensive conservation BMPs:

Residential Survey Programs	Residential Plumbing Retrofit	System Water Audits	Metering with Commodity Rates
Large Landscape Conservation	High Efficiency Clothes Washers	Conservation Pricing	School Education Programs
Commercial Industrial Institutional	Public Information Programs	Conservation Coordinator	Water Waste Prohibitions
Wholesaler Agency Assistance Programs		Residential Ultra Low Flush Toilet Replacement Programs	

Water Conservation Fund 1988

- Loans to local agencies for capital for water conservation projects and feasibility studies

Water Conservation in Landscaping Act 1990

- Local agencies required to have landscape ordinances by January 31,1993

California Water Plan Update 2005-2030

- Water use efficiency will continue to be a primary way to meet increased demand, by such means as increasing:
  - levels of urban and agricultural water use efficiency e.g. water efficient fixtures, landscaping, irrigation
  - recycled municipal water and expand its uses e.g. landscaping, industrial uses
- State-wide water-efficiency programs include appliance standards, labelling and education
- Suggests establishing a goal for per capita water use in California

Jurisdictional Scan – WaterSense

- WaterSense is a voluntary public-private partnership program sponsored by USEPA
- Mission: to protect the future of nation's water supply by promoting and enhancing the market for water-efficient products and services
- USEPA develops national specifications for water-efficient products, services and national brand
  - e.g. high-efficiency toilets, bathroom sink faucets, landscape irrigation services, weather or sensor-based irrigation control technologies, showerheads
- In order to be considered for the label a product area must be able to:
    - Realize water savings on national level
    - Perform as well or better than their less efficient counterparts
    - Be about 20% more efficient than the average counterpart
    - Achieve water efficiency through several technology options
    - Be effectively differentiated by the WaterSense label
    - Be independently certified
    - Provide measurable results

Best Management Practices
Industrial and Commercial Sectors

- "Of all water conservation practices, those specific to industrial water conservation are the least likely to be required by statute because there is tremendous variability among industries in terms of how water savings can be accomplished. Not all states surveyed have developed water conservation standards specific to industrial facilities, but experiences in some states indicate that they key to industrial water conservation is to develop industry-specific and/or site-specific practices, or to require that industries develop water conservation practices to the greatest extent possible, based on technical and economic feasibility."
- "Because water saving potential is highly industry specific and site specific, the most common strategy for industrial water conservation is to conduct an on-site audit, in which water use and water-related costs are calculated and the feasibility of implementing more water-efficient processes or technologies is analyzed. Although initial investments may be large, water savings can often result in investment paybacks of a year or less."

Source: *Water Conservation, Efficiency and Reuse. A Report to the Georgia Environmental Protection Division*. Vinson Institute of Government, University of Georgia, 2006.

Water Conservation Plans
Industrial and Commercial Sectors

Georgia

- All applicants (except agriculture) for new or increased withdrawals must contain a water conservation plan approved by the state and based on state guidelines
- Water conservation Rules allow water systems flexibility in determining what programs are needed and would be cost effective for their water system
- Applicants must develop and implement effective water conservation programs in accordance with accepted standards for their industry and which address local water resource constraints, cost/benefit analysis, etc.
- The following basic elements should be addressed in any water conservation program: Water Loss, Water Demand Management, and Long Range Planning
- Permittee must submit a 5-year progress report that outlines actions and/or improvements made to conserve water and reduce water loss. Includes reporting
  - gallons of water withdrawn per quantity of product produced
  - actions in five areas: leak detection and/or repair; meter Installation, calibration or replacement; method for reusing/reclaiming process water for use in other areas of operation; Installation of new technology to increase water efficiency; and other water conservation actions

Water Conservation Plans
Industrial and Commercial Sectors

Arizona

- Department of Water Resources required to establish conservation requirements based on the latest commercially available conservation technology consistent with reasonable economic return
- All industrial users are required to avoid waste and make efforts to recycle water
- Single pass cooling or heating is not allowed unless water is reused, and low-flow plumbing fixtures are required as state or local plumbing codes mandate
- During the 2000-2010 period, industrial users are required to use low water use landscaping plants where feasible and to water with efficient irrigation systems.
- **Categories of conservation requirements are:**
  - General industrial conservation requirements - applies to all industrial users
  - Turf-related facilities - annual allotment based upon the number of acres of turf, bodies of water, and low water use landscaping
  - Sand and gravel facilities - operating standards must develop a conservation plan
  - Large-scale power plants - water efficiency standards for their cooling towers
  - Large-scale cooling facilities - water efficiency standards
  - Dairy operations - annual allotment based on herd size, or may apply for a BMP program
  - Cattle feedlot operations - annual allotment based on herd size
  - New large landscape users - landscape efficiency design standards
  - New large industrial users - water use efficiency and conservation plan requirements

Jurisdictional Scan – United Kingdom

- "Future Water: The Government's water strategy for England", released Feb. 2008
  - Per capita water consumption to be reduced by 20% from 150 l/day to 120 l/day by 2030 through efficient technology, metering and tariffs
  - "Climate change means that we will all have to value water more as we find a fairer way of paying for it."
    - water industry emits under 1% and hot water use in homes emits over 5% of the total UK GHG emissions
  - "No one approach will work for all areas, but we must find ways of improving efficient, and of reducing demand and wastage."
  - Reduce leakage – water industry must demonstrate its commitment to demand management by meeting its leakage reduction and water efficiency targets (one-quarter of all water supplied is lost to leakage)
  - Reduce demand through:
    - better building design (e.g. will amend the Building Regulations to include a new requirement for a minimum "whole building performance" standard of water efficiency in new homes: 125 l/p/d; and voluntary Code for Sustainable Homes will be applied to new government-funded social housing: 105 l/p/d representing current best practice in water efficiency without requiring water reuse or rainwater harvesting)
    - more efficient appliances
    - improving industrial processes
    - move increasingly towards water metering in areas where supplies are under pressure (could mean near universal metering in water stressed areas – currently only 30% of households in England are metered)
- Envirowise, a government-funded program of free, confidential advice to UK businesses. Independent, practical and proven guidance is available through a dedicated, free helpline; on-site visits delivered by a nationwide team of expert advisors; information resources from case studies to best practice guides; over 200 events a year, from intimate seminars to major exhibitions; and an informative website
- Water Savings Group, established in 2005, will continue to bring together key water sector organizations to develop a range of measures to reduce household per capita consumption and also review measures in place to promote water efficiency in industry and commerce

WATER CONSERVATION AND WATER CHARGES
Food Processing and Beverage Production Sectors Meeting
December 1, 2008

Provincial staff met with stakeholders from the food processing and beverage production sectors on December 1, 2008 in Mississauga to discuss the development of Ontario's water conservation and efficiency strategy. A secondary purpose of the meeting was to discuss a proposed 'Phase 2' of water taking charges for commercial and industrial water users. Nine participants attended the session representing both individual companies and trade associations (see Attachment 1 for the list of participants). The goal of the meeting was to present attendees with an overview of both the conservation and Phase 2 water charges components and to secure their input and feedback on the key issues (see Attachment 2 for a copy of the meeting Agenda).

Key questions guided the discussion of conservation and Phase 2 charges. Refer to Attachment 3 for the list of questions.

Although there were numerous and varied responses to key questions, some common themes emerged from the meeting. Common themes are those issues and/or recommendations for which there was general agreement amongst session participants. These themes and the proceedings from the consultation meeting are summarized in Table 1 through Table 3 of this report.

TABLE 1 – Water Conservation and Efficiency - General

1. *What is your sector currently doing in regard to water conservation and efficiency?*	
Themes	▪ **Where conservation practices employed they have been driven by financial considerations, social responsibility and certification programs (e.g., ISO 14000)** ▪ **Larger companies tend to have conservation programs, while small and mid-sized facilities less likely to have them.**
General / context	▪ Sources for bottled water are 90% spring 10% municipal – springs are privately owned and not metered. ▪ It takes between 1.3 -1.5 L of water to produce a bottle of water. ▪ 97% of the water produced is consumed. ▪ Water use varies seasonally in some industries and must be taken into consideration. ▪ Some companies there is little or no focus on water efficiency. ▪ Brewing industry has reduced water use by 29% since 2003 ▪ Refreshment (not bottled water) industry drawing from municipal sources. ▪ Cost savings and social responsibility both considerations for conservation. ▪ Social responsibility is a motivator for conservation – business tied closely to the consumer therefore important to be seen as forward thinking ▪ Food and Beverage: would suggest that conservation addressed in larger companies but overall, industry-wide, about 10% have conservation programs.
Initiatives/programs	▪ Conservation initiatives based on proper valuation through ISO 14000 – develop/use conserving technologies accordingly. ▪ On-going process - continually look for ways to achieve water efficiency ▪ There are set conservation targets. ▪ Employee incentive program ("Energy Day") – employees provided with check sheets complete a walk-through and contribute ideas for energy and water conservation and are rewarded for ideas that result in savings. ▪ Employees in best position to contribute conservation ideas because they are on the front-lines and know the processes. ▪ Various initiatives within the facilities, e.g., timers on hoses, changing clasps on hoses to reduce leakage, efficient bottle washing changes, etc. ▪ Have energy conservation programs that also result in water savings – such programs common in larger companies, less so is small and mid-sized ones. ▪ Have a model code established in 2000 with targets for conservation – available on web at www.cbwa.ca ▪ Spirits industry: some meet the global standards in their facilities. ▪ Energy wise program from Union Gas also covers water.

1. (Cont'd.) ***What is your sector currently doing in regard to water conservation and efficiency?***	
Issues/considerations	▪ Conservation initiatives are based on ROI. The law of diminishing returns applies – currently some companies have achieved a high level of water conservation and further efforts are not cost effective on a stand alone basis. ▪ Financially motivated changes – conservation related changes must make financial sense ▪ No capacity within spirit industry to absorb additional costs ▪ Need a cultural shift – conservation education/outreach critical ▪ Even with conservation programs in place, new business (growth) will result in overall increase in water use – must be considered ▪ Water use varies between types of industries in sector, therefore sector-wide (beverage & food processing) approach to conservation not viable ▪ Water conservation initiatives are specific to a particular type of industry/process.
Other	▪ The International Council of Bottle Water Associations (ICBWA) is compiling a base line study for carbon and water footprints and will use the baseline to inform and move forward on conservation. ▪ Baseline study to be completed in 2009 ▪ Guelph Food Technology Centre assists food/beverage industry with facility audits/assessments, establishing environmental management systems and training ▪ Technology centre currently validating water savings for Toronto's ICI reduction program.
2. ***What are the current Best Management Practices for water conservation and efficiency in your sector?***	
Themes	▪ **None**
General / context	▪ Certification initiatives/programs (e.g., energy conservation programs, ISO 14000, etc.) can help drive water conservation.
BMPs	▪ ISO 14000 (larger companies and a corporate-wide initiative). ▪ Third party audits.
Issues / considerations	▪ ISO 14000 standards are a driver for conservation (mostly in larger companies, ISO can be quite burdensome for small and mid-sized companies). ▪ Tools and processes that ISO offers are good and can be adapted but ISO certification should not be a requirement. ▪ Need to first establish a benchmark for facilities – employ meters in facilities for a few weeks to determine actual water use before establishing conservation targets. ▪ Behavioural changes important for achieving water use reductions. ▪ Regs. can be a stimulus for BMPS. ▪ Voluntary programs are effective and most viable. ▪ Water conservation has to be a corporate-wide initiative in order for facilities to undertake – head office has to support. ▪ Proprietary issues a concern, need confidentiality agreements with 3rd party providers, also what if a facility is out of compliance? ▪ Facilities need a reasonable time to comply.
Other	▪ ICBWA baseline study will be used to inform conservation initiatives moving forward.

3. *What should be key components of a water conservation program for your sector?*	
Themes	▪ **Must be a science-based approach.** ▪ **Programs should be based on science and site specific with priority focus on high and medium demand watersheds.** ▪ **Must be achievable with a reasonable ROI.** ▪ **Awareness component is important – need to address behaviour.**
General / context	▪ The elements of a science-based approach are: focus on high risk watersheds, establish baseline (through 3rd party or self assessment), through assessment determine actual capacity for conservation (not an arbitrary target) and need scaling of where dollars could go to cost effectively increase efficiency
Components/approach	▪ Establish a model (form) that companies can complete to establish a baseline, determine actual potential for conservation and to provide a means for companies to indicate what conservation initiatives they have already undertaken (and be given credit for those initiatives) ▪ Facility changes and new technology can be costly; therefore there should be an incentive or incentives for initiatives beyond a certain level. ▪ Training to increase awareness and address behavioural issues (i.e., power washing floors instead of sweeping). ▪ Some type of self-assessment tool which also enables companies to show the have achieved water conservation (while others have not) ▪ Consideration should be given to a credible 3rd assessment ▪ Third party could be a LCD (local utility) ▪ Audits/assessments are expensive – need to provide financial support/incentive ▪ Plan does not have to solve the problem in 2 years, depending on results from assessment; plan may be implemented over a 10 year period. ▪ Some mechanism to share information on effective approaches, technologies, etc. that are not proprietary – possibly gov't funded case studies.
Issues / considerations	▪ Need to consider technical capacity – how much water conservation is achievable or viable. ▪ Health and safety will always be given priority over conservation. ▪ Where is the biggest bang for the buck? (e.g., municipalities having leaks that are 15% of their total water use) ▪ Province needs to learn/understand what the potential is for conservation in each industry.

4. *Who should be required to prepare a water conservation plan and implementation program?*	
Themes	**Phase-in assessments / plans, focusing on high and medium demand watersheds.** **Harmonization of regulations and roles and responsibilities of parties (MOE, CAs, etc.)**
General / context	▪ Certification offers credibility and consistency ▪ Target areas based on risk – watersheds under greatest pressure
Who to prepare	▪ Work through associations – need to establish a baseline for water use and determine what the actual potential is for conservation. ▪ Accessing industry through associations addresses confidentiality; some merit to the idea of certified practitioners (e.g., If you want to be eligible for incentives that you must used recognized third party) ▪ Across the board, all should be developing conservation plans ▪ Start with larger users (Permit holders – 50,000 litres/day or more) for development of a conservation plan.
Issues/consideration	▪ Have to establish standardized reporting protocol for consistency ▪ Ensure confidentiality issue is addressed. ▪ For any new process, need standardization and certification of practioners ▪ Need clarity around authority – currently CA's, municipalities and provincial ministries all have various responsibilities and/or regulations pertaining to water use and water conservation. ▪ Metering should be first step in establishing baseline – some facilities meter others don't.
5. What barriers to the preparation and implementation of a plan would need to be overcome?	
Themes	▪ **The cost of achieving water conservation must make financial sense with a reasonable payback in a reasonable time (ROI)** ▪ **Lack of harmonization of regulations, guidelines and other government initiatives creates some confusion** ▪ **Small and mid-sized companies may lack the in-house, resources, awareness and/or commitment.**
General / context	▪ Larger companies have greater capacity to respond than smaller and mid-sized one, but ROI applies.
Barriers	▪ Cost – there must be a ROI ▪ Confidentiality and protection of proprietary information ▪ Culture / behaviour often not conservation oriented ▪ Lack of understanding, education and awareness ▪ Industry dealing with different regulations/requirements of multiple gov'ts and agencies (e.g., CAs, MOE, municipality, etc.) ▪ Limited capacity and resources – particular an issue for small and mid-sized companies ▪ Time – have limited time to work with third parties for assessments and follow-up
Issues / considerations	▪ If a company doesn't have resources should be able to access a fund help offset cost to undertake initiatives (e.g., Ontario Power Authority's funding program for energy conservation) ▪ Harmonization of incentives – one-stop shop to access funding ▪ Consider Environmental Farm Plan model which allows stacking of incentives.

6. What targets or performance measures should be set for Ontario's entire strategy and/or for each sector?	
Themes	▪ Starting point should be the sustainability of the source – any targets should be based on the capacity of the watershed. ▪ Focus resources (funding, initiatives, etc.) where they will have the greatest impact – watersheds under greatest pressure.
General / context	▪ Information on Ontario watersheds should be available from hydrogeology studies and should be the starting point for establishing science-based targets.
Targets / measures	▪ Begin with the sustainability of the watershed and back out to individual users – what savings required to protect the viability of the watershed? ▪ Work with individual water users in priority watersheds. ▪ Facility audits / assessments should be first undertaken in those facilities located in at risk watersheds. ▪ Ecological requirements should inform targets - water budgets are available and could assist in this process ▪ Audits/assessments should be a priority in critical areas (watersheds).
Issues / considerations	▪ What do we require as a province for future sustainability? / What is the future capacity? – Need data (solid watershed science) and knowledge about needs of eco-system before targets can be set. ▪ Business should expect available funds to go to the threatened/high risk watersheds and where appropriate, to the companies located in those watersheds.

TABLE 2: Water Conservation and Efficiency – Goals, Objectives & Actions

1. *Water Should be the goals and objectives for Ontario's water conservation and efficiency strategy? (FRONT LINE OBJECTIVES)*	
Themes	▪ **Primary objective should be the sustainability of the resource on a watershed basis.** ▪ **"Best available science" must inform decisions and the setting of program goals and objectives** ▪ **Program goals and objectives must be based on sound science and knowledge and should drive prioritization and decision-making for any conservation program.**
General / context	▪ It will be an on-going process, evolving with new information and understanding of watersheds, their capacities, etc. ▪ Local municipalities, CAs also have data/information on watersheds, water use, etc. ▪ Gov't. fund to identify viable technologies and how they can be adapted for water conservation. ▪ Reward research/innovation in companies practicing conservation.
Goals and objectives	▪ There should be short-, medium- and long-term program goals and objectives. ▪ Initially program should be voluntary. ▪ Awareness and education should be included.
Issues / considerations	▪ How are watersheds defined – how specific, to what level? ▪ Food safety is the priority may make some goals/objectives difficult to achieve. ▪ Consider a collaborative approach that builds on existing programs (i.e., energy conservation initiatives).

2. *What actions and/or commitments should be included in the strategy to active goals and objectives for:*	
(a) Technology-based measures	
Themes: Technology-based measures	▪ **Need improved measuring capacity – more and better quality metering.** ▪ **Universal application of metering**
General / context	▪ Consider the application of GIS technology to determine status of watersheds (from PTTW database)
Measures	▪ Case studies to assist in shift of corporate practices/technologies (i.e., this is what the practice/technology means in terms of costs, paybacks, etc). ▪ Identify approaches/technologies in companies that are willing to share information (where confidentiality isn't an issue). ▪ Need specific data – the current practice in industry is moving away from theoretical (calculations based on assumptions) to actual measurement/metering. ▪ Measure anywhere where it is possible to measure to help build data base/universal application of metering.
Issues / considerations	▪ Needs to be a corporate-wide initiative or it won't happen because facilities compete for capital. ▪ Do not look at water conservation technologies alone; consider energy conservation since many energy conserving practices/technologies result in water savings.
(b) Behavioural or management practices	
Themes	▪ **Establish an employee-based program where they identify conservation opportunities (water and energy)**
Practices	▪ "Water conservation day" – employees given information, tools, support to do water audit (employees know the processes the best and can provide valuable insight) ▪ Build conservation performance targets into personnel performance review with financial reward program for those employees who generate water and cost savings. ▪ Establish GOPs (Good Operating Practices) for water conservation. ▪ Management system approach that allows identification of GOPs with greatest return, can determine suitability of GOP and its application – mostly applies to larger companies. ▪ A recognition or award program for companies achieving water conservation. ▪ Consider combining with other environmental/energy award instead of a stand alone program (e.g., a "best in class" for water conservation). ▪ Consider a labelling program for products produced by facilities practicing water conservation
Issues /considerations	▪ If a labelling program, need to have real meaning and broad recognition. ▪ For a labelling program, need sound measurements, monitoring, etc. – cannot be construed as "green washing"

2 (cont'd). *What actions and/or commitments should be included in the strategy to active goals and objectives for:*	
(c) Educational initiatives	
Initiatives	▪ Extension specialists to help companies implement – takes burden off of already resource taxed companies. ▪ Resources needed not just money also skill/knowledge
Issues / considerations	▪ Conservation not a consideration in most small and mid-sized facilities – lack knowledge, resources, etc. ▪ Small and mid-sized companies may find it difficult even to get time to work with consultant/3rd party/extension specialist.
(d) Regulatory initiatives	
General / context	▪ GOPs may be driven by regulations but also part of corporate culture
Initiatives	▪ Initially should be a voluntary approach
Issues / considerations	▪ Regulatory will drive practices in facilities in province but will not affect Corporation
(e) Financial incentives	
Incentives	▪ A reduced water charge for companies employing good conservation practices. ▪ If a company doesn't have resources should be able to access a fund help offset cost to undertake initiatives (e.g., Ontario Power Authority's funding program for energy conservation) ▪ Funding to identify viable conservation technologies.
Issues / consideration	▪ Any gov't-based financial incentives need to be uniform – cannot favour one user over another (e.g., cost for kilowatt hour of electricity is the same for all users). ▪ Need to recognise that companies must compete globally - additional cost for water and for water conservation initiatives for a business in Ontario that must compete with one in another jurisdiction that does not pay or have to invest in water conservation. ▪ Need to come up with a balance between becoming green and pushing local companies out of business because of financial constraints/burdens.

TABLE 3: Water Charges

1. *Based on the implementation schedule, are there any issues or concerns regarding the timeline?*	
Themes	▪ **No concern raised on the timeline amongst meeting participants**
2. *In terms of reporting water use volumes, to what degree, if any, is there sub-metering of water in your sector/company?* ***- Can water allocations/use within a facility's water system be readily distinguished?***	
General / context	▪ Should be a goal to have metering to understand water use within facilities. ▪ Large companies have metering in their facilities and know water use within their system; smaller/mid-sized companies may not. ▪ Onus should be on company (user) to provide information on water use within facility.
Issues / considerations	▪ Charge universal, higher rate for consumptive use, then provide credit for water put back into watershed – will need to ensure water quality through monitoring/verification. ▪ Approach outlined in bullet above puts a large burden on industry. ▪ Is metering consistent? This speaks to the need for third party verification. ▪ Must address quality of water returned to the watershed. ▪ How would MOE deal with the water quality issue if it gives credit for non-consumptive use? ▪ Third party can be used to get accurate data on water usage and not theoretical data. ▪ Where water is returned to the system, sub-metering doesn't matter, the only issue is the quality of the returning water. ▪ Mapping should include surface and ground withdrawals.
3. *Are there any issue or concerns regarding the proposed charge rates?*	
Themes	▪ **Industry does not support cost pass-through.** ▪ **MOE should establish a technical (engineering) panel to understand technology and inform decision-making.**
General / context	▪ Rates are there to conserve – those conserving should not be charged or should be credited while those not conserving should be penalised. ▪ Need a sector approach – look at what water is being used, source of supply, etc., to determine best approach. ▪ There should be an appeal process – charged a rate but if able to demonstrate conservation can appeal the charge. ▪ Funding should be available to encourage small companies to conserve while those already conserving should not be charged. ▪ Will drive away small businesses in the province.
Issues / considerations	▪ Over the longer term cost pass-through becomes a tax and there are issues of controlling costs, use of dollars collected, etc. ▪ If paying for water taken, no incentive for conservation – paying for all water taken therefore why reduce consumptive use. ▪ Should there be a provincial water board as is the case for energy? ▪ Would the cost of implementing the conservation aspect of the MOE program come from the charges?

ATTACHEMENT 1

Water Conservation and Water Charges
Food Processing and Beverage Production Meeting

LIST OF PARTICIPANTS

Participant	Affiliation
Armstrong, Charlotte	Labatt (ZBS North America)
Brethour, Cher	Guelph food Technology Centre
Challinor, John	Nestle Waters Canada
Goetz, Jim	Food & Consumer Products of Canada
Golberg, Mark	Globaltox
Graham, Jane	Alliance of Ontario Food Producers
Lambert, Mark	Hiram Walker
van Heyningen, Anthony	Refreshments Canada
Westcott, Jan	Spirits Canada

Water Conservation and Water Charges
Food Processing and Beverage Production Discussion

Date: December 1, 2008

Location: Delta Meadowvale, Garden Studio 3
Mississauga

AGENDA

8:30 AM	Arrival and registration (continental breakfast provided)
9:00 AM	Welcoming remarks and introductions
9:15 AM	Review of session agenda and format for the day – comments and questions
9:30 AM	Overview – Developing Ontario's Water Conservation and Efficiency Strategy: - Summary of findings from initial multi-stakeholder consultation - Water conservation and efficiency in other jurisdictions
10:00 AM	Exploration and discussion – key questions
12:00 PM	Lunch (provided)
1:00 PM	Review of Great Lakes Basin-wide goals and objectives
1:15 PM	Exploration and discussion – key questions
2:00 PM	Overview – Phase 2 Water Charges - Previous consultations and resulting charge framework - Specific elements of Phase 2 - Proposed implementation schedule - Financial analysis to date
2:30 PM	Exploration and discussion – key questions
4:00 PM	Wrap-up and next steps

Water Conservation and Water Charges
Food Processing and Beverage Production Meeting

KEY QUESTIONS

Water conservation and efficiency – general:

1. What is your sector currently doing in regard to water conservation and efficiency?
2. What are the current Best Management Practices for water conservation and efficiency in your sector?
3. What should be key components of a water conservation program for your sector?
4. Who should be required to prepare a water conservation plan and implementation program?
5. What barriers to the preparation and implementation of a plan would need to be overcome?
6. What targets or performance measures should be set for Ontario's entire strategy and/or for each sector?

Water conservation and efficiency – goals, objectives and actions:

1. What should be the goals and objectives for Ontario's water conservation and efficiency strategy?
2. What actions and/or commitments should be included in the strategy to achieve the goals and objectives for:
   - Technology-based measures?
   - Behavioural or management practices?
   - Educational initiatives?
   - Regulatory initiatives?
   - Financial incentives?

Water charges:

1. Based on the implementation schedule, are there any issues or concerns regarding the timeline?
2. In terms of reporting water use volumes, to what degree, if any is there sub-metering of water in your sector/company?
   a. Can water allocation/use within a facility's water system be readily distinguished?
3. Are there any issues or concerns regarding the proposed charge rates?

Great Lakes St. Lawrence River Basin Sustainable Water Resources Agreement

DRAFT MEETING NOTES

Water Conservation and Water Charges
Tourism, Golf Courses and Irrigation (non-agricultural)
December 9, 2008

Provincial staff met with stakeholders from the tourism, golf course and commercial irrigation sectors on December 9, 2008 in Toronto to discuss the development of Ontario's water conservation and efficiency strategy. A secondary purpose of the meeting was to discuss a proposal for a second phase of water charges for industrial and commercial water users. Six participants attended the session representing both individual companies and trade associations (page 10). The goal of the meeting was to present attendees with an overview of both the conservation and Phase 2 water charges components and to secure their input and feedback on the key issues.

Key questions guided the discussion of conservation and Phase 2 charges (page 12).

Although there were numerous and varied responses to key questions, come common themes emerged from the meeting. Common themes are those issues and/or recommendations for which there was general agreement amongst session participants.

DRAFT MEETING NOTES

Comments raised during the water conservation and efficiency presentation:

- Some municipalities require golf courses to adhere to the guidelines developed for golf courses under the Audubon Cooperative Sanctuary Certification Program for Golf Courses.
- Requirements for Integrated Pest Management will impact how water is used on golf courses.
- MOE needs to look more holistically at its approach rather than deal with pesticides and water separately.
- Golf course representatives raised concerns that Source Protection Committees are over stepping their boundaries; they also wondered about the efficacy of OLWR.
- Asked how reductions would be measured, what would the benchmark be?

Table 1 – Water Conservation and Efficiency - General

1. What is your sector currently doing in regard to water conservation and efficiency?	
Themes	▪ **New versus old golf courses and irrigation systems** ▪ **Golfer perception** ▪ **Water-associated energy use**
General/context	▪ There's a lack of consistent monitoring between courses ▪ Golfers, especially in private clubs want green, perfect courses, yet there is an ecological cost of "wall to wall" green ▪ There is a broad range across courses in terms of size, budget, green fees, ownership and operating mindset which affects the interest in and financial resources available for improved water use efficiency, particularly for existing courses
Initiatives/Programs	▪ Are looking at onsite opportunities for conservation and/or water reuse/recycling ▪ Some new courses use closed-loop equipment washing system (can cost $45-50K)
Issues/ Considerations	▪ New courses have up-to-date systems, that are metered and may be capable of sub-metering (water efficiency is a consideration on the set-up of new courses) ▪ Older courses may have leaky systems and are generally harder and more costly to upgrade ▪ Older courses may not be metered ▪ Retrofitting irrigation system might require increase in green fees which might result in lost clientele ▪ Need to condition players – courses don't have to be manicured from edge to edge ▪ High water use makes for high electricity bills ▪ Owners are concerned about cost to stay in business, which is already rising with the Integrated Pest Management accreditation requirements and continuing education costs ▪ Want credit for past efforts to reduce water use
Other	▪ Looking at opportunities for reuse/recycling, but coming

	up against regulatory burden ▪ Are creating cultural shift across golf courses industry, but it is taking time ▪ There is a commitment to environmental responsibility: superintendents see themselves as stewards
2. What are the current Best Management Practices for water conservation and efficiency in your sector?	
Themes	▪ **There are available BMPS** ▪ **Use of rainwater-harvesting and swales/recontouring to recapture water**
General/context	▪ No protocols in place to allow innovations like rainwater-harvesting and swales ▪ There are over 800 courses existing in the province
BMPs	Golf Courses ▪ Integrated Pest Management ▪ Ontario-specific BMPs could be put together from existing BMPs ▪ Recontour to capture water ▪ Make sure not to skimp on soil structure ▪ Need something on rainwater harvesting ▪ There needs to be accreditation for irrigation installers ▪ Should be some allowance for customization ▪ Lose a lot of water from leaky pipes – audits would help to identify leaks and opportunities for improvement and could be done before a PTTW is issued for a new course Landscape Irrigation ▪ A "wild west" with no regulation ▪ Estimates that there are over 10,000 irrigation systems for industrial and commercial properties with no maintenance of these systems ▪ LEED is driving the need for efficiency ▪ Are using rainwater as an "appropriate" source of water for irrigation ▪ There are many efficiencies available ▪ Backflow systems need to be kept up to date (esp. for use of rainwater) ▪ Retrofit nozzle heads ▪ There needs to be accreditation for irrigation installers. ▪ Austin, Texas requires certified irrigation systems ▪ The water efficiency technology exists; it is an issue of getting it into the hands of the consumers and installed in the ground Sports fields ▪ There are no BMPs or tools
Issues/ Considerations	Golf courses ▪ What kind of credit can be introduced into the system for work already done to decrease water use? ▪ Greenbelt is detracting from the use of innovation, ex. Regarding to create swales

	▪ Need incentives for site design ▪ Proper golf course design when courses are first being designed: work with architects before courses are built ▪ Provide incentives for improvements to irrigation control systems ▪ Local health departments need education on rainwater harvesting and water system reuse ▪ Tighter budgets in upcoming seasons means that incentives will be required for improvements Landscape Irrigation ▪ Are trying to education irrigation system installers: there is a need to provide education on water efficiency ▪ Ontario Building Code is a problem re appropriately sourced water for irrigation (i.e. rainwater), since rainwater is stormwater and cannot be used ▪ Lots of opportunities available as people don't understand the amount of water they're using on irrigation Sports fields ▪ Under pressure to do the right thing ▪ Difficult to determine use as municipal sports field aren't billed (or even metered) ▪ Are heavily punished by municipal water bans
Other	▪ Even with (existing) BMPs everything is voluntary and haphazard ▪ Turfgrass Institute has some research underway on use of water budgets as a water control method
3. What should be key components of a water conservation program for your sector?	
Themes	▪ **Greatest water loss is within irrigation systems**
General/context	▪ Water is lost within irrigation systems from pipes, joints, risers and heads ▪ Permits provide more water than is needed or could be used
Components/approach	▪ Rebate audits ▪ Rebate improvements to irrigation systems shown to be required by audits ▪ New systems should be audited before the permit is given ▪ Need to manage golfer expectations (educate golfers that their expectations have an environmental cost) ▪ Attempt to allow water reuse in redesigns and retrofits
Issues/ Considerations	▪ Need to decide what the audit should be ▪ Biggest gain is in fixing leakage ▪ Benchmarking is a conundrum: what year do we pick as a dry year may be followed by a wet year?
4. Who should be required to prepare a water conservation plan and implementation program?	
General/context	• Any water conservation and efficiency provisions should be incorporated into the IPM accreditation for golf

	courses e.g. add a water conservation and efficiency module
Who to prepare	▪ Could BMP be used as a type of qualifier to ensure water use reductions?
Issues/considerations	
5. What barriers to the preparation and implementation of a plan would need to be overcome?	
Themes	▪ **Public awareness of water use and expectations of golfers** ▪ **Financial**
General/context	
Barriers	▪ The public needs to better understand water use (including their individual water use) ▪ Lack of water use data (which reporting will eventually overcome) ▪ Payback, because don't pay much for water it takes a long time to see a return on investment for irrigation system improvements ▪ Regulatory issue: stopping some innovations e.g. water reuse
Issues/considerations	▪ The quickest way to water conservation may be through energy bills, because there is no "quick" payback for water conservation ▪ There is a need for more regulation and control on installation of irrigation systems
6. What targets or performance measures should be set for Ontario's entire strategy and/or for each sector	
Targets/measures	▪ Need to quantify the efficiency of systems ▪ Need leak detection ▪ Water and energy efficiency could be improved on many older courses but would be costly
Issues/considerations	▪ Water budgets (by site and watershed) should be a key to benchmarking for landscape irrigation ▪ Targets/performance measures need to be approached on a site-by-site basis. C of A is fair as it is site specific. ▪ Golf course industry is a long way away from establishing benchmarks. Just getting started on BMPs and doing some water audits. Benchmarking would require 5 years or more of actual water takings data. Need to establish a database on actual water use. ▪ If we develop BMPs that will result in the minimum amount of water necessary to deliver a product, we would need incentives and regulations to ensure that golf course owners implement them. ▪ Accreditation for installers needs teeth

Table 2 – Water Conservation and Efficiency – Goals, Objectives & Actions

1. What should be the goals and objectives for Ontario's water conservation and efficiency strategy?	
General/context	▪ Water use is weather dependent ▪ Need to recognize the diversity of operations ▪ Need to get better at using water as a resource by minimizing needless waste and water loss ▪ Need to measure water use ▪ Need to educate consumers about their water use
Goals/objectives	▪ Need people to work toward objectives and make continual changes/improvements, but do not require a % reduction in water use: no quantity target. The goal is to get better and facilities should have the flexibility to implement the water conservation and efficiency measures that they deem appropriate ▪ Work on the basis of plant requirements for water rather than the look of the course and/or lawn; use the minimum amount of water to achieve a healthy plant; if this is the objective, then water conservation and efficiency goals can be met ▪ Identify and agree upon BMPs for golf course sector in Ontario (by golf course associations and MOE)
Issues/considerations	▪ Must develop BMPs for the golf course industry before setting any rates of achievement ▪ Harmonize programs ▪ Sometimes regulations are required to make changes ▪ Consider tying BMPs for water use to manager performance, which would also opportunities for change ▪ Focus on the smart use of water versus the non-use of water ▪ All water use needs to be targeted, not just lawn watering: every use of water needs to be considered and brought together under the strategy ▪ Recognize that landscape irrigation is not a necessity
2. What actions and/or commitments should be included in the strategy to active goals and objectives for:	
(a) Technology-based measures	
Themes	▪ Work with others parties evaluating technologies e.g., USEPA, Green Plumbers Program in Australia to identify what technologies are water efficient ▪ Require certification of irrigation installers
General/context	▪ Should be about plant health and plant health requirements
Measures	▪ People (courses) need to work toward an objective, but that doesn't need to quantified, ex: NGCOA's Environmental Statement: http://www.ngcoa.ca/UserFiles/EnvPositionStmt_Feb25-08(1).pdf
Issues/considerations	▪ Water conservation and efficiency achievements can be

	made if plant health is the basis on which golf courses are managed
(b) Behavioural or management practice	
Themes	▪ Minimize needless waste and water loss (get better at using water as a resource)
Practices	▪ Tie to manager's performance ▪ Is there a way to build LEED into golf courses? Or tie golf course water efficiency to RBC Bluewater?
Issues/considerations	▪ Recognition by ENGOs says more to the public
(c) Educational Initiatives	
Initiatives	▪ There is a lack of education of irrigation contractors who are the middle people between manufacturers and consumers ▪ Need continuing education of irrigation contractors, etc. ▪ Need certification of irrigation contractors, etc. ▪ Community demonstration gardens for swales, etc ▪ Public education needed ▪ The Audobon golf course program was brought in so that it, as an outside organization, could give credibility to leaders in golf course operations. If MOE brought in an awards program, that would help.
Issues/Considerations	▪ Education must be aimed at technology
(d) Regulatory Initiatives	
General/context	▪ Older landscape irrigation systems need more attention than new systems ▪ Require certification for irrigation installers
Initiatives	▪ For inspections and maintenance ▪ Regulations could recognize existing professional codes ▪ There needs to be room for adaptation of all programs, including any that are regulatory
Issues/considerations	▪ Regulatory obstacles include the Ontario Building Code, Greenbelt Plan, and public health issues ▪ Use of third party audits is accepted for IPM ▪ There must be a reward for certification from the regulator. Otherwise certification is a marketing advantage only.
(e) Financial Incentives	
Incentives	• None were raised
Issues/consideration	• Golf courses will have differing financial abilities to pay for water conservation and efficiency measures, particularly "Ma and Pa" type of operations that charge low green fees

Table 3: Water Charges

1. Based on the implementation schedule, are there any issues or concerns regarding the timeline?	
Themes	▪ **No concerns raised**
2. In terms of reporting water use volumes, to what degree, if any, is there sub-metering of water in your sector/company? - **Can water allocations/use within a facility's water system be readily distinguished?**	
General/context	▪ Need for education on metering/meter installation, which would further the understanding of water use
Issues/considerations	▪ Concerns over paying for 100% of use, should only pay for consumptive use of water ▪ Charge for use of water, not for replacing the water in the water system or watershed (i.e. charge for consumptive use) ▪ Golf courses are partially consumptive, depending on processes (e.g. recycling pond water). ▪ Golf course facilities will have separate water use (and potentially separate metering) for club house ▪ Golf courses – don't have accurate data and do not meter what is used for consumptive use ▪ Sub-metering in the landscape industry is uncommon; however, there is an interest in sub-metering ▪ The trend is to examine where the water is being used. As water rates continue to rise, sub-metering will be significant in understating where/how water is used
3. Are there any issues or concerns regarding the proposed charge rates?	
Themes	▪ **Administrative costs for companies**
General/context	▪ Concern about cumulative costs to meet regulatory requirements (administrative costs for facilities); costs to golf courses to meet various provincial requirements could be high as resources are required for administration – need for consolidation of provincial reporting/requirements to minimize administrative burden on companies ▪ Does it fulfil ministry's purpose of having this charge? ▪ Minimum charge should be examined, but a minimum charge to cover ministry administrative costs does not make sense
Issues/considerations	▪ No concern about proposed rates – little impact on the sector, but charge will signal for conservation in the sector (e.g. encourage recycling water/pond use) ▪ Charge should not be an administrative burden ▪ Big cost is extra personal to administer charge (extra bodies, related costs, salary, temporary salary cost, training, contracting out, etc.,) ▪ Small operations that are running at minimal budgets might not have resources to operate or administer the charge requirements.

	▪ Additional charges or costs for water are increasing/more frequent - another charge may results in behavioural change/a change in habits of water use. ▪ Inane to introduce minimum charge to cover administrative costs of the charge ▪ Grandfathered permit holders: pay $50,000 to get permit and then have to pay $70 (for example) a year for charges
Other concerns raised during the meeting	
	▪ Would there be a double charge for cases where a golf course has two permits: one PTTW is for taking water from one source (e.g. creek) and putting it into a pond or reservoir and 2nd PTTW is for taking water from the pond/reservoir and using it for golf course irrigation? ▪ Golf courses are encouraged to build reservoirs to avoid water takings during stressed periods; however, the golf course would be charged for the water taking for storage/use at another time. ▪ A portion of the water that is being charged for will be recycled into the property (golf courses for example) ▪ Should golf courses be charged for water that they withdraw but then put back into the system?

DRAFT MEETING NOTES

Water Conservation and Water Charges
Tourism, Golf Courses and Irrigation (non-agricultural)

List of Participants

Participant	Affiliation
Chris Le Conte	SMART Watering Systems
David Sim	SMART Watering Systems
Vince Kichimoto	National Golf Course Owners Association
Pam Charbonneau	OMAFRA/Ontario Turfgrass Institute
Teri Yamada	consultant to golf sector
Randy Booker	Ontario Golf Superintendent's Association

Great Lakes St. Lawrence River Basin Sustainable Water Resources Agreement

DRAFT MEETING NOTES

Water Conservation and Water Charges
Tourism, Recreation and Landscaping Sectors Discussion

Date: **December 9, 2008**

Location: **Ontario Ministry of the Environment**
Toronto, 125 Resources Rd., Room N212

AGENDA

8:30 AM	Arrival and registration (continental breakfast provided)
9:00 AM	Welcoming remarks and introductions
9:15 AM	Review of session agenda and format for the day – comments and questions
9:30 AM	Overview – Developing Ontario's Water Conservation and Efficiency Strategy: - Summary of findings from initial multi-stakeholder consultation - Water conservation and efficiency in other jurisdictions
10:00 AM	Exploration and discussion – key questions
12:00 PM	Lunch (provided)
1:00 PM	Review of Great Lakes Basin-wide goals and objectives - Examples from other jurisdictions
1:15 PM	Exploration and discussion – key questions
2:00 PM	Overview – Phase 2 Water Charges - Previous consultations and resulting charge framework - Specific elements of Phase 2 - Proposed implementation schedule - Financial analysis to date
2:30 PM	Exploration and discussion – key questions
4:00 PM	Wrap-up and next steps

DRAFT MEETING NOTES

KEY QUESTIONS – WATER CONSERVATION AND WATER CHARGES SECTOR CONSULTATIONS

Water conservation and efficiency – general:

1. What is your sector currently doing in regard to water conservation and efficiency?
2. What are the current Best Management Practices for water conservation and efficiency in your sector?
3. What should be key components of a water conservation program for your sector?
4. Who should be required to prepare a water conservation plan and implementation program?
5. What barriers to the preparation and implementation of a plan would need to be overcome?
6. What targets or performance measures should be set for Ontario's entire strategy and/or for each sector?

Water conservation and efficiency – goals, objectives and actions:

1. What should be the goals and objectives for Ontario's water conservation and efficiency strategy?
2. What actions and/or commitments should be included in the strategy to achieve the goals and objectives for:
   - Technology-based measures?
   - Behavioural or management practices?
   - Educational initiatives?
   - Regulatory initiatives?
   - Financial incentives?

Water charges:

1. Based on the implementation schedule, are there any issues or concerns regarding the timeline?
2. In terms of reporting water use volumes, to what degree, if any is there sub-metering of water in your sector/company?
   a. Can water allocation/use within a facility's water system be readily distinguished?
3. Are there any issues or concerns regarding the proposed charge rates?

WATER CONSERVATION AND WATER CHARGES
Commercial and Industrial Sector Meeting Summary Report (draft)
December 11, 2008

Provincial staff met with representatives from the Commercial and Industrial sectors (see Attachment 1 for a list of attendees and their respective organizations) on December 11, 2008 in Toronto to discuss the development of Ontario's water conservation and efficiency strategy. A secondary purpose for the meeting was to discuss a proposed 'Phase 2' of water taking charges for commercial and industrial water users. Refer to Attachment 2 for a copy of the meeting Agenda.

At the conclusion of the presentation on water conservation and efficiency, the following general comments and questions were raised by participants:

- Concern that there are regulations dealing with protecting water quality, and this [agreement] is dealing with water quantity – the two should be collectively dealt with and therefore, there is a need for co-ordination amongst levels and divisions of government.
- Word of caution: reducing water in one area/sector can cause an increase in another area/sector (e.g., change from water cooling system to an air cooling system requires hydro and shifts the water use to the power sector from the industrial sector). Also increases greenhouse gas emissions.
- When MOE staff did the jurisdictional scan did they look at what is being done in other provinces in the mining sector?
- What is "usage" (slide 22); the amount of water going into the plant regardless of the amount being returned?

Subsequent to the presentation of Phase 2 water charges, the following general comments and questions were raised by participants:

- What impact do water charges have on NAFTA – does this (charging rates for water taking and consumption) commodify water and therefore have implication for trade?
- How does/will the government demonstrate to industrial users the use and allocation of the fees collected from charges?

Key questions guided the discussion of conservation and Phase 2 charges. Refer to Attachment 3 for the list of questions.

Although there were numerous and varied responses to key questions, some common themes emerged from the meeting. Common themes are those issues and/or recommendations for which there was general agreement amongst session participants. These themes and the proceedings from the consultation meeting are summarized in Table 1 through Table 3 of this report.

TABLE 1: Water Conservation and Efficiency – General

1. *What is your sector currently doing in regard to water conservation and efficiency?*	
General / context	▪ In the mining sector water is taken (e.g., dewatering) but it is returned to the environment. ▪ The exception in mining is a mill, water is taken in and used, but it is often recalculated and reused. ▪ Sometimes the water is put back into the environment treated; sometimes it is put back untreated. ▪ Conservation measures for dewatering a pit are extremely limited. ▪ It can get complicated because water is taken from one source (ground water for dewatering) and returned to another source (surface water), but it is all returned and therefore, conservation of the taking is not really viable. ▪ Most refineriesi have moved or working towards moving from once through cooling water systems to cooling tower – this reduces water withdrawal, but increases net consumption due to cooling tower evaporation to air. ▪ For construction, dust control is the only area for which there is conservation potential but sometimes dust control is planned ahead, sometimes it is not. ▪ Cement industry is not a big water user: some used for conditioning flue gases. ▪ Conservation practices in cement industry driven by the *Safeguarding and Sustaining Ontario's Water Act* which allows for water charges. ▪ Cement industry making efforts to reduce water use; e.g., water from trucks is being re-used to rinse aggregates.
Other	▪ Sector-specific targets for conservation are more viable than blanket, province-wide targets. ▪ There is more opportunity for conservation in one sector than another. ▪ There are two components to protecting water sources – one is protecting water quality the other is reducing water use – the focus seems to be on reduction, but it should be on both. ▪ One action to help protect water quality can result in increased water use. Refineries in moving away from once-through cooling water to cooling towers helps reduce the potential for spills getting to surface water and this also reduces water withdrawal by about 95%, however it does increase net water consumption (due to cooling tower evaporation to air). ▪ For road or bridge construction the driver for water taking is the location of the infrastructure project – have to dewater for safety reasons. ▪ For both dewatering and water course diversion in construction projects, the water is returned to the environment. ▪ Diversions of water courses require PTTW. ▪ Road builders use hot mix facilities and aggregates – unique issues to be discussed separately. ▪ Sometimes the public wants dust control – may push municipality for it. ▪ Water consumption is driven by the owner of the project not the contractor. ▪ Unless there is another approach to construction of infrastructure, there is no real opportunity for conservation.

TABLE 1 (cont'd.): Water Conservation and Efficiency – General

2. *Water are the current Best Management Practices for water conservation and efficiency in your sector?*	
General / context	▪ Petroleum industry is working to leverage the successful work on health and safety to the environment – it has become a mindset that when an employee sees a potential health and safety issue they report it, the same holds true for proactively addressing potential environmental issues. ▪ CPPI is currently developing a Water Management Framework and Water Management Primer addressing both water quality and conservation, which will include: sections on water uses within refineries; summary of technological advancesand examples of recent water reduction and conservations and protection of water quality in the industry. ▪ Refining industry is shifting from water cooling to air fin cooling – primarily driven by economics – which consumes power and more space, but reduces water taking by about 60%. ▪ Water use increases in summer because air fin systems cannot cool sufficiently due to higher temperatures – use of heat exchange water cooling to supplement.
Other	• Dust control should be looked at through the overall PTTW permit and not require an additional permit. • Only way to know how much water is actually used for dust control would be to look at all the relevant permits. ▪ MOE might be a good spot to develop guidelines for dust management and include BMP's for conservation. ▪ Could incorporate BMPs for efficient water use for dust control in MOUs ▪ Address dust control upfront (before project at point of initial permit) and identify conservation opportunities.
3. What should be key components of a water conservation program for your sector?	
General / context	• For mining, a process audit or assessment examining water use. • An initiative to examine water conservation opportunities when equipment is upgraded or replaced. • For road building/infrastructure, when assigning project to a contractor, opportunity to identify areas/initiatives for conservation. • For dust suppression, an agreement for water conservation in MOUs with both Ministry of Transportation and with municipality (owner of the project) • If all permit work was done up front by the municipality or other owner of the project, could then identify potential impacts and opportunities for conservation beforehand. • Incentives to work with partners, such as Ready Mix Concrete Association, to reduce water use in processes.
Other	• Can't push on all fronts at the same time; currently air emission requirements (Reg. 419), and toxics reduction is the focus of the petroleum industry (applies to mining sector as well). • In the cement industry, targets are set in the plants. • A challenge for the petroleum sector is the movement from processing lighter crude to processing heavier crudes – conventional refineries need some upgrading and more processing results in higher water use.
4. Who should be required to prepare a water conservation plan and implementation program?	
Themes	▪ It should be up to the sectors or individual companies to come up with their

TABLE 1 (cont'd.): Water Conservation and Efficiency – General

	own plans. ▪ Plans should be voluntary with some incentive behind them.
General / context	▪ All CPPI companies have some form of environmental plans / programs therefore water conservation could be one component of the overall plan. ▪ Cement plants or members should come up with their own plans. ▪ Plan need to be more site-specific. ▪ Facility plans could possibly roll-up to a sector plan. ▪ In the mining sector it would be helpful to have sector-based guidelines to help guide the development of individual plans. ▪ Reasonable to expect a facility to consider water conservation / protection (assess) and then determine which areas are more important and these are given priority. ▪ Also, it is reasonable to expect a company to understand water use and opportunities for conservation, but need to be able to prioritize environmental initiatives which in the end may not include water conservation. ▪ Different companies could be addressing different issues at the same time depending on where they can and need to improve environmentally (e.g., one company might have no issues with water quality and would want to work on water conservation or visa versa). ▪ Perhaps if in high use watershed, priority given to water conservation.
Other	▪ Would not recommend legislating water reduction plans because resources may be taken away from more pressing environmental issue to develop and implement a conservation plan (e.g., an engineer working on another, more important environmental concern, would be pulled off it to work on the plan). ▪ Mining companies have to make "qualitative trade-offs" – conservation or water quality protection would be a qualitative trade-off. ▪ Very few investments in environmental programs/technologies have a financial payback. ▪ Construction industry does not maintain a site/facility or the same labour force and it is therefore difficult to put a plan into place. ▪ Can't bring a water conservation plan from site to site because each situation is unique and site-specific. ▪ In construction, it is the owner who is initiating the job (owner driven), therefore water conservation should be dealt with up front.

TABLE 1 (cont'd): Water Conservation and Efficiency – General

5. What barriers to the preparation and implementation of a plan would need to be overcome?	
Themes	▪ **Limited amount of resources that can be allocated.** ▪ **Can't separate water quantity and water quality – has to be a holistic approach.**
General /context	▪ Companies run different future project lists – one for corporate profit making ventures and the other for health and safety and the environment and then prioritise lists. ▪ Construction industry does not have facilities – move from one location to the next – therefore; the focus should be on owners and building in conservation up front, before project begins. ▪ Technology has to be economically feasible – 80/20 rule ▪ Environmental pressure being applied by multiple ministries/levels of government; each with their own environmental focus/priority.
Other	▪ Don't underestimate the value of new technology and then focus technology on those areas of greatest need. ▪ Money/funding for innovation should be focused towards the big water users.
6. What targets or performance measures should be set for Ontario's entire strategy and/or for each sector?	
	▪ For efficiency target should use a percentage. ▪ Should not be measured as an overall reduction target. ▪ If set a conservation target – how would it be measured? ▪ Perhaps reduction targets should be set on a per unit basis. ▪ Must look at water efficiency on a "rolling year average" basis – should take into consideration say a 5-year average temperature and base target on average (if, for example, use 1 year, could have an extreme year and therefore, not reflective of the average). ▪ Need to instead look at infrastructure and the changes that can be made for long term, sustained conservation. ▪ Investment in new infrastructure should be contingent on meeting environmental performance criteria. ▪ Setting a target province-wide is not viable, should focus on individual sectors.
	▪ A consideration for a performance target for the sector is that opportunities for conservation vary amongst companies in the same sector – one may have undertaken conservation initiatives while another has not – and therefore, can not expect a company which has implemented conservation programs to necessarily be capable of further reducing water use. ▪ Through awareness initiatives the mindset becomes more conservation oriented, creating a conservation ethos that people take to and apply at work. ▪ Due to the water shortages in Alberta, the mindset is shifting toward conservation (e.g., no one would consider not buying a low-flow toilet). ▪ Individuals can't visualize large targets but give them something manageable that they personally can do, and that behaviour will filter down into work places.

TABLE 2: Water Conservation and efficiency – Goals, objectives and actions

1. *What should be the goals and objectives for Ontario's water conservation and efficiency strategy?*	
Themes	▪ **In formulating goals and objectives, need to distinguish between water consumption and water taking (where water is returned to the environment).** ▪ **Focus on areas where there is the greatest benefit, i.e., high stress watersheds.** ▪ **Include education objectives**
General / context	▪ Conservation initiatives that reduce water consumption need to be distinguished from those initiatives that reduce water taking in terms of preferred conservation practices (i.e. which is a better objective environmentally?). ▪ PTTW program should take into consideration consumption versus taking. ▪ By distinguishing between consumption and taking (and return) in permit, would provide MOE with data on water use – this would be consistent with objectives to measure/monitor conservation outcomes. ▪ Might be as simple as having a box that applicant's check; "Is this a consumptive use?" ▪ Secure baseline/benchmark data on water use – need a number against which to measure to know how much water is being conserved, what programs are working, etc. ▪ To the Regional objective to "Promote investment in and maintenance of efficient water infrastructure and green infrastructure"(slide 27): needs to be greater consideration given to upfront design of construction projects to build green.
Other	▪ Should provide an incentive to design and build green for builders/developers and/or owners (e.g., municipalities) of the construction project.
2. *What actions and/or commitments should be included in the strategy to achieve the goals and objectives for:*	
(a) ***Technology-based measures?***	
General / context	▪ Action to address leaks. ▪ Flow inhibitors viable for residential use but not viable for industrial. ▪ Some larger companies have access to international uses of technology but smaller companies may not. ▪ Perhaps an opportunity to leverage international know-how and technology - provide smaller companies with access to information and insight into available technologies.
(b) *Behavioural or management practices?*	
General / context	▪ Petro-chemical have done a lot of work around behavioural and management issues/considerations for health and safety and are using this same focus to address the environmental aspects – need this same focus and leadership around water conservation. ▪ Behavioural changes are a continual, on-going process of moving the bar forward.

TABLE 2 (cont'd): Water Conservation and efficiency – Goals, objectives and actions

(c) *Educational initiatives*?	
Themes	▪ **Should be specific focus in actual school curriculum on water use and conservation.**
General / context	▪ Need to broaden the "environmental stewardship mindset" – "we are all in this together, we all have a role". ▪ Need to piggy-back water conservation message on other conservation initiatives – build on existing programs. ▪ Need to give careful consideration as to how the information is provided and what methods or approaches are used – some are effective, many are not. ▪ Need to adopt concept of "personal responsibility". ▪ Information should highlight what others are doing to make it credible at a personal level.
(d) *Regulatory initiatives*?	
Themes	▪ **More discussion with specific sectors on what are reasonable, possible impacts.** ▪ **Some companies are further along and should not be penalised with overarching regulation.** ▪ **Address water consumption versus water taking (and return).** ▪ **Need to ensure harmonization of regulations – avoid duplication, overlap and contradiction.**
General / context	▪ Must allow for flexibility of solutions. ▪ Should be sector-specific. ▪ Alternatives have to be available and reasonable ROI. ▪ Through municipal infrastructure investment initiatives – have funding requirements conditional on demonstrable conservation.
(e) *Financial incentives*?	
Themes	▪ **Accelerated capital cost allowance for conservation technology**
General / context	▪ Provide access to funding or financial incentives for sector specific (or broader) partnerships for conservation. ▪ R and D tax credits for water conservation to stimulate new/modified technologies and approaches. ▪ Funding for new research into reducing water usage in facilities (e.g., Zenon membrane technology) ▪ Third party may do the research but the company would get the tax credit. ▪ Reward system – reward the good players (e.g., instead of using water from a fresh water source, reusing stormwater in facility).

TABLE 3: Phase 2 Water Charges

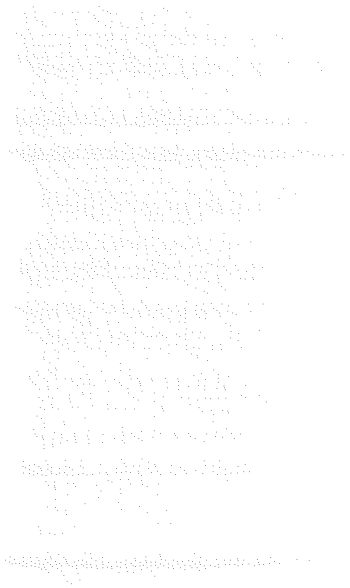
1. *Based on the implementation schedule, are there any issues or concerns regarding the timeline?*	
General / context	▪ Need to know the date of Phase 2 implementation as soon as possible so industry can plan accordingly. ▪ Some construction projects are multi-year in length and could fall into the implementation year. ▪ Is there some way to grandfather projects that are already underway? ▪ Provide an "exception" for projects already under construction.
2. *In terms of reporting water use volumes, to what degree, if any is there sub-metering of water in your sector/company? Can water allocation /use within a facility's water system be readily distinguished?*	
General / context	▪ Do not push industry into putting significant capital investment into measuring because it is not warranted in terms of value add will take available money away from other environmental initiatives. ▪ Major facilities such as refineries calculated water intake based on pump electricity use, which then directly relates to pumping rate and volume. ▪ Sub-metering would cost millions for an individual facility. ▪ One flow meter on a large pipe would cost several hundred thousand dollars. ▪ Use pumping estimates (pumping curve) in construction projects. ▪ Mining uses pumps may have metering and limited sub-metering in mills for some processes.
3. *Are there any issues or concerns regarding the proposed charge rates?*	
Themes	▪ **Fees should go to cost recovery only – no profit going to general revenues.**
General / context	▪ In construction, if MTO applies for a permit and construction firm takes over the permit and does the dewatering/stream diversion who pays? ▪ What services are these fees covering? ▪ If a mine was in advance exploration and returning 100% of the water taken, would they automatically be considered a medium consumptive user simply because they are in the mining sector? ▪ Stream diversion for construction is similar to the mining issue in that 100% of the water taken is returned to source, so actually falls into "low consumptive"category. ▪ Charges should be based on consumption and not based on sector because some companies within a sector would be low and others would be medium ▪ What criteria were used to set the rate? ▪ By putting those sectors/industries into the mid-consumptive use category despite how much water is returned to the environment discourages industry from being pro-active in reducing any consumptive water uses. ▪ When tendering a bid you can calculate water transfers but difficult to calculate dewatering for the specific purpose of health and safety – it is a competitive issue in securing bids. ▪ Could there be a caveat for certain sectors because there is no alternative for health and safety? ▪ Should consider taking out percentages scale for categorization of consumptive users to avoid confusion if allocation to a category is sector based. ▪ Problem with removing percentage scale is that the sectors will still want to know how they got slotted into a particular category.

WATER CONSERVATION AND WATER CHARGES
Ontario Forest Industry Association meeting notes (draft)
January 6 and 19, 2009

Provincial staff met with representatives from the Ontario Forest Industry Association on January 6, 2009 in Toronto and January 19, 2009 via teleconference. The main purpose of the meetings was to discuss water use in the forestry sector and the development of Ontario's water conservation and efficiency strategy.

The following are the main points that were raised at the meetings.

- Water use costs money (pumping, heating and treatment)
- Nationally, 20% reduction in water use in pulp and paper processing in the past decade; reductions reflect in-plant efficiency gains not mill closures
- Forest industry does not have money to put into new initiatives for water conservation and efficiency
- Companies are looking for energy savings, tying water savings to energy savings might make water conservation an easier "sell"
- It is difficult to separate water quantity and water quality management
- Employee awareness helps to build an internal culture of conservation
- Any water efficiency program could be built on the platform of the OPA's energy conservation program which was made available via the OFIA
- A variety of BMPs were created in the '80s and '90s. It is not necessary for the Province to spend money on BMPs for the forest industry. The major limiting factor for acting on BMPs is existing equipment in the mill
- Energy and water audits have been done. A more detailed process called Pinch Analysis is the next step, but is cost prohibitive; this would be a good place for the Province to provide support
- OFIA was receptive to working with the province to further water conservation and efficiency amongst its members and the sector as a whole
- OFIA members are not concerned about the charge specifically, but about the cumulative impact of government charges/regulatory requirements; the charge is one more nail in the coffin
- Some plants have a power production on site; water used in power production may be re-used in processing in some cases (varies by plant, season, etc.)



WATER CONSERVATION AND EFFICIENCY
Conservation Authority and ENGO Sector Meeting Summary Report (draft)
January 13, 2009

Provincial staff met with representatives from the Conservation Authorities and Environmental Non-government Organizations (ENGOs) on January 13, 2009 in Toronto (see Attachment 1 for a list of attendees and their respective organizations). The meeting was held to discuss the development of Ontario's water conservation and efficiency strategy (see Attachment 2 for a copy of the meeting Agenda).

At the conclusion of the presentation on water conservation and efficiency, the following general comments and questions were raised by participants:

- Presentation slide number 3 (water use by sector) – Does the MOE have a similar chart on consumptive use as this is an important focus. The current chart makes consumptive use look insignificant which is not the case.
- Is there any accountability in terms of conservation planning for permits? Understanding that currently permit holders can say they undertake water efficiency, but there is no requirement to prove reductions.
- Could flow requirements be part of Ontario's approach as it has been included in BC's conservation strategy?
- The targets shown from other jurisdictions (BC, Alberta, etc.) are broad-level conservation targets – are there any that are sector or watershed specific?
- Need to have a consistent measurement for water use – currently very hard to set benchmarks and use indicators when talking apples and oranges for water use measurement.
- Return-flow requirement is the foundation the Annex Agreement, surprised this is not an important part of this consultation.
- At some point in consultation process there should be a multi-sector, multi-ministry discussion of issues and sharing of ideas (beyond the AAP)

Key questions guided the discussion of conservation and water efficiency. Refer to Attachment 3 for the list of questions.

Although there were numerous and varied responses to key questions, some common themes emerged from the meeting. Common themes are those issues and/or recommendations for which there was general agreement amongst session participants. These themes and the proceedings from the consultation meeting are summarized in Table 1 and Table 2 of this report.

TABLE 1: WATER CONSERVATION AND EFFICIENCY – GENERAL

1. *What are the conservation authorities and non-government organisations currently doing in regard to water conservation and efficiency?*	
General/context - CAs	▪ sharing watershed science and conservation practices with municipalities. ▪ Involved in evaluation of technology (e.g. lot-level stormwater controls and rain water harvesting) ▪ Operate outreach and educational programs, visitor centres, outdoor ed. centres and eco-schools to demonstrate best practices. ▪ Support source protection committees ▪ Low water response programs ▪ Oak Ridges Moraine planning and development. ▪ Involved with overall management strategies for the watershed. ▪ Pilot project for a "soft path" analysis in a small municipality (Grand River CA) ▪ Work with municipalities to revisit how water is used, e.g. grey water systems. ▪ Neighbourhood scale project to test conservation and protection options and approaches (TRCA). ▪ Facilitate and co-ordinate cooperation and integration of parties involved in water management (e.g., engineers, planners, etc) – happens at a watershed planning and an implementation scale ▪ Inventory water users and water use to evaluate base-flow– build on PTTW data base. ▪ Identify permit holders who are big takers and approach them for data on actual taking/water use – this approach works well because CAs are not the regulating body and therefore companies more willing to provide data.
General/context-NGOs	▪ Have clients in crisis who are opposing permits for takings of both small and large scale (CELA) ▪ Try to work with other groups around the GL to share best approaches within the basin (CELA) ▪ Inform public to use the laws to address concerns/issues around water use/conservation (CELA) ▪ Affordability and accessibility issues around conservation opportunities for low income and rural individuals (CELA) ▪ Focus on landscape-level and the needs of the watershed in terms of protecting and restoring wetlands (DU) ▪ Examine wetland conversion (loss), mapping and updating in conjunction with province and feds. – possibly complete 2009 (DU) ▪ Priority to protect source and water quality as a pre-cursor to water use (Waterkeeper). ▪ Comments on EBR posting and litigation (Waterkeeper) ▪ Represent citizens/groups in OMB hearings (ECO Justice) ▪ Provide advice to environmental/citizen groups (ECO Justice) ▪ Launch lawsuits over sewage-related issues (ECO Justice) ▪ Work on solutions for stormwater management and green infrastructure (ECO Justice)

TABLE 1 (Cont'd): WATER CONSERVATION AND EFFICIENCY – GENERAL

1. (Cont'd.) ***What is your sector currently doing in regard to water conservation and efficiency?***	
NGOs	▪ Education programs for well care, maintenance and decommissioning (Ontario Groundwater Association) ▪ Deliver "Well Aware" program (Ontario Groundwater Association) ▪ Support innovative research in water conservation (Walter-Duncan-Gordon) ▪ Support groups involved in the development of policy and management practices (Walter-Duncan-Gordon) ▪ Support universities looking at drivers that support green development and green infrastructure – e.g., Blue Builders (Walter-Duncan-Gordon) ▪ Pursue research and advocate for water sustainability (POLIS) ▪ Undertaking long-term water conservation pilots to help municipalities build long-term capacity (POLIS) ▪ Water conservation 101 tool book to guide municipalities (POLIS) ▪ Scenario Builder (available March '09), an Excel-based program for conservation planning (POLIS) ▪ Linking energy and GHG reduction to water conservation – integrate this data into the Scenario Builder (POLIS) ▪ Scenario Builder actually quantifies the savings – water, energy , GHG emissions
2. ***What should be key components of a water conservation program for your organisation/for other sectors?***	
Themes	▪ **Measurable goals with attached timelines and an understanding of how to implement** ▪ **Build on existing programs and tools in Ontario and from other jurisdictions** ▪ **Monitoring and measurement to determine if goals and targets are met** ▪ **Dollars and resources should be focused on source-end water protection and conservation (e.g., wetlands)** ▪ **Accurate data and science needed to make appropriate decisions** ▪ **Municipality must demonstrate actual need in order to prevent over designing/building of water infrastructure – use accurate water use data to inform decisions** ▪ **Need to educate planners and engineers about best approach to facility sizing** ▪ **Conservation design should be built into the approvals process** ▪ **Builders/developers should be forced to adhere to standards and best practices that keep the water on the land** ▪ **More expansive and integrated approach to water quality and water quantity (include watershed, wetlands, etc)** ▪ **Take an adaptive management approach to implementation – do not need to wait for all the data**

TABLE 1 (Cont'd): WATER CONSERVATION AND EFFICIENCY – GENERAL

2. (Cont'd) What should be key components of a water conservation program for your organisation/for other sectors?	
General	▪ Economic stimulus represents and opportunity for green infrastructure ▪ Education initiatives in rural areas ▪ Financial incentives and other initiatives ▪ Approach: Ecological Goods and Services – quantifying and qualifying ecological value of protecting a watershed instead of paying for loss of production resulting from protecting wetland ▪ Parallel with carbon credits to protect wetlands ▪ Need to overlay on regulations some mechanism to ensure that rural communities/individuals are not adversely impacted ▪ Streamline regulations for the process of building or restoring a wetland or conservation initiative (currently easier to drain a wetland than restore or build one) ▪ Conservation should inform urban infrastructure planning and development early in the process ▪ Conservation planning needs to begin at the sub-watershed level ▪ Need a requirement for the demonstration of water conservation savings on a per unit basis ▪ Have an inventory checklist of BMPs ▪ Industry should be required to report regularly on what they have done ▪ Skill retraining of municipal and industry employees for conservation ▪ Government needs to get the message out about what is being done and achieved in water conservation ▪ Need to instil a conservation mind-set
3. *Who should be required to prepare a water conservation plan and implementation program?*	
General	▪ All water using sectors should be required to do conservation plan, but requirements should be sector and watershed specific ▪ If plans are done differently for each watershed, issue of it not being a level playing field will be raised by affected parties. ▪ Should investigate what impact conservation requirements have had in other jurisdictions (i.e., have industries left jurisdictions with stricter conservation requirements? – important information to have to justify approach with stakeholders who say requirements will drive out business)

TABLE 1 (Cont'd): WATER CONSERVATION AND EFFICIENCY – GENERAL

4. *What barriers to the preparation and implementation of the water conservation and efficiency measures would need to be overcome?*	
Theme	▪ Funding ▪ Lack of legislation and regulation for conservation ▪ Myth of abundance (particularly around Great Lakes) ▪ Lack of consistency province-wide for measuring water use, conservation and takings ▪ Low cost of water ▪ Municipal perception that conservation reduces water revenues ▪ Capacity: Expertise and Funding ▪ Legislative barriers, e.g., building code, mining act, aggregate resources ▪ Failure of government to enforce existing legislation ▪ Failure to build the economic and ecological case for water conservation ▪ Water conservation seen as an environmental add-on, not an integral part of infrastructure planning and development ▪ Lack of a sense of urgency ▪ Individual silos of programs, initiatives, etc., little or no integration ▪ Lack of transparency and co-operation between involved departments and agencies ▪ Lack of focused water conservation education in curriculum
General	▪ Government rules (e.g., strict rules on wells, wellhead protection/maintenance, causes individuals to walk away adding to problem) ▪ Jurisdictional confusion – a lot of information released without tangible programs ▪ Provincial Growth Planning – for example, directing growth in groundwater dependent areas forcing municipality to build supply pipe to meet growth ▪ Political pressures that are counter-productive to conservation ▪ Perception that conservation equals job loss

TABLE 1 (Cont'd): WATER CONSERVATION AND EFFICIENCY – GENERAL

5. *What targets or performance measures should be set for Ontario's entire strategy and/or for each sector?*	
Themes	▪ **Should have an overall target for Ontario (e.g., 30%) that is supported by sector-specific targets** ▪ **Need design targets – infrastructure designs should have to meet specific conservation targets** ▪ **Funding tied to conservation performance targets** ▪ **Requirement for universal metering (intake and outflow)** ▪ **"50% new water to come from conservation" (BC Strategy) is a target that Ontario should adopt** ▪ **Efficiency should be measured on a unit production basis** ▪ **Review targets on a regular schedule in order to monitor change (e.g., every 2 years)** ▪ **Need to recognise those who achieve conservation targets and demonstrate innovation** ▪ **Need to make the link between energy savings/GHG emission reductions and water conservation** ▪ **Link with existing energy conservation programs to integrate water conservation (which has inherent energy savings)** ▪ **There should be watershed targets linking water conservation and ecological conditions** ▪ **Climate change adaptation targets, revisit and update regularly**
General	▪ Ontario needs a strong statement about its water overuse as compared with other jurisdictions (e.g., Europe, Australia) ▪ Sliding scale for performance reductions (e.g., 30% over ten years) ▪ Twin with a conservation-oriented jurisdiction (e.g., Germany) and learn from their practices and approaches. ▪ Residential sector target should be set at 150 l/pp – technology exists to meet this target ▪ Need target for Max Peak reduction so facilities are not oversized as currently occurs ▪ Aggressive standards based on what is attainable to drive a pro-active approach to conservation ▪ Incentives for manufacturing of conservation equipment with caveat that these companies are not excluded from conservation and other environmental regulations ▪ Audit of water users in sectors to examine conservation practices in place ▪ By twinning with other jurisdictions could draw on best practices in individual sectors ▪ Sector-specific targets based on industry BMP targets ▪ Third party verification of targets being met ▪ Concern with third party verification – need transparency therefore government must have oversight role (Water Conservation Officer) ▪ Performance standards for audits ▪ Fast track performance standards for public sector – driver for conservation, technology, innovation, etc.

TABLE 1 (Cont'd): WATER CONSERVATION AND EFFICIENCY – GENERAL

5. (Cont'd) ***What targets or performance measures should be set for Ontario's entire strategy and/or for each sector?***	
General/Context (cont'd)	▪ Link performance standards to PTTW – when permit reviewed conservation performance would be included – which would serve as a conservation driver for new takers/users ▪ MOE/Gov't, need to be careful not to create a cumbersome bureaucracy for certification. ▪ MOE develop model by-laws for water conservation for use by Ontario municipalities ▪ Consider Dr. Hans Schrier's (UBC) work which addresses valuation issues as they pertain to water use – important work for determining approaches/priorities
Questions	▪ What is the baseline? ▪ What is 30%? Is it 30% more efficient? Is it 30% less water use than today? ▪ How is the baseline set?

TABLE 2: WATER CONSERVATION AND EFFICIENCY - GOALS, OBJECTIVES & ACTIONS

1. ***Water should be the goals and objectives for Ontario's water conservation and efficiency strategy?***	
Themes	▪ **A time limited process (i.e., 2 years) to establish targets, plans, best practices for each sector.** ▪ **Goals and objectives should have specific targets and performance measures** ▪ **Link water efficiency/conservation requirements to infrastructure funding** ▪ **Education and training** ▪ **Sector-specific targets and best practices** ▪ **Must balance human and ecological water needs – must be more comprehensive than current approach** ▪ **Specific objectives for assessing cumulative impacts** ▪ **Goals and objectives must integrate individual sector use and cumulative impact (on a watershed basis)** ▪ **Precautionary principle should guide strategy** ▪ **Dispel the "Myth of Abundance" through education, awareness, and outreach**
General / Context	▪ Universal metering for municipal-supplied water users and large water users (PTTW) ▪ Standardization of metering ▪ Secure local political support (councils must support conservation) ▪ Implementation of strategy should build on existing programs and use the strategy to reinvigorate water conservation players and others working on related environmental programs (e.g., energy conservation, climate change, etc.)

TABLE 2 (Cont'd): WATER CONSERVATION & EFFICIENCY – GOALS, OBJECTIVES & ACTIONS

2. *What actions and/or commitments should be included in the strategy to achieve goals and objectives for:*	
(a) Technology-based measures	
Themes: Technology-based measures	▪ **Provide support for performance evaluation, both technical and economic (ROI)** ▪ **Provide support for a strong technology pilot testing program** ▪ **Rebate program for small and remote communities for implementation (e.g., a toilet exchange program)**
General / context	▪ Provide support for knowledge sharing for innovative technologies/processes at the operational level, such as the Water Efficiency Network, CWWA (this could be undertaken through the Green Economic Development Committee of Cabinet) ▪ A virtual hub or best practices web site to enable sharing of best practices information between water users in different sectors ▪ Reliable meters to measure intake and outflow
(b) Behavioural or management practices	
Themes	▪ Auditing tool kits, guidelines, planning procedures, etc. for all sectors for conservation planning and to compare to benchmark ▪ Social marketing for conservation ▪ Pubic reporting and transparency ▪ Have benchmark, publish where sectors are in terms of performance (e.g., MOE overview report profiling best actors, report cards)
General / context	▪ Need for co-ordinating information/resources for a cohesive message to individuals (integrate information/resources on water conservation, stormwater, energy, climate change, etc. instead of many "one-offs") ▪ Social capital assessment for communities
(c) Educational initiatives	
	▪ Work with other provinces to share and capitalise on collective know-how (conservation programs, model by-laws, education, etc) ▪ Do not reinvent the wheel – education initiatives should piggyback on existing programs/initiatives (already established and working) ▪ Curriculum requirements (e.g., BC strategy)
	▪ Work with national benchmarking initiative to include water conservation ▪ Support for Children's Water Education Council (CWEC)

TABLE 2 (Cont'd): WATER CONSERVATION & EFFICIENCY – GOALS, OBJECTIVES & ACTIONS

2 (cont'd). ***What actions and/or commitments should be included in the strategy to active goals and objectives for:***	
(d) Regulatory initiatives	
Themes	▪ **Process to amend building code every 5 years to accommodate/address new technologies/fixtures and other changes** ▪ **Mandate purple pipes (double plumbing) as done under BC's strategy** ▪ **Mandate designing for water conservation (should be linked to PTTW with approval contingent upon sustainable design)** ▪ **Enhancing wetland policy (e.g., no net loss of recharge wetlands) but without creating an impediment to wetland restoration** ▪ **Regulations should not rely on mitigation/no net loss** ▪ **Need to consider how to make better links/drive total water budget approach that take into account the health and viability of watersheds/sub-watersheds** ▪ **Revise Planning Act and Class EA to ensure conservation planning and water allocation options are considered earlier in process** ▪ **Strategy should become legislation "Water Conservation Act"** ▪ **The stricter intra-basin transfer regulations, the more conservation-oriented the municipality will have to be** ▪ **Mandate water utilities to become self-sustaining – require full cost recovery**
General / context	▪ Draw on committee examining stormwater manual for climate change adaptation – integrate work with strategy
(e) Financial incentives	
Themes	▪ **Implement a "blue screen" that requires water conservation planning as a condition of infrastructure funding and prioritizes repair of leaking water mains and undertaking water reuse pilots** ▪ **Phased funding for infrastructure contingent upon meeting conditions/milestones of water conservation plan** ▪ **Incentive program to get individuals to protect water features such as wetlands (i.e., "Water Trust")** ▪ **Do not re-invent new funding programs; build on existing ones** ▪ **Provide guidelines to municipalities for structuring/applying water rates to help drive conservation** ▪ **Sustainable funding sources for ENGOs/NGOs to deliver programs** ▪ **Incentives or regulations/requirements for water efficient fixtures/equipment/practices for builders, developers, etc.**
General / context	▪ Integrate indoor/outdoor water efficiency with energy efficiency incentive programs ▪ Use disincentives – charge more for those who don't conserve (water budgeting) ▪ Streamline of regulatory requirements as a incentive (e.g., PTTW would be reviewed less frequently for good players)

ATTACHMENT 1

WATER CONSERVATION AND EFFICIENCY
COMMERCIAL AND INDUSTRIAL SECTORS
January 13, 2009

Representative	Organization
Barbato, Nicole	Conservation Ontario
Bulk, Joanna	Lake Ontario Waterkeeper
Cayley, Julie	Ducks Unlimited
Day, Carolyn	Canadian Federation of University Women Ontario Council
Etienne, James	Grand River Conservation Authority
Mass, Carol	POLIS Project for Ecological Governance
MacDonald, Elaine	Ecojustice
Meek, Sonya	Toronto Region Conservation Authority
Miller, Sarah	Canadian Environmental Law Association
Morris, Tim	Walter Duncan Gordon Foundation
Morwood, Earl	Ontario Groundwater Association

Water Conservation and Water Charges
Environmental Nongovernmental Organization and Conservation Authority Discussion

Date: January 13, 2008

Location: **Private Dining Room, 2nd Floor, Burwash Building**
Victoria University (see attached map)
University of Toronto

AGENDA

8:30 AM	Arrival and registration (continental breakfast provided)
9:00 AM	Welcoming remarks and introductions
9:15 AM	Review of session agenda and format for the day – comments and questions
9:30 AM	Overview – Developing Ontario's Water Conservation and Efficiency Strategy: - Summary of findings from initial multi-stakeholder consultation - Water conservation and efficiency in other jurisdictions
10:00 AM	Exploration and discussion – key questions
12:00 PM	Lunch (provided)
1:00 PM	Review of Great Lakes Basin-wide goals and objectives - Examples from other jurisdictions
1:15 PM	Exploration and discussion – key questions
2:30 PM	Wrap-up and next steps

KEY QUESTIONS – WATER CONSERVATION
CAs AND NGOs CONSULTATION

Water conservation and efficiency – general:

1. What are conservation authorities and non-government organizations currently doing in regard to water conservation and efficiency?
2. What should be key components of a water conservation program for your organization?
3. Who should be required to prepare a water conservation plan and implementation program?
4. What barriers to the preparation and implementation of water conservation and efficiency measures would need to be overcome?
5. What targets or performance measures should be set for Ontario's entire strategy and/or for each sector?

Water conservation and efficiency – goals, objectives and actions:

1. What should be the goals and objectives for Ontario's water conservation and efficiency strategy?
2. What actions and/or commitments should be included in the strategy to achieve the goals and objectives for:
   - Technology-based measures?
   - Behavioural or management practices?
   - Educational initiatives?
   - Regulatory initiatives?
   - Financial incentives?

(7)

WATER CONSERVATION AND WATER CHARGES
Municipal Sector Meeting Summary Report (draft)
January 16, 2009

Provincial staff met with 16 representatives from the municipal sector and associated water system and product industries and associations. One participant represented the building/development sector (see Attachment 1 for a list of attendees and their respective organizations). The meeting was held in Toronto on January 16, 2009 and the purpose of the meeting was to discuss the development of Ontario's water conservation and efficiency strategy. A secondary purpose for the meeting was to discuss a proposed 'Phase 2' of water taking charges for commercial and industrial water users. Refer to Attachment 2 for a copy of the meeting Agenda.

At the conclusion of the presentation on water conservation and efficiency, the following general comments were raised by participants:

- Need to understand the reason for this initiative. It has not been made clear as to why this initiative is being undertaken and stakeholders should be informed.

- Need to be careful about saying there will be savings for the customer – 80% of municipal supply/treatment are fixed costs so, for example, say supply makes up 20% of the costs, a 10% savings resulting from conservation totals only a 2% cost savings.

Subsequent to the presentation of Phase 2 water charges, the following general comments were raised by participants:

- The charges for water are too low and will not act as an incentive for conservation.

- There seems to be a real disconnect between the purpose of this meeting – to discuss ways and means of achieving water conservation and efficiency – and the low water taking charges rates.

Key questions guided the discussion of Conservation and Efficiency, and Phase 2 Water Charges. Refer to Attachment 3 for the list of questions.

Although there were numerous and varied responses to key questions, some common themes emerged from the meeting. Common themes are those issues and/or recommendations for which there was general agreement amongst session participants. These themes and the proceedings from the consultation meeting are summarized in Table 1 through Table 3 of this report.

TABLE 1: Water Conservation and Efficiency – General

1. What is your sector currently doing in regards to water conservation and efficiency?	
Municipalities	▪ Municipality provide rebates for water efficient fixtures (showerheads, toilets, etc) ▪ Municipal water efficient plans with different measures (IC&I programs, leak detection, water audit, rebates, etc.) ▪ Note: if lower tier municipalities conserve water, they lose revenues ▪ Lower tier focus of conservation/efficiency on supply side (leakage detection and repair) ▪ Initiatives for water efficiency for new development – multi-unit and single-family ▪ Municipality – public and community housing retrofits ▪ Municipality – meter change out programs in residential area ▪ Recalibration of in IC&I of metering (needs to be done to maintain accuracy of meters) ▪ Some internal retrofits of municipal buildings and conserve./efficiency requirements for new buildings (i.e., some municipalities requiring LEED for new municipal buildings) ▪ School curriculum programs ▪ Wide-spread public education programs ▪ Water conservation by-laws (watering bans/restrictions) ▪ Have caught the low-hanging fruit with conservation/efficiency programs, but harder to do more ▪ Water efficiency master plan updated with targets for savings: o Ontario's first toilet replacement program o Distribute subsidized rain barrels o Research pilot on large rainwater harvesting o Audits of commercial sector o Improvement initiatives e.g. shower heads, low flush toilets o Rebates for ultra low flush toilets ▪ After metering had 30% spare capacity, difference was huge ▪ Reverse demand charge – great incentive but became politically unpopular (e.g., used 200 cubic litres of water in Aug. and 100 cubic litres of water in Nov. the difference between the two has to be paid back over the subsequent year – done to discourage excessive water use in summer and it worked)
Great Lakes – St. Lawrence Cities Initiative	▪ Great Lakes/St. Lawrence Cities Initiatives – Has a conservation framework with goal of 15% water reduction by 2015 (commencing 2000) ▪ GLSCI – provides support and information on conservation plan development

TABLE (1 Cont'd): Water Conservation and Efficiency – General

1 (Cont'd). ***What is your sector currently doing in regards to water conservation and efficiency?***	
Water system and product industries	▪ Industry working with codes and standards committee to encourage conservation (e.g., removing 13 litre toilets) – creating a level playing field ▪ Water treatment industry trying to improve efficiencies in technologies (WQA and NSF) ▪ CWQA – self education in water industry building to collection and dissemination of information to association members and public ▪ Businesses not currently water conservation minded because there no incentive ▪ OMWA have not yet jumped on conservation band wagon but recognise need to get on board. ▪ Kohler (Water fixture company) – using California standards for fixtures, moving towards 1.2 gal/flush toilets, 1.5 l/min faucets and 1.75 l/min showerheads ▪ Kohler - recipient of WaterSense product manufacturer of the year award for conservation/efficiency technology ▪ Kohler – working toward a small carbon footprint ▪ Water treatment industry working to improve technology
2. What are the current Best Management Practices for water conservation and efficiency in your sector?	
General / Context	▪ Rainwater harvesting ▪ Metering ▪ Water audits ▪ Capacity buy-back programs ▪ Water use by-laws ▪ Control of fire hydrant use ▪ Labelling programs (Energy Star) ▪ Social marketing (toilet rebate programs, landscape audits, etc) ▪ Sharing of best practices between industry ▪ Monitoring in-flow and consumption at industrial facilities (plant) ▪ Selling to consumer the Energy Star home (note: problem is initial cost to consumer a 10K to 15K premiums – a hard added cost to sell ▪ District Management Areas (DMAs) and Sector Management Areas (SMAs) – measuring water in/out and complete a water balance to identify loss (currently a pilot project to be expanded municipal-wide) ▪ Automatic Meter Reading (AMRs) – demand side initiative currently pilot level only ▪ Pressure management results is lower equipment failure (leakage reduction) ▪ SCADA (Supervised Control and Data Acquisition) ▪ 4.8 litre toilets and 7.5 litre/minute showerheads for new construction ▪ Certification of technologies for water treatment ▪ Water system design – eliminating and avoiding dead-ends ▪ Develop hydraulic model for system focus on water quality (regular calibration required) ▪ R&D into technology for conservation ▪ Improved management practice
Other / Issues / Questions	▪ Understanding of consumer behaviour when designing water efficient products e.g. can only make a showerhead so efficient because the consumer will just shower longer

TABLE (1 Cont'd): Water Conservation and Efficiency – General

3. What should be key components of a water conservation program for your sector?	
Themes: ▪ **General**	▪ **Linking water efficiency with water quality visa versa** ▪ **Linking energy efficiency with water conservation/efficiency** ▪ **Need a common, viable measurement for target – percentages are ambiguous** ▪ **Leak detection** ▪ **Research projects (new technologies and pilots)** ▪ **Cost benefit analysis of options (ROI)** ▪ **Consider true value of water (environmental, social, economic – full spectrum)** ▪ **Water rate dollars collected by municipality must be allocated to water system, not general revenues**
Themes: ▪ **Uniform standards** ▪ **Stricter code requirements** ▪ **Harmonization**	▪ **Uniform standards across Ontario (regulations, policies, code and any other tools to be used by province)** ▪ **Need harmonization of standards for codes** ▪ **Update building code** ▪ **Monitoring and reporting of initiatives** ▪ **Need standards for certification of conservation products and fixtures** ▪ **Harmonize policies that are already in place at different levels**
Themes: ▪ **Education and communications**	▪ **Education and communications** ▪ **Deal with the "myth of abundance" – need a conservation culture change (e.g., Environmental/water footprint)** ▪ **Individual must understand value of water – needs to be communicated and reinforced** ▪ **Consistent messaging across province on conservation/efficiency based on a market analysis (need a good understanding of the market, best approaches and what will work)**
Themes: ▪ **Requirements and regulations**	▪ **Need initiatives targeting high water wasters – should have a requirement to reduce/eliminate waste** ▪ **Need council support – resolutions, by-laws, etc – province must provide directive** ▪ **Provincial directive will help get municipal councils on board**
General / context	▪ By-laws can be used to mandate use of water efficient technology (e.g., low-flow toilets) ▪ Need to focus attention of municipal councils and management on water (e.g., energy utilities) ▪ Develop realistic targets; specific targets for municipalities to be developed through another round of discussions ▪ Establish progress indicators ▪ Great Lakes St. Lawrence Cities Initiative has signatories and they have committed to conservation/efficiency – one way to get municipal council support ▪ Alternative landscapes and related education ▪ Builders do not need to be environmentally friendly unless put into law ▪ Rates may have to change ▪ Fine for polluting or a consequence for water misuse and pollution ▪ Fines can be revenue generating ▪ Incentive for lower tier municipalities to enact conservation programs (offset loss of revenue) ▪ Rates may have to change if municipality selling less water ▪ Consider Hydro model where distribution is separated from supply

TABLE (1 Cont'd): Water Conservation and Efficiency – General

4. Who should be required to prepare a water conservation plan and implementation program?	
Themes	▪ **Differing views** • **all municipalities vs. growing municipalities (water utility)** • **all PTTW holders vs. large water users with PTTW holders** ▪ **Province should be involved in updating the plan and monitoring it** ▪ **Public institutions**
General	▪ Province should develop guidelines but in consultation with builders/developers because responsible for implementing ▪ High water users – can make their own conservation plan or they could be included in a municipal plan ▪ All partners need to be present when developed ▪ Need to recognize that municipal water conservation plans are variable and any past achievements in water conservation and efficiency ▪ Plans do not actually reduce water use; the key is to measure progress on plan implementation ▪ There should be connections to municipal plans, conservation authorities, SPC and watersheds ▪ Municipalities can readily prepare plans. The detaisl of what goes into a plan is the difficulty. A public meeting should be required.
5. What barriers to the preparation and implementation of a plan would need to be overcome?	
Themes: General	▪ **Disconnect between watershed carrying capacity and water use and conservation/efficiency requirements** ▪ **Building code cycle too long** ▪ **"Myth of Abundance" – sense there is a lot of water so no need to conserve** ▪ **Consumer behaviour not conservation oriented – needs to change** ▪ **Inconsistency in data within and across municipalities** ▪ **Low water rates**
Themes: Lack of political, senior mgt., and interdepartmental support	▪ **Finance departments in municipalities – focus on the fiscal year versus the Works Depts., which must plan longer-term** ▪ **Disconnect between planning development, finance and operations in municipalities** ▪ **Lack of political will and support** ▪ **Longer approvals from planning depts. in municipalities for innovative technologies and designs versus those for conventional** ▪ **Lack of direction from province and municipal political-/director-level – need higher level directive to ensure allocation of resources** ▪ **Lots of surplus capacity so no incentive/support for conservation/efficiency within municipality** ▪ **Sometimes political motivation not in line with conservation/efficiency**
Themes: Lack of Resources and Know-how (financial, personnel and expertise)	▪ **Lack of in-house expertise in municipalities, therefore templates and guidance on conservation plans and implementation strategies required** ▪ **Lack of sufficient resources - need resources allocated** ▪ **Lack of funding for conservation and efficiency programs** ▪ **Lack of resources, expertise, etc. in small municipalities – need both financial and technical support** ▪ **To address lack of resources, expertise, etc. need provincial body to provide information, expertise, support, guidance, tools, models, etc.**

TABLE (1 Cont'd): Water Conservation and Efficiency – General

5. (Cont'd.) ***What barriers to the preparation and implementation of a plan would need to be overcome?***	
General / context	▪ Frequency and format of water bills – not consistent ▪ Understanding overall purpose/objective of strategy – is it energy savings, GHG reduction, etc? ▪ Metrics for industry hard to obtain – consider proprietary information ▪ Financial issues for small communities ▪ Water rate revenues directed into general revenues, not into water system ▪ Getting good billing data difficult, e.g., need an AMR system to breakout water use data, but for a lower tier municipality the system would cost 10M ▪ Difficult to get co-operation of different parties (province, municipality, builders, engineers, etc) ▪ Some areas of conservation difficult to monitor and report (i.e., education) ▪ Requiring too much detail on conservation plan could be a barrier ▪ Not knowing how to measure the success of a program ▪ Longer payback for older buildings, e.g., older commercial buildings require retrofit but infrastructure is a barrier, so cost recovery is longer
6. What targets or performance measures should be set for Ontario's entire strategy and/or for each sector?	
Themes **Targets, data, numbers**	▪ **How should targets be set? – It is ambiguous to assign a percentage** ▪ **There need to be a connection from bottom up (end user, lower tier municipality, regional municipality, province) – to determine numbers and possible reductions** ▪ **Conservation plans should have to state/record spare capacity** ▪ **Consider application of International Leakage Index (ILI)** ▪ **General percentage changes mean nothing to some consumers, therefore need per capita goals** ▪ **Reasons to set targets: drive monitoring, metering, funding, reporting, conservation initiatives, etc.** ▪ **Per capita measurement should be used for residential** ▪ **Defined targets for single-family residential homes (i.e., 150 litres/person/day for homes with water efficient fixtures)** ▪ **Benchmark should be a litre/person/day measurement used as a target not a requirement**
Themes: **Requirements, regulations**	▪ **Disconnect of various acts and regulations – need to consider the whole when determining targets** ▪ **Harmonization of regulations is necessary** ▪ **Conservation/efficiency requirements within standards (Building Code) – may also need to address national code through CCME** ▪ **Provincial targets must apply to all ministries (they must have an obligation to help meet targets and make them work)** ▪ **Cabinet level directive for conservation so all ministries and ministers must support, but raises question about how to achieve this directive** ▪ **Public sector conservation plans should be made public** ▪ **Public institutions (e.g., schools, prisons, hospitals) should be given standards to meet and plans should be public**
General / context	▪ Don't be prescriptive, ask municipalities to set their own targets ▪ Plans should not revolve around numbers, should be statements of principles ▪ Consistent use of terminology (e.g., "Consumptive use" definition in Annex vs. definition in Source Protection – will get a different set of numbers)

	▪ Domestic water use targets could be set for the ICI sector but not for processing components: must ask industry about what is achievable for processing components

TABLE (1 Cont'd): Water Conservation and Efficiency – General

7. Given the spectrum of options-from voluntary/encouragement at one end to requirements/regulation at the other, what conservation initiatives/practices should be at the regulatory end and under what circumstances?	
Themes:	▪ **Capital funding for infrastructure should be tied to demonstrable water efficiency and conservation results** ▪ **Tie in regulatory requirements (PTTW, C of A, etc.) to conservation/efficiency** ▪ **Phase in requirements – targets set over a timeline because some initiatives take time to implement** ▪ **Requirements for leak detection and reduced water wasting** ▪ **Public sector should be regulated** ▪ **Municipal sector should be legislated to have conservation plan – note of caution about level of detail required** ▪ **Mandate Peak Day factor – would force reduction in summer water use**
General	▪ Reporting requirements for water conservation and efficiency achievements with verification by province ▪ Requirements for use of certified equipment (e.g., Water Sense) and contractors for irrigation (and possibly other areas) ▪ Provincial guidelines for developers ▪ Quantify job creation and economic stimulus of water conservation and efficiency ▪ Building Code should set minimum standards for soil ▪ Mandatory metering and measurement of municipally-supplied customers ▪ Mandate a maximum peak day factor

TABLE 2: Water Conservation and Efficiency – goals, objectives and action

1. *What should be the goals and objectives for Ontario's water conservation and efficiency strategy?*	
Themes:	▪ **Targeted and specific** ▪ **Set targets in residential (e.g., 150 litre/person/day)** ▪ **Consider all water – wastewater and drinking water** ▪ **Water quality as well as water quantity must be included** ▪ **Harmonization and consistency of codes and standards** ▪ **Level provincial playing field** ▪ **Reduction of Peak Day** ▪ **Reduce water loss** ▪ **Standards for leakage ILI** ▪ **Changing building codes and standards (residential and IC&I)** ▪ **Create opportunity for municipality/IC&I to use alternative approaches (e.g., community grey water system)** ▪ **May have objectives for grey water use, but health and safety (safe drinking water) must be assured**
General / Context	▪ Monitoring and reporting - be prescriptive to ensure consistency (apples to apples ▪ If supported by reasonable needs, should have province-wide efficiency and conservation objectives ▪ What is reasonable objective for water consumption? (e.g., how much per person per day?) ▪ Water audits for IC&I ▪ ICI: 1) Audits 2)Identify opportunities for conservation, equipment, etc 3) Implement and monitor conservation program with measurement and reporting ▪ Standards for equipment for water conservation for use in IC&I ▪ Have a single aim, such as a mission statement: "to provide an effective and efficient use of water from a holistic point-of-view for the benefit of …(should be endorsed by Cabinet) ▪ Adopt the 5 Regional objectives and include wording to the effect that Ontario shall… ▪ Need to answer the question "why reduce?"
2. What actions and or commitments should be included in the strategy to achieve the goals and objectives for:	
a) Technology- based measures	
Themes	▪ **Revise building code but enable , municipalities to go beyond it** ▪ **Pilot projects for new technology (support financial & implementation)** ▪ **R & D, pilots to determine appropriate technologies (e.g., meters for use in system)** ▪ **Metering standards should be required by province for universal consistency and other conservation related equipment (e.g., pumps)** ▪ **Update codes and standards through consultation** ▪ **Encourage R and D of efficient technology (e.g., metering, reporting and managing of conservation)** ▪ **Address the dynamic of what is allowed to stay in the market (e.g., 13 litre toilets) – need to tax (or apply a disincentive) for the environmentally inefficient products** ▪ **Need to monitor and maintain technology over time or savings erode**

TABLE 2 (Cont'd.): Water Conservation and Efficiency – goals, objectives and action

a) Technology-based measures (Cont'd)	
General / Context	▪ Templates for non-conventional, new, innovative technology ▪ Implement and endorse the right technology (i.e., what do we do with the mercury from energy efficient light bulbs) ▪ Testing of technology does not always reflect reality, therefore monitor and evaluate testing methods (toilets don't typically plug from waste, but from over paper use) ▪ Support "Water Sense" initiatives through incorporation in code ▪ Technology can drive reporting ▪ Build into equation life expectancy of technology ▪ Technology has to perform for the consumer
b) Behavioural and management practices	
Themes	▪ Municipalities have to demonstrate conservation within all their departments (Parks, recreation, etc – province should encourage municipalities to require this of their departments ▪ Resources going to municipalities for infrastructure (both municipal revenues from water rates and funding from province for infrastructure) must go to water system with set portion allocated to water conservation and efficiency ▪ Provincially-led social marketing campaign with consistent messages and materials that can be customized by municipalities ▪ Educational role in fostering market transformation (e.g. water tight reports) – opportunity for government to affect/transform marketplace ▪ On going monitoring of conservation plans helps to change behaviour over the long term ▪ Education – public and within sectors
General / Context	▪ Premier's Award for conservation (recognition program) ▪ Municipal award category for governance and innovation ▪ Review management practices over time and compare to determine which is better ▪ Lessons to be learned from past programs ("install programs" are better than "give-aways") ▪ Managers role is to make money for stakeholders, so is a tough educational challenge to inform upper management of need for conservation/efficiency ▪ Need mechanism to benefit stakeholders, like a water credit (i.e., carbon credit) or perhaps a trade of water rights (selling off unused potential) ▪ Industry awards are incentives and seen as a means for consumers to differentiate between one supplier and another ▪ Awards like Green Builder of the Year drive innovation ▪ The word "Green" has been overused so therefore provincial award should "catchy"

TABLE 2 (Cont'd.): Water Conservation and Efficiency – goals, objectives and action

c) Educational initiatives	
Themes	▪ **Provincial-level initiatives to dispel "Myth of Abundance"** ▪ **Technical training and tools for practitioners** ▪ **Province-wide curriculum for water conservation (more curriculum connections)** ▪ **Must link conservation/efficiency education directly to provincial curriculum** ▪ **Education most effective at primary school level (habit forming)** ▪ **Provincial media campaign for water conservation (use a qualified ad agency)** ▪ **Promote intrinsic value of water** ▪ **Province should allocate serious funding to advertising in order to raise awareness levels** ▪ **Message of advertising should be Ontario-wide, all individuals should be thinking of Ontario as their community not just the municipality in which they live** ▪ **Requirement for water bill to report litres/household/day – average, provincial goal and actual – this would help customers understand their water use in relation to the average and the provincial goal (consider visually showing water use by placement on a scale)**
General / Context	▪ Demonstration sites for conservation (i.e., water/eco-education centres for students) ▪ Centre of excellence on water conservation – virtual or real (similar to Walkerton Centre) ▪ Using Centre of Excellence to research, compile and disseminate information (from international domestic and international jurisdictions) ▪ Alliance for Water Efficiency – use as clearinghouse for information ▪ Children's Water Festival is a good program ▪ Water for sustainable future should be focus of education ▪ Education and knowledge exists in industry on part of builders and engineers but there is apathy amongst these individuals to educate consumers ▪ Province should tap into industry trade shows as an educational opportunity ▪ Builders and industry could benefit from more educational initiatives (e.g. Green Plumbers) ▪ Conservation training and education of provincial ministries and agencies (i.e., Ministry of Heath, Municipal Affairs and Housing, etc.)
d) Regulatory initiatives	
Themes	▪ **Ban the sale of 13-litre toilets (regulations and/or code)** ▪ **Require conservation initiatives (measure, report, verify) for qualification for infrastructure funding** ▪ **Harmonizing water regulations** ▪ **Water conservation plan for everyone who has a PTTW** ▪ **Modify/upgrade building code and plumbing code** ▪ **Should have annual reporting on conservation achievements** ▪ **Mandatory metering with a time deadline** ▪ **Consistent billing** ▪ **Summer by-law direction established by province at a minimum standard – municipalities will have to comply with minimum**

TABLE 2 (Cont'd.): Water Conservation and Efficiency – goals, objectives and action

d) Regulatory initiatives (Cont'd.)	
General	▪ Harmonization of federal and provincial regulations ▪ Builders and industry could benefit from more educational initiatives (e.g. Green Plumbers) ▪ Consider including BMPs in regulations ▪ Caution! BMPs and standards must consider impact on system and environment (must be tested before introduced) ▪ Requirement to post (like EBR) conservation standards and requirements ▪ Regulation should be encouraging/embarrassing not threatening or enforcing
e) Financial incentives	
Themes	▪ **Grant programs tied to specific conservation deliverables (measure, report, verify)** ▪ **Grant programs cannot reward bad players and penalize good players** ▪ **Grants for good water conservation plans with qualifier, be careful grants to service the mediocre** ▪ **Funding/grants for R & D and pilots** ▪ **Proper funding allocated to water and wastewater** ▪ **Dollars from water rates must be used for water systems (supply and wastewater) and water conservation and efficiency (not general revenues)** ▪ **Inclining block rates** ▪ **Establish conservation performance targets and allow good actors to benefit and receive grants**
General	▪ Incentives for IC&I for water conservation programs or penalize non-conserving businesses ▪ Accelerated capital depreciation for water conservation technologies and equipment ▪ Rebates for reduced water consumption ▪ Incentives for smaller municipalities to install residential meters ▪ Financial incentives for smaller municipalities to develop conservation plans ▪ Invest and support LEED program with incentives ▪ Should provide financial resources for an information hub with benchmarks, standards, models, etc. ▪ Conservation plans should not be costly if straight forward guidelines come from province ▪ Rebates and incentives offered by municipalities could be influenced/financed by province

TABLE 3: Water Charges

1. *Are there any issues or concerns regarding the proposed charge rates?*	
Themes	▪ **Rates are so low as to be meaningless** ▪ **Disconnect between the idea of incentives for conservation and the low charge rate** ▪ **Large water users will affect water use most – why are they being charged such low rates?** ▪ **Conservation costs should be covered by charge revenue**
General / Context	▪ Lot of water wastage and loss in small companies (not captured through charge) ▪ Should have tiered rate for non-consumptive users vs. consumptive and for consumptive with transfers ▪ Should have a premium on consumptive use when transfer involved
2. *Are there any issues or concerns regarding the administration of the charge to municipal water users?*	
Themes	▪ **Reporting water use information to the province for water charges is an administrative burden for many municipalities** ▪ **Because billing frequencies vary, have no idea what is consumed in one day (charge intended to apply to users taking more than 50,000 litres per day)** ▪ **How does MOE define high consumptive use?**
General / Context	▪ If a percentage of water is being returned, MOE should consider where entity fits into category (high or medium) ▪ Some municipalities do not have list of individual users (e.g., one municipality had to go to tax roll to determine) ▪ Changing reporting requirements so that municipalities only have to provide data for water customers above an annual volume threshold would reduce their workload substantially ▪ Administrative cost for some municipalities to report water use to the province will be higher than revenue from charge ▪ What is the goal of rates? To raise revenue for the province? Because annual reporting will not capture seasonal users (e.g., golf courses), the rates will have no effect on reducing peak demand (the most costly water to supply and significant conservation issue) ▪ Discretionary vs. non –discretionary water consumption should be taken into consideration (e.g., water bottlers – individuals can choose to buy water and pay more, but cement is necessary for building, so cost of water charges if too high will be passed on to end user) ▪ Will MOE be requiring the municipalities to submit the data? If charging users directly, why does municipality have to supply data?
3. *Based on the implementation schedule, are there any issues or concerns regarding the timeline?*	
General / Context	▪ Why wait so long? – should have a shorter timeline and higher rates should apply ▪ Shorter timeline is manageable because no adjustments in technology just have to pay more ▪ Any chance rate revenues could be applied to stewardship program (source protection)?

ATTACHMENT 1

List of Participants
January 16, 2009

Name	Organization
Bourque, Jason	Canadian Institute of Plumbing and Heating
Bozzo, Peter	Nimbus Water Systems Canada
Brooks, Michael	RMSI Consulting and OWWA
Cumming, Austin	Kohler Canada
Harris, Katelyn	University of Guelph
Hartley, Alex	York Region
Klaus, Jerry	Town of Markham
MacIntyre, Theresa	York Region
Rosemary MacLennan	Ontario Municipal Water Association/ Municipality of Trent Hills
Manente, Johann	Peel Region
Meek, Rob	Town of Vaughan
Moir, Korice	Great Lakes St. Lawrence Cities Initiative
Pleasance, Glen	Region of Durham
Rang, Sarah	Great Lakes St. Lawrence Cities Initiative
Vaccaro, Joe	BILD
Wong, Kevin	Canadian Water Quality Association

ATTACHMENT 2

Water Conservation and Water Charges
Municipal Sector Discussion

Date: **January 16, 2008, 9:00am to 4:00pm**

Location: **Temagami Room, MacDonald Block**
900 Bay St., Toronto

AGENDA

8:30 AM	Arrival and registration (continental breakfast provided)
9:00 AM	Welcoming remarks and introductions
9:15 AM	Review of session agenda and format for the day – comments and questions
9:30 AM	Overview – Developing Ontario's Water Conservation and Efficiency Strategy: - Summary of findings from initial multi-stakeholder consultation - Water conservation and efficiency in other jurisdictions
10:00 AM	Exploration and discussion – key questions
12:00 PM	Lunch (provided)
1:00 PM	Review of Great Lakes Basin-wide goals and objectives - Examples from other jurisdictions
1:15 PM	Exploration and discussion – key questions
2:00 PM	Overview – Phase 2 Water Charges - Previous consultations and resulting charge framework - Specific elements of Phase 2 - Proposed implementation schedule - Financial analysis to date
2:30 PM	Exploration and discussion – key questions
4:00 PM	Wrap-up and next steps

KEY QUESTIONS – WATER CONSERVATION AND WATER CHARGES
MUNICIPAL SECTOR CONSULTATION

Water conservation and efficiency – general:

1. What is your sector currently doing in regard to water conservation and efficiency?
2. What are the current Best Management Practices for water conservation and efficiency in your sector?
3. What should be key components of a water conservation program for your sector?
4. Who should be required to prepare a water conservation plan and implementation program?
5. What barriers to the preparation and implementation of a plan would need to be overcome?
6. What targets or performance measures should be set for Ontario's entire strategy and/or for each sector?

Water conservation and efficiency – goals, objectives and actions:

1. What should be the goals and objectives for Ontario's water conservation and efficiency strategy?
2. What actions and/or commitments should be included in the strategy to achieve the goals and objectives for:
   - Technology-based measures?
   - Behavioural or management practices?
   - Educational initiatives?
   - Regulatory initiatives?
   - Financial incentives?

Water charges:

1. Are there any issues or concerns regarding the proposed charge rates?
2. Are there any issues or concerns regarding the administration of the charge to municipal water users?
3. Based on the implementation schedule, are there any issues or concerns regarding the timeline?

WATER CONSERVATION AND WATER CHARGES
Broader Public Sector Institutions (draft)
January 23, 2009

Provincial staff met with representatives from public sector institutions (see Attachment 1 for a list of attendees and their respective organizations). The meeting was held in Toronto on January 23, 2009, and the purpose of the meeting was to discuss the development of Ontario's water conservation and efficiency strategy. Refer to Attachment 2 for a copy of the meeting Agenda.

Participants were given a presentation to provide some context and offer an overview of water conservation and efficiency. Subsequent to the presentation, the following general comments and questions were raised by participants:

- Are there benchmarks for the residential water use? For institutions?
- If the Great Lakes-St. Lawrence Cities Initiative has a target of 15% reduction in total water usage over 15 years, how have they set the target?
- When the Regional body refers to improved water use efficiency, what sort of initiatives are they considering to achieve this? What practical actions does this include?
- With Smart Meter can see electrical use in real-time, for water use must wait a month to get the water bill, therefore no immediate sense of need to conserve

Key questions guided the discussion of Conservation and Efficiency. Refer to Attachment 3 for the list of questions.

Although there were numerous and varied responses to key questions, some common themes emerged from the meeting. Common themes are those issues and/or recommendations for which there was general agreement amongst session participants. These themes and the proceedings from the consultation meeting are summarized in Table 1 and Table 2 of this report.

TABLE 1: Water Conservation and Efficiency – General

1. What is your sector currently doing in regards to water conservation and efficiency?	
Ontario Realty Corporation	▪ Environmental Management System (EMS) – water conservation is part of the EMS ▪ BOMA / LEED certification for new buildings and renovation tied into Green Building (e.g., low-flow toilets) ▪ Part of EMS addresses behavioural aspect of conservation ▪ LEED Pilot program – ORC has 4 buildings in the study and LEED has a total of 80 buildings across the country ▪ ORC had first LEED certified building ▪ Draft study saying want to conserve water ▪ There are water use consideration associated with reduction in pesticide use ▪ Some consideration for water conservation from the perspective of reducing or eliminating stormwater retention ponds (e.g., increasing permeable surfaces, etc.)
Correctional Services	▪ Fund minor capital projects to address water wastage (e.g., install computer based controls on showers for shut-off) ▪ No official program for water conservation, but respond to requests/ideas for conservation initiatives from individual facilities ▪ If prison institution approaches Correctional Services about water conservation, will take a look, but not a proactive process.
OAPPA/McMaster	▪ Water conservation program were born out of energy initiatives ▪ Institutions like McMaster University have large water use with limited focus on water conservation (i.e., 7 years ago, 1 metering location) ▪ Under took meter installation to identify benchmark ▪ Universities are complex therefore, complicated to track water use ▪ Limited focus on water ▪ Lots of untraceable water use/ large water using facilities such as hospital. ▪ Three years ago established sustainable building initiatives, now all new and existing buildings will be LEED Silver. ▪ New engineering building to be LEED Gold ▪ Engineering building will have rainwater harvesting system with filtration and treatment producing potable water. ▪ Auditing the rainwater reuse harvesting system and studying its applicability for other facilities and its exportability ▪ McMaster University has 2 chilled water reservoirs which were abandoned in the 60"s, 1 has a 0.5 M gal capacity that will be used to harvest rainwater which will be used for cooling tower and cooling water for reactor. ▪ Aggressive sub-metering in engineering building to track results ▪ The computerised set up in the new engineering building allows for students to monitor water use and can serve as a learning tool ▪ Students are a driver for conservation ▪ Institutions that have a policy in place actually move forward on conservation/sustainability ▪ Monitoring rainwater harvesting system and engineering building, therefore data and reports to be available on water quality and quantity from monitoring program. ▪ The more we track policies and monitor them the more that can be achieved in sustainability ▪ Over 15 years the players change and there needs to be a record and policy in place

TABLE 1 (Cont'd.): Water Conservation and Efficiency – General

Ontario College Facilities Management Association	▪ Following some current standard conservation initiatives (e.g. low-flow toilets, low-flow showerheads, etc.) ▪ Some colleges have banned use of water bottles ▪ Sir Sandford Fleming retrofitted water fountains with goosenecks to fill water bottles ▪ College network has procured a real time data system for energy ▪ Driver for data system was cost savings for energy ▪ Water accounts for 1% of budget/ energy 29% ▪ Challenge is the order of magnitude - need greatest return on investment (i.e., biggest bang for the buck) ▪ Trying to look at energy conservation from a holistic perspective to include water ▪ Five to seven of the colleges are metered for water but data not yet available ▪ Different colleges have put in green roofs and water collection systems, such as Durham College ▪ Following some current standard conservation initiatives (e.g. low-flow toilets, low-flow showerheads, etc.) ▪ Some colleges have banned use of water bottles ▪ Fleming retrofitted water fountains with goosenecks to fill water bottles ▪ College network has procured a real time data system for energy ▪ Driver for data system was cost savings for energy ▪ Water accounts for 1% of budget/ energy 29% ▪ Challenge is the order of magnitude - need greatest return on investment (i.e., biggest bang for the buck) ▪ Trying to look at energy conservation from a holistic perspective to include water ▪ Five to seven of the colleges are metered for water but data not yet available ▪ Different colleges have put in green roofs and water collection systems, such as Durham College
Ontario Long-term Care Association	▪ Represent 430 long term care facilities (for profit), in total in Ontario there are 600 long-term care facilities (for profit+not-for-profit) ▪ For profit facilities interested in cost savings ▪ As a sector, just starting to learn about LEED and what it might mean for the facilities in the future ▪ No conservation mandate yet for sector

TABLE 1 (Cont'd.): Water Conservation and Efficiency – General

2. What are the current Best Management Practices for water conservation and efficiency in your sector?	
General / Context	▪ For universities focus mostly on human consumption (behavioural) uses (e.g., low-flow toilets/faucets/showerheads) is areas like residences, gyms, labs, etc. ▪ Had tried waterless urinals but created problems with flows therefore moving to ultra low-flow urinals ▪ Rainwater harvesting – a small component at most Ontario universities and colleges (e.g., McMaster, UOIT), ▪ McMaster using some drought tolerant landscaping – disabled automatic irrigation system and now only manually water some flower beds ▪ Colleges moving from spray to drip irrigation ▪ Programs for landscape design use college property as "living labs" for l, therefore irrigation required ▪ Landscape programs at colleges have a sustainability component, including water efficiency ▪ McMaster uses artificial turf for sports field ▪ Employ water efficient appliances and fixtures at prison facilities
3. What should be key components of a water conservation program for your sector?	
Themes	▪ **Benchmarking, and it should be done on a comparative basis** ▪ **Need to be cognizant of different sectors – one-size-fits-all approach does not work** ▪ **Information clearinghouse on technologies, systems, etc., for conservation with cost-benefit data.** ▪ **Need to know what the BMP is for specific water uses, such as cooling towers, food management, boilers, etc.**
General / Context	▪ Must have cost effective BMP's ▪ Need to consider the population to which the measure will apply (e.g., long term care facilities, patients need baths three times per wk.) ▪ More specific standards for equipment used for new construction for different facilities (i.e., on a facility basis) ▪ Need to consider cost recovery models for water use (i.e., is it really better to replace toilets? In other words, where is the money best used with greatest ROI) ▪ Should have guidelines but should not be prescriptive ▪ Voluntary reduction with awards/reward for achieving

TABLE 1 (Cont'd.): Water Conservation and Efficiency – General

4. Who should be required to prepare a water conservation plan and implementation program?	
Themes	▪ **Conservation plans should be required for new construction** ▪ **Make a distinction between new construction and existing (can be cost prohibitive for existing buildings to undertake water conservation retrofits)** ▪ **Highly consumptive users should be required to produce a plan** ▪ **PTTW holders should be required to produce a plan**
General / Context	▪ Should require a conservation plan for institutions – not sure from which point the benchmark would be measured ▪ Public institutions have an obligation for conservation ▪ Should be voluntary, not mandatory with incentives ▪ It is a moral issue – unless conservation required will not move forward ▪ Reductions in water use are readily achievable ▪ Education component important part of the plan ▪ There are numerous obligations for facilities/buildings, such as recycling, energy conservation, waste management programs, therefore need to prioritise and focus on those initiatives with greatest ▪ Consider things that are easy to implement and don't cost a lot ▪ Take a phased approach to implementation on a voluntary basis ▪ Regulatory obligations drive conservation/sustainability initiatives, voluntary approaches don't necessarily result in action ▪ Take a broader, more property wide approach, instead of a building by building approach ▪ There may be opportunities to piggyback on other initiatives to make water conservation planning/implementation less onerous ▪ If plans are mandatory, keep it simple and provide a template (suitable/applicable to each type of facility) ▪ Priorities should focus on high water users in high stress watersheds ▪ Need to distinguish between owned buildings versus leased buildings ▪ Perhaps highly consumptive users should be required to do a conservation plan
5. *What barriers to the preparation and implementation of a plan would need to be overcome*?	
Themes	▪ **Cost and personnel resources** ▪ **Without sufficient funding and support, conservation will not happen** ▪ **For procurement at government facilities, lowest price prevails with reasonable quality, this may eliminates purchasing of green products/technologies, therefore there needs to be an enabler from the government to meet greening strategies** ▪ **Resources are allocated to regulatory requirements, therefore focus is on such areas** ▪ **As water is conserved the cost goes up in order to support the infrastructure which turns into a non- inducement for conservation** ▪ **Need some requirement or conservation won't happen** ▪ **Need to show the benefits for facilities of conservation** ▪ **On energy side, several funding incentives programs in place, need similar programs for water conservation** ▪ **Lack of data** ▪ **Competing policies**

TABLE 1 (Cont'd.): Water Conservation and Efficiency – General

5. (Cont'd.) ***What barriers to the preparation and implementation of a plan would need to be overcome?***	
General / Context	▪ Have many competing programs to track already e.g. greenhouse gases, energy conservation, etc. ▪ Current cost cutting initiatives ▪ Freezing of operating budgets ▪ Comparing costs with US colleges where every $1 in $2 goes to labour, in Ontario, $1 in $4, therefore colleges in Ontario are already running lean and have limited resources ▪ Some buildings are leased without having to pay for water use, therefore little incentive to conserve ▪ Should be given credit for conservation initiatives (e.g., if facility has rainwater system, should not have to pay stormwater management charge, or should have a reduced rate) ▪ Harder to track conservation in leased situations ▪ Heavy regulatory obligations consume time and dollars ▪ Conservation can have the impact of increasing water/stormwater rates (e.g., City of London has raised stormwater surcharge on a per acre basis and this will result in a increase cost to Fanshaw of 30K) ▪ Enforcing another punitive measure is going to make matters worse – there is a genuine interest in conservation, but need funding and resources to make it work ▪ Water conservation lower down the totem pole in terms of priorities
6. ***What targets or performance measures should be set for Ontario's entire strategy and/or for each sector?***	
Themes	▪ **Benchmarks for sectors need to be established first** ▪ **Performance measures for new construction are more viable** ▪ **Difficult to quantify water use/conservation targets for existing buildings** ▪ **Fine to set target but need to know how to measure** ▪ **Difficult to get representation across sectors to develop benchmarks and secure data** ▪ **A phased approach makes sense / some things will take longer to implement** ▪ **If setting a target, need to know the actual ability/ opportunity to use less water** ▪ **Need to have harmonization of regulations among Agreement jurisdictions**
General / Context	▪ Must take growth into account when setting targets ▪ LEED study tracking consumption in existing buildings, might be a starting point for benchmarking for some facilities/buildings ▪ Set performance measure for awareness/education (e.g., tracking surveys) ▪ Possible starting place is to secure data from facilities in other jurisdictions (e.g., universities in California) ▪ Need to determine what is the consumptive use in each sector ▪ Use PTTW to identify high water users ▪ Are we not talking about how efficiently and effectively we use water? – should focus on those water users who consume and degrade water the most

TABLE 2: Water Conservation and Efficiency – goals, objectives and action

1. What should be the goals and objectives for Ontario's water conservation and efficiency strategy?	
Themes	▪ **To ensure compliance with Regional Agreement** ▪ **There should be both short-term and long-term goals** ▪ **Short-term goals driver for actions on conservation** ▪ **Early term targets should focus on readily attainable conservation initiatives/process/technologies** ▪ **Indentify the low hanging fruit or readily achievable reductions to secure quick wins** ▪ **Curriculum-based education/particularly in elementary schools** ▪ **Water is a soft point in the curriculum compared to energy as a whole** ▪ **Make water conservation curriculum mandatory**
General / Context	▪ Setting (determining) benchmark and setting reduction targets accordingly ▪ Timelines need to be tangible (e.g. 5-10 yrs) with reportable milestones at set increments ▪ Requirements for information sharing between participating jurisdictions
2. *What actions and or commitments should be included in the strategy to achieve the goals and objectives for*:	
a) *Technology- based measures*	
Themes	▪ **Provide level of technical support to assess facilities and recommend approaches** ▪ **Provide mechanism (standards or fact sheets) to help sector understand/evaluate/employ technology** ▪ **Consider branding/labelling of water conserving technology (i.e., "Water Sense" brand for technology)** ▪ **Funding for research and development will promote innovation in water conservation** ▪ **Opportunity for government-based rebates or incentives** ▪ **Allocation of set amount of funding specifically for water conservation technology** ▪ **Promote Canadian/provincial technology with procurement changes to allow purchase of more expensive, conserving technology instead of lowest price** ▪ **Information clearinghouse on technology/studies from other jurisdictions and other sectors** ▪ **Some entity responsible for water conservation (e.g., expand existing mandate of Energy Office or have separate water conservation office)**
b) Behavioural and management	
Themes	▪ **Award recognition program**
Context / General	▪ Need to provide opportunities for management to review water efficiency guidelines for facility operations, construction, etc. ▪ Need regional champions (e.g., "Best Practices Co-ordinator" – a regional co-ordinator who educates , mentors, advises) for sustainability, including water conservation ▪ Doctrine or signed commitment for water conservation

TABLE 2: Water Conservation and Efficiency – goals, objectives and action

2. (Cont'd.)	***What actions and or commitments should be included in the strategy to achieve the goals and objectives for:***
c) Educational initiatives	
Themes	▪ **Curriculum-based at the elementary level** ▪ **Need for local municipalities to have better awareness programs (individuals need to understand the true cost of water)** ▪ **Partner with existing education programs/initiatives (e.g. CAs) to deliver water conservation programs** ▪ **Sustainable procurement with certified suppliers (e.g. irrigation contractors)**
General / Context	▪ Huge opportunity for water conservation research/education at post secondary level for all relevant disciplines (e.g., engineering, landscape design, etc.) ▪ Can go beyond suppliers of water related products to other products (e.g., a manufacturer of a given product that wastes a lot of water in the process of manufacture – should avoid procuring products from this manufacturer even if lowest cost) ▪ From an awareness perspective, need to know about unsustainable, water wasting practices
d) Regulatory initiatives	
Themes	▪ **Incremental approach with specific targets by certain dates** ▪ **Consider a phased approach to implementation** ▪ **Regulation and incentives go hand- in-hand** ▪ **Regulations introduced in advance of delivery dates** ▪ **Incentives provided in advance of the delivery dates** ▪ **Need harmonization of regulations – need consistency within Ontario, as well as with other Agreement jurisdictions** ▪ **Regulations need to be "practical" and "implementable"**
General / Context	▪ Early conservation legislation (perhaps in public sector) as a test ▪ Determine applicability (who to target first) – large water users/consumptive water users? ▪ Need to consider who will enforce regulations of programs (PTTW?) – could be resource intensive ▪ Different synergies can happen if goals are reached at different times (e.g. complacency if goal met in one jurisdiction and not others)
e) Financial incentives	
	▪ Need to be incentives not penalties ▪ Incentives for water may have to be higher because there is a lower return from water conservation than from energy conservation ▪ Rebate program or incentive for new technology/equipment ▪ Need different approaches for different users (e.g., consumers versus industry) ▪ Grant amount should be based on the water conservation that can be demonstrated ▪ Enable municipalities to deal with conservation induced loss of revenues ▪ Specific financial incentives tied to metering requirements with reallocation of the savings to water conservation
	▪ Rate structure for water (e.g., inclining block structure) ▪ Caution, increasing water rates can drive business out of a community ▪ Instead of a negative approach, use positive terminology (e.g., "use less water, pay less") ▪ Water is straight forward to meter ▪ Owner needs to have access to the metering data

LIST OF PARTICIPANTS
Broader Public Sector Institutions Consultation
January 23, 2009

PARTICIPANT	ORGANIZATIOIN
Bakker, Harry	Ontario College Facilities Management Association & Fanshaw College
Croll, Elise	Ontario Realty Corporation (ORC)
Cupido, Anthony (Tony)	Plant Administrators (OAPPA) & McMaster University
Langston, Jennifer	Ontario Long Term Care Association
Vendra, Angelo	Ministry of Community Safety and Correctional Services

Water Conservation and Efficiency
Broader Public Sector Institutions Consultation

Date: **January 23, 2008**

Location: **Temagami Room, MacDonald Block**
900 Bay St. Toronto

AGENDA

8:30 AM	Arrival and registration (continental breakfast provided)
9:00 AM	Welcoming remarks and introductions
9:15 AM	Review of session agenda and format for the day – comments and questions
9:30 AM	Overview – Developing Ontario's Water Conservation and Efficiency Strategy: - Summary of findings from initial multi-stakeholder consultation - Water conservation and efficiency in other jurisdictions
10:00 AM	Exploration and discussion – key questions
12:00 PM	Lunch (provided)
1:00 PM	Review of Great Lakes Basin-wide goals and objectives - Examples from other jurisdictions
1:15 PM	Exploration and discussion – key questions
2:30 PM	Wrap-up and next steps

KEY QUESTIONS – WATER CONSERVATION CONSULTATIONS
Broader Public Sector Institutions Consultation
January 23, 2009

Water conservation and efficiency – general:

1. What is your sector currently doing in regard to water conservation and efficiency?
2. What are the current Best Management Practices for water conservation and efficiency in your sector?
3. What should be key components of a water conservation program for your sector?
4. Who should be required to prepare a water conservation plan and implementation program?
5. What barriers to the preparation and implementation of a plan would need to be overcome?
6. What targets or performance measures should be set for Ontario's entire strategy and/or for each sector?

Water conservation and efficiency – goals, objectives and actions:

1. What should be the goals and objectives for Ontario's water conservation and efficiency strategy?
2. What actions and/or commitments should be included in the strategy to achieve the goals and objectives for:
   - Technology-based measures?
   - Behavioural or management practices?
   - Educational initiatives?
   - Regulatory initiatives?
   - Financial incentives?

Developing Ontario's Water Conservation and Efficiency Strategy
Changes in Notification of Agricultural Water Takings
Agricultural Sector Discussion
January 29, 2009

Provincial staff met with representatives the agricultural sector (see Attachment 1 for a list of attendees and their respective organizations). The meeting was held at the University of Guelph on January 29, 2009, and the purpose of the meeting was to discuss the development of Ontario's water conservation and efficiency strategy and changes in notification of agricultural water takings (refer to Attachment 2 for a copy of the meeting Agenda).

A presentation was given to participants to provide some context and an overview of water conservation and efficiency. Subsequent to the presentation, the following general comments and questions were raised by participants:

- Target water conservation in high use watersheds
- Area on Water Use map showing high use in Norfolk is not accurate – shows a blanket high use which is not the case (based on monitoring results by agriculture) and has made it difficult to get or modify permits, map needs to be redrawn
- Problems with low level response – "we have been in a level 3, but no one has taken responsibility and acted on it"
- Agriculture irrigation uses both raw water and potable water/ how are you going to deal with this?
- Of the whole pie chart agriculture is only 0.1 % and hydro is a huge portion – "What is usage?" How is consumptive use and non-consumptive use defined?
- Who owns the water in the province?
- Allocations and use is the big underlying policy issue that affects water conservation, government is ignoring allocations policy, needs to solve allocations first Allocation of water is an issue – Who gets what? MOE needs to decide that sooner or later the government is going to have to, through law, decide how to distribute the water
- Economy/environment/social/cultural drivers that differ greatly – giving simple answers does not address the complexity of the issues

In the afternoon, a presentation of the Great Lakes Basin goals and objectives was given to participants and the following general comments and questions were raised:

- Should there be a performance measure/indicator for the government to meet in regards to the cost of consultation/studies
- Should the targets be set around the sustainability of water takings?
- The presentation of regional goals and objectives did not specifically address agriculture and others, was limited reference to funding/this is a concern
- Really hope that the agricultural concerns are brought up in the strongest way possible, usually our concerns get swept aside because we are such a small portion of Ontario
- Want this particular group reconvened before and finalization of policy/proposal
- This [trying to be heard and getting the issues across to all the different government agencies] is an emotionally exhausting endeavour

Key questions guided the discussion of conservation and efficiency and changes in notification of agricultural takings (see Attachment 3 for the list of questions).

Although there were numerous and varied responses to key questions, some common themes emerged from the meeting. Common themes are those issues and/or recommendations for which there was general agreement amongst session participants. These themes and the

proceedings from the consultation meeting are summarized in Table 1 and Table 2 of this report.

TABLE 1: Water Conservation and Efficiency – General

1. *What is your sector currently doing in regards to water conservation and efficiency?*	
Crops (Irrigation)	▪ What drives the conservation is the cost (equipment, time required, etc.), therefore irrigation is only done on an "as needed basis" ▪ There are certain points in the cycle where watering crops is critical (need to consider timing, amounts of water, how applied, etc), for example, 4 hours on a hot day without proper and sufficient irrigation equals plant loss which equals lost revenue for the year ▪ Must have water drainage to address evapotranspiration ▪ Wastage of water through irrigation is not true/irrigation is precisely managed ▪ Studies cost a fortune (e.g., recommendation from study to install variable pumps, did all the work to submit funding to Feds, but funding was denied) ▪ Equipment is costly (e.g., 750 K for dams that control flow) ▪ Biggest issue for irrigation is supply; the problem is getting water in a fair and equitable way ▪ A large scale system (pipe or open channel) is the only cost effective, sustainable way to meet supply is certain areas of the province ▪ Too many small systems in use in Ontario and this is a disaster ▪ Saskatchewan, Alberta and B.C. governments have invested millions of dollars into large scale supply systems which are both cost efficient and highly water efficient ▪ In other parts of the province large scale systems are not the best approach, drip irrigation is also highly efficient and used in some operations ▪ Support Irrigation Advisory Committees (IAC) – made up of local farmers – providing sufficient funding ▪ Have open channel system – Stantec did a study of the channel and found a high level of return flow from system and the pumps shut off during rainfall, therefore conserve water. ▪ Stantec recommended that the open channel system for Niagara-on-the-Lake would provide environmental benefits (not closed channel system) ▪ Normally do not have flow in the channel at Niagara-on-the-Lake, the flow is provided by the operation pumping in water, but the CA says that a 15% flow must be maintained for the fish (this is water that the farm is supplying) ▪ When B.C., Alberta talk about getting higher efficiencies, they refer to flood irrigation where there are huge savings to be secured, not an issue in Ontario where systems/processes more advanced therefore opportunities for savings would be significantly lower ▪ In California water is dammed for use downstream – send it down through channels to farmers and they pay for what they use ▪ Agricultural industry is encouraging framers/producers to get PTTWs ▪ Irrigation Advisory Committees (IACs) schedule drawing of water to ensure everyone is not drawing at the same time and provide oversight for use and to maintain water flows ▪ IACs also work to mitigate between farmer and property owner if issues arise IACs promote BMP's for different operations ▪ IACs have projects to create deep wells, new ponds and more efficient systems – short term funding for these projects (such as Catfish Big Otter Water Supply Enhancement Program funded by Healthy Futures) was provided but expired after 2 years ▪ COWSEP (Canada-Ontario Water Supply Expansion Program): program allowed for the creation of water storage, ponds, efficiency initiatives, but may not be further funded, don't know at this point in time ▪ Minimum or no tillage and plastic mulch

TABLE 1 (Cont'd.): Water Conservation and Efficiency – General

1 (Cont'd). What is your sector currently doing in regards to water conservation and efficiency	
Livestock	▪ On a production unit basis, dairy livestock is the largest user of water in agriculture to meet the needs of the livestock (hygiene) and product (milk), but 60% of water is returned to the environment as fertilizer ▪ Rigorous demands for hygiene in livestock operations which require significant water use, but much of the water is captured (e.g., treatment of wastewater, reuse of water for calves, etc) ▪ In dairy and beef operations use nose pumps to water cattle, in hog operations use nose pumps to water livestock – both these systems are water efficient. ▪ Poultry operations very water efficient ▪ Most livestock operations use less than 50,000 l/day, therefore do not require a permit
Greenhouses	▪ Some greenhouse businesses are almost 100% efficient with a very high level of water reuse – store water, allow it to settle and pump it back for use in the greenhouse (closed system) ▪ Closed systems in greenhouse operations are becoming standard practice ▪ 1 acre of greenhouse peppers produces 64 times more than 1 acre of field production ▪ Operators should get credit for the efficiency practices and systems they have put in place
2. *What are the current Best Management Practices for water conservation and efficiency in your sector?*	
Themes	▪ All water conservation and efficiency initiatives as identified in question 1 above considered BMPs ▪ May employ a series of BMPs for a given crop (e.g., mulch, no till, and drip irrigation) to minimize water use
3. *What should be key components of water efficiency (conservation) program for your sector?*	

Themes	▪ Funding (long-term and short-term); 'shovel-ready projects' and long-term projects
	▪ Projects cost a large amount of money and need to be funded over the long term (20 to 40 years)
	▪ Large supply systems versus small systems
	▪ Agriculture should be at the top for priority for water supply
	▪ Program Need to fit into vision of agriculture think about the future of agriculture:
	  ▪ Need to consider the impact of climate change and long term implications for agriculture
	  ▪ Need a comprehensive approach to address agriculture needs, do not deal with it on a piecemeal basis
	▪ Source Water Protection: surface set backs need to be reasonable and site specific and should be determined in consultation with the agricultural community
	▪ Decisions should be based on practical science
	▪ Co-operation and harmonization between all different ministries, regulations, approvals (this includes, CAs, MOE, MNR, Feds and Municipalities)
	▪ All levels of government must agree that agriculture is given priority access to water supply

TABLE 1 (Cont'd.): Water Conservation and Efficiency – General

3 (Cont'd). What should be key components of water efficiency (conservation) program for your sector	
General / Context	▪ In some cases in Ontario, large scale water supply systems more efficient than a number of small ones ▪ Large water supply systems require significant funding ▪ Even if shovel-ready now, it would take 20 to 40 years to construct the large water supply system ▪ Two-levels for the water supply system, first a large system to get the water to the farm and a smaller system for use on the farm. ▪ Large systems would not work on some farms in Ontario – areas where large systems would not work, on-farm systems are necessary ▪ Some agricultural operations must do land drainage which has implications for water flows, stream conditions, etc. – Does this issue link into the MOE's conservation and efficiency initiative? ▪ Possible to have zero discharge from drainage using control tile (sub surface systems) that return the water to the environment, but they are extremely costly and if a priority for government, need to be paid for by government ▪ Use of control tiles provides an environmental benefit not a production benefit
4. *Who should be required to prepare a water conservation plan and implementation program?*	
Themes	▪ "Required" is an inappropriate term ▪ "Who should participate" – do not use command and control approach, need to work co-operatively/collaboratively with agriculture ▪ Consider economic and operational realities of the agricultural operations ▪ Do not develop programs/initiatives without pre-consultation and input from agriculture ▪ At farm level the farmer should be required to do some kind of a Conservation Plan as a condition of funding (to cover conservation expenditures/investments); cost of plan should not fall on backs of farmers, funding made available ▪ The plan should not be complex – it should be similar to a basic farm plan but outlining conservation measures ▪ MOE must recognize past conservation practices/initiatives undertaken by farmers ▪ Keep the plan simple – no technical studies, similar to EFP with peer review, no consultants required ▪ Do not create new entity to fund and for conservation planning - use existing capacity (e.g. Environmental Farm Plan, PTTW) with funding goes through that entity
General / Context	▪ If municipality required to do a Consv. Plan then there is concern that the cost of producing a plan is passed on to the end user/farmer, the cost should not be passed onto the farmer ▪ If the Consv. Plans are required for municipalities then funding must be made to the municipality to cover the cost, so it is not passed onto farmers

TABLE 1 (Cont'd.): Water Conservation and Efficiency – General

5. *What the barriers to the preparation and implementation of a plan would need to be overcome?*	

Themes	▪ Insufficient and short-term funding is a barrier, need long term funding which also addresses larger scale initiatives
	▪ Farmers pick up the bulk of costs for projects, pay for studies, (e.g., $3 M project for 140 growers, growers pay $2M looking for $1M from government)
	▪ Get funding for a project than the funding program is stopped and the farmer is left with having to deal with the remaining costs
	▪ Lack of co-operation, understanding and harmonization amongst relevant government agencies and process
	▪ PTTW requirements so complicated some need consultants to fill out forms
	▪ Language barrier between government and agricultural community
	▪ Gov'ts use a one size fits all approach that does not work – different agricultural operations have different needs, processes, etc.
	▪ Demographic profile of farmers shows that the farming population is aging, therefore not around in the long term so reticent to invest in long-term infrastructure, equipment, etc. so funding programs must address this reality Farm re-structuring is the ideal time for adjustments on water use and planning
	▪ Contradictory government policies/regulations – need harmonization
	▪ Currently large degree of mistrust with the MOE as a result of PTTW (i.e., Minister of Environment said there would be no PTTW fees to agriculture, then it was added but after agriculture community confronted the charge was later retracted)
	▪ Mistrust creates a barrier for moving forward – need to rebuild the trust by working directly with farming community and at the farming level
	▪ Lack or recognition of the importance of agriculture
	▪ Funding stopped after study phase and before implementation – need a guarantee of the availability of long-term funding
	▪ Penalizing pro-active players who provide data (e.g, in Norfolk whole community was put in high use area after providing data to MOE even though whole area not high use)
	▪ No benchmarking , but if done farmers need to be given the information and have access to useful data
	▪ Lack of centralized source of information so studies repeated unnecessarily
	▪ Science not being appropriately applied:
	  ▪ Return flow is not considered, all water taken is considered consumptive use
	  ▪ Consumptive use co-efficients are not accurate for Ontario – developed in California
	▪ Lack of transparency – has to be a transparent process

TABLE 1 (Cont'd.): Water Conservation and Efficiency – General

5 (Cont'd.) What the barriers to the preparation and implementation of a plan would need to be overcome?	
Strategies to address barriers	▪ Process to get funding needs to be simple ▪ Before developing forms, applications, processes, etc. sit down with farm community and work directly with them in development ▪ Provide an agriculture-specific PTTW (develop in consultation with agriculture appropriate language as used by farming community) ▪ Recognize different agricultural sectors in the development of the conservation plans or PTTW's ▪ Need to work with different members of agricultural community to develop tools, processes, etc ▪ Need to consider where and when it is strategic for the farmer to invest. ▪ Have a pool of funding available long term so when the farmer decides to invest in his operation, he can complete a plan and take it to the funding entity and secure funding for a required period (i.e., may be a 5 or 10 year investment to replace on irrigation system with another more efficient system) ▪ Fit funding initiatives into existing business management practices of agricultural community ▪ In Europe there is co-management which is based on contracts between agriculture and government, including funding, technical assistance, etc. ▪ Obsolete co-efficients for consumptive use – based on old technology and do not reflect progress in the industry (new technologies) ▪ Approval process is daunting for the farmer need to simplify and streamline ▪ MOE needs to ensure good players rewarded and recognized for conservation and water efficiency work they have undertaken ▪ Who should keep the information? – should be a centralized accessible library of information/ studies so that all farmers can access and do not need to repeat studies that have already been done ▪ Better co-operation of regional MOE offices for the implementation of the Conservation Plan (consistency between MOE offices) ▪ There needs to be a higher level directive to regional offices on how the plan will be implemented for the agricultural sector and how to work with the farming community ▪ Whatever needs to be done should be done on a basin–wide basis to create level playing field with all the jurisdictions

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TABLE 1 (Cont'd.): Water Conservation and Efficiency – General

6. What targets or performance measures should be set for Ontario's entire strategy and/or for each sector?	
Themes	▪ What is the point of doing a plan for your farm if a generic, overall plan with set targets has been done – need individual farm level plans based on the specifics of the operation, location, production, etc. ▪ Targets are random numbers (e.g., how did GL-St. Lawrence Cities Initiative establish a 15% reduction target, what is the science behind 15%?) ▪ Numeric Targets in agriculture do not make sense for sector or sub-sector, 'sustainability of the system' makes more sense, having targets and plans is nonsensical, we need a process not a target ▪ Step away from the fixed formula – a process is needed with co-operation and participation by the agricultural community ▪ Agriculture is complex and diversified so no one plan fits all ▪ Needs to be a business plan that can be shown to the bank with funding entity providing the farmer with a letter of acknowledgment that the funding in place and guaranteed for the duration of the project. ▪ Funding pool must be set out in legislation so it is there for the long term and can not be rescinded with a change of government ▪ Water use reductions targets must consider crop changes or production changes and associated water needs (i.e., changing from a low water use crop to a high water use crop)
General / Context	▪ Will Ontario targets have to be met by the other GL states in the agreement? ▪ Must have a level playing field ▪ Percentage reduction would not be appropriate for agriculture – consideration must be for meeting production and environmental needs ▪ Need to know the benchmark in the region and where Ontario falls in relation ▪ Benchmarks have to be determined locally (amount of water needed by cattle here is different than Texas) ▪ Has to be established longitudinally; cannot judge benchmark on a yearly basis – irrigation for crops weather dependent ▪ Agriculture is at a disadvantage because of the large land mass involved and more impacted by the vagaries of weather (e.g., wet years, dry years, period of drought, etc.) ▪ Need some mechanism to allow for the establishment of a benchmark ▪ Target for beef? Target for tobacco? Target for turf? – Setting separate targets is nonsensical ▪ If enough money is provided then the farmers will meet a target (pool funding ensure available for long term) ▪ If a percentage of water has to be allocated to maintaining fish in a channel that receives water from farmer pumping it, then farmer should be given credit if they have to allocate 15% of their pumped water to maintaining fish habitat in the channel

TABLE 2: Water Conservation and Efficiency – Goals, Objectives and Actions

1. *What should be the goals and objectives for Ontario's water conservation and efficiency strategy?*	
Themes	▪ There should be overarching goals and objectives for agriculture with initiatives/ approaches as previously discussed and recommended ▪ Funding must be included in the goals in order to meet objectives ▪ Specific targets should not be set ▪ What is expectation? What is "improvement", "restoring", "sustainability" and to what level ▪ "Sustainability" is the relationship between resiliency and risk – agriculture unsustainable without irrigation ▪ Have to deal with drought, priority has to be given to allocate water to agriculture ▪ Goals and objectives have to set a minimum threshold of water supply to ensure viability of agricultural operations at all times ▪ These thresholds must be time sensitive and consider seasonal needs ▪ Minimum level of supply at all times, mitigates risk to some degree ▪ Irrigation usually required at most critical times – high heat, dry periods ▪ Need to recognize that agriculture as having unique requirements ▪ Goals and objectives have to allow for individual differences of specific farm operations ▪ Goals and objectives have to recognize the market demands and the ability to meet those demands (competing globally and market has expectation of certain size, appearance, quality of product)
2. *What actions and/or commitments should be included in the strategy to achieve the goals and objectives for: Technology-based measures / Behavioural or management practices / Educational initiatives / Regulatory initiatives / Financial incentives*	

Themes	▪ Farmers support voluntary stewardship and co-operation, therefore there should be no regulatory requirements
	▪ Already have too many regulations
	▪ Agricultural industry already has many of these initiatives which were put in place through existing mechanism/programs (Environmental Farm Plan) – need to build and expand on these mechanism, do not create new ones.
	▪ EFP gets reviewed every 3 years, process of building it and developing already in place and on-going
	▪ EFP is now farm based, currently studying EFPs on a watershed basis
	▪ Build on the Irrigation Advisory Committee and the EFP for watershed to deliver programs and initiatives
	▪ EFPs cover:
	  ▪ Technology-based measures?
	  ▪ Behavioural or Management Practices?
	  ▪ Education
	  ▪ Financial
	▪ Funding pool must be set out in legislation to ensure long term access to funding and the delivery of funding should be done through existing programs (EFP)

TABLE 3: Changes in Notification of Agricultural Water Takings – EBR posting of Permits to Take Water

Changes in Notification of Agricultural Water Takings - General	
Themes	▪ If public notification monitoring and reporting in Ontario, must be a universal requirement for all jurisdictions to ensure a level playing field ▪ Put the public notification monitoring and reporting requirement for Ontario on hold until US states confirm they are ready and can move forward to meet the requirement. ▪ Need to recognize that there may be multiple users under one permit, therefore individual takings are far below 379,000 l/day ▪ Slide 4: "Under Section 34 of the Ontario Water Resources Act (OWRA), livestock or poultry watering does not require a PTTW issued by the ministry, as long as the water is not taken into storage" – this seems to contradict the intent of the conservation and efficiency goals of the Agreement – storage reduces peak demand during peak water use periods and adds to industries resiliency ▪ Should not be a discrepancy between livestock or crops for consumptive use of water
General / Context	▪ How do/will intra-basin transfers be identified in the US jurisdictions, since there are no or minimal monitoring and reporting requirements ▪ Niagara study (Stantec), found a means to address the large water takings that were divided amongst multiple users – MOE should consider this approach as a possible model
Questions / Issues	▪ Are there any intra–basin water transfers that exceed the 379,000 L/day for the purposes of watering livestock? ▪ Would water taken out of the Niagara River and put into Lake Ontario be considered an intra-basin transfer? ▪ What happens in the US when they reach the trigger amount (19 M l/day consumptive use)? Does the Charter speak to the requirements? ▪ In reference to slide 4 – does livestock have priority over fruit crops?
1. Do you have any concerns with an averaging amount of 90 days?	
	▪ Averaging over which 90 days? Agriculture use varies yearly, seasonally, daily, therefore need to focus on consumptive use ▪ Need to take into consideration the production requirements – plants may need large amount of water for 3 days and no water for the following 10 days
2. Do you have any concerns with amending Regulation 681/94 made under the Environmental Bill of Rights Act, 1993 to require proposals for a PTTW for the irrigation of agricultural crops if it involves an intra-basin transfer of water to be posted on the EBR if "Notice to Parties" or "Regional Review" is triggered?	
Themes	▪ **No EBR posting**
Questions / Issues	▪ Posting to the EBR allows individuals/groups with other agendas to go after agricultural operator which already go through several regulatory approvals and requirements. Isn't that why the PTTW process is rigorous and based on science. ▪ Is there another way that agricultural use could be posted that is not the EBR? ▪ Concern that if posted to the EBR there is the potential to go to the Environmental Review Tribunal and that watering of crops and livestock would be detrimental to agricultural operations. ▪ If notification mandatory, then should go to an agricultural body (Farm, Food Practices Board only) ▪ The Environmental Review Tribunal has no idea about what is going on in agriculture

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	▪ Environmental groups constantly monitor the EBR and will cause constant headaches for the farmers, using it for their gain

ATTACHMENT 1

LIST OF PARTICIPANTS
Broader Public Sector Institutions Consultation
January 29, 2009

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PARTICIPANT	ORGANIZATIOIN
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Keith Currie	Ontario Federation of Agriculture
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Brian Gilroy	Ontario Fruit and Vegetable Growers Association/Ontario Apple Growers
Tina Schankula	Ontario Federation of Agriculture
Chantelle Leidl	University of Guelph/Industrial Water Conservation Project

Developing Ontario's Water Conservation and Efficiency Strategy
Changes in Notification of Agricultural Water Takings
Agricultural Sector Discussion

Date: **January 29, 2009**

Location: **Room 442 University Centre,**
University of Guelph
Use Parking Lot P31 (map attached)

AGENDA

8:30 AM	Arrival and registration (continental breakfast provided)
9:00 AM	Welcoming remarks and introductions
9:15 AM	Review of session agenda and format for the day – comments and questions
9:30 AM	Overview – Developing Ontario's Water Conservation and Efficiency Strategy: - Summary of findings from initial multi-stakeholder consultation - Water conservation and efficiency in other jurisdictions
10:00 AM	Exploration and discussion – key questions
12:00 PM	Lunch (provided)
1:00 PM	Review of Great Lakes Basin-wide goals and objectives - Examples from other jurisdictions
1:15 PM	Exploration and discussion – key questions
2:00 PM	Changes in Notification of Agricultural Water Takings – EBR posting of Permits to Take Water
2:30 PM	Exploration and discussion – key questions
3:00 PM	Wrap-up and next steps

KEY QUESTIONS – WATER CONSERVATION AND EFFICIENCY SECTOR CONSULTATIONS

Water conservation and efficiency – general:

1. What is your sector currently doing in regard to water conservation and efficiency?
2. What are the current Best Management Practices for water conservation and efficiency in your sector?
3. What should be key components of a water conservation program for your sector?
4. Who should be required to prepare a water conservation plan and implementation program?
5. What barriers to the preparation and implementation of a plan would need to be overcome?
6. What targets or performance measures should be set for Ontario's entire strategy and/or for each sector?

Water conservation and efficiency – goals, objectives and actions:

1. What should be the goals and objectives for Ontario's water conservation and efficiency strategy?
2. What actions and/or commitments should be included in the strategy to achieve the goals and objectives for:
   - Technology-based measures?
   - Behavioural or management practices?
   - Educational initiatives?
   - Regulatory initiatives?
   - Financial incentives?

Changes in Notification of Agricultural Water Takings

1. The averaging amount is 90 days. In the OWRA, we have a regulation-making authority to permit for the averaging of the 379,000 litres/day amount over a shorter period. Do you have any concerns with an averaging amount of 90 days?

2. Do you have any concerns with amending Regulation 681/94 made under the Environmental Bill of Rights Act, 1993 to require proposals for a PTTW for the irrigation of agricultural crops if it involves an intra-basin transfer of water to be posted on the EBR if 'Notice to Parties' or 'Regional Review' is triggered?

David Armitage	Ontario Federation of Agriculture

KEY QUESTIONS – WATER CONSERVATION AND WATER CHARGES SECTOR CONSULTATIONS

Ontario Power Generation

Water conservation and efficiency – general:

1. What is your sector currently doing in regard to water conservation and efficiency?
   - *hydroelectric is non-consumptive – efficiency is achieved through turbine, generator and hydraulic conveyance upgrades or expansion, and operating procedures to maximize energy production from available water and minimize spill*
   - *most fossil and nuclear water use is non-consumptive*
   - *limited opportunity for water conservation and efficiency initiatives – mainly in secondary water use areas*
   - *once-through cooling technology requires large volume to meet temperature limits in C's of A and to mitigate environmental (water temperature) impacts*

2. What are the current Best Management Practices for water conservation and efficiency in your sector?
   - *nuclear new build will incorporate best practices*
   - *existing nuclear employs best practices in use at time of construction*
   - *existing OPG fossil employs best practices in use at time of construction – no opportunity for future water conservation and efficiency investment – coal phase out by end of 2014 limits capital budgets*
   - *once-through water cooling technology is less consumptive and more energy efficient than water cooling tower or air cooling*
   - *OPG suggests that Ministries consult with OWA, Brookfield, Bruce Power, gas and co-generation sectors*

3. What should be key components of a water conservation program for your sector?
   - *must consider tradeoffs between once-through cooling volume versus other more consumptive technology, environmental impacts, environmental regulations, energy consumption and climate change*

4. Who should be required to prepare a water conservation plan and implementation program?
   - *limited opportunity (so limited value) from water conservation and efficiency plans in nuclear and fossil power sectors*
   - *hydroelectric, nuclear and fossil are highly regulated with specified reporting requirements – must avoid duplication and conflict in regulations, administrative costs and reporting*

5. What barriers to the preparation and implementation of a plan would need to be overcome?

   - *costs will be passed on to energy consumers – especially for those associated with capital projects*
   - *plans in energy sector would be largely affected by energy policy*

6. What targets or performance measures should be set for Ontario's entire strategy and/or for each sector?

   - *targets and performance measures must consider technology, opportunity and limitations, costs and over-all footprint*
   - *targets and performance measures must consider cumulative effects and climate change*

Water conservation and efficiency – goals, objectives and actions:

1. What should be the goals and objectives for Ontario's water conservation and efficiency strategy?
2. What actions and/or commitments should be included in the strategy to achieve the goals and objectives for:
   - Technology-based measures?
   - Behavioural or management practices?
   - Educational initiatives?
   - Regulatory initiatives?
   - Financial incentives?

Water charges:

1. Based on the implementation schedule, are there any issues or concerns regarding the timeline?

   - *no timeline issues*

2. In terms of reporting water use volumes, to what degree, if any is there sub-metering of water in your sector/company?
   a. Can water allocation/use within a facility's water system be readily distinguished?

   - *limited sub-metering of service water systems (fossil)*
   - *volumes based on pump ratings*

3. Are there any issues or concerns regarding the proposed charge rates?

   - *rate is consistent with OPG-computed "consumptive" use calculation*
   - *some concerns/questions over volume-based charges for largely non-consumptive water use – administrative charges are high (due to large volumes even at low charge rate) for small number of permits*
   - *confirm that the water conservation and efficiency program and water charges will apply to all of Ontario, not only to those plants in the Great Lakes Basin*

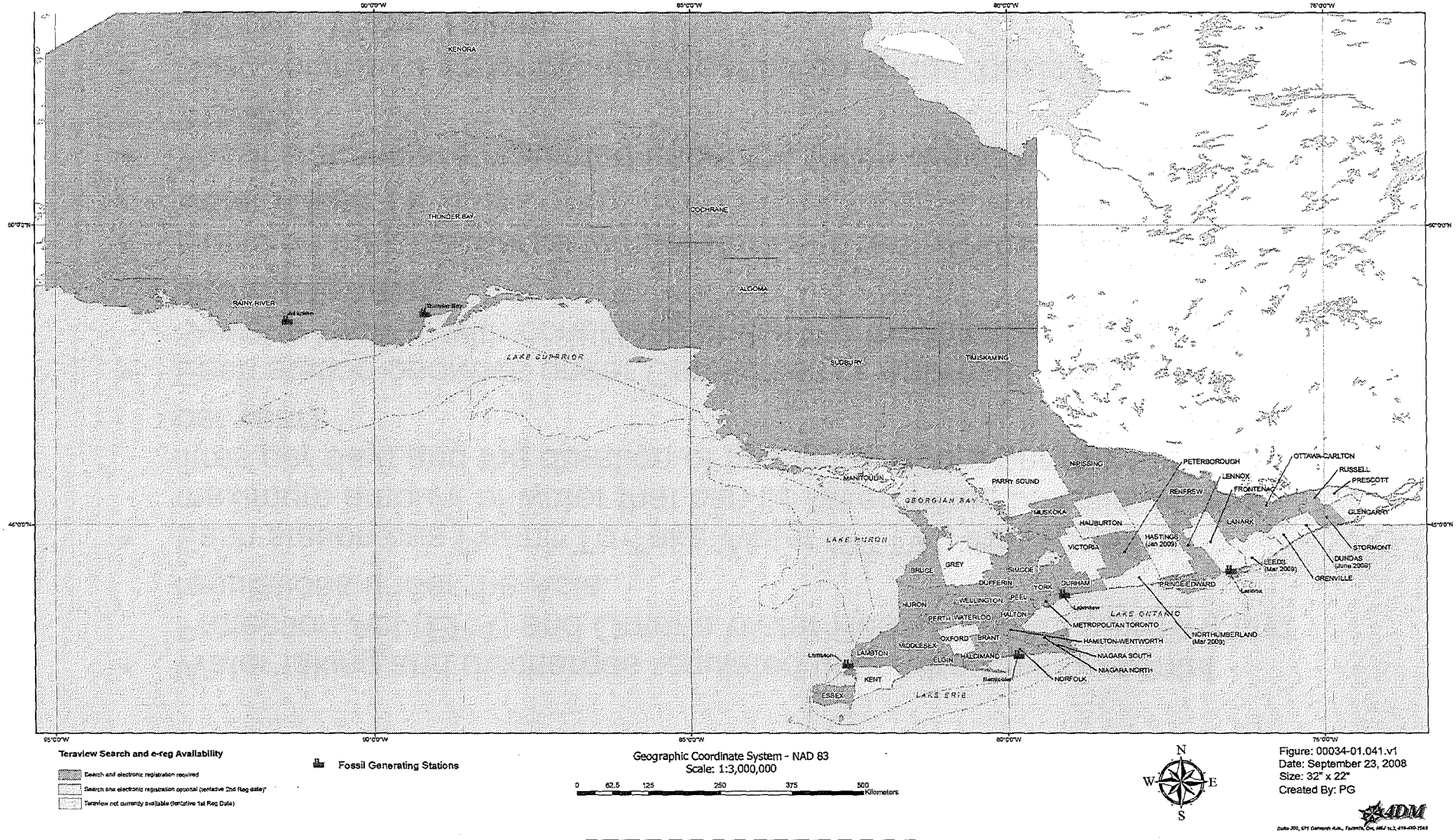
Fossil Presentation for Stakeholder Consultation with Ontario Ministries

Leonard Terplak, P. Eng.
Fossil Environment Division
January 20, 2009

The Fossil Fleet

- Four stations fuelled with coal > Atikokan, Lambton, Nanticoke, Thunder Bay
- One station duel fuelled with Natural Gas or Residual Fuel Oil > Lennox
- Lennox, Lambton, Nanticoke and Thunder Bay located on Great Lakes system
- Atikokan (north-west) of Thunder Bay on inland lake system (Lower Basin/Snow Lake)
- 2 Units at Nanticoke equipped with Selective Catalytic Conversion (SCR) for NOx reduction.
- 2 Units at Lambton equipped with both Flue Gas Desulphurization for SO2 removal and SCRs.

Teraview Search and e-reg Availability - OPG Fossil Generating Stations



Teraview Search and e-reg Availability

- Search and electronic registration required
- Search and electronic registration optional (tentative 2nd Reg date)*
- Teraview not currently available (tentative 1st Reg Date)

Fossil Generating Stations

Geographic Coordinate System - NAD 83
Scale: 1:3,000,000

0 62.5 125 250 375 500 Kilometers

N W E S

Figure: 00034-01.041.vi
Date: September 23, 2008
Size: 32" x 22"
Created By: PG

ADM

Regulatory Framework - Water

- Water taking and discharges regulated under the Environmental Protection Act (EPA) and Ontario Water Resources Act (OWRA) and regulations under the Acts.
- Each station has Permit To Take Water (PTTW) that specifies maximum amount of water that can be taken (litres per minute and litres per day) and the duration of taking (24 hours per day, 365 days per year).
- Each station operates under Certificates of Approval – Industrial Sewage Works) with conditions governing the discharge of effluents and wastewater.
- Limits on max discharge temperature and temperature rise of cooling water (Delta T).
- Fossil stations are regulated under the MISA regulation (O. Reg. 215/95).
- Daily volume of water takings reported on annual basis under O. Reg. 387/04 - Water Taking.

Water Use

STATION	Number of Units & Nominal Capacity (Gross MW)	Water Use Annual Average 2002 – 2007 (Billion Litres)	PTTW (Billion Litres)	
			Daily Max	Calc Annual Max
Atikokan	1 @ 227 = 227	142	0.607	222
Lambton	4 @ 500 = 2000	1,066	3.853	1,406
Lennox	4 @ 540 = 2160	701	5.793	2,115
Nanticoke	8 @ 500 = 4000	2,925	14.00	5,110
Thunder Bay	2 @ 165 = 330	355	1.31	480
		5,189	25.563	9,333

Water Systems at Fossil Stations

- Condenser Circulating Water (CCW) – cooling water used to condense steam from power generation turbines.
- Tempering Water (Lennox, Nanticoke) – used as required to reduce the temperature of condenser cooling water to meet cooling water discharge temperature limits. Tempering pumps mix cooler lake water with CCW before discharge to the lake.
- Service Water – used for cooling in auxiliary equipment (e.g. generator stators, hydrogen coolers, power transformers, turbine lube oil and pump and compressor coolers) and provides water to other processes and uses in the station.
- Fire Water – used for fire fighting (emergency use).

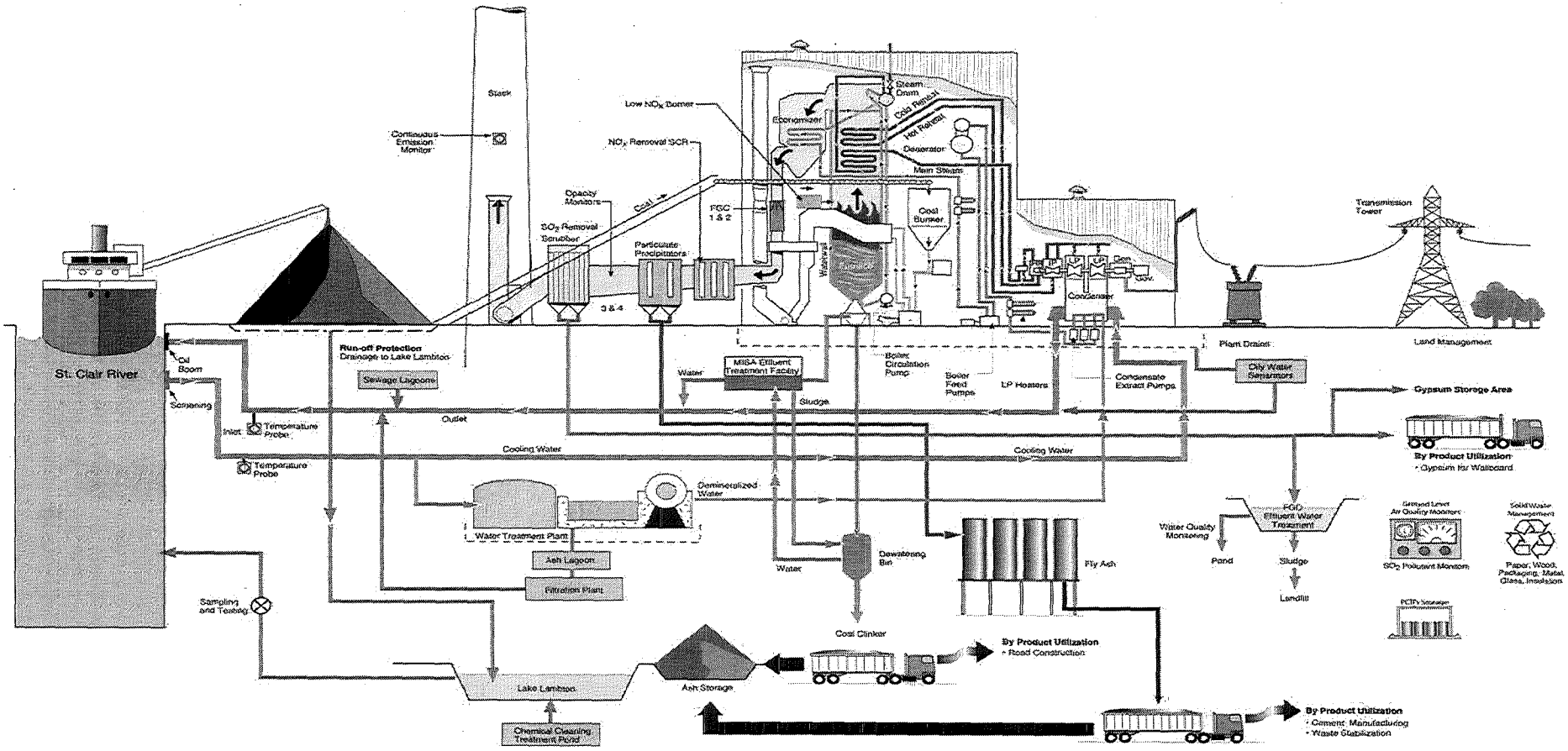
Non-Cooling Uses of Service Water

- Most of the Service Water used for cooling; some service water used for:
  - Sluicing and transport of bottom ash from coal fuelled boilers
  - Dust suppression on coal and ash piles
  - Feed water makeup to boilers (water treatment plant)
  - Zebra mussel chlorination and dechlorination
  - Maintenance – washing of air pre-heaters and boilers
  - Washing of travelling screens on intake water pumps
  - Maintaining water seal on the boilers
  - Making domestic (potable) water (Atikokan, Lennox)
  - Water for reagent preparation (Lambton FGD, some of the water is recycled from FGD process)

Water Uses at Fossil Stations

- Cooling water application is Once Through Cooling Water.
- More than 95% of water taken is used for cooling applications.
- Actual Consumption of water taken is small > Water is returned as cooling water discharge or as treated effluent in compliance with MISA regulation and effluent limits in Certificates of Approval.

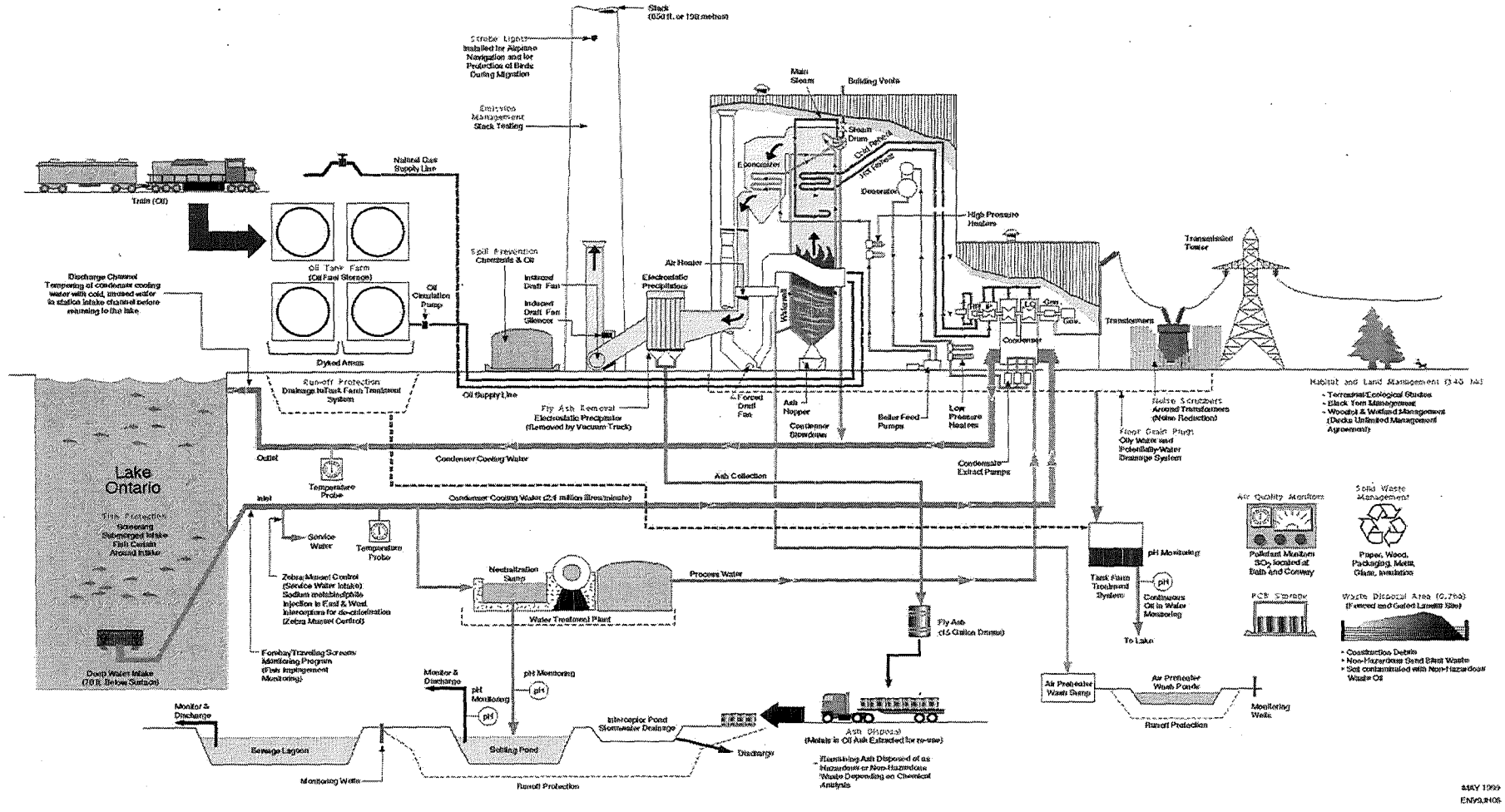
Lambton G.S.
Schematic Diagram with Environmental Protection Features



August 2004
Lambton Env.

ONTARIO POWER GENERATION

LENNOX G.S.
SCHEMATIC DIAGRAM WITH ENVIRONMENTAL PROTECTION FEATURES



Future Water Savings at Fossil Stations

- Very limited opportunities for water conservation in existing plants.
- Significant savings in water use not possible without major capital investments - not cost effective for existing plants.

- Reduced production from coal fuelled stations after Jan 1, 2009 (carbon dioxide emission reduction targets).
- Provincial government off - coal policy at end of 2014 > Cessation of Coal Use – O. Reg. 496/07

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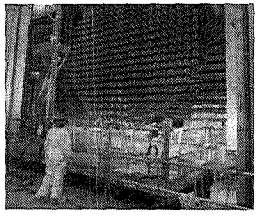
OPG NUCLEAR

OPG Nuclear Water Use






Consultation Meeting
January 20, 2009

ONTARIO POWER GENERATION

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OPG NUCLEAR

Water Use Quantity & Technology

- Once-through Cooling Water
  - No consumptive use
  - Water is used to condense steam
  - Accounts for 90-95% of water taken from Lake
  - Increased water flow $\Rightarrow$ increased efficiency, decreased lake ΔT
- Service Water
  - No consumptive use
  - Water is used as cooling water (heat exchangers), fire protection
  - Accounts for 5-10% of water taken from Lake
  - Required for safe operation of plant

ONTARIOPOWER GENERATION

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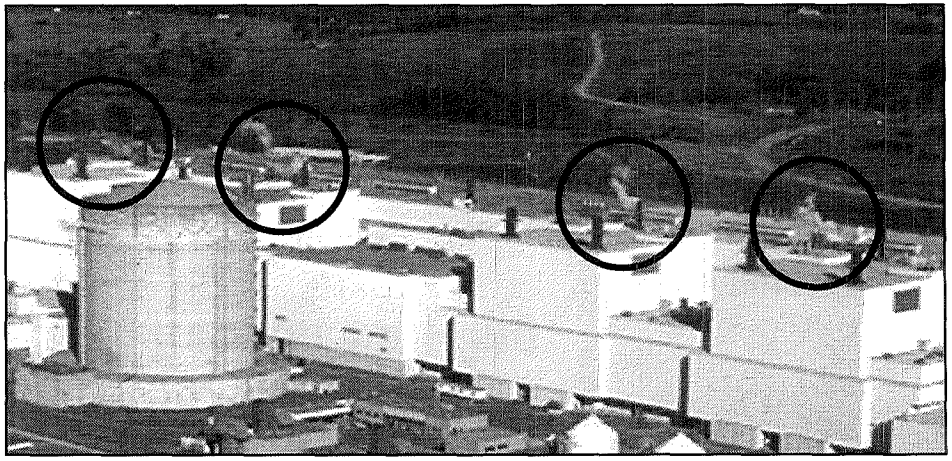
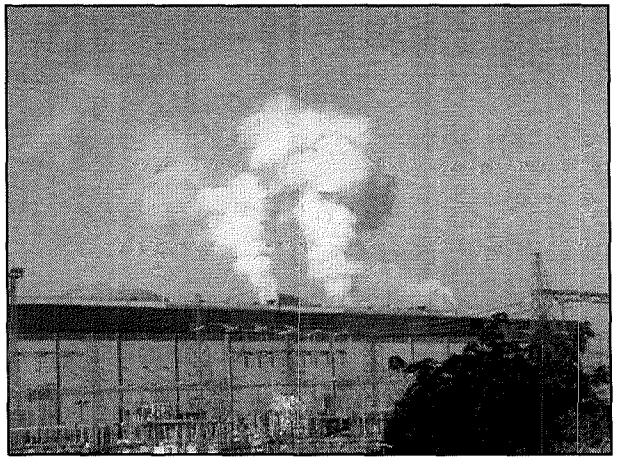
OPG NUCLEAR

Water Use Quantity & Technology

- Demineralized water
  - Limited consumptive use
  - Continuous loop: water ⇔ steam
  - Accounts for <0.025% of water taken from Lake
  - Small percentage of demineralized water is released



Darlington Units 1-4 Standard Operation



Pickering Unit 4 Start-up

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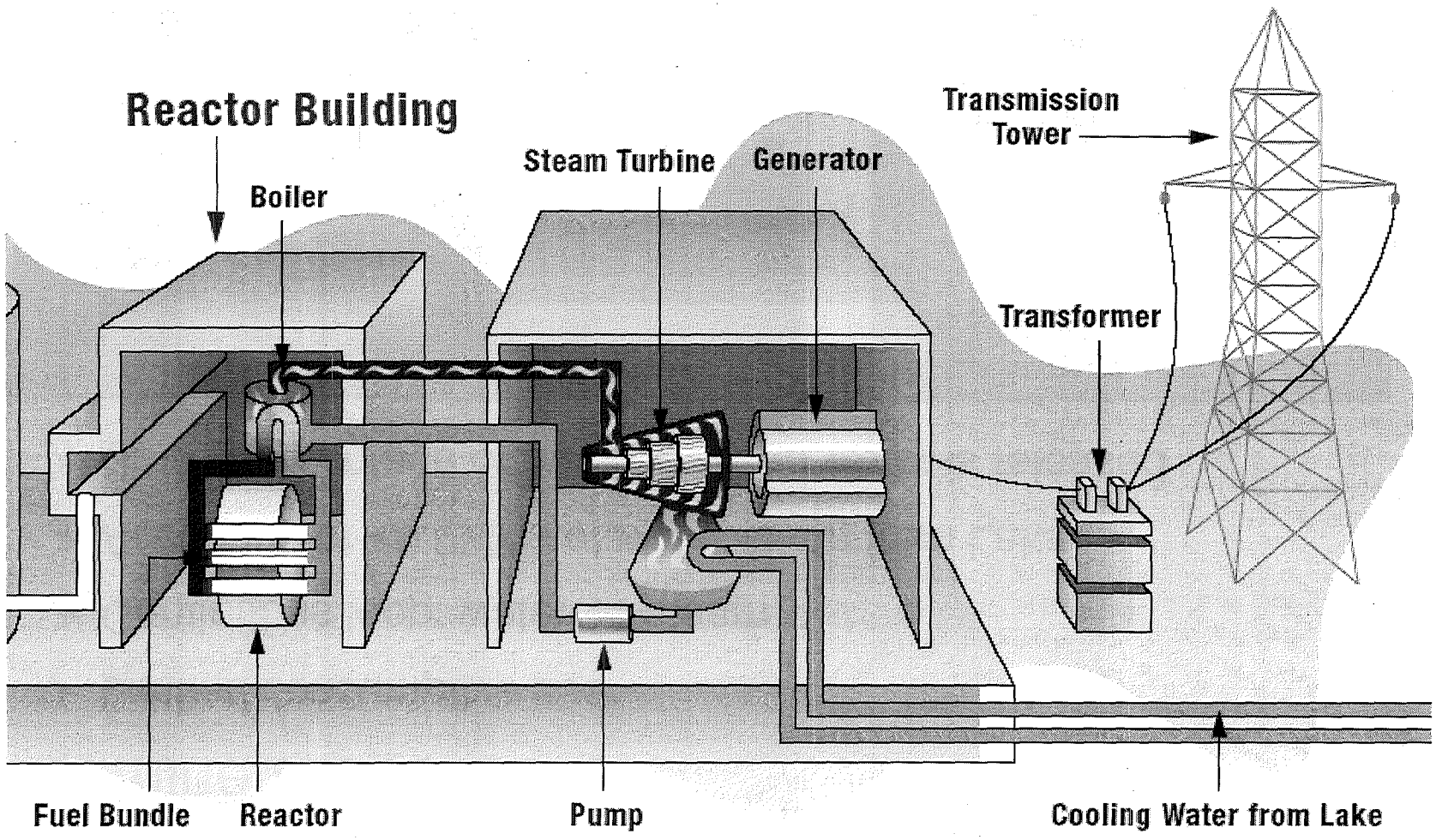
Water Use Quantity & Technology



ONTARIOPOWER GENERATION

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OPG NUCLEAR

Regulations and Permits

- O. Reg. 387/04, Water Taking
  - Collect and record data on the volume of water taken daily
  - Report annually
- Site Permits to Take Water
  - Allowable rates (L/min) and allowable amounts (L/day)
  - Varying requirements for measurement, records, and reporting

Station	Permit	Permit Expiry	Allowable Amount	Water Taken (2007)
Pickering A	66-P-196	Mar. 31, 2016	4.16×10^{12} L/yr	1.46×10^{12} L
Pickering B	77-P-3068	Dec. 31, 2012	4.78×10^{12} L/yr	3.29×10^{12} L
Darlington	81-P-3017	Aug. 31, 2020	4.89×10^{12} L/yr	3.89×10^{12} L

ONTARIO POWER GENERATION

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OPG NUCLEAR

Assessment of Potential Reductions

- CCW Flow Reduction
  - Pumps are already shut off during maintenance outages
  - Flow reductions during unit operation would not be supported as they would impact negatively on unit efficiency
- Service Water Flow Reduction
  - Flow throttling already takes place on heat exchangers cooling heavy water
  - Flow throttling on other heat exchangers would have to be evaluated with respect to each one's reactor safety implications, and as such would either be disallowed or would have to be of exceptional reliability (expensive) to be allowable and therefore unlikely to be approved

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OPG NUCLEAR

Assessment of Potential Reductions

- Demineralized Water Usage
  - Constant demineralized water supply is necessary to maintain boiler water purity and prevent corrosion. Increased corrosion would not be acceptable.
  - Minor consumptive losses are already minimized by routine maintenance of steam release valves which also enhances unit efficiency
- *Domestic Water Usage*
  - *Existing washroom facilities are refurbished with low flow technologies as they reach their end of life. All new facilities are constructed to latest codes or beyond.*

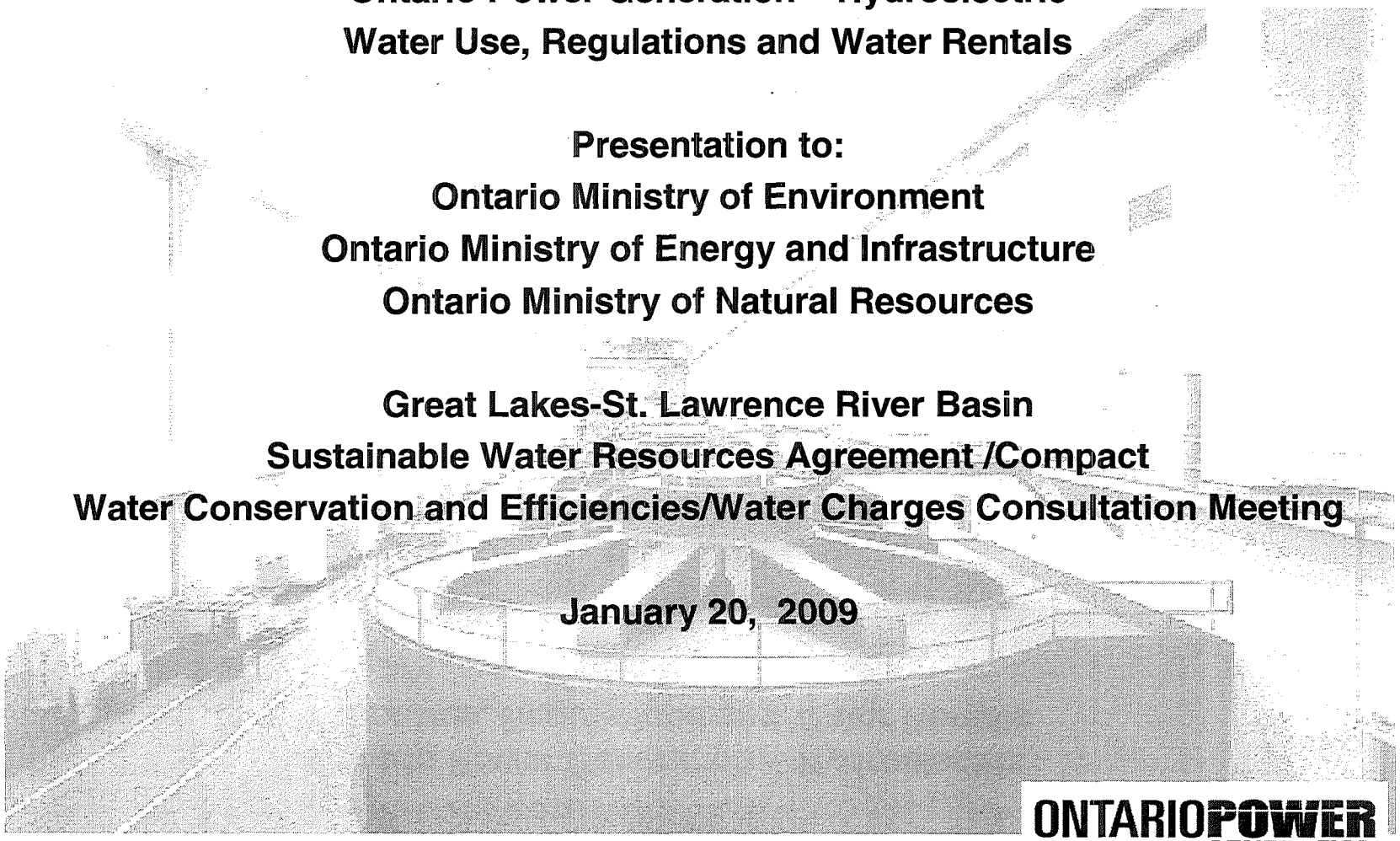
ONTARIO POWER GENERATION

Ontario Power Generation – Hydroelectric
Water Use, Regulations and Water Rentals

Presentation to:
Ontario Ministry of Environment
Ontario Ministry of Energy and Infrastructure
Ontario Ministry of Natural Resources

Great Lakes-St. Lawrence River Basin
Sustainable Water Resources Agreement /Compact
Water Conservation and Efficiencies/Water Charges Consultation Meeting

January 20, 2009



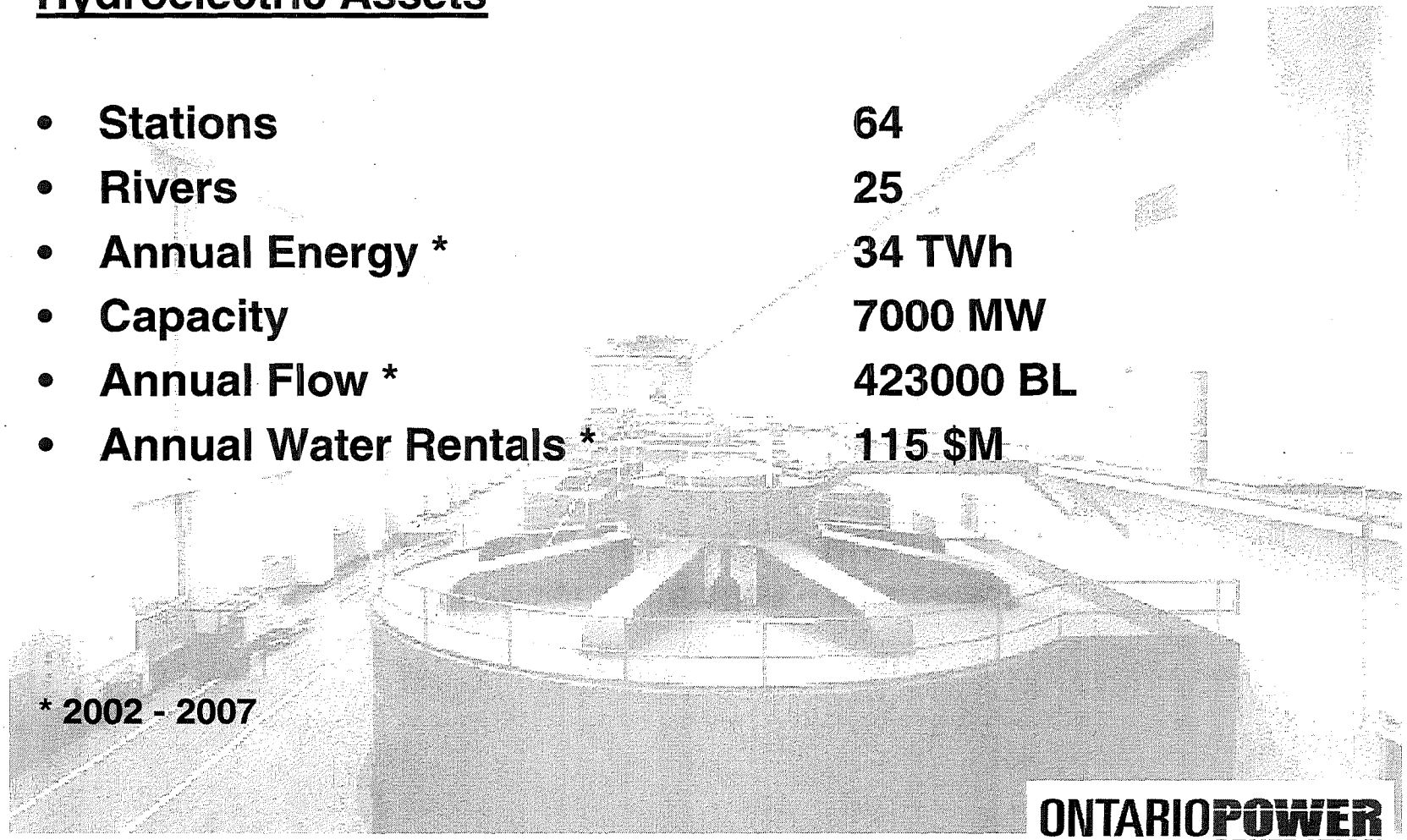
ONTARIO POWER GENERATION

(57)

Ontario Power Generation – Hydroelectric
Water Use, Regulations and Water Rentals

Hydroelectric Assets

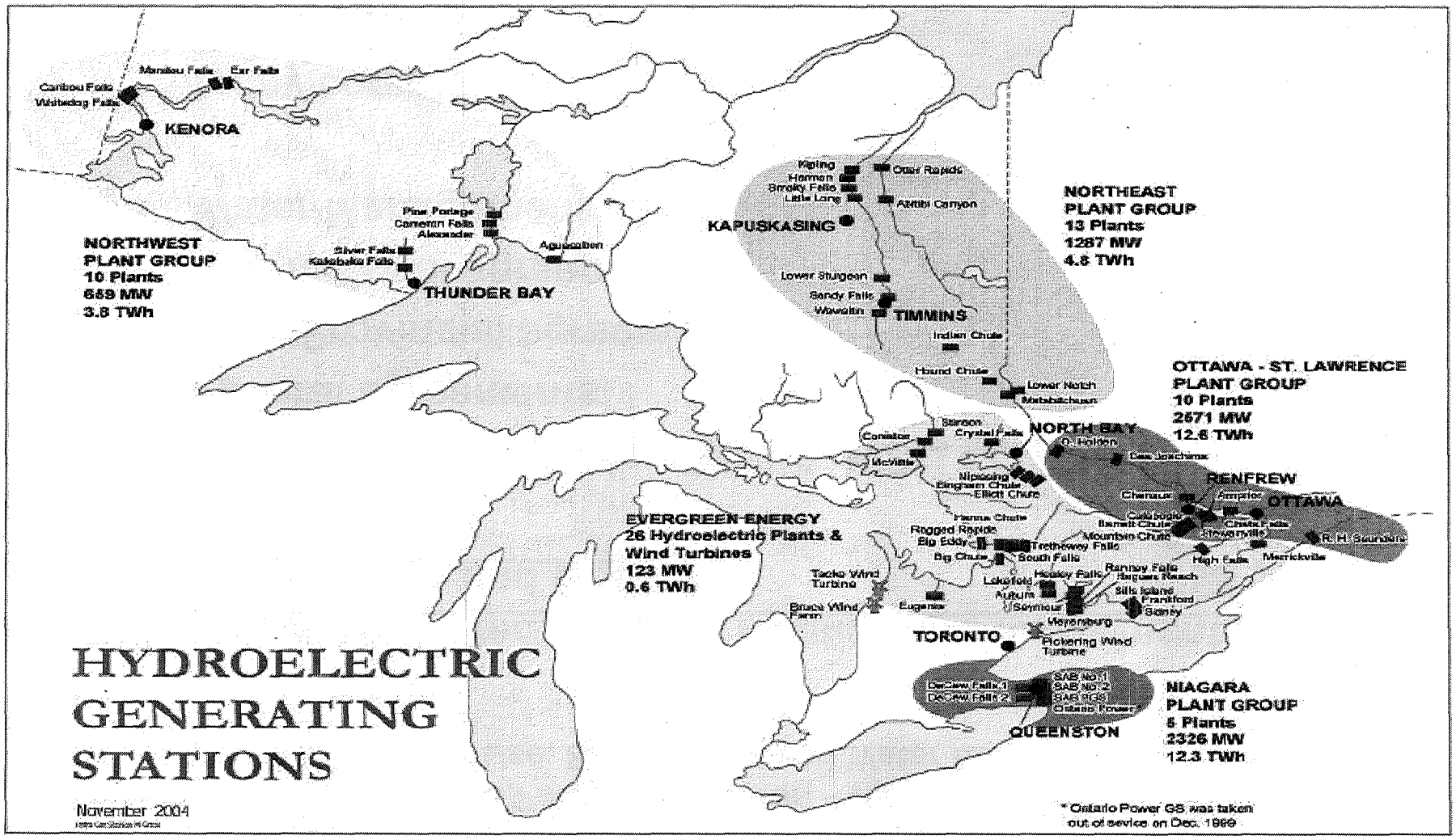
- Stations 64
- Rivers 25
- Annual Energy * 34 TWh
- Capacity 7000 MW
- Annual Flow * 423000 BL
- Annual Water Rentals * 115 $M



* 2002 - 2007

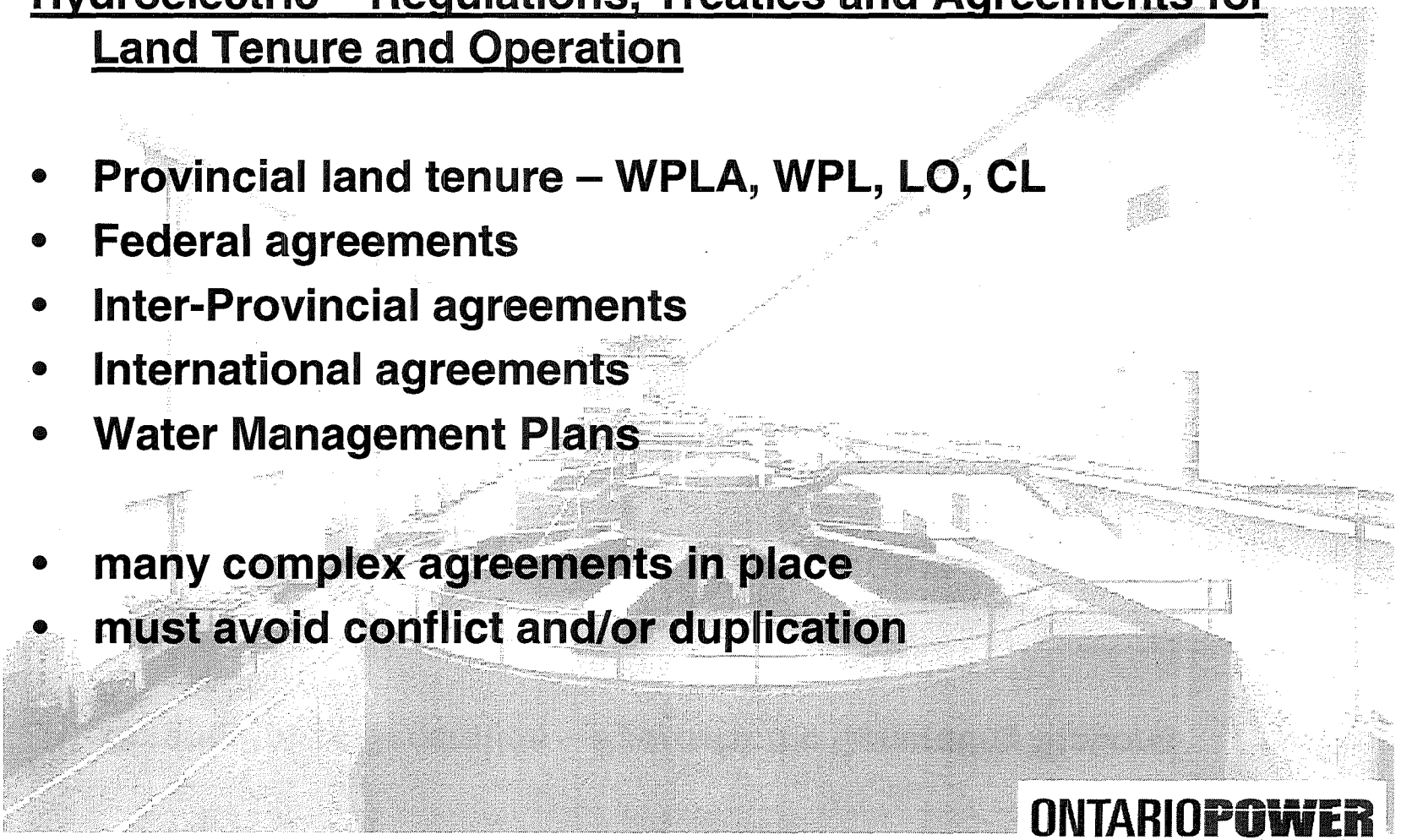
ONTARIOPOWER GENERATION

Ontario Power Generation – Hydroelectric Generating Stations



Ontario Power Generation – Hydroelectric
Water Use, Regulations and Water Rentals

Hydroelectric – Regulations, Treaties and Agreements for Land Tenure and Operation



- Provincial land tenure – WPLA, WPL, LO, CL
- Federal agreements
- Inter-Provincial agreements
- International agreements
- Water Management Plans

- many complex agreements in place
- must avoid conflict and/or duplication

ONTARIO POWER GENERATION

Ontario Power Generation – Hydroelectric
Water Use, Regulations and Water Rentals

Hydroelectric Assets – Summary by Plant Group

Plant Group	Number of Stations	Annual Energy (TWh)	Capacity (MW)	Annual Turbine Flow (BL)	GRC – WR ($M)
Northeast	13	4.8	1290	56500	19
Northwest	10	3.8	660	80500	15
Ottawa – St. Lawrence	10	12.6	2570	225500	39
Niagara	5	12.3	2330	51000	42
Central Hydro	26	0.6	120	9500	1
Total	64	34.1	7000	423000	115

ONTARIOPOWER GENERATION

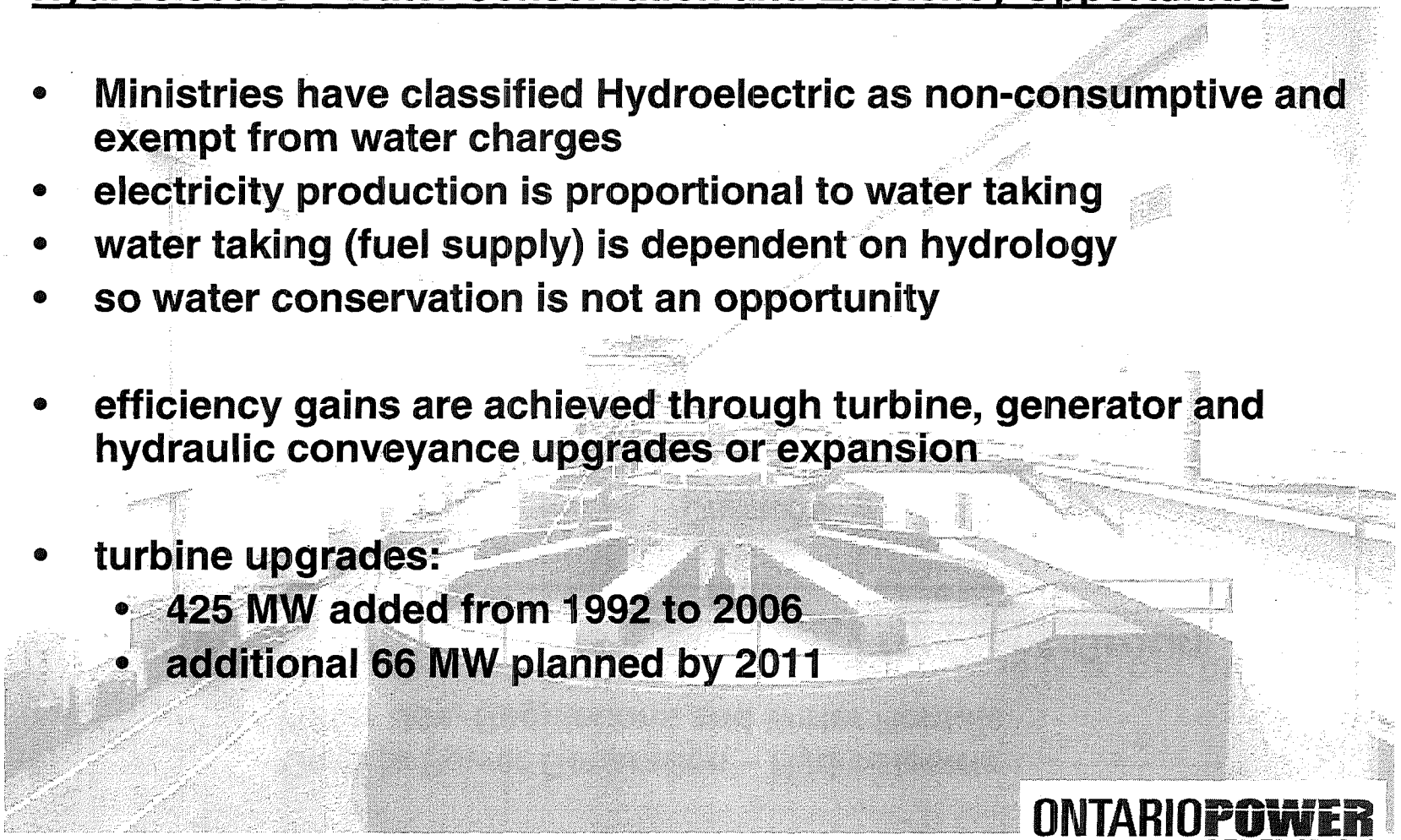
Ontario Power Generation – Hydroelectric
Water Use, Regulations and Water Rentals

Hydroelectric – Water Conservation and Efficiency Opportunities

- Ministries have classified Hydroelectric as non-consumptive and exempt from water charges
- electricity production is proportional to water taking
- water taking (fuel supply) is dependent on hydrology
- so water conservation is not an opportunity

- efficiency gains are achieved through turbine, generator and hydraulic conveyance upgrades or expansion

- turbine upgrades:
  - 425 MW added from 1992 to 2006
  - additional 66 MW planned by 2011

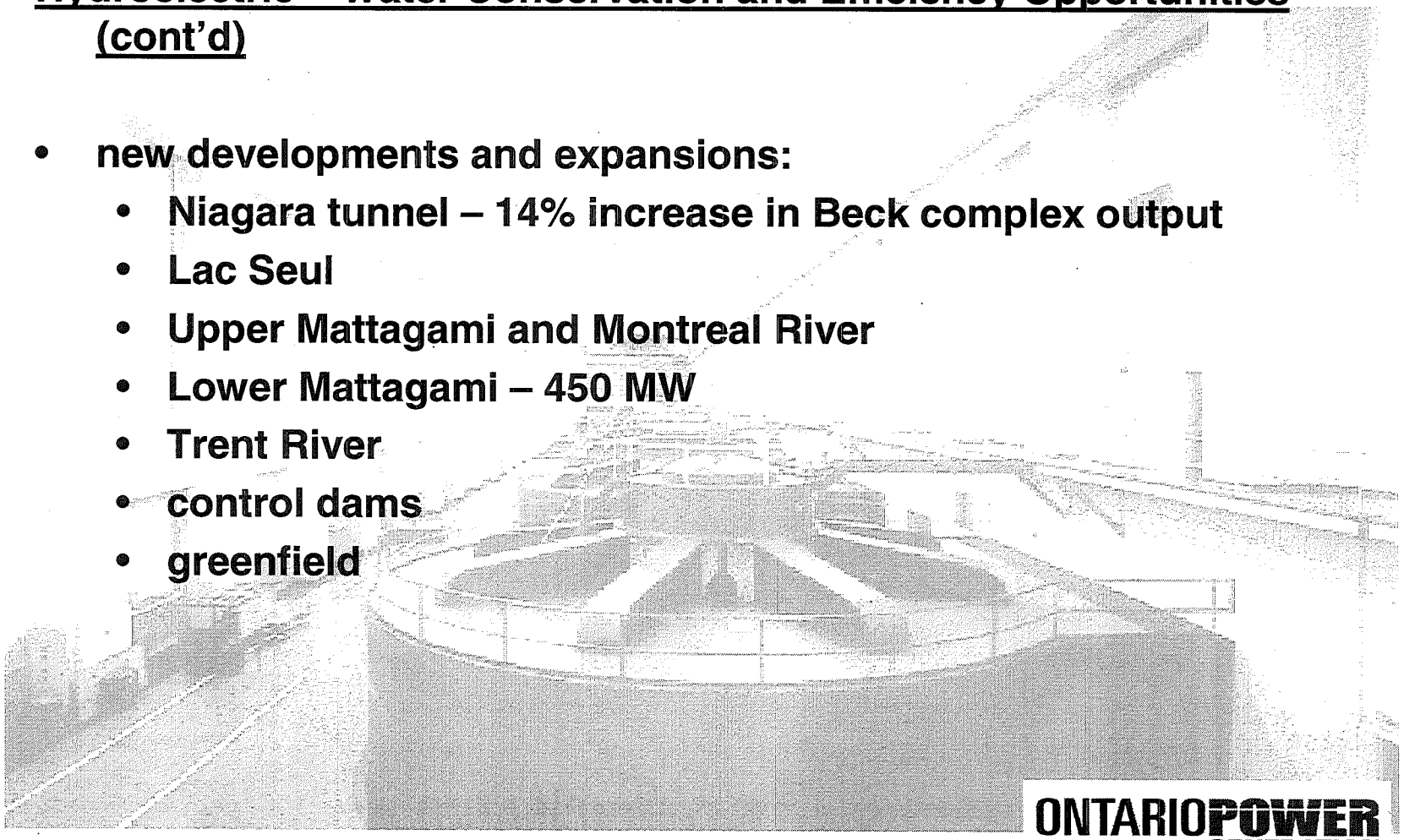


ONTARIO POWER GENERATION

Ontario Power Generation – Hydroelectric
Water Use, Regulations and Water Rentals

Hydroelectric – Water Conservation and Efficiency Opportunities (cont'd)

- new developments and expansions:
  - Niagara tunnel – 14% increase in Beck complex output
  - Lac Seul
  - Upper Mattagami and Montreal River
  - Lower Mattagami – 450 MW
  - Trent River
  - control dams
  - greenfield



ONTARIOPOWER GENERATION

(H1)

Great Lakes – St. Lawrence River Basin Sustainable Water Resources Agreement

Developing Ontario's Water Conservation and Efficiency Strategy
Agreement Advisory Panel Water Conservation and Efficiency Subgroup
Teleconference January 8, 2009, 1-2 pm

DRAFT Meeting Notes

Teleconference Participants

CELA: Sarah Miller and Theresa McClenaghan
City of Vaughan: Robert Meek
Conservation Ontario: Nicole Barbato
Ecojustice: Elaine Macdonald
GLSLCI: Korice Moir
Sierra Club: Lino Grima
OFA: Tina Schankula
Peel Region: Rodney Bouchard and Lynn Germain
POLIS: Carol Maas
Town of Markham: Gerry Klaus, Karen Dennison
UOI: Rhonda Gagnon
Walter and Duncan Gordon Foundation: Tim Morris
York Region: Tracy Carrigan, Teresa McIntrye, Lisa Lin
MOE: Carol Salisbury, Marta Soucek, Brent Taylor, Jill Marie Bourgeault
MNR: Laura Kucey

Meeting materials:

- Agenda
- PowerPoint: Developing Ontario's water conservation and efficiency program
- Meeting notes:
  - Food and Beverage Dec 1, 08
  - Tourism-Golf Courses-Irrigation Dec 9, 08
  - Commercial-Industrial Dec 11, 08

Main Points of Discussion by Subgroup Members

- Much of what was said at the 3 sector-specific meetings held to date is not unreasonable. There is a huge opportunity for water conservation and efficiency working with these sectors. The challenge will be how to make progress mandatory that makes sense for each sector without being so variable that we can't achieve and measure tangible results.

- With respect to targets, they may not be uniform. We may need to establish an overall provincial target; however, the question will be how to meet it across sectors. Perhaps a variable set of opportunities can be introduced that can be met across the sectors. Down the road, in order to have a level playing field and competitive equity, we may need to push those water users that have not increased their water conservation and efficiency.

- If targets are to be set, municipalities must understand what they are, as they will have implications e.g. rate structures and potentially lower revenues of lower-tier municipalities which distribute water to customers.

- Return flow needs to be considered.

- How can we prevent unwise management of our water resources, through the PTTW? The new permitting system is one of the major tools to get to water conservation. For example, golf course design requirements should be established for new courses so that we do the right things in the first place.

- How can we better organize our views and focus our needs? What should water conservation and efficiency achieve e.g., return water to the lakes? What is the purpose? e.g., first aspect is to reduce pollution and water/wastewater treatment, second aspect is to reduce energy costs and others costs. Agreed that we need more focus. We should look at developing principles perhaps focusing on the wise use of water and we need a rationale for those principles e.g., every use of water should be metered – we cannot manage what we cannot measure.

- An AAP sub-group has also been set up to consider intra-basin transfers. Representatives from several sectors will be participating in this sub-group. A call has been scheduled for 2pm on January 21, 2009 for this sub-group.

Action Items

- Members from Markham and Vaughan asked for a copy of the presentation being made at the sector-specific meetings – MOE to send via email

- Members from Peel, Markham and Vaughan asked for an invitation to the municipal sector meeting on January 16th – MOE to send via email

- Members asked for a schedule of meetings - see below

Schedule for water conservation and efficiency-related meetings

Water conservation and efficiency sector-specific meetings

- December 1, 2008 (Food processing and beverage)
- December 9, 2008 (Tourism, landscaping, golf course and other recreation)
- December 11, 2008 (Industrial, Commercial)
- January 6 (Ontario Forest Industry Association); follow up teleconference to be held
- January 13, 2009 (Conservation Authorities and environmental groups)
- January 16, 2009 (Municipal)
- January 20, 2009 (Power producers)
- January 23, 2009 (Institutional)
- January 29, 2009 (Agriculture)

Agreement Advisory Panel water conservation and efficiency sub-group meeting

- January 8, 2009, 1-2 pm – teleconference
- January 30, 10-11am – teleconference

Agreement Advisory Panel meeting

- February 11, 2009 – 1-4 pm teleconference on water conservation (and water charges)
- Please note that the Panel is also meeting via teleconference on February, 12, 2009, 1-4 pm, to discuss intra-basin transfers and possibly information and science
- February 18 and 19, 2009 – two-day, face-to-face meeting on water conservation, water charges and intra-basin transfers
- February 26 – additional meeting if required

Proposed actions and commitments in the Strategy: e) Financial incentives - continued

- Issues/considerations
  - Any government-based financial incentives need to be uniform – cannot favour one user over another
  - Grant programs cannot reward bad players and penalize good players
  - Need to be incentives not penalties
  - Incentives for water may have to be higher because there is a lower return from water conservation than from energy conservation
  - Need to recognise that companies must compete globally e.g. Ontario businesses may incur additional costs for water and water conservation initiatives and must compete similar businesses in other jurisdictions where they do not pay or have to invest in water conservation
  - Need to come up with a balance between becoming green and pushing local companies out of business because of financial constraints/burdens
  - Golf courses will have differing financial abilities to pay for water conservation and efficiency measures, particularly "Ma and Pa" type of operations that charge low green fees
  - Integrate indoor/outdoor water efficiency with energy efficiency incentive programs
  - Use disincentives
    - charge more for those who don't conserve (water budgeting)
    - Incentives for IC&I for water conservation programs or penalize non-conserving businesses

Proposed actions and commitments in the Strategy: e) Financial incentives - continued

- Municipal infrastructure funding
  - Require conservation initiatives (measure, report, verify) for qualification for infrastructure funding
  - Implement a "blue screen" that requires water conservation planning as a condition of infrastructure funding and prioritizes repair of leaking water mains and undertaking water reuse pilots
  - Phased funding for infrastructure contingent upon meeting conditions/milestones of water conservation plan
  - Have funding requirements conditional on demonstrable conservation
- Municipal – other
  - Provide guidelines to municipalities for structuring/applying water rates to help drive conservation
  - Inclining block rates
  - Dollars from water rates must be used for water systems (supply and wastewater) and water conservation and efficiency (not general revenues)
  - Proper funding allocated to water and wastewater
  - Enable municipalities to deal with conservation induced loss of revenues
  - Establish conservation performance targets and allow good actors to benefit and receive grants
  - Grants for good municipal water conservation plans with qualifier, be careful grants to service the mediocre
  - Conservation plans should not be costly if straight forward guidelines come from province
  - Financial incentives for smaller municipalities to develop conservation plans
  - Incentives for smaller municipalities to install residential meters
  - Rebates for reduced water consumption
  - Rebates and incentives offered by municipalities could be influenced/financed by province

Proposed actions and commitments in the Strategy: e) Financial incentives

- Do not re-invent new funding programs; build on existing ones
- Need different approaches for different users (e.g., consumers versus industry)
- Grant amount should be based on the water conservation that can be demonstrated
- Research and development
  - R and D tax credits for water conservation to stimulate new/modified technologies and approaches. Third party may do the research but the company would get the tax credit.
  - Funding for new research into reducing water usage in facilities (e.g., Zenon membrane technology)
  - Funding/grants for R & D and pilots
- Identification and implementation of water-efficient technologies and practices
  - Accelerated capital cost allowance for conservation technology
  - A reduced water charge for companies employing good conservation practices
  - If a company doesn't have resources should be able to access a fund help offset cost to undertake initiatives (e.g., Ontario Power Authority's funding program for energy conservation)
  - Funding to identify viable conservation technologies, including undertaking water audits
  - Provide access to funding or financial incentives for sector specific (or broader) partnerships for conservation
  - Establish conservation performance targets and allow good actors to benefit and receive grants
  - Grants for good municipal water conservation plans with qualifier, be careful grants to service the mediocre
  - Specific financial incentives tied to metering and sub-metering requirements of public facilities with reallocation of the savings to water conservation
  - Agriculture: funding pool must be set out in legislation to ensure long term access to funding and the delivery of funding should be done through existing programs (e.g., Environmental Farm Plans)
- Incentive program to get individuals to protect water features such as wetlands (i.e., "Water Trust")
- Sustainable funding sources for ENGOs/NGOs to deliver programs
- Invest and support LEED program with incentives

Proposed actions and commitments in the Strategy: d) Regulatory Initiatives - continued

- Issues/considerations
  - Need to ensure harmonization of regulations, administrative costs and reporting – avoid duplication, overlap and contradiction, includes harmonization of federal and provincial regulations
  - More discussion with specific sectors on what are reasonable, possible impacts.
  - Some companies are further along and should not be penalised with overarching regulation.
  - Must allow for flexibility of solutions
  - Should be sector-specific
  - Alternatives have to be available and reasonable ROI
  - There needs to be room for adaptation of all programs, including any that are regulatory
  - Consider including BMPs in regulations; Caution! BMPs and standards must consider impact on system and environment (must be tested before introduced)
  - Requirement to post (e.g., on EBR) conservation standards and requirements
  - Regulation should be encouraging/embarrassing not threatening or enforcing
  - Regulatory will drive practices in facilities in province but will not affect Corporation
  - Regulatory obstacles include the Ontario Building Code, Greenbelt Plan, and public health issues
  - Use of third party audits e.g. accepted for Integrated Pest Management
  - The regulator must reward certification. Otherwise, certification is a marketing advantage only.
  - Determine applicability (who to target first) – large water users/consumptive water users?
  - Need to consider who will enforce regulations of programs (PTTW?) – could be resource intensive

Proposed actions and commitments in the Strategy: d) Regulatory Initiatives - continued

- Municipal
  - The stricter intra-basin transfer regulations, the more conservation-oriented the municipality will have to be
  - Mandate water utilities to become self-sustaining – require full cost recovery
  - Mandatory metering with a time deadline
  - Consistent billing
  - Summer by-law direction established by province at a minimum standard – municipalities will have to comply with minimum

- Broader public sector
  - Government agencies should lead by example and most agreed that they should be regulated to undertake water conservation and efficiency
  - Incremental approach with specific targets by certain dates
  - Consider a phased approach to implementation
  - Regulation and incentives go hand- in-hand
  - Regulations introduced in advance of delivery dates
  - Incentives provided in advance of the delivery dates
  - Need harmonization of regulations – need consistency within Ontario, as well as with other Agreement jurisdictions
  - Regulations need to be "practical" and "implementable"

Proposed actions and commitments in the Strategy: d) Regulatory Initiatives

- Initially should be a voluntary approach
- Farmers support voluntary stewardship and co-operation; there should be no regulatory requirements; too many regulations already
- Strategy should become legislation "Water Conservation Act"
- Water conservation plan for everyone who has a PTTW
- Mandate designing for water conservation (should be linked to PTTW with approval contingent upon sustainable design)
- Should have annual reporting on conservation achievements
- Address water consumption versus water taking (and return)
- Water efficiency codes and standards
  - Process to amend building code every 5 years to accommodate/address new technologies/fixtures and other changes
  - Ban the sale of 13-litre toilets (regulations and/or code)
  - Mandate purple pipes (dual plumbing) as done under BC's strategy
- Regulations could recognize existing professional codes
- Incentives or regulations/requirements for water efficient fixtures/equipment/practices for builders, developers, etc
- Enhancing wetland policy (e.g., no net loss of recharge wetlands) but without creating an impediment to wetland restoration
- Regulations should not rely on mitigation/no net loss
- Need to consider how to make better links/drive total water budget approach that take into account the health and viability of watersheds/sub-watersheds
- Revise Planning Act and Class EA to ensure conservation planning and water allocation options are considered earlier in process
- Require certification for irrigation installers
- Older landscape irrigation systems need more attention than new systems
- For inspections and maintenance
- Streamline of regulatory requirements as a incentive (e.g., PTTW would be reviewed less frequently for good players)

Proposed actions and commitments in the Strategy: c) Educational initiatives - continued

Delivery

- Education initiatives should piggyback on existing programs/initiatives/partners which are already established and working
- Need to give careful consideration as to how the information is provided and what methods or approaches are used – some are effective, many are not.
- Information should highlight what others are doing to make it credible at a personal level
- Work with national benchmarking initiative to include water conservation
- Support for Children's Water Education Council and Children's Water Festivals
- Demonstration sites for conservation (i.e., water/eco-education centres for students)
- Centre of excellence on water conservation – virtual or real (similar to Walkerton Centre)
- Using Centre of Excellence to research, compile and disseminate information (from international domestic and international jurisdictions)
- Alliance for Water Efficiency – use as clearinghouse for information
- Requirement for water bill to report litres/household/day – average, provincial goal and actual – this would help customers understand their water use in relation to the average and the provincial goal (consider visually showing water use by placement on a scale)
- Province should tap into industry trade shows as an educational opportunity

Proposed actions and commitments in the Strategy: c) Educational initiatives

- Public education and awareness is needed
  - Broaden the "environmental stewardship mindset" – "we are all in this together, we all have a role"
  - Adopt concept of "personal responsibility"
  - Promote intrinsic value of water
  - Know about unsustainable, water wasting practices
  - Provincial-level initiatives
    - Ontario-wide, media campaign for water conservation (allocate serious funding, use a qualified ad agency)
    - dispel "Myth of Abundance"
  - Need for local municipalities to have better awareness programs (individuals need to understand the true cost of water)
- Enhance school curriculum
  - Province-wide curriculum for water use and conservation (more curriculum connections)
  - Education most effective at primary school level (habit forming)
  - Water for sustainable future should be focus of education
- Build capacity within companies to be able to conserve and use water more wisely
  - Companies require resources (e.g., staff skills, knowledge and time; and money)
  - Provide extension specialists to help companies implement
- Educate and train water-related professions
  - Enhance water conservation research/education at post secondary level for all relevant disciplines (e.g., engineering, landscape design, etc.)
  - Provide technical training and tools for practitioners
  - Provide continuing education to irrigation contractors, builders and industry (e.g. green Plumbers)
  - There is apathy amongst builders, engineers and others to, in turn, educate consumers
  - Provide education and training for provincial ministries and agencies
- Work with other provinces to share and capitalise on collective know-how

Proposed actions and commitments in the Strategy: b) Behavioural or management practices - continued

- Issues/considerations
  - Industry awards are incentives and seen as a means for consumers to differentiate between one supplier and another. Awards such as Green Builder of the Year drive innovation
  - A labelling program would require sound measurements, monitoring and broad recognition
  - Need for co-ordinating information/resources for a cohesive message to individuals (i.e., integrate information/resources on water conservation, stormwater, energy, climate change, etc. instead of many "one-offs")

Proposed actions and commitments in the Strategy: b) Behavioural or management practices

- Increase management and employee awareness and build an internal culture of conservation: minimize needless waste and water loss
- Just as some industries have focussed and provided leadership on health and safety and the environment, same focus and leadership is needed on water conservation
- Behavioural changes are a continual, on-going process of moving the bar forward
- Encourage management systems that have a corporate commitment to water conservation, identify good operating practices for water conservation, review practices over time and strive for continual improvement
- Develop a recognition or award program for companies achieving water conservation (combine with other awards)
- Consider a labelling program for products produced by facilities practicing water conservation
- Auditing tool kits, guidelines, planning procedures, etc. for all sectors for conservation planning
- Establish benchmarks and publish where sectors are in terms of performance (e.g., MOE overview report profiling best actors, report cards)
- Pubic reporting and transparency
- Provincially-led social marketing campaign with consistent messages and materials - municipal customization
- Education - public and within sectors
- Municipal - each department should demonstrate conservation; portion of water and sewer $ should be allocated to water conservation
- Opportunity for government to affect/transform the marketplace
- Sustainable procurement with certified suppliers (e.g. irrigation contractors)
- Need regional sectoral champions e.g. a best practices coordinator who educates, mentors and advises
- Build on existing structures and systems in place to deliver programs and initiatives

Proposed actions and commitments in the Strategy: a) Technology-based measures - continued

  - Update codes and standards (through consultation), including incorporating WaterSense
  - Revise Ontario Building Code but enable municipalities to go beyond it
  - Require certification of irrigation installers
  - Label water conserving technology
- Provide technical support to assess facilities and recommend more water efficient technologies and practices
- Take action to address leaks
- Establish an entity responsible for water conservation and efficiency
- Issues / considerations
  - Needs to be a corporate-wide initiative or it won't happen because facilities compete for capital
  - Do not look at water conservation technologies alone; consider energy conservation since many energy conserving practices/technologies result in water savings
  - Landscape irrigation should be about plant health requirements
  - Must consider the tradeoffs between technologies e.g. once-through cooling reduces water taking volume vs. more consumptive closed loop cooling systems, as well as environmental impacts, environmental regulations, energy consumption and climate change

Proposed actions and commitments in the Strategy: a) Technology-based measures

- Measurement
  - Need improved measuring capacity - more and better quality metering and access to metering data on an individual, facility and municipal level
  - Universal application of metering municipally-supplied customers
- Develop and promote water-efficient technologies
  - Support new water-efficiency technology development and implementation through funding, research and pilot testing projects
  - Monitor and evaluate performance, both technical and economic (ROI); work with others parties evaluating technologies
  - Monitor and maintain technology over time, otherwise savings will erode
  - Provide support for knowledge-sharing of innovative technologies/practices at the operational level; leverage (international) know-how and technology - provide mechanisms for organizations to access information and insight into available technologies
  - Shift corporate thinking by providing case studies of practices and technologies in use with the associated costs, paybacks, etc.
  - Information clearinghouse to share studies and best practices information from other jurisdictions and sectors
  - Develop templates for non-conventional, new, innovative technology
  - Offer rebate program for small and remote communities for implementation (e.g., a toilet exchange program)
  - Apply disincentives for water inefficient products
  - Change procurement practices to support purchase of water efficient technologies and services

Goals and objectives for Ontario's water conservation and efficiency strategy

Financial objectives

- Consider all financial aspects of water conservation (implementation costs, return on investment, cost saving and cost effective BMPs and technologies)
- Focus and allocate resources (funding, incentives) on areas of greatest impact
- Identify long term funding and resources and use existing funding structures

Varying views:

- Regulations will ensure conservation (resources are allocated to regulatory requirements) *vs.* voluntary approach
- Funding prescribed in legislation *vs.* funding available to all water users
- Funding and resources should be focused on source-end water protection and conservation (e.g., wetlands) *vs.* funding for innovation for large water users

Goals and objectives for Ontario's water conservation and efficiency strategy

Objectives around approaches

- Assess capacity/potential for conservation within/between sectors
- Recognize past efforts around conservation practices and initiatives
- Facilitate innovative approaches to water conservation and efficiency
- Build on existing programs (existing BMPs, program tools, energy conservation programs, climate change initiatives) with input from all sectors
- Support global competitiveness / level playing field

Varying views:

- Require universal metering *vs.* financial and operational barriers to metering
- Focus on large water users in high and medium stressed watersheds (could include areas of high demand/use) *but* water use mapping may be incomplete
- Focus on consumptive users and users who alter water quality *vs.* focus on total water takings
- Voluntary approaches *vs.* regulatory obligations

Goals and objectives for Ontario's water conservation and efficiency strategy

Objectives around integration

- Harmonize regulations, policies, codes, guidelines, incentives, roles and responsibilities and other government initiatives
- Link water conservation/savings to energy savings
- Link water quantity and water quality management
- Recognize competing/other water uses (e.g. health and safety requirements, future growth and water requirements)

Objectives around education and awareness

- Promote water conservation education, outreach and awareness of water use (through curriculum, formal and non-formal training opportunities)
- Promote culture of conservation and behavioural changes to achieve reduction in water use
- Develop consistent messaging across province (conservation and efficiency, water use, ecological impacts of water use, dispel 'myth of abundance')

Goals and objectives for Ontario's water conservation and efficiency strategy

Objectives around knowledge and information

- Improve our understanding of watersheds (water budgets) and how much water is being used (identify benchmarks and baseline water use, examine return flow vs. consumptive use of water, assess cumulative impacts on a local and watershed basis)
- Establish consistent monitoring, reporting and data standards
- Identify an information clearinghouse (technologies, BMPs, systems) for water conservation with cost-benefit data
- Pursue water sustainability research and impacts of climate change

Goals and objectives for Ontario's water conservation and efficiency strategy

Goals

- General agreement with the Regional Goals

Objectives

- Consider all water users and water use needs under the strategy
- Short, medium and long term objectives should be adaptive and flexible and have phased implementation with tangible timelines and established milestones
- Base objectives on science and recognize diversity of site/sector operations, processes, influences

Varying views:

- Set specific objectives with targets and measures *vs.* general objectives
- Encourage voluntary participation *vs.* requiring mandatory compliance

Targets, performance measures and benchmarks

- Commercial and Industrial Sectors
  - For efficiency target should use a percentage.
  - Should not be measured as an overall reduction target.
  - Perhaps reduction targets should be set on a per unit basis.
  - Setting a target province-wide is not viable, should focus on individual sectors.
  - A consideration for a performance target for the sector is that opportunities for conservation vary amongst companies in the same sector – one may have undertaken conservation initiatives while another has not – and therefore, can not expect a company which has implemented conservation programs to necessarily be capable of further reducing water use.

Targets, performance measures and benchmarks

- Public Sector/Institutions
  - Benchmarks for sectors need to be established first
  - Performance measures for new construction are more viable
  - Difficult to quantify water use/conservation targets for existing buildings
  - Fine to set target but need to know how to measure
  - Difficult to get representation across sectors to develop benchmarks and secure data
  - A phased approach makes sense / some things will take longer to implement
  - If setting a target, need to know the actual ability/ opportunity to use less water
  - Need to have harmonization of regulations among Agreement jurisdictions

- Recreation, Tourism and Landscaping:
  - Water budgets (by site and watershed) should be a key to benchmarking
  - Targets/performance measures need to be approached on a site-by-site basis
  - Accreditation for irrigation systems installers

Targets, performance measures and benchmarks

- ENGOs and CAs
  - Should have an overall target for Ontario (e.g., 30%) that is supported by sector-specific targets
  - Need design targets – infrastructure designs should have to meet specific conservation targets
  - Funding tied to conservation performance targets
  - "50% new water to come from conservation" (BC Strategy) is a target that Ontario should adopt
  - Review targets on a regular schedule in order to monitor change (e.g., every 2 years)
  - Need to recognise those who achieve conservation targets and demonstrate innovation
  - There should be watershed targets linking water conservation and ecological conditions
  - Climate change adaptation targets, revisit and update regularly
  - Residential sector target should be set at 150 l/pp – technology exists to meet this target
  - Need target for Max Peak reduction so facilities are not oversized as currently occurs

Targets, performance measures and benchmarks

- Food and Beverage Processors
  - Starting point should be the sustainability of the source – any targets should be based on the capacity of the watershed.
  - Information on Ontario watersheds should be available from hydrogeology studies and should be the starting point for establishing science-based targets
  - Begin with the sustainability of the watershed and back out to individual users – what savings required to protect the viability of the watershed?
  - Ecological requirements should inform targets - water budgets are available and could assist in this process

- Municipal Sector
  - Consider application of International Leakage Index (ILI)
  - Defined targets for single-family residential homes (i.e., 150 litres/person/day for homes with water efficient fixtures)
  - Benchmark should be a litre/person/day measurement used as a target not a requirement
  - Provincial targets must apply to all ministries (they must have an obligation to help meet targets and make them work)

- Ontario Power Generation
  - Targets and performance measures must consider technology, opportunity and limitations, costs and over-all footprint
  - Targets and performance measures must consider cumulative effects and climate change

Targets, performance measures and benchmarks

- Agriculture
  - Numeric Targets in agriculture do not make sense for sector or sub-sector, 'sustainability of the system' makes more sense, having targets and plans is nonsensical, we need a process not a target
  - Water use reductions targets must consider crop changes or production changes and associated water needs (i.e., changing from a low water use crop to a high water use crop)
  - Percentage reduction would not be appropriate for agriculture – consideration must be for meeting production and environmental needs
  - Need to know the benchmark in the region and where Ontario falls in relation
    - Benchmarks have to be determined locally
    - Has to be established longitudinally; cannot judge benchmark on a yearly basis – irrigation for crops weather dependent

Barriers to water conservation and efficiency

Awareness/Education

- Lack of understanding, education and awareness by everyone
- Culture / behaviour often not conservation oriented
- Behavioural change and success are difficult to monitor
- Lack of water conservation in curriculum

Other

- Importance of new technology, but its has to be economically feasible
- Confidentiality and protection of proprietary information for businesses
- Failure to build the economic and ecological case for water conservation (seen as environmental add-on)
- Low water cost (many)
- Mis-trust in government (agriculture)
- Guidance on conservation plans and implementation strategies required (municipalities, industry)
- Recognition of large, medium and small operations within each sector, and different agricultural sectors
- Science not being applied appropriately (e.g., return flow not considered, consumptive use co-efficients not accurate for Ontario)
- Continuous funding (agriculture)

Barriers to water conservation and efficiency

Lack of leadership and support

- Lack of political, senior management and interdepartmental support (short vs. long-term plan)
- Lack of direction from Province
- Competing policies and priorities within a company
- Lack of sense of urgency
- Political pressures that are counter-productive to conservation

Capacity

- Lack of financial, personnel resources, expertise, commitment and time (particularly in small and mid-size companies and municipalities)
  - Cost for water conservation must have return on investment
- Province needs to provide information, expertise, support, guidance, tools, models, etc.

Legislation/Regulations/Programs

- Lack of requirements, legislation and regs.
- Regulatory and legislative barriers
  - E.g., Building Code provisions and its long cycle
- Lack of harmonization of regs, guidelines and other policies creates some confusion
- Little or no integration of programs and initiatives
- Lack of consistency
- Different regulations/requirements imposed by multiple gov'ts and agencies (e.g., CAs, MOE, municipality, etc.)

Water conservation plans

Other considerations

- Plans do not actually reduce water use; the key is to measure progress on plan implementation
- Ensure confidentiality issue is addressed – working through industry associations could help
- Have to establish standardized reporting protocol for consistency
- Facility plans could possibly roll-up to a sector plan
- If plans are done differently for each watershed, issue of it not being a level playing field will be raised by affected parties.
- Should investigate what impact conservation requirements have had in other jurisdictions (i.e., have industries left jurisdictions with stricter conservation requirements?
- There should be connections to municipal plans, conservation authorities, Source Protection committees and watersheds
- Need to recognize that conservation plans will vary and will reflect past achievements in water conservation and efficiency
- Use existing programs to channel funding support for developing conservation plans (e.g. Environmental Farm Plan, PTTW)
- Consider who will ultimately pay for the costs of developing water conservation plans (e.g., municipalities passing on costs to end users)

Water conservation plans

How should they be prepared?

- Some merit to the idea of using certified practitioners to prepare plans
  - e.g., If you want to be eligible for incentives that you must used recognized third party)
  - certification offers credibility and consistency
- Need to work co-operatively/collaboratively with sectors
- All partners need to be present when developed
- It would be helpful to have sector-based guidelines to help guide the development of individual plans
- Province should develop guidelines but in consultation with sectors because they are responsible for implementing
- Work through associations – need to establish a baseline for water use and determine what the actual potential is for conservation
- Where possible, harmonize with/build on other initiatives (e.g., environmental management plans and programs; IPM accreditation for golf courses) to make water conservation planning/implementation less onerous
- Municipalities can readily prepare plans but the details of what goes into a plan is the difficulty – a public meeting should be required
- Province should be involved in updating plans and monitoring them
- Take a phased approach to implementation on a voluntary basis

Water conservation plans

What should they include?

- Plans need to be site specific – consider economic, operational and environmental realities of individual operations
- Metering should be first step in establishing baseline – some facilities meter others don't
- Could BMP be used as a type of qualifier to ensure water use reductions?
- Reasonable to expect a facility to assess water conservation potential and then determine highest priorities for implementation
- Businesses may have to make "qualitative trade-offs" (e.g., conservation vs. water quality protection; water vs. energy efficiency)
- Education an important component of the plan
- Consider things that are easy to implement and don't cost a lot (e.g., 'no consultants required')
- Take a broader, more property-wide approach, instead of a building by building approach
- Keep it simple and provide a template (suitable/applicable to each type of facility)

Water conservation plans

Who should be required to have one?

- Across the board, all should be developing conservation plans
- All water using sectors should be required to do conservation plan, but requirements should be sector and watershed specific
- Target areas based on risk – high water users in watersheds under greatest pressure
- Start with larger users (e.g., PTTW holders – 50,000 litres/day or more) for development of a conservation plan
- It should be up to the sectors or individual companies to come up with their own plans
- Plans should be voluntary (not mandatory) with some incentive behind them
- Would not recommend legislating water reduction plans because resources may be taken away from more pressing environmental issue to develop and implement a conservation plan (e.g., an engineer working on another, more important environmental concern, would be pulled off it to work on the plan)
- Construction industry does not maintain a site/facility or the same labour force and it is therefore difficult to put a plan into place
- municipalities vs. growing municipalities (water utilities)
- Public institutions – have an obligation for conservation
- High volume water users [on municipal systems] can make their own conservation plan or they could be included in a municipal plan
- Conservation plans should be required for new construction
  - make distinction from existing because can be cost prohibitive to undertake water conservation retrofits
- Need to distinguish between owned buildings versus leased buildings
- Farmers should be required to do a Conservation Plan as a condition of funding (to cover conservation expenditures/investments)

Strategy-overall stakeholder perspectives

- Expect a provincial water conservation and efficiency strategy that delivers tangible results (e.g., water and energy savings) and is cost effective for both water managers and water users
- Unique water use issues within individual water use sectors (even within individual municipalities and businesses), so a one-size-fits all approach is inappropriate
- Focus efforts on water conservation and efficiency measures in the various water use sectors that will yield the most promising, cost-effective results and measurement of those results

Synopsis of current water conservation and efficiency efforts, including BMPs

What is Being Done

- Education for employees, schools
- Sharing of watershed science and conservation practices with municipalities
- Water use by-laws
- Metering
- Low water response programs
- PTTW data analysis
- Municipalities provide rebates for water efficient fixtures
- Use of drought tolerant landscaping
- CPPI developing water management primer addressing both water quality and conservation water treatment industry trying to improve efficiencies in technologies (WQA and NSF)
- Irrigation Advisory Committees (IAC) work to stagger schedule drawing of water
- IAC promotes BMPs for different operations
- Stantec completed study on open channel system for irrigation Canadian-Ontario Water Supply Expansion Program
- ORC building LEED designated facilities

Definitions

- Water conservation
  - A reduction in the use, loss or waste of water or an increase in the efficiency of water use (*Source: Ontario Permit to Take Water Manual)*

- Environmentally Sound and Economically Feasible Water Conservation Measures
  - Those measures, methods, technologies or practices for efficient water use and for reduction of water loss and waste or for reducing a Withdrawal, Consumptive Use or Diversion that:
    - are environmentally sound;
    - reflect best practices applicable to the water use sector;
    - are technically feasible and available;
    - are economically feasible and cost-effective based on analysis that considers direct and avoided economic and environmental costs; and
    - consider the particular facilities and processes involved, taking into account the environmental impact, age of equipment and facilities involved, the process employed, energy impacts and other appropriate factors.

  (Source: Great Lakes-St. Lawrence River Basin Resources Agreement)

Appendix contents

1. Definitions
2. Synopsis of current water conservation and efficiency efforts, including BMPs
3. Water conservation plans
4. Barriers to water conservation and efficiency
5. Targets, performance measures and benchmarks
6. Proposed goals and objectives for Ontario's water conservation and efficiency strategy
7. Proposed actions and commitments in the Strategy

APPENDIX

Next Step: AAP meeting February 18, 2009

- Full day, face-to-face meeting (55 St. Clair Avenue West, 8th floor, room A/B)
- Focus on developing Ontario's water conservation and efficiency strategy
- Based upon the findings from the stakeholder meetings, research and jurisdictional scan, preliminary, draft options for the contents of an Ontario water conservation and efficiency strategy will be presented for discussion, exploration and evaluation by the AAP
- AAP will develop draft recommendations
- Note: February 26 (if needed) AAP will finalize recommendations, discuss and/or resolve issues

AAP water conservation subgroup discussions

- What is the goal of water conservation and efficiency?
  - Water use efficiency is what should be emphasizing
  - With population growth, total water use may increase
- Water conservation should be treated as a watershed and a landscape issue - upstream issues e.g. significant groundwater recharge, source protection planning, and not just "end of pipe"
- Objectives needed for water conservation for nature
- Benchmarks for current practice and best practices are extremely important. Baseline information is needed.
- Emphasis should be more on voluntary approaches vs. mandatory requirements
- A process and/or entity for ongoing championing of the strategy and engagement within and across sectors is needed
- Design for water conservation and insist on BMPs prior to approvals
- Water conservation and efficiency should be worked into the business planning cycle for agriculture
- Need to integrate with existing legislation and regulations
- Competitiveness – need to pay attention to what is happening on the U.S. side.
- Need to measure return flows

AAP water conservation subgroup discussions

- Huge opportunity for water conservation and efficiency working with these sectors
  - Challenge: how to make progress mandatory that makes sense for each sector without being so variable that we can't achieve and measure tangible results

- Targets
  - They may not be uniform
  - May need to establish an overall provincial target; however, the question will be how to meet it across sectors
  - Perhaps a variable set of opportunities can be introduced that can be met across the sectors. In the future, in order to have a level playing field and competitive equity, those water users that have not increased their water conservation and efficiency may need to be pushed.
  - If targets are to be set, municipalities must understand what they are, as they will have implications e.g. potentially lower revenues
  - Should come from the bottom up; not top down, and based on real figures
  - Instead of % reductions, emphasize more water efficient technology, which not only saves water but also increases financial returns

Proposed actions and commitments in the Strategy: e) Financial incentives

- Municipal
  - Require conservation initiatives (measure, report, verify) to qualify for infrastructure funding
  - Provide guidelines to municipalities for structuring/applying water rates to help drive conservation
  - Water/sewer revenues must be used for water/sewer systems and water conservation and efficiency
  - Enable municipalities to deal with conservation induced loss of revenues
  - Establish conservation performance targets and allow good actors to benefit and receive grants
  - Financial incentives for smaller municipalities e.g., develop conservation plans, install residential meters
  - Rebates and incentives offered by municipalities could be influenced/financed by province

Proposed actions and commitments in the Strategy: e) Financial incentives

- Build on existing funding programs and delivery agents
- Grant amount should be based on the water conservation that can be demonstrated
- Funding for research, development and pilot projects
- Funding to identify and implement water-efficient technologies and practices
  - e.g., to identify viable conservation technologies, to undertake water audits, to pay for new water-efficient technologies
- Specific financial incentives tied to metering and sub-metering requirements of public facilities with reallocation of the savings to water conservation
- A reduced water charge for companies employing good conservation practices
- Agriculture: funding must be set out in legislation to ensure long term access and delivery of funding should be done through existing programs (e.g., Environmental Farm Plans)
- Incentive program to get individuals to protect water features such as wetlands (i.e., "Water Trust")
- Sustainable funding sources for ENGOs/NGOs to deliver programs

Proposed actions and commitments in the Strategy: d) Regulatory Initiatives - continued

Issues/considerations

- Need to ensure harmonization of regulations, administrative costs and reporting – avoid duplication, overlap and contradiction
- More discussion with specific sectors on what are reasonable and possible impacts
- Should be sector-specific
- Must allow for flexibility of solutions
- Alternatives have to be available and reasonable ROI
- Some companies are further along and should not be penalised with overarching regulation
- Regulation should be encouraging/embarrassing not threatening or enforcing
- Existing regulatory obstacles should be removed
- Need to consider who will enforce regulations

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- Initially should be a voluntary approach; Farmers support voluntary stewardship and co-operation; there should be no regulatory requirements; too many regulations already
- Strategy should become legislation "Water Conservation Act"
- Mandate designing for water conservation (linked to PTTW with approval contingent upon sustainable design)
- Should have annual reporting on conservation achievements
- Address water consumption versus water taking (and return)
- Need to consider how to make better links/drive total water budget approach that take into account the health and viability of watersheds/sub-watersheds
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- Revise Planning Act and Class EA to ensure conservation planning and water allocation options are considered earlier in process
- Revise water efficiency codes and standards
- Require certification for irrigation installers
- Streamline of regulatory requirements as a incentive
- Municipal
  - Require full cost recovery; Mandatory metering with a time deadline; Consistent billing; Require to pass a summer water conservation by-law based upon a minimum standard
- Government agencies should lead by example and most agreed that they should be regulated to undertake water conservation and efficiency

Proposed actions and commitments in the Strategy: c) Educational initiatives

- Public education and awareness is needed
- Enhance primary and elementary school curriculum re: water conservation
- Build capacity within companies to be able to conserve and use water more wisely
- Educate and train water-related professions
  - Enhance water conservation research/education at post secondary level for all relevant disciplines (e.g., engineering, landscape design, etc.)
  - Provide continuing education e.g., irrigation contractors, building industry, building officials
- Support for Children's Water Education Council and Children's Water Festivals
- Build on existing education programs/initiatives/partners
- Establish a Centre of Excellence to research, compile and disseminate information
- Work with other provinces to share and capitalise on collective know-how

Proposed actions and commitments in the Strategy: b) Behavioural or management practices

- Build on existing structures and systems in place to deliver programs and initiatives
- Encourage management systems that have a corporate commitment to water conservation, identify good operating practices for water conservation, review practices over time and strive for continual improvement
- Increase management and employee awareness and build an internal culture of conservation
- Integrate information/resources on water conservation, stormwater, energy, climate change for a cohesive message
- Develop/enhance recognition or award programs for companies achieving water conservation
- Consider a labelling program for products produced by facilities practicing water conservation
- Auditing tool kits, guidelines, planning procedures, etc. for all sectors for conservation planning
- Pubic reporting and transparency
- Establish benchmarks and publish where sectors are in terms of performance
- Opportunity for government to affect/transform the marketplace
- Change procurement practices to support purchase of water efficient technologies and services
- Need regional sectoral champions e.g. a best practices coordinator who educates, mentors and advises

Proposed actions and commitments in the Strategy: a) Technology-based measures

- Need improved measuring capacity
  - More and better quality metering and access to metering data on an individual, facility and municipal level
  - Universal application of metering municipally-supplied customers
- Develop and promote water-efficient technologies
- Update codes and standards including incorporating WaterSense
- Label water conserving technology
- Provide technical support to assess facilities and recommend more water efficient technologies and practices
- Take action to address leaks
- Establish an entity responsible for water conservation and efficiency
- Must consider the co-benefits as well as tradeoffs between technologies

Goals and objectives for Ontario's water conservation and efficiency strategy

Objectives

- General agreement with the Regional Objectives

Additional suggestions

- Objectives should consider all water users and water use needs
- Short, medium and long term objectives should be adaptive and flexible and have phased implementation with tangible timelines and established milestones
- Recognize diversity of site/sector operations, processes, influences
- Consistent themes that emerged:
  - Knowledge and Information, Integration and Harmonization, Approaches, Ecological Considerations, Financial Considerations, and Opportunities
- Some suggestions to elevate actions to the Obejctives level to emphasize importance; however, varying viewpoints will require consideration under actions and commitments (captured in the Appendix)

Goals and objectives for Ontario's water conservation and efficiency strategy

Goals

- General agreement with the Regional Goals

Additional suggestions

- Ensure the sustainability of the resource and the sustainable use of water on a watershed basis
- Ensure that precautionary principle and best available science guides the strategy
- Balance environmental, social, and economic values and water needs
- Inspire corporate and social responsibility around water use

Targets, performance measures and benchmarks

- Start with benchmarks before performance measures or targets
- Consider a per capita benchmark for residential water users
- Arguments for and against having a provincial target
- Considerations for targets:
  - Should be linked to ecological conditions in the watershed and climate targets
  - Must consider cumulative impacts
  - Provincial targets must apply to the provincial government
  - Set targets in the context of “ability to decrease” water use

Barriers to water conservation and efficiency

- Lack of capacity
  - E.g., financial, personnel resources, expertise, commitment and time
- Legislation/Regulations/Programs
- Lack of Awareness/Education
- Lack of leadership and support
- Other
  - E.g., confidentiality and protection of proprietary information

Water conservation & efficiency plans

- Broad range of views expressed on who should be required to have plans
  - All water users vs. some water users vs. no water users should be required – plans should be voluntary
- Phased approach to implementation suggested
- General agreement that plans need to be site specific
  - Adaptive to economic, operational and environmental realities of individual operations
- Some identified the need for plans to be simple and easy to develop
  - i.e., "no consultants required"
- Plans do not actually reduce water use; the key is to measure progress on plan implementation
- Sector-based guidelines for plans needed and should be developed collaboratively by province and sectors
- Need to harmonize with other environmental management initiatives to make water conservation planning and implementation less onerous
- Some merit to the idea of using certified practitioners to prepare plans - offers credibility and consistency

Synopsis of key stakeholders' messages

Agreement among stakeholders

- Need to implement environmentally sound best available cost effective water conservation and efficiency measures, as per the wording in the Charter Annex Agreement
- Taking a sector-based approach
- Government to lead by example in its own operations
- Develop/update BMPs, standards, tools and programs
- Research and implement water efficient technologies
- Improve the understanding of ecological needs for water
- Provide education, awareness and outreach for the public
- Monitor and report on water conservation and efficiency improvements
- Provide funding
- Implement through partnerships

Varying views

- Establishing a provincial target
- Mandatory and voluntary approaches
- Encourage and/or require water conservation plans and provide incentives for implementation

Synopsis of current water conservation and efficiency efforts heard from stakeholders

- Water conservation and efficiency efforts are inconsistent amongst and within sectors
- Many sectors stated that opportunities for water conservation are limited for various reasons. Others recognized the potential for water conservation and efficiency.
- Almost all sectors linked water and energy use but few considered water conservation in their energy conservation efforts
- Some companies have focussed on other environmental priorities
- Some companies are beginning to recognize the need for a culture shift re: water conservation and efficiency
- Water needs and opportunities are sector/industry/facility as well as watershed specific. Water use also varies seasonally.
- Return-on-investment is an important consideration when deciding whether to implement conservation measures
- Opportunity to build on existing structures and programs within Ontario and experiences in other jurisdictions

Chronology of recent stakeholder meetings

Sector-specific meetings

- Food and beverage - December 1, 2008
- Tourism, golf courses, non-agricultural irrigation - December 9, 2008
- Commercial, industrial - December 11, 2008
- Ontario Forest Industry Association - January 6 and 20, 2009
- Conservation authorities, environmental organizations - January 13, 2009
- Municipal - January 16, 2009
- Ontario Power Generation - January 20, 2009
- Broader public sector - January 23, 2009
- Agriculture - January 29, 2009

Agreement Advisory Panel water conservation and efficiency subgroup

- 2 teleconferences - January 8 and 30, 2009

Provincial efforts underway

- Passage of *Safeguarding and Sustaining Ontario's Water Act, 2007*
  - provides regulation-making authority under OWRA to establish water conservation and efficient use of water

- Inter-ministry Water Conservation and Efficiency Work Group meets regularly
  - MOE, MMAH, MNR, MAFRA, MEI, MEDT, MRI, MNDM

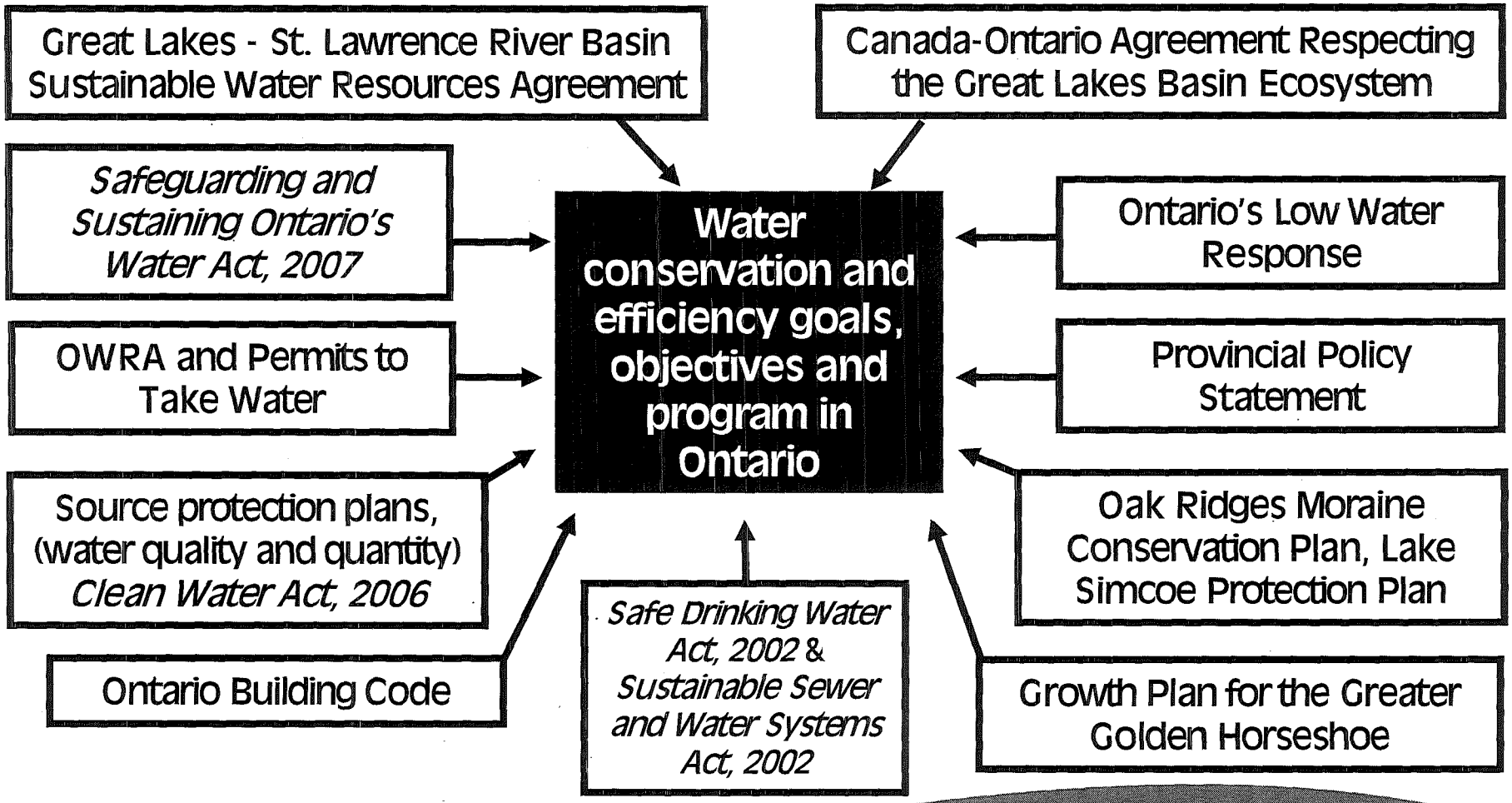
- Research projects, jurisdictional scan and business case underway

- Ideas and information gathering from sectors and interested parties

Great Lakes - St. Lawrence River Basin Sustainable Water Resources Agreement, 2005

- Deadlines under this Agreement are driving the development of Ontario's water conservation and efficiency strategy
- Among other provisions, it requires **stronger water conservation and efficiency measures** (article 304):
  - Within 2 years of signing the Agreement
    - Development of Regional water conservation and efficiency objectives (completed)
  - Within 2 years of diversion ban:
    - Water conservation and efficiency goals, objectives, program by each province and state, consistent with Basin-wide goals (in Agreement) and objectives
      - Program can be either voluntary or mandatory and must be for all, including existing, Basin water users
    - Annual assessment of programs by each state/province and public reporting
    - Regional Body review of state/provincial water management and conservation programs and basin-wide conservation objectives every 5 years
    - The parties to commit to promote Environmentally Sound and Economically Feasible Water Conservation Measures
  - Agreement states the conservation programs need to adjust to new demands and the potential impacts of cumulative effects and climate change.

Ontario's Foundation – Water Conservation & Efficiency



Water Conservation and Efficiency Drivers

Purpose

1. Update the entire Agreement Advisory Panel (AAP) on the progress to date in developing Ontario's water conservation and efficiency strategy

2. Summarize the findings from the nine recent Sector-Specific meetings

3. Discuss common emerging themes, as identified by the AAP Subgroup

4. Help prepare the AAP for its task on February 18th: crafting options for inclusion in Ontario's water conservation and efficiency strategy for government consideration

Developing Ontario's Water Conservation and Efficiency Strategy

Summary of findings from Sector-Specific meetings and the Agreement Advisory Panel Subgroup meetings

December 2008 to January 2009

Presentation to the Agreement Advisory Panel

February 11, 2009

(16)

Agreement Advisory Panel Meeting
Agreement Implementation

Date: February 11, 2009

Location: 3rd floor, Training Room B, 40 St. Clair Avenue West, Toronto.
Teleconference: 416-212-0400/1-866-355-2663, **passcode 0617#**
NOTE: the passcode is different for each day

REVISED AGENDA

12:00 PM	Arrival - Lunch (provided)
12:30 PM	Those participating via Webex – begin logon
1:00 PM	**Live at 40 St. Clair Ave. W. and via Webex**
	De-brief on sector meetings held on water conservation and efficiency
3:00 PM	De-brief on sector meetings held on water charges phase 2
4:00 PM	Wrap up, next steps

Schedule for water conservation and efficiency-related meetings

Agreement Advisory Panel meeting

- February 11, 2009 – 1-4 pm webinar on water conservation (and water charges)
- Please note that the Panel is also meeting via webinar on February, 12, 2009, 1-4 pm, to discuss intra-basin transfers and possibly information and science
- February 18 and 19, 2009 – two-day, face-to-face meeting on water conservation, water charges and intra-basin transfers
- February 26 – additional meeting if required

groups should be established and responsible for deciding about it targets, as was done to develop the GLSCI 15% total reduction target. Agreed that there is need for a process for ongoing engagement.

- Ontario tried to promote water conservation and efficiency in the past but it petered away as there was no permanent structure to ensure information sharing, etc.
- If water conservation is linked to energy conservation and water quality it will be more doable as an integrated initiative.
- It is harder to undue historical uses than prevent wastage for new proposals. This is a golden opportunity to design for water conservation and to insist on BMPs prior to approvals.
- Water conservation and efficiency should be worked into the business planning cycle for agriculture e.g. a retiring farmer will not want to invest but another who wants to expand may want to use more efficient technologies.
- Benchmarks for current practice and best practices are important. Baseline information is needed.
- Need to integrate with existing legislation and regulations.
- Competitiveness – we need to pay attention to what is happening on the U.S. side.
- Water conservation should be treated as a watershed and a landscape issue - upstream issues e.g. significant groundwater recharge, source protection planning, and not just "end of pipe". Water is like a bank account: you don't want to withdraw too quickly.
- The GLCA requires consideration about return flow. We will need to measure return flows.
- We need some objectives for water conservation for nature.
- Goals and objectives should, come from the bottom up; not top down, and based on real figures. Therefore we should have small objectives such as keeping 50% of the water in the watershed all of the time. Do not waste water – meter every user. Objectives should be linked to actions. This gets us away from the notion that using water is a bad thing. With population growth, total water use may increase. Water use efficiency is what we should be emphasizing. Wasting water should be avoided.
- Benchmarking is extremely important e.g. calculating water taking on PTTWs. We must work harder to monitor actual water use and avoid impacts of water takings too e.g. ecological impacts, local impacts.
- For Feb. 11th, some members recommended having a written proposal – not too long – to speak to, with concrete ideas and proposals. Others wanted a list of themes that have been observed.

Action Items

- Draft notes from the January 30, 2009 agricultural sector meeting to be sent to AAP members for their information as soon as the notes are available
- Open invitation to AAP to participate in the February 11th, 9:30 am presentation by RMSI of its preliminary findings for the water conservation and efficiency business case to be sent once details are available. Participation is optional. The presentation may be attended in person at 40 St. Clair Ave. West, Toronto or via webinar. Invitations will be sent under separate cover.
- Materials for February 11th , 1 pm, AAP (webinar) meeting to be sent a minimum of 2 days in advance of the meeting

Great Lakes – St. Lawrence River Basin Sustainable Water Resources Agreement

Developing Ontario's Water Conservation and Efficiency Strategy
Agreement Advisory Panel Water Conservation and Efficiency Subgroup
Teleconference January 30, 2009, 10 am

Meeting Notes (Draft)

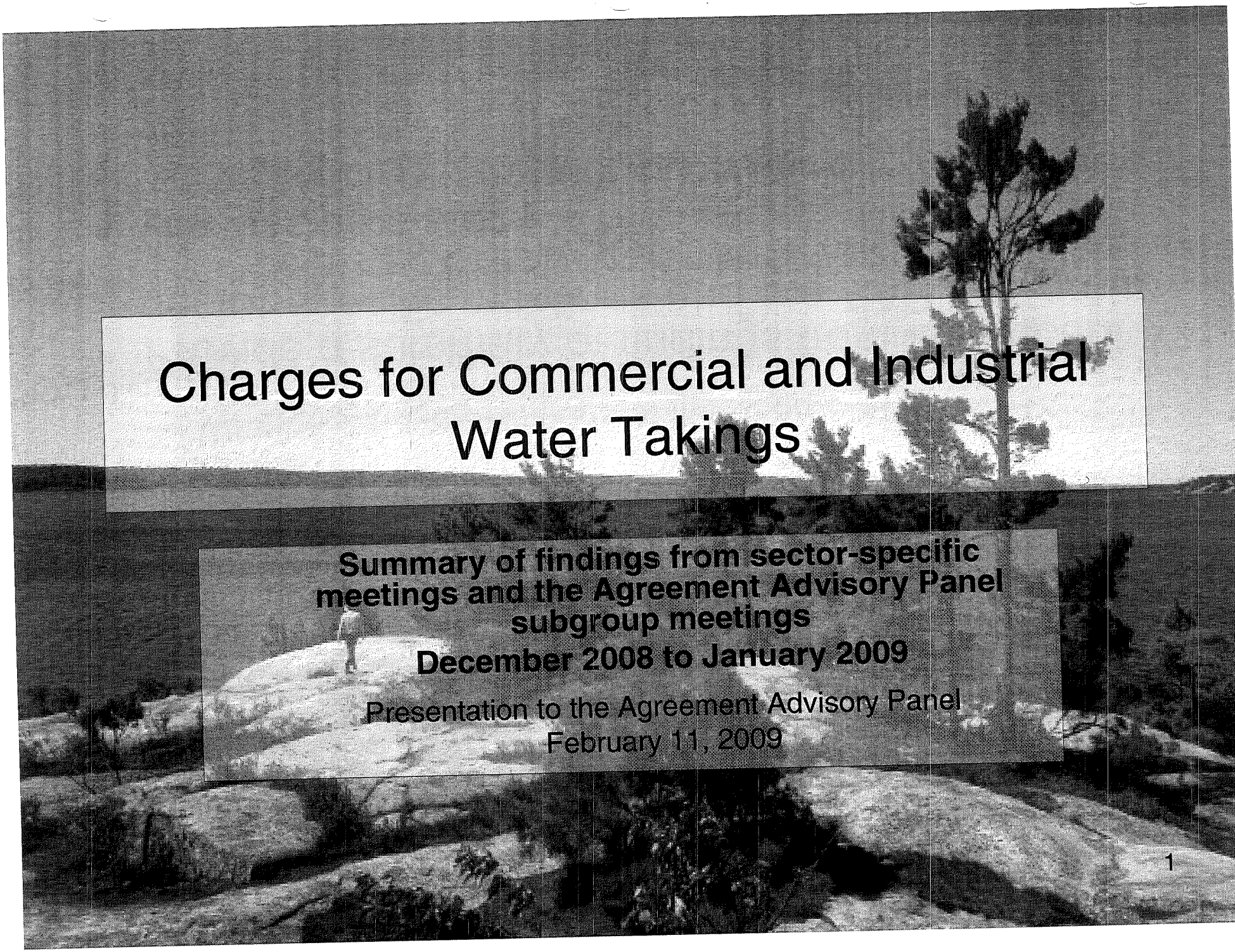
Teleconference Participants
CELA: Sarah Miller
Ducks Unlimited: Kevin Ritch
GLSLCI: Korice Moir
OFA: Tina Schankula
POLIS: Carol Maas
Sierra Club: Lino Grima
York Region: Tracy Carrigan, Teresa McIntrye
MOE: Carol Salisbury, Brent Taylor, Marta Soucek
MNR: Laura Kucey
OMAFRA: Deborah Brooker

Meeting materials:
- Agenda
- Meeting notes:
  - Ontario Forest Industry Association – January 6 and 19, 2009
  - Conservation authorities and ENGOs – January 13, 2009
  - Municipal Sector – January 16, 2009
  - Ontario Power Generation - January 20, 2009
  - Broader Public Sector Institutions - January 23, 2009

Main Points of Discussion by Subgroup Members

- Tina did not receive the email on January 27, 2009 to the AAP subgroup which contained the agenda and materials for today's call. [Later it was determined that the email had been sent but was not received due to server problems.]
- One person asked why were we moving on this initiative "at break neck speed"?
- Tina, Deborah and Carol provided verbal highlights from yesterday's agricultural sector meeting. Meeting notes are expected shortly.
- One member raised the issue of seasonality of water takings e.g. agriculture whereas Great Lakes water taking reporting is averaged yearly.
- The implications of climate change, including more evapotranspiration, are likely to increase agricultural water demands.

Common emerging themes
- Goal –instead of % reductions, emphasize more efficient technology, which not only saves water but also increases financial returns
- Emphasis should be more on voluntary approaches vs. mandatory requirements
- A process element needs to be included in the strategy: there needs to be a small group on water conservation is each sector so that people continue to talk and promote water conservation and efficiency. A plan is not enough itself. There needs to be ongoing education and discussion. Sector-specific work



Charges for Commercial and Industrial Water Takings

Summary of findings from sector-specific meetings and the Agreement Advisory Panel subgroup meetings
December 2008 to January 2009

Presentation to the Agreement Advisory Panel
February 11, 2009

Purpose

- Provide a brief overview of the water charges proposal
- Clarify issues raised by AAP charges sub-group
  - What is the purpose of the charge?
  - What volume is the charge applied to?
  - How are municipal users to be charged?
  - What are the implications of the charge for NAFTA?
- Provide a summary of findings from five recent sector-specific meetings and the AAP sub-group
- Discuss next steps
  - Preparation for Feb 18/19 AAP meeting

Who Would Pay the Charges?

- Commercial and industrial water takers who require a Permit to Take Water (PTTW) under the *Ontario Water Resources Act* and commercial and industrial users on municipal supplies would be subject to the charge
- Historical (grandfathered) water takers that use water for commercial and industrial purposes would be required to apply for a permit and pay the charge
- The charge would not apply to:
  - Non-commercial uses, including domestic use
  - Agricultural water use
  - Hydropower production

Ontario

What are the Charges?

Rate ($ per million litres)	Implementation Phase	Examples
$3.71 (implemented)	Phase 1: highly consumptive users	❖ Beverage manufacturing ❖ Ready-mix concrete
$0.86	**Phase 2**: medium consumptive users	❖Mining ❖Iron & steel products ❖Pulp & paper
$0.06	**Phase 2**: low consumptive users	❖ Thermal power

- Sectors that use water more consumptively pay a higher rate than those sectors that use water less consumptively
  - All companies within a sub-sector are charged the same volumetric rate for their total annual water withdrawals

Ontario

Implementing the Charge

- Charge implemented in phases:

January 1, 2009	*Phase 1*: • highly consumptive uses • began paying for water used as of Jan 1/09 • First billed in 2010
Date TBD	*Phase 2*: • medium, low consumptive water users • could begin paying for water Jan 1/2011 at earliest

- Charge framework reviewed in 2012 and every 5 years thereafter
  - Re-assess water management costs; adjust rates accordingly
  - Re-examine other aspects of framework (e.g., rate categories)
  - Changes to the charge framework will require regulatory amendments and public consultation

What is the Purpose of the Charge?

- The charge is a *regulatory charge*
  - to support the costs of a provincial regulatory scheme and to further the goals of that scheme (e.g., water management)
  - In this case, the purpose is to recover a portion of the government's water quantity management program costs
- The types of costs that would be recovered through the charge are limited to programs that are either required to manage water takings or to provide direct benefits to the water takers
  - e.g.: water monitoring programs, Permit to Take Water, Low Water Response, water budgets
- The government must demonstrate a clear link between the charges and the program costs recovered
  - any program costs associated with exempt sectors must not be subsidized by other water takers

What Volume is the Charge Applied to?

- The charge is ***volume-based***, so that users are charged annually for the ***total actual volume*** of water withdrawn
  - Charge is paid annually based on the previous year's taking
- Consumptive use is only factored into the charge rate, not the annual water withdrawal volume
  - a higher rate applies to facilities who use water more consumptively (i.e., where water incorporated into a product)
  - lower rates apply to facilities who use water less consumptively
- All facilities within a sector are charged the same volumetric rate for their total annual water withdrawals

How are Municipal Users Charged?

- Industrial and commercial water users on municipal supplies are charged directly by the province

- The ministry relies on information from municipalities to identify the users to be charged and their annual water taking volumes

- For 'Phase 1' charges, Regulation 450/07 requires owners of water works to report the names, account information, and annual water use volumes for industrial and commercial users on their system by March 31 of every year

Are there implications for NAFTA?

- Water in its natural state is not a good or a product subject to NAFTA
    - International trade rules do not apply to water in lakes and rivers
- The province is not charging for water – only the administration of the resource – therefore, there is no commercialization of the resource
- The charge is not applied in a discriminatory manner; all users in like circumstances are charged the same regulatory charge
- The difference in rates applied to the various uses of water is based on environmental criteria (i.e., highly consumptive users pay more because they do not return the water) and the intent of the charge is to support water management in Ontario
- Therefore the charge is consistent with the provisions of international trade agreements which allow for the protection of the environment and the conservation of natural resources

Sector & AAP sub-group meetings

- Meetings held throughout December and January to discuss Phase 2 water charges with individual sectors
  - Food & beverage; golf courses, tourism & landscape irrigation; industrial; Ontario Forest Industry Association; Ontario Power Generation; municipal
- Charges proposal presented and specific discussion questions asked
  - Based on the implementation schedule, are there any issues or concerns regarding the timeline?
  - In terms of reporting water use volumes, to what degree, if any is there sub-metering of water in your sector/company?
  - Are there any issues or concerns regarding the proposed charge rates?
  - Are there any issues or concerns regarding the administration of the charge to municipal water users? (*municipal meeting only*)
- Discussion points were recorded and circulated to attendees for review, correction and addition
- Two AAP sub-group calls were held to review feedback from sector meetings and discuss issues

Input from sector & subgroup meetings

Proposed implementation: 2011

- Generally no concerns
- Some commercial & industrial sectors need to know the date of Phase 2 implementation as soon as possible for project planning
- Some suggested earlier implementation – 'why wait?'

Degree of sub-metering within a facility

- Limited or no sub-metering for most sectors
- In some sectors (e.g., food and beverage), larger companies are more likely to meter and sub-meter than smaller/mid-size companies
- For many commercial/industrial facilities, sub-metering would be costly ($millions per facility)

Input from sector & subgroup meetings

Proposed rates: $0.86, $0.06 per ML

- Framework and low charge rates will not encourage greater water use efficiency and conservation
- Charge will signal need for conservation (even though rate is low)
- No concerns expressed over the direct financial impact of the charge rates
- Concerns about cumulative impact of governmental regulatory requirements
- Charge rate categories do not reflect the variation in consumptive use within some sectors
- Consider exempting the portion of water used by companies for health and safety reasons

Input from sector & subgroup meetings

Administration of charge to municipal users

- Reporting water use information to the province for water charges is an administrative burden for many municipalities
- Administrative cost for some municipalities to report water use to the province will be higher than revenue from the charge
- Changing reporting requirements so that municipalities only have to provide data for water customers above an annual volume threshold would reduce municipal workload substantially
- Some municipalities do not have complete records of the required information (e.g., list of individual users)

Other issues/considerations

- Some sectors view charge as a cost pass through and do not support
- Should be a reward for conservation (i.e. reduction in charge or no charge)
- Charge could pose some logistics problems for some water users (e.g., short-term road construction projects)

Next Steps

- AAP face-to-face meeting February 18, 2009: discussion of charges for commercial and industrial water takings
- Phase 2 charges proposal for EBR posting planned for Spring/09

Ontario

(b1)

Great Lakes Agreement Advisory Panel Meeting
IMPLEMENTING THE GREAT LAKES - ST. LAWRENCE RIVER BASIN SUSTAINABLE WATER RESOURCES AGREEMENT

Date: February 18, 2009

Location: 8th floor, Boardroom A/B, 55 St. Clair Avenue West, Toronto.

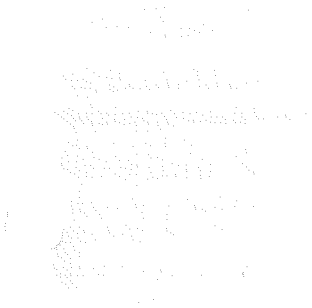
NOTE: This location is scent-free. Please refrain from wearing perfume, cologne or other heavily scented products.

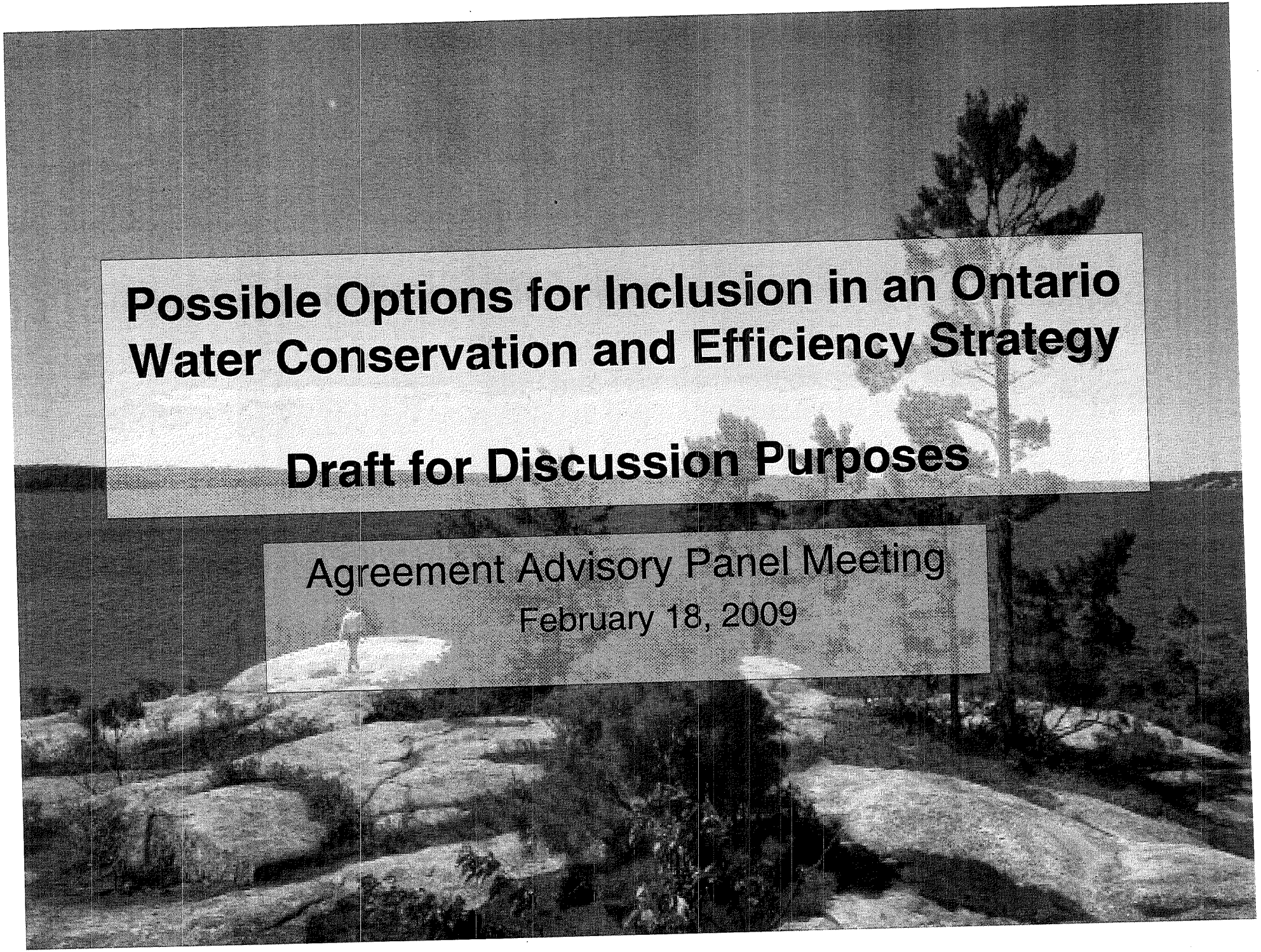
AGENDA

9:00 AM	Arrival (continental breakfast provided)
9:30 AM	Welcoming remarks Sharon Bailey, Director, LWPB, MOE
9:45 AM	Proposed Options for Inclusion in the Ontario Water Conservation and Efficiency Strategy, Carol Salisbury, MOE Discussion
12:30 PM	LUNCH (provided)
1:00 PM	Proposed Options for Inclusion in the Ontario Water Conservation and Efficiency Strategy (continued) Discussion
3:40 PM	Supporting Information and Science, Jonathan Staples, MNR - Watershed boundaries and mapping Discussion - Water Use Reporting Discussion - Consumptive use Discussion - Averaging amounts Discussion
4:30 PM	First Nations Engagement Update Rob Messervey, MNR
4:55 PM	Wrap-up and Next Steps Ann Marie Weselan, MOE
5:00 PM	Meeting ends

Agreement Advisory Panel meeting
Consultation on Agreement implementation
February 18, 19, 2009
Document List

1. Agenda for February 18, 2009
2. Proposed Options for Inclusion in the Ontario Water Conservation and Efficiency Strategy
3. Supporting Information and Science (4 attachments: Consumptive Use Framework, work sheet, and thresholds and the Water User Reporting Draft Guidelines).
4. First Nations Engagement Update
5. Agenda for February 19, 2009
6. Key Decision Points for Discussion
7. Intra-basin Transfers: Establishing the Baseline
8. Intra-basin Transfers: Connecting Channels
9. Regulating New and Increased Transfers: Regional Review Process
10. Regulating New and Increased Transfers: How to Apply the Exception Criteria
11. Regulating New and Increased Transfers: When to Apply the Exception Criteria
12. Ensuring adequate public notification of applications: Prior Notice – EBR Posting of Permits to Take Water





Possible Options for Inclusion in an Ontario Water Conservation and Efficiency Strategy

Draft for Discussion Purposes

Agreement Advisory Panel Meeting

February 18, 2009

Purpose

- To provide possible options for the contents of an Ontario Water Conservation and Efficiency Strategy to the Agreement Advisory Panel for discussion, exploration and evaluation.
  - In particular, the Panel's input is being sought to identify:
    - priorities of the Strategy;
    - how ambitious the Strategy should be; and
    - who should fund implementation.
  - Note: The possible options presented here are preliminary and based upon stakeholder input and research conducted to date.

Water Conservation and Efficiency Strategy: Possible Outline

A. Context

B. Guiding Principles

C. Mission Statement

D. Targets

E. Goals and Objectives

F. Actions and Commitments

- Long-term sustainable use including water conservation plans and audits
- Supply and demand management
- Monitoring and reporting
- Science, technology and research
- Education and information sharing

Suggested key points of discussion for AAP

- None (from Agreement)
- Are guiding principles required?
- Is a mission statement required?
- Scale and types of targets
- None (very similar to Regional G & O)
- Water conservation plans and audits, funding, priorities, timeframe

A. Context

- Among other provisions, the Article 304 of the Annex Agreement requires **stronger water conservation and efficiency measures**:
  - Within 2 years of signing the Agreement
    - Development of Regional water conservation and efficiency objectives (completed)
  - Within 2 years of diversion ban:
    - Water conservation and efficiency goals, objectives, program by each province and state, consistent with Basin-wide goals (in Agreement) and objectives
      - Program can be either voluntary or mandatory and must be for all, including existing, Basin water users
    - Annual assessment of programs by each state/province and public reporting
    - Regional Body review of state/provincial water management and conservation programs and basin-wide conservation objectives every 5 years
    - The parties to commit to promote Environmentally Sound and Economically Feasible Water Conservation Measures
  - Agreement states the conservation programs need to adjust to new demands and the potential impacts of cumulative effects and climate change.

B. Guiding principles in formulating and implementing the Strategy

Recognizing the opportunities for water conservation and efficiency in Ontario, and the potential water, energy, and cost savings, as well as GHG emission reductions, the Strategy will strive to:

i. Increase people's understanding of the importance and value of water in sustaining all life

ii. Create a culture of conservation and wise use of Ontario's water resources

iii. Promote leadership in the implementation of cost-effective water conservation and efficiency measures which enhance Ontario's economic competitiveness

iv. Recognize ecological needs for water and ensure sustainable water use, using an ecosystem approach

v. Use science-based approaches, and the precautionary principle in the absence of complete scientific understanding, including consideration of cumulative impacts

vi. Consider water use throughout the hydrological cycle, accounting for on-site, lot level as well as "end-of-pipe" water conservation and efficiency measures

vii. Encourage innovation in the development and application of water conservation and efficient technologies and practices, particularly in the design and approval of new buildings and facilities

viii. Allow flexibility in implementation given that water use and the potential for water conservation and efficiency is unique in each sector and facility

ix. Improve our knowledge of how much water we use

x. Harmonize with other regulations, programs and environmental considerations

xi. Build upon existing policies, programs, organizations and structures which promote the stewardship of Ontario's water resources

Questions

1. Should the Strategy contain Guiding Principles?
2. If yes, are there any significant Guiding Principles missing (keeping in mind the possible Mission Statement, Goals and Objectives of the Strategy)?

C. Mission Statement

The Strategy could include a mission statement.

Option 1. Use only the water we need to protect our health, economy, and environment by sustaining the quantity and quality of water for generations to come. (Wisconsin - draft)

Option 2. Ontarians understand the value of water, know how to use water wisely and do so.

Option 3: Ontarians use water efficiently and in a sustainable manner to meet the environmental, social and economic needs of current and future generations.

Considerations

- As the proposed goals are taken directly from the Great Lakes-St. Lawrence River Basin Sustainable Water Resources Agreement, a short mission statement could help to make this an Ontario Strategy
- A provincial target with a timeframe could suffice in making this an Ontario-specific Strategy

Questions

1. Should the Strategy have a Mission Statement?
2. If yes:
   - which option would you recommend? or
   - what new option would you suggest?

D. Water Conservation and Efficiency Targets

The Strategy could include targets. A number of possible types of targets are presented. Some targets could be considered in combination with one another.

Scale of targets:

1. Province-wide targets
2. Sector-wide targets
3. Individual water users targets

Types of targets:

1. Water conservation
2. Water efficiency

1. Province-wide targets

Option 1. Province-wide targets now

- e.g., water use in British Columbia will be 33 percent more efficient by 2020

Option 2. Province-wide targets later

Option 3: No Province-wide targets

Considerations

- Any target would need to be credible based upon real data
- How targets could be set
  - Could consider starting from bottom up e.g., add up estimated potential water savings by sectors or end water users
  - Could consider what we require as a province for future sustainability i.e. future capacity
    - Consider if is enough data/baseline information to establish a numeric target
    - Need solid watershed science data and knowledge about needs of ecosystem before targets can be set
- Develop province-wide targets later once sector-wide or individual targets are developed and rolled up
- Implications of a province-wide target for sectors and individual water users would need to be explained

2. Sector-wide targets

Option 1. Targets developed for each sector later
Option 2: No targets for any sector

Considerations

- Very few, if any, existing Ontario-specific, sector-wide benchmarks
- Baseline information needed in order to select performance indicators and targets
- Methodologies for calculating performance may be required
- How targets could be set
  - Need to know the potential to use less water or use water more efficiently
  - Must consider technology, opportunity and limitations, costs and over-all environmental footprint
  - Need to know targets and benchmarks in the Great Lakes Region and how Ontario compares to them in order to ensure a level competitive playing field
- Could link performance standards to PTTW
- Could consider a phased approach; some things take longer to implement
- Sector-wide targets may not reflect the diversity of water users within a sector
- Implications of sector-wide targets on individual facilities would need to be explained

3. Individual water users targets

Option 1. All PTTW holders

Option 2. Industrial, commercial and institutional facilities

Option 3. High volume water users

Option 4. Watershed-based targets for water-stressed areas

Considerations

- Individual entities could develop their own targets for water conservation and efficiency that:
  - reflect best practices applicable to the water use sector;
  - are technically feasible and available;
  - are economically feasible and cost-effective based on analysis that considers direct and avoided economic and environmental costs; and
  - consider the particular facilities and processes involved, taking into account the environmental impact, age of equipment and facilities involved, the process employed, energy impacts and other appropriate factors.
- Individual water users targets could be based upon conducting water audits and/or preparing water conservation and efficiency plans
- Could consider high volume water users e.g. on a municipal supply, at a minimum
- Could consider watershed-based targets linking water conservation and ecological conditions

Types of targets

Option 1. Water conservation e.g. total reduction in water use

Option 2. Water efficiency e.g. % increase in water efficiency, meet a stated benchmark such as indoor residential water use per capita

Considerations

- Water conservation
  - Reducing overall water use could be necessary in high water stressed watersheds, where there is insufficient infrastructure capacity or for short periods of time
  - For some water uses such as agriculture a minimum amount of water is needed at critical periods of times for plants and a minimum amount of water is needed at all times for livestock. Similarly, for some operations a minimum amount of water is needed to meet health and safety requirements
  - Reducing overall water use could be accomplished without reducing water wastage e.g. companies leave an urban area
  - Reducing overall water use may not be possible with population and employment growth
- Water efficiency
  - More closely aligned with reducing water wastage
  - % increase in water efficiency could take into account current level of water efficiency and the costs of improvements
- Targets and performance measures could consider cumulative impacts and climate change

Questions

1. Should a province-wide target be included in the Strategy now, in the future, or at all?
2. Should sectors be required to establish their own targets?
3. Should individual water users be required to establish their own targets?
4. Do you agree that the Strategy should emphasize the use of water efficiency targets but also identify circumstances in which water conservation targets may also be appropriate? yes

Timeframe of Strategy

Option 1. 10 Year Strategy
Option 2. 15 Year Strategy
Option 3: Other

Considerations

- How far into the future the Strategy should go
- Length of the Strategy is linked to decisions on targets, time and funding required to undertake the actions and commitments
- Greater certainty as to what is needed and what may be possible in the near term
- A longer-term planning horizon could be necessary to accomplish the objectives, recognizing:
  - complexities of the environmental, social and economic needs for water use throughout the province
  - varying levels of efforts in water conservation and efficiency to date; and
  - need for science-based research and development

Question

Question to be deferred to the end of the discussion

- What should be the timeframe of the Strategy and why?

E. Water Conservation and Efficiency: Goals

- As stated in the Great Lakes-St. Lawrence River Basin Sustainable Water Resources Agreement

a. Ensuring improvement of the waters and water dependent natural resources
b. Protecting and restoring the hydrologic and ecosystem integrity of the Basin
c. Retaining the quantity of surface water and groundwater in the Basin
d. Ensuring sustainable use of waters of the Basin
e. Promoting the efficiency of use and reducing losses and waste of water

E. Water Conservation and Efficiency: Objectives

- Wide support to adopt the Regional objectives; could have minimal changes to emphasize the need to take ecological needs for water into account
- *Red italicized text indicates a variation from the Regional objectives*

Ontario's Water Conservation and Efficiency Objectives

1. **Guide programs toward long-term sustainable water use *including taking ecosystem needs for water into account***
2. **Adopt and implement supply and demand management to promote efficient use and conservation of water resources**
3. **Improve monitoring and standardize data reporting among state and provincial water conservation and efficiency programs**
4. **Develop science, technology and research**
5. **Develop education programs and information sharing for all water users**

E. Water Conservation and Efficiency: Objectives

1. Guide programs toward long-term sustainable water use including *taking ecosystem needs for water into account*

a. Use adaptive programs that are goal-based, accountable and measurable over time.

b. Develop and implement programs openly and collaboratively, including with local stakeholders, aboriginal peoples, governments and the public.

c. Prepare and maintain long-term water demand forecasts.

d. Develop long-term strategies that incorporate water conservation and efficient water use *and integrate them with other environmental management practices and considerations such as energy use and climate change.*

e. Review and build upon existing programs and planning efforts and consider practices and experiences from other jurisdictions.

E. Water Conservation and Efficiency: Objectives

2. Adopt and implement supply and demand management to promote efficient use and conservation of water resources

a. Maximize water use efficiency and minimize waste of water.

b. Promote appropriate innovative technology for water reuse.

c. Conserve and manage existing water supplies to prevent or delay the demand for and development of additional supplies.

d. Provide incentives to encourage efficient water use and conservation.

e. Include water conservation and efficiency in the review of proposed new or increased uses.

f. Promote investment in and maintenance of efficient water infrastructure and green infrastructure.

E. Water Conservation and Efficiency: Objectives

3. Improve monitoring and standardize data reporting among state and provincial water conservation and efficiency programs

a. Improve and increase the measurement and evaluation of water conservation and water use efficiency.

b. Encourage measures to monitor, account for, and minimize water loss.

c. Track and report program progress and effectiveness.

E. Water Conservation and Efficiency: Objectives

4. Develop science, technology and research

a. Encourage the identification and sharing of innovative management practices and state of the art technologies.

b. Encourage research, development and implementation of water use and efficiency and water conservation technologies and standards.

c. Seek a greater understanding of traditional knowledge and practices of aboriginal peoples.

d. Strengthen scientific understanding of the linkages between water conservation practices and ecological *needs and* responses.

E. Water Conservation and Efficiency: Objectives

5. Develop education programs and information sharing for all water users

a. Ensure equitable public access to water conservation and efficiency tools and information.

b. Inform, educate and increase awareness regarding water use, conservation and efficiency and the importance of water.

c. Promote the cost-saving aspect of water conservation and efficiency for both short-term and long-term economic sustainability.

d. Share conservation and efficiency experiences, including successes and lessons learned across the Basin.

e. Enhance and contribute to regional information sharing.

f. Encourage and increase training opportunities in collaboration with professional or other organizations in order to increase water conservation and efficiency practices and technological applications.

g. Ensure that conservation programs are transparent and that information is readily available.

h. Aid in the development and dissemination of sector-based best management practices and results achieved.

i. Seek opportunities for the sharing of traditional knowledge and practices of aboriginal peoples.

Question

1. Do you agree with the following additions in red? If not, what changes would you suggest?

   - Objective 1: Guide programs toward long-term sustainable water use including *taking ecosystem needs for water into account.*
   - Objectives 1d: Develop long-term strategies that incorporate water conservation and efficient water use *and integrate them with other environmental management practices and considerations such as energy use and climate change.*
   - Objective 4d: Strengthen scientific understanding of the linkages between water conservation practices and ecological *needs and* responses.

F. Actions and Commitments

- Each of the following possible actions and commitments are grouped under one of the five overarching objectives
- A number of possible actions and commitments are presented; Strategy could include one or more of them
- Possible actions and commitments:
  - are preliminary and based upon stakeholder input and research conducted to date
  - include a range of voluntary and mandatory
  - could be implemented in partnerships by the province with the public, aboriginal communities, municipalities, businesses, institutions, environmental and community-based organizations
- Panel's input is being sought to identify:
  - priorities
  - how ambitious the Strategy should be
  - who should fund implementation

F. Actions and Commitments

1. Guide programs toward long-term sustainable water use including taking ecosystem needs for water into account
   - Governance
   - Water conservation plans and audits
   - Water availability and demand forecasting
2. Adopt and implement supply and demand management to promote efficient use and conservation of water resources
   - Provincial regulatory measures
   - Municipal
   - Leak detection and repair
   - Financial incentives
3. Improve monitoring and standardize data reporting among state and provincial water conservation and efficiency programs
   - Methodologies for calculating performance indicators and benchmarks
   - Standard billing information
   - Water loss
   - Program progress and effectiveness
4. Develop science, technology and research
   - Technologies and practices
   - Standards
   - Environmental needs and linkages
   - How people value and use water
5. Develop education programs and information sharing for all water users
   - Public education and awareness campaign
   - Enhancing curriculum
   - Building capacity
   - Educate and train water professionals

F. Actions and Commitments

Objective 1. Guide programs toward long-term sustainable water use including taking ecosystem needs for water into account

F. Actions and Commitments

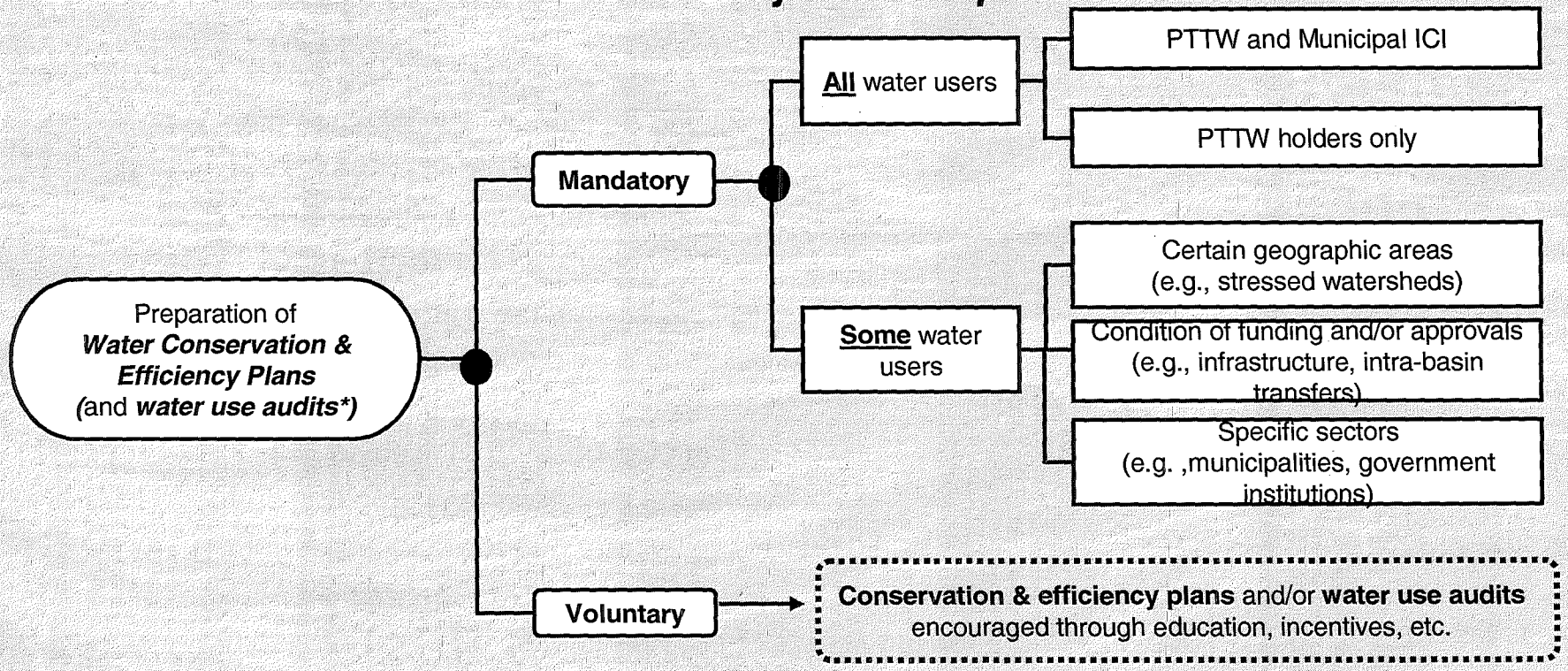
1. **Establish a permanent entity to oversee and promote water conservation and efficiency in Ontario once a Strategy is in place**
   a. Within the Ontario Government e.g. secretariat
   b. Expand current role of Ontario's Chief Energy Conservation Officer (an arms-length agency)
   c. Create a new Ontario Chief Water Conservation and Efficiency Officer
   d. Create a multi-stakeholder body (e.g., Alberta Water Advisory Council)

Considerations

- A permanent entity could help to ensure the longevity of the Strategy
- A permanent entity could facilitate the ongoing dialogue within and between sectors regarding water conservation and efficiency
- Expanding the role of Ontario's Chief Energy Conservation Officer could establish clear link between water and energy use and capital on existing structures and efforts to reduce energy use

F. Actions and Commitments

2. Water Conservation and Efficiency Plans: *Options*



* A ***water use assessment/audit*** could be a precursor to developing a plan, in order to document water use in a particular facility/property, assess the potential for increased efficiency and conservation, and establish a baseline for measuring future efficiency and conservation achievements

F. Actions and Commitments

2. Water Conservation and Efficiency Plans: *Considerations*

- Plans could be site specific and consider the economic, operational and environment realities of individual operations
- Guidelines could be developed collaboratively between province and sectors
- Contents of plans
- Timeframes for preparing and implementing plans
- Plans could be evaluated and updated
  - Periodically (e.g., every 5 years)
  - On renewal of PTTW
  - Never – plan should be a one-time requirement
- Possible approval mechanisms for plans
  - Approval by the province
  - Sign-off by a 'qualified person'
  - No formal approval mechanism
- Could consider who should be qualified to conduct a water use audit and/or prepare a water conservation and efficiency plan
  - Water users
  - Certified third parties

F. Actions and Commitments

3. Work towards long-term water availability and water use demand forecasting such as on a provincial, Great Lake, and/or watershed-basis

Considerations

- Build on source protection planning efforts
- Improve understanding on long-term water availability and demand, taking into account cumulative impact, climate change, etc.
- Phase in according to priority areas e.g., water-stressed sub-watersheds

Questions

1. What kind of permanent entity, if any, should be established to oversee and promote water conservation and efficiency in Ontario once a Strategy is in place?
2. Who should be required to prepare and implement water conservation plans?

F. Actions and Commitments

Objective 2. Adopt and implement supply and demand management to promote efficient use and conservation of water resources

F. Actions and Commitments

Provincial regulatory measures

1. Permit to Take Water program enhancements

- Results achieved through implementation of water conservation and efficiency measures could be collected, monitored, reported and sustained over time

2. Provincial water efficiency standards and labelling

a. Adopt water efficiency standards for water-using products, including updating existing standards such as for toilets

b. Adopt new water efficiency standards for water-using products, such as rain sensors on residential and commercial automatic irrigation systems

c. Review water efficiency standards every 5 years

d. Establish a water efficiency labelling scheme for water-consuming products (i.e., WaterSense)

F. Actions and Commitments

Municipal

3. Minimize waste of water

a. Municipalities could be required/encouraged to adopt water conservation by-laws which minimize wastage of potable water (e.g., irrigating lawns when it is raining)

b. Ontario, in conjunction with municipal organizations, could develop model municipal water conservation by-laws

4. Metering of municipally-supplied customers (not private wells)

a. Municipalities could be required/encouraged to meter new development*

b. Municipalities could be required/encouraged to meter existing development* (phased in)

* including multi-unit buildings submetering retrofitting.

5. Municipal water rates

a. Municipalities could be required/encouraged to have a pricing structure which charges all water users the full cost of providing water and wastewater services

b. Municipalities could be required/encouraged to have a pricing structure which encourages water conservation (e.g., inclining block rates)

F. Actions and Commitments

General

6. Leak detection and repair

a. Encourage PTTW holders to undertake leak detection and repair using environmentally sound, economically feasible and cost-effective measures applicable to the water use sector

b. Prepare guidance on leak detection and repair measures which are environmentally sound, economically feasible and cost-effective

7. Financial incentives to identify and implement water-efficient technologies and practices

a. Consider water conservation and efficiency when constructing, acquiring, operating and managing government facilities

i. Require broader public sector to consider water conservation and efficiency (e.g. in procurement practices)

ii. Encourage other water use sectors to review and revise procurement practices to consider water conservation and efficiency

F. Actions and Commitments

7. Financial incentives to identify and implement water-efficient technologies and practices - continued

b. Business

i. Accelerated capital depreciation for conservation and efficiency technology

ii. Funding for sector specific (or broader) partnerships to identify viable conservation and efficiency technologies

iii. Funding to undertake water audits

iv. A reduced provincial water taking charge for companies employing good conservation practices

c. Municipal for small & remote

i. Set water conservation and efficiency as a criteria for infrastructure funding

  i. Water conservation plan as a prerequisite

  ii. Specific water conservation and efficiency measures as prerequisites e.g., metering, inclining water rates, active leak detection and repair

ii. Funding for specific water conservation measures and/or plans, particularly for small and remote communities

c. Broader public sector

i. Specific financial incentives tied to metering and sub-metering requirements of public facilities with reallocation of the savings to water conservation

F. Actions and Commitments

7. Financial incentives to identify and implement water-efficient technologies and practices - continued

d. Agriculture

i. Funding pool must be set out in legislation to ensure long term access to funding

ii. Delivery should be through existing programs (e.g., Environmental Farm Plans)

e. Stewardship

i. Financial incentive program to get individuals to protect environmental water features such as wetlands (i.e., "Water Trust")

f. ENGOs/NGOs

i. Sustainable funding sources to deliver programs

8. Funding Sources

a. Province

b. Municipal water and sewer rates

c. Provincial water taking charges for industrial and commercial related funding programs

d. Individual water users

Funding Considerations:

- Funding amount could be based on the potential amount of water saved or increased efficiency of water use and results must be reported
- Apply disincentives for water inefficient products
- Provincial government funding could be limited due to current economic conditions

Questions

1. Should municipalities be required or encouraged to adopt water conservation by-laws which minimize wastage of water? yes
2. Should municipalities be required or encouraged to meter new development on a municipal water supply? yes
3. Should municipalities be required or encouraged to meter existing development on a municipal water supply? yes
4. Should municipalities be required or encouraged to charge all water users the full cost of providing water and wastewater services? yes
5. Should municipalities be required or encouraged to set a water rate structure which encourages water conservation? yes
6. What are the funding priorities?
7. How should the Strategy be funded? (question to be revisited at the end of the discussion)

F. Actions and Commitments

Objective 3. Improve monitoring and standardize data reporting among state and provincial water conservation and efficiency programs

F. Actions and Commitments

1. **Establish methodologies for calculating water conservation and water efficiency performance indicators and conduct benchmarking**
   a. For all sectors
   b. For some water use sectors e.g., for new or increased transfers

2. **Standard water consumption information on municipal consumer water bills (similar to electricity bills)**
   a. Require standard information on consumer water bills
   b. Provide model consumer water bill

3. **Measures to monitor, account for, and minimize water loss**
   a. Municipal drinking water system owners could be encouraged/required to measure and monitor water loss
   b. Prepare guidance for municipal drinking water system owners on how to calculate water loss
   c. Municipal drinking water system owners could report water loss to municipal council, the public and the Ministry of the Environment annually

F. Actions and Commitments

4. Track and report program progress and effectiveness

a. Ontario could report water conservation and efficiency program progress and effectiveness annually to the public and share these with other jurisdictions

b. Ontario could conduct a five-year review of its water conservation goals, objectives and programs and report to the public and the Regional Body

c. Ontario could make information readily available to the public, including trends in the efficient and sustainable use of water, and share these with other jurisdictions

5. Engage other jurisdictions when developing water conservation and efficiency performance indicators, benchmarks, monitoring and reporting requirements, etc.

Questions

1. Should methodologies be established for calculating water conservation and water efficiency performance indicators and benchmarking be conducted for all or some sectors?
2. Should the province require standard water consumption information on municipal consumer water bills?

F. Actions and Commitments

Objective 4. Develop science, technology and research

F. Actions and Commitments

1. Water conservation technologies and practices

a. Support research to identify the potential for water conservation and efficiency in sectors and the associated business case

b. Encourage and support organizations to identify research priorities for water conservation and efficiency technologies and practices to inform the development of sector BMPs and/or water conservation and efficiency plans

c. Fund research, development, testing and application of water efficient technologies, including modified, new, and innovative technologies and approaches

d. Monitor and evaluate water efficient technologies, both technical and economic performance; work with others parties to evaluate technologies

e. Develop guidance for new, innovative technologies and practices such as rainwater harvesting, grey water use

f. Establish mechanisms for organizations to collaborate on research efforts and to share information and insight into cost-effective, available technologies, across sectors and with other jurisdictions

g. Support research to identify linkages between water and energy conservation

F. Actions and Commitments

2. Water conservation and efficiency standards

a. Research potential water conservation and efficiency standards to inform recommendations around provincial codes and standards

b. Support research to identify water use needs for residential and commercial landscape irrigation and to develop guidance on the design of water efficient residential and commercial landscaping, soil characteristics, etc., suitable for inclusion in municipal development standards

3. Environmental needs and linkages

a. Support research on the ecological need for water to ensure the health and resiliency of watersheds

b. Support research and development of water conservation and efficiency technologies and practices that maintain and enhance natural water sources, such as green infrastructure which captures and uses stormwater onsite

c. Support research to gain a better understanding of the linkages between water quantity and water quality, in the context of water conservation and efficiency

d. Support research to gain a better understanding water conservation and efficiency linkages with climate change mitigation and adaptation

F. Actions and Commitments

4. **How people value and use water**

a. Develop relationships and programs to integrate Aboriginal traditional knowledge and practices regarding the importance of water and its sustainable use

b. Support social science research to understand and influence human behaviour and attitudes regarding water use, and to promote uptake of water conservation and efficiency technologies and practices (e.g., use of community-based social marketing)

Considerations

- All actions and commitments could be developed in concert with other scientific research efforts related to the Agreement
- Investigate and consider tradeoffs between technologies, environmental impacts, environmental regulations, energy consumption and climate change
  - e.g., once-through cooling reduces water taking volume vs. more consumptive closed loop cooling systems

Question

1. What are the science, technology and research priorities?

F. Actions and Commitments

Objective 5. Develop education programs and information sharing for all water users

F. Actions and Commitments

1. Public education and awareness campaign

a. Provincially-led social marketing campaign with consistent messages and materials, allowing for municipal customization: to address the value of water (including intrinsic value), works to dispel the myth of abundance, and instill responsible use of water

b. Offer household water audits to help people take charge of making changes in their water use (integrated with energy audits where possible)

c. Leverage stakeholders to transmit conservation message

2. Enhance curriculum

a. Enhance primary, secondary and post-secondary school curriculums and provide supporting educational materials

b. Provide educational materials for use by organizations that influence children

c. Continue to support Children's Water Festivals and Children's Water Education Councils

F. Actions and Commitments

3. Build capacity within companies and organizations to be able to conserve and use water more efficiently

a. Develop new and update existing best management practices and promote them

b. Provide sector-specific expertise (e.g., extension services)

c. Develop and share technical guidance to conduct water use assessments/audits

d. Provide clearinghouse for water conservation and efficiency lessons, tools and techniques (e.g., Alliance for Water Efficiency)

e. Develop employee awareness and engagement in water conservation in day-to-day operations

f. Sponsor demonstration sites and pilot projects

g. Develop relationships and programs to share Aboriginal traditional knowledge and practices regarding the importance of water and its sustainable use

h. Work with the other provinces and jurisdictions to share and capitalize on water conservation and efficiency innovations

F. Actions and Commitments

4. Educate and train water professionals

a. Enhance water conservation research and education at the post secondary level for all relevant disciplines (e.g., engineering, landscape design, plumbing, etc.)

b. Create a Water Conservation and Efficiency Centre of Excellence (academic) and associated Research Chair

c. Provide sector-specific water conservation and efficiency training via "Water Conservation and Efficiency Centre" (e.g., Walkerton Clean Water Centre)

d. Provide continuing education to irrigation contractors, builders and industry via professional associations

Question

1. What are the education and information sharing priorities?

Questions

Deferred Question (from slides 15-16)

- What should be the timeframe of the Strategy e.g. 10 or 15 years or longer, and why?

Revisited Question (from slide 38)

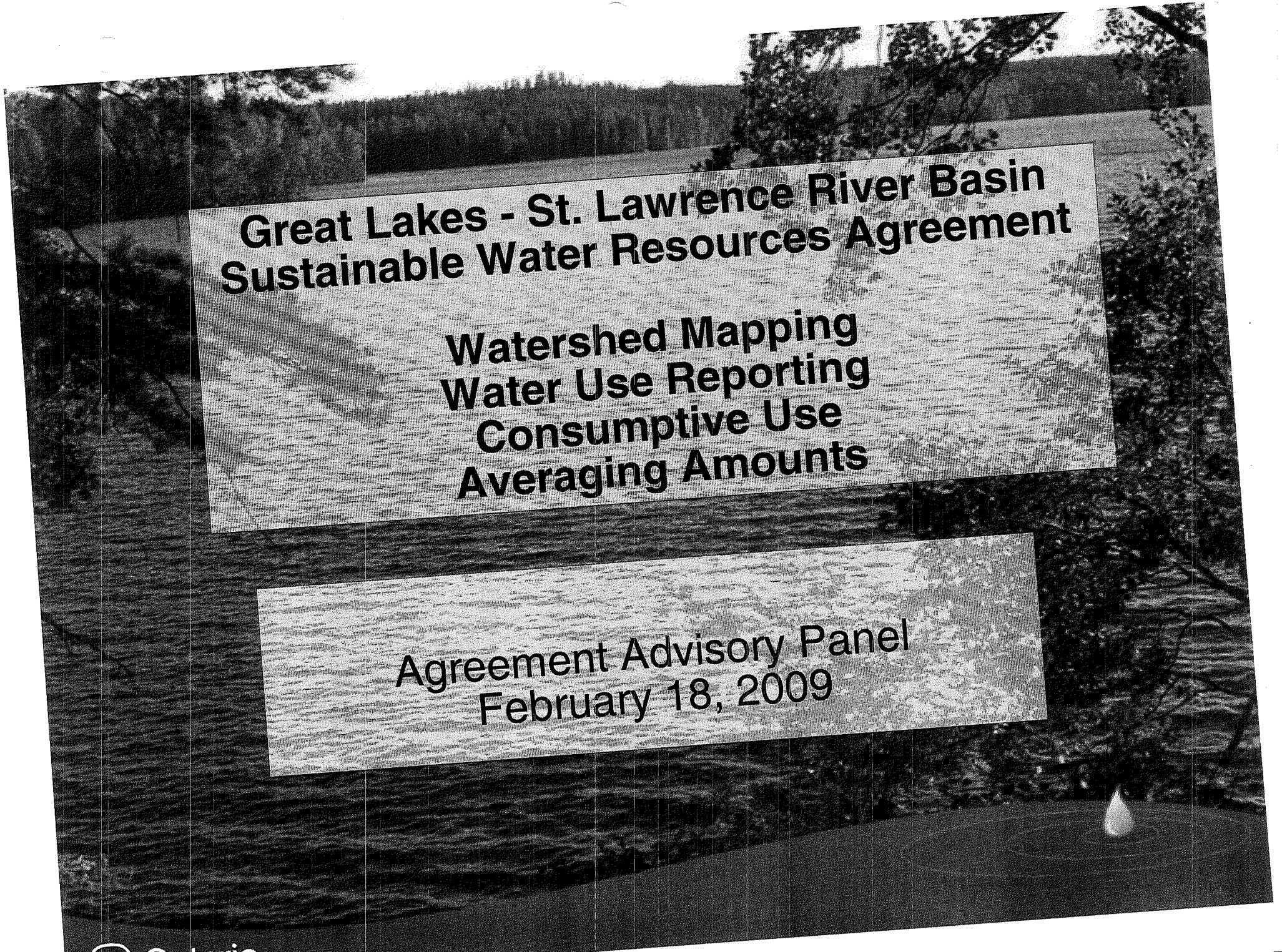
2. How should the Strategy be funded?

Appendix - Definitions

- Water conservation
  - A reduction in the use, loss or waste of water or an increase in the efficiency of water use

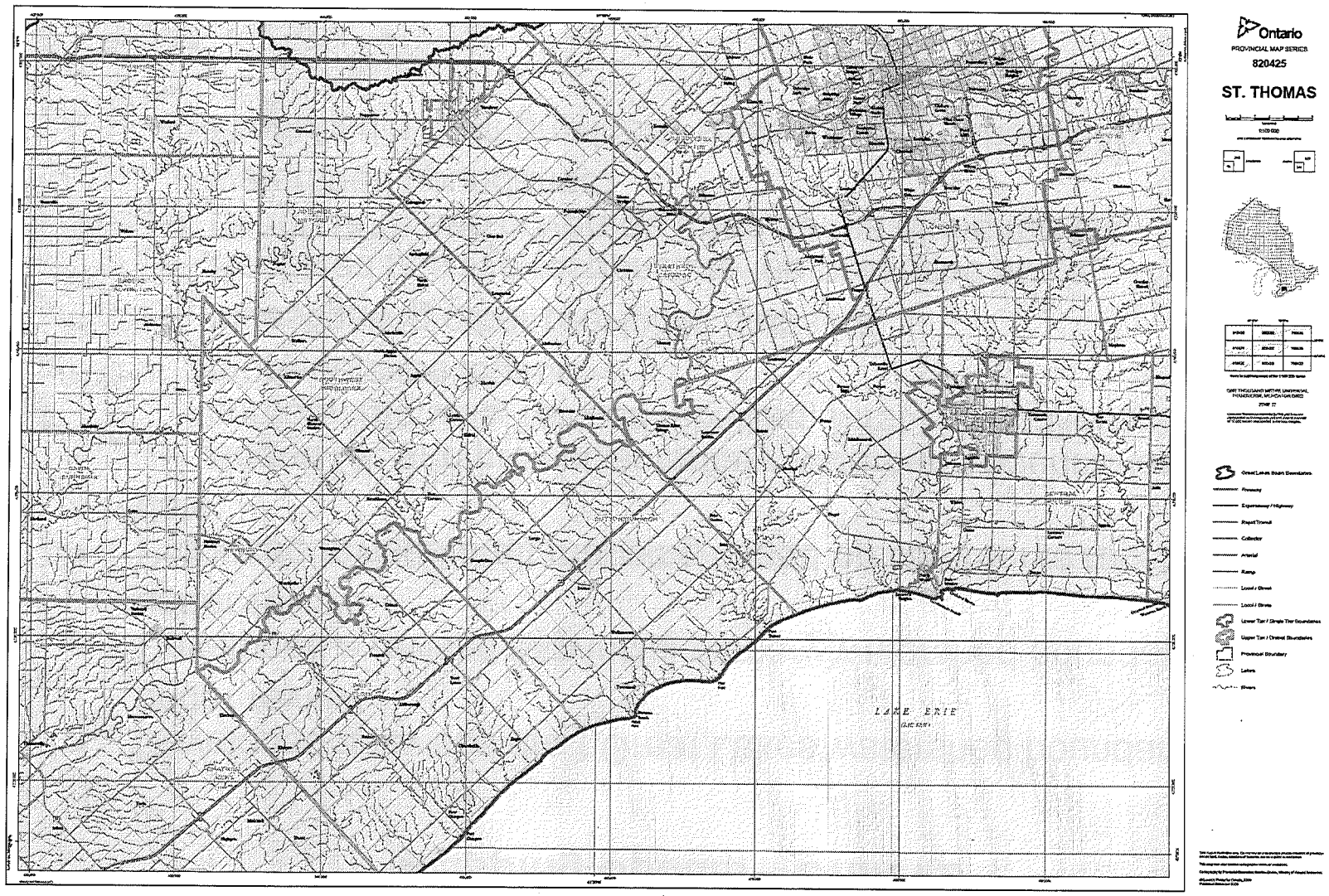
    Source: Ontario Permit to Take Water Manual
- Environmentally Sound and Economically Feasible Water Conservation Measures
  - Those measures, methods, technologies or practices for efficient water use and for reduction of water loss and waste or for reducing a Withdrawal, Consumptive Use or Diversion that:
    - are environmentally sound;
    - reflect best practices applicable to the water use sector;
    - are technically feasible and available;
    - are economically feasible and cost-effective based on analysis that considers direct and avoided economic and environmental costs; and
    - consider the particular facilities and processes involved, taking into account the environmental impact, age of equipment and facilities involved, the process employed, energy impacts and other appropriate factors.

    Source: Great Lakes-St. Lawrence River Basin Resources Agreement


Great Lakes - St. Lawrence River Basin
Sustainable Water Resources Agreement
Watershed Mapping
Water Use Reporting
Consumptive Use
Averaging Amounts
Agreement Advisory Panel
February 18, 2009


Great Lakes - St. Lawrence River Basin
Sustainable Water Resources Agreement
Watershed Mapping
Agreement Advisory Panel
February 18, 2009
Ontario

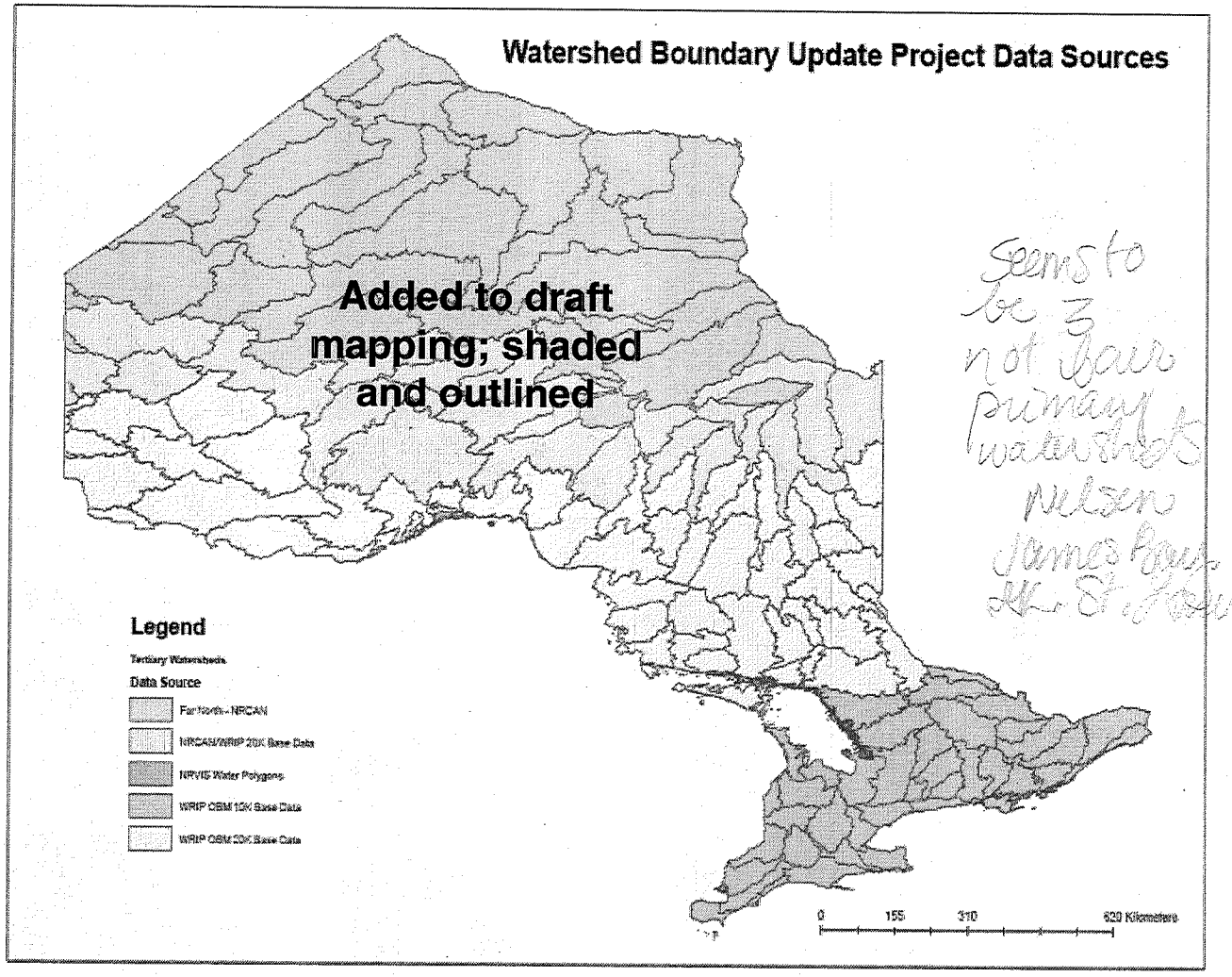
Draft #1: Great Lakes Watershed Mapping 1:100,000



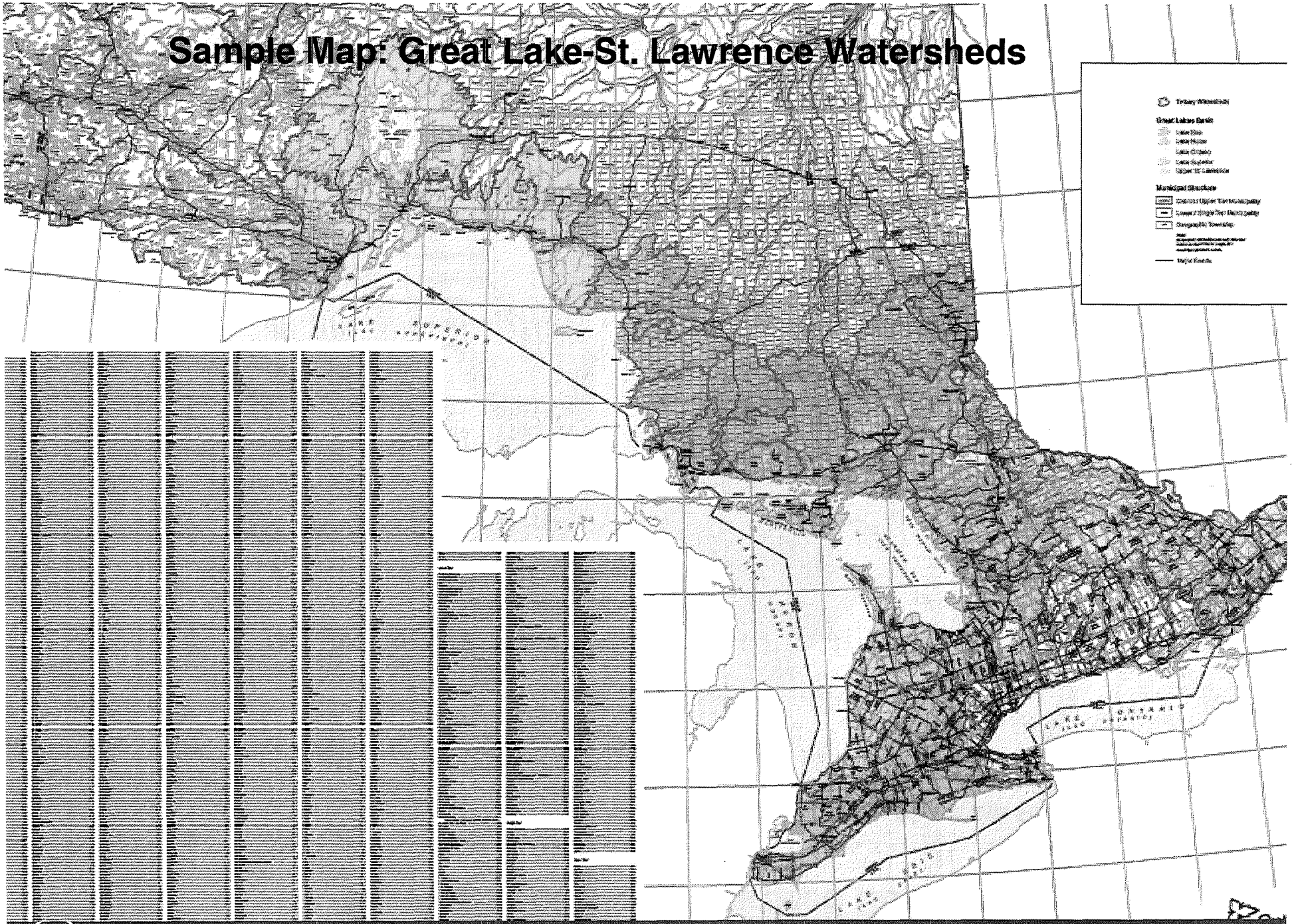
Mapping Update – Draft #2

- Developed a revised draft Great Lakes watershed boundary, under review.
- Developed a revised provincial primary watershed boundary, under review.
- Produced revised draft mapping based on comments received to date:
  - Added GL and provincial tertiary watershed boundaries, contour intervals, revised labelling, First Nation Reserves, more detailed legend.
  - Investigating other provincial datasets.
  - Received positive response to the proposed scale (1:100,000) and coverage (map series along the GL watershed boundaries).
  - Produced a draft provincial-scale GL watershed map.

Provincial Tertiary Watershed Boundary, 2008



Sample Map: Great Lake-St. Lawrence Watersheds



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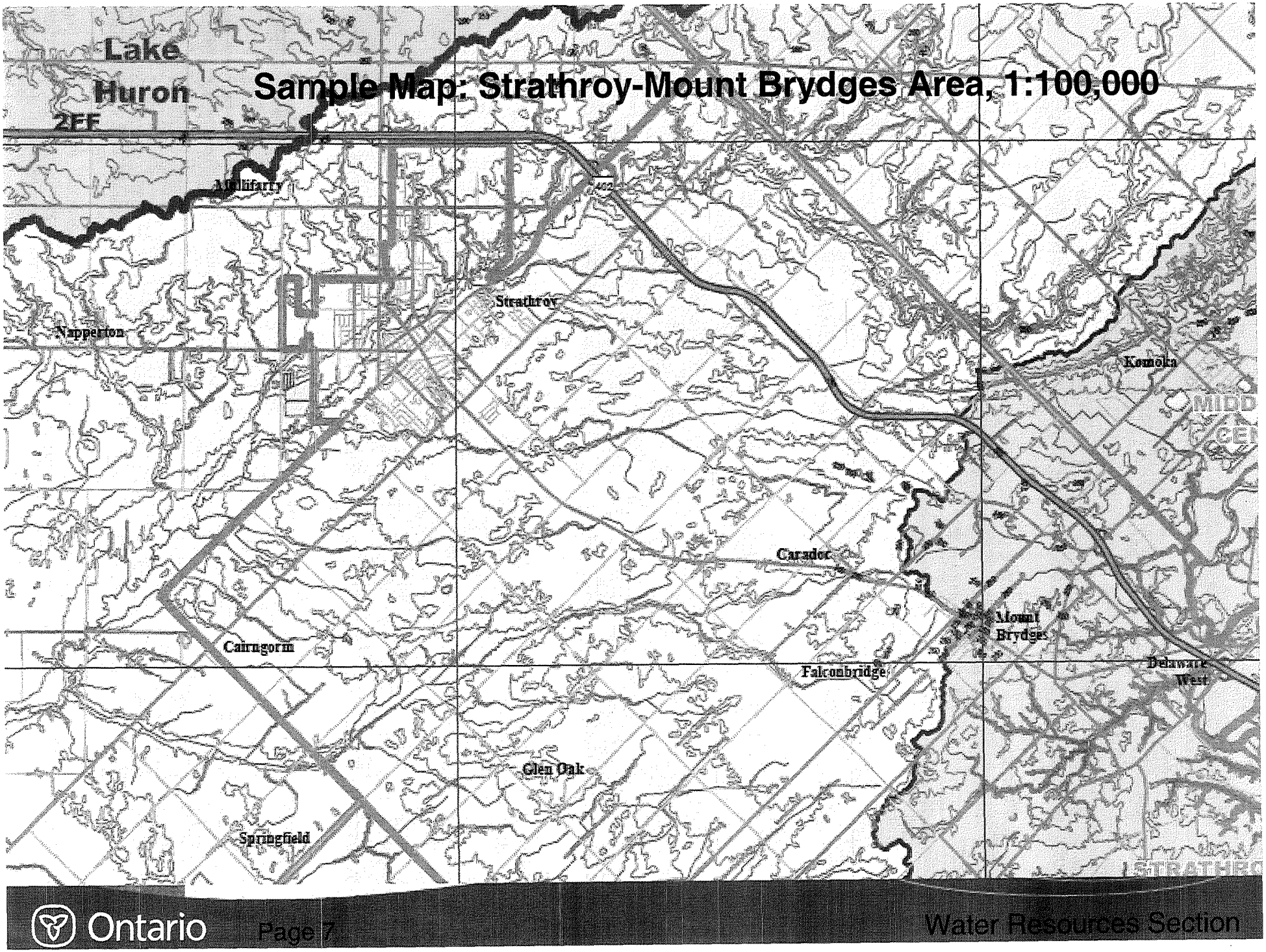
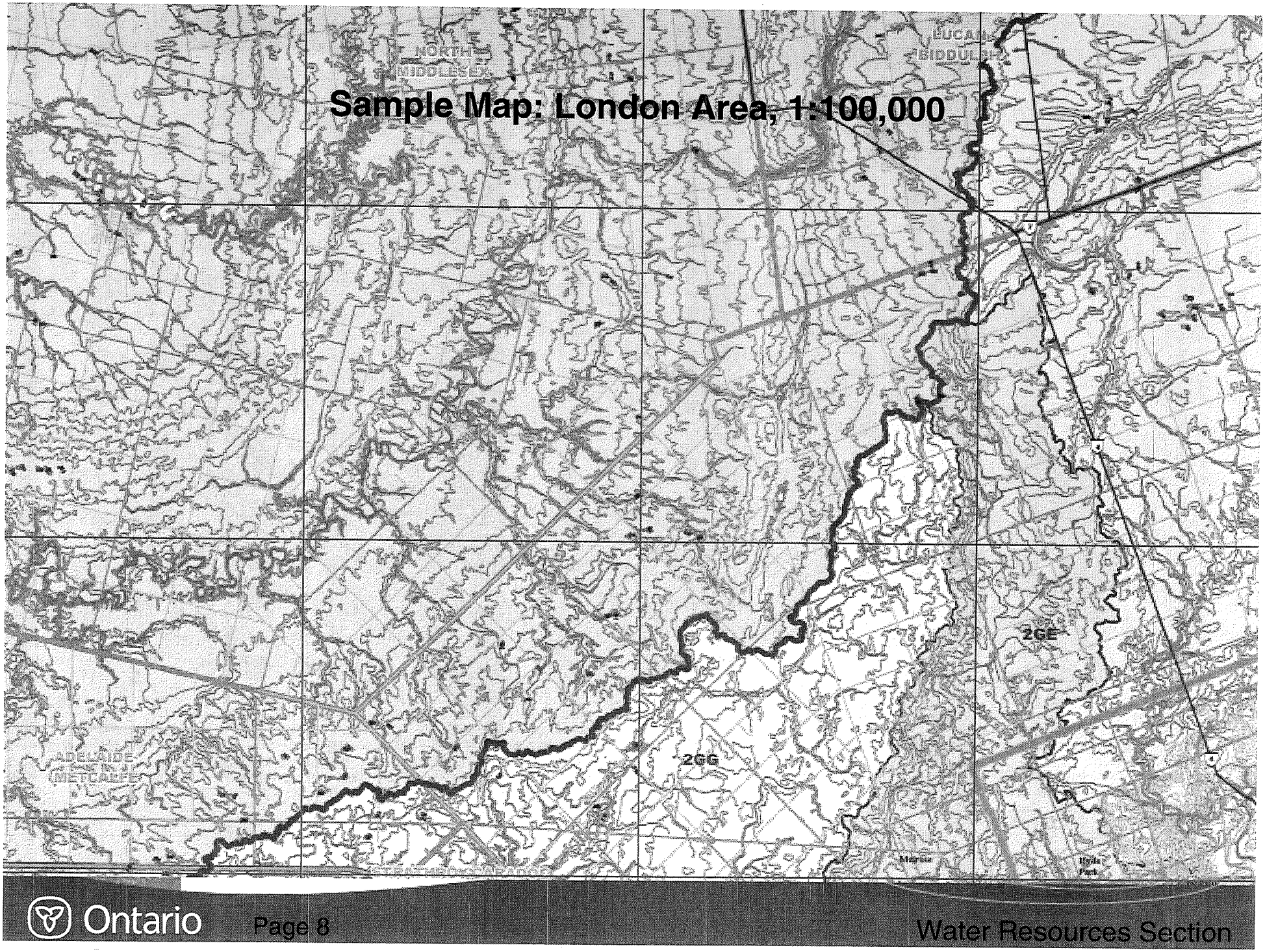
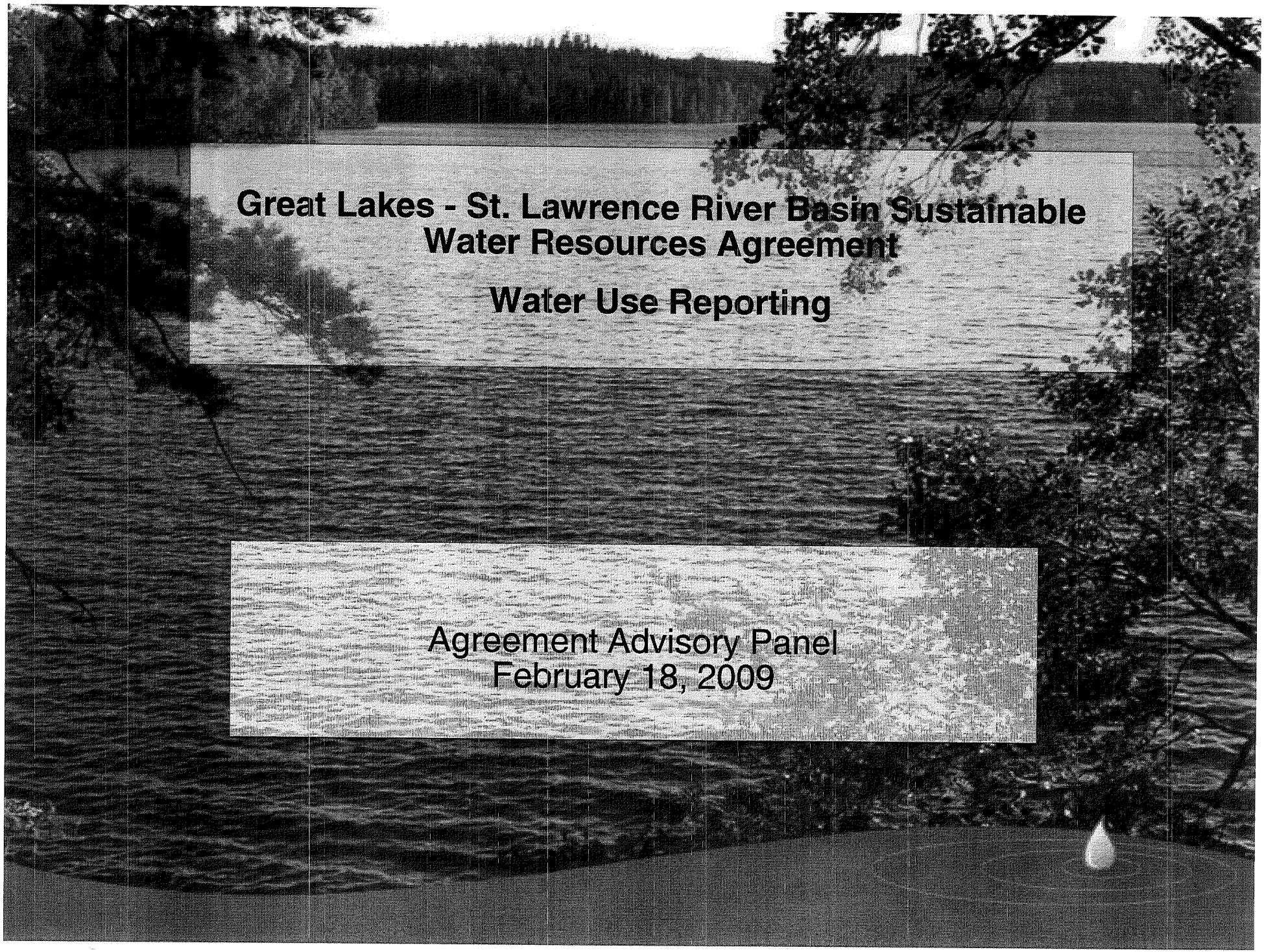

Lake
Huron
2FF
Sample Map: Strathroy-Mount Brydges Area, 1:100,000
Mallifarty
402
Strathroy
Napperton
Komoka
Caradoc
Mount
Brydges
Cairngorm
Falconbridge
Delaware
West
Glen Oak
Springfield


Sample Map: London Area, 1:100,000
NORTH MIDDLESEX
LUCAN BIDDULPH
2GE
2GG
ADELAIDE METCALFE
Mapleton
Hyde Park

Questions for Discussion

- Revised mapping has been provided. AAP members are encouraged to review the mapping and forward any additional comments/suggestions to the GL Annex account.



Great Lakes - St. Lawrence River Basin Sustainable Water Resources Agreement

Water Use Reporting

Agreement Advisory Panel
February 18, 2009

Water Use Reporting Protocols – Overview

- Commitment: A. 301 – jurisdictions are to gather and share water use information; this information will assist in improving the scientific understanding of the:
  - Waters of the basin.
  - Impacts of withdrawals.
  - Role of groundwater and boundaries.
- Protocol is to provide guidance on how information is reported to the Great Lakes-St.Lawrence River Water use database in a common and consistent manner.
- The water use database will be used for sharing aggregated information and this information will also be made available to the public consistent with confidentiality requirements (A. 704).
- Information is gathered and shared on withdrawals and consumptive use, and diversions and diversion return flow data for all uses that exceed the threshold.

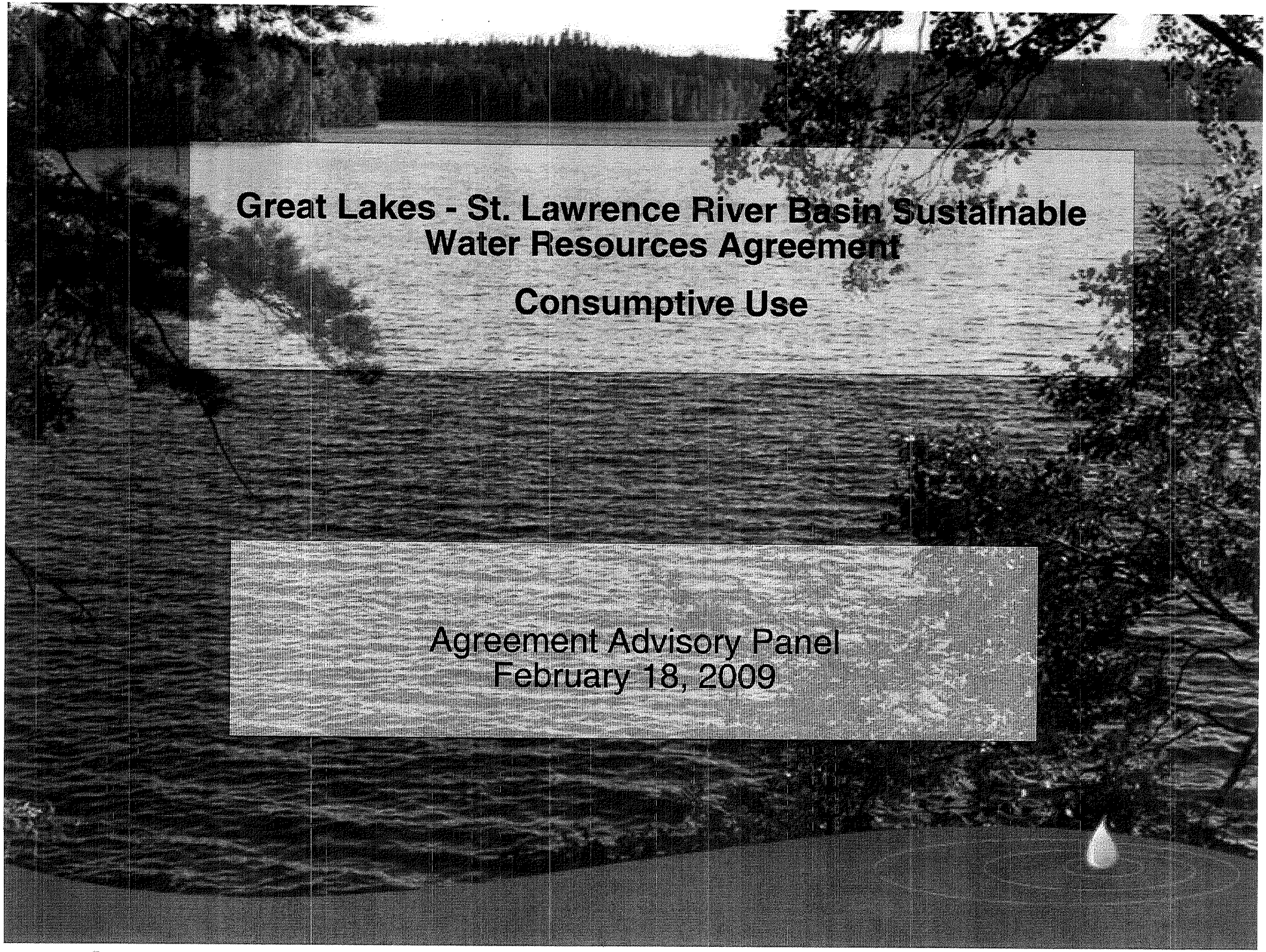
Water Use Reporting Protocols - Detail

- Jurisdictions will submit aggregate data by:
  - Sector.
  - Source 1) GLSLR surface water including connecting channels, 2) other surface water, and 3) groundwater.
  - GLSLR watershed.
  - Total volumes.
- Jurisdictions may also submit data below the threshold.
- Jurisdictions may apply a CU coefficient to the aggregate volumes per sector, to provide comparable information.
- Jurisdictions will also request CU data from water users and report this information.
- Water users are required to maintain monthly records of withdrawals, consumptive uses, diversions and diversion return flows.
- Water users will report water use information annually as prescribed by the jurisdiction.
- Reporting of diversions allowed as Exceptions (A.201) must account for water returned to the source GLSLR watershed.

Questions for Discussion

1. Jurisdictions currently report aggregate data by Great Lake or St. Lawrence watershed (5 watersheds). Should jurisdictions be encouraged to assemble and report on the data at a finer watershed scale such as a Tertiary watershed scale (Ontario), HUC-8 scale (States), and an Order-1 scale(Quebec)?
2. Jurisdictions may apply a consumptive use coefficient to the aggregate volumes by sector to provide comparable information. Should jurisdictions report refined CU estimates where available, such as those that would be identified through more detailed inflow/outflow studies, assessments?
3. Jurisdictions are to report aggregate data by sector (10 sectors). Should jurisdictions report by sub-sector categories if available, such as the proposed 33 sub-sectors outlined in the draft AquaResource CU study?
4. Should Ontario submit water use data below the threshold (e.g. >50k L/d)?
5. Should water users be required to report water diversions/transfers?

- AAP members are encouraged to review the draft Water Use Reporting protocols and forward any additional comments/suggestions to the GL Annex account.


Great Lakes - St. Lawrence River Basin Sustainable Water Resources Agreement
Consumptive Use
Agreement Advisory Panel
February 18, 2009

Summary of Agreement Commitments

- Article 200 (3): Parties shall adopt, implement measures to manage, regulate withdrawals and consumptive uses in accordance with the Agreement.
- **Article 201 (2):** Any excepted diversion proposal that results in a new or increased CU of 19 MLD or greater average over any 90-day will undergo Regional Review.
- Article 201 (4): The Exception Standard states that all water withdrawn shall be returned to the Source Watershed less an allowance for Consumptive Use.
- Article 203: Looks at the decision making standard for management of withdrawals and consumptive uses.
- **Article 205 (1):** Shall provide all parties with prior notice and an opportunity to comment on any proposal for a new or increased consumptive use of 19 MLD or greater average in any 90-day period.
- Article 207 (1): To help determine new/increased diversions, withdrawals, or consumptive uses, each jurisdiction must establish a baseline for these 3 forms of taking.
- Article 207 (4): The Basin surface water divide shall be used when managing/regulating new or increased diversions, consumptive uses or withdrawals of surface water and groundwater.
- **Article 301 (1):** Parties shall annually gather and share information on all Withdrawals in excess of 100,000 gallons per day (379,000 litres per day) or greater average in any 30-day period (including Consumptive Uses) and all Diversions.
- Article 301 (3): Parties shall require users to report their monthly Withdrawals, Consumptive Uses and Diversions on an annual basis.
- **Article 302 (2):** The science strategy shall support the assessment of cumulative impacts of withdrawals, diversions and consumptive uses on a Great Lake, St. Lawrence River watershed basis

Consumptive Use Definitions

- In the Agreement, consumptive use means "that portion of water withdrawn or withheld from the basin that is lost or otherwise not returned to the Basin due to evaporation, incorporation into Products, or other processes."
- Source Water Protection definition of CU: "water that is taken from a source, and not locally returned to the same source in a reasonable time period." The source could be defined as a specific aquifer, surface water feature, or (sub)watershed.
- Definitions will result in significantly different CU estimates.
- e.g. dewatering from a groundwater source and discharging to a surface water feature, GLCA: <1% consumptive; SWP: 100% consumptive.

Methodology for Estimating CU Water Demand (draft AquaResource CU Study)

- Tiered methodology 1)helps to identify water takings with a CU 19 MLD or more, averaged over a 90-day period, and 2) assigns a CU coefficient to all water takings that assists Ontario in fulfilling its obligation to report and regulate Basin consumptive uses.
- Tier 1 is predominately a screening tool such that only large consumptive uses would move forward to a more detailed Tier 2 assessment.
- Tier 1 screening is to identify water takings close to the 19 MLD CU threshold, or water takings considered to be to be large consumptive water users (i.e. Section 5.5 of O.Reg. 387/04 Water Taking (i.e. beverage manufacturing, fruit or vegetable canning, ready-mix concrete, aggregate processing/slurry, other product manufacturing that incorporates 50k L/d of water or greater).
- A Tier 1 screening threshold (recommended 2.5 MLD CU) accounts for the variability in the generalized CU coefficients when considering individual operations.

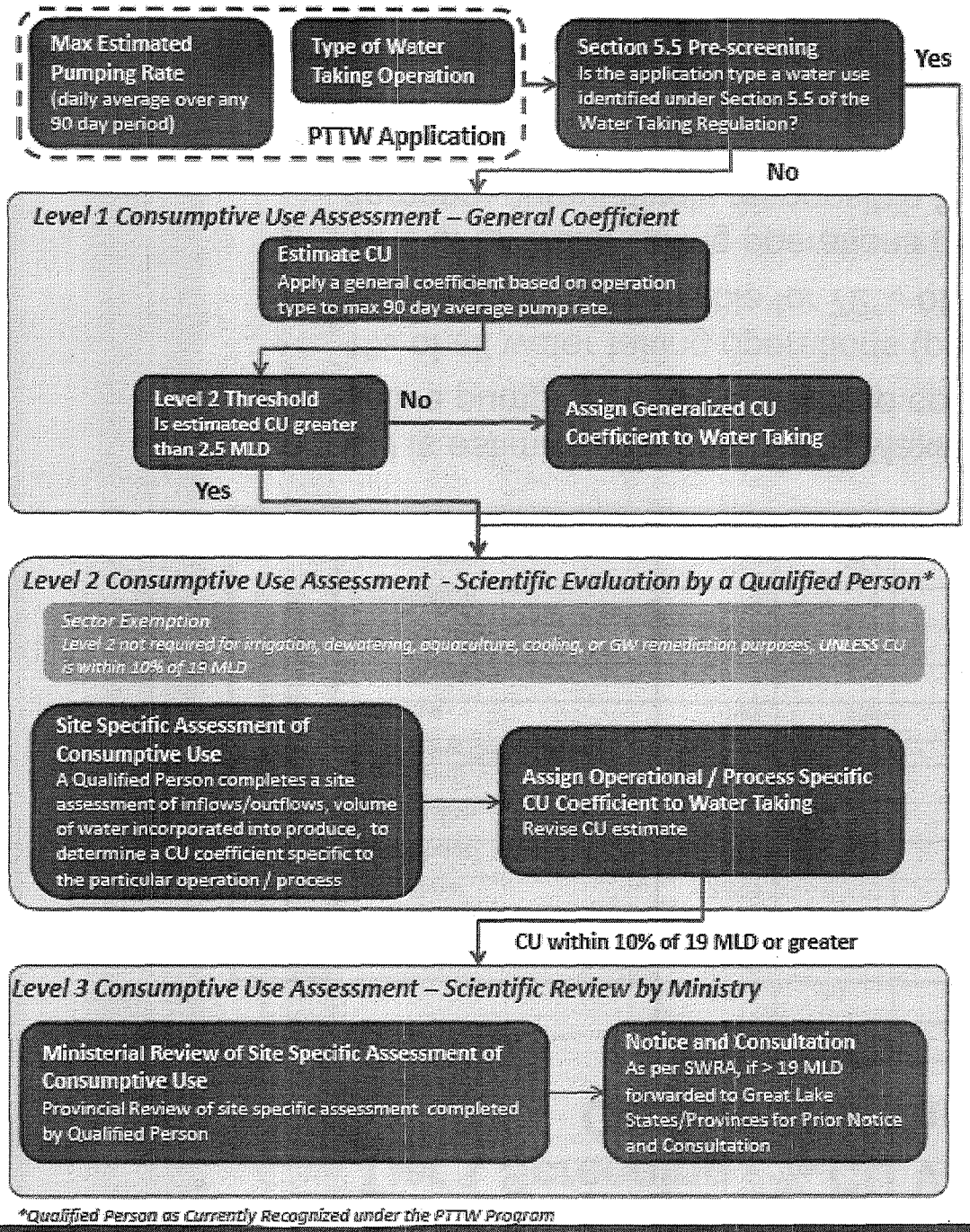
Tier 1 Screening
Generalized CU coefficients and Refinement Considerations

Great Lakes Commission Category	*Sub-Category*	NAICS Code	Types of Operations	Coefficient (%)	Range of Coefficients (25^{th}-75^{th} Percentile)	Refinement Considerations
1. Public Water Supply	*None*	2213	Municipal Water Supplies	12	10-15	• Volumetric balance of distribution and sewage system • Consider distribution system losses, sanitary sewer infiltration • Outdoor water use practices • Consumptive component of Commercial / Industrial uses connected to water supply
2. Self-Supply Domestic	*Self-Supplied Residential*	814	Private or Communal Residential Takings	15	10-15	
	Self-Supplied Institutional	61,62, 92, 712	Schools, Correctional facilities, hospitals other government buildings not on a municipal supply	10		• Use of water (e.g. washing – low consumptive, vs lawn/garden watering – high consumptive) • Location of discharge (e.g. septic system vs municipal sewer system)
	Self-Supplied Commercial	41, 44, 45, 72, 81	Motels, Restaurants, Office buildings, not on municipal supply	9		• Use of water (e.g. washing – low consumptive, vs lawn/garden watering – high consumptive)
	Self-Supplied Snowmaking	71392	Ski hills	10		• Evaporative losses from snow-making activity • Sublimination losses from artificial snow
	Self-Supplied Recreational	7131, 7132, 71393, 71395,	Amusement parks, water parks	35	31-42	• Estimate water used for supporting facilities (hotel, restaurant) vs evaporative losses from water features. • Quantify wastewater discharges (filter backwash, sanitary discharge)
3. Self-Supply Irrigation	*None*	111, 7112, 71391, 71394,	Irrigation of agricultural lands, golf course, parks/sports fields, tree nurseries	85 Based on OMAFRA suggestion	90-95	• Type of irrigation delivery system (drip vs gun) o Gun irrigation ~85% o Drip irrigation ~90-95%

Tier 1 Screening - % CU Volume and % Water Takers Captured for Various Thresholds

		Screening Threshold (MLD)						
		>0.5	>1	>2.5	>5	>10	>15	>19
Consumptive Use Captured (% of Total)		99%	95%	86%	79%	75%	73%	72%
Water Users Captured (% of Total)		51%	34%	12%	5%	2%	2%	1%
Sector Breakdown (Number of Permit Holders)	Agricultural	2,303	1,472	405	113	25	11	8
	Commercial	426	319	135	47	17	10	6
	Construction	1	1	0	0	0	0	0
	Dewatering	9	4	2	1	1	1	1
	Dewatering Construction	11	9	6	6	3	3	3
	Industrial	207	156	102	78	61	51	50
	Institutional	1	0	0	0	0	0	0
	Miscellaneous	5	2	1	1	0	0	0
	Remediation	1	0	0	0	0	0	0
	Water Supply	294	174	87	51	35	28	22
	Total	3,258	2,137	738	297	142	104	90

- CU is estimated by combining Maximum Permitted Rate, months with active pumping, and generalized consumptive coefficients – conservative.
- 1% of all water taking operations (permitted) have > 19 MLD CU demand; cumulatively responsible for 72% of total CU demand.
- 12% of all water taking operations (permitted) have > 2.5 MLD CU demand; cumulatively responsible for 86% of total CU demand.



DRAFT Provincial Methodology for Estimating Consumptive Use

* Tier 2 is not required for irrigation, dewatering, aquaculture, cooling or GW remediation purposes UNLESS CU is greater than 17 MLD.

Questions for Discussion

Draft Provincial Methodology for Estimating Consumptive Use

1. Tiered Framework: Do AAP members support the tiered framework approach IN GENERAL (i.e. using generalize coefficients, then requiring users above a defined threshold (or thresholds) to conduct a site specific assessment of their consumptive use)?
2. When should site specific CU assessments be required?
   a) Framework suggests that ALL highly consumptive water uses defined in S. 5(5) of the Water Taking Regulation undertake a site specific assessment Do AAP members support this?
   b) For other water uses, when should a site specific assessment be required, e.g.
      - Above a set volume (e.g. draft framework suggests a threshold of 2.5 MLD with exceptions)?
      - A number of thresholds, defined by sector?
      - For defined sectors only, where refinement is possible?
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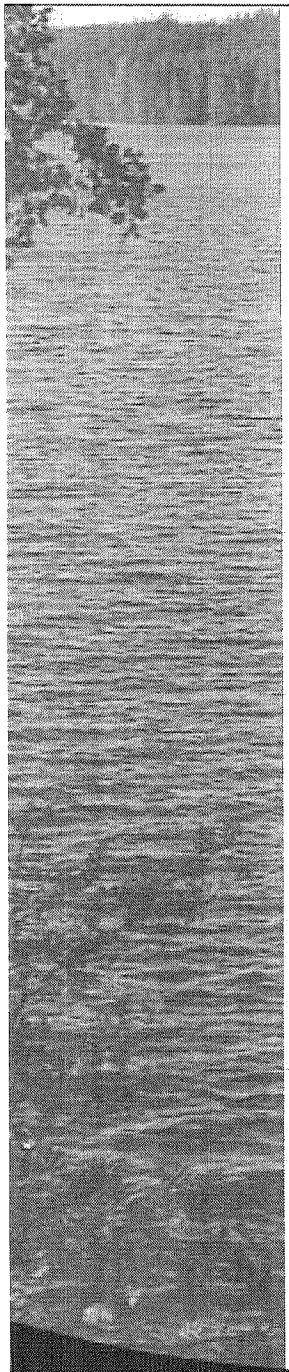
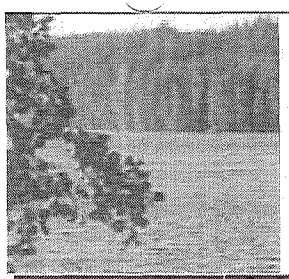


Additional Questions

AAP members are encouraged to complete the Consumptive Use Worksheet, which includes the following additional questions, and forward them to the GL Annex account.

1. AquaResource has developed a proposed set of generalized consumptive use coefficients which sub-divide the 9 Great Lakes Commission categories into 32 sub-categories. Do AAP members have comments or questions regarding the categories and/or the coefficients?
2. How prescriptive should the province be with approaches to site-specific consumptive use assessments
   - Generic?
   - Sector-specific guidance/protocols?
   - User-defined?
3. How will site-specific assessments be reviewed/approved (approach may depend on potential workload and resource needs)
   - Rely on sign-off by qualified person (definition in PTTW Manual – MOE, 2005)?
   - Require peer review?
   - Provincial review/approval?

Appendix – Consumptive Use Coefficients



Consumptive Use Coefficients

Great Lakes Commission Category	*Sub-Category*	NAICS Code	Types of Operations	Coefficient (%)	Range of Coefficients (25^{th}-75^{th} Percentile)	Refinement Considerations
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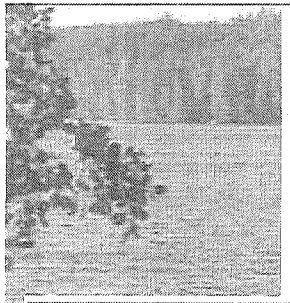
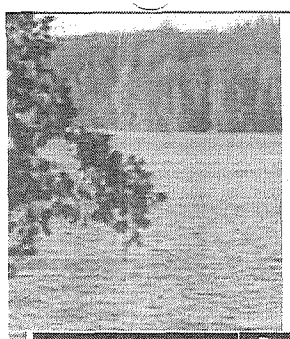


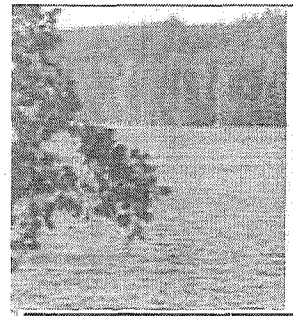
Consumptive Use Coefficients

Great Lakes Commission Category	*Sub-Category*	NAICS Code	Types of Operations	Coefficient (%)	Range of Coefficients (25th-75th Percentile)	Refinement Considerations
		71399, 1132				• If a communal system, conveyance system losses (non-consumptive) should be considered.
4. Self-Supply Livestock	*Livestock*	112	Livestock watering/washing	62 Lower coefficient accounts for washing	80-90	
	Aquaculture	1125	Fish hatcheries	0.8		• Potential evapotranspiration calculations • Seasonality of operations
5. Self-Supply Industrial	*Generalized Industrial Sector*			10	7-14	
	Mining	2121, 2122	Metal Ore Mining	13	7-15	• Determine specific processes (e.g dewatering vs processing) • Volumetric balance of inflow/outflows • Estimate groundwater infiltration into drainage system
	Heating & Cooling	22133	Heat Pumps	2		
			Cooling (Once through cooling)	2		
			Cooling (closed loop)	80		• Determine volume of water required to maintain cooling system levels.
	Sand, Gravel Mining and Quarrying	21232	Aggregate wash operations	10		• Potential evapotranspiration calculations to estimate losses from wash ponds • Quantify water held in product as it is shipped offsite.
	Stone Mining and Quarrying	21231	Dewatering to access quarried materials	0.8		
	Food Manufacturing	311	Food processing, including dairy products, grain milling	20		• Inflows/Outflow study • Recognize processes/techniques specific to operation • Is water for incorporation into product? Is water for used for wash purposes
	Beverage Manufacturing	31212, 31214	Breweries, distillers	50		• Determine portion of water used in washing vs water incorporated into product



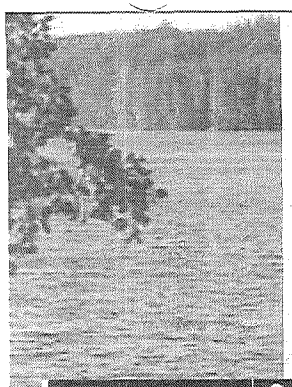
Consumptive Use Coefficients

Great Lakes Commission Category	*Sub-Category*	NAICS Code	Types of Operations	Coefficient (%)	Range of Coefficients (25th-75th Percentile)	Refinement Considerations
		31211 31213	Water bottlers, wineries, soft drinks	80		• Determine portion of water used in washing vs water incorporated into product
	Textile Mills	313	Fiber, Yarn, Thread and Fabric Mills, Textile and Fabric Finishing	16		• Inflows/Outflow study • Recognize processes/techniques specific to operation • Water recycling processes
	Textile Product Mills	314	Textile Furnishing Mills – Carpet, Curtain, Rope, Canvas Mills	14		• Inflows/Outflow study • Recognize processes/techniques specific to operation • Water recycling processes
	Wood Product Manufacturing	321	Sawmills, Engineered Wood Products, Millwork, Pallet, Prefab Building Panels	25		• Inflows/Outflow study • Recognize processes/techniques specific to operation • Water recycling processes
	Paper Manufacturing	322	Pulp, Paper, Paperboard Millls Converted Paper Manufacturing	5		• Inflows/Outflow study • Recognize processes/techniques specific to operation • Water recycling processes
	Petroleum and Coal Products	324	Petroleum Refineries, Asphalt, Roofing Materials Manufacturing	12		• Inflows/Outflow study • Recognize processes/techniques specific to operation • Water recycling processes
	Chemical Manufacturing	325	Basic Chemicals, Resins, Synthetic Fibres, Pesticide / Herbicide / Fertilizer, Pharmaceuticals, Paints, Cleaning Products	28		• Inflows/Outflow study • Recognize processes/techniques specific to operation • Water recycling processes • Determine portion of water used in washing vs water incorporated into product.
	Plastics and Rubber Products	326	Plastic Pipe, Packaging, laminated plastic manufacturing. Tire, Rubber hose and belting Manufacturing	8 Rubber 9 Plastic		• Inflows/Outflow study • Recognize processes/techniques specific to operation • Water recycling processes



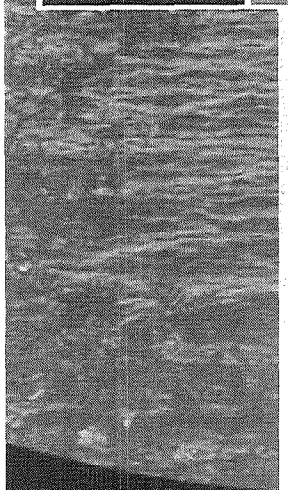
Consumptive Use Coefficients

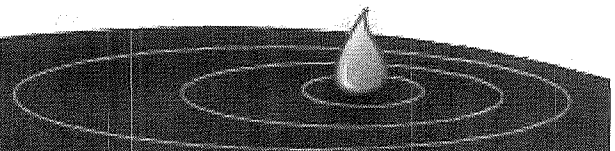
Great Lakes Commission Category	*Sub-Category*	NAICS Code	Types of Operations	Coefficient (%)	Range of Coefficients (25th-75th Percentile)	Refinement Considerations
	Non-Metallic Mineral Product Manufacturing	327	Clay and Refractory Products, Glass Products,	12		• Inflows/Outflow study • Recognize processes/techniques specific to operation • Water recycling processes
		3273, 3274	Cement, Concrete, Lime and Gypsum Manufacturing	80		• Estimate amount of water incorporated into product vs volume used for washing equipment
	Primary Metal Manufacturing	331	Iron and Still Mills, Alumina Production, Nonferrous Metal Production, Foundries	15		• Inflows/Outflow study • Recognize processes/techniques specific to operation • Water recycling processes
	Fabricated Metals	332	Forging and Stamping, Cutlery and Handtool Manufacturing, Architectural and Structure Metal Manufacturing, Hardware Manufacturing	6		• Inflows/Outflow study • Recognize processes/techniques specific to operation • Water recycling processes
	Transportation Equipment Manufacturing	333, 336	Motor Vehicle and Parts Manufacturing, Aerospace Manufacturing, Ship and Boat Building, Railroad Manufacturing	4		• Inflows/Outflow study • Recognize processes/techniques specific to operation • Water recycling processes
	Miscellaneous Manufacturing	All other manu-facturing		13		• Inflows/Outflow study • Recognize processes/techniques specific to operation • Water recycling processes
	Heavy and Civil Construction	237	Construction Dewatering, Utilities construction, Pipeline testing	0.8		
6. Self-Supply Thermoelectric Power (fossil fuel plants)	*None*	221112	Coal or natural gas power plants (Once through cooling)	2	1-2	
			Coal or natural gas power plants (closed loop cooling)	80	65-95	• Determine volume of water required to maintain cooling system levels.



Consumptive Use Coefficients

Great Lakes Commission Category	*Sub-Category*	NAICS Code	Types of Operations	Coefficient (%)	Range of Coefficients (25th-75th Percentile)	Refinement Considerations
7. Self-Supply Thermoelectric Power (nuclear plants)	*None*	221113	Nuclear power plants (Once through cooling)	2	1-2	
			Nuclear power plants (closed loop cooling)	80	65-95	• Determine volume of water required to maintain cooling system levels.
8. Self-Supply Hydroelectric Power	*None*	221111	Dams & Reservoirs generating hydro	0		
9. Self-Supply - Other	*Environmental Needs*	NA	Constructed wetlands, low flow augmentation, assimilative capacity, navigation purposes	0		
	Remediation	562	Groundwater Remediation, Leachate Collection	2		





% CU Volume and % Water Takers Captured for Various Thresholds

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	Water Supply	294	174	87	51	35	28	22
	Total	3,258	2,137	738	297	142	104	90

Consumptive use estimated combining Maximum Permitted Rate, months with active pumping, and generalized consumptive coeffic

Great Lakes - St. Lawrence River Basin Sustainable Water Resources Agreement

Consumptive Use – Discussion Questions

PROPOSED METHODOLOGY FOR CALCULATING CONSUMPTIVE WATER USE

AAP Representative: _____

Consumptive Use Coefficients:

1. AquaResources has developed a proposed set of generalized consumptive use coefficients which sub-divide the 9 Great Lakes Commission categories into 32 sub-categories. Please provide your comments regarding the categories and/or the coefficients?

Draft Provincial Methodology for Estimating Consumptive Use (Tiered Framework summarized on 10th slide):

2. **Tiered Framework Approach:** Please provide your comments on the tiered framework approach (i.e. using generalize coefficients, then requiring users above a defined threshold (or thresholds) to conduct a site specific assessment of their consumptive use)

3. **When should Site Specific CU Assessments be required?**
   a. Framework suggests that ALL highly consumptive water uses defined in S. 5(5) of the Water Taking Regulation undertake a site specific assessment (i.e. beverage manufacturing, fruit or vegetable canning, ready-mix concrete, aggregate processing/slurry, other product manufacturing that incorporates more than 50,000 litres/day into a manufactured product). Do you support this? Please comment.

   b. For other water uses, <u>when</u> should a site specific assessment be required? e.g.
      - Above a set volume (e.g. draft framework suggests a threshold of 2.5 MLD)
      - A number of thresholds, defined by sector?

- For defined sectors only, where refinement is possible?
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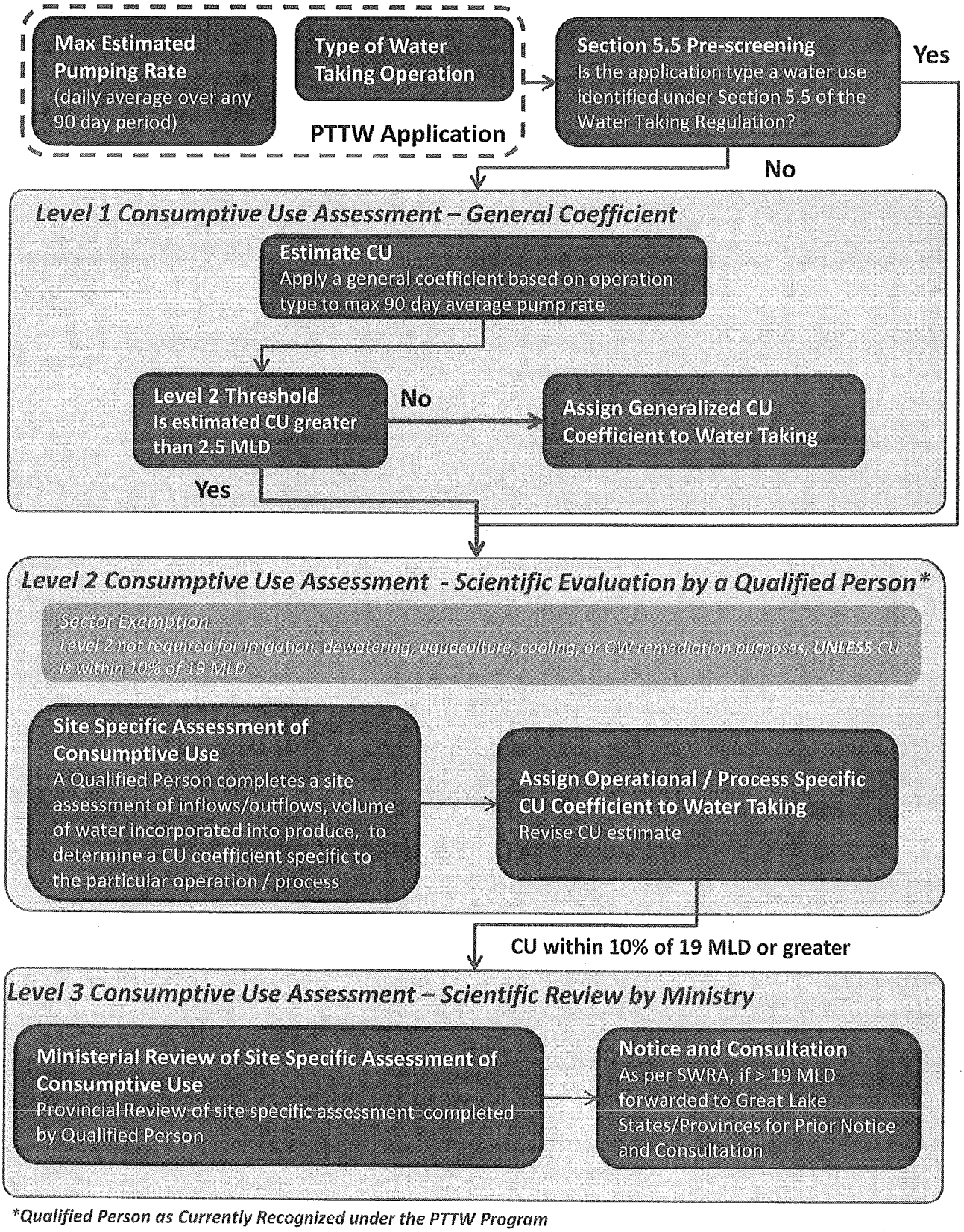
4. **How prescriptive should the province be with approaches to site-specific assessments? e.g.**
   - Generic
   - Sector-specific guidance/protocols
   - User-defined

5. **How should site-specific assessments be reviewed/approved? e.g.**
   - Rely on sign-off by qualified person (e.g., engineer?)
   - Require peer review
   - Provincial review/approval
   - Approach may depend on potential workload and resource needs

Please Send Comments to:
greatlakesannex.mnr@ontario.ca

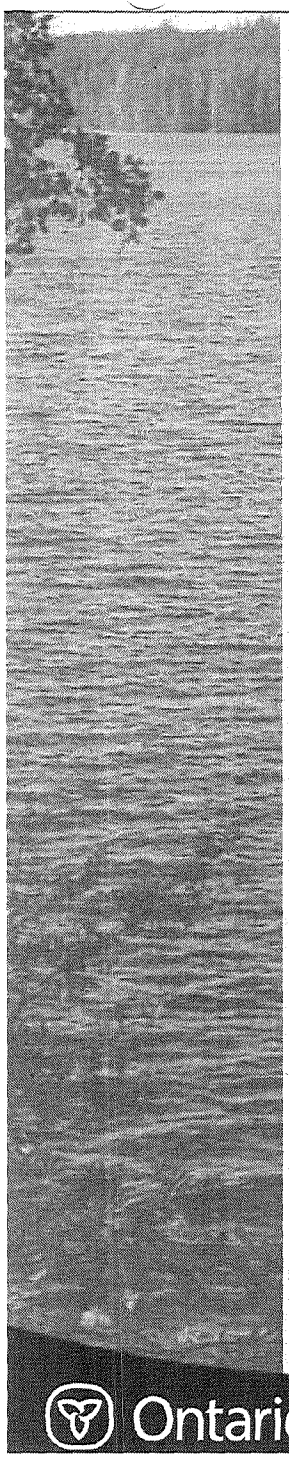
Staff Contact:
Jonathan Staples
Water Resources Section, MNR
(705) 755-1219
Jonathan.Staples@ontario.ca

DRAFT Provincial Methodology for Estimating Consumptive Use



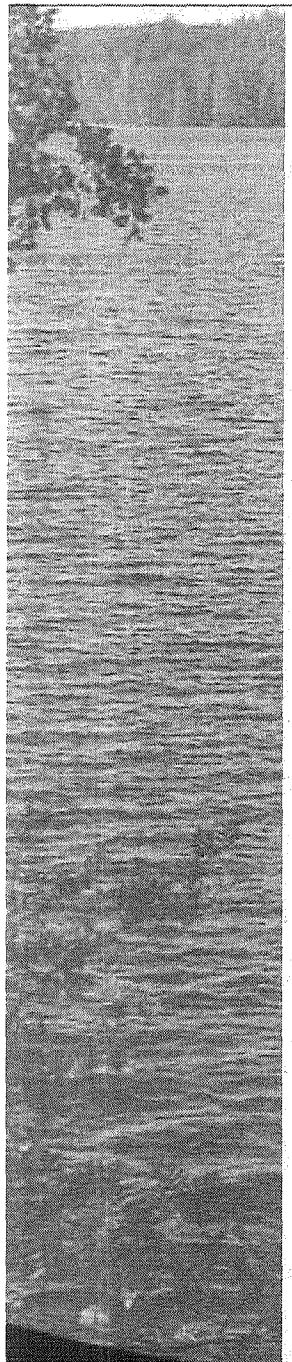
Qualified Person as Currently Recognized under the PTTW Program


Great Lakes - St. Lawrence River Basin Sustainable Water Resources Agreement
Averaging Amounts
Agreement Advisory Panel
February 18, 2009



Agreement Commitments

- Key thresholds in the Agreement are based on a 90 day average, including:
  - Regulation of exceptions to the ban on diversions (A. 201)
  - Regulation of withdrawals, consumptive uses (A. 206)
  - Prior notice and comment process (A. 205)
  - Regional review process (Chapter 5)
- The 90 day average results from agriculture concerns about seasonal growing periods.
- The threshold requiring the reporting of water use information is based on a 30 day average (A. 301) – this is consistent with the Great Lakes Charter

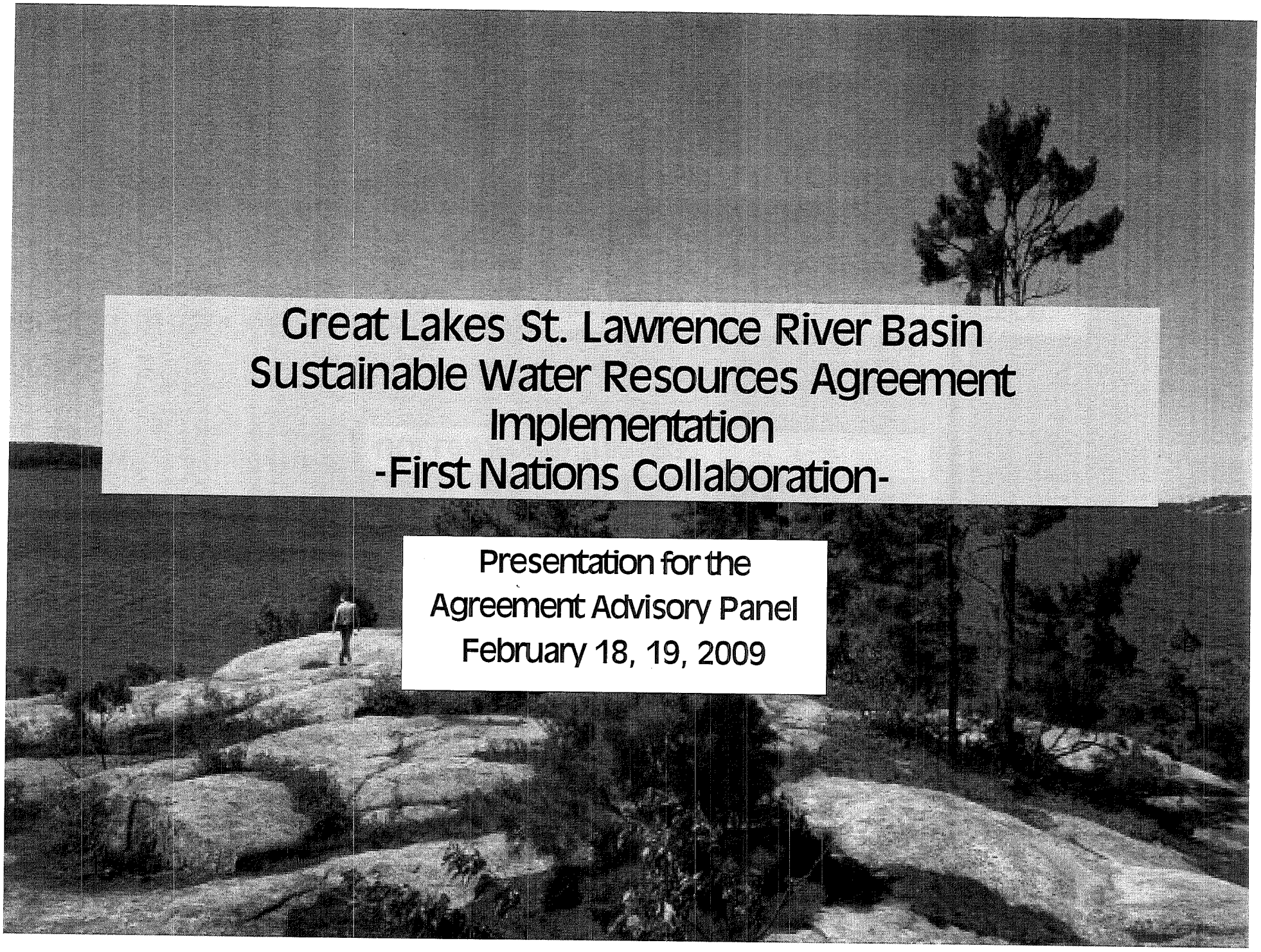


OWRA Provisions

- Current PTTW regulation is based on a maximum daily volume
- Key OWRA amendments implementing the Agreement allow for the creation of a regulation prescribing the manner of calculating average amounts of water, including:
  - the livestock watering exemption – s. 34 (2)
  - the definition of a "threshold amount" (379,000 litres/day) for regulating intra-basin transfers– s. 34.5(1)
  - The intra-basin transfer exceptions – s. 34.6 (2)
- This regulation-making authority is provided in s. 75(1.2)(c)

Question for Discussion

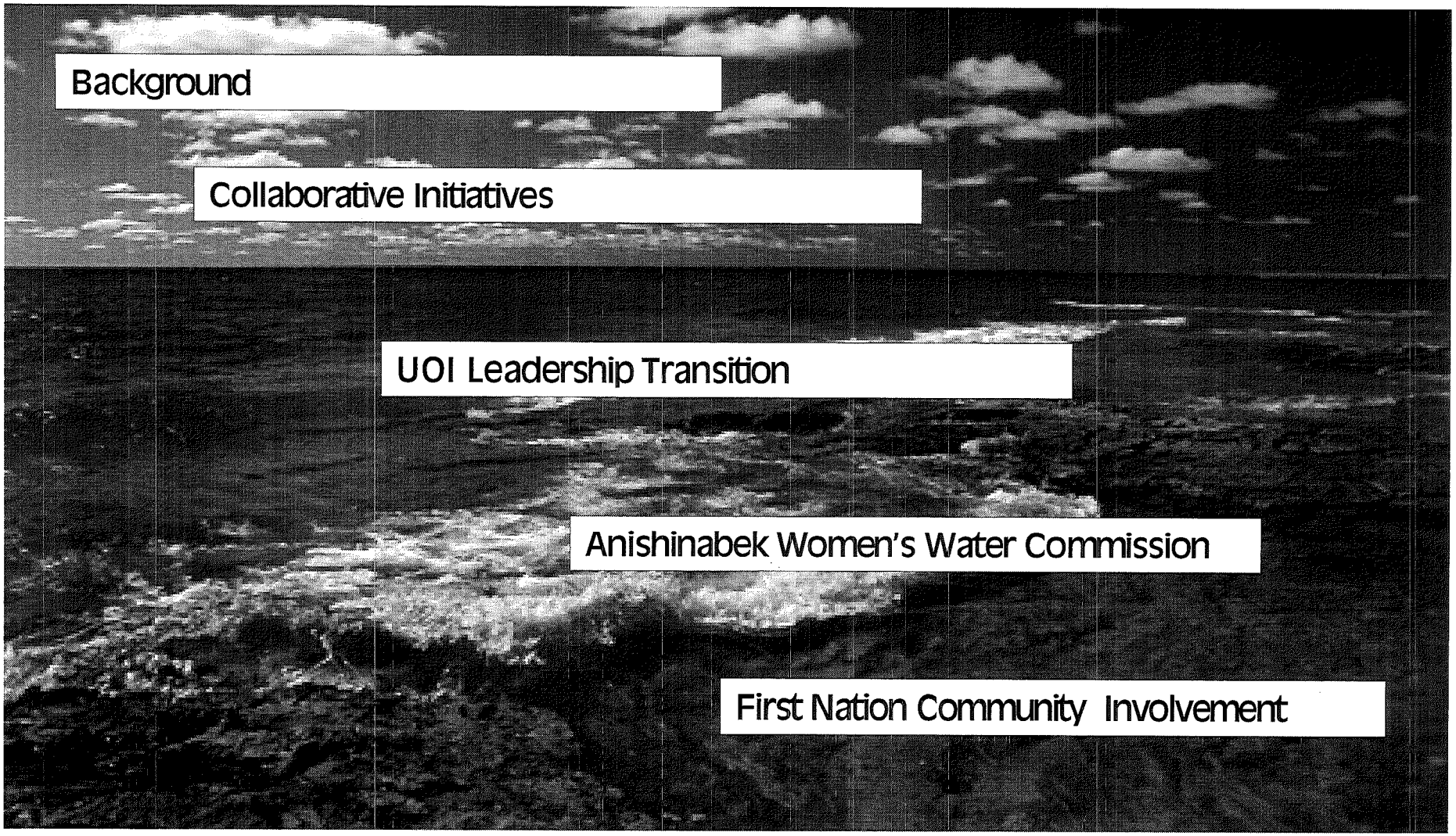
1. Should the 90 day Agreement averaging period be adopted? Should all sectors have the same averaging period?
   - Option 1: 90 day average for Agriculture; 30 day average for other uses
   - Option 2: 90 day average for all uses
   - Option 3: 90 day average for agriculture, max. daily use for other uses (as per PTTW)
   - Other?



Great Lakes St. Lawrence River Basin Sustainable Water Resources Agreement Implementation
-First Nations Collaboration-

Presentation for the
Agreement Advisory Panel
February 18, 19, 2009

Presentation Overview



Great Lakes – St. Lawrence River Basin Sustainable Water Resources Agreement Background - Specific Contributions from Tribes/First Nations

- Since 2003, dialogue between Ontario and some First Nation PTOs community members has contributed to the negotiation of the Agreement (finalized in Dec. 2005)
- Tribes/First Nations met in Chicago on the Agreement negotiation (Jan. 2005) and on the Draft Water Conservation and Efficiency Objectives (Nov. 2006)
- Tribes/First Nations met in Niagara Falls (April, 2005), leading to the formation of the **United Indian Nations of the Great Lakes**. There was a call for further consultation with Tribes/First Nations in the preparation of the Agreement and a greater role for First Nations in decision making.

- Consequently:
  - The position leading to the basin wide diversion ban was strengthened
  - The Agreement was strengthened with respect to Tribes/First Nation Consultation
  - The importance of Traditional Knowledge and Values was entrenched in the Regional Water Conservation and Efficiency Objectives

Great Lakes – St. Lawrence River Basin Sustainable Water Resources Agreement
Background - **First Nations Involvement**

The Agreement specifically addresses First Nations and Tribes involvement:

Provides for **appropriate engagement** by a state/province with First Nation or Tribes regarding water proposals, in a matter suitable to the individual proposal and the laws and policies of the state/province;

Prescribes a **notice and comment process** for First Nation or Tribes for the regional review of water use proposals by other states/provinces;

Seeks to facilitate **dialogue and input** from First Nations and Tribes on regional issues under the Agreement;

Seeks to establish ongoing **scientific and technical interaction** and **data exchange** with First Nations and Tribes regarding matters falling within the scope of the Agreement;

Does not abrogate or derogate from the protection provided for the existing aboriginal or treaty rights of aboriginal peoples in Ontario and Quebec as recognized and affirmed by section 35 of the Constitution Act, 1982.

Great Lakes – St. Lawrence River Basin Sustainable Water Resources Agreement
Background – First Nations in Ontario / Union of Ontario Indians

In Ontario there are two Ontario-wide aboriginal organizations:
Chiefs of Ontario and the Metis Nation of Ontario
And there are 12 Independent First Nations

There are 4 political treaty/territorial organizations (PTOs):
- Nishnawbe Aski Nation
- **Union of Ontario Indians**
- Grand Council Treaty #3
- Association of Iroquois and Allied Indians

60 of Ontario's First Nation Communities are within the Great Lakes –St. Lawrence River Basin

The Anishinabek Nation incorporated the Union of Ontario Indians (UOI) as its secretariat in 1949. The UOI is a political advocate for 42 member First Nations across Ontario

Great Lakes – St. Lawrence River Basin Sustainable Water Resources Agreement
Collaboration Initiatives – MNR/UOI MOU

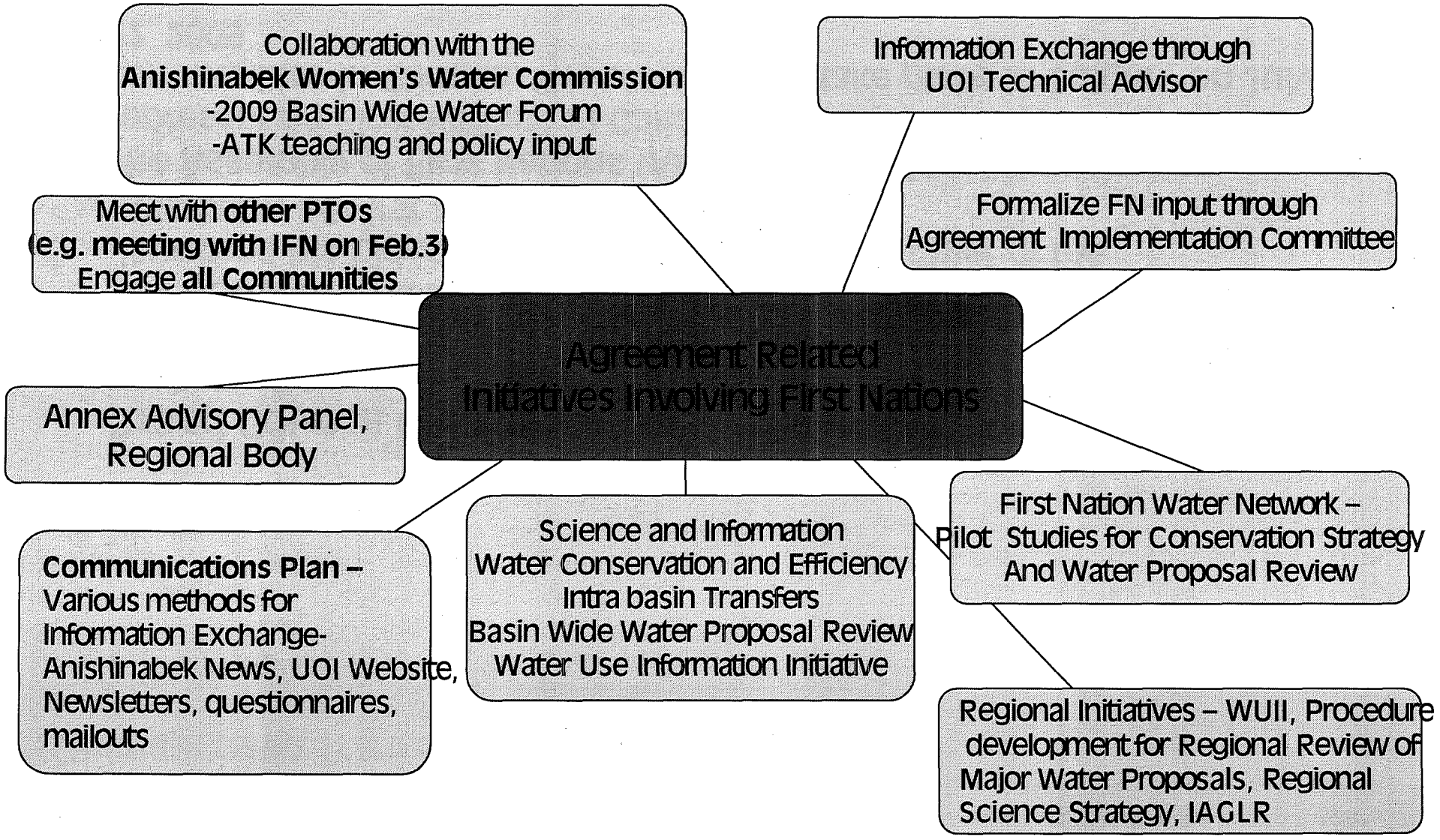
In March, 2007, the Union of Ontario Indians and the MNR signed a Memorandum of Understanding (MOU) to enhance collaboration in Agreement Implementation

The MOU is consistent with principles adopted in the broader resource management MOU for the Anishinabek/Ontario Resource Management Council (RMC)

- Mutual respect, recognition, responsibility, cooperation, trust
- Recognize the right of each Anishinabek FN to pursue its own priorities
- Natural resource management in Ontario is an important area of mutual interest

Under the MOU, various activities will be undertaken by UOI and MNR to ensure the exchange of policy and technical information and advice (including traditional principles and perspectives)

Great Lakes – St. Lawrence River Basin Sustainable Water Resources Agreement
Collaborative Initiatives - as Part of the MNR/UOI MOU



UOI Leadership Transition

Grand Council Chief Beaucage is the UOI leader, first elected as Grand Council Chief in 2004 then re-elected in 2006 by acclamation.

On February 3, 2009, Grand Council Chief John Beaucage launched his bid to become the next National Chief of the Assembly of First Nations (AFN).

The Assembly of First Nations (AFN) is the National organization representing First Nations in Canada. There are over 630 First Nation communities in Canada. The election will take place in Calgary on July 22, 2009.

Anishinabek Women's Water Commission (WWC)

The WWC was appointed by Grand Council Chief John Beaucage in 2007 to advise UOI on all aspects related to the management of the Great Lakes.

The WWC play a leadership role in raising awareness of Great Lakes water and impacts to its quality and quantity.
The WWC share their traditional knowledge and teachings about water as they undertake their work across the Anishinabek Nation.

Through MOU, WWC activities related to Agreement implementation are supported:

- Participation with the Agreement Advisory Panel (including sub-groups), Regional Body meetings, Agreement Implementation Committee Meetings, Water Use Information meetings, Anishinabek/Ontario Resource Management Council Water Working Groups
- ATK presentations at IAGLR conferences, UOI Youth conferences, MNR/UOI Water Policy Conference
- Hosting Water Ceremony for Minister, Upcoming Community Meetings
- 2009 Basin – Wide Water Forum
- ~~Women's Water Walkers Great Lakes Walks – St. Lawrence River Walk this~~

First Nations Community Involvement

Agreement Implementation Information Exchange at the First Nations Community level through:

- The UOI First Nations Water Network – a UOI forum for communication about water for Anishinabek and non-Anishinabek First Nation community members. Pilot studies will soon be delivered for information exchange with First Nation communities around Agreement Implementation initiatives.

- UOI , together with the WWC, hosting a series of meetings, in First Nation communities to celebrate water and exchange information between MNR/MOE and First Nations community members about Agreement Implementation and related Great Lakes initiatives:
  Mar 23 – Whitefish Lake FN
  Mar 30 – Rama FN
  April 6 - Aamijwnaang FN
  TBD – Thunder Bay

- Various presentations by UOI / MNR/ MOE representatives to community members and at conferences

- UOI website and newspaper articles

Agreement Advisory Panel
Consultation on Agreement Implementation

February 18, 2009

1.0 Possible Options for Inclusion in an Ontario Water Conservation and Efficiency Strategy

General Discussion:

- Guiding Principle ii needs to be explained e.g. rationale for why we use so much water compared to other countries
- Strategy should include an introductory statement on the consequences of the failure to act and the need to act now

Should the Strategy contain Guiding Principles?

- Yes

If yes, are there any significant Guiding Principles missing (keeping in mind the possible Mission Statement, Goals and Objectives of the Strategy)?

- The first principle should have a lot of punch
- Reorder the principles to be iii, ii and i
- Have a first principle that is more active
- Modify principle ii to read "to be more compatible with other jurisdictions"
- Principle ii should be the first principle
- There should be a principle of continuous improvement
- In first principle indicate that water is a scarce resource
- Should include a principle that addresses "the myth of abundance"
- Need to reflect that there are threats to the Great Lakes (external and internal)
- The term "environment" should be included in the introductory statement to the principles
- Replace "Recognizing the opportunities" with "Recognizing the need" for water conservation in the introductory statement to the principles
- Consider an introductory statement about the consequences of the failure to act and some historical context (previous efforts around water efficiency)
- "Wise" use could be possibly changed to efficient or consider providing a definition of wise in this context.
- Concern that 11 principles is too many:
  - Consider grouping (e.g. protecting the watershed, education, etc.) and reducing to 4 or 5 principles and then sub – group statements from there

New Principles

- Should include something about climate change such as mitigating the risks or protection from the impacts
- Some principle that states that where conservation opportunities exist then they must be developed or implemented (e.g. ban 13L toilets)
- Inclusion and harmonizing of work with First Nations around water conservation and efficiency
- Low income communities should have equal access to conservation and efficiency

Should the Strategy have a Mission Statement?

- Yes

If yes, which option would you recommend?

- Option 3 should read, "Ontario commits to using water efficiently"
- Future generations should be referenced
- Include protecting health and quality and quantity
- Option 1 is good because it includes an action
- Consider adding a timeframe
- No there should not be a timeframe, a mission statement should be more motherhood and a timeframe should be part of a goal/objective
- Mission statement should stand alone and be timeless
- Need to capture the sense of urgency of doing conservation and efficiency now (not just for future generations)
- Option 1 – instead of using "need" change to "essential" to protecting
- Statement of water for generations to come needs to be stronger because what we do today is going to have an enormous impact on the future
- Idea of "continuous" improvement in our practices
- Option 1 should read, "sustaining and improving"

Should a province-wide target be included in the strategy now, in the future, or at all?

- The difficulty in setting a province–wide target is the definition of the target
- Target needs to be focused on efficiency and consumptive use
- A single province–wide target is too generic
- A single target does enable comparison to other jurisdictions
- Should have sector targets building to a provincial target
- Perhaps have a definition target such as "BMP's will apply in all sectors"
- Lose the water use pie chart, it is misleading
- Consider using a consumptive use pie chart
- "A target is a target" and shows the public something that the conservation and efficiency goal is serious
- Consumptive pie chart is misleading for agriculture
- Per capita reduction target provides context for the public
- Benchmarking in water use sector not accurate and impossible to compare one jurisdiction to the next
- Targets needs to be sector-specific
- Need for continuity of targets for Agreement jurisdictions
- Need a balance between a target that is aspirational and measureable targets
- Target should be aspirational and informed by sector and sub-sector targets
- Targets should be revisited following improvements to water use measurement
- Targets should be achieved by using Best Practices
- Aspirational targets for province not regulatory
- Set standards, not numerical targets
- Percentage targets are good for comparison, but they are not based on science
- Target could be a combination of percentages and actionable targets – need the impetus to get the data and start meeting targets

Should sectors be required to establish their own targets?

- Change the wording to read, "standard" or "benchmark" instead of a target
- Needs an arm's length oversight of sector standards
- Must be collaborative between the province, jurisdictions and sectors with a timeline
- Ultimately has to be driven by the Ministry of the Environment to meet timelines
- Will be a struggle in some sectors due to lack of metering or sub-metering
- Need clarity around phasing-in
- Government does not need to be involved until after sectors report on implementing BMPs and improvements in water conservation and efficiency reporting; see how the sector is doing first before government gets involved: reward good water users and go after bad water users
- MOE/ province must be involved in setting sector targets and in helping sectors to achieve them
- Consider standards for sectors such as "bronze, silver, gold" – make it tangible
- Ontario should be proactive in setting standards (lead by example in the GL Basin)

Should individual water users be required to establish their own targets?

- Where is the reinforcement for individuals to set targets?
- What are the consequences if the targets set are not met?

Targets – General Comments:

- Stressed watersheds should have Plan based on water budgets and targets to meet the Plan (link to Source Water Protection Committees)
- Should be done in conjunction with Source Protection
- A plan as to how to achieve targets and a reporting mechanism is required
- Need to clarify "sectors" what are they? How many?

Do you agree that the strategy should emphasize the use of water efficiency targets but also indentify circumstances in which water conservation targets may also be appropriate?

- Yes, both conservation and efficiency (e.g. stormwater control, reuse on golf course, xeriscaping)

2.0 Water Conservation and Efficiency Objectives

Do you agree with the following additions in red? If not, what changes would you suggest?

Objective 1: Guide programs toward long-term sustainable water use including *taking ecosystem needs into account.*

- Take out the word "including"?

Objective 1d: Develop long-term strategies that incorporate water conservation and efficient water use *and integrate them with other environmental management practices and considerations such as energy use and climate change.*

- No changes additions/ comments

Objective 4d: Strengthen scientific understanding of the linkages between water conservation practices and ecological *needs and responses.*

- No changes additions/ comments

2.1 Actions and Commitments: Objective 1

What kind of permanent entity, if any, should be established to oversee and promote water conservation and efficiency in Ontario once a strategy is in place?

- Each of the relevant ministries should have an office/department dedicated to water conservation/efficiency (OMAFRA, Health, MMAH, Infrastructure)
- Should have stakeholder-specific advisory committees set up through the affiliate ministries
- Should be an overarching mechanism for coordination e.g. central office/person; there should be an Ontario Chief Water Conservation Office who liaises with the current Ontario Chief Energy Conservation Officer

Who should be required to prepare and implement water conservation plans?

- All PTTW holders and municipal ICI (IC over 50,000 l/day threshold)
- Slide 30 – sign-off by qualified individual
    - Consider how intensive a requirement is it going to be?
    - The sign-off person must understand the workings of that sector
- It cannot be too onerous or costly to the individual
- Consider using the sector-specific advisory committees (set up through relevant ministries) to serve as the roll of "qualified person"

2.2 Actions and Commitments: Objective 2

Should municipalities be required or encouraged to adopt water conservation by-laws which minimize wastage of water?

- Consistency of by-laws should be mandated
- Such a requirement would make municipalities address leakage
- Requirements hold more weight, but must be clearly defined (e.g., "what is wastage"?)
- Municipality must have the authority to enforce the conservation by-laws
- Stipulation of who is responsible (i.e. upper tier and/or lower tier)
- Need standardized measurement for leakage – how measured?
- If outdoor use – need a minimum standard
- Need to examine barriers to water efficiency and develop appropriate strategies
- Is the municipality the right entity to have a by-law for leakage repair on the water distribution systems? Should be the province.

Should municipalities be required or encouraged to meter new development on a municipal water supply?

- Metering should be a requirement for new development
- This is a first necessary step
- What is "new development"?
- Need to look at the legal scheme that regulates new development
- Trigger has to be municipally supplied water only

Should municipalities be required or encouraged to meter existing development on a municipal water supply?

- Yes, metering should be a requirement for existing development

Should municipalities be required or encouraged to charge all water users the full cost of providing water and wastewater services?

- Should be a requirement to charge all water users the full cost
- Municipality can have full cost recovery but if have a declining block rate, no incentive for conservation
- Define what, "full cost" means
- Some small systems are struggling due to high cost of improvements and few water users to share the cost

Should municipalities be required or encouraged to set a water rate structure which encourages water conservation?

- Currently rates increasing because of full cost recovery, therefore consider phasing in conservation rate-based structure
- Tiered rate structure for conservation (Australia or electricity model)
- Province should set tiered rate structure in which the triggers for increased rates (i.e., water use thresholds) are consistent for all municipalities. For example, the first block rate could be 170 litres/person/day and have a low rate; in the next block, the rates would be double; similar in approach to the electricity rate structure.

What are the funding priorities?

- First identify "low hanging fruit" in all sectors that don't cost anything/much and implement them
- Use existing rebate/funding programs for both water and energy
- Go after opportunities that do not cost (e.g., building code amendments)
- Education of all water users
- Need to have a rational water rate
- Leak reduction and other water efficiency initiatives that reduce or eliminate need for new water supply such as upgrading water treatment and supply infrastructure; for infrastructure should have a priority for health and safety e.g. lead pipes
- Funding must consider the full cost of implementation (e.g, staffing and other resource requirements)
- Focus funding on high water stressed areas

How should the Strategy be funded?

- Development charges (portion allocated to water management)
- PTTW
- Possibly consider separate development charge for water conservation
- User fees as a general principle with a proviso that people with low incomes have access to water and a low block rate for minimum water needs
- Consider shifting a portion of the current funding for energy efficiency to water conservation
- Water is a priority and has implications for health, economy etc. therefore should be funded
- Outreach/lobby decision-makers about need for funding for water conservation and efficiency
- Now is the time to allocate current infrastructure funds to water efficiency/conservation initiatives

2.3 Actions and Commitments: Objective 3

Should methodologies be established for calculating water conservation and water efficiency performance indicators and benchmarking be conducted for all or some sectors?

- Yes, but contextualize to the particular sector

Should the province require standard water consumption information on municipal consumer water bills?

- Yes

Should the municipalities be required or encouraged to measure, monitor and/or report water loss?

- Yes, with a provision for health and safety (e.g., fire fighting)

2.4 Actions and Commitments: Objective 4

What are the science, technology and research priorities?

- Research into groundwater issues and how landscape conservation can help with groundwater recharge
- Need to be clear in the Strategy that groundwater is included in the Great Lakes basin
- Be sure to integrate with work that is already being done Source Protection

2.5 Actions and Commitments: Objective 5

What are the education and information sharing priorities?

- Social marketing is absolutely necessary
- Curriculum (provincial) enhancement for schools
- Integrate First Nations education at the curriculum level
- Integrate energy and water audits for homes

- An enhanced presence of water festivals in urban schools
- Publicise the success stories from all jurisdictions - with publicity
- Take on demonstration sites and pilot projects to determine what is effective and what is not
- Training of irrigation contractors and other water professionals
- Have comparative benchmarks for the individual consumer (e.g., a mechanism such as the water bill that indicates where the individual household falls in terms of water use)
- Find out how much water can be saved and the cost savings and people will act
- Make our legal commitments publicly known e.g., Ontario is legally committed to preparing a water conservation and efficiency strategy and all the provinces and states around the Great Lakes Basin are doing this too

3.0 Timeframe of Strategy

What should be the timeframe of the Strategy e.g. 10 to 15 years or longer, and why?

- Given the political cycle, any timeline over 4 years is "fictional"
- Milestones should be set with timelines for certain actions
- Could have a phased approach with deliverables per phase e.g, 1, 2 and 5 years, with 5-year review as per the Agreement
- There are some initiatives that are going to take time and there could be a build up of actions, therefore phasing makes sense
- The timeline is bound by Agreement
- Do all that we can
- Be ahead of the curve in the basin leadership
- Provincial target of 10 years (e.g., 20% by 2020) with benchmarks along the way to show that we are on track

General questions and comments pertaining to conservation/efficiency discussion:

- Did MOE look at the time when there was a water conservation secretariat? (Jim McLaren)" Should look at the experience of the secretariat in order to inform the development of a water conservation and efficiency office
- "Voluntary" is not consistent with conservation and efficiency
- Audits do not deliver water efficiency, need to ensure implementation of water recommendations
- There needs to be an incentive or disincentive for water conservation and efficiency
- Need to go back and look at the impediments to water conservation and efficiency in the past and come up with strategies to address them
- Slide 42 – would be a place to include the bronze, silver, gold standards
- Slide 4 – indicate up front in the Strategy, in a legal context, the obligation for conservation and efficiency
- If Ontario is going to have a leading conservation/efficiency program, needs to be communicated now to the Agreement jurisdictions
- What is the conservation test going to be?
- How will we arrive at a test that the Regional Body will accept?

4.0 Watershed Boundaries and Mapping

General Questions and Comments:

- Under the Clean Water Act there is a lot of mapping, keys, symbols, is the mapping consistent?
- Symbology is consistent but the data to create boundaries is different
- Will there be an effort to work together for consistency between mapping and The Clean Water Act – will boundaries be updated?
- Connecting waterways have been a big issue – How is upstream/downstream determined?
- The connecting channel always belongs to the downstream lake, the regulation should not be any different – this is simple hydrology

5.0 Water Use Reporting

Jurisdictions currently report aggregate data by Great Lakes or St. Lawrence watershed (5 watersheds). Should jurisdictions be encouraged to assemble and report on the data at a finer watershed scale such as a Tertiary watershed scale (Ontario), HUC-8 scale (States), and an Order-1 scale(Quebec)?

- Yes

Should Ontario submit water use data below the threshold (e.g. > 50K L/d)?

- Reporting water use data below threshold will provide insight for all jurisdictions and for sectors
- Is there a way of providing data in 2 forms? At threshold and below threshold?
- Reporting takings below the threshold gets at the issue of cumulative impacts
- Ontario should approach Minnesota to see if they will share information and details
- Should not have duplication of reporting and reporting should be done through the PTTW
- Reporting at Great Lakes watershed level is too large, need reporting at a sub-watershed level
- Would be valuable to report return flow
- Are there different parameters that should be reported to get a better handle on climate change, understanding climate change impacts, etc.

Should water users be required to report water diversions/transfers?

- Yes

Should water transfers Into the GL Basin be reported?

- Support reporting requirements about transfers into the Great Lakes basin
- Should encourage other watersheds areas such as James Bay to measure and report
- Need to know transfers into the GL watershed in order to determine cumulative impacts and for the water balance

6.0 Methodology for Estimating Consumptive Use

Tiered Framework: Do AAP members support the tiered framework approach in general (i.e. using generalized coefficients, then requiring users above a defined threshold (or thresholds) to conduct a site specific assessment of their consumptive use)?

- Need the median and upper quarter and lower quarter
- This is generalized in an average and does not provide sufficient clarification
- Need a better measure of the coefficient
- When determining whether exceeding the threshold use upper quarter

When should site specific CU assessments be required?

a) **Framework suggests that all highly consumptive water users defined in Section 5(5) of the Water Taking Regulation undertake a site specific assessment. Do AAP members support this?**

- How certain is the province of the CU coefficients in the sectors?
- Yes, general support

b) **For other water users, when should a site-specific assessment be required?**

- Where there is a problem in the watershed (e.g. bottler taking water and there is a shortage)
- Stressed or potentially stressed watersheds (e.g. future stressed watersheds)
- How could changes to the Navigable Waters Act have an impact the Agreements requirements etc.?

7.0 Averaging Amounts

Should the 90 day Agreement averaging period be adopted? Should all sectors have the same averaging period?

- Whatever provides the greatest protection for the environment

MOE/MNR will bring more information on averaging amounts back to the AAP for consideration

BLUEPRINT

FOR ONTARIO'S WATER CONSERVATION AND EFFICIENCY STRATEGY

INTRODUCTION

[Need to Develop]

- Outline the barriers identified in consultation process, highlight themes, etc.
- Assume Ontario is close to 100% metered – though important we need to move beyond
- Align with Agreement Regional Objectives

VISION

[Need to Develop]

- Outline who needs a plan – note that we don't feel mandatory planning across the board is necessarily the best way to foster
- How implementation of the plan is equal if not more important than the targets

"The Industrial Economy is giving way to the Creative Economy....the Darwinian struggle of daily business will be won by the people--and the organizations-- that adapt most successfully to the new world that is unfolding."[1] The creative economy is built on "ideas" in place of physical capital. Ideas enable optimization of existing resources providing environmental and cost savings co-benefits. The Creative Economy invests in people and ideas as opposed to hard infrastructure. This is the way of the future, and the way to achieve a water efficient, energy efficient, and low carbon future that will prosper ecologically and economically in the future.

- Premier Dalton McGuinty noted "our world is changing...and our businesses are going to have to be at their very best if they want to compete and win."[2]
- Outline the story for the Blueprint:
  - Government should lead, be accountable, and stimulate a transition to a new, water efficient economy and value system

A number of green infrastructure funds and rebate programs exist, and a cost effective and efficient instrument to increase purchases and retrofits of water efficient fixtures and equipment is to expand existing funding and rebate programs. The incremental costs of additional rebates and extended visit time for energy efficiency auditors who are already in homes and businesses, are small in comparison to the co-benefits of reduced energy costs for municipalities, the increase in business for retailers, and long term risk management against declining water supplies and droughts that may result from climate change. British Columbia has also recognized the importance of providing audits and rebates to retrofit existing inefficient fixtures with efficient technology and includes a similar initiative in its Living Water Smart Strategy.

Incorporating water efficiency measures into existing green infrastructure funding can be revenue neutral – by simultaneously reducing the funding of grants for infrastructure expansions while increasing grants for sustainable water infrastructure. Promoting long term sustainability of water,

[1] 'Ontario in the Creative Age,' in Toronto on Thursday, Feb. 5, 2009.

[2] *Doskoch, B. "Report urges a more creative economy in Ontario" Accessed Feb 10, 2009 at: http://toronto.ctv.ca/servlet/an/local/CTVNews/20090207/creative_economy_090207/20090207/?site_codename=Toronto*

energy and financial resources should be a key criteria for funding to ensure efficient use of limited dollars. For example, Class Environmental Assessments for pipeline retrofit projects (to recover lost capacity) are much less complicated or expensive than finding and building new supplies. Fast-tracking funding for leaky water mains projects creates jobs; saves water and increases system capacity; reduces energy costs and decreases GHG emissions; and saves costly clean up and repair work resulting from a broken water main.

GOALS

Foster Sustainable Water Use through integrated, adaptive approaches:

"Sustainable use is defined as achieving four things simultaneously:

(1) providing all humans with access to safe, clean supplies to meet their basic needs,

(2) sustaining healthy freshwater ecosystems that provide socially valued ecosystem services and products,

(3) enabling the remaining water (after meeting 1 and 2) to serve the broadest possible array of socially valued purposes, and

(4) doing all of this in a way that does not compromise the abilities of future generations to do the same."

Brian Richter personal communication

in (Galloway and Pentland 2003: 9)

Harmonize new requirements with existing regulations, requirements and initiatives

The Strategy must build on and harmonize with the considerable number of legislation, regulations and initiatives already in place in Ontario. The Clean Water Act (CWA) and Source Water Protection Planning along with the Permit to Take Water (PTTW) and Water Takings Regulation (WTR) will provide the scientific backbone for the conservation strategy. The Safeguarding and Sustaining Ontario's Water Act will begin to charge highly consumptive commercial and industrial water users. Conservation Authorities and local governments in Ontario often have stewardship programs and existing monitoring programs which could be built on.

Mitigate long term risk to all sectors from: climate change, rising energy costs, tough economic times

[expand]

Foster a creative economy

[expand]

Measurable, economically beneficial, energy benefits [this may be rolled into the risk section]

[expand]

TIMING & MILESTONES

Priority Area	Action
Provide Leadership and Direction by 2010	
Accountability	Establish a Chief Water Efficiency Conservation Officer of Ontario
	Establish water conservation criteria for "new or expanding" Permits to Take Water
Targets	PROVINCIAL TARGET: Water Use in Ontario will be 20% more efficient by 2020
	RESIDENTIAL TARGET 170: 50% of homes will use less than 170 LCD for indoor water use by 2020
	Other Priority Subsectors Targets: Water Efficiency Officer and Multi-stakeholder Project Teams will establish Priority Sub-Sector based targets by 2011
	Subwatershed Targets: Where a risk to water quantity (either drinking water source or ecological) has been identified through water budgeting, Low Water Response, or comments from the public, require development of sub-watershed conservation targets and action plans by 2012
Sector Based Plans	Conduct a market transformation analysis of multi-sector stakeholder groups to identify best strategies for overcoming barriers to adoption of best practices by 2010
	Conduct a gap analysis of resources (technical, social, financial) required for each sector to overcome barriers identified in the market transformation analysis by 2010
	Municipal/Residential – Draft an action plan comprised of actions specified herein, and include any additional actions required to address the findings of the gap analysis by 2011 Other Priority Sub-Sectors - Establish a process and action plan to identify, promote, encourage and, where necessary, mandate the adoption of best management practices by 2011
Strong, Scientific Backbone by 2011	
Water Budgets & Baseline Data	Build on existing PTTW and CWA requirements to ensure reliable, comprehensive data is collated for all water users in a watershed and made publicly available for water use decision making by 2010 Build on existing PTTW and CWA requirements to ensure reliable, comprehensive data is collated for all water users in a watershed and made publicly available for water use decision making by 2010
Benchmarks	Multi-stakeholder Project Teams should identify benchmarks for best management practices for each Priority Subsector
Best Management Practices	Each Multi-stakeholder project team should identify BMPs for each Priority Subsector including opportunities for use of rainwater, greywater and wastewater reuse
	Build on new permit requirements for reporting water efficiency BMPs by clarifying, collating and housing identified BMPS in sector specific clearinghouses
	Build on existing PTTW reporting requirements to ensure meaningful, standardized information (where possible) on BMPs currently in use is being collected for Priority Subsectors

Create a Culture of Conservation by 2012		
Stimulate a Creative Economy	Build Capacity	Require water conservation plans and programs as eligibility criteria for provincial funding of large-scale water and wastewater projects by 2012
		Modify and expand existing green infrastructure funds and rebate programs for all sectors
		Foster development of competent water efficiency practitioners in all sectors by 2012
	Tools & Resources	Develop and provide access to tools and resources that enable water conservation and efficiency planning and action for all sectors by 2012
	Research & Development	Foster research and development into new water efficient technologies, practices, and alternative sources of water (rainwater, greywater, reuse) by 2012
Connect to Values	Social Marketing & Education	Develop a Social Marketing and Education Campaign for Water Conservation, based on the findings from the market transformation analysis, by 2012
Transform the Market	Price it Right	Price water according to its true and full value and ensure medium and large sized urban communities are moving towards volume based (conservation) pricing
	Make Conservation Easy & Automatic	Require minimum water efficiency standards that meet or exceed existing international standards and institute a 3 year review cycle to keep Ontario current
		Partner with EPA's WaterSense label and specification program to benefit all sectors by 2010

OBJECTIVE 1: PROVIDE LEADERSHIP AND DIRECTION BY 2010

Accountability

Water and energy are inextricably linked, and are two fundamental resources for ecological and human health. The Conservation Bureau and the Chief Energy Efficiency Conservation Officer were established to provide leadership in electricity conservation and demand management and advance an energy conservation culture in Ontario. Water efficiency would benefit from a similar role, either as a new position or as an additional role for the Chief Energy Efficiency Conservation Officer.

Applicants for a new or expanded source of water are currently required to document existing and planned water conservation and efficiency best management practices under the revised Permit to Take Water system. Although this requirement provides a good basis for encouraging water efficiency, the applicant is simply required to consult their relevant sector association to identify best practices. Although a sector-based approach that makes use of existing best management practices is appropriate, increased clarity and criteria for best practices could prevent future inefficiencies in all "new" water takings. Criteria for well known water efficient practices in the areas of building design, landscape design and irrigation practices should be established by the Ministry of the Environment for all new or expanded permits and training provided to Directors to ensure best practices are implemented.

Direction, Monitoring & Adaptation

ACTION: Establish a Chief Water Efficiency Conservation Officer of Ontario

Roles & Responsibilities

- Identify "Priority Subsectors" where opportunities for Water Conservation are high
- Establish a multi-stakeholder project team for each Priority Subsector to develop targets and action plans
- Oversee development of Priority Subsector targets and action plans
- Measure, track and regularly report on performance against water conservation targets and the level of water conservation mentality among the public
- Collaborate with other provinces and the federal government towards common goals and objectives
- Advise on relevant government policy for conservation on an ongoing basis
- Ensure the low-income and Aboriginal sectors are provided access to water efficient practices for climate change adaptation, energy savings and risk management and do not experience hardship as a result of government policies

Prevent Future Wastage

ACTION: Establish water conservation criteria for "new or expanding" Permits to Take Water

- Approve requests for new water only when defined criteria has been met:
  - Establish criteria for sustainable building design
  - Establish criteria for water efficient landscape design for new development, golf-courses and parks
  - Establish criteria for best irrigation practices (with input from stakeholders)
- Training for PTTW Directors must be provided to ensure discretionary decision making is effective in supporting practices that exceed defined criteria, that enable efficient decision making regarding permits, and to understand and resolve challenges faced by permit applicants in each sector

Targets

An overarching target is necessary to send clear signals to the province as a whole that efficiency is essential to our continued economic and ecological health. There are, however, challenges associated with setting such an overarching target in the absence of good, solid baseline information and knowledge of the *potential* for water savings in each sector. In spite of the challenges, an aspirational target provides incentive for change and a benchmark with which to gauge progress in 5 years when the requisite baseline, benchmarks and best practices information is available.

PROVINCIAL TARGET: Water Use in Ontario will be 20% more efficient by 2020	
Challenges	**Rationale**
Baseline is inaccurate, out of date	The target is today based the 2004 Environment Canada MUD database. This target must be reviewed and revised following improved understanding of Ontario's total water use and current uptake of efficiency measures. Until a good baseline is available, this target provides a driver for efficiency.
This target could be unfair to communities who have already implemented efficiency measures	This target is an overall, average target, supported by Priority Subsector targets. Ontario as a whole is aiming for 20% increase in efficiency, not necessarily individual sectors, munis, etc. who have already incorporated best practices.
The target is not based on any tangible ecological benefit	The goal at this level is for the province to provide the "leadership" necessary to enable local action. This goal serves simply to drive increased "efficiency" of Ontario to increase long term competitiveness, improve our capacity to adapt to climate change impacts, and to demonstrate we acknowledge that water has value and we should not be wasteful. Watershed based targets will address the need for ecologically based targets.

Developing the Provincial Target

The provincial target was developed using the best available information. A 20% increase in efficiency by 2020 would result in a residential per capita water use of 208 LCD and a gross per capita water use of 385 LCD[1].

A study in the Region of Durham demonstrated that by installing High Efficiency Toilets (HETs), high efficient showerheads and horizontal axis clothes washers, an indoor residential water use of 150 LCD could be sustained - an estimated 35% increase in efficiency for the residential sector.

This target is more aggressive than the BC target and less aggressive than the Great Lakes and St. Lawrence Cities Initiative. British Columbia is targeting a 33% increase in efficiency by 2020, however B.C. has a gross per capita water use of 649 LCD meaning Ontario is already 26% more efficient than B.C. based on this metric.

The Great Lakes and St. Lawrence Cities Initiative target is to achieve a 15% reduction below 2000 levels by 2015 in select urban municipalities – an estimated overall increase in efficiency of up to 35% to counterbalance population growth of 20% (depending on commercial and industrial growth rates). Though this objective is not a provincial target, it provides another reference point for comparison.

In short, a 20% increase in efficiency is achievable, and provides a balance between other Canadian jurisdictional targets.

The purpose of an absolute, residential indoor water use target is to encourage *efficient* use of water, in all communities regardless of a perceived abundance of water or low population growth rates. Target 170 quickly communicates an acceptable benchmark for communities to gauge their water use. A per capita residential indoor water use target does not penalize progressive communities that have already reduced their residential water demand nor communities where industrial and commercial use may inflate their gross (total) per capita demands. An absolute, per capita target is much clearer than a percentage based target for which a reference point must be specified, and thereby encourages action despite an ill defined baseline.

RESIDENTIAL TARGET 170: 50% of homes will use less than 170 LCD for indoor water use by 2020

Challenges	Rationale
May be a problem for un-metered communities to establish their residential per capita water demand	Communities have 10 years to reach this goal and metering is a first step toward improving water efficiency.
May present a hardship for low-income communities or communities with few resources developed	Partnered with extension services including social, technical and financial capacity. Target is 50% of homes across Ontario – the majority of Ontario's population is in medium and large urban centres that can meet the target.
Excludes outdoor water use	Outdoor water use is difficult to specify on an absolute per capita basis because of widely varying climatic conditions, lot size and behavioural practices. The provincial target of 20% more efficient by 2020 will encourage communities and homeowners to reduce outdoor use.
Difficult to measure and monitor indoor water use	Provide guidance to water utilities to enable them to report on water utility bills winter (indoor) per person consumption; monthly per person consumption and target water use so homeowners SEE their water use in comparison to the provincial target.
Goal is not based on any tangible ecological benefit	The goal at this level is for the province to provide the "leadership" necessary to enable local action. This goal serves simply to drive increased "efficiency" of Ontario to increase long term competitiveness, improve our capacity to adapt to climate change impacts, and to demonstrate we acknowledge that water has value and should not be wasted. All water saved, particularly in high use areas *does* have an ecological benefit. Watershed based targets will further address the need for ecologically based targets.

Developing The Residential TARGET 170

Pilot studies have demonstrated that new homes can achieve 120-170 LCD indoor demands with little or no behavioural changes required[1]. The residential sector in Ontario (population) is projected to grow by 18% between 2008 and 2020[1]. Getting our building codes right TODAY would easily ensure that 20% of homes meet or exceed 170 LCD with little or no effort. Setting water efficient standards in line with US requirements for residential fixtures would ensure that water wasting toilets and washing machines that are replaced over 10 years would equate to an estimated additional 30% of homes meeting 170 LCD[1].

The Queensland Water Commission used a similar strategy (absolute per capita based target) effectively to achieve "Target 140" in 2 years (as opposed to 10 years to achieve 50% of homes meeting 170 LCD) and a number of other industrialized countries have 100% of homes averaging less than 170 LCD[1].

Finally, this objective was developed to support the provincial water efficiency target of 20% by 2020. Best estimates of current *total* (indoor and outdoor) residential water use are 260 LCD. A 20% increase in residential efficiency would result in a target of 208 LCD. The proposed "50% of homes use 170 LCD" target equates to an average provincial *indoor* use target of 200 LCD – therefore a slightly less aggressive target than the provincial target of 190 LCD [need to rework rationale somewhat].

Other Priority Subsectors Targets: Water Efficiency Officer and Multi-stakeholder Project Teams will establish Priority Sub-Sector based targets by 2011

The most logical scale to set ecologically based water use targets is at the sub-watersheds scale. A primary objective of the water conservation, use targets and action plans is to protect the ecological needs for water in addition to long term human needs. One example of such an approach is in the Delaware River Basin in Southwestern Pennsylvania where numerical withdrawal limits are specified for many watersheds based on actual available baseflow[3]. From an ecological standpoint, sub-watersheds that are currently stressed, or projected to be quantifiably stressed in the future, should establish conservation targets to reduce water withdrawals from the basin. Although the Clean Water Act provides similar protection for stressed watersheds, the protection should extend to watersheds that do not jeopardize drinking water supplies but are nonetheless ecologically stressed.

Subwatershed Targets: Where a risk to water quantity (either drinking water source or ecological) has been identified through water budgeting, Low Water Response, or comments from the public, require development of sub-watershed conservation targets and action plans by 2012

Challenges	Rationale
Watershed based targets can result in an unlevel playing field	Each sector is guided by sector specific goals for efficiency and the overarching provincial goals to create a level playing field. An unlevel playing field makes sense on an ecological basis as water availability is a non-negotiable entity; it makes sense for residential/industry/ag growth to be located where sufficient water exists and where each sector can continue to thrive.
Water Budget Data is not yet fully available, may create delays	Provincial target and early actions will incentivize change. Data collection and reporting is required under the Clean Water Act and PTTW and will be forthcoming.

Developing Subwatershed Targets

Water budgets are being completed as a requirement of the Clean Water Act for drinking water source protection. The Clean Water Act currently requires identification of risks to municipal supply in terms of water quantity and requires source water protection plans to address these risks. An additional requirement for establishing sub-watershed water conservation targets and action plans must build on and harmonize with the existing Clean Water Act, Permit to Take Water and Low Water Response requirements, resources, roles and responsibilities.

The tangled web of regulations and requirements stemming from the Clean Water Act, PTTW process and Low Water Response makes identifying a clear plan of action difficult. A process should be developed in consultation with stakeholders whereby the existing water budgeting process would highlight a risk to water quantity (including an ecological risk), followed by an additional screen to verify the actual risk to the sub-watershed to avoid unnecessary action as a result of poor data. The process must also specify who would prepare the watershed water conservation plan, the stakeholders to include, and may require piloting of the process to navigate challenging decision making processes given multi-sector stakeholders will be impacted and involved. Wherever possible, regulations and requirements should be streamlined, harmonized and clarified including providing knowledgeable experts on the ground to assist water users in navigating the multitude of new and complex requirements.

Sector Based Plans

[3] http://www.nj.gov/drbc/99AR6.pdf

The Sector Based Plans are intended to support Priority Subsectors in achieving the provincial target for improved water efficiency, conservation and productivity. The plans should be developed by a project team comprised of subsector stakeholders under the guidance of the Water Efficiency Officer. The plans should be based on market based research and a gap analysis of resource needs to ensure actions are suited to the needs of the intended recipients and stakeholders and make efficient use of existing resources. The plans must be made publicly available, and a public reporting process established to disclose progress made against established targets. The Water Efficiency Officer must review and revise subsector plans regularly to adapt to changing knowledge, expertise, societal and market conditions.

Assess the Market by 2010

To ensure effective, efficient action plans are developed, first an understanding of the barriers to adoption of best practices must be gleaned. To some extent, the Ministry's sector consultation process may have achieved this objective. There are a multitude of stakeholders who can influence the uptake of a water efficient product or practice, either positively or negatively. In order for a new technology or practice to take hold in the marketplace, a number of professions have to support their profusion. For example: citizens, consumers, retailers, wholesalers, home builders, plumbers and inspectors, stakeholder group and trade associations, and practitioners including farmers, engineers, architects and installers all have an important role in affecting the transformation of the marketplace. Insight into the approaches and required resources best suited to overcoming these barriers for each major stakeholder group will increase the effectiveness of targeted actions and accelerate market transformation of water efficient products, technologies and practices.

ACTION: Conduct a market transformation analysis of multi-sector stakeholder groups to identify best strategies for overcoming barriers to adoption of best practices by 2010

Resource Gap Analysis by 2010

With knowledge of approaches and required resources to increase adoption of best practices in each sector, an analysis of the extent to which existing resources can be leveraged and new resources required should be completed. Multi-stakeholder project teams should be engaged in this process to identify existing resources that may be leveraged.

ACTION: Conduct a gap analysis of resources (technical, social, financial) required for each sector to overcome barriers identified in the market transformation analysis by 2010

Priority Subsector Plans

Critical components of the action plans are noted in the "Create a Culture of Conservation" section and include: Capacity Building (financial, social and technical); Transformation of Values and Transformation of the Market (pricing and standards).

Each sector (industry, businesses, institutions and agriculture) and subsector has specific water use needs (quantity and quality), different best management practices, processes, designs, and technologies, unique conservation potentials, varied levels of progress to date and capacities to achieve further water conservation and efficiency goals. Therefore targets and action plans must be tailored to each subsector based on specific knowledge of their practices and needs. This requires consultation with and participation from each subsector as well as their respective associations.

ACTION: Municipal/Residential – Draft an action plan comprised of actions specified herein, and include any additional actions required to address the findings of the gap analysis by 2011

The barriers to the adoption of best practices in the municipal/residential sector are relatively well understood and therefore many action items have been specified herein. Many of these actions should be implemented immediately. However, insight from the market analysis and details on specific technical resources and expertise should be included in the municipal/residential action plan.

ACTION: Other Priority Sub-Sectors - Establish a process and action plan to identify, promote, encourage and, where necessary, mandate the adoption of best management practices by 2011

The Alberta Water Council recently developed a framework for consulting with sectors to develop overarching plans that guide sectors in setting and meeting water conservation, efficiency and productivity goals, objectives, targets and actions. Ontario should employ a similar process, but require tighter timelines than Alberta to avoid delays, and focus on actions that provide obvious long term ecological and economic benefit (i.e. increasing market competitiveness may require short term investment).

OBJECTIVE 2 - STRONG, SCIENTIFIC BACKBONE BY 2011

As of 2008, all holders of a Permit to Take Water (PTTW) are required to submit a schedule of planned and actual water takings as part of the Ontario Water Resources Act (OWRA) and the Water Taking Regulation (WTR). However, the data is not currently summarized nor publicly available. The Clean Water Act requires development of water budgets, an analysis of risk to water quantity and Source Water Protection Plans which may include conservation objectives.

Good solid science and data gathered in a consistent manner is necessary to establish effective baselines, support a solid understanding of provincial and sub-watershed water use and to assess the potential for water efficiency and conservation. Establishing a database of baseline data, benchmarks and Best Management Practices (BMPs) for each Priority Subsector is essential to enable comparison of the temporal water efficiency and productivity of individual water users, to compare current water use to best practices within subsectors, and to compare and contrast water use across subsectors.

Ontario has recently established a solid basis for securing this required information with the PTTW system and the CWA. The Province should continue to monitor the quality of the data, the format of the data and disclose the data publicly with the aim of ensuring the information collected is useful.

Water Budgets & Baseline Data

ACTION: Build on existing PTTW and CWA requirements to ensure reliable, comprehensive data is collated for all water users in a watershed and made publicly available for water use decision making by 2010

Benchmarks

A benchmark is "a standard by which something can be measured or judged". For example, benchmarks for residential indoor water use in Ontario have been stated as approximately 250 LCD prior to the 1996 Building Code change, 200 LCD for new homes meeting the current code, and 150 LCD assuming all fixtures are "high efficiency"[4]. These benchmarks provide a standard by which the current water use of municipalities, individual homes and even the province can be measured or judged.

Similar numerical benchmarks for industrial, commercial and institutional water use are much less defined or non-existent – largely because water is used in each of these sectors for widely varying purposes. However, benchmarks for Priority Subsectors such as food processing, golf-courses, etc. could likely be established. For example, in Australia, a "Water Toolkit" complete with benchmarks for each food processing type have been established in kL of water consumed/unit product[5]. Such a benchmark could prove very useful to evaluating the potential for water savings in Priority Subsectors. The Province should ensure current data collection protocols support collection of data in a format conducive to establishing current water use benchmarks and comparing to best practice benchmarks.

[4] Veritec Consulting (2008) *Water Savings Potential in New Homes*
[5] http://www.plentyfoodgroup.com.au/water/

ACTION: Build on existing PTTW requirements for reporting water use to ensure a standardized format, consistent with establishing subsector specific benchmarks, is in place

ACTION: Multi-stakeholder Project Teams should identify benchmarks for best management practices for each Priority Subsector

Best Management Practices

New permits require identification of existing and planned use of BMPs. Each Priority Subsector is anticipated to have a suite of best management practices, some of which can be, or are already, formalized in written form (i.e. irrigation BMPs published by OMAFRA, OWWA BMPs for residential water efficiency, etc.). Looking to subsector stakeholder groups to identify BMPs is essential and logical, the MOE should ensure it develops in-house expertise and training for officers surrounding these BMPs to support permit holders and applicants. Furthermore, some degree of standardization of permit applications (i.e. include a list of typical subsector specific water efficiency BMPs) may increase the ability of the province to assess uptake of BMPs in each sector with time.

ACTION: Each Multi-stakeholder project team should identify BMPs for each Priority Subsector including opportunities for use of rainwater, greywater and wastewater reuse

ACTION: Build on new permit requirements for reporting water efficiency BMPs by clarifying, collating and housing identified BMPS in sector specific clearinghouses

ACTION: Build on existing PTTW reporting requirements to ensure meaningful, standardized information (where possible) on BMPs currently in use is being collected for Priority Subsectors

OBJECTIVE 3 – CREATE A CULTURE OF CONSERVATION BY 2012

Stimulate a Creative Economy

This Blueprint suggests a transformation of the way we use water and resources – with the Province's energy efficiency policies and plans paving the way for change. Transformation of the market, and the regulations and social capital that will keep our markets current with the international marketplace now and in the future, will phase out the need for government intervention in the form of rebates and financial incentives. Until this transformation penetrates our value systems and our purchasing processes, our leaders must stimulate the transition.

Water conservation is the most economical source of "new water." Water efficiency measures save more than water – energy, greenhouse gas emissions and the costs of adapting to the impacts of climate change on available water resources represent significant cost savings. Requiring conservation plans as a condition for funding ensures taxpayer dollars are utilized where they are needed most and communicate to municipalities that conservation is a viable form of new water.

[Info about funding for rebate programs, etc.]

Competent, water efficiency practitioners are essential to transforming the economy from a supply side, hard infrastructure paradigm to a demand side, creative economy paradigm. Knowledgeable, creative practitioners that work to optimize water use efficiency will serve Ontario's economy well in times to come. The success of regulatory transformation is contingent upon access to knowledge – people and tools. The Province should provide communities with extension services in the form of knowledgeable in house experts, access to organizations with expertise, training opportunities and in some cases financial resources to hire practitioners. Technical resources such as toolkits, guidelines, templates, best practices, etc. that are easily standardized will ease the transition for communities and avoid inefficiencies associated with developing programs from scratch.

Build Capacity

ACTION: Require water conservation plans and programs as eligibility criteria for provincial funding of large-scale water and wastewater projects by 2012

MUNICIPAL/RESIDENTIAL ACTIONS:

- Revise eligibility criteria for funds such as FCM's Green Municipal Fund; Building Canada COIP fund, etc.
- Provide funding incrementally based on evidence of water conserved
- Require submittal of accurate baseline information to benchmark water conserved

OTHER PRIORITY SUBSECTOR ACTION:

- Identify government funding and programs for water and ensure conservation, efficiency and productivity are conditions for funding

ACTION: Modify and expand existing green infrastructure funds and rebate programs for all sectors

ALL SECTORS

- Ensure MEI[1] and OPA[1] funding programs recognize the water-energy link and include water saving initiatives

  Examples include the Municipal Eco-Challenge fund; the Electricity Retrofit Incentive Program; the Industrial Energy Efficiency Program, etc.

MUNICIPAL/RESIDENTIAL

- Revise infrastructure funding programs to make water conservation and efficiency eligible for funding by 2012 [need to check that its not already!]

  Expand funds such as FCM's Green Municipal Fund; Building Canada COIP fund, etc. to recognize water conservation as a form of infrastructure. For example, provide infrastructure funding for development of water efficiency plans, offering rebate programs, ICI audits, etc.

- Incorporate water efficiency measures into "Ontario Home Energy Savings" Program (Residential ecoENERGY program)

  Six litre toilets are already offered as rebates, however this rebate should be revised to High Effiicency (4.8 L) toilets only, and add rebates offered for horizontal axis residential clothes washers, which offer significant hot water energy savings. The Province should encourage federal government to provide the matching rebates to increase uptake.

- Prioritize and fast-track funding for sustainable water infrastructure

  Examples of funds that could be utilized to fast track sustainable water infrastructure include: Building Canada Fund; Canada-Ontario Infrastructure Program (COIP); Industry Canada's Ontario Potable Water Program; etc. Example of sustainable water infrastructure include: repairing and updating aging and leaky water mains, metering projects, wastewater reuse, rainwater, greywater recycling projects and/or pilots, distribution mains for water recycling.

COMMERCIAL & INSTITUTIONAL

- Match rebates from the Canadian ecoEnergy Retrofit for Small and Medium Organizations for retrofits that save both water and energy

  For example, include Pre-rinse spray valves for restaurants.

AGRICULTURE

- Invest in the Environmental Cost-Sharing programs of the Environmental Farm Plan for implementation of Beneficial Management Practices for agricultural water efficiency by 2012

  For example Increase the % of cost-share from 30% to 50% and increase the funding caps.

ACTION: Foster development of competent water efficiency practitioners in all sectors by 2012

ALL SECTORS

- Develop MOE expertise in water budgeting, water conservation and ecological needs and provide extension and outreach support to permit applicants, Source Protection Committees, OMAFRA, Irrigation Advisory Committees and Water Use Co-operatives, etc.
- Through shared programs and partnerships provide funding for organizations to hire water conservation experts to assist with programming, develop expertise and transfer knowledge

MUNICIPAL/RESIDENTIAL

- Provide training and financial support to an organization to deliver water conservation and efficiency auditing and rebate services for residential and ICI sectors

  Green Communities Canada has developed capacity to deliver EcoEnergy, EcoAction and Well Aware programs. The Home Energy Audit should be expanded to provide a walk-through assessment of homeowner's water uses, offer toilet/faucet testing to evaluate for leaks, install free faucet aerators and high efficiency showerheads (where available, for example from Union Gas). The auditor and organization should educate the homeowner and the public about the availability of water efficiency rebates (widely unknown that a $100 rebate is offered for 6L toilets).

  These organizations could be equipped with training to deliver a standardized fixture rebate program, Outdoor and ICI water audits and Community Base Social Marketing programs. Municipalities could then have the option to partner with the organization, for example with a base fee and pay per rebate issued; they would save the cost of developing and delivering individualized programming. This program would ensure that only "approved" WaterSense labeled toilets are rebated and that new "approved" technologies can be seamlessly implemented into communities as they become available.

- Provide financial resources to existing, effective, capacity building networks such as the CWWA and OWWA Water Efficiency Committees, the Alliance for Water Efficiency

  Many of these organizations have no base funding and could greatly expand their outreach capacity with permanent staff.

OTHER PRIORITY SUB-SECTORS

- Develop actions to address any needs for social capacity identified in Gap Analysis

Technical Tools & Resources

A recent CWWA Benchmarking initiative found that many municipalities across Canada do not fully understand how water is used within their communities, and without this understanding targets are meaningless. It is critical for low capacity municipalities to have generic water conservation plans, templates and programs "on the shelf" ready to give them a head start to avoid starting from scratch.

ACTION: Develop and provide access to tools and resources that enable water conservation and efficiency planning and action for all sectors by 2012

ALL SECTORS

- Provide access to water conservation and efficiency auditing toolkits, detailed guidelines, templates for planning, model bylaws, best management practices and other resources for all priority sub-sectors
  - Work with existing clearinghouse(s) (i.e. the Alliance for Water Efficiency, OMAFRA, etc.) to provide a central location, familiar to each sector, for all resources and tools

Research & Development

[DEVELOP INTRO]

ACTION: Foster research and development into new water efficient technologies, practices, and alternative sources of water (rainwater, greywater, reuse) by 2012

ALL SECTORS

- Shift funding [or distinct fund?] for water research from end-of pipe solutions to innovative, ideas oriented solutions that focus on optimizing water use in all sectors

Connect to Values

Based on the market transformation analysis, co-ordinate a social marketing campaign to educate citizens about the full and true value of water and effect both a change in behaviour in all sectors of society and to generate lasting support for and understanding of water efficiency initiatives. Work with other provinces and federally to share information and pool resources to develop effective programming. Educate Ontarians about the importance of the link between water use, energy, greenhouse gas emissions and climate change adaptation. Provide core funding to established water conservation education groups like Children's Water Education Council, who already have the capacity and reach to educate.

ACTION: Develop a Social Marketing and Education Campaign for Water Conservation, based on the findings from the market transformation analysis, by 2012

Transform the Market

Price it Right

ACTION: Price water according to its true and full value and ensure medium and large sized urban communities are moving towards volume based (conservation) pricing

MUNICIPAL/RESIDENTIAL

- Conduct a review of financial plans submitted in accordance with the Financial Plans Regulation to identify gaps in responsible, sustainable planning for water provision provincially by 2011.

  The financial plans regulation encourages municipalities to introduce full-cost pricing. Financial plans are required by December 2010 at the latest, depending on the municipality and will outline the full-costs of providing water. There are a large number of municipalities (low-income, small, northern, etc.) who may be unable to fully recover the costs of municipal water infrastructure and operation for a number of reasons. The intent of pricing water according to its full cost is to move away from a culture of "cheap water" in areas where residents can easily "afford" to waste water. Full cost pricing remains a key recommendation from the Environmental Commissioner of Ontario. The Province should aim to continue to move towards this goal, whilst avoiding undue hardship on low-income communities.

- If a review of the financial plans suggests that full cost and volume based pricing are not planned in the majority of urban communities, develop a plan of action to ensure implementation of full cost and volume based pricing in these communities.

OTHER PRIORITY SUB-SECTORS:

- Propose pricing related actions to incentivize conservation based on results of the gap analysis.

Make Conservation Easy & Automatic

Municipalities are spending millions of dollars per year on rebate programs that would no longer be necessary if water wasting fixtures (13L toilets, etc.) were banned. Toilet manufacturers have stated that banning 13 L toilets would create a level playing field and allow them to phase out old manufacturing lines as they have done in the USA[6]. The US Energy Policy Act sets minimum water efficiency standards for both new construction and all point of sale transactions. Furthermore, the US Secretary of Energy has "the authority to adopt new or revised efficiency standards on an expedited basis if such standards are jointly proposed by multi-stakeholder groups, including manufacturers, States, and efficiency advocates". Ontario should adopt similar standards.

The Building Code changes in 1996 were instrumental in increasing Ontario's water efficiency. Mandating efficient fixtures, and updating specifications regularly, makes purchasing the most efficient technology easy and automatic for consumers and incentivizes development of new technology. Installing best available technology is much more cost effective than conducting retrofits later.

ACTION: Require minimum water efficiency standards that meet or exceed existing international standards and institute a 3 year review cycle to keep Ontario current

MUNICIPAL/RESIDENTIAL

- Require minimum water efficiency standards that meet or exceed existing international standards in the Ontario Building Code and the Energy Efficiency Act by 2010; and increase review cycle to 3 years

  Requirements must extend beyond new construction to manufacturers and point of sale transactions (i.e. BAN 13 L TOILETS and other inefficient fixtures). Mandate High Efficiency Toilets (4.8 L) by 2015 for both residential and commercial sectors[1]. Include clothes washer and dishwasher standards that meet or exceed US standards[1]. Mandate purple pipes (water collection and reuse) and investigate feasibility of hotwater recirculation plumbing rough-ins in new home construction by 2015[1].

  New standards should be coupled with a re-education program for plumbing inspectors and improved technical resources for innovative technologies such as rainwater harvesting, greywater reuse, etc. (i.e. provide a series of technical templates and background to base approval decisions on, etc.).

OTHER PRIORITY SUB-SECTORS

- Review sector specific standards for opportunities to phase out inefficient technologies that are agreed upon by multiple stakeholder groups

  Mandate pre-rinse spray values, commercial grade high efficiency toilets, irrigation systems, etc. for new construction and all point of sale transactions to meet US and California standards.

6 http://www.region.waterloo.on.ca/web/Region.nsf/8ef02c0fded0c82a85256e590071a3ce/5AD72F4F812093FD8525742B0062C3A4/$file/E-08-036.pdf?openelement

ACTION: Partner with EPA's WaterSense label and specification program to benefit all sectors by 2010

Build on the success of the EnergyStar program. Encourage stakeholders to become WaterSense partners including municipalities, builders, retailers, irrigation sector, etc. Advocate federally for a national organization to administer a Canadian WaterSense program, equivalent to its US counterpart.

A BLUEPRINT FOR ONTARIO'S WATER CONSERVATION AND EFFICIENCY STRATEGY

EXECUTIVE SUMMARY

INTRODUCTION

[Need to Develop]

- Outline the barriers identified in consultation process, highlight themes, etc.
- Assume Ontario is close to 100% metered – though important we need to move beyond
- Align with Agreement Regional Objectives

VISION

[Need to Develop]

- Outline who needs a plan – note that we don't feel mandatory planning across the board is necessarily the best way to foster
- How we implementation of the plan is equal if not more important than the targets
- Outline the movement toward "a creative economy" Premier Dalton McGuinty noted "our world is changing...and our businesses are going to have to be at their very best if they want to compete and win."[1]
- Outline the story for the Blueprint:
    - Government should lead, be accountable, and stimulate a transition to a new, water efficient economy and value system

[1] *Doskoch, B. "Report urges a more creative economy in Ontario" Accessed Feb 10, 2009 at: http://toronto.ctv.ca/servlet/an/local/CTVNews/20090207/creative_economy_090207/20090207/?site_codename=Toronto*

GOALS

Foster Adaptive, Integrated Watershed Management

[expand]

Ensure Water for Ecological and Instream Flow needs [need approp. wording here]

[expand]

Ensure sustainable provision of Human needs for water [this maybe should be balance ecological, economic and human needs]

[expand]

Harmonize new requirements with existing regulations, requirements and initiatives

The Strategy must build on and harmonize with the considerable number of legislation, regulations and initiatives already in place in Ontario. The Clean Water Act (CWA) and Source Water Protection Planning along with the Permit to Take Water (PTTW) and Water Takings Regulation (WTR) will provide the scientific backbone for the conservation strategy. The Safeguarding and Sustaining Ontario's Water Act will begin to charge highly consumptive commercial and industrial water users. Conservation Authorities and local governments in Ontario often have stewardship programs and existing monitoring programs which could be built on.

Mitigate long term risk to all sectors from: climate change, rising energy costs, tough economic times

[expand]

Foster a creative economy

[expand]

Measurable, economically beneficial, energy benefits [this may be rolled into the risk section]

[expand]

OBJECTIVE 1: PROVIDE LEADERSHIP AND DIRECTION BY 2010

Accountability

Water and energy are not only inextricably linked, but are two fundamental resources for ecological and human health. The Conservation Bureau and the Chief Energy Efficiency Conservation Officer were established to provide leadership in electricity conservation and demand management and advance an energy conservation culture in Ontario. Water efficiency would benefit from a similar role.

ACTION: Establish a Chief Water Efficiency Conservation Officer of Ontario

Identify "Priority Subsectors" where opportunities for Water Conservation are high

Establish a multi-stakeholder project team for each Priority Subsector to develop targets and action plans

Oversee development of Priority Subsector targets and action plans

Measure, track and regularly report on performance against water conservation targets and the level of water conservation mentality among the public

Collaborate with other provinces and the federal government towards common goals and objectives

Advise on relevant government policy for conservation on an ongoing basis

Ensure the low-income and Aboriginal sectors are provided access to water efficient practices for climate change adaptation, energy savings and risk management and do not experience hardship as a result of government policies

Timing & Milestones

By the End of Calendar Year	Milestones
2009	• Establish a "Chief Water Efficiency Conservation Officer" • Implement Provincial and Residential Targets
2010	• Make water conservation "Easy and Automatic" • Conduct "Market Transformation and Gap Analysis" • Establish a "Strong, Scientific Backbone"

2011	• Implement all other Priority Subsector Targets • Complete all Priority Subsector action plans • Funding and rebate programs have been revised and expanded • Financial, Social and Technical capacity and resources are in place • Implement social marketing programs
2015	• Evaluate progress towards targets • Revise and adapt action plans as required

Targets

Provincial: Water Use in Ontario will be 20% more efficient by 2020

An overarching target is necessary to send clear signals to the province as a whole that efficiency is essential to our continued economic and ecological health. There are, however, challenges associated with setting such an overarching target in the absence of good, solid baseline information and knowledge of the *potential* for water savings in each sector. In spite of the challenges, an aspirational target provides incentive for change and a benchmark with which to gauge progress in 5 years when the requisite baseline, benchmarks and best practices information is available.

The target as stated was developed using the best available information. A 20% increase in efficiency by 2020 would result in a residential per capita water use of 208 LCD and a gross per capita water use of 385 LCD[2]. A study in the Region of Durham demonstrated that by installing High Efficiency Toilets (HETs), high efficient showerheads and horizontal axis clothes washers, an indoor residential water use of 150 LCD could be sustained - an estimated 35% increase in efficiency for the residential sector. This target is more aggressive than the BC target and less aggressive than the Great Lakes and St. Lawrence Cities Initiative. British Columbia is targeting a 33% increase in efficiency by 2020, however B.C. has a gross per capita water use of 649 LCD meaning Ontario is already 26% more efficient than B.C. based on this metric. The Great Lakes and St. Lawrence Cities Initiative target is to achieve a 15% reduction below 2000 levels by 2015 – an estimated overall increase in efficiency of 35% to counterbalance population growth of 20%. In short, a 20% increase in efficiency is achieveable, and provides a balance between other Canadian jurisdictional targets.

Challenges	Rationale
Baseline is inaccurate, out of date	The target is today based the 2004 Environment Canada MUD database. This target must be reviewed and revised following improved understanding of Ontario's total water use and current uptake of efficiency measures. Until a good baseline is available, this target provides a driver for efficiency.
This target could be unfair to communities who have already implemented efficiency	This target is an overall, average target, supported by Priority Subsector targets. Ontario as a whole is aiming for 20% increase in efficiency, not necessarily

[2] Calculated from the 2004 MUD Database baseline of 480 LCD gross and 260 LCD residential

measures	individual sectors, munis, etc. who have already incorporated best practices.
The target is not based on any tangible ecological benefit.	The goal at this level is for the province to provide the "leadership" necessary to enable local action. This goal serves simply to drive increased "efficiency" of Ontario to increase long term competitiveness, improve our capacity to adapt to climate change impacts, and to demonstrate we acknowledge that water has value and we should not be wasteful. Watershed based targets will address the need for ecologically based targets.

Residential: TARGET 170 - 50% of homes will use less than 170 LCD for indoor water use by 2020

The purpose of an absolute, residential indoor water use target is to encourage *efficient* use of water, in all communities regardless of a perceived abundance of water or low population growth rates. Target 170 quickly communicates an acceptable benchmark for communities to gauge their water use. A per capita residential indoor water use target does not penalize progressive communities that have already reduced their residential water demand nor communities where industrial and commercial use may inflate their gross (total) per capita demands. An absolute, per capita target is much clearer than a percentage based target for which a reference point must be specified, and thereby encourages action despite an ill defined baseline.

The target is based on available, good, science. Pilot studies have demonstrated that new homes can achieve 120-170 LCD indoor demands with little or no behavioural changes required[3]. The residential sector in Ontario (population) is projected to grow by 18% between 2008 and 2020[4]. Getting our building codes right TODAY would easily ensure that 20% of homes meet or exceed 170 LCD with little or no effort. Setting water efficient standards in line with US requirements for residential fixtures would ensure that water wasting toilets and washing machines that are replaced over 10 years would equate to an estimated additional 30% of homes meeting 170 LCD[5].

The Queensland Water Commission used a similar strategy (absolute per capita based target) effectively to achieve "Target 140" in 2 years (as opposed to 10 years to achieve 50% of homes meeting 170 LCD) and a number of other industrialized countries have 100% of homes averaging less than 170 LCD[6].

Finally, this objective was developed to support the provincial water efficiency target of 20% by 2020. Best estimates of current *total* (indoor and outdoor) residential water use are 260 LCD. A 20% increase in residential efficiency would result in a target of 208 LCD. The proposed "50% of homes use

[3] Veritec Consulting (2008) *Water Savings Potential in New Homes.*
[4] Ministry of Finance. Ontario Population and Selected Characteristics. Accessed at: http://www.fin.gov.on.ca/english/economy/demographics/projections/2007/demog07t3.html
[5] Estimated by assuming replacement rates estimated at 4%-7%/yr. SDGE, a Sempra Energy Utility, http://www.sdge.com/forms/washersDryers.pdf & Water Conservation Plan Guidelines, United States Environmental Protection Agency, August 6, 1998
[6] Ontario Ministry of the Environment (2007)Developing Ontario's Water Conservation and Efficiency Goals Objectives and Programs: Background Information for August 28, 2007 Workshop.

170 LCD" target equates to an average provincial *indoor* use target of 200 LCD – therefore a slightly less aggressive target than the provincial target of 190 LCD [need to rework rationale somewhat].

Challenges	Rationale
May be a problem for un-metered communities to establish their residential per capita water demand	Communities have 10 years to reach this goal and metering is a first step toward improving water efficiency.
May present a hardship for low-income communities or communities with few resources developed.	Partnered with extension services including social, technical and financial capacity. Target is 50% of homes across Ontario – the majority of Ontario's population is in medium and large urban centres that can meet the target.
Excludes outdoor water use	Outdoor water use is difficult to specify on an absolute per capita basis because of widely varying climatic conditions, lot size and behavioural practices. The provincial target of 20% more efficient by 2020 will encourage communities and homeowners to reduce outdoor use.
Because it excludes outdoor water use, difficult for users to measure and monitor	Provide guidance to water utilities to enable them to report on water utility bills winter (indoor) per person consumption; monthly per person consumption and target water use so homeowners SEE their water use in comparison to the provincial target.
Goal is not based on any tangible ecological benefit	The goal at this level is for the province to provide the "leadership" necessary to enable local action. This goal serves simply to drive increased "efficiency" of Ontario to increase long term competitiveness, improve our capacity to adapt to climate change impacts, and to demonstrate we acknowledge that water has value and we should not waste. All water saved, particularly in high use areas *does* have an ecological benefit. Watershed based targets will further address the need for ecologically based targets.

Other Priority Subsectors: Water Efficiency Officer and Multi-stakeholder Project Teams will establish Priority Sub-Sector based targets by 2011

Sub-Watershed: Where a risk to water quantity (either drinking water source or ecological) has been identified through water budgeting, Low Water Response, or comments from the public, require development of sub-watershed conservation targets and action plans by 2012

The most logical scale to set ecologically based water use targets is at the sub-watersheds scale. A primary objective of the water conservation and use targets and action plans is to protect the ecological needs for water in addition to long term human needs. One example of such an approach is

in the Delaware River Basin in Southwestern Pennsylvania where numerical withdrawal limits are specified for many watersheds based on actual available baseflow[7]. From an ecological standpoint, sub-watersheds that are currently stressed, or projected to be quantifiably stressed in the future, should establish conservation targets to reduce water withdrawals from the basin. Although the Clean Water Act provides similar protection for stressed watersheds, the protection should extend to watersheds that do not jeopardize drinking water supplies but are nonetheless ecologically stressed.

Water budgets are being completed as a requirement of the Clean Water Act for drinking water source protection. The Clean Water Act currently requires identification of risks to municipal supply in terms of water quantity and requires source water protection plans to address these risks. An additional requirement for establishing sub-watershed water conservation targets and action plans must build on and harmonize with the existing Clean Water Act, Permit to Take Water and Low Water Response requirements, resources, roles and responsibilities.

The tangled web of regulations and requirements stemming from the Clean Water Act, PTTW process and Low Water Response makes identifying a clear plan of action difficult. A process should be developed in consultation with stakeholders whereby the existing water budgeting process would highlight a risk to water quantity (including an ecological risk), followed by an additional screen to verify the actual risk to the sub-watershed to avoid unnecessary action as a result of poor data. The process must also specify who would prepare the watershed water conservation plan, the stakeholders to include, and may require piloting of the process to navigate challenging decision making processes given multi-sector stakeholders will be impacted and involved. Wherever possible, regulations and requirements should be streamlined, harmonized and clarified including providing knowledgeable experts on the ground to assist water users in navigating the multitude of new and complex requirements.

Challenges	Rationale
Watershed based targets can result in an unlevel playing field	Each sector is guided by sector specific goals for efficiency and the overarching provincial goals to create a level playing field. An unlevel playing field makes sense on an ecological basis as water availability is a non-negotiable entity; it makes sense for residential/industry/ag growth to be located where sufficient water exists and where each sector can continue to thrive.
Water Budget Data is not yet fully available, may create delays	Provincial target and early actions will incentivize change. Data collection and reporting is required under the Clean Water Act and PTTW and will be forthcoming.

Sector Based Plans

The Sector Based Plans are intended to support Priority Subsectors in achieving the provincial target for improved water efficiency, conservation and productivity. The plans should be developed by a project team comprised of subsector stakeholders under the guidance of the Water Efficiency Officer. The plans should be based on market based research and a gap analysis of resource needs to ensure

[7] http://www.nj.gov/drbc/99AR6.pdf

actions are suited to the needs of the intended recipients and stakeholders and make efficient use of existing resources. The plans must be made publicly available, and a public reporting process established to disclose progress made against established targets. The Water Efficiency Officer must review and revise subsector plans regularly to adapt to changing knowledge, expertise, societal and market conditions.

Assess the Market by 2010

To ensure effective, efficient action plans are developed, first an understanding of the barriers to adoption of best practices must be gleaned. To some extent, the Ministry's sector consultation process may have achieved this objective. There are a multitude of stakeholders who can influence the uptake of a water efficient product or practice, either positively or negatively. In order for a new technology or practice to take hold in the marketplace, a number of professions have to support their profusion. For example: citizens, consumers, retailers, wholesalers, home builders, plumbers and inspectors, stakeholder group and trade associations, and practitioners including farmers, engineers, architects and installers all have an important role in affecting the transformation of the marketplace. Insight into the approaches and required resources best suited to overcoming these barriers for each major stakeholder group will increase the effectiveness of targeted actions and accelerate market transformation of water efficient products, technologies and practices.

ACTION: Conduct a market transformation analysis of multi-sector stakeholder groups to identify best strategies for overcoming barriers to adoption of best practices by 2010

Resource Gap Analysis by 2010

With knowledge of approaches and required resources to increase adoption of best practices in each sector, an analysis of the extent to which existing resources can be leveraged and new resources required should be completed. Multi-stakeholder project teams should be engaged in this process to identify existing resources that may be leveraged.

ACTION: Conduct a gap analysis of resources (technical, social, financial) required for each sector to overcome barriers identified in the market transformation analysis by 2010

Priority Subsector Plans

Critical components of the action plans are noted in the "Create a Culture of Conservation" section and include: Capacity Building (financial, social and technical); Transformation of Values and Transformation of the Market (pricing and standards).

The barriers to the adoption of best practices in the municipal/residential sector are relatively well understood and therefore many action items have been specified herein. Many of these actions should be implemented immediately. However, insight from the market analysis and details on specific technical resources and expertise should be included in the municipal/residential action plan.

ACTION: Municipal/Residential – Draft an action plan comprised of actions specified herein, and include any additional actions required to address the findings of the gap analysis by 2011

Each sector (industry, businesses, institutions and agriculture) and subsector has specific water use needs (quantity and quality), different best management practices, processes, designs, and

technologies, unique conservation potentials, varied levels of progress to date and capacities to achieve further water conservation and efficiency goals. Therefore targets and action plans must be tailored to each subsector based on specific knowledge of their practices and needs. This requires consultation with and participation from each subsector as well as their respective associations.

The Alberta Water Council recently developed a framework for consulting with sectors to develop overarching plans that guide sectors in setting and meeting water conservation, efficiency and productivity goals, objectives, targets and actions. Ontario should employ a similar process, but require tighter timelines than Alberta to avoid delays, and focus on actions that provide obvious long term ecological and economic (i.e. increasing market competitiveness may require short term investment) benefit.

ACTION: Other Priority Sub-Sectors - Establish a process and action plan to identify, promote, encourage and, where necessary, mandate the adoption of best management practices by 2011

OBJECTIVE 2 - STRONG, SCIENTIFIC BACKBONE BY 2011

As of 2008, all holders of a Permit to Take Water (PTTW) are required to submit a schedule of planned and actual water takings as part of the Ontario Water Resources Act (OWRA) and the Water Taking Regulation (WTR). However, the data is not currently summarized nor publicly available. The Clean Water Act requires development of water budgets, an analysis of risk to water quantity and Source Water Protection Plans which may include conservation objectives.

Good solid science and data gathered in a consistent manner is necessary to establish effective baselines, support a solid understanding of provincial and sub-watershed water use and to assess the potential for water efficiency and conservation. Establishing a database of baseline data, benchmarks and Best Management Practices (BMPs) for each Priority Subsector is essential to enable comparison of the temporal water efficiency and productivity of individual water users, to compare current water use to best practices within subsectors, and to compare and contrast water use across subsectors.

Ontario has recently established a solid basis for securing this required information with the PTTW system and the CWA. The Province should continue to monitor the quality of the data, the format of the data and disclose the data publicly with the aim of ensuring the information collected is useful.

Water Budgets & Baseline Data

ACTION: Build on existing PTTW and CWA requirements to ensure reliable, comprehensive data is collated for all water users in a watershed and made publicly available for water use decision making by 2010

Benchmarks

A benchmark is "a standard by which something can be measured or judged". For example, benchmarks for residential indoor water use in Ontario have been stated as approximately 250 LCD prior to the 1996 Building Code change, 200 LCD for new homes meeting the current code, and 150

LCD assuming all fixtures are "high efficiency"[8]. These benchmarks provide a standard by which the current water use of municipalities, individual homes and even the province can be measured or judged.

Similar numerical benchmarks for industrial, commercial and institutional water use are much less defined or non-existent – largely because water is used in each of these sectors for widely varying purposes. However, benchmarks for Priority Subsectors such as food processing, golf-courses, etc. could likely be established. For example, in Australia, a "Water Toolkit" complete with benchmarks for each food processing type have been established in kL of water consumed/unit product[9]. Such a benchmark could prove very useful to evaluating the potential for water savings in Priority Subsectors. The Province should ensure current data collection protocols support collection of data in a format conducive to establishing current water use benchmarks and comparing to best practice benchmarks.

ACTION: Build on existing PTTW requirements for reporting water use to ensure a standardized format, consistent with establishing subsector specific benchmarks, is in place

ACTION: Multi-stakeholder Project Teams should identify benchmarks for best management practices for each Priority subsector

Best Management Practices

New permits require identification of existing and planned use of BMPs. Each Priority Subsector is anticipated to have a suite of best management practices, some of which can be, or are already, formalized in written form (i.e. irrigation BMPs published by OMAFRA, OWWA BMPs for residential water efficiency, etc.). Looking to subsector stakeholder groups to identify BMPs is essential and logical, the MOE should ensure it develops in house expertise and training for officers surrounding these BMPs to support permit holders and applicants. Furthermore, some degree of standardization of permit applications (i.e. include a list of typical subsector specific water efficiency BMPs) may increase the ability of the province to assess uptake of BMPs in each sector with time.

ACTION: Each Multi-stakeholder project team should identify BMPs for each Priority Subsector including opportunities for use of rainwater, greywater and wastewater reuse

ACTION: Build on new permit requirements for reporting water efficiency BMPs by clarifying, collating and housing identified BMPS in sector specific clearinghouses

ACTION: Build on existing PTTW reporting requirements to ensure meaningful, standardized (where possible) information on BMPs currently in use is being collected for Priority Subsectors

[8] Veritec Consulting (2008) *Water Savings Potential in New Homes*
[9] http://www.plentyfoodgroup.com.au/water/

OBJECTIVE 3 – CREATE A CULTURE OF CONSERVATION BY 2012

Stimulate a Creative Economy

"The Industrial Economy is giving way to the Creative Economy....the Darwinian struggle of daily business will be won by the people--and the organizations-- that adapt most successfully to the new world that is unfolding."[10] The creative economy is built on "ideas" in place of physical capital. Ideas enable optimization of existing resources providing knock on environmental and cost savings co-benefits. The Creative Economy invests in people and ideas as opposed to hard infrastructure. This is the way of the future, and the way to achieve a water efficient, energy efficient, and low carbon future that will prosper ecologically and economically in the future.

This Blueprint suggests a transformation of the way we use water and resources – with the Province's energy efficiency policies and plans paving the way for change. Transformation of the market, and the regulations and social capital that will keep our markets current with the international marketplace now and in the future, will phase out the need for government intervention in the form of rebates and financial incentives. Until this transformation penetrates our value systems and our purchasing processes, our leaders must stimulate the transition.

Financial Capacity

Water conservation is the most economical source of "new water". Water efficiency measures save more than water – energy, greenhouse gas emissions and the costs of adapting to the impacts of climate change on available water resources represent significant cost savings. In B.C., to be considered for provincial infrastructure funding municipalities are required to submit water conservation plans with grant application [OLIVER – do you have a reference?]. Requiring conservation plans as a condition for funding ensures taxpayer dollars are utilized where they are needed most and communicate to municipalities that conservation is a viable form of new water.

A number of green infrastructure funds and rebate programs exist, and a cost effective and efficient instrument to increase purchases and retrofits of water efficient fixtures and equipment is to expand existing funding and rebate programs. The incremental costs of additional rebates and extended visit time for energy efficiency auditors who are already in homes and businesses, are small in comparison to the knock on effects of reduced energy costs for municipalities, the increase in business for retailers, and long term risk management against declining water supplies and droughts that may result from climate change. British Columbia has also recognized the importance of providing audits and rebates to retrofit existing inefficient fixtures with efficient technology and includes a similar initiative in its Living Water Smart Strategy.

Incorporating water efficiency measures into existing green infrastructure funding can be revenue neutral – by simultaneously reducing the funding of grants for infrastructure expansions while increasing grants for sustainable water infrastructure. Promoting long term sustainability of water, energy and financial resources should be a key criteria for funding to ensure efficient use of limited dollars. For example, Class Environmental Assessments for pipeline retrofit projects (to recover lost capacity) are much less complicated or expensive than finding and building new supplies. Fast-tracking funding for leaky water mains projects creates jobs; saves water and increases system capacity; reduces energy costs and decreases GHG emissions; and saves costly clean up and repair work resulting from a broken water main.

[10] 'Ontario in the Creative Age,' in Toronto on Thursday, Feb. 5, 2009.

ACTION: Require water conservation plans and programs as eligibility criteria for provincial funding of large-scale water and wastewater projects by 2012

MUNICIPAL/RESIDENTIAL

Revise eligibility criteria for funds such as FCM's Green Municipal Fund; Building Canada COIP fund, etc.

Provide funding incrementally based on evidence of water conserved

Require submittal of accurate baseline information to benchmark water conserved

OTHER PRIORITY SUBSECTORS:

Identify government funding and programs for water and ensure conservation, efficiency and productivity are conditions for funding

ACTION: Modify and expand existing green infrastructure funds and rebate programs for all sectors

ALL SECTORS

Ensure MEI[11] and OPA[12] funding programs recognize the water-energy link and include water saving initiatives

Examples include the Municipal Eco-Challenge fund; the Electricity Retrofit Incentive Program; the Industrial Energy Efficiency Program, etc.

MUNICIPAL/RESIDENTIAL

Revise infrastructure funding programs to make water conservation and efficiency eligible for funding by 2012 [need to check that its not already!]

Expand funds such as FCM's Green Municipal Fund; Building Canada COIP fund, etc. to recognize water conservation as a form of infrastructure. For example, provide infrastructure funding for development of water efficiency plans, offering rebate programs, ICI audits, etc.

Incorporate water efficiency measures into "Ontario Home Energy Savings" Program (Residential ecoENERGY program)

Six litre toilets are already offered as rebates, however this rebate should be revised to High Effiicency (4.8 L) toilets only, and add rebates offered for horizontal axis residential clothes washers, which offer significant hot water energy savings. The Province should encourage federal government to provide the matching rebates to increase uptake.

[11] Ministry of Energy and Infrastructure
[12] Ontario Power Authority

Prioritize and fast-track funding for sustainable water infrastructure

Examples of funds that could be utilized to fast track sustainable water infrastructure include: Building Canada Fund; Canada-Ontario Infrastructure Program (COIP); Industry Canada's Ontario Potable Water Program; etc. Example of sustainable water infrastructure include: repairing and updating aging and leaky water mains, metering projects, wastewater reuse, rainwater, greywater recycling projects and/or pilots, distribution mains for water recycling.

COMMERCIAL & INSTITUTIONAL

Match rebates from the Canadian ecoEnergy Retrofit for Small and Medium Organizations for retrofits that save both water and energy

For example, include Pre-rinse spray valves for restaurants.

AGRICULTURE

Invest in the Environmental Cost-Sharing programs of the Environmental Farm Plan for implementation of Beneficial Management Practices for agricultural water efficiency by 2012

For example Increase the % of cost-share from 30% to 50% and increase the funding caps.

Social Capacity

Competent, water efficiency practitioners are essential to transforming the economy from a supply side, hard infrastructure paradigm to a demand side, creative economy paradigm. Knowledgeable, creative practitioners that work to optimize water use efficiency will serve Ontario's economy well in times to come. The success of regulatory transformation is contingent upon access to knowledge – people and tools. The Province should provide communities with extension services in the form of knowledgeable in house experts, access to organizations with expertise, training opportunities and in some cases financial resources to hire practitioners. Technical resources such as toolkits, guidelines, templates, best practices, etc. that are easily standardized will ease the transition for communities and avoid inefficiencies associated with developing programs from scratch.

In keeping with efficient use of resources, funding and extension services should make use of existing funds (i.e. Drinking Water Source Protection funds, Energy and Infrastructure funding, etc.) and organizations (Canadian and Ontario Water and Wastewater Associations, the Alliance for Water Efficiency, etc.) where possible.

ACTION: Foster development of competent water efficiency practitioners in all sectors by 2012

ALL SECTORS

Develop MOE expertise in water budgeting, water conservation and ecological needs and provide extension and outreach support to permit applicants, Source Protection Committees, OMAFRA, Irrigation Advisory Committees and Water Use Co-operatives, etc.

Through shared programs and partnerships provide funding for organizations to hire water conservation experts to assist with programming, develop expertise and transfer knowledge

MUNICIPAL/RESIDENTIAL

Provide training and financial support to an organization to deliver water conservation and efficiency auditing and rebate services for residential and ICI sectors

Green Communities Canada has developed capacity to deliver EcoEnergy, EcoAction and Well Aware programs. The Home Energy Audit should be expanded to provide a walk-through assessment of homeowner's water uses, offer toilet/faucet testing to evaluate for leaks, install free faucet aerators and high efficiency showerheads (where available, for example from Union Gas). The auditor and organization should educate the homeowner and the public about the availability of water efficiency rebates (widely unknown that a $100 rebate is offered for 6L toilets).

These organizations could be equipped with training to deliver a standardized fixture rebate program, Outdoor and ICI water audits and Community Base Social Marketing programs. Municipalities could then have the option to partner with the organization, for example with a base fee and pay per rebate issued; they would save the cost of developing and delivering individualized programming (reinventing the wheel). This program would ensure that only "approved" WaterSense labeled toilets are rebated and that new "approved" technologies can be seamlessly implemented into communities as they become available.

Provide financial resources to existing, effective, capacity building networks such as the CWWA and OWWA Water Efficiency Committees, the Alliance for Water Efficiency

Many of these organizations have no base funding and could greatly expand their outreach capacity with permanent staff.

OTHER PRIORITY SUB-SECTORS

Develop actions to address any needs for social capacity identified in Gap Analysis

Technical Tools & Resources

A recent CWWA Benchmarking study clearly indicated that many municipalities across Canada do not understand how water is used within their communities, without this understanding, targets are meaningless. It is critical for low capacity municipalities to have generic water conservation plans, templates and programs "on the shelf" ready to give them a head start to avoid starting from scratch.

ACTION: Develop and provide access to tools and resources that enable water conservation and efficiency planning and action for all sectors by 2012

ALL SECTORS

Provide access to water conservation and efficiency auditing toolkits, detailed guidelines, templates for planning, model bylaws, best management practices and other resources for all priority sub-sectors

Work with existing clearinghouse(s) (i.e. the Alliance for Water Efficiency, OMAFRA, etc.) to provide a central location, familiar to each sector, for all resources and tools

Research & Development

ACTION: Foster research and development into new water efficient technologies, practices, and alternative sources of water (rainwater, greywater, reuse) by 2012

ALL SECTORS

Shift funding for water research from end-of pipe solutions to innovative, ideas oriented solutions that focus on optimizing water use in all sectors

Transform Values

Based on the market tansformation analysis, co-ordinate a social marketing campaign to transform Ontario's perception of water to one of respect and value [need better wording – Tony?]. Work with other provinces and federally to share information and pool resources to develop effective programming. Educate Ontarians about the importance of the link between water use, energy, greenhouse gas emissions and climate change adaptation. Provide core funding to established water conservation education groups like Children's Water Education Council, who already have the capacity and reach to educate.

ACTION: Develop a Social Marketing Campaign for Water Conservation, based on the findings from the market analysis, by 2012

Transform the Market

Price it Right

ACTION: Price water according to its true and full value and ensure medium and large sized urban communities are moving towards volume based (conservation) pricing.

MUNICIPAL/RESIDENTIAL

Conduct a review of financial plans submitted in accordance with the Financial Plans Regulation to identify gaps in responsible, sustainable planning for water provision provincially by 2011.

The financial plans regulation encourages municipalities to introduce full-cost pricing. Financial plans are required by July 2010 and will outline the full-costs of providing water. There are a large number of municipalities (low-income, small, northern, etc.) who may be unable to fully recover the costs of municipal water infrastructure and operation for a number of reasons. The intent of pricing water according to its full cost is to move away from a culture of "cheap water" in areas where residents can easily "afford" to waste water. Full cost pricing remains a key recommendation from the Environmental Commissioner of Ontario. The Province should aim to continue to move towards this goal, whilst avoiding undue hardship on low-income communities.

If a review of the financial plans suggests that full cost and volume based pricing are not planned in the majority of urban communities, develop a plan of action to ensure implementation of full cost and volume based pricing in these communities.

OTHER PRIORITY SUB-SECTORS:

Propose pricing related actions to incentivize conservation based on results of the gap analysis.

Make Conservation Easy & Automatic

Municipalities are spending millions of dollars per year on rebate programs that would no longer be necessary if water wasting fixtures (13L toilets, etc.) were banned. Toilet manufacturers have stated that banning 13 L toilets would create a level playing field and allow them to phase out old manufacturing lines as they have done in the USA[13]. The US Energy Policy Act sets minimum water efficiency standards for both new construction and all point of sale transactions. Furthermore, the US Secretary of Energy has "the authority to adopt new or revised efficiency standards on an expedited basis if such standards are jointly proposed by multi-stakeholder groups, including manufacturers, States, and efficiency advocates". Ontario should adopt similar standards.

The Building Code changes in 1996 were instrumental in increasing Ontario's water efficiency. Mandating efficient fixtures, and updating specifications regularly, makes purchasing the most efficient technology easy and automatic for consumers and incentivizes development of new technology. Installing best available technology is much more cost effective than conducting retrofits later.

ACTION: Require minimum water efficiency standards that meet or exceed existing international standards and institute a 3 year review cycle to keep Ontario current

MUNICIPAL/RESIDENTIAL

Require minimum water efficiency standards that meet or exceed existing international standards in the Ontario Building Code and the Energy Efficiency Act by 2010; and increase review cycle to 3 years

Requirements must extend beyond new construction to manufacturers and point of sale transactions (i.e. BAN 13 L TOILETS and other inefficient fixtures). Mandate High Efficiency Toilets (4.8 L) by 2015 for both residential and commercial sectors[14]. Include clothes washer and dishwasher standards that meet or exceed US standards[15]. Mandate purple pipes (water collection and reuse) and investigate feasibility of hotwater recirculation plumbing rough-ins in new home construction by 2015[16].

New standards should be coupled with a re-education program for plumbing inspectors and improved technical resources for innovative technologies such as rainwater harvesting, greywater reuse, etc. (i.e. provide a series of technical templates and background to base approval decisions on, etc.).

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13 http://www.region.waterloo.on.ca/web/Region.nsf/8ef02c0fded0c82a85256e590071a3ce/5AD72F4F812093FD8525742B0062C3A4/$file/E-08-036.pdf?openelement

14 Reference: California mandating HETs by 2014

15 Reference: US Energy Policy Act Revision of 2005, 2007 and Energy Independence and Security Act in 2008

16 Reference: BC's Living Water Smart Strategy

OTHER PRIORITY SUB-SECTORS

Review sector specific standards for opportunities to phase out inefficient technologies that are agreed upon by multiple stakeholder groups

Mandate pre-rinse spray values, commercial grade high efficiency toilets, irrigation systems, etc. for new construction and all point of sale transactions to meet US and California standards.

ACTION: Partner with EPA's WaterSense label and specification program to benefit all sectors by 2010

Build on the success of the EnergyStar program. Encourage stakeholders to become WaterSense partners including municipalities, builders, retailers, irrigation sector, etc. Advocate federally for a national organization to administer a Canadian WaterSense program, equivalent to its US counterpart.

DRAFT--FOR DISCUSSION PURPOSES ONLY
Council of Great Lakes Governors' Water Use Information Initiative
January 29, 2009

Face-to-face meeting of Committee to discuss draft recommendations and make revisions	January 13-14, 2009
WUI Committee conference call	January 21, 2009 2:00 p.m. EST
Conference call held with Advisory Panel and Tribes/First Nations to discuss draft documents	Wednesday, February 4, 2009 Tribes/First Nations: 2:00 p.m. EST Advisory Panel: 3:00 p.m. EST
Conference call meeting to discuss feedback from Advisory Panel, Tribes and First Nations and changes to draft documents.	February 25, 2009 11:00 a.m. EST
Interim grant report to GLPF due.	March 10, 2009
Draft documents finalized for public input period.	March 11, 2009
Documents sent to Advisory Panel, Tribes and First Nations in advance of public input period.	March 23, 2009
30-day public input period begins.	March 25, 2009
Public input period closes.	April 27, 2009
Public comments distributed to States and Provinces, Advisory Panel, Tribes/First Nations.	May 4, 2009
Committee call to consider changes to draft documents based on public comment.	May 15, 2009
Documents finalized.	May 29, 2009
Final documents distributed to Advisory Panel, Tribes and First Nations.	June 5, 2009
Conference call held with Advisory Panel, Tribes and First Nations to provide briefing on final recommendations	June 12, 2009 Tribes/First Nations 2:00 p.m. EST Advisory Panel 3:00 p.m. EST
Interim grant report to GLPF due.	June 9, 2009
Final recommendations shared with Regional Body	June 26, 2009
Final recommendations adopted by Regional Body	TBD

GLPF grant closes. Final report due from CGLG staff.	July 20, 2009

Consumptive Use Coefficients

Water Use Category	ILLINOIS	INDIANA	MICHIGAN	MINNESOTA	NEW YORK	OHIO	ONTARIO	PENNSYLVANIA	QUEBEC	WISCONSIN
Public Supply	10-15%	15%	10-15%	10-15%	10%	10-15%	15%	10%	10-15%	10-15%
Self-Supply Domestic	10-15%	15%	10-15%	10-15%	10%	10-15%	15%	10%	10-15%	10-15%
Self-Supply Irrigation	90%	90%	90%	90%	90%	90%	78%	90%	90%	70%
Self-Supply Livestock	80%	80%	80%	80%	90%	80%	80%	80%	80%	90%
Self-Supply Industrial	Varies by plant & SIC code	6%	10-15%	Varies by plant & SIC code	25%	10%; salt mining is 90%	Varies by plant & SIC code	Varies by plant & SIC code	10% for pulp & paper industry	10.2% for manufac-turing & mining
Self-Supply Thermoelectric (Fossil Fuel)	Individually estimated based on the quantity of make-up water	2%	1-2% for plants using once-through cooling; individual analysis for wet cooling towers	2%	2%	Individually estimated based on the quantity of make-up water	.9% based on reports of increased local lake evaporation due to discharge of heated water to lakes	NA (Pennsyl-vania has no facilities in the basin)	10%; estimates obtained from USGS report	.5-1%
Self-Supply Thermoelectric (Nuclear)	Individually estimated based on the quantity of make-up water	NA (Indiana has no facilities in the basin)	1-2% for plants using once-through cooling; individual analysis for wet cooling towers	NA (Minnesota has no facilities in the basin)	5%	14% based on reports of increased local lake evaporation due to discharge of heated water to lakes	.9% based on reports of increased local lake evaporation due to discharge of heated water to lakes	NA (Pennsyl-vania has no facilities in the basin)	NA (Quebec has no facilities in the basin)	.5-1%
Hydroelectric	Coefficient for all states and provinces is 0%									
Self-Supply Other	0%	12%	Varies based on use	Varies based on use	Varies based on use	Varies based on use	Varies based on use	Varies based on use	Varies based on use	Varies based on use

Figure 4

Definitions and Abbreviations

General Definitions and Abbreviations

- **bgd**: billion gallons per day
- **bld**: billion liters per day
- **consumptive use**: that portion of water withdrawn or withheld from the Great Lakes basin and assumed to be lost or otherwise not returned to the Great Lakes basin due to evapotranspiration, incorporation into products, or other processes
- **Great Lakes surface water (GLSW)**: the Great Lakes, their connecting channels (the St. Clair River, the Detroit River, the Niagara River and the St. Marys River), and the St. Lawrence River
- **groundwater (GW)**: all subsurface water
- **interbasin diversion (positive)**: water transferred from the Great Lakes basin into another watershed
- **interbasin diversion (negative)**: water transferred from another watershed into the Great Lakes basin
- **intrabasin diversion (positive)**: water transferred out of one Great Lakes watershed into another
- **intrabasin diversion (negative)**: water transferred into one Great Lakes watershed from another
- **level of accuracy**: the quality of data based on percentage of total volume and rated as 1) measured; 2) partially measured or: 3) estimated,
- **level of aggregation**: the quality of data based on percentage of total volume and rated as 1) originating from site-specific sources or 2) originating from higher level aggregate sources, such as county or census databases
- **mgd**: million gallons per day
- **mld**: million liters per day
- **other surface water (OSW)**: tributary streams, lakes, ponds, and reservoirs within the Great Lakes basin
- **principal facility**: facilities withdrawing in excess of the Great Lakes Charter uniform trigger level of 100,000 U.S. gallons/day (380,000 liters/day) average over a 30-day period. A principal facility is determined by the total withdrawal (or consumption) of all sources combined (Great Lakes surface water, other surface water, and groundwater) rather than a single source. The combined withdrawals (or consumption) of separate wells or operations undertaken by the same facility or company will be evaluated separately for the purpose of determining principal facility status unless those operations are covered under the same registration (or permit) or are physically contiguous. Principal facilities are a subset of all facilities in the database.
- **tgd**: trillion gallons per day
- **tld**: trillion liters per day
- **withdrawal amount**: water removed or taken from surface or groundwater (including hydroelectric use)

Water Use Category Definitions

1. **Public Water Supply:** Water withdrawn for all uses by public and private water suppliers and delivered to users that do not supply their own water. (Water suppliers provide water for a variety of uses such as residential, commercial, industrial, and public water use.)
2. **Self-Supply Domestic: (residential, commercial, institutional):** Water used for normal household purposes. Also referred to as residential water use, this category includes water used for drinking, food preparation, bathing, washing clothes and dishes, flushing toilets, and watering lawns. Commercial uses include water used by motels, hotels, restaurants, office buildings and institutions, both civilian and military. This category also includes water for mobile homes, hospitals, schools, fire fighting, air conditioning and other similar uses not covered under a public supply. In addition, this category includes amusement and recreational water uses such as snowmaking and water slides. The coefficient for domestic per capita water use is 75 gallons a day (U.S.) unless otherwise indicated by the reporting state or province.
3. **Self-Supply Irrigation:** Water artificially applied on lands to assist in the growing of crops and pastures or in the maintenance of recreational lands, such as parks and golf courses.
4. **Self-Supply Livestock**: Water used by horses, cattle, sheep, goats, hogs, poultry, and other commercially important animals. Water used in fish hatchery operations are also included under this category.
5. **Self-Supply Industrial (manufacturing and mining):** Industrial water includes water used in the manufacture of metals, chemicals, paper, and allied products. Mining water use includes water used in the extraction or washing of minerals; for example solids, such as coal and ores, and liquids such as crude petroleum and natural gas. Water used in quarrying and milling is also included in the industrial category. Brine extraction from oil and gas operations is not included. Withdrawals and consumptive uses for industrial and mining purposes (including dewatering operations) recorded under another category (e.g., public supply) will not be recorded here. Water used in a closed cycle (recirculation) will not be reported as a withdrawal. Other situations should be evaluated on a case-by-case basis.
6. **Self-Supply Thermoelectric Power (fossil fuel plants):** Water used by plants fueled by fossil fuels such as coal, oil or natural gas. Withdrawals and consumptive uses already recorded under another category (e.g., public supply) will not be reported here.
7. **Self-Supply Thermoelectric Power (nuclear plants):** Water used by plants fueled by nuclear generation. Withdrawals and consumptive uses already recorded under another category (e.g., public supply) will not be reported here.
8. **Self-Supply Hydroelectric Power:** Water used to drive turbines that generate electric power. This category includes both "instream use" where water is used on a once-through basis and "offstream use" where water is recycled through pumped-storage systems. Neither use is considered a consumptive use.
9. **Self-Supply - Other**: Water used for purposes not reported in categories one through nine. Examples include, but are not limited to, withdrawals for fish/wildlife, environmental, recreation, navigation, and water quality purposes. Specifically, water used to maintain levels for navigation, for recreation, for fish and wildlife habitat creation and enhancement (excluding fish hatchery operations included under Category 5), for flow augmentation (or diversion), for sanitation, pollution confinement, and other water quality purposes and agricultural activities (services) other than those directly related to irrigation such as field drainage are included. Water used in temporary or immediate emergency situations (e.g., fighting forest or peat fires) is also reported here.

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II. GREAT LAKES BASIN SUMMARY TABLES

Water Use by Jurisdiction
Water Use by Basin
Water Use by Category

SUMMARY REPORT - GREAT LAKES BASIN

Units: Bgal(US)/d
Year Of Data: 2004

Water-Use by Jurisdiction - All Facilities

Jurisdiction	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Illinois	0.82	0.00	0.00	0.82	0.00	1.22	0.02
Indiana	2.59	2.15	0.12	4.86	0.00	0.00	0.18
Michigan	9.71	0.71	0.53	10.95	0.00	0.00	0.59
Minnesota	0.32	3.86	0.01	4.18	0.00	0.00	0.04
New York	133.91	180.35	0.13	314.40	0.00	0.04	0.32
Ohio	2.09	0.91	0.14	3.15	0.00	-0.01	0.17
Ontario	143.00	59.96	0.28	203.24	0.06	-4.01	0.28
Pennsylvania	0.04	0.01	0.01	0.05	0.00	0.00	0.01
Quebec	171.59	133.58	0.10	305.27	0.00	0.00	0.16
Wisconsin	3.36	0.02	0.18	3.57	0.00	0.00	0.14
Total:	**467.43**	**381.54**	**1.51**	**850.48**	**0.06**	**-2.76**	**1.90**

Water-Use by Jurisdiction - Principal Facilities

Jurisdiction	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Illinois	0.82	0.00	0.00	0.82	0.00	1.22	0.02
Indiana	2.59	2.14	0.09	4.82	0.00	0.00	0.17
Michigan					0.00	0.00	
Minnesota	0.32	3.85	0.00	4.18	0.00	0.00	0.04
New York	133.49	0.48	0.01	133.98	0.00	0.04	0.22
Ohio	2.09	0.91	0.07	3.06	0.00	-0.01	0.15
Ontario	0.49	0.38	0.09	0.96	0.06	0.00	0.11
Pennsylvania	0.04	0.01	0.00	0.04	0.00	0.00	0.01
Quebec	171.59	133.58	0.05	305.21	0.00	0.00	0.13
Wisconsin					0.00	0.00	
Total:	**311.43**	**141.34**	**0.31**	**453.08**	**0.06**	**1.25**	**0.85**

SUMMARY REPORT - GREAT LAKES BASIN

Units: Bgal(US)/d
Year Of Data: 2004

Water-Use by Basin - All Facilities

Basin	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Lake Superior	1.14	42.03	0.03	43.19	0.00	-4.01	0.08
Lake Michigan	10.19	2.61	0.69	13.49	0.00	1.22	0.65
Lake Huron	25.95	13.73	0.09	39.76	0.05	0.00	0.14
Lake Erie	56.54	1.27	0.37	58.18	5.82	-0.01	0.49
Lake Ontario	42.68	89.42	0.19	132.29	-5.80	0.04	0.35
St. Lawrence River	330.94	232.49	0.14	563.56	0.00	0.00	0.19
Total:	**467.43**	**381.54**	**1.51**	**850.48**	**0.06**	**-2.76**	**1.90**

Water-Use by Basin - Principal Facilities

Basin	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Lake Superior	0.35	3.87	0.01	4.23	0.00	0.00	0.05
Lake Michigan	3.41	2.11	0.08	5.59	0.00	1.22	0.18
Lake Huron	0.04	0.07	0.02	0.13	0.05	0.00	0.01
Lake Erie	50.76	0.98	0.14	51.88	5.82	-0.01	0.24
Lake Ontario	2.25	0.65	0.02	2.92	-5.80	0.04	0.22
St. Lawrence River	254.62	133.66	0.05	388.34	0.00	0.00	0.15
Total:	**311.43**	**141.34**	**0.31**	**453.08**	**0.06**	**1.25**	**0.85**

SUMMARY REPORT - GREAT LAKES BASIN

Units: Bgal(US)/d
Year Of Data: 2004

Water Use by Category - All Facilities

Category	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Public Supply	3.14	1.14	0.55	4.83	0.00	1.01	0.60
Domestic Supply	0.04	0.04	0.37	0.46	0.00	0.00	0.06
Irrigation	0.01	0.16	0.29	0.46	0.00	0.00	0.34
Livestock	0.01	0.01	0.11	0.14	0.00	0.00	0.09
Industrial	3.82	0.46	0.17	4.45	0.00	0.00	0.38
Fossil Fuel Power	13.82	1.70	0.00	15.52	0.00	0.00	0.18
Nuclear Power	15.25	0.00	0.00	15.25	0.00	0.00	0.23
Hydroelectric Power	431.34	377.77	0.00	809.12	0.00	-4.01	0.00
Other	0.00	0.25	0.00	0.25	0.06	0.24	0.03
Total:	**467.43**	**381.54**	**1.51**	**850.48**	**0.06**	**-2.76**	**1.90**

Water Use by Category - Principal Facilities

Category	Withdrawals				Diversions		Consumptive Use
	GLSW	OSW	GW	TOTAL	Intrabasin	Interbasin	
Public Supply	1.67	0.82	0.18	2.66	0.00	1.01	0.34
Domestic Supply	0.00	0.04	0.06	0.10	0.00	0.00	0.01
Irrigation	0.00	0.02	0.02	0.03	0.00	0.00	0.03
Livestock	0.00	0.00	0.00	0.01	0.00	0.00	0.01
Industrial	2.30	0.34	0.06	2.70	0.00	0.00	0.24
Fossil Fuel Power	4.55	1.23	0.00	5.78	0.00	0.00	0.10
Nuclear Power	1.56	0.00	0.00	1.56	0.00	0.00	0.08
Hydroelectric Power	301.33	138.64	0.00	439.97	0.00	0.00	0.00
Other	0.00	0.25	0.00	0.25	0.06	0.24	0.03
Total:	**311.43**	**141.34**	**0.31**	**453.08**	**0.06**	**1.25**	**0.85**

STATE/PROVINCIAL REPORTING PROTOCOLS TO REGIONAL DATABASE

Introduction

In the Great Lakes-St. Lawrence River Basin Sustainable Water Resources Agreement (Agreement) and the Great Lakes—St. Lawrence River Basin Water Resources Compact (Compact), the Great Lakes States and Provinces committed to gather and share Water use information. This information will assist the Great Lakes States and Provinces in beginning to improve scientific understanding of the Waters of the Basin, the impacts of Withdrawals from various locations and Water sources on the Basin Ecosystem, understanding of the role of groundwater, and to clarify what groundwater forms part of the Waters of the Basin. It will also provide the basis for adaptive management. These protocols, jointly drafted by the Great Lakes States and Provinces, are intended to provide guidance on how information reported to the Great Lakes—St. Lawrence River Water use database is reported in a common and consistent manner to ensure these ends are met.

Agreement/Compact Commitments

In Article 301 of the Agreement and Section 4.1 of the Compact, each jurisdiction has committed to annually gather and share accurate and comparable information on all Withdrawals in excess of 100,000 gallons per day (379,000 liters per day) or greater average in any 30-day period (including Consumptive Uses) and all Diversions, including Exceptions. A Great Lakes–St. Lawrence River Water use database will be used for sharing of aggregate information, which will also be available to the public consistent with confidentiality requirements in Article 704 of the Agreement and Section 8.3 of the Compact.

Accurate and Comparable Information

Jurisdictions will collect Withdrawal and Consumptive Use data for in-Basin uses, and Diversion and Diversion return flow data, for all uses that exceed the thresholds in the Agreement and Compact. Jurisdictions will submit to the regional database each year aggregate data (meaning the total sum of all users) by:

1. Sector (see below); ,
2. Source (Great Lakes—St. Lawrence River surface water including the connecting channels and Lake St. Clair, other surface water including tributaries and inland lakes, and ground water);
3. Watershed (Great Lake or St. Lawrence River); and,
4. Total volumes of Withdrawals, Consumptive Uses, Diversions, and Diversion return flows.

Separately, jurisdictions are encouraged to collect and submit to the regional database data on Diversions *into* the Basin. Jurisdictions may also submit to the regional database data below the thresholds in the Agreement and Compact.

Water Use Information by Sector. Each jurisdiction will submit aggregate data to the Regional Database for each of the sectors defined below.

1. Public Water Supply. Water distributed to the public through a physically connected system of treatment, storage and distribution facilities serving a

group of largely residential customers that may also serve industrial, commercial, and other institutional operators. Water Withdrawn directly from the Basin and not through such a system shall not be considered to be used for Public Water Supply purposes.

2. Self-Supply Commercial, Institutional and Residential: Commercial uses include water used by motels, hotels, restaurants, office buildings and institutions, both civilian and military. This category also includes water for mobile homes, hospitals, schools, air conditioning and other similar uses not covered under a public supply. In addition, this category includes amusement and recreational water uses such as snowmaking and water slides. Residential uses include water used for drinking, food preparation, bathing, washing clothes and dishes, flushing toilets and watering lawns.
3. Self-Supply Irrigation. Water artificially applied on lands to assist in the growing of crops and pastures or in the maintenance of recreational lands, such as parks and golf courses.
4. Self-Supply Livestock. Water used by animals such as horses, cattle, sheep, goats, hogs and poultry. Water used in fish hatchery operations are also included under this category.
5. Self-Supply Industrial. Industrial water includes water used in the manufacture of metals, chemicals, paper, food and beverage and other products. Mining water use includes water used in the extraction or washing of minerals, for example solids, such as coal and ores, and liquids such as crude petroleum and natural gas. Water used in quarrying and milling is also included in the industrial category. Brine extraction from oil and gas operations is not included. Withdrawals and consumptive uses for industrial and mining purposes (including dewatering operations) recorded under another category (e.g., public supply) will not be recorded here. Once initially reported, water used in a closed cycle (recirculation) will not be reported as a withdrawal. Other situations should be evaluated on a case-by-case basis.
6. Self-Supply Thermoelectric Power Production (Once-through cooling). Withdrawals and consumptive uses already recorded under another category (e.g., public supply) will not be reported here.
7. Self-Supply Thermoelectric Power Production (Recirculated cooling). Withdrawals and consumptive uses already recorded under another category (e.g., public supply) will not be reported here.
8. Off-Stream Hydroelectric Power Production. Water used to drive turbines that generate electric power. This category includes "off-stream use" [e.g., reservoir storage] where water is recycled through pumped-storage systems.
9. In-Stream Hydroelectric Water Use. This category includes "run of the river" use which is not considered a water withdrawal or consumptive use. Reporting for this category is voluntary.
10. Other Self Supplied. Water used for purposes not reported in categories one through nine. Examples include, but are not limited to, withdrawals for fish/wildlife, environmental, navigation and water quality purposes. Specifically, water used to maintain levels for navigation, for fish and wildlife habitat creation and enhancement (excluding fish hatchery operations included

in category 4), for flow augmentation (or diversion), for sanitation, pollution confinement, and other water quality purposes and agricultural activities (services) other than those directly related to irrigation such as field drainage are included.

Source. Water use data for each of the sectors will indicate total volumes supplied by Great Lakes—St. Lawrence River surface water (including the connecting channels and Lake St. Clair), other surface water (tributaries and inland lakes), and ground water. Aggregate data for each of these sources will be submitted separately.

Consumptive Use Coefficients. To provide comparable information, each jurisdiction may apply a coefficient to the aggregate volumes of water appropriate to each sector of users. Jurisdictions will also request Consumptive Use data from water users and report this information. It is expected that the accuracy of measuring methods or coefficients will improve over time.

Submitting Water Use Data to the Regional Database

The States and Provinces will report data to the regional database on a calendar year basis. Time will be needed for jurisdictions to complete data entry and quality control protocols before the information can be provided to the Regional Database. Jurisdictions will submit aggregate data to the Regional Database by August 15th of each year for the previous calendar year. Annual reports will be prepared and completed by the Regional Database Repository by November 15th covering the previous year's water use data.

WATER USER REPORTING PROTOCOLS

Agreement/Compact Commitments

In Article 301 of the Agreement and Section 4.1 of the Compact, each jurisdiction has committed to requiring water users to report their monthly Withdrawals, Consumptive Uses and Diversions on an annual basis to the appropriate State/Provincial program. This requirement applies to all Withdrawals in excess of 100,000 gallons per day (379,000 liters) or greater average in any 30-day period and all Diversions and Diversion return flows.

Annual Water Use Reporting. Water users are required to maintain monthly records of the amount of Water Withdrawn, Consumptive Uses and Diversions and Diversion return flows and report this information annually on forms prescribed by the appropriate State/Provincial program. The States/Provinces may require additional information for administrative purposes or to address other provisions of the Compact/Agreement (e.g., the number of days each month withdrawals occurred, the minimum and maximum daily withdrawal quantities, quantities of discharges, water level/stream flow data, etc.) or other State/Provincial laws and regulations. At a minimum, the following elements will be required as part of the annual water user reports.

Method of Measurement. A number of accurate methods are available to measure water volumes. Some common measuring methods include flow volume or rate meters, water

levels and rating curves, flow gauging, discharge rates and timing devices. Methods of measurement approved by each State and Province for their jurisdiction will be reviewed in the Water Management Program Review required in Article 300 of the Agreement and Section 3.4 of the Compact.

Reporting of Withdrawals. Withdrawals are defined as the taking of water from surface water or groundwater (Agreement Article 103, Compact Section 1.2). Monthly totals for each installation used to supply a common distribution system will be required.

Reporting of Consumptive Uses. Consumptive Use is defined as that portion of Water Withdrawn or withheld from the Basin that is lost or otherwise not returned to the Basin due to evaporation, incorporation into Products, or other processes (Agreement Article 103, Compact Section 1.2).

Flexibility will be extended in how consumptive use quantities are obtained, allowing for the use of coefficients applied to withdrawal quantities, measurements based on a comparison of withdrawal and discharge quantities if appropriate, or other innovative approaches (all methods subject to approval by the relevant State/Province).

Reporting of Diversions. Diversions are defined as a transfer of water from the Basin into another watershed, or from the watershed of one of the Great Lakes into that of another by any means of transfer, including but not limited to a pipeline, canal, tunnel, aqueduct, channel, modification of the direction of a watercourse, a tanker ship, tanker truck or rail tanker but does not apply to water that is used in the Basin or Great Lakes watershed to manufacture or produce a Product that is then transferred out of the Basin or watershed (Agreement Article 103, Compact Section 1.2).

Since relatively few withdrawers divert water, the State/Provinces may want to have separate diversion annual reports for diverters (i.e., diverters would need to complete a withdrawal annual report and a diversion annual report).

Diversions allowed as Exceptions under Agreement Article 201 and Compact Section 4.9 require that "All Water Withdrawn from the Basin shall be returned, either naturally or after use, to the Source Watershed less an allowance for Consumptive Use." Therefore, annual water use reporting for Diversions allowed under the Exception Standard must account for water returned to the Basin or to the source Great Lake—St. Lawrence watershed. Methods of measurement approved by each State and Provinces will be reviewed as part of the approval process in Chapter 5 of the Agreement and Section 4.5 of the Compact.

USGS
science for a changing world

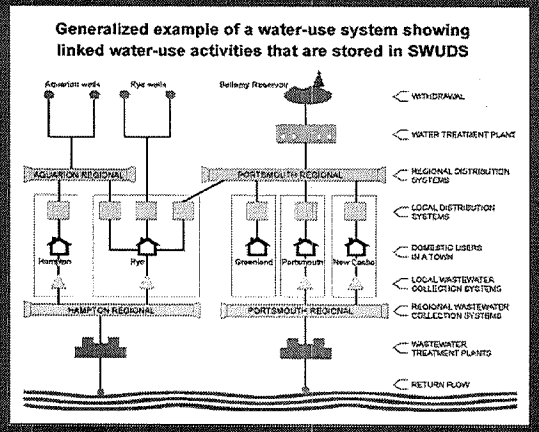
Consumptive Water-Use Coefficients in the Great Lakes Basin

Council of Great Lakes Governors
Water Use Information Initiative Meeting
Chicago, Illinois January 13, 2009

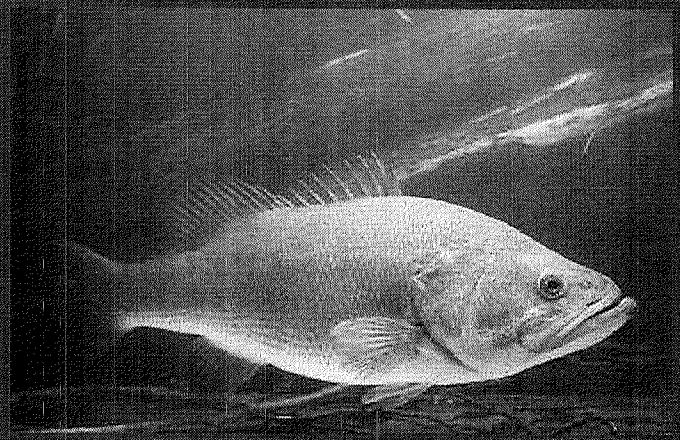
U.S. Department of the Interior
U.S. Geological Survey

USGS Water Census—Areas of Emphasis

Water Use Science



Ecological Flows



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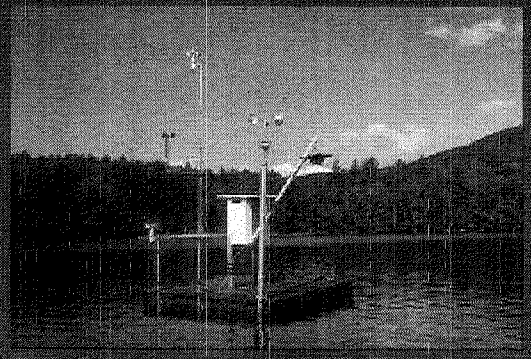


USGS

USGS Water Census—Water-Use Science

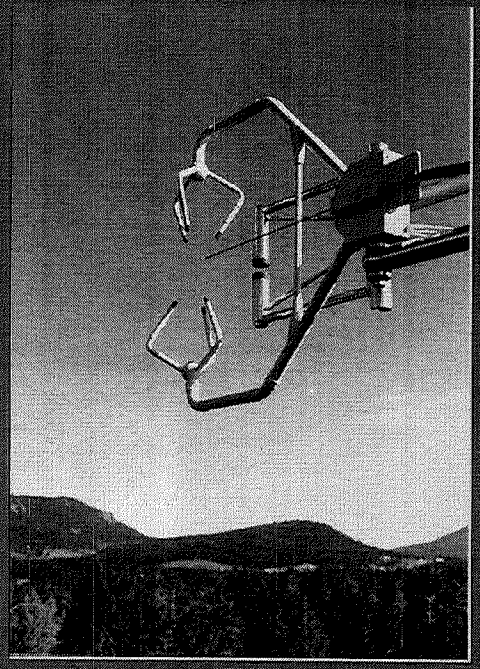
Total Withdrawals by Source

Interbasin Transfers

Consumptive Uses

- Definitions
- Measured information
- Embodied water use by product
- Large municipal system analysis

Return Flows

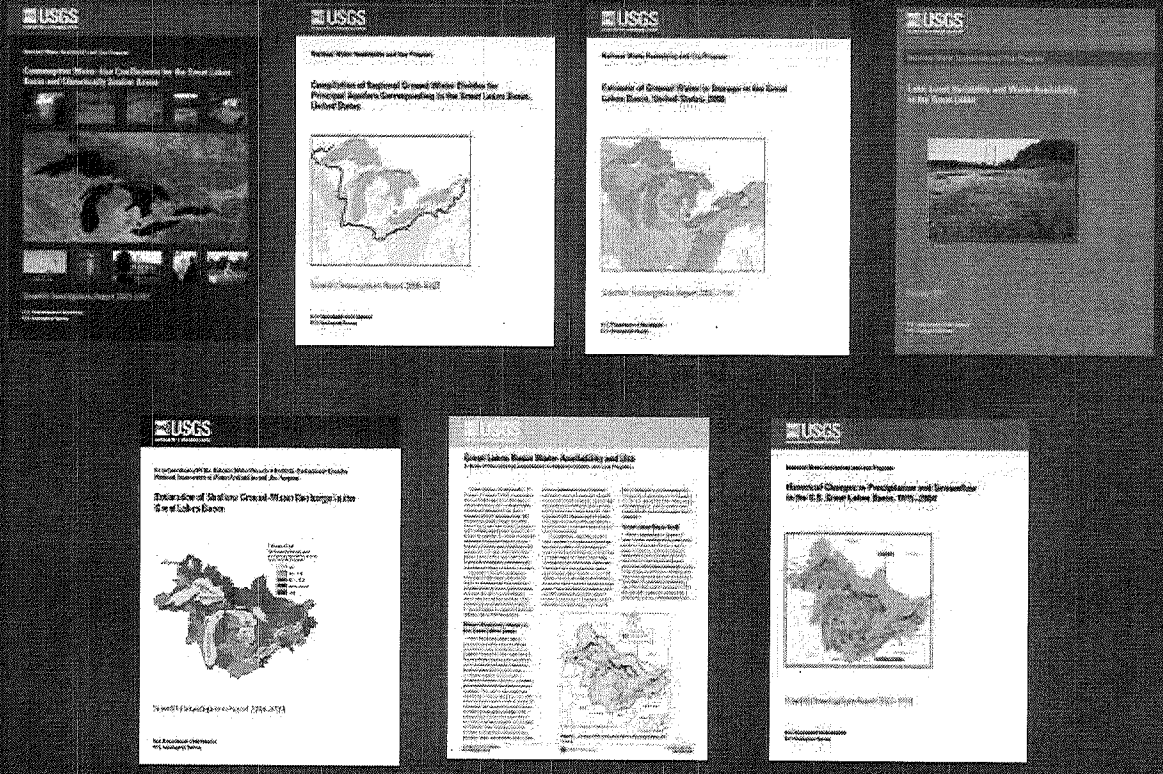


USGS

USGS Water Census—Great Lakes Pilot

Ground Water and Surface Water—Flows and Storage

Water Use



http://water.usgs.gov/wateravailability/greatlakes/

USGS

USGS National Water Census—Great Lakes Pilot

- A major objective—better understand water use (WU)
- Input from CGLG and GLC on WU objective
- Feedback: consumptive use (CU) a top priority
- Three WU products recommended for Pilot Study:

1. Annotated bibliography of CU coefficients
2. Seasonal and monthly WU and CU for selected categories
3. WU by HUC-8

USGS

USGS CU Report

Objective—Compile reported CU coefficients for Great Lakes and similar areas

Annotated bibliography

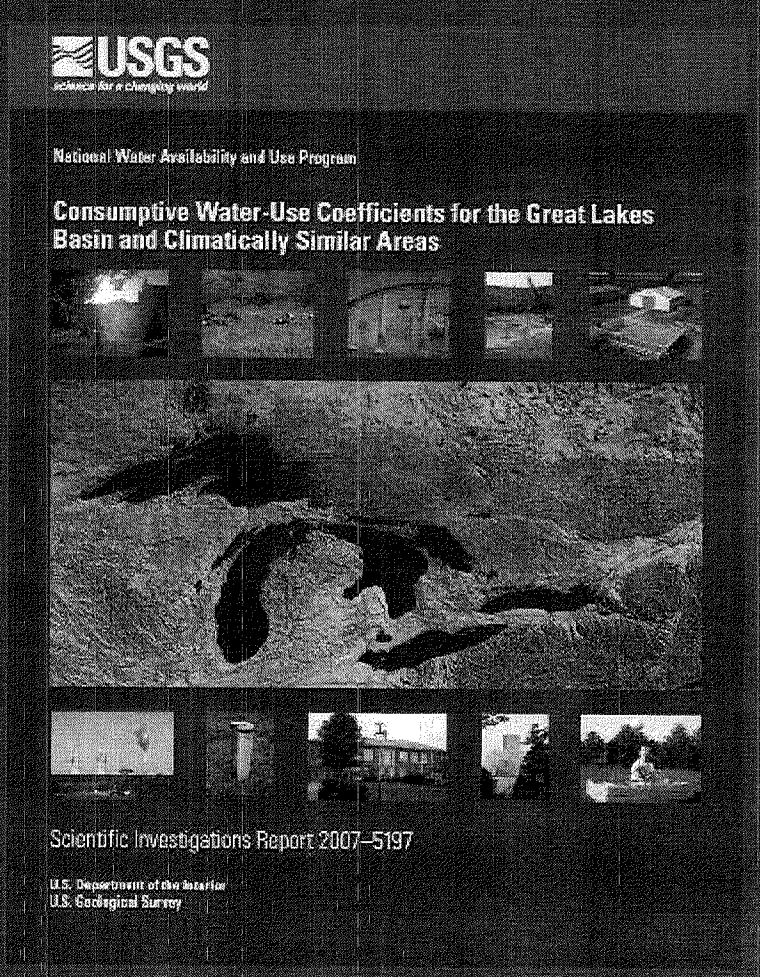
Detailed consumptive-use coefficient tables

Consumptive-use coefficients for water-use categories

Selected statistical analysis

Summary tables

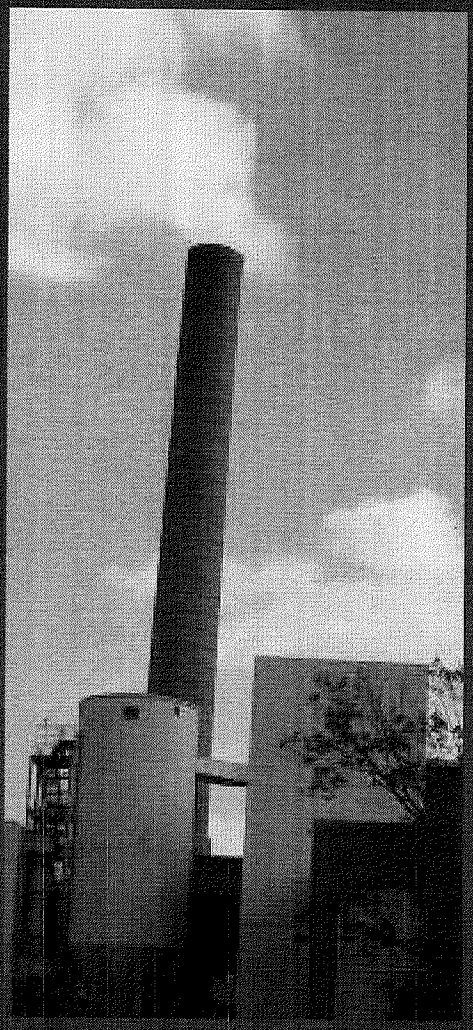
USGS



CU Definitions

USGS report—CU means that part of the water withdrawn that is evaporated, transpired, incorporated into products or crops, consumed by humans or livestock, or otherwise **removed from the immediate environment.**

Agreement—CU means that portion of water withdrawn or withheld from the Basin that is lost or otherwise **not returned to the Basin** due to evaporation, incorporation into products, or other processes.



USGS

CU Coefficients—Major Findings

Comparable statistics (percentiles) for Great Lakes Basin and "climatically-similar" areas

Domestic/Public-Supply coefficients

- Half of coefficients between 10 and 15%

Industrial statistics

- Half of coefficients between 7 and 14%
- Beverage and bottled water industries should be treated separately

Commercial coefficients

- Half of coefficients between 8 and 15%

USGS

CU Coefficients—Major Findings

Thermoelectric power

- Differ greatly by type of cooling

Irrigation

- Higher for Great Lakes area than for continents, some countries, and the world
- Differences due to climate, crop type, irrigation methods, and various ways of defining the category
- Coefficient range of 70–100%

Livestock

- Over half of the references reported coefficients between 80 and 100%

Mining

- Varied widely

USGS

CU Coefficients—Application Example

Withdrawals for 5 Mgal/d CU threshold

Water-use category or industry	Consumptive use (Mgal/d)	Median coefficient (%)	Computed withdrawal (Mgal/d)	2005 Ohio counties[1]
Public Supply	5	12	41.7	9
Industrial	5	10	50	3
Thermoelectric	5	2	250	9
Irrigation	5	90	5.56	0
Ethanol plant	5	77	6.49	-
Bottled-water facility	5	97	5.15	-

USGS

[1] 2005 Ohio Counties--withdrawals greater than computed withdrawal in the table, based on a consumptive use of 5 Mgal/d and the median coefficient from Shaffer and Runkle, 2007

CU Variability within Sector/Subsectors

Industry	N	Min	Median	Max	Environment Canada (2004)
Food and kindred products	22	5	12	45	11 & 23[1]
Paper and allied products	23	2	9	21	9
Chemicals and allied products	23	0	6	22	8
Stone, clay, and glass products	12	5	12	15	-
Primary metal industries	22	1	8	37	8
Transportation equipment	19	1	8	29	29

Note-This information is for Industry Sector

USGS

Accuracy of CU Coefficients

Reference	Geographic area	Single coefficient	Coefficient or other	Data source
Barlow, 2003[1]	Rhode Island, Massachusetts	10	Coefficient	Secondary
Brill and others, 1977	Illinois, Indiana, Kentucky, Ohio	6	Coefficient	Primary
College of Exploration, [n.d]	World	9	CW	Unknown
Cosgrove and Rijsberman, 2000	World	11	CW	Secondary
Delaware River Basin Commission, [n.d]	Pennsylvania, Delaware, New Jersey	4[2]	CW	Primary
Ellefson and others, 1987	Wisconsin	20[3] 10[3]	Coefficient Coefficient	Primary Primary
Great Lakes Commission, 2005a	Great Lakes		CW	Secondary
Government of Canada and the U.S. Environmental Protection Agency, 1995	Great Lakes: Canada, Lake Superior Canada, Lake Huron Canada, Lake Erie Canada, Lake Ontario United States, Lake Superior United States, Lake Michigan United States, Lake Huron United States, Lake Erie United States, Lake Ontario	 2 5 4 4 15 9 3 16 8	 CW CW CW CW CW CW CW CW CW	 Secondary Secondary Secondary Secondary Secondary Secondary Secondary Secondary Secondary
Hutson, 1998	Tennessee	11	CW	Primary
Hutson and others, 2004b	Tennessee	22	RW	Primary

Issues:

Single vs. multiple coefficients

Coefficient vs. CW vs. RW

Primary vs. Secondary vs. Unknown Data Source

USGS

Note-This information is for Industry Sector

Recent USGS Water-use Publications

Shaffer, K.H., and Runkle, D.L., 2007, Consumptive water-use coefficients for the Great Lakes Basin and climatically similar areas: U.S. Geological Survey Scientific Investigations Report 2007-5197, 191 p.

http://pubs.usgs.gov/sir/2007/5197/

Horn, M.A., Moore, R.B., Hayes, Laura, and Flanagan, S.M., 2008, Methods for and estimates of 2003 and projected water use in the Seacoast region, southeastern New Hampshire: U.S. Geological Survey Scientific Investigations Report 2007–5157, 87 p., plus 2 appendixes on CD ROM.

http://pubs.er.usgs.gov/sir/2007/5157/

Stuckey, M.H., 2008, Development of the Water-Analysis Screening Tool used in the initial screening for the Pennsylvania State Water Plan update of 2008: U.S. Geological Survey Open-File Report 2008-1106, 9 p.

http://pubs.er.usgs.gov/usgspubs/ofr/ofr20081106/

USGS

Suggestions

For New or Increased Withdrawals:

1. CU based on measurements—W-R or W-C
2. CU based on actual process analysis
3. CU based on similar actual instance
4. CU based on coefficients in literature

Application of CU Coefficients:

- If applied to sector or subsector, limit the range of practices that are combined

USGS

Suggestions

Sponsor a regional database of measured CUs and practices to which they apply

- Look for opportunities to expand the universe of measured CU coefficients
- Move towards on-line data entry
- Develop guidance for annual reporting from users
- Develop guidance on doing a process analysis for CU greater than threshold
- SIC or NAICS codes—updates along with withdrawal and discharge capacity

USGS

Questions

- To which types of uses can CU coefficients be applied?
- How important is it to improve CU coefficients (get actual data)? Can the need for various sectors be prioritized?
- How broadly do you want to apply CU coefficients? What constitutes a sector? What is the relationship to SIC or NAICS?
- Should application of CU coefficients be comparable among jurisdictions? Should methods of data collection or system analyses?

USGS

Comment

- If the goal is to understand impacts of withdrawals on the Basin Ecosystem, then the location, quality, and timing of return flow must be understood.
- For instance, the timing and amount of impact of a ground-water withdrawal on a stream and its relation to that of the return flow.
- New or modified programs might consider these and related issues.

USGS

Questions?

USGS

DECEMBER 13, 2005

GREAT LAKES—ST. LAWRENCE RIVER BASIN SUSTAINABLE WATER RESOURCES AGREEMENT

The State of Illinois,

The State of Indiana,

The State of Michigan,

The State of Minnesota,

The State of New York,

The State of Ohio,

The Province of Ontario,

The Commonwealth of Pennsylvania,

The Government of Québec,

The State of Wisconsin,

Recognizing that,

The Waters of the Basin are a shared public treasure and the States and Provinces as stewards have a shared duty to protect, conserve and manage these renewable but finite Waters;

These Waters are interconnected and form a single hydrologic system;

Protecting, conserving, restoring, and improving these Waters is the foundation of Water resource management in the Basin and essential to maintaining the integrity of the Basin Ecosystem;

Managing to conserve and restore these Waters will improve them as well as the Water Dependent Natural Resources of the Basin;

Continued sustainable, accessible and adequate Water supplies for the people and economy of the Basin are of vital importance;

The States and Provinces must balance economic development, social development and environmental protection as interdependent and mutually reinforcing pillars of sustainable development;

Even though there has been significant progress in restoring and improving the health of the Basin Ecosystem, the Waters and Water Dependent Natural Resources of the Basin remain at risk;

In light of possible variations in climate conditions and the potential cumulative effects of demands that may be placed on the Waters of the Basin, the States and Provinces must act to ensure the protection and conservation of the Waters and Water Dependent Natural Resources of the Basin for future generations;

Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;

Sustainable development and harmony with nature and among neighbours require cooperative arrangements for the development and implementation of watershed protection approaches in the Basin;

Reaffirming,

The principles and findings of the Great Lakes Charter and the commitments and directives of the Great Lakes Charter Annex 2001;

Acknowledging,

Nothing in this Agreement is intended to abrogate or derogate from the protection provided for the existing aboriginal or treaty rights of aboriginal peoples in Ontario and Québec as recognized and affirmed by section 35 of the Constitution Act, 1982 or from the treaty rights or rights held by any Tribe recognized by the federal government of the United States based upon its status as a Tribe recognized by the federal government of the United States, and acknowledging the commitment of these peoples to preserve and protect the waters of the Basin;

The continuing and abiding roles of the United States and Canadian federal governments under the Boundary Waters Treaty of 1909 and other applicable international agreements, that continue unaffected by this agreement, and the valuable contribution of the International Joint Commission;

Effective management is dependent upon all Parties acting in a continuing spirit of comity and mutual cooperation;

Agree as follows:

CHAPTER 1
GENERAL PROVISIONS

ARTICLE 100
OBJECTIVES

1. The objectives of this Agreement are:
   a. To act together to protect, conserve and restore the Waters of the Great Lakes—St. Lawrence River Basin because current lack of scientific certainty should not be used as a reason for postponing measures to protect the Basin Ecosystem;
   b. To facilitate collaborative approaches to Water management across the Basin to protect, conserve, restore, improve and efficiently and effectively manage the Waters and Water Dependent Natural Resources of the Basin;
   c. To promote co-operation among the Parties by providing common and regional mechanisms to evaluate Proposals to Withdraw Water;
   d. To create a co-operative arrangement regarding Water management that provides tools for shared future challenges;
   e. To retain State and Provincial authority within the Basin under appropriate arrangements for intergovernmental cooperation and consultation;
   f. To facilitate the exchange of data, strengthen the scientific information upon which decisions are made, and engage in consultation on the potential effects of Withdrawals and losses on the Waters and Water Dependent Natural Resources of the Basin;
   g. To prevent significant adverse impacts of Withdrawals and losses on the Basin Ecosystem and its watersheds; and,
   h. To promote an Adaptive Management approach to the conservation and management of Basin Water resources, which recognizes, considers and provides adjustments for the uncertainties in, and evolution of, scientific knowledge concerning the Basin's Waters and Water Dependent Natural Resources.
2. The Parties shall interpret and apply the provisions of this Agreement to achieve these objectives.

ARTICLE 101
SCOPE OF APPLICATION

This Agreement applies to the Waters of the Basin within the Parties' territorial boundaries.

ARTICLE 102
GENERAL COMMITMENT

Each Party to this Agreement shall seek to adopt and implement Measures that may be required to give effect to the commitments embodied within this Agreement.

ARTICLE 103
GENERAL DEFINITIONS

In this Agreement,

"Adaptive Management" means a Water resources management system that provides a systematic process for evaluating, monitoring and learning from the outcomes of operational programs and adjustment of policies, plans and programs based on experience and the evolution of scientific knowledge concerning Water resources and Water Dependent Natural Resources.

"**Agreement**" means this Agreement.

"**Applicant**" means a Person who is required to submit a Proposal that is subject to management and regulation under this Agreement. "**Application**" has a corresponding meaning.

"**Basin**" or "**Great Lakes—St. Lawrence River Basin**" means the watershed of the Great Lakes and the St. Lawrence River upstream from Trois-Rivières, Québec within the jurisdiction of the Parties.

"Basin Ecosystem" or "**Great Lakes—St. Lawrence River Basin Ecosystem**" means the interacting components of air, land, Water and living organisms, including humankind, within the Basin.

"**Community within a Straddling County**" means any incorporated city, town or the equivalent thereof, that is located outside the Basin but wholly within a County that lies partly within the Basin and that is not a Straddling Community.

"**Compact**" means the Great Lakes—St. Lawrence River Basin Water Resources Compact.

"**Consumptive Use**" means that portion of Water Withdrawn or withheld from the Basin that is lost or otherwise not returned to the Basin due to evaporation, incorporation into Products, or other processes.

"County" means the largest territorial division for local government in a State. In Québec, County means a regional county municipality (municipalité régionale de comté - MRC). The County boundaries shall be defined as those boundaries that exist as of the signing date of this Agreement.

"**Cumulative Impacts**" mean the impact on the Great Lakes—St. Lawrence River Basin Ecosystem that results from incremental effects of all aspects of a Withdrawal, Diversion or Consumptive Use in addition to other past, present, and reasonably foreseeable future Withdrawals, Diversions and Consumptive Uses regardless of who undertakes the other Withdrawals, Diversions and Consumptive Uses. Cumulative Impacts can result from

individually minor but collectively significant Withdrawals, Diversions and Consumptive Uses taking place over a period of time.

"**Diversion**" means a transfer of Water from the Basin into another watershed, or from the watershed of one of the Great Lakes into that of another by any means of transfer, including but not limited to a pipeline, canal, tunnel, aqueduct, channel, modification of the direction of a watercourse, a tanker ship, tanker truck or rail tanker but does not apply to Water that is used in the Basin or Great Lakes watershed to manufacture or produce a Product that is then transferred out of the Basin or watershed. "**Divert**" has a corresponding meaning.

"Environmentally Sound and Economically Feasible Water Conservation Measures" mean those measures, methods, technologies or practices for efficient water use and for reduction of water loss and waste or for reducing a Withdrawal, Consumptive Use or Diversion that i) are environmentally sound, ii) reflect best practices applicable to the water use sector, iii) are technically feasible and available, iv) are economically feasible and cost effective based on an analysis that considers direct and avoided economic and environmental costs and v) consider the particular facilities and processes involved, taking into account the environmental impact, age of equipment and facilities involved, the processes employed, energy impacts and other appropriate factors.

"Exception" means a transfer of Water that is excepted under Article 201 from the prohibition against Diversions.

"**Exception Standard**" means the standard to be used for Exceptions that is established under Article 201.

"**Intra-Basin Transfer**" means the transfer of Water from the watershed of one of the Great Lakes into the watershed of another Great Lake.

"**Measures**" means any legislation, law, regulation, directive, requirement, guideline, program, policy, administrative practice or other procedure.

"New or Increased Diversion" means a new Diversion, an increase in an existing Diversion, or the alteration of an existing Withdrawal so that it becomes a Diversion.

"New or Increased Withdrawal or Consumptive Use" means a new Withdrawal or Consumptive Use or an increase in an existing Withdrawal or Consumptive Use.

"**Originating Party**" means the Party within whose jurisdiction an Application is made.

"**Party**" means a State or Province that enters into this Agreement.

"**Person**" means a human being or a legal person, including a government or a non-governmental organization, including any scientific, professional, business, non-profit, or

public interest organization or association that is neither affiliated with, nor under the direction of a government.

"**Product**" means something produced in the Basin by human or mechanical effort or through agricultural processes and used in manufacturing, commercial or other processes or intended for intermediate or end use consumers. (i) Water used as part of the packaging of a Product shall be considered to be part of the Product. (ii) Other than Water used as part of the packaging of a Product, Water that is used primarily to transport materials in or out of the Basin is not a Product or part of a Product. (iii) Except as provided in (i) above, Water which is transferred as part of a public or private supply is not a Product or part of a Product. (iv) Water in its natural state such as in lakes, rivers, reservoirs, aquifers or water basins is not a Product.

"**Proposal**" means a Withdrawal, Diversion or Consumptive Use of Water that is subject to this Agreement.

"**Province**" means Ontario or Québec.

"Public Water Supply Purposes" means water distributed to the public through a physically connected system of treatment, storage and distribution facilities serving a group of largely residential customers that may also serve industrial, commercial, and other institutional operators. Water Withdrawn directly from the Basin and not through such a system shall not be considered to be used for Public Water Supply Purposes.

"**Regional Body**" means the Great Lakes—St. Lawrence River Water Resources Regional Body established by this Agreement.

"**Regional Review**" means the collective review by all Parties in accordance with this Agreement.

"**Source Watershed**" means the watershed from which a Withdrawal originates. If Water is Withdrawn directly from a Great Lake or from the St. Lawrence River, then the Source Watershed shall be considered to be the watershed of that Great Lake or the watershed of the St. Lawrence River, respectively. If Water is Withdrawn from the watershed of a stream that is a direct tributary to a Great Lake or a direct tributary to the St. Lawrence River, then the Source Watershed shall be considered to be the watershed of that Great Lake or the watershed of the St. Lawrence River, respectively, with a preference to the direct tributary stream watershed from which it was Withdrawn.

"**Standard or Decision-Making Standard**" means the Decision-Making Standard for Management and Regulation established by Article 203 of this Agreement.

"**State**" means one of the states of Illinois, Indiana, Michigan, Minnesota, New York, Ohio or Wisconsin or the Commonwealth of Pennsylvania.

"**Straddling Community**" means any incorporated city, town or the equivalent thereof, that is either wholly within any County that lies partly or completely within the Basin or partly in two Great Lakes watersheds but entirely within the Basin, whose corporate boundary existing as of the date set forth in paragraph 2 of Article 709, is partly within the Basin or partly within two Great Lakes watersheds.

"**Technical Review**" means a detailed review conducted to determine whether or not a Proposal that requires Regional Review under this Agreement meets the Exception Standard following procedures and guidelines as set out in this Agreement.

"**Water**" means ground or surface water contained within the Basin.

"**Water Dependent Natural Resources**" means the interacting components of land, Water and living organisms affected by the Waters of the Basin.

"**Waters of the Basin or Basin Water**" means the Great Lakes and all streams, rivers, lakes, connecting channels and other bodies of water, including tributary groundwater, within the Basin.

"**Withdrawal**" means the taking of water from surface water or groundwater. "**Withdraw**" has a corresponding meaning.

CHAPTER 2
PROHIBITION OF DIVERSIONS, EXCEPTIONS AND MANAGEMENT AND REGULATION OF WITHDRAWALS

ARTICLE 200
PROHIBITION OF DIVERSIONS AND MANAGEMENT AND REGULATION OF WITHDRAWALS

1. The Parties shall adopt and implement Measures to prohibit New or Increased Diversions, except as provided for in this Agreement.
2. The Parties shall adopt and implement Measures to manage and regulate Exceptions in accordance with this Agreement.
3. The Parties shall adopt and implement Measures to manage and regulate Withdrawals and Consumptive Uses in accordance with this Agreement.

ARTICLE 201
EXCEPTIONS TO THE PROHIBITION OF DIVERSIONS

Straddling Communities

1. A Proposal to transfer Water to an area within a Straddling Community but outside the Basin or outside the source Great Lake Watershed shall be excepted from the prohibition against Diversions and be managed and regulated by the Originating Party provided that, regardless of the volume of Water transferred, all the Water so

transferred shall be used solely for Public Water Supply Purposes within the Straddling Community, and:

a. All Water Withdrawn from the Basin shall be returned, either naturally or after use, to the Source Watershed less an allowance for Consumptive Use. No surface water or groundwater from outside the Basin may be used to satisfy any portion of this criterion except if it:
   i. Is part of a water supply or wastewater treatment system that combines water from inside and outside of the Basin;
   ii. Is treated to meet applicable water quality discharge standards and to prevent the introduction of invasive species into the Basin;
   iii. Maximizes the portion of water returned to the Source Watershed as Basin Water and minimizes the surface water or groundwater from outside the Basin;
b. If the Proposal results from a New or Increased Withdrawal of 100,000 gallons per day (379,000 litres per day) or greater average over any 90-day period, the Proposal shall also meet the Exception Standard; and,
c. If the Proposal results in a New or Increased Consumptive Use of 5 million gallons per day (19 million litres per day) or greater average over any 90-day period, the Proposal shall also undergo Regional Review.

Intra-Basin Transfers

2. A Proposal for an Intra-Basin Transfer that would be considered a Diversion under this Agreement, and not already excepted pursuant to paragraph 1 of this Article, shall be excepted from the prohibition against Diversions, provided that:
   a. If the Proposal results from a New or Increased Withdrawal less than 100,000 gallons per day (379,000 litres per day) average over any 90-day period, the Proposal shall be subject to management and regulation at the discretion of the Originating Party;
   b. If the Proposal results from a New or Increased Withdrawal 100,000 gallons per day (379,000 litres per day) or greater average over any 90-day period and if the Consumptive Use resulting from the Withdrawal is less than 5 million gallons per day (19 million litres per day) average over any 90-day period:
      i. The Proposal shall meet the Exception Standard and be subject to management and regulation by the Originating Party, except that the Water may be returned to another Great Lake watershed rather than the Source Watershed;
      ii. The Applicant shall demonstrate that there is no feasible, cost effective and environmentally sound water supply alternative within the Great Lake watershed to which the Water will be transferred, including conservation of existing water supplies; and,
      iii. The Originating Party shall provide notice to the other Parties prior to making any decision with respect to the Proposal.
   c. If the Proposal results in a New or Increased Consumptive Use 5 million gallons per day (19 million litres per day) or greater average over any 90-day period:

i. The Proposal shall be subject to management and regulation by the Originating Party and shall meet the Exception Standard, ensuring that Water Withdrawn shall be returned to the Source Watershed;
ii. The Applicant shall demonstrate that there is no feasible, cost effective and environmentally sound water supply alternative within the Great Lake watershed to which the Water will be transferred, including conservation of existing water supplies;
iii. The Proposal undergoes Regional Review; and,
iv. If the Originating Party is a State, the Proposal is approved pursuant to the Compact.

Straddling Counties

3. A Proposal to transfer Water to a Community within a Straddling County that would be considered a Diversion under this Agreement shall be excepted from the prohibition against Diversions, provided that it satisfies all of the following conditions:
   a. The Water shall be used solely for the Public Water Supply Purposes of the Community within a Straddling County that is without adequate supplies of potable water.
   b. The Proposal meets the Exception Standard, with particular emphasis upon ensuring that:
      i. All Water Withdrawn from the Basin shall be returned, either naturally or after use, to the Source Watershed less an allowance for Consumptive Use;
      ii. No surface water or groundwater from outside the Basin is used to satisfy any portion of subparagraph (i) above except if it:
         (a) Is part of a water supply and/or wastewater treatment system that combines water from inside and outside of the Basin;
         (b) Is treated to meet applicable water quality discharge standards and to prevent the introduction of invasive species into the Basin;
         (c) Maximizes the portion of water returned to the Source Watershed as Basin Water, and minimizes the surface water or groundwater from outside the Basin;
      iii. All such Water returned meets all applicable water quality standards.
   c. The Proposal shall be subject to management and regulation by the Originating Party, regardless of its size;
   d. There is no reasonable water supply alternative within the basin in which the community is located, including conservation of existing water supplies;
   e. Caution shall be used in determining whether or not the Proposal meets the conditions for this Exception. This exception should not be authorized unless it can be shown that it will not endanger the integrity of the Basin Ecosystem;
   f. The Proposal undergoes Regional Review; and,
   g. If the Originating Party is a State, the Proposal is approved pursuant to the Compact.

   A Proposal must satisfy all of the conditions listed above. Further, substantive consideration will also be given to whether or not the Proposal can provide sufficient

scientifically based evidence that the existing water supply is derived from groundwater that is hydrologically interconnected to Waters of the Basin.

Exception Standard

4. The following criteria constitute the Exception Standard:
   a. The need for all or part of the Exception cannot be reasonably avoided through the efficient use and conservation of existing water supplies;
   b. The Exception shall be limited to quantities that are considered reasonable for the purposes for which it is proposed;
   c. All Water Withdrawn shall be returned, either naturally or after use, to the Source Watershed less an allowance for Consumptive Use. No surface water or groundwater from outside the Basin may be used to satisfy any portion of this criterion except if it:
      i. Is part of a water supply or wastewater treatment system that combines water from inside and outside of the Basin;
      ii. Is treated to meet applicable water quality discharge standards and to prevent the introduction of invasive species into the Basin;
   d. The Exception shall be implemented so as to ensure that it shall result in no significant individual or cumulative adverse impacts to the quantity or quality of the Waters and Water Dependent Natural Resources of the Basin with consideration given to the potential Cumulative Impacts of any precedent-setting consequences associated with the Proposal;
   e. The Exception shall be implemented so as to incorporate Environmentally Sound and Economically Feasible Water Conservation Measures to minimize Water Withdrawals or Consumptive Use;
   f. The Exception shall be implemented so as to ensure that it is in compliance with all applicable municipal, State, Provincial and federal laws as well as regional interstate, inter-provincial and international agreements, including the Boundary Waters Treaty of 1909;
   g. All applicable criteria in this Article have also been met.

Review of Article

5. The Parties shall evaluate this Article in the context of the periodic cumulative impact assessment as described in Article 209.

ARTICLE 202
IMPLEMENTATION OF THE STANDARD AND THE EXCEPTION STANDARD

1. The Parties shall seek to adopt and implement Measures establishing the Exception Standard under Article 201 and the Decision-Making Standard for management and regulation of Withdrawals and Comsumptive Uses under Article 203. The Standards are one of the means by which the Parties shall together protect, conserve, restore, improve and manage the Waters of the Basin.
2. The Standard and the Exception Standards are minimum standards. The Parties may implement Measures that are more restrictive than the requirements of this Agreement. Although a Proposal may meet the Standard or the Exception Standard,

it may not be approved under the laws of the Originating Party if that Party has implemented more restrictive Measures.

3. When fully implemented, this Agreement shall lead to Water Withdrawal management systems that are consistent in their fundamentals within the Basin.

ARTICLE 203
THE DECISION-MAKING STANDARD FOR MANAGEMENT OF WITHDRAWALS AND CONSUMPTIVE USES

The following criteria constitute the Decision-Making Standard for management of new or increased Withdrawals and Consumptive Uses:

1. All Water Withdrawn shall be returned, either naturally or after use, to the Source Watershed less an allowance for Consumptive Use;
2. The Withdrawal or Consumptive Use shall be implemented so as to ensure that the Proposal will result in no significant individual or cumulative adverse impacts to the quantity or quality of the Waters and Water Dependent Natural Resources and the applicable Source Watershed;
3. The Withdrawal or Consumptive Use shall be implemented so as to incorporate Environmentally Sound and Economically Feasible Water Conservation Measures;
4. The Withdrawal or Consumptive Use shall be implemented so as to ensure that it is in compliance with all applicable municipal, State and federal laws as well as regional interstate and international agreements, including the Boundary Waters Treaty of 1909;
5. The proposed use is reasonable, based upon a consideration of the following factors:
   a. Whether the proposed Withdrawal or Consumptive Use is planned in a fashion that provides for efficient use of the Water, and will avoid or minimize the waste of Water;
   b. If the Proposal is for an increased Withdrawal or Consumptive Use, whether efficient use is made of existing Water supplies;
   c. The balance between economic development, social development and environmental protection of the proposed Withdrawal and use and other existing or planned withdrawals and Water uses sharing the water source;
   d. The supply potential of the Water source, considering quantity, quality, and reliability and safe yield of hydrologically interconnected water sources;
   e. The probable degree and duration of any adverse impacts caused or expected to be caused by the proposed Withdrawal and use under foreseeable conditions, to other lawful consumptive or non-consumptive uses of water or to the quantity or quality of the Waters and Water Dependent Natural Resources of the Basin, and the proposed plans and arrangements for avoidance or mitigation of such impacts; and,
   f. If a Proposal includes restoration of hydrologic conditions and functions of the Source Watershed, the Party may consider that.

ARTICLE 204
PROPOSALS SUBJECT TO REGIONAL REVIEW

1. Regional Review as outlined in Chapter 5 applies to a Proposal for any Exception requiring Regional Review under Article 201.
2. The Proposal may be approved by the Originating Party thereafter only if it meets the Exception Standard.

ARTICLE 205
PROPOSALS SUBJECT TO PRIOR NOTICE

1. The Originating Party shall provide all Parties with detailed and timely notice and an opportunity to comment within 90 days on any Proposal for a New or Increased Consumptive Use of 5 million gallons per day (19 million litres per day) or greater average in any 90-day period. Comments shall address whether or not the Proposal is consistent with the Standard established under Article 203. The Originating Party shall provide a response to any such comment received from another Party.
2. A Party may provide notice, an opportunity to comment and a response to comments even if this is not required under paragraph 1 of this Article. Any provision of such notice and opportunity to comment shall be undertaken only after consulting the Applicant.

ARTICLE 206
MANAGEMENT AND REGULATION OF NEW OR INCREASED WITHDRAWALS AND CONSUMPTIVE USES

1. Each Party shall establish a program for the management and regulation of New or Increased Withdrawals and Consumptive Uses by adopting and implementing Measures consistent with the Standard. Each Party, through a considered process, shall set and may modify threshold levels for the regulation of New or Increased Withdrawals in order to assure an effective and efficient Water management program that will ensure that uses overall are reasonable, that Withdrawals overall will not result in significant impacts to the Waters and Water Dependent Natural Resources of the Basin, determined on the basis of significant impacts to the physical, chemical and biological integrity of Source Watersheds, and that other objectives of the Agreement are achieved. Each Party may determine the scope and thresholds of its program, including which New or Increased Withdrawals and Consumptive Uses will be subject to the program.
2. In the event that a Party has not established threshold levels in accordance with paragraph 1 on or before 10 years after paragraphs 1 and 2 of Article 200 come into force, it shall apply a threshold level for management and regulation of all New or Increased Withdrawals of 100,000 gallons per day (379,000 litres per day) or greater average in any 90 day period.
3. The Parties intend programs for New or Increased Withdrawals and Consumptive Uses to evolve as may be necessary to protect Basin Waters. The Regional Body shall periodically assess the Water management programs of the Parties. Such assessments may produce recommendations for the strengthening of the programs including, without limitation, establishing lower thresholds for management and regulation in

accordance with the Standard. The Parties may, by unanimous consent, collectively adopt such thresholds or revisions to their programs.

ARTICLE 207
APPLICABILITY

Determining New or Increased Diversions, Consumptive Uses or Withdrawals

1. To establish a baseline for determining a New or Increased Diversion, Consumptive Use or Withdrawal, each Party shall develop either or both of the following lists for their jurisdiction:
   a. A list of existing Water Withdrawal approvals as of the date this Article comes into force;
   b. A list of the capacity of existing systems as of the date this Article comes into force. The capacity of the existing systems should be presented in terms of Withdrawal capacity, treatment capacity, distribution capacity, or other capacity limiting factors. The capacity of the existing systems must represent the state of the systems. Existing capacity determinations shall be based upon approval limits or the most restrictive capacity information.

   For all purposes of this Agreement, volumes of the Diversions, Consumptive Uses or Withdrawals set forth in the list(s) prepared by each Party in accordance with this Paragraph shall constitute the baseline volume.

   The list(s) shall be furnished to the Regional Body within 1 year of the date this Article comes into force.

Timing of Additional Applications

2. Applications for New or Increased Withdrawals, Consumptive Uses or Exceptions shall be considered cumulatively within ten years of any application.

Change of Ownership

3. Unless a new owner proposes a project that will result in a Proposal for a New or Increased Diversion or Consumptive Use subject to Regional Review, the change of ownership in and of itself shall not require Regional Review.

Groundwater

4. The Basin surface water divide shall be used for the purpose of managing and regulating New or Increased Diversions, Consumptive Uses or Withdrawals of surface water and groundwater.

Withdrawal systems

5. The total volume of surface water and groundwater resources that supply a common distribution system shall determine the volume of a Withdrawal, Consumptive Use or Diversion.

Connecting Channels

6. The watershed of each Great Lake shall include its upstream and downstream connecting channels.

Transmission in Water Lines

7. Transmission of Water within a line that extends outside the Basin as it conveys Water from one point to another within the Basin shall not be considered a Diversion if none of the Water is used outside the Basin.

Hydrologic Units

8. The Lake Michigan and Lake Huron watersheds shall be considered to be a single hydrologic unit and watershed.

Bulk Water Transfer

9. A Proposal to Withdraw Water and to remove it from the Basin in any container greater than 5.7 gallons (20 litres) shall be treated under this Agreement in the same manner as a Proposal for a Diversion. Each Party shall have the discretion, within its jurisdiction, to determine the treatment of Proposals to Withdraw Water and to remove it from the Basin in any container of 5.7 gallons (20 litres) or less.

U.S. Supreme Court Decree: Wisconsin et al. v. Illinois et al.

10. Notwithstanding any terms of this Agreement to the contrary, with the exception of Paragraph 14 of this Article, current, New or Increased Withdrawals, Consumptive Uses and Diversions of Basin Water by the State of Illinois shall be governed by the terms of the United States Supreme Court decree in Wisconsin et al. v. Illinois et al. and shall not be subject to the terms of this Agreement nor any rules or regulations promulgated pursuant to this Agreement. This means that, with the exception of Paragraph 14 of this Article, for purposes of this Agreement, current, New or Increased Withdrawals, Consumptive Uses and Diversions of Basin Water within the State of Illinois shall be allowed unless prohibited by the terms of the United States Supreme Court decree in Wisconsin et al. v. Illinois et al.
11. The Parties acknowledge that the United States Supreme Court decree in Wisconsin et al. v. Illinois et al. shall continue in full force and effect, that this Agreement shall not modify any terms thereof, and that this Agreement shall grant the parties no additional rights, obligations, remedies or defenses thereto. The Parties specifically acknowledge that this Agreement shall not prohibit or limit the State of Illinois in any manner from seeking additional Basin Water as allowed under the terms of the United States Supreme Court decree in Wisconsin et al. v. Illinois et al., any other party from objecting to any request by the State of Illinois for additional Basin Water under the terms of said decree, or any party from seeking any other type of modification to said decree. If an application is made by any party to the Supreme Court of the United States to modify said decree, the Parties to this Agreement who are also parties to the decree shall seek formal input from Ontario and Québec, with respect to the proposed modification, use best efforts to facilitate the appropriate participation of said Provinces in the proceedings to modify the decree, and shall not unreasonably impede or restrict such participation.
12. With the exception of Paragraph 14 of this Article, because current, New or Increased Withdrawals, Consumptive Uses and Diversions of Basin Water by the State of Illinois are not subject to the terms of this Agreement, the State of Illinois is

prohibited from using any term of this Agreement, including Article 201, to seek New or Increased Withdrawals, Consumptive Uses or Diversions of Basin Water.

13. With the exception of Paragraph 14 of this Article, Articles 200, 201, 202, 203, 204, 205, 206, 207 (Paragraphs 1, 2, 3, 5 and 9 only), 208 and 210 of this Agreement all relate to current, New or Increased Withdrawals, Consumptive Uses and Diversions of Basin Water and, therefore, do not apply to the State of Illinois. All other provisions of this Agreement not listed in the preceding sentence shall apply to the State of Illinois, including the Water Conservation Programs provision of Article 304.
14. In the event of a Proposal for a Diversion of Basin Water for use outside the territorial boundaries of the Parties to this Agreement, decisions by the State of Illinois regarding such a Proposal would be subject to all terms of this Agreement, except Paragraphs 10, 12 and 13 of this Article.

ARTICLE 208
EXEMPTIONS FROM THE AGREEMENT

This Agreement does not apply to Withdrawals of Basin Water for the following purposes:

1. Supply of vehicles, including vessels and aircraft, whether for the needs of the persons or animals being transported or for ballast or other needs related to the operation of vehicles; or,
2. Use in a non-commercial project on a short-term basis for firefighting, humanitarian or emergency response purposes.

ARTICLE 209
AMENDMENTS TO THE STANDARD AND EXCEPTION STANDARD AND PERIODIC ASSESSMENT OF CUMULATIVE IMPACTS

1. The Standard and the Exception Standard may be amended periodically according to the rules in this Agreement to reflect advancements in science, information and knowledge.
2. The Parties shall co-ordinate the collection and application of scientific information to further develop a mechanism by which individual and Cumulative Impacts of Withdrawals may be assessed.
3. The Parties shall collectively conduct within the Basin, on a Great Lake and St. Lawrence River Basin basis, a periodic assessment of the Cumulative Impacts of Withdrawals, Diversions and Consumptive Uses from the Waters of the Basin. The assessment of the Cumulative Impacts shall be done upon the earlier of:
   a. Every 5 years;
   b. Each time the incremental losses to the Basin reach 50,000,000 gallons (190,000,000 litres) per day average in any 90-day period in excess of the quantity at the time of the last assessment; or,
   c. At the request of one or more of the Parties.
4. The assessment of Cumulative Impacts shall form a basis for the review of the Standard and the Exception Standard and their application. This assessment shall:
   a. Utilize the most current and appropriate guidelines for such a review, which may include but not be limited to Council on Environmental Quality and Environment Canada guidelines;

b. Give substantive consideration to climate change or other significant threats to Basin Waters and take into account the current state of scientific knowledge, or uncertainty, and appropriate Measures to exercise caution in cases of uncertainty, if serious damage may result;
c. Consider Adaptive Management principles and approaches recognizing, considering and providing adjustments for the uncertainties in, and evolution of, science concerning the Basin's water resources, watersheds and ecosystems including potential changes to Basin-wide processes, such as lake level cycles and climate; and,
d. Include the evaluation of Article 201 concerning Exceptions. Based on the results of this assessment, the provisions in that Article may be maintained, made more restrictive or withdrawn.

5. The Parties have the responsibility of conducting this Cumulative Impact assessment. Applicants are not required to participate in this assessment.
6. Unless required by other statutes, Applicants are not required to conduct a separate cumulative impact assessment in connection with an Application but shall submit information about the potential impacts of a Proposal to the quantity or quality of the Waters and Water Dependent Natural Resources of the applicable Source Watershed. An Applicant may, however, provide an analysis of how their proposal meets the no significant adverse Cumulative Impact provision of the Standards.

ARTICLE 210
JUDICIAL REVIEW

The Parties shall seek to adopt and implement Measures to permit a Party to, in an Originating Party's court of competent jurisdiction, seek judicial review of a decision of the Originating Party with respect to a Withdrawal, Consumptive Use or Exception if that decision is, according to this Agreement, subject to the Standard or the Exception Standard.

CHAPTER 3
PROGRAMS

ARTICLE 300
WATER MANAGEMENT PROGRAM REVIEW

1. The Parties shall protect, conserve, restore and improve the Waters and Water Dependent Natural Resources of the Basin by implementing programs that apply the Standard and the Exception Standard.
2. Each Party shall submit a report to the Regional Body, detailing the Water management and Water conservation and efficiency programs that implement this Agreement in their jurisdiction.
3. The report shall set out the manner in which Water Withdrawals are managed by sector, Water source, quantity or any other means and how the provisions of the Standard, the Exception Standard and Water conservation and efficiency programs are implemented.

4. The first report shall be provided by each jurisdiction one year from the date that this Article comes into force and thereafter every 5 years.
5. The Regional Body shall forward each report to all members and shall give the members at least 30 days to consider it.
6. Following that period, the Regional Body shall consider the reports submitted by each Party.
7. The Regional Body shall issue a Declaration of Finding on whether the programs in place in each Party:
   a. Meet or exceed the provisions of this Agreement;
   b. Do not meet the provisions of this Agreement; or,
   c. Would meet the provisions of this Agreement if certain modifications were made and what options may exist to assist the jurisdiction in meeting the provisions of this Agreement.
8. The Regional Body shall distribute the reports to its members.
9. Any Party may ask the Regional Body to issue a Declaration of Finding respecting the Water management and Water conservation and efficiency programs of any of the Parties, including themselves, to determine whether the programs,
   a. Meet or exceed the provisions of this Agreement;
   b. Do not meet the provisions of this Agreement; or,
   c. Would meet the provisions if certain modifications were made and what options may exist to assist the jurisdiction in meeting the provisions of this Agreement.
10. As one of its duties and responsibilities, the Regional Body may recommend a range of approaches to the Parties with respect to the development, enhancement and application of Water management and Water conservation and efficiency programs to implement the Standard and Exception Standard reflecting improved scientific understanding of the Waters of the Basin, including groundwater, and the impacts of Withdrawals on the Basin Ecosystem.

ARTICLE 301
INFORMATION

1. In order to develop and maintain a compatible base of Water use information, the Parties shall annually gather and share accurate and comparable information on all Withdrawals in excess of 100,000 gallons per day (379,000 litres per day) or greater average in any 30-day period (including Consumptive Uses) and all Diversions, including all Exceptions.
2. The Parties shall report this information to a Great Lakes—St. Lawrence River Water use data base repository and aggregated information shall be available to the public, consistent with the confidentiality requirements in Article 704.
3. Each Party shall require users to report their monthly Withdrawals, Consumptive Uses and Diversions on an annual basis.
4. Information gathered shall be used to improve scientific understanding of the Waters of the Basin, the impacts of Withdrawals from various locations and Water sources on the Basin Ecosystem, understanding of the role of groundwater, and to clarify what groundwater forms part of the Waters of the Basin.

ARTICLE 302
SCIENCE

1. The Parties commit to provide leadership for the development of a collaborative strategy with other regional partners to strengthen the scientific basis for sound Water management decision making under this Agreement.
2. The strategy shall guide the collection and application of scientific information to support:
   a. An improved understanding of the individual and Cumulative Impacts of Withdrawals from various locations and Water sources on the Basin Ecosystem and to develop a mechanism by which impacts of Water Withdrawals may be assessed;
   b. The periodic assessment of Cumulative Impacts of Withdrawals, Diversions and Consumptive Uses on a Great Lake and St. Lawrence River watershed basis;
   c. Improved scientific understanding of the Waters of the Basin;
   d. Improved understanding of the role of groundwater in Basin Water resources management; and,
   e. The development, transfer and application of science and research related to Water conservation and Water use efficiency.

ARTICLE 303
AVAILABILITY OF APPLICATIONS AND RECORDS OF DECISION

1. Each Party shall seek to make publicly available all Applications it receives that are subject to management and regulation under this Agreement.
2. Each Party shall seek to make publicly available the record of decision including comments, objections and responses.

ARTICLE 304
WATER CONSERVATION AND EFFICIENCY PROGRAM

1. Within two years of the signing of the Agreement, the Regional Body shall identify Basin-wide Water conservation and efficiency objectives to assist the Parties in developing their Water conservation and efficiency program. These objectives shall be based on the goals of:
   a. Ensuring improvement of the Waters and Water Dependent Natural Resources;
   b. Protecting and restoring the hydrologic and ecosystem integrity of the Basin;
   c. Retaining the quantity of surface water and groundwater in the Basin;
   d. Ensuring sustainable use of Waters of the Basin; and,
   e. Promoting the efficiency of use and reducing losses and waste of Water.
2. Within two years after Article 200, paragraphs 1 and 2 come into force (Prohibition of Diversions and Management of Exceptions), each Party shall develop its own Water conservation and efficiency goals and objectives consistent with the Basin-wide goals and objectives, and shall develop and implement a Water conservation and efficiency program, either voluntary or mandatory, within its jurisdiction based on the Party's goals and objectives. Each Party shall thereafter annually assess its programs in meeting the Party's goals and objectives, report to the Regional Body every five years and make this annual assessment available to the public.

3. Beginning five years after Article 200, paragraphs 1 and 2 come into force (Prohibition of Diversions and Management of Exceptions), and every five years thereafter, the Regional Body shall review and modify as appropriate the Basin-wide objectives and the Parties shall have regard for any such modifications in implementing their programs. This assessment shall be based on examining new technologies, new patterns of Water use, new resource demands and threats, and the Cumulative Impact assessment under Article 209.
4. Within two years after Article 200, paragraphs 1 and 2 come into force (Prohibition of Diversions and Management of Exceptions), the Parties commit to promote Environmentally Sound and Economically Feasible Water Conservation Measures such as:
   a. Measures that promote efficient use of Water;
   b. Identification and sharing of best management practices and state of the art conservation and efficiency technologies;
   c. Application of sound planning principles;
   d. Demand-side and supply-side Measures or incentives; and,
   e. Development, transfer and application of science and research.
5. Each Party shall implement, in accordance with paragraph 2 above a voluntary or mandatory Water conservation program for all, including existing, Basin Water users. Conservation programs need to adjust to new demands and the potential impacts of cumulative effects and climate change.

CHAPTER 4
GREAT LAKES—ST. LAWRENCE RIVER WATER RESOURCES REGIONAL BODY

ARTICLE 400
FUNCTIONS OF THE REGIONAL BODY

1. The Regional Body is composed of the Governor or Premier of each of the Parties, or a person designated by each of them.
2. The Regional Body is established to undertake the following duties and responsibilities:
   a. Ensure, in accordance with this Agreement, a formalized process with respect to Proposals that require Regional Review and thereby provide an opportunity to address concerns within the Basin;
   b. Declare whether or not a Proposal subject to Regional Review meets the Exception Standard;
   c. Declare whether a Party's Water management programs meet the provisions of this Agreement;
   d. Facilitate the development of consensus and the resolution of disputes on matters arising under this Agreement;
   e. Monitor and report on the implementation of this Agreement by the Parties, including: data collection; the implementation of each Party's program to manage

and regulate Withdrawals, Consumptive Uses and Diversions; promotion of Water conservation; and, the assessment of Cumulative Impacts;

f. Establishment of Basin wide goals and objectives for Water conservation and efficiency, the review of those programs and recommendations and declarations in respect of them;
g. Periodically review the Standard and Exception Standard and their application including new scientific information relating to groundwater;
h. Recommend options to Parties with respect to the development and enhancement of their Water management programs;
i. Develop guidance for the implementation of the Standard and the Exception Standard and in particular the review of a Proposal, the preparation of an Application and the review of the Parties' Water management programs;
j. Propose amendments to this Agreement; and,
k. Perform any other functions or duties necessary to implement this Agreement.

ARTICLE 401
ORGANIZATION AND PROCEDURES OF THE REGIONAL BODY

1. The Regional Body may establish its own administrative practices and procedures.
2. The Regional Body may create a secretariat by the unanimous consent of its members.
3. The Regional Body shall meet:
   a. At least once annually; and,
   b. At any other time at the call of the Chair or at the request of two or more Parties.
4. The members shall appoint a Chair and Vice Chair through the following process:
   a. For the first year, the Chair and Vice Chair shall be members elected by a vote of the members.
   b. Each subsequent year, until all members have served, the Vice Chair shall be chosen by drawing lots from amongst those members who have not yet served.
   c. Each member shall serve as Chair immediately after having served as Vice Chair.
   d. Each member shall serve as Vice Chair and as Chair, each for one year.
   e. Once all members have served as Vice Chair and Chair, the original order of serving shall be repeated.
5. In the event that an Application for Regional Review is from the Chair's State or Province, the role of the Chair shall be filled by the Vice Chair or another member.
6. Each Party shall bear an equitable share of the costs of the Regional Body to a maximum amount per annum that is agreed upon each year by the Parties.
7. The Parties shall support the Regional Body using existing agency staff and facilities to the greatest extent possible and are encouraged to make additional resources available though partnerships and co-operative arrangements with government agencies, public or private entities, individuals or academic institutions.
8. The Regional Body shall keep a complete public record of documents provided to it or generated by it, including but not limited to:
   a. Proposals about which it is notified;
   b. Applications, Technical Reviews and comments provided by the public;
   c. Comments or objections made in respect of a Proposal by members of the Regional Body;

4. The first report shall be provided by each jurisdiction one year from the date that this Article comes into force and thereafter every 5 years.
5. The Regional Body shall forward each report to all members and shall give the members at least 30 days to consider it.
6. Following that period, the Regional Body shall consider the reports submitted by each Party.
7. The Regional Body shall issue a Declaration of Finding on whether the programs in place in each Party:
   a. Meet or exceed the provisions of this Agreement;
   b. Do not meet the provisions of this Agreement; or,
   c. Would meet the provisions of this Agreement if certain modifications were made and what options may exist to assist the jurisdiction in meeting the provisions of this Agreement.
8. The Regional Body shall distribute the reports to its members.
9. Any Party may ask the Regional Body to issue a Declaration of Finding respecting the Water management and Water conservation and efficiency programs of any of the Parties, including themselves, to determine whether the programs,
   a. Meet or exceed the provisions of this Agreement;
   b. Do not meet the provisions of this Agreement; or,
   c. Would meet the provisions if certain modifications were made and what options may exist to assist the jurisdiction in meeting the provisions of this Agreement.
10. As one of its duties and responsibilities, the Regional Body may recommend a range of approaches to the Parties with respect to the development, enhancement and application of Water management and Water conservation and efficiency programs to implement the Standard and Exception Standard reflecting improved scientific understanding of the Waters of the Basin, including groundwater, and the impacts of Withdrawals on the Basin Ecosystem.

ARTICLE 301
INFORMATION

1. In order to develop and maintain a compatible base of Water use information, the Parties shall annually gather and share accurate and comparable information on all Withdrawals in excess of 100,000 gallons per day (379,000 litres per day) or greater average in any 30-day period (including Consumptive Uses) and all Diversions, including all Exceptions.
2. The Parties shall report this information to a Great Lakes—St. Lawrence River Water use data base repository and aggregated information shall be available to the public, consistent with the confidentiality requirements in Article 704.
3. Each Party shall require users to report their monthly Withdrawals, Consumptive Uses and Diversions on an annual basis.
4. Information gathered shall be used to improve scientific understanding of the Waters of the Basin, the impacts of Withdrawals from various locations and Water sources on the Basin Ecosystem, understanding of the role of groundwater, and to clarify what groundwater forms part of the Waters of the Basin.

ARTICLE 302
SCIENCE

1. The Parties commit to provide leadership for the development of a collaborative strategy with other regional partners to strengthen the scientific basis for sound Water management decision making under this Agreement.
2. The strategy shall guide the collection and application of scientific information to support:
   a. An improved understanding of the individual and Cumulative Impacts of Withdrawals from various locations and Water sources on the Basin Ecosystem and to develop a mechanism by which impacts of Water Withdrawals may be assessed;
   b. The periodic assessment of Cumulative Impacts of Withdrawals, Diversions and Consumptive Uses on a Great Lake and St. Lawrence River watershed basis;
   c. Improved scientific understanding of the Waters of the Basin;
   d. Improved understanding of the role of groundwater in Basin Water resources management; and,
   e. The development, transfer and application of science and research related to Water conservation and Water use efficiency.

ARTICLE 303
AVAILABILITY OF APPLICATIONS AND RECORDS OF DECISION

1. Each Party shall seek to make publicly available all Applications it receives that are subject to management and regulation under this Agreement.
2. Each Party shall seek to make publicly available the record of decision including comments, objections and responses.

ARTICLE 304
WATER CONSERVATION AND EFFICIENCY PROGRAM

1. Within two years of the signing of the Agreement, the Regional Body shall identify Basin-wide Water conservation and efficiency objectives to assist the Parties in developing their Water conservation and efficiency program. These objectives shall be based on the goals of:
   a. Ensuring improvement of the Waters and Water Dependent Natural Resources;
   b. Protecting and restoring the hydrologic and ecosystem integrity of the Basin;
   c. Retaining the quantity of surface water and groundwater in the Basin;
   d. Ensuring sustainable use of Waters of the Basin; and,
   e. Promoting the efficiency of use and reducing losses and waste of Water.
2. Within two years after Article 200, paragraphs 1 and 2 come into force (Prohibition of Diversions and Management of Exceptions), each Party shall develop its own Water conservation and efficiency goals and objectives consistent with the Basin-wide goals and objectives, and shall develop and implement a Water conservation and efficiency program, either voluntary or mandatory, within its jurisdiction based on the Party's goals and objectives. Each Party shall thereafter annually assess its programs in meeting the Party's goals and objectives, report to the Regional Body every five years and make this annual assessment available to the public.

d. Declarations of Finding;
e. Materials in respect of dispute resolution;
f. Water management program reports;
g. Cumulative Impact Assessments;
h. The science strategy developed under Article 302;
i. Reports on Water conservation and efficiency programs; and,
j. Amendments to the Agreement agreed to by the Parties.

9. Public access to documents is recognized to be subject to confidentiality obligations set out in this Agreement.
10. To the greatest extent possible, the Regional Body shall conduct public participation and Regional Review concurrently and jointly with similar processes under the Compact and in the Originating Party's jurisdiction.
11. The Parties recognize the importance and necessity of public participation in promoting management of the Water resources of the Basin. Consequently, meetings of the Regional Body, at which official action is to be taken, shall be open to the public except when the Regional Body is meeting in executive session.
12. The minutes of the Regional Body shall be a public record.

CHAPTER 5
REGIONAL REVIEW

ARTICLE 500
REVIEW OF PROPOSALS

1. This Chapter sets out the process for Regional Review.
2. Regional Review provides the Parties an opportunity to address concerns with respect to a Proposal.
3. Unless the Applicant or the Originating Party otherwise requests, it shall be the goal of the Regional Body to conclude its review no later than 90 days after notice under Article 501 of such Proposal is received from the Originating Party.
4. The Parties agree that the protection of the integrity of the Great Lakes-St. Lawrence River Basin Ecosystem shall be the overarching principle for reviewing Proposals subject to Regional Review, recognizing uncertainties with respect to demands that may be placed on Basin Water, including groundwater, levels and flows of the Great Lakes and the St. Lawrence River, future changes in environmental conditions, the reliability of existing data and the extent to which Diversions may harm the integrity of the Basin Ecosystem.
5. The Originating Party shall have lead responsibility for coordinating information for resolution of issues related to evaluation of a Proposal and shall consult with the Applicant throughout the Regional Review Process.

ARTICLE 501
NOTICE FROM ORIGINATING PARTY TO THE REGIONAL BODY AND THE PUBLIC

1. The Originating Party shall determine if an Application is subject to Regional Review.
2. If so, the Originating Party shall provide timely notice to the Regional Body, the Parties to this Agreement, and the public.
3. Such notice shall not be given unless and until all information, documents and the Originating Party's Technical Review needed to evaluate whether the Proposal meets the Exception Standard have been provided.

ARTICLE 502
OTHER NOTICE

1. An Originating Party may:
   a. Provide notice to the Regional Body of an Application, even if notification is not required under this Agreement; or,
   b. Request Regional Review of an application, even if Regional Review is not required under this Agreement.
2. A majority of the members of the Regional Body may request Regional Review of a regionally significant or potentially precedent setting Proposal.
3. Any such Regional Review shall be undertaken only after consulting the Applicant.
4. An Originating Party may provide preliminary notice of a potential Application.

ARTICLE 503
PUBLIC PARTICIPATION

1. To ensure adequate public participation, the Regional Body shall adopt procedures for the review of Proposals that are subject to Regional Review in accordance with this Article.
2. The Regional Body shall provide notice to the public of a Proposal undergoing Regional Review. Such notice shall indicate that the public has an opportunity to comment in writing to the Regional Body on whether the Proposal meets the Exception Standard.
3. The Regional Body shall hold a public meeting in the State or Province of the Originating Party in order to receive public comment on the issue of whether the Proposal under consideration meets the Exception Standard.
4. The Regional Body shall consider the comments received before issuing a Declaration of Finding.
5. The Regional Body shall forward the comments it receives to the Originating Party.

ARTICLE 504
FIRST NATIONS AND TRIBES CONSULTATION

1. In respect of a Proposal, appropriate consultation shall occur with First Nations or federally recognized Tribes in the Originating Party in the manner suitable to the individual Proposal and the laws and policies of the Originating Party.

2. The Regional Body shall:
   a. Provide notice to the First Nations and federally recognized Tribes within the Basin of a Proposal undergoing Regional Review and an opportunity to comment in writing to the Regional Body on whether the Proposal meets the Exception Standard;
   b. Inform the First Nations and federally recognized Tribes of public meetings and invite them to attend;
   c. Forward the comments that it receives from the First Nations and federally recognized Tribes under this Article to the Originating Party for its consideration before issuing a Declaration of Finding; and,
   d. Consider the comments that it receives from the First Nations and federally recognized Tribes under this Article before issuing a Declaration of Finding.
3. In addition to the specific consultation mechanisms described above, the Regional Body shall seek to establish mutually agreed upon mechanisms or processes to facilitate dialogue with, and input from First Nations and federally recognized Tribes on matters to be dealt with by the Regional Body; and, the Regional Body or the appropriate Parties shall seek to establish mutually agreed upon mechanisms to facilitate on-going scientific and technical interaction and data exchange regarding matters falling within the scope of this Agreement.

ARTICLE 505
TECHNICAL REVIEW

Originating Party's Technical Review

1. The Originating Party shall provide the Regional Body with its Technical Review of the Proposal under consideration.
2. The Technical Review shall thoroughly analyze the Proposal and provide an evaluation of the Proposal sufficient for a determination of whether the Proposal meets the Exception Standard.

Independent Technical Review

3. Any Party may undertake an independent Technical Review of a Proposal and the Originating Party shall assist by providing additional information as may be required.
4. At the request of the majority of its members, the Regional Body shall make such arrangements as it considers appropriate for an independent Technical Review of a Proposal.
5. All Parties shall exercise their best efforts to ensure that a Technical Review undertaken under paragraphs 3 or 4 does not unnecessarily delay the decision by the Originating Party on the Application. Unless the Applicant or the Originating Party otherwise requests, all Technical Reviews shall be completed no later than 60 days after the date the notice of the Proposal was given to the Regional Body.

ARTICLE 506
DECLARATION OF FINDING

1. The Regional Body shall meet to consider a Proposal. The Applicant shall be provided with an opportunity to present the Proposal to the Regional Body at such time.

2. The Regional Body, having considered the notice, the Originating Party's Technical Review, any other independent Technical Review that is made, any comments or objections including the analysis of comments made by the public, First Nations and federally recognized Tribes, and any other information that is provided under this Agreement shall issue a Declaration of Finding that the Proposal under consideration:
   a. Meets the Exception Standard;
   b. Does not meet the Exception Standard; or,
   c. Would meet the Exception Standard if certain conditions were met.
3. An Originating Party may decline to participate in a Declaration of Finding made by the Regional Body.
4. The Parties recognize and affirm that it is preferable for all members of the Regional Body to agree whether the Proposal meets the Exception Standard.
5. If the members of the Regional Body who participate in the Declaration of Finding all agree, they shall issue a written Declaration of Finding with consensus.
6. In the event that the members cannot agree, the Regional Body shall make every reasonable effort to achieve consensus within 25 days.
7. Should consensus not be achieved, the Regional Body may issue a Declaration of Finding that presents different points of view and indicates each Party's conclusions.
8. The Regional Body shall release the Declarations of Finding to the public.
9. The Originating Party shall consider the Declaration of Finding before it makes a decision on the Proposal.

CHAPTER 6
DISPUTE RESOLUTION

ARTICLE 600
GENERAL

1. The Parties undertake to resolve any disputes under this Agreement in a conciliatory, co-operative and harmonious manner.
2. Where dispute resolution is required, the Parties undertake to use the dispute resolution mechanisms provided for in this Chapter to arrive at a mutually satisfactory resolution.
3. The provisions of this Chapter shall not be used to dispute a Declaration of Finding on a Proposal that is subject to Regional Review.
4. A Person who is not a Party to this Agreement may not seek dispute resolution under this Agreement.

ARTICLE 601
PROCEDURE FOR DISPUTE RESOLUTION

Initial Steps

1. A Party may provide detailed written notice to another Party and to the Regional Body of a dispute that in its opinion requires resolution under this Chapter.

Measures to Settle Disputes

2. If the dispute is not resolved informally, the Chair shall initiate the most appropriate measures to resolve the dispute. These measures may include:
   a. The appointment of a panel to hear the Parties to the dispute;
   b. Consultation with experts;
   c. Establishment of a working or fact-finding group; or,
   d. The use of dispute resolution mechanisms such as conciliation or mediation.
3. After resolution is attempted by one of the means suggested in paragraph 2, recommendations shall be made in accordance with directions given by the Chair at the time the mean was adopted. The disputing Parties shall consider the recommendations and exercise their best efforts to settle their dispute.

Reference to Regional Body

4. If the disputing Parties, having considered the recommendations, fail to settle the dispute, any one of them may refer the matter to the Regional Body. In this case, the Chair shall, in consultation with the other members who are not involved in the dispute, direct the Regional Body to take such further steps as he or she considers advisable in the circumstances to resolve the dispute.
5. When those steps have been taken, the Regional Body shall issue its recommendations regarding the resolution of the dispute.
6. The disputing Parties shall consider the recommendations and shall exercise their best efforts to settle.

Role of the Chair

7. In the event that a dispute involves the Party of the Chair, the role of the Chair set out in this Chapter shall be filled by the Vice Chair or failing him or her, another member who is not a Party to the dispute.

CHAPTER 7
FINAL PROVISIONS

ARTICLE 700
REAFFIRMATION OF CONSTITUTIONAL POWERS AND RESPONSIBILITIES

1. Nothing in this Agreement alters the legislative or other authority of Parliament or of the Provincial legislatures or of the federal Government of Canada or of the Provincial governments or the rights of any of them with respect to the exercise of their legislative or other authorities under the Constitution of Canada.
2. This Agreement is not intended to infringe upon the treaty power of the United States of America, nor shall any term hereof be construed to alter or amend any treaty or term thereof that has been or may hereafter be executed by the United States of America.

ARTICLE 701
RELATIONSHIP TO AGREEMENTS CONCLUDED BY CANADA OR THE UNITED STATES OF AMERICA

1. Nothing in this Agreement is intended to provide nor shall be construed to provide, directly or indirectly, to any Person any right, claim or remedy under any treaty or international agreement nor is it intended to derogate any right, claim, or remedy that already exists under any treaty or international agreement.
2. Nothing in this Agreement is intended to affect the application of the Boundary Waters Treaty of 1909 whose requirements continue to apply in addition to the requirements of this Agreement.

ARTICLE 702
RELATIONSHIP TO FIRST NATIONS AND TRIBES

1. Nothing in this Agreement is intended to abrogate or derogate from treaty rights or rights held by any Tribe recognized by the federal government of the United States based upon its status as a Tribe recognized by the federal government of the United States.
2. Nothing in this Agreement is intended to abrogate or derogate from the protection provided for the existing aboriginal or treaty rights of aboriginal peoples in Ontario and Québec as recognized and affirmed by section 35 of the Constitution Act, 1982.

ARTICLE 703
RELATIONSHIP TO OTHER AGREEMENTS AMONG THE PARTIES

1. The Parties assert that by this Agreement they are fulfilling their existing commitments with respect to each other under the Great Lakes Charter and the Great Lakes Charter Annex.
2. The obligations of this Agreement shall be co-ordinated with any obligations set out in other environmental and conservation agreements between or among the Parties.

ARTICLE 704
CONFIDENTIALITY

1. Nothing in this Agreement requires a Party to breach confidentiality obligations or requirements prohibiting disclosure that it has under its own laws, to compromise security or a person's commercially sensitive or proprietary information.
2. A Party may take steps, including but not limited to deletion and redaction, deemed necessary to protect any confidential, proprietary or commercially sensitive information when distributing information to other Parties. The Party shall summarize or paraphrase any such information in a manner sufficient for the Regional Body to exercise its authorities contained in this Agreement.

ARTICLE 705
MEASURES SUBJECT TO TRANSITIONAL PROVISIONS

Each Party shall, from the date of execution of this Agreement, exercise its best efforts to refrain from taking any action that would defeat the objectives of this Agreement.

ARTICLE 706
AMENDMENTS

1. The Parties may agree in writing to amend this Agreement.
2. An amendment to this Agreement requires the consent of all Parties to the Agreement.
3. When so agreed, and approved in accordance with the applicable legal procedures of each Party, an amendment shall constitute an integral part of this Agreement from the date of its entry into force.

ARTICLE 707
WITHDRAWAL AND TERMINATION PROCEDURE

1. Twelve months after it gives written notice to all other Parties, a Party may withdraw from this Agreement.
2. If a Party withdraws, the Agreement shall remain in force among the remaining Parties.
3. This Agreement shall be terminated when all Parties, or all remaining Parties, agree in writing.

ARTICLE 708
ENTIRE AGREEMENT

The Parties consider this Agreement to be a complete and integral whole. Each provision is material and any change or amendment made must be agreed to by all Parties.

ARTICLE 709
ENTRY INTO FORCE

Parts of this Agreement come into force at different times. Except as otherwise provided in this Agreement, if in any part of the Agreement set out below the parties agree to adopt or implement measures or undertake any other action, this shall be done as expeditiously as possible and in any event no later than the earliest date specified for the part in this Article.

The following are the dates that the parts of this Agreement come into force:

1. On the day the Agreement is signed by all Parties:
   a. Preamble;
   b. Chapter 1 (General Provisions);
   c. Article 202 (Implementation of the Standard and the Exception Standard);
   d. Article 208 (Exemptions from the Agreement);
   e. Article 302 (Science);
   f. Article 303 (Availability of Applications and Records of Decisions);
   g. Article 304, paragraph 1 (Water Conservation Objectives);
   h. Chapter 4 (Great Lakes—St. Lawrence River Water Resources Regional Body);
   i. Chapter 6 (Dispute Resolution); and,
   j. Chapter 7 (Final Provisions).

2. 60 days after the last Party has notified the others that it has completed the Measures necessary to implement the following parts of this Agreement:
   a. Article 200, paragraphs 1 and 2 (Prohibition of Diversions and Management and Regulation of Exceptions);
   b. Article 201 (Exceptions to Prohibition of Diversions);
   c. Article 203 (The Standard for management of Withdrawals and Consumptive Uses);
   d. Article 204 (Proposals Subject to Regional Review);
   e. Article 207 (Applicability);
   f. Article 209 (Amendments to the Standard and Exception Standard and Periodic Assessment of Cumulative Impacts);
   g. Article 210 (Judicial Review);
   h. Article 300 (Water Management Program Review);
   i. Article 304, except for paragraph 1 (Implementation of Water Conservation Programs of the Parties); and,
   j. Chapter 5 (Regional Review).
3. 5 years after the date paragraph 2 of this Article comes into force or 60 days after the last Party has notified the others that it has completed the Measure necessary to implement it, whichever is first:
   a. Article 200, paragraph 3 (Management of Withdrawals and Consumptive Uses);
   b. Article 205 (Proposals Subject to Prior Notice);
   c. Article 206 (Management and Regulation of New or Increased Withdrawals and Consumptive Uses); and,
   d. Article 301 (Information).
4. Except as otherwise set out in this Agreement, 60 days following the date that the last Party has notified the others that it has completed the necessary legal procedures, any remaining parts of this Agreement shall come into force.
5. The terms, agreements, and review processes contained in the Great Lakes Charter of 1985 ("Charter") shall remain in full force and effect unless and until the Parties to the Charter certify in writing that it has been replaced by the terms of this Agreement. Until the coming into force of Chapter 5 of this Agreement, the Regional Body as described in Chapter 4 shall be used for all prior notice and consultation activities as described in the Charter.

ARTICLE 710
LANGUAGE

This Agreement has been made and executed in English and French and both versions are equally authoritative.

Signed this 13th day of December, 2005.

Governor of Illinois

Governor of Indiana

Governor of Michigan

Governor of Minnesota

Governor of New York

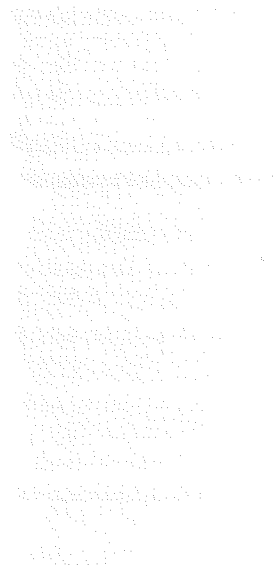
Governor of Ohio

Premier of Ontario

Governor of Pennsylvania

Premier of Québec

Governor of Wisconsin



Province of Ontario
Water Conservation and Efficiency Program Review
November 2012

The following information is submitted by the Province of Ontario to the Great Lakes Regional Body pursuant to the provisions in the Agreement Article 304 of the *Great Lakes-St.Lawrence River Basin Sustainable Water Resources Agreement* (Agreement).

1. Lead agencies and contact persons:

Sharon Bailey, Director
Land and Water Policy Branch
Ontario Ministry of the Environment

Eric Boysen, Director
Biodiversity Branch
Ontario Ministry of Natural Resources

2. Status of Ontario's water conservation and efficiency goals and objectives consistent with the Basin-wide goals and objectives:

Ontario has adopted water conservation and efficiency goals and objectives that are consistent with the Basin-wide goals and objectives. The goals and objectives were developed based on stakeholder consultation and public comments received. A decision notice was posted on the Environmental Bill of Rights Registry: http://www.ebr.gov.on.ca/ERS-WEB-External/display.do?language=en&currentURL=%2Fdisplaynoticecontent.do%3FnoticeId%3DMTA2Mjcx%26statusId%3DMTY3MDA3

Ontario's Goals are identical to the Goals prescribed in the Agreement:

1. Ensuring improvement of the waters and water dependent natural resources;
2. Protecting and restoring the hydrologic and ecosystem integrity of the Basin;
3. Retaining the quantity of surface water and groundwater in the Basin;
4. Ensuring sustainable use of waters of the Basin; and,
5. Promoting the efficiency of use and reducing losses and waste of water.

Ontario's objectives are consistent with the regional objectives adopted for the Basin and have been tailored for Ontario to reflect the direction in the Water Opportunities and Water Conservation Act, 2010, and to address stakeholder requests to emphasize the importance of taking ecological water needs into account in decision making, in keeping with the broader ecosystem protection and restoration goals of the Agreement.

1) Guide programs toward long-term sustainable water use and management including taking ecosystem needs for water into account.

a) Use adaptive programs that are goal-based, accountable and measurable over time.
b) Develop and implement programs openly and collaboratively, including with local stakeholders, Aboriginal people, governments and the public.
c) Prepare and maintain long-term water demand forecasts.
d) Conduct and improve multi-scale water budgets and water quantity risk assessments.
e) Develop long-term strategies that incorporate water conservation and efficient water use and integrate them with other environmental management practices and considerations such as energy use, climate change, and the protection and restoration of hydrological and ecological integrity.
f) Review and build on existing programs and planning efforts and consider other jurisdictions' practices and experiences.

2) Adopt and implement supply and demand management to promote efficient use and conservation of water resources.
   a) Maximize water use efficiency and minimize waste of water.
   b) Promote appropriate innovative water, wastewater and stormwater technologies and services.
   c) Conserve and manage existing water supplies to prevent or delay the demand for and development of additional supplies.
   d) Provide incentives to encourage efficient water use and conservation.
   e) Include water conservation and efficiency in the review of proposed new or increased uses.
   f) Promote investment in and maintenance of efficient water infrastructure and green infrastructure.

3) Improve monitoring and standardize data reporting among state and provincial water conservation and efficiency programs.
   a) Improve and increase the measurement and evaluation of water conservation and water use efficiency.
   b) Encourage measures to monitor, account and report on water loss.
   c) Track and report program progress and effectiveness.
   d) Monitor and collect information related to the waters of Ontario.
   e) Collect and report water use information.

4) Develop science, technology and research.
   a) Encourage the identification and sharing of innovative water, wastewater and stormwater management practices and technologies.
   b) Encourage research, development and implementation of water conservation and efficiency technologies, services and standards.
   c) Seek and involve traditional knowledge and practices of Aboriginal people in Ontario.

d) Strengthen scientific understanding of the linkages between water resources and use, water conservation practices, and ecological needs and responses.
e) Increase understanding of water and its movement including groundwater and its interaction with surface water, and the effects of climate change on water resources.

5) Develop education programs and information sharing for all water users.
   a) Ensure equitable public access to water conservation and efficiency tools and information.
   b) Inform, educate and increase awareness regarding the importance of water to life, and the need for conservation and efficient water use.
   c) Promote the cost-saving aspect of water conservation and efficiency for both short-term and long-term economic sustainability.
   d) Share conservation and efficiency experiences, including successes and lessons learned.
   e) Enhance and contribute to regional information sharing.
   f) Encourage and increase training opportunities in collaboration with professional or other organizations in order to increase water conservation and efficiency practices and technological applications.
   g) Ensure that conservation programs are transparent and that information is readily available.
   h) Aid in the development and dissemination of sector-based best management practices and results achieved.
   i) Seek opportunities for the sharing of traditional knowledge and practices of Aboriginal people.

3. Ontario's water conservation and efficiency program overview:

On November 29, 2010, Ontario passed the Water Opportunities and Water Conservation Act, 2010, which is a critical step to Ontario fulfilling its water conservation and efficiency Agreement commitments. The Act builds upon Ontario's expertise in clean water technology and sets out a framework to make the province a continental leader in water innovation to help address global water challenges. Among other things, the Act sets the framework to encourage Ontarians to use water more efficiently by creating and implementing innovative approaches to protecting and conserving water resources for current and future generations.

See attached Programs Document which describes Ontario's other contributing water management and conservation statutes, programs and policies.

4. Consistency with Regional Objectives:

Ontario's program is consistent with the regional objectives in the promotion of environmentally sound and economically feasible water conservation measures (see

table below and attached Programs Document). The programs (statutes, programs and policies) below may link to more than one objective.

REGIONAL OBJECTIVES	LEGISLATIVE OR PROGRAM CITATION
o Guide programs toward long-term sustainable water use.	*Ontario is implementing a range of adaptive programs and conservation and efficiency strategies that take into account the importance of water to related ecosystems, working with local stakeholders, and improving water demand forecasts, and water budgets, e.g.:* 1. Ontario Water Resources Act and the Water Taking Regulation 2. Clean Water Act, 2006 3. Conservation Authorities Act, 1990 4. Water Budget Studies 5. Lakes and Rivers Improvement Act 6. Endangered Species Act, 2007 7. Ontario Great Lakes Wetland Conservation Action Plan 8. Greenbelt Act, 2005 and Greenbelt Plan 9. Niagara Escarpment Planning and Development Act and Plan 10. Ontario's Biodiversity Strategy 11. Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem 12. Joint Strategic Plan for the Management of Great Lakes Fisheries
o Adopt and implement supply and demand management to promote efficient use and conservation of water resources.	*Ontario has a range of programs that manage water supply and demand to achieve efficient use and conservation of water resources — including promoting innovative water technologies, green infrastructure and water use efficiency, e.g.:* 13. Water Opportunities and Water Conservation Act, 2010 14. Financial Plans Regulation under the Safe Drinking Water Act, 2002 15. Building Code Act, 1992 and the Building Code 16. Green Energy Act, 2009 17. Oak Ridges Moraine Conservation Act, 2001 and Plan 18. Places to Grow Act, 2005 and Growth Plan 19. Lake Simcoe Protection Act, 2008 and Lake Simcoe Protection Plan

REGIONAL OBJECTIVES	LEGISLATIVE OR PROGRAM CITATION
	20. Planning Act and Provincial Policy Statement 21. Municipal Stormwater Management Systems 22. Ontario Small Waterworks Assistance Program
o Improve monitoring and standardize data reporting among State and Provincial water conservation and efficiency programs.	*A range of Ontario programs support improved monitoring and standardized data reporting related to water supply, water use and conservation/ efficiency, e.g.:* 23. Ontario Low Water Response 24. Ontario Surface Water Monitoring 25. Groundwater Monitoring Network and Climate Change Project 26. Water Use Reporting 27. Water Resources Information Program 28. Ecological Framework for Recreational Fisheries Management in Ontario 29. The Ontario Geological Survey's Groundwater Mapping Program 30. Climate Change Modelling and the Weather and Water Information Gateway
o Develop science, technology and research.	*The following programs encourage science, technology and research to implement the best in water, wastewater and stormwater technology:* 31. Showcasing Water Innovation 32. Ontario Clean Water Agency 33. Innovation Demonstration Fund 34. Green Focus on Innovation and Technology 35. Ontario Research Fund - Research Excellence Water Round 36. Investor Accelerator Fund 37. Ontario Ministry of Agriculture, Food and Rural Affairs / University of Guelph Partnership Research Program 38. New Directions Research Program 39. Anishinabek/Ontario Fisheries Resource Centre 40. Climate Ready: Ontario's Adaptation Strategy and Action Plan

REGIONAL OBJECTIVES	LEGISLATIVE OR PROGRAM CITATION
o Develop education programs and information sharing for all water users.	*Ontario is implementing a range of education programs and other programs that raise awareness of the importance of water and the value of conservation, efficiency and cost-saving, and which promote the sharing of best management practices e.g.:* 41. Ontario Drinking Water Stewardship Program 42. Water Efficiency Labelling 43. Best Management Practices 44. Canada-Ontario Environmental Farm Plan 45. Species at Risk Stewardship Fund 46. Invading Species Awareness Program 47. Community Fisheries and Wildlife Involvement Program 48. Eastern Habitat Joint Venture 49. Ontario Parks Water Conservation Initiatives

5. Ontario's water conservation and efficiency program implementation timeline and status:

Ontario's water conservation and efficiency program is in place and is being implemented. See attached Programs Document for more details.

ATTACHMENT

ONTARIO'S WATER CONSERVATION AND EFFICIENCY GOALS, OBJECTIVES AND PROGRAMS IN ACCORDANCE WITH THE GREAT LAKES-ST. LAWRENCE RIVER BASIN SUSTAINABLE WATER RESOURCES AGREEMENT

Introduction

In December 2005, Ontario Premier McGuinty, Québec Premier Charest, and the governors of the eight U.S. Great Lakes states (Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania and Wisconsin) signed the *Great Lakes – St. Lawrence River Basin Sustainable Water Resources Agreement* (Agreement). This good-faith agreement committed the provinces and states that share the Great Lakes to adopt and implement measures to better protect and conserve the waters of the Great Lakes – St. Lawrence River Basin (Basin).

Among other things, each jurisdiction committed to developing and implementing state and provincial water conservation and efficiency goals, objectives and programs (mandatory or voluntary). In this document, Ontario sets out its goals, objectives and programs for water conservation and efficiency. Ontario's goals are identical to the goals in the Agreement. Ontario's objectives are consistent with the regional objectives for the Basin which were developed cooperatively by all jurisdictions and adopted in December 2007. These goals, objectives and programs are a significant step forward in implementing the province's commitments under the Agreement. The goals and objectives are broad in scope, aiming to enhance long-term, sustainable water-use practices and management; promote water conservation and efficiency; improve monitoring and data sharing amongst jurisdictions in the Great Lakes Basin; develop science and research and education and outreach to help advance our water conservation efforts. The province's existing water management and water conservation programs, including the Water Opportunities and Water Conservation Act, 2010, support achievement of the goals and objectives.

The province continues to take action to protect the Great Lakes. In June 2012, a draft Ontario Great Lakes Strategy was released which discusses the various ways the province would take action to protect and restore the Great Lakes. The draft Strategy would help to advance Great Lakes water quantity management and the fulfillment of Ontario's water conservation and efficiency goals and objectives.

The Ministries of the Environment and Natural Resources will work with water users and other ministries to meet these goals and objectives and implement programs.

The remainder of the document describes Ontario's water conservation and efficiency goals, objectives (Table 1) and programs (Appendices A and B).

On August 5, 2009, the Ministries of the Environment and Natural Resources posted a Proposal Notice on the Environmental Registry to seek public input on proposals for implementing key Ontario commitments under the Agreement. Among the proposals consulted on was the development of Ontario water conservation and efficiency goals and objectives, as committed to under the Agreement. Based on consultation and comments received, Ontario is adopting the Basin-wide water conservation goals and objectives.

Ontario's objectives are consistent with the regional objectives adopted for the Basin. They have been tailored for Ontario to reflect the direction in the Water Opportunities and Water Conservation Act, 2010. They have also been adapted to address stakeholder requests to emphasize the importance of taking ecological water needs into account in decision making, in keeping with the broader ecosystem protection and restoration goals of the Agreement.

GOALS (identical to the *Great Lakes-St. Lawrence River Basin Sustainable Water Resources Agreement*)

1. Ensuring improvement of the waters and water dependent natural resources;

2. Protecting and restoring the hydrologic and ecosystem integrity of the Basin;

3. Retaining the quantity of surface water and groundwater in the Basin;

4. Ensuring sustainable use of waters of the Basin; and,

5. Promoting the efficiency of use and reducing losses and waste of water.

Table 1. Objectives (consistent with the Basin-wide Objectives)	
1. Guide programs toward long-term sustainable water use and management including taking ecosystem needs for water into account.	a. Use adaptive programs that are goal-based, accountable and measurable over time. b. Develop and implement programs openly and collaboratively, including with local stakeholders, Aboriginal people, governments and the public. c. Prepare and maintain long-term water demand forecasts. d. Conduct and improve multi-scale water budgets and water quantity risk assessments. e. Develop long-term strategies that incorporate water conservation and efficient water use and integrate them with other environmental management practices and considerations such as energy use, climate change, and the protection and restoration of hydrological and ecological integrity. f. Review and build on existing programs and planning efforts and consider other jurisdictions' practices and experiences.
2. Adopt and implement supply and demand management to promote efficient use and conservation of water resources.	a. Maximize water use efficiency and minimize waste of water. b. Promote appropriate innovative water, wastewater and stormwater technologies and services. c. Conserve and manage existing water supplies to prevent or delay the demand for and development of additional supplies. d. Provide incentives to encourage efficient water use and conservation. e. Include water conservation and efficiency in the review of proposed new or increased uses. f. Promote investment in and maintenance of efficient water infrastructure and green infrastructure.
3. Improve monitoring and standardize data reporting among state and provincial water conservation and efficiency programs.	a. Improve and increase the measurement and evaluation of water conservation and water use efficiency. b. Encourage measures to monitor, account and report on water loss. Track and report program progress and effectiveness. c. Monitor and collect information related to the waters of Ontario. d. Collect and report water use information.

Table 1. Objectives (consistent with the Basin-wide Objectives)	
4. Develop science, technology and research.	a. Encourage the identification and sharing of innovative water, wastewater and stormwater management practices and technologies. b. Encourage research, development and implementation of water conservation and efficiency technologies, services and standards. c. Seek and involve traditional knowledge and practices of Aboriginal people in Ontario. d. Strengthen scientific understanding of the linkages between water resources and use, water conservation practices, and ecological needs and responses. e. Increase understanding of water and its movement including groundwater and its interaction with surface water, and the effects of climate change on water resources.
5. Develop education programs and information sharing for all water users.	a. Ensure equitable public access to water conservation and efficiency tools and information. b. Inform, educate and increase awareness regarding the importance of water to life, and the need for conservation and efficient water use. c. Promote the cost-saving aspect of water conservation and efficiency for both short-term and long-term economic sustainability. d. Share conservation and efficiency experiences, including successes and lessons learned. e. Enhance and contribute to regional information sharing. f. Encourage and increase training opportunities in collaboration with professional or other organizations in order to increase water conservation and efficiency practices and technological applications. g. Ensure that conservation programs are transparent and that information is readily available. h. Aid in the development and dissemination of sector-based best management practices and results achieved. i. Seek opportunities for the sharing of traditional knowledge and practices of Aboriginal people.

Appendix A. Index of Ontario's Contributing Water Management and Conservation Statutes, Programs and Policies and Lead Provincial Ministry

Guide programs toward long-term sustainable water use and management including taking ecosystem needs for water into account

1. Ontario Water Resources Act and the Water Taking Regulation	MOE
2. Clean Water Act, 2006	MOE
3. Conservation Authorities Act, 1990	MNR
4. Water Budget Studies	MNR
5. Lakes and Rivers Improvement Act	MNR
6. Endangered Species Act, 2007	MNR
7. Ontario Great Lakes Wetland Conservation Action Plan	MNR
8. Greenbelt Act, 2005 and Greenbelt Plan	MMAH
9. Niagara Escarpment Planning and Development Act and Plan	MNR
10. Ontario's Biodiversity Strategy	MNR
11. Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem	MOE, MNR, OMAFRA
12. Joint Strategic Plan for the Management of Great Lakes Fisheries	MNR

Adopt and implement supply and demand management to promote efficient use and conservation of water resources

13. Water Opportunities and Water Conservation Act, 2010	MOE
14. Financial Plans Regulation under the Safe Drinking Water Act, 2002	MOE
15. Building Code Act, 1992 and the Building Code	MMAH
16. Green Energy Act, 2009	Energy
17. Oak Ridges Moraine Conservation Act, 2001 and Plans	MMAH
18. Places to Grow Act, 2005 and Growth Plan	MOI
19. Lake Simcoe Protection Act, 2008 and Lake Simcoe Protection Plan	MOE
20. Planning Act and Provincial Policy Statement	MMAH
21. Municipal Stormwater Management Systems	MOE
22. Ontario Small Waterworks Assistance Program	MOI

Improve monitoring and standardize data reporting among state and provincial water conservation and efficiency programs

23. Ontario Low Water Response	MNR
24. Ontario Surface Water Monitoring	MNR
25. Groundwater Monitoring Network and Climate Change Project	MOE
26. Water Use Reporting	MOE/MNR
27. Water Resources Information Program	MNR
28. Ecological Framework for Recreational Fisheries Management in Ontario	MNR
29. The Ontario Geological Survey's Groundwater Mapping Program	MNDM
30. Climate Change Modelling and the Weather and Water Information Gateway	

	MNR

Develop science, technology and research

31. Showcasing Water Innovation Fund	MOE
32. Ontario Clean Water Agency	MOE
33. Innovation Demonstration Fund	MEDI
34. Green Focus on Innovation and Technology	MEDI
35. Ontario Research Fund - Research Excellence Water Round	MEDI
36. Investment Accelerator Fund	MEDI
37. Ontario Ministry of Agriculture, Food and Rural Affairs /University of Guelph Partnership Research Program	OMAFRA
38. New Directions Research Program	OMAFRA
39. Anishinabek/Ontario Fisheries Resource Centre	MNR
40. Climate Ready: Ontario's Adaptation Strategy and Action Plan	MOE

Develop education programs and information sharing for all water users

41. Ontario Drinking Water Stewardship Program	MOE
42. Water Efficiency Labelling	MOE
43. Best Management Practices	OMAFRA
44. Canada-Ontario Environmental Farm Plan Program	OMAFRA
45. Species at Risk Stewardship Fund	MNR
46. Invading Species Awareness Program	MNR
47. Community Fisheries and Wildlife Involvement Program	MNR
48. Eastern Habitat Joint Venture	MNR
49. Ontario Parks Water Conservation Initiatives	MNR

Ontario Ministry Acronyms Legend
Finance – Ministry of Finance
OMAFRA – Ministry of Agriculture, Food and Rural Affairs
Energy – Ministry of Energy
MOI – Ministry of Infrastructure
MMAH – Ministry of Municipal Affairs and Housing
MNR – Ministry of Natural Resources
MOE – Ministry of the Environment
MEDI – Ministry of Economic Development and Innovation
MNDM – Ministry of Northern Development, and Mines
MTO – Ministry of Transportation

Appendix B. Description of Ontario's Contributing Water Management and Conservation Statutes, Programs and Policies

The following programs contribute to achieving Ontario's goals and objectives for water conservation and efficiency. The programs below may link to more than one goal or objective.

GUIDE PROGRAMS TOWARD LONG-TERM SUSTAINABLE WATER USE AND MANAGEMENT INCLUDING TAKING ECOSYSTEM NEEDS FOR WATER INTO ACCOUNT

To achieve this objective, we have a range of adaptive programs and conservation and efficiency strategies that take into account the importance of water to related ecosystems, working with local stakeholders, and improving water demand forecasts, and water budgets.

1. Ontario Water Resources Act and the Water Taking Regulation
Water takings in Ontario are governed by the Ontario Water Resources Act and the Water Taking Regulation (Ontario Regulation 387/04). The purpose of the Ontario Water Resources Act is to provide for the conservation, protection and management of Ontario's waters and for their efficient and sustainable use, in order to promote Ontario's long-term environmental, social and economic well-being. http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90o40_e.htm

The Water Taking Regulation under the Ontario Water Resources Act, outlines matters that the Ministry of the Environment must consider when considering an application for a Permit to Take Water. The Permit to Take Water Program provides for the fair sharing, conservation, and sustainable use of Ontario's waters. Any person taking more than a total of 50,000 litres of water in a day must first obtain a Permit to Take Water. Water taken for domestic uses, watering of livestock or poultry, or firefighting is excepted from the requirement to obtain a permit. http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_040387_e.htm

The regulation of water taking is done in accordance with statute, policies, guidelines and the Permit to Take Water Manual (http://www.ene.gov.on.ca/environment/en/resources/STD01_078778.html). The Water Taking Regulation specifically identifies the relevant matters that must be considered by the ministry when assessing water taking applications, including:

- the need to protect the natural functions of the ecosystem, including the natural variability of water flow or water levels, minimum stream flow, and habitat that depends on water flow or water levels;
- impact on groundwater and surface water quantity and quality;
- issues related to water availability, including low water conditions and the level of existing water use in the watershed;
- whether water conservation measures are being implemented or are proposed to be implemented in the use of water, in accordance with best water

management standards and practices for the relevant sector if these are available; and
- demonstrated need for the water (reasonable prospect of use).

New or increased water takings by regulation-specified highly consumptive water users that remove water from "high use watersheds" are either prohibited or constrained during the low-flow period. The regulation-designated high use watersheds are shown on the Summer Low Flow Map and Average Annual Flow Map specified by the regulation.

Applicants for a Permit to Take Water must complete and submit a "Schedule 1 – Implementation of Water Conservation in accordance with Best Management Practices and Standards for the Relevant Sector".

This Schedule contains a list of water conservation best management measures and practices for applicants. For the measures and practices checked off, applicants are expected to provide specific details about best management practices applied or to be applied and to cite any information used to determine water conservation and efficiency management practices and measures. Using the Schedule, applicants must declare the water conservation measures and practices they are currently implementing or anticipate implementing over the duration of the permit. They must state their goals for reducing the use, loss or waste of water or for increasing the efficiency of water use e.g., litres per day per unit of production or litres per day per capita for the residential sector. Finally, applicants are asked to identify any approval or certification that they have received for implementing water conservation and efficiency measures best management practices e.g. Environmental Farm Plan, Audubon Cooperative Sanctuary Program for Golf Courses.

In 2007, the Ontario government passed the Safeguarding and Sustaining Ontario's Water Act, which amended the Ontario Water Resources Act to enable implementation of the Great Lakes – St. Lawrence River Basin Sustainable Water Resources Agreement (Agreement) and other amendments to the Permit to Take Water program. (http://www.mnr.gov.on.ca/en/Business/Water/2ColumnSubPage/STEL02_164560.html)

The Ontario Water Resources Act was amended in 2010 to add a regulation-making authority to establish water efficiency standards or requirements for prescribed appliances and products.

2. Clean Water Act, 2006

The purpose of Clean Water Act, 2006 is to protect existing and future sources of drinking water in Ontario in terms of both quality and quantity of water. It is part of the Ontario Government's commitment to ensure the sustainability of clean, safe drinking water for all Ontarians and to implement the recommendations of the Walkerton Inquiry.

The Clean Water Act, 2006 requires that source protection committees be established and that they consist of representation from the municipalities, industries and other stakeholders from the local watershed. The committees are required to assess activities and conditions that pose a risk to the quality and quantity of municipal drinking water sources, and prepare a plan to address these risks (called "drinking water threats" under the Clean Water Act, 2006). This work includes identifying present and future groundwater and surface water municipal supplies, and areas where large regional aquifers are being recharged. A component of the source protection plan is a water budget which involves measuring how much water exists both at surface and below ground, how it moves, and how much water is withdrawn to identify potential water shortages. Part of this process will be looking at the long-term water supply and determining current or future water availability.

If there are significant risks to drinking water quantity, the source protection plan must include policies to address those risks. Such policies may address water conservation and/or water efficiency. Under the Clean Water Act, 2006, source protection committees are provided with a wide range of policy options to deal with threats that have been identified, including prohibiting the threat activity or regulating it through a risk management plan under Part IV, addressing it through a provincial approval where the threat activity is governed by an approval, land use planning tools or non-regulatory approaches such as education and outreach and incentive programs. Some guidance and/or tools may be developed to support decision-making and source protection committees to determine which best management practices in efficient water use and supply would be locally appropriate when creating their source protection plan policies.

Under the Clean Water Act, source protection planning must also consider several federal and provincial Great Lakes agreements, including the Great Lakes Charter and the Great Lakes-St Lawrence River Basin Sustainable Water Resources Agreement.
http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_06c22_e.htm

3. Conservation Authorities Act, 1990
The Conservation Authorities Act is administered by the Ministry of Natural Resources. The Act provides a statutory framework for creating, funding and the operations of conservation authorities; municipalities petition the Province to form or join a conservation authority to be able to participate in shared local resource management. As public sector organizations, conservation authorities implement programs that serve both the Ministry's and the municipal interests. There are 36 conservation authorities in Ontario today.

The current shared program with the Ministry of Natural Resources for conservation authorities is related to public safety and natural hazard prevention and management. Program activities include flood and erosion control operations, flood forecasting and warning, ice management, regulating development in hazard prone

areas and for interfering with a watercourse or wetlands, as well as hazard prevention by input into municipal planning documents. Water based hazard technical information can be developed in shoreline and watershed plans.

Each conservation authority has a provincially-approved 'Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses' made under the Conservation Authorities Act. Conservation authorities regulate development and activities through a permitting process in areas prone to water related hazards (floodplains, shorelines, wetlands, hazardous lands) as set out in the Act and regulations that fall within the authority's jurisdiction. The conservation authority considers the impact of a development on the control of flooding, erosion, dynamic beaches, pollution or the conservation of land and considers permits for activities that may change or interfere with the existing channel of a watercourse or a wetland.

Conservation authorities review municipal plans and site plan applications made under the Planning Act for consistency with the natural hazards policies of the Provincial Policy Statement as a delegated role from the Ministry of Natural Resources.

Additional local resource management programs are determined by the conservation authority boards of directors which are comprised of municipal appointees. These additional programs reflect local needs and the capacity of the conservation authority and may include activities such as stewardship, watershed studies, education and recreation. Conservation authorities may also comment on municipal planning documents according to their own board approved policies as a public body.

By contract or agreement, authorities may provide additional technical advice or other services to municipalities, such as assessment of environmental impacts, hydrogeology services, stormwater management advice, natural heritage advice, septic system reviews, tree planting and other activities.

Conservation authorities may also have responsibilities under other provincial legislation, programs or through agreements with other government agencies. For example, conservation authorities undertake the duties of source protection authorities under the Clean Water Act, 2006; participate in the Ontario Low Water Response Program; and review applications for impacts to fish habitat under the Fisheries Act through agreements with Fisheries and Oceans Canada.

http://www.mnr.gov.on.ca/en/Business/Water/2ColumnSubPage/STEL02_165435.html
http://www.mnr.gov.on.ca/en/Business/Water/2ColumnSubPage/STEL02_165437.html

4. Water Budget Studies

Under the Clean Water Act, 2006, the Ministry of Environment, Ministry Natural Resources and many other partners are working together on Ontario's source water protection program. The Ministry of Natural Resources, with the conservation authorities and other local partners, are leading the development of water budgets to estimate surface and groundwater supplies, water use, and undertake water quantity risk assessments in support of the development of source protection plans by source protection committees. The Ministries of Environment and Natural Resources work with conservation authorities in their legislated role as source protection authorities to provide technical and administrative support to the source protection committees.

The overall goal of water budgeting is to quantify the various parts of the water cycle, understand the pathways that water takes though a watershed and identify potential stressors within the hydrologic system. Under the Clean Water Act, 2006; further changes in regulation and technical rules are being developed to meet requirements to include climate change assessment. In collaboration with the Ministry of the Environment, the Ministry of Natural Resources is working to ensure that climate change scenarios are included in water budget cumulative impact assessments at the watershed scale. These assessments will consequently support the development of risk management tools and local adaptation efforts in watershed management. All data, information and technologies developed through the Water Budget project will be made available through the Weather and Water Information Gateway under the Regional Adaptation Collaborative.

The Ministry of Natural Resources, working with the Ministry of the Environment and Environment Canada, has produced a guide for the assessment of hydrologic effects of climate change in Ontario. The purpose of the guide is to provide a methodology for conducting assessments of the effects of climate change on water resources in Ontario. This guide supports the Clean Water Act, 2006 and has numerous target users and applications. In addition to the guide, the Ministry of Natural Resources has developed an interactive web-based tool that allows users to select and download standard climate change data sets for use within hydrologic models as outlined in the guide. This web-based tool is functional and available at
www.waterbudget.ca
http://www.waterbudget.ca/climatechangeguide

5. Lakes and Rivers Improvement Act

The Lakes and Rivers Improvement Act, administered by the Ministry of Natural Resources, provides for the management, preservation and use of Ontario's lakes and rivers and the land under them, the protection of public rights and riparian interests, the management of fish and wildlife dependent on lakes and rivers, protection of natural amenities and the protection of people and property by ensuring that dams and diversions are suitably located, constructed and maintained.

Dams and water diversions (e.g. for hydroelectric power production) are also regulated through the Lakes and Rivers Improvement Act, which regulates works

forwarding, holding back or diverting water and is administered through the Ministry of Natural Resources. Lakes and Rivers Improvement Act approvals govern how dams are managed including water levels and flows and levels as they are affected by the operation of waterpower generating facilities and water control structures to protect the public from floods and other hazards, while supporting flows, ecosystem health, drinking water supply, hydro-electricity generation, navigation for commercial and recreational purposes, agricultural irrigation, and municipal, commercial and industrial use.

When a Permit to Take Water is required from the Ministry of the Environment for the water taking associated with a dam or diversion, the Ministry of the Environment collaborates with the Ministry of Natural Resources to harmonize the requirements imposed on dam or diversion operators by the approvals and permits issued by the ministries.
http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90l03_e.htm
http://www.mnr.gov.on.ca/en/Business/Water/2ColumnSubPage/STEL02_165453.html

6. Endangered Species Act
With the passage of the Endangered Species Act in 2007, Ontario became a North American leader in protection and recovery for the province's more than 200 species at risk and their habitats. Many species at risk and their habitat in the Great Lakes Basin are now legally protected under the Act. Some of these protected species, including the Lake Sturgeon and American Eel, have also been the focus of rehabilitation efforts under the 2007-2012 Canada – Ontario Agreement Respecting the Great Lakes Basin Ecosystem.

Key to protecting many species at risk is protecting and restoring their aquatic habitat and water-based features. Conserving water to supply habitat and other water needs for species at risk will further support their recovery. For example, the recovery of both fish species identified above would be enhanced by permitting upstream and downstream passage around water control and hydro-power structures, both of which can be used to alter inflows and outflows of water to lakes, rivers and wetlands.

Under the Act, a recovery strategy is developed for each species listed as either Endangered or Threatened on the Species at Risk in Ontario (SARO) list. A recovery strategy provides the Ontario government with the best available scientific information on a species and advice regarding its protection and recovery. The government then outlines the actions it plans to take in response to this advice in a government response statement. Recovery strategies and government response statements are available to the public through Ontario's Environmental Registry and the Ministry of Natural Resources home page.
http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_07e06_e.htm
http://www.mnr.gov.on.ca/en/Business/Species/index.html

7. Ontario Great Lakes Wetland Conservation Action Plan
The Great Lakes Wetland Conservation Action Plan was crafted in 1994 so government and environmental organization partners could work together more effectively to conserve remaining Great Lakes Basin wetlands. The Great Lakes Wetland Conservation Action Plan is the implementation mechanism for the *25-year Strategic Plan for Wetlands of the Great Lakes Basin*. It complements federal and provincial policy and supports intergovernmental efforts including the binational Canada-United States Great Lakes Water Quality Agreement, draft Provincial Policy Statement, Ontario Biodiversity Strategy, Ontario's Draft Great Lakes Strategy and the Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem. A team of environmental organizations and government representatives, including Ministry of Natural Resources' wetland conservation stewardship interests, coordinates the delivery of the Great Lakes Wetland Conservation Action Plan.

The Ministry of Natural Resources, on behalf of Ontario, also supports international efforts to conserve and manage Great Lakes coastal wetlands through its participation in the Great Lakes Commission's Wetlands Consortium and its support of the International Joint Commission's Upper Great Lakes and Lake Ontario-St. Lawrence River water level studies.
http://www.mnr.gov.on.ca/en/Business/Biodiversity/2ColumnSubPage/STDPROD_068924.html

8. Greenbelt Act, 2005 and Greenbelt Plan
The Greenbelt Act, 2005 provides the legislative framework for the development and implementation of the Greenbelt Plan. The Act sets out the objectives of the Greenbelt Plan including protection of the land base needed to maintain, restore and improve the ecological and hydrological functions of the Greenbelt Area. The Greenbelt Act requires all decisions under the Planning Act and Condominium Act to conform with the Greenbelt Plan and that municipalities bring their official plans into conformity with the Greenbelt Plan at the time of their next 5 year official plan review.

The Greenbelt Plan requires municipalities to provide for a comprehensive, integrated and long-term approach to managing water resource systems. It identifies a Natural Heritage System in Schedule 4 as a guiding framework to help reach this goal. It also contains a listing of key natural heritage and key hydrological features which are to be identified and protected from development and site alteration, along with appropriate buffers.

The Greenbelt Plan area contains numerous watersheds, subwatersheds and groundwater resources, including the network of tributaries that support the major river systems identified in the Plan. These resources are critical to the long-term health and sustainability of water resources and biodiversity and overall ecological integrity.

Key policies which ensure the protection of water resources in the Greenbelt include those related to: the need to use watershed plans and watershed management

approaches to guide development; the consideration of cross-jurisdictional or cross-watershed impacts; and the protection of source water in accordance with provincial direction. The plan also contains policies that restrict the planning and provision of infrastructure in order to help protect the water resources systems, including key natural heritage and key hydrologic features.
http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_05g01_e.htm
http://www.mah.gov.on.ca/Page189.aspx

9. Niagara Escarpment Planning and Development Act and Niagara Escarpment Plan
The Niagara Escarpment Planning and Development Act sets out the legislative framework for the Niagara Escarpment Plan and the oversight body, the Niagara Escarpment Commission.

The Niagara Escarpment Plan provides a framework for protection, conservation, and sustainable development to ensure that the Escarpment will remain substantially as a continuous natural environment for future generations.

The plan contains maps which identify land use designations, including Escarpment Natural and Protection Areas and includes policies that guide planning and development in order to help protect the water resources. The plan ensures that new development affecting streams, watercourses, lakes, wetlands, and groundwater systems will have minimum individual and cumulative effect on water quality and quantity, and on the Escarpment environment.
http://www.escarpment.org/landplanning/plan/index.php
http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90n02_e.htm

10. Ontario's Biodiversity Strategy
Ontario launched its strategy to protect biodiversity across the province in 2005. The Ontario Biodiversity Council, a multi-stakeholder group with members from the conservation and environmental community, business and industry, the Minister of Natural Resources, aboriginal organisations and others, guides implementation of the strategy and also reports to the public on progress. In 2011, Council led the process of reviewing and updating the strategy resulting in Ontario's Biodiversity Strategy, 2011. The new strategy includes actions to reduce threats and enhance the resilience of the Great Lakes. Actions include reducing pollution and preventing the introduction and spread of invasive species, implementing legislation to better protect species at risk and their habitats, completing a system of protected areas representative of Ontario's ecosystems, and encouraging private land and water resources stewardship.

On an international scale, Ontario participates in efforts to conserve the diversity of species and ecosystems of the Great Lakes Basin through binational projects such as The Great Lakes Conservation Blueprint for Terrestrial and Aquatic Biodiversity, *The Sweetwater Sea: An International Biodiversity Conservation Strategy for Lake*

Huron and the first Great Lakes-wide international assessment of island biodiversity, *Islands of Life: A Biodiversity and Conservation Atlas of Great Lakes Islands.* http://www.mnr.gov.on.ca/en/Business/Biodiversity/2ColumnSubPage/STEL02_166816.html

11. Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem
The Canada-Ontario Agreement Respecting the Great Lakes Basin Ecosystem (Canada-Ontario Agreement) is the framework through which the Canadian federal government and the Province of Ontario work cooperatively to restore, protect and conserve the Great Lakes Basin Ecosystem. Under the Canada-Ontario Agreement, Ontario works with Canada and other partners to deliver on Great Lakes priorities, and helps Canada meet its commitments under the Canada-U.S. Great Lakes Water Quality Agreement.

The most recent Canada-Ontario Agreement was signed in 2007 and linked aquatic ecosystem health, water conservation, and sustainable water use. Through this Agreement, Ontario and Canada committed to fostering sustainable water use and conservation consistent with the intent of the Great Lakes-St. Lawrence River Basin Sustainable Water Resources Agreement.

The 2007 Canada-Ontario Agreement expired on June 24, 2012. Canada and Ontario have begun negotiations on a new Canada-Ontario Agreement and expect to consult on a proposed Canada-Ontario Agreement in 2013.

Canada and Ontario in collaboration with other partners have undertaken over 1,000 projects under the 2007 Canada-Ontario Agreement.

The Canada-Ontario Agreement Memorandum of Cooperation outlines areas of collaboration between the Ministry of the Environment, Ministry of Natural Resources and Ministry of Agriculture, Food and Rural Affairs on behalf of Ontario and the Great Lakes-St. Lawrence Cities Initiative in support of the 2007 Canada-Ontario Agreement. In June 2012, the ministers and mayors renewed the Memorandum of Cooperation for two years in order to discuss Great Lakes priorities, including beaches and coastal health, benefits of Great Lakes investments and projects on integrated stormwater management and combined sewer overflows and bypasses. The Province will consider municipal concerns when negotiating a new Canada-Ontario Agreement with the federal government.

In June 2010, the "Water Conservation and Efficiency Market Transformation Study" was released in support of two Canada-Ontario Agreement commitments:

- Annex 3 Result 1.3 d) "foster sustainable water use and conservation consistent with the intent of the Great Lakes St. Lawrence River Basin Sustainable Water Resources Agreement;" and

- Annex 3 Result 1.2 d) "Improve public awareness and access to programs that support beneficial practices and stewardship activities."

http://www.mnr.gov.on.ca/en/Business/GreatLakes/2ColumnSubPage/STEL02_173911.html
http://www.ec.gc.ca/grandslacs-greatlakes/default.asp?lang=En&n=B903EE0D-1
http://www.ene.gov.on.ca/environment/en/subject/great_lakes/STDPROD_096902.html

12. Joint Strategic Plan for the Management of Great Lakes Fisheries

The *Joint Strategic Plan for Management of Great Lakes Fisheries* is a world-renowned model for ensuring that Canada and the U.S. agree on how best to manage and sustain common Great Lakes fish stocks. The Great Lakes Fishery Commission, a secretariat that coordinates fisheries management and research on the Great Lakes, coordinates implementation of this historic plan, originating in the 1950s and last revised in 1997. The Ministry of Natural Resources represents Ontario on four out of five Great Lakes Fishery Commission lake committees and on the Council of Lake Committees. The lake committees are responsible for developing fish-community goals and objectives for each Great Lake, as well as plans for managing, preserving and restoring Great Lakes fish species and their habitats.

The Joint Strategic Plan makes a clear connection between fish habitat, water quality and water uses. The plan highlights impacts on fish during spawning and the potential for large-scale diversions to impact fish. Thus, the plan clearly identifies a need to ensure the conflicting goals of users take into account impacts on fish, an important aquatic resource.
www.glfc.org

OBJECTIVE 2: ADOPT AND IMPLEMENT SUPPLY AND DEMAND MANAGEMENT TO PROMOTE EFFICIENT USE AND CONSERVATION OF WATER RESOURCES

To achieve this objective, we have a range of programs that manage water supply and demand to achieve efficient use and conservation of water resources — including promoting innovative water technologies, green infrastructure and water use efficiency.

13. Water Opportunities and Water Conservation Act, 2010

On November 29th, 2010 Ontario's Legislature passed the Water Opportunities and Water Conservation Act, 2010. The Act contains five schedules. Schedule 1 enacts a stand-alone act, the Water Opportunities Act, 2010 (see below for details). Schedules 2 to 5 amend existing legislation in respect of water conservation and other matters. The Act builds upon Ontario's expertise in clean water technology and sets out a framework to make the province a North American leader in water innovation to help address global water challenges. Among other things, the Act sets the framework to encourage Ontarians to use water more efficiently by creating and

implementing innovative approaches to protect water resources for current and future generations.

Schedule 1 of the Act introduced the Water Opportunities Act, 2010 which created the Water Technology Acceleration Project, a non-crown corporation to encourage collaboration and coordination between industry, governments and academia. The Water Technology Acceleration Project will assist in facilitating the creation and growth of globally competitive companies and high-value jobs in the water and wastewater sector.

- The Water Opportunities Act, 2010 also includes authority to require municipalities and other municipal service providers to prepare municipal water sustainability plans that would include an asset management plan, a financial plan, a water conservation plan, strategies for maintaining and improving the service, a risk assessment and other prescribed information; authority to require prescribed information on or with municipal water bills to promote transparency; authority to set aspirational targets for water conservation and other matters; and authority to require public agencies to prepare water conservation plans. This includes authority to require public agencies to achieve water conservation targets and consider technologies, services and practices that promote the efficient use of water when making capital investments or purchasing goods and services.

The Act also amended the Ontario Water Resources Act to enable regulations for water efficiency standards or requirements for prescribed appliances and products. No person would be permitted to offer for sale, sell or lease a prescribed appliance or product unless it meets the water efficiency standard or requirement set out in the regulations. These are tools that will enable Ontarians to use water more efficiently to conserve and protect water resources.

The Act also amended the Building Code Act, 1992. These changes require the Minister of Municipal Affairs to initiate reviews of the Building Code with reference to standards for water conservation every five years, rename the Building Code Energy Advisory Council to the Building Code Conservation Advisory Council, and expand the mandate of this council to include advising the Minister on the Building Code with reference to standards for water conservation.
http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_10w19_e.htm
http://www.ontla.on.ca/web/bills/bills_detail.do?locale=en&Intranet=&BillID=2362

14. Financial Plans Regulation under the Safe Drinking Water Act, 2002
As part of the province's commitment to implement all of Justice O'Connor's Walkerton recommendations, the Ministry of the Environment put in place a new licensing framework under the Safe Drinking Water Act for municipal residential drinking-water systems – the Municipal Drinking-Water License Program. Financial plans are one of the elements which must be put in place for a license to be issued.

A Financial Plans Regulation and Financial Plans Guidance Document were prepared and put into effect by the Province in 2007. The Regulation outlines requirements set out by the Minister of the Environment for financial plans that are required to obtain a license under the Safe Drinking Water Act. Taken together, the Financial Plans Regulation and Guideline are a key step in the province's long term strategy to ensure the financial sustainability of municipal drinking water and wastewater systems.
http://www.e-laws.gov.on.ca/html/source/regs/english/2007/elaws_src_regs_r07453_e.htm
http://www.ene.gov.on.ca/envision/env_reg/er/documents/2007/Financial%20Plan%20Guideline%20-%20Aug%2015.pdf

15. Building Code Act, 1992 and the Building Code
Ontario's Building Code is a regulation under the Building Code Act, 1992 that sets out technical and administrative requirements that must be met when a building is constructed, renovated or undergoes a change of use. Plumbing requirements are included in the Building Code. Provisions that support water efficiency (e.g., through mandating low-flow toilets in new construction and additional bathrooms added to existing buildings) were added to the Building Code in 1996 to improve water efficiency in any new construction/renovation that occurs.

The 2006 edition of the Building Code introduced an "objective-based" format, which links Code requirements to underlying objectives. Resource Conservation is one category of objectives and includes water conservation. This provides designers with a choice in how they conserve water: the designers can either follow the prescriptive requirements of the Code or they can propose an alternative solution to meet the water conservation objectives of the prescriptive requirements. The 2006 Building Code also clarified that certain uses of rainwater and greywater were permissible, thereby increasing certainty in the building industry about the uses of these green technologies.

In December 2009, the Building Code was amended to, among other things, eliminate the Code's exemptions that allowed for the installation of 13 litre toilets in certain renovations and some building uses. Effective January 1, 2011, the Building Code will only allow for the installation of toilets with a maximum flush cycle of 6 litres or less.

On November 7, 2012 the Ontario government announced the filing of a new edition of the Building Code. It includes enhancements to the water conservation requirements for toilets, urinals, showerheads and also expands the permitted uses for rainwater and grey water reuse which take effect January 1, 2014.
http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_92b23_e.htm
http://www.e-laws.gov.on.ca/html/regs/english/elaws_regs_120332_e.htm

16. Green Energy Act, 2009

On May 14, 2009 the Ontario government passed the Green Energy Act to attract new investment, create new green economy jobs and better protect the environment. Amendments in 2010 expanded the guiding principles for the Government of Ontario to consider when constructing, acquiring, operating and managing government facilities. The guiding principles now include:

- Reporting on water use associated with government facilities;
- Ensuring water efficiency is considered in planning and designing government facilities; and
- Using technologies, services and practices that promote the efficient use of water and reduce negative impacts on Ontario's water resources.

http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_09g12_e.htm

17. Oak Ridges Moraine Conservation Act, 2001 and Oak Ridges Moraine Conservation Plan

The Oak Ridges Moraine Conservation Act, 2001 provides the legislative framework for the development and implementation of the Oak Ridges Moraine Conservation Plan.

The Oak Ridges Moraine Conservation Plan provides a long-term framework of designations and policies and requires that municipalities further implement these directions through their official plans and zoning by-laws. It identifies a Natural Heritage System comprised of Cores and Linkage Areas and goes on to define key natural heritage and hydrological features which are to be identified and protected in municipal planning documents. It also provides mapping of landform conservation areas and highly vulnerable aquifer areas, requires subwatershed planning and the preparation of water conservation plans and water budgets, and requires the identification of municipal well-head protection areas and restricts certain types of stormwater management facilities in order to protect the ground water resources in the Moraine's aquifers – which provide drinking water for over 250,000 people and provide the baseflow for the vast majority of streams running north and south off the Moraine – the regional groundwater divide for central Ontario.

The Oak Ridges Moraine Conservation Plan requires that every upper-tier municipality and single-tier municipality within the designated moraine area begin to prepare a water budget and conservation plan for every watershed whose streams originate within the municipality's area of jurisdiction. It also, as of April 2007, prohibits major development unless the water budget and conservation plan is completed and demonstrates that the water supply required for the major development is sustainable.

http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_01o31_e.htm
http://www.mah.gov.on.ca/AssetFactory.aspx?did=1779
http://www.mah.gov.on.ca/Page4808.aspx

18. Places to Grow Act, 2005 and Growth Plans

The Places to Grow Act, 2005, provides the legislative framework for the development and implementation of growth plans for any part of the province. The Act clearly establishes the provincial interest in coordinated regional growth management and infrastructure investment. It sets a broad scope for growth plans, allowing for province-wide relevance and application, and gives growth plans status. The Act requires that all decisions under the Planning Act and Condominium Act, 1998 must conform to a growth plan and that municipal official plans be brought into conformity within three years of the effective date of a growth plan.
http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_05p13_e.htm

The Growth Plan for the Greater Golden Horseshoe area was the first plan developed under the Places to Grow Act, 2005, and came into effect in June 2006.

Growth Plan for the Greater Golden Horseshoe

The Growth Plan for the Greater Golden Horseshoe, 2006 represents the province's long-term vision for managing the rapid growth that is forecast for this region to 2031. The Plan contains policies that call for more compact and complete communities, require co-ordination between infrastructure investment and land-use planning and support the development of a culture of conservation.

The Growth Plan includes water conservation policies. These policies require that the construction of new, or expansion of existing, municipal or private communal water and wastewater systems should only be considered when:

- strategies for water conservation and other water demand management initiatives are being implemented;
- plans for expansion or for new services are to serve growth in a manner that supports achievement of the intensification and density targets; and,
- plans have been considered in the context of applicable Great Lakes Basin Agreements.

Municipalities are also required to develop and implement official plan policies and other strategies in support of conservation objectives: water conservation, including water demand management, for the efficient use of water, and water recycling to maximize the reuse and recycling of water.
https://www.placestogrow.ca/index.php?option=com_content&task=view&id=9&Itemid=14

Growth Plan for Northern Ontario

In March 2011, the Ministry of Infrastructure released the Growth Plan for Northern Ontario, a 25-year plan to guide decisions and investments to build a globally competitive northern economy that is resilient and sustainable. The Plan includes a chapter on the environment which sets out policies to encourage municipalities to contribute to the protection of surface water and ground water features. Additionally, Northern economic and service hubs are to identify environmental sustainability objectives and develop policies and programs to achieve water conservation.

https://www.placestogrow.ca/index.php?option=com_content&task=view&id=53&Itemid=65

19. Lake Simcoe Protection Act, 2008 and Lake Simcoe Protection Plan
The Lake Simcoe Protection Act, 2008 provides the legislative framework for the development and implementation of the Lake Simcoe Protection Plan.

On June 2, 2009 the government released the Lake Simcoe Protection Plan to address environmental protection of the watershed. Drawing on expert advice from scientists, the plan sets a new standard for environmental protection in the province and provides a road map to help restore and protect the health of Lake Simcoe.

Among other things, the Plan promotes greater efforts to conserve and use water more efficiently in order to maintain future demands for water within sustainable limits. To monitor progress in achieving the water quantity-related objectives of the Plan, the indicators of environmental health relating to water quantity include effective water conservation and efficiency plans (e.g., as measured through reductions in peak water demand, reduced water use per capita, progress in achieving municipal targets).

The Plan contains the following policies, among others, to promote greater efforts to conserve and use water more efficiently throughout the Lake Simcoe watershed:

- Within five years of the date the Plan comes into effect, municipalities of Barrie, Orillia, New Tecumseth, Bradford West Gwillimbury, Innisfil, Oro-Medonte and Ramara will prepare and begin implementation of a water conservation and efficiency plan that includes targets for water conservation and/or efficiency with associated timeframes, water conservation measures, incentives and means to promote conservation, cost/benefit analyses, required measures, an implementation plan, and monitoring and reporting;
- The Ministry of Agriculture, Food and Rural Affairs, in cooperation with key stakeholders, will assist and encourage water conservation and efficiency efforts in the agricultural community through stewardship programs aimed at promoting the adoption of best management practices;
- The Ministry of the Environment will work with other water use sectors in the Lake Simcoe watershed to encourage the development and implementation of water conservation and efficient use practices for their sector; and
- An application to establish or expand a major recreational use shall be accompanied by a recreational water use plan that demonstrates the reduction in water use or use of water conservation technologies.

The plan also requires the Ministries of Environment and Natural Resources to develop in-stream flow targets for water quantity stressed subwatersheds, in collaboration with the local conservation authority. The targets will consider the potential impacts of climate change and will be used to inform future strategies related to water taking.
http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_08l23_e.htm

http://www.ene.gov.on.ca/en/water/lakesimcoe/index.php

20. Planning Act and Provincial Policy Statement
The Planning Act provides the legislative basis for the land use planning system in Ontario. Municipalities are the main implementers of provincial land use planning policies through their official plans and zoning by-laws and their decisions on planning applications. Their decisions and plans are required by the Planning Act to conform (or not conflict) with provincial plans and to be consistent with policies in the Provincial Policy Statement. A variety of other legislation may also apply when municipalities are making decisions on applications or when creating their planning documents.

The Planning Act contains the process requirements for public notice and consultation rules governing municipal processing of land use proposals or documents and the framework for appeals to the Ontario Municipal Board. The planning process provides an opportunity for an inter-disciplinary assessment of all related matters pertaining to land use, including the integration of water-related considerations.

Issued under the authority of section 3 of the Planning Act, the Provincial Policy Statement provides policy direction on matters relating to land use planning that are of provincial interest. For example, policy 1.6.4.1 of the Provincial Policy Statement states that planning for water and sewage services shall promote water conservation and water use efficiency. In addition, policy 2.2.1 states that planning authorities shall protect, improve or restore the quality and quantity of water by, among other things, "promoting efficient and sustainable use of water resources, including practices for water conservation and sustaining water quality" and using the watershed as the ecologically meaningful scale for planning. It calls for planning authorities to identify the ground and surface water features and functions necessary for ecological and hydrological integrity of the watershed and maintain linkages among hydrologically connected water based and/or terrestrial based features.

The Ministry of Municipal Affairs and Housing, working in collaboration with relevant ministries, has undertaken a comprehensive review of the Provincial Policy Statement and released a draft provincial policy statement for comment.
http://www.mah.gov.on.ca/AssetFactory.aspx?did=9881
http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_90p13_e.htm)

21. Municipal Stormwater Management Systems
The Ministry of the Environment has created several documents for municipalities, community groups, businesses and anyone who is interested in managing stormwater and reducing pollution at its source.
http://www.ene.gov.on.ca/environment/en/subject/stormwater_management/STDPROD_076045.html

In 2010, the Ministry of the Environment completed a review of the need for a new policy, act or regulation to deal with municipal stormwater management systems in Ontario municipalities in light of climate change. The review identified a need for a stormwater management policy framework, with emphasis on improving stormwater management at the source through reuse and low impact development practices. Further, increased collaboration for source control practices is needed between all partners including residents, businesses, conservation authorities and all levels of governments.

The ministry is collaborating with several partners on three case study projects on innovative stormwater management practices.

22. Ontario Small Waterworks Assistance Program
The Ontario Small Waterworks Assistance Program began in August 2007 to provide operating and capital assistance to municipalities and Local Services Boards that provide drinking water services to 5,000 and fewer residents. Through the first two phases of the program, $20 million in operating assistance is being provided to 166 communities.

On August 16, 2010, the government launched the third phase of the Ontario Small Waterworks Assistance Program to provide capital funding over four years to help small communities that own residential drinking water or wastewater systems improve water conservation and efficiency. Examples of possible projects that could be funded include fixing leaking pipes and installing water meters. In May 2011, $40.9 million was committed to 85 communities under the Ontario Small Waterworks Assistance Program.
http://www.moi.gov.on.ca/en/infrastructure/sectors/oswap.asp

Funding from the Ontario Small Waterworks Assistance Program is part of the Province's overall investment in municipal water infrastructure. Since 2003, the Province has committed approximately $1.8 billion to municipal water, wastewater and stormwater projects.
http://www.mri.gov.on.ca/english/programs/OWI-award.asp

OBJECTIVE 3: IMPROVE MONITORING AND STANDARDIZE DATA REPORTING AMONG STATE AND PROVINCIAL WATER CONSERVATION AND EFFICIENCY PROGRAMS

To achieve this objective, we have a range of programs that improve monitoring of water supply, use and conservation/ efficiency and standardizing data reporting among state and provinces.

23. Ontario Low Water Response
The Ontario Low Water Response program provides a framework to coordinate and support local response in the event of a drought. The Ministry of Natural Resources

maintains the provincial monitoring network, analyzes data to provide early warnings, and coordinates provincial drought response. The Ontario Low Water Response program consists of a tiered system whereby the level of low water conditions will indicate the placement of the watershed in either a Level I, II or III Low Water Condition. Local Water Response Teams may be required to outline contingency measures that will be adopted within the watershed to achieve water use reduction targets of 10-20%. Water permit holders may be contacted to help achieve water reduction targets. Varying levels of conservation are required depending on the low water level that has been declared.
http://www.mnr.gov.on.ca/en/Business/Water/Publication/MNR_E002322P.html

24. Ontario Surface Water Monitoring
Ontario collects, monitors and analyzes water flows, levels and climate data to identify areas throughout the province where a potential risk of flood or drought may exist.
http://www.mnr.gov.on.ca/en/Business/Water/2ColumnSubPage/STEL02_164544.html

25. Groundwater Monitoring Network and Climate Change Project
Ontario's Provincial Groundwater Monitoring Network (Ministry of the Environment) monitors ambient groundwater quantity and quality conditions in the province through a network of monitoring wells. Information provides an indicator of aquifer conditions and supports water-taking, drought management, land use planning decisions, and water budget and cumulative impact studies.
http://www.ene.gov.on.ca/environment/en/resources/STD01_076357.html

26. Water Use Reporting
By regulation, every holder of a Permit to Take Water is required to report daily water use for each calendar year prior to March 31 of the following year. These data are used to inform the broad water management programs for the province.

Provincial reporting of withdrawals, consumptive uses and diversions to the Great Lakes Commission's Regional Water Use Database is coordinated by the Ontario Ministry of Natural Resources.
http://www.glc.org/wateruse/database/

27. Water Resources Information Program
The Water Resources Information Program works to ensure information about Ontario's water resources is available to provincial ministries, municipalities, conservation authorities and others to create maps, conduct geographic analysis and support decisions about the province's water resources. One product of this program is updated watershed boundary mapping that can support the implementation of the Great Lakes-St. Lawrence River Basin Sustainable Water Resources Agreement.
http://www.mnr.gov.on.ca/en/Business/WRIP/index.html

28. Ecological Framework for Recreational Fisheries Management in Ontario
Even with its abundant resources, Ontario's fisheries are in high demand by sport fishing and tourist industries, as well as commercial fisheries. Ontario's Fisheries Management Zones have been established to protect and maintain Ontario's high quality fishing opportunities. To enhance public involvement and decision-making in managing and ensuring the sustainability of its recreational fisheries resources, Ontario created complementary Fisheries Management Zone Advisory Councils for each zone. Each of Ontario's four Great Lakes is assigned a council, with a council assigned specifically to the Fisheries Management Zone that encompasses Georgian Bay as well.

In support of the Ecological Framework, the Ministry of Natural Resources implemented a broad-scale monitoring program for inland lakes. The broad-scale monitoring program is a long-term effort to monitor the health of Ontario's lakes and their fisheries. The goals of the program are to: describe the distribution of aquatic resources in Ontario lakes; identify stresses on these resources; track trends in indicators of the health of Ontario's fisheries, lake ecosystems and aquatic biodiversity; and assess and report on the status of fisheries in Ontario. A wide range of variables are monitored: fish are netted to determine abundance, sex, length and weight, and to test for contaminants; temperature/oxygen and water quality is analyzed; invasive species are documented; and fishing effort is estimated.

Intensive monitoring occurs on each of the Great Lakes to provide information on the fish communities and fisheries they support. These monitoring programs inform the development of lake-specific Fish Community Objectives and are used to establish allowable harvest levels for fisheries within the lakes.
http://www.mnr.gov.on.ca/en/Business/LetsFish/2ColumnSubPage/STEL02_166745.html

29. The Ontario Geological Survey's Groundwater Mapping Program
The Ontario Geological Survey's groundwater mapping program contributes to water management initiatives, including the development of GIS-based maps / databases, regional (3-D) aquifer mapping, watershed characterization, thematic studies, regional groundwater sampling, method/protocol and product development.
http://www.mndm.gov.on.ca/en/mines-and-minerals/geoscience/groundwater

30. Climate Change Modelling and the Weather and Water Information Gateway
An integrated one-window information gateway of water resource and weather monitoring data known as the Weather and Water Information Gateway, is a flexible, scalable and standardized web-based information discovery system based on open standards that provides long-term access to current and future weather, and water resource data and information. The ultimate function is to discover and deliver data, knowledge and tools while supporting the development of local capacity so that decision makers can make more informed risk management decisions.
http://www.web2.mnr.gov.on.ca/mnr/ccmapbrowser/climate.html
http://adaptation.nrcan.gc.ca/collab/index_e.php

OBJECTIVE 4: DEVELOP SCIENCE, TECHNOLOGY AND RESEARCH

To achieve this objective, we have a range of programs that encourage science, technology and research to implement the best in water, wastewater and stormwater technology.

31. Showcasing Water Innovation Fund

The $17 million program launched on April 29, 2011 is funding leading-edge, innovative and cost-effective solutions for managing drinking water, wastewater and stormwater systems in Ontario communities. The program was established to complement the Water Opportunities Act, 2010 by advancing integrated and sustainable water management in Ontario communities. Lessons learned from these innovative projects will be shared across the province.
http://www.ene.gov.on.ca/environment/en/funding/showcasing_water_innovation/index.htm

32. Ontario Clean Water Agency

The Water Opportunities and Water Conservation Act, 2010 allows the Ontario Clean Water Agency to finance and promote the development, testing, demonstration and commercialization of technologies and services for the treatment and management of water, wastewater and stormwater. The Ontario Clean Water Agency is a Crown Agency of the Province of Ontario that provides clean water services to municipalities, First Nations communities, institutions and businesses.
http://www.e-laws.gov.on.ca/html/statutes/english/elaws_statutes_93c23_e.htm

33. Innovation Demonstration Fund

The Innovation Demonstration Fund administered by the Ministry of Economic Development and Innovation focuses on emerging technologies, including environmental, alternative energy, bio-products, hydrogen and other globally significant technologies. The purpose of the Innovation Demonstration Fund is to support pilot-scale technology demonstrations that will lead to the commercialization of processes and/or products in Ontario that are globally competitive, innovative green technologies. The Innovation Demonstration Fund program announced a special round of funding for water projects that resulted in support being provided to four water technology projects with an investment of $5.9M.
http://www.mri.gov.on.ca/english/programs/idf/guidelines.asp

34. Green Focus on Innovation and Technology

To support newly commercialized innovative green technologies, the province introduced the Green Focus on Innovation and Technology. The initiative allows the Government of Ontario to use its buying power to adopt innovative clean technologies, products and solutions and showcase the successful solutions to potential customers in local and global markets. Green Focus on Innovation and Technology provides an opportunity for clean technology companies to accelerate their innovative green technologies to the global marketplace.
http://www.doingbusiness.mgs.gov.on.ca/mbs/psb/psb.nsf/English/GreenFIT

35. Ontario Research Fund - Research Excellence Water Round
The Ontario Research Fund Research Excellence Water Round promotes research excellence of strategic value to Ontario by supporting new leading-edge, transformative, and internationally significant research in water and wastewater-related technologies. These solutions include water and wastewater-related technologies and marketable processes and methods. The government is investing $8.8 million to support four water researchers in Hamilton, Toronto, and Waterloo.
http://www.mri.gov.on.ca/english/programs/orf/re/water/program.asp

36. Investment Accelerator Fund
The Investment Accelerator Fund helps accelerate the growth of new technology companies (including companies focused on water conservation technologies) being established in Ontario and positions them for further investment by angels and venture capitalists. The Fund invests up to $500,000 in companies that have the potential to be global leaders in their field and provide sustainable economic benefits to Ontario.
http://www.mri.gov.on.ca/english/programs/iaf/program.asp

37. Ontario Ministry of Agriculture, Food and Rural Affairs/University of Guelph Partnership Research Program
The Ontario Ministry of Agriculture, Food and Rural Affairs invests in research in seven theme areas through a partnership with the University of Guelph. The 'Environmental Sustainability' research theme focuses on maintaining the ability of natural resources (soil, air, water and biodiversity) to support and strengthen the agriculture, food and bioproduct sectors, and rural communities. 'Improving water quantity supply and quality' is one of the five research priorities within this research theme, and calls for proposals are issued annually. The principal researchers for these projects are from the University of Guelph, however projects funded through this program bring together collaborative teams from various academic, government, non-government organizations or industry partners. For details please visit:
http://www.uoguelph.ca/research/omafra/index.shtml
http://www.uoguelph.ca/research/omafra/Research_themes.shtml

38. New Directions Research Program
The purpose of the New Directions Research Program administered by the Ministry of Agriculture, Food and Rural Affairs is to stimulate the sustainable growth and competitiveness of Ontario's agri-food sector through investment in innovative and high quality research in partnership with industry, rural communities, organizations, other levels of government and research institutions. A water management area of focus will encourage research on water conservation / efficiency, water quality and related energy efficiency in the agriculture and agri-food sectors; development of regional strategies to improve water management; knowledge translation and transfer to improve on-farm water efficiency /quantity and quality; and development or application of effective drainage system technology under changing climatic conditions.

http://www.omafra.gov.on.ca/english/research/new_directions/overview.htm

39. Anishinabek/Ontario Fisheries Resource Centre
The Anishinabek/Ontario Fisheries Resource Centre was established to serve as an independent source of information on fisheries assessment, conservation, and management, promoting the value of both Western science and Aboriginal knowledge of the land and water. In the past six years, the centre has completed over 150 fisheries projects with First Nations and government agencies across the province, including creel surveys, index netting projects, tagging studies, fish habitat inventories, and synthesis of existing fisheries data for the purpose of formulating resource management plans. This type of information contributes to measuring the success of water conservation and fisheries management efforts.
http://www.aofrc.org/

40. Climate Ready: Ontario's Adaptation Strategy and Action Plan 2011-2014
Ontario's adaptation strategy and action plan outlines a strategy with a progressive vision, five broad goals and 37 actions to help communities and ecosystems adjust to the realities of a changing climate over four years, to 2014.

The plan's 37 actions to improve Ontario's resilience include:

- Ensuring source protection plans consider integrating climate change adaptation measures into policies to ensure sources of drinking water are sustainable in the future.
- Supporting community outreach efforts through our Community Adaptation Initiative that gives communities the tools and information they need to plan for the future.
- Helping ecosystems and wildlife adapt by updating Ontario's biodiversity strategy.

http://www.ene.gov.on.ca/environment/en/resources/STDPROD_081665.html
http://www.ene.gov.on.ca/environment/en/resources/STDPROD_101104.html

OBJECTIVE 5: DEVELOP EDUCATION PROGRAMS AND INFORMATION SHARING FOR ALL WATER USERS

To achieve this objective, we have a range of education programs and other programs that raise awareness of the importance of water and the value of conservation, efficiency and cost-saving, and to share best management practices.

41. Ontario Drinking Water Stewardship Program
The Ontario Drinking Water Stewardship Program was established under the Clean Water Act, 2006 to provide financial assistance to landowners and others to help protect drinking water. The investment of $28 million provides funding to conservation authorities and the Ontario Federation of Agriculture to deliver local financial assistance to landowners, farmers and businesses who implemented voluntary measures to help protect municipal drinking water sources. To date the Program has supported the implementation of over 2200 projects across the province, with funding

still available through local conservation authorities for projects that help address significant drinking water threats identified through the source protection planning process. For more information please visit www.ontario.ca/cleanwater.

42. Water Efficiency Labelling

The Ontario Ministry of the Environment signed a promotional partnership agreement with the U.S. Environmental Protection Agency to be part of their WaterSense Program, a water efficiency labelling program for products such as showerheads, faucets and toilets. As a promotional partner, Ontario can share information about the program and promote WaterSense. The WaterSense label lets consumers know they are buying products tested and proven to use 20 per cent less water, and will make it easier for Ontarians to make green choices everyday. WaterSense also gives tips for saving water around the house. Ontario-based manufacturers can now get their water efficient products certified and promoted under the program. Retailers, municipalities and other organizations in Ontario can also participate in WaterSense and help promote the label. More information is available at: www.epa.gov/watersense.

43. Best Management Practices

For the agricultural sector, the Ontario Ministry of Agriculture, Food and Rural Affairs provides a number of fact sheets and over 25 guides on best management practices. This series of best practices books offer proven, practical and affordable approaches to conserving soil, water and other natural resources in rural areas. In particular, three books, Irrigation Management, Water Management and Cropland Drainage address, among other things, efficient use of water / water conservation, (e.g., water efficient irrigation systems and staggering irrigation schedules, water quality tile drainage installation, maintenance and outlet protection for erosion control and subsurface drainage whereby water use may be conserved).

For the municipal sector, the Ministry of the Environment provided funding to the Ontario Water Works Association to prepare "Water Efficiency: Best Management Practice" as well as "Outdoor Water Use Reduction Manual" and associated seminars, available at: http://www.owwa.com/img/content_images/Image/Outdoor%20Water%20Use%20Manual.pdf

44. Canada-Ontario Environmental Farm Plan Program

The Ontario Ministry of Agriculture, Food and Rural Affairs, in partnership with Agriculture and Agri-food Canada, supports the development and delivery of the Canada-Ontario Environmental Farm Plan program. The Environmental Farm Plan is a confidential, voluntary self-assessment farmers undertake to review potential environmental risks associated with their farm operations. Farmers attend an Environmental Farm Plan educational workshop, complete a review of their operation, and develop an individualized Action Plan to address identified concerns. Action Plans may be submitted to a peer review committee and farmers with plans may be eligible to apply for cost-share funding from the associated cost-share

program, the Canada-Ontario Farm Stewardship Program. The program is available province-wide to assist producers with implementing environmental projects identified through the Environmental Farm Plan risk assessment process, and supports eligible projects in 27 best management practices categories.

The Environmental Farm Plan promotes water conservation and water efficiency, raising farmers' awareness of legislative requirements and best practices. The Canada-Ontario Farm Stewardship Program provides cost-share funding to accelerate adoption of environmental improvement projects, including projects that promote sustainable environmental practices related to water use. Funding support for both programs is currently provided by the Ministry of Agriculture, Food and Rural Affairs and Agriculture and Agri-food Canada under the federal-provincial Growing Forward agricultural policy framework agreement. Both programs are delivered locally to farmers by the Ontario Soil and Crop Improvement Association on behalf of government and the Ontario Farm Environmental Coalition.
http://www.omafra.gov.on.ca/english/environment/efp/efp.htm

45. Species at Risk Stewardship Fund
The Species at Risk Stewardship Fund is a funding program to encourage and support the recovery and protection of species at risk and their habitats through stewardship activities. Since 2007, Ontario has supported over 600 projects through the fund. The fund is open to individuals and groups across the province including landowners, farmers, Aboriginal peoples, academic and research institutions, conservation organizations, industries, municipalities, and others who undertake eligible protection and recovery activities. Eligible aquatic-related activities could include inventory, monitoring or outreach work around aquatic species at risk, enhancing and protecting aquatic habitat of species at risk or the development and implementation of Best Management Practices by industry to help avoid or mitigate threats to species such as Lake Sturgeon or American Eel.
http://www.mnr.gov.on.ca/en/Business/Species/2ColumnSubPage/STEL01_131229.html

46. Invading Species Awareness Program
The province-wide Invading Species Awareness Program has been a joint partnership initiative of the Ministry of Natural Resources and the Ontario Federation Anglers and Hunters since 1992. The program focuses on education and outreach as well as programs designed to monitor the occurrence and distribution of invasive species. The Invading Species Awareness Program has involved over 300 partners.
http://www.invadingspecies.com/
http://www.ontariostewardship.org/

47. Community Fisheries and Wildlife Involvement Program
The Community Fisheries and Wildlife Involvement Program provides opportunities for Ontarians to participate in hands-on fish and wildlife management and conservation activities. The Community Fisheries and Wildlife Involvement Program funds volunteer projects that benefit fish and wildlife in the province and improve

opportunities for outdoor recreation. Over the past 25 years, thousands of volunteers have helped to conserve biodiversity with financial support and technical advice from the Community Fisheries and Wildlife Involvement Program. The program is currently undergoing review to ensure the best use of available funding and to make certain projects funded in the future focus on Ministry of Natural Resources' core business areas.
http://www.mnr.gov.on.ca/en/Business/LetsFish/2ColumnSubPage/STEL02_166030.html

48. Eastern Habitat Joint Venture
Established in 1989, and covering the six eastern-most Canadian provinces, the Eastern Habitat Joint Venture is collaborative partnership focused on implementation of activities that benefit waterfowl and wetlands under the North American Waterfowl Management Plan and all birds and their habitat under the North American Bird Conservation Initiative. The Ontario government has provided support to Eastern Habitat Joint Venture partners in Ontario since 1994. Ontario partners include: the federal and provincial governments, Ducks Unlimited Canada, the Nature Conservancy of Canada and Bird Studies Canada. Since 2006, through a partnership with Ducks Unlimited Canada, the Ontario government invested over $4 million in wetland securement and restoration projects valued at over $22 million. These projects resulted in the conservation of over 8,000 hectares of wetland and associated upland and the enhancement of 11,700 hectares of habitat for breeding and migratory birds.
http://www.mnr.gov.on.ca/en/Business/Forests/2ColumnSubPage/STEL02_166335.html
http://www.ec.gc.ca/pch-hjv/default.asp?lang=En&n=EEE6EDE7-1

49. Ontario Parks Water Conservation Initiatives
Ontario Parks is responsible for the operations and protection of over 330 parks, covering 8.2 million hectares that attract an average of 10 million visits each year. Over the last few years, Ontario Parks has undertaken a number of initiatives to conserve water use within the park and to more efficiently treat grey water. Initiatives include the use of low-flow fixtures in park washrooms, use of low-power hand dryers, solar hot water assist systems and on-demand water heaters to reduce reliance on hydroelectric power, cold water meters in new buildings to monitor water usage, use of polyethylene piping in water distribution systems to reduce leakage, and a future pilot grey water treatment and reuse system at a comfort station as a potential tool for adaptation to future climate change water resource impacts.

Act Decision Notice:

Title:
Bill 198 - Safeguarding and Sustaining Ontario's Water Act, 2007

EBR Registry Number:
010-0163
Ministry:
Ministry of the Environment
Date Decision loaded to the Registry:
August 14, 2007
Date Proposal loaded to the Registry:
April 03, 2007

Keyword(s): Aquifers | Drinking Water | Water | Standard
Related Act(s):

Ontario Water Resources Act, R.S.O. 1990

Decision on Act:

On June 4, 2007, Bill 198, the *Safeguarding and Sustaining Ontario's Water Act, 2007* received Royal Assent. The Act amends the *Ontario Water Resources Act* (OWRA) to implement the Great Lakes–St. Lawrence River Basin Sustainable Water Resources Agreement, 2005 (Agreement) and to modernize section 34 of the Act. Some provisions of the Act will come into force on a date to be requested by proclamation by the lieutenant governor.

Copies of the ministry's revised statutes can be accessed here.

Comment(s) Received on the Proposal: 155

Public Consultation on the proposal for this decision was provided for 30 Days, from April 03, 2007 to May 03, 2007.

As a result of public consultation on the proposal, the Ministry received a total of 155 comments: 30 comments were received in writing and 125 were received online.

Additionally, a copy of all comments are available for public viewing by contacting the Contact person listed in this notice.

A selection of these comments are available:

View All Comments

Effect(s) of Consultation on this Decision:

In response to this April 3, 2007 posting, the ministry received a total of 155 submissions from:
- industry (16),
- academia (1),
- agriculture (2),
- municipal (6),
- non-government organizations (10),
- conservation authorities (2), and
- others (118).

Stakeholders were also given an opportunity to comment on another proposal notice on the proposed amendments to the *Ontario Water Resources Act,* which was posted on the EBR between January 9 and February 8, 2007. (Please refer to the EBR Registry number AA07E0001 to view this EBR registry notice).

All comments from both EBR postings, as well as from the Annex Advisory Panel stakeholder meetings and the presentations to Standing Committee, were considered in the development of Bill 198 and in the amendments reviewed before the Standing Committee. This decision notice summarizes changes made as a result of comments received through both postings and the other consultations, leading to the final Act.

The comments received reflect general support in moving forward with the amendments to the OWRA as the initial step in implementing the Agreement, while recognizing that the Ministry of the Environment and the Ministry of Natural Resources would continue to work with the Annex Advisory Panel in the development of the regulations needed for the implementation of the Agreement's intra-basin provisions.

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Additional Information:

The documents linked below are provided for information purposes only
All links will open in a new window

1. **Great Lakes - St. Lawrence River Basin S ustainable Water Resources Agreement**
2. **Supoorting background materials**
3. **Legislature version of Bill 198**

Following the EBR posting in January 2007, the government responded to EBR comments and requests made by some members of the government's Annex Advisory Panel, a stakeholder panel made up of environmental organizations, industry, municipalities and academics, for stronger restrictions on transfers between the five Great Lake watersheds in a number of ways:

1) The proposed legislation was modified to authorize stronger intra-basin transfer controls by regulation to:

a) Provide regulation-making authority to lower the threshold requiring return of water to the source Great Lake watershed;
b) Provide regulation-making flexibility to introduce additional criteria to control intra-basin transfers, in response to the periodic cumulative impact assessments required under the Agreement (i.e., Article 209); and
c) Provide regulation-making flexibility so that terminology related to the intra-basin transfer criteria can be fleshed out by regulation.

It is contemplated that further consultation with the Annex Advisory Panel and others would be conducted before any proposed regulations are made with regard to intra-basin transfers.

2) A commitment was made to engage the Annex Advisory Panel in a dialogue about potential interim measures. This would include discussions concerning the request that the government consider imposing interim measures on new or increased intra-basin transfers as development of the other supporting regulations proceeds. Any proposed regulation would require full public consultation.

Following introduction of Bill 198, as a result of the further stakeholder comments received through this EBR posting and other consultations, a number of changes were incorporated into the final legislation, including:

- Regulation-making authority that would require "return flow" for smaller transfer proposals to the same Great Lake watershed where the water was taken. This authority provides another tool to allow the province to require "return flow" in situations not mandated by the Agreement, and therefore allows the province to go beyond the provisions of the Agreement. This change responds to comments seeking stronger controls on intra-basin transfers.

- Strengthening the water conservation provisions of the Bill, by amending the authority of the Director to require water conservation measures as a condition in a permit to take water. This amendment provides that the Director may require the permit holder to prepare and implement water conservation plans and has the regulation-making authority to require the preparation and implementation of water conservation plans. This responds to comments seeking stronger conservation provisions.

- Placing an obligation on the Minister of the Environment to publish the assessment of cumulative impacts prepared under Article 209 of the Agreement on the EBR Registry for comment. The EBR posting must highlight climate change and other significant threats to the Basin. The Minister would then be obligated to publish a statement on the Registry on what actions the government intends to take in response to the assessment. This responds to comments seeking stronger consideration of climate change and cumulative impacts.

The following are a few additional technical changes made to the Bill:

- Requiring a permit holder to address a flow, leak, release, or diversion of water from a well, hole, or excavation if it is interfering with another person's taking. This change preserves the authority already provided in the OWRA, correcting an inadvertent omission from the Bill as introduced.

- Clarifying the regulation-making authority governing regulatory charges in the Bill by enabling industrial and commercial water takers and distributors of water for industrial or commercial purposes to be charged.

- Allowing a permit to continue in force if an applicant has applied for a renewal on time but has not received a Director's decision (Originally, the permit would have expired after one year). This responds to comments to remove the one-year limit in the Bill for situations where a decision on a permit has not been made.

- The Bill already gives the authority to make a regulation requiring prescribed grandfathered water takers to obtain a permit. Other changes to the Bill enable the government to have this authority in place on Royal Assent rather than on proclamation. This responds to concerns that currently grandfathered water users should be charged for water use similar to permitted water users.

View Proposal

CANADIAN ENVIRONMENTAL LAW ASSOCIATION
L'ASSOCIATION CANADIENNE DU DROIT DE L'ENVIRONNEMENT

March 12, 2009

To the Great Lakes Team
and the Annex Advisory Panel

Submissions Regarding Consultation on the Implementation by Ontario of the *Great Lakes, St. Lawrence River Basin Sustainable Water Resources Agreement* from the Canadian Environmental Law Association

I would like to thank the Great Lakes team who has worked so hard to determine the best path forward for Ontario in its implementation of the *Great Lakes - St. Lawrence River Basin Sustainable Water Resources Agreement* (the Agreement). You have done an exceptional job of framing the scope, complexity and interrelationship of issues that Ontario needs to resolve for its own implementation of the Agreement. This consultation will also assist Ontario with its contributions as a member of the Regional Body that will adjudicate these matters in the future.

The Canadian Environmental Law Association (CELA) has tried to strengthen the protection of the waters of the Great Lakes since the original Great Lakes Charter in 1985. As one of the Ontario members of the Advisory Panel to the Council of Great Lakes Governors during the negotiation of this Agreement we have gained an appreciation of the issues basin-wide as well as in Ontario. We have approached this consultation with two priorities with regards to how Ontario can best improve our own water protection and entrench a culture of conservation in our Province, and how we can continue to show leadership in the Region through the best practices, programs and in our regime for water allocation.

In our view the final Agreement and its companion US agreement, the *Great Lakes St. Lawrence River Basin Water Resources Compact* (the Compact) were substantially weakened by the last minute extension of access to Great Lakes water to all residents of straddling counties in the US. This political expediency has blurred the geographical surface water boundaries and made it considerably more difficult to protect and manage the Great Lakes as an ecosystem and from a watershed perspective. In times of stress that are predicted as climate change impacts the region, it will be more difficult operate with the dualities this has created.

We recognise that geography has given each of the Great Lakes jurisdictions unique perspectives on the resource. No jurisdiction has as many challenges in implementation as Ontario because four Great Lake watersheds penetrate this Province as well as all four connecting channels. Regrettably the different points of

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view have led to diverse approaches to implementation of these agreements that have perpetuated the very uneven playing field among jurisdictions in the Region. While this works against an ecosystem approach it does offer opportunities for progressive jurisdictions like Ontario to act to improve upon the Agreement. We appreciate the effort that has been taken in Ontario to address the complexities and to seek made in Ontario solutions that may be stronger than the Agreement.

Our Approach to Conservation

This view of the process and the Agreement has strengthened our resolve to have Ontario do its best to achieve the original intent and purpose of the Agreement. In our response to options that you have put before us in this consultation we have largely selected options that will;

- expedite a conservation culture in Ontario,
- **prevent** future water wastage,
- use existing instruments where possible,
- encourage the best public access and participation in programs,
- improve our understanding of water use and sustainability by generating sound science, data on actual use and return flows and establish baselines for all portions of the system including groundwater, and
- allow for flexibility to make future adjustments for ecosystem and human health.

CELA and many others in Ontario were involved in a previous extensive consultation on "A Water Efficiency Strategy for Ontario" carried out by the Ministry of Natural Resources when David Peterson was Premier. To learn from the past, we suggest that some review be done of the barriers that prevented this strategy from being implemented to ensure we are successful in securing a conservation plan.

Our Approach to Intra-Basin Diversions

While it is a necessity to focus on intra-basin diversion issues in Ontario, we would hope that Ontario will not be the source of many future applications for exceptions to the Agreement. It is in everyone's best interest to set strong precedents under the Agreement and exhaust all alternatives by finding ways first to live within our watersheds. CELA is concerned that we do not yet have adequate scientific information to make sound and sustainable decisions in regard to long-term impacts of intra-basin diversions. We have favoured options that support the advancement of sound science as soon as possible. This consultation has identified that determination of water availability is not occurring early enough in the planning and development process. Since Permit-to-Take Water (PTTW) data is not yet aggregated on a watershed or sub-watershed basis, we cannot be confident of the cumulative impacts. These concerns need to be addressed, before new intra-basin diversions and transfers are considered.

No single instrument available to us can adequately address Agreement Implementation and ensure the broadest public notice and access to the decision-making process. We favour combinations of instruments that will guarantee the public

timely notice of applications, encourage their involvement in decision-making, give them resources in to be involved in the decision making and give them rights of appeal. This will likely mean that changes will be needed to all of the processes involved for effective implementation of the Agreement. There will likely lead to new scope for instruments and new sequencing of approvals for public and private applicants.

Our Approach to Information, Science and Data needs (when in doubt err on the side of more information)

In 1997 CELA and Great Lakes United published a report examining the outcomes of the original 1985 Great Lakes Charter. That report, *The Fate of the Great Lakes ~ Sustaining or Draining the Sweetwater Seas?,* reviewed the problems with the current database on water use in the Great Lakes and found that the database was not current. Today there still is a five year lag. The data was aggregated so much it was not adequate to identify trends or attribute them to causes. There were gaps in reporting as each jurisdiction collected information for some but not all sectors of users and some jurisdictions based reporting on estimates rather than actual volumes used leading to variations in accuracy. Jurisdictions were unable to report to the database as data gathering had not been a historical priority and cuts to water management resources further undermined their capacity to report and gather data.

It has been a point of pride that Ontario and Minnesota have had the most detailed information on actual use because they have been collecting information on much lower trigger levels than are still required by the Agreement (50,000 litres in Ontario). This means that these two jurisdictions will have much more accurate information about actual cumulative and consumptive use by sector. Because we have such a knowledge deficit of our use and of the sustainability of our surface waters, Great Lakes tributaries and ground water, we should encourage reporting of **all** the data we have above and below the trigger level as this will help drive and build a basin-wide understanding of our use of the resource and the value of collecting better data at lower thresholds.

Because each jurisdiction has different implementing legislation rather than harmonised legislation implementing the key provisions of the Compact and Agreement, some of the problems with the unevenness of the information and data reported under the Charter will likely persist. CELA concurs that more precision can be created by, for instance, using more precise consumptive use coefficients for more sectors as Ontario is suggesting. This leads to the question: Are we collecting data on enough aspects of the system to help us fill science gaps we have on groundwater influence on the Great Lakes, groundwater recharge baselines, indicators of climate change and ecological impacts of water withdrawals? Consideration needs to be given to expanding the data we are gathering to fill these gaps in anticipation of new stressors on water supply such as population growth in the Basin, as well as in the straddling counties.

Ontario's efforts to refine mapping of their Great Lakes Watersheds down to the sub-watershed level are very valuable and will be useful in communicating to the public and other water users locations of withdrawals, return flow and intra-basin diversion information. Once Ontario generates water budget information from their source protection plans this information can be integrated into the maps and consideration should be given to communicating it basin-wide to deepen understanding of ground and surface water interfaces.

Responses to the questions posed in your consultations on February 18th and 19th, 2009

Now that we have outlined our preferred approaches to these three issues, CELA will endeavour to go through each of the slide decks in the order they are set out on your agendas for the February 18 and 19, 2009 Annex Advisory Panel meetings and attempt to give answers to questions we feel are key to the best implementation of the Agreement in Ontario.

February 18th Consultation on Conservation

Possible Options for Inclusion in an Ontario Water Conservation and Efficiency Strategy
Slide 4 A. Context
CELA is concerned that the Regional Water Conservation and Efficiency Objectives are not rigourous or specific enough to result in strong actions in each jurisdiction.

There is not yet clarity on the relationship between each of the jurisdictions' programmes and the conservation yardstick that will be used by the Regional Body to determine if applicants pass the conservation test. Will Ontario be able to assess the adequacy of conservation based on their own program or on the Regional Water Conservation and Efficiency Objectives?

The definitions and interpretations of "Environmentally Sound" and "Economically Feasible" will determine the rigour of this conservation test. Ontario's conservation strategy should endeavour to give these terms more precise meaning and rigour. CELA maintains that conservation and efficiency efforts will have economic benefits over time for each sector and cumulatively for the region in avoided water use and consumption. Conservation can create more resiliencies for the ecosystem.

Slide 5 B. Principles
CELA feels that the guiding principles need to be more grounded in a problem statement whether it be put in a **mission statement** and/or added within this section. We need to strongly debunk the myth of abundance. We also need to take the blame and acknowledge that the Great Lakes Region and North Americans lead the world as the largest wasters of water. Our per capita use of water exceeds by 1/3 to 1/2 the use in other developed countries. I would include here the need to save water for future generations to come (in perpetuity) as well as for the health and well being of

all creatures dependent on these waters. Some of the climate change predictions and other stressors on water supply like pollution should be included in this rationale.

We would add a principle that reads:
Drafting conservation plans will ensure that all responsible sectors understand the contribution and benefits they can contribute.

Questions

1. The strategy needs guiding principles as well as a strong mission statement grounded in the problems.
2. Add "Drafting conservation plans will ensure that all responsible sectors understand the contribution and benefits they can contribute."

Slide 7 & 8 Mission statement
Questions

1. Yes a mission statement is important for reasons stated above.
2. Option 1 is the best as it acknowledges our responsibility to future generations, links quality and quantity and speaks to health as well as to the environment and the economy. Target statements would help.

Slides 9 to 14 Discussions of Targets
There is a role for multiple nested targets. Targets give us something to measure against. Each option is a driver of programs and progress in different ways.

- Province-wide targets so jurisdictions can compare themselves to others in the Great Lakes (important to the one and five year reviews of conservation plans mandated in the Agreement) and to others in the world.
- Sector-wide targets can serve as a yardstick for best practices and,
- Individual user targets will yield site specific information and allow users to cost out options and benefits unique to them and the local watershed.

We can acknowledge that targets will be crude at the beginning but that they are none the less valuable as statements of intent. Targets need to be flexible as our knowledge of actual baselines and use grow over time. We will need to be adjusting and refining targets, particularly in times of shortage and stress.

Targets can be set as the outcome of water audits and the preparation of water conservation and efficiency plans for both water uses in the environment as well as in the pipe. We feel that **all PTTW users** (presuming this would catch all high volume users as well as most industrial, commercial and institutional sectors) should be **required** to do plans. Templates for what a plan should include for each sector should be developed with input from each sector. **Both** conservation and efficiency need to be components of all plans. Considerable savings can be gained from **prevention of further wastage**. CELA assumes that every sector can reduce their overall water use and this should not just be considered in times of drought but as an essential goal of each conservation plan. In PTTW reviews, new allocations should be based on conservation savings and amounts actually used. Shorter review periods (5 years)

would be preferable in this time of implementation so we can seek efficiency gains from all the permit holders.

In the interest of sound science it would be ideal to set watershed based targets for the whole province for ground and surface waters as long as conservative margins are left for the ecological needs and the needs of future generations in each sub watershed. Ontario should not encourage that 100% of any watershed be allocated as some have been in the US.

Slides 15 & 16 Timeframe of Strategy

Creating a conservation culture is not a short term endeavour and should be adopted as a long-term strategy by the Province. As our knowledge and understanding grow, new ways to use water wisely should too. Stressors on the Great Lakes - St. Lawrence River ecosystem are also likely to grow. New stressors are likely to emerge that we have not anticipated. This effort should be a continuous effort and not time limited.

Slides 18 - 24 Water Conservation and Efficiency Objectives

CELA concurs that a made-in-Ontario Conservation Strategy needs to build on the Regional Strategy to ensure that ecosystem needs are addressed. We congratulate you on your commitment to this in your suggested language changes in your consultation for Objective 1.

CELA agrees that conservation benefits and savings are compounded by linking and integrating water conservation programs and savings with parallel energy conservation efforts in Objective 1d. This linkage will compound the savings and build the case for conservation. We are gratified to see that the government has already begun this in their Green Energy Act Bill 150 released on February 23, 2009.

We strongly support the need to integrate conservation with climate change impacts. Considerable research has been done on climate change impacts on the Great Lakes and adaptation strategies. Conservation should be positioned as one of those adaptive strategies. Indicators should be developed as sentinels of climate change with a goal of reporting to the regional database on these indicators. CELA recommends that the Province work with the Great Lakes-St. Lawrence Environmental Adaptation Research Group Environment Canada Atmospheric Service housed at the Faculty of Environmental Studies at the University of Waterloo to develop indicators. Linda Mortsch is the contact there (519) 888-4567 ex 5495 linda.mortsch@ec.gc.ca.

Actions and Commitments
Objective
1. Guide programs toward long-term sustainable water-use including taking ecosystem needs for water into account

CELA endorses the need for a permanent entity to oversee Ontario's Water Conservation Strategy. We would like to extract some lessons from our past involvement in Provincial approaches to conservation policy. We do not recommend that a model such as a secretariat that primarily relies on one person because this approach was taken as a follow-up on the Water Efficiency Strategy, a previous consultation on water conservation undertaken in the early 1990s by the Province. Following on that consultation, renowned champion of wise water use Jim MacLaren was appointed as the Province's Water Secretariat and while he had a conservation mandate, he was also given the mandate to make water and wastewater services financially self-sustaining. This additional mandate overwhelmed the conservation mission and his mission got bogged down by a debate on public verses private funding and control of these services. The Ontario Water Secretariat was replaced by the Ontario Clean Water Agency (OCWA) a Provincial Agency whose main role was to manage and run some of the smaller vulnerable systems in the Province but also had conservation mandate.

The only remaining legacies of that original Ontario Water Efficiency effort is the goal to have the Ontario Public Service keep their consumption at 1991 levels until 2011 (see Ontario Green tips http://www.ene.gov.on.ca/cons/3783-e.htm). OCWA still has a conservation mandate for the dwindling number of facilities they manage.
CELA prefers a model that is multi-stakeholder such as your **Option D** that centralises conservation in the Province in a way that works with an advisory council that is made up of those who are expected to implement the strategy. This would lead to solutions that best fit each individual sector's diverse needs and to more quickly capturing best practices. Part of the mandate of that office should be a requirement to couple water conservation with energy conservation policy.

In selecting options for preparation of Water Conservation & Efficiency Plans (including water audits) we prefer the preparation of plans be **mandatory for all municipalities and all private and public PTTW holders**. We observe that there has been a deluge of educational materials on the benefits of water conservation from all levels of government for decades and this voluntary approach has only resulted in a patchwork of isolated successful conservation implementation, usually where it has been necessary because of shortages in supply. Making plans necessary and conditional on the granting of permits and infrastructure funding will get long overdue results.

Timetables for completion of plans should be within the next five years. Reporting on progress on implementing plans can have a longer timeframe.

3. **Adopt and implement supply and demand management**

Provincial regulatory measures

1. **PTTW program enhancements** -

The permit system has to not only report takings but also return flows so more precise information becomes available on consumptive use and the benefits of conservation become apparent to those holding permits.

The PTTW will need refining to be used as an instrument to drive conservation. Prevention of wastage needs to become central to permit examinations. For instance there could be requirements for golf course and subdivision landscape design that captures storm water and keeps it on site to recharge aquifers rather than sending it off site.

There will need to be training for those reviewing PTTW to maximize conservation in each application as well as education of applicants.

Funds raised by charges from the PTTW program should be used for these program enhancements not only for government approvals and reporting but to assist applicants to meet new criteria.

2. Provincial water efficiency standards and labelling

CELA agrees with the need for standards and labelling for efficiency in the recommendations in this section but we feel the Province could go further. **Ontario should create blue/green jobs in carrying out water conservation as they have committed to in their Green Energy Act for energy conservation.** While water efficiency was acknowledged as an additional benefit in this Act, a rigorous analysis of how many new jobs could come from water conservation was not done. The Ontario government should encourage innovation, research and development of new jobs in the manufacturing of water efficient devices, water meters, rain sensors, and Canadian low flush toilets. Jobs should also be created in carrying out water audits for all sectors, training water conservation experts, retrofits not only of single family dwellings but of multi-unit buildings, zeroscaping and storm water management and replacement of lead distribution systems with safer alternatives. Priority should be given to leak detection and repair in municipal infrastructure grants and planning. All of this could mean a significant number of jobs could be created in Ontario as the result of a strong water conservation commitment.

3. Municipal

CELA agrees that waste minimization, metering, municipal rate structures, leak detection and repair are essential for municipalities. Procurement and the use of energy in water treatment and delivery are areas where municipal improvements should be sought. We would recommend strong measures that would make declining block rates illegal. A level playing field will be created if all sectors are required to pay the true cost of their water and wastewater services.

That said **one solution does not fit all Ontarians.** There are exceptional circumstances in the municipal sector that must be acknowledged and addressed.

CELA has been active in a coalition, the Low-Income Energy Network in order to provide our low-income clients with **affordable services and equitable access to conservation programs.** What follows are excerpts from a report we did in 2003 *DSM for Low Income Consumers in Ontario.*

"In 2001, the lowest income quintile of Ontarians were paying 9.9% of their average income on water, fuel and electricity while high income Ontarians were paying 2%. They tend to have inefficient appliances over 10 years old and they are more likely to be heating water with electricity (the most expensive option)." In cities a large percentage of low-income residents are in rental units and over 90% of them have their utilities included in their rents and are consequently unaware of their individual energy use and are buffered from reaping the benefits of conservation. They have little incentive or power to reduce their water use. Low income home owners have little ability to be able to replace water heaters or upgrade to more efficient appliances and to pay for energy audits. These people are the most vulnerable and will need special consideration in a water conservation scheme.

Consideration should be given to affordable block rates for the amount of water needed in these households for health and safety. Programs need to be considered that create incentives for landlords to retrofit buildings with water efficient appliances, toilets and delivery systems as well as the most efficient water heating devices. Conservation savings need to be passed on to tenants. By-laws could achieve this.

Ontario's *Safe Drinking Water Act* now requires steps for municipalities to plan measures so that water systems pay for themselves. However, many municipalities in Ontario are moving from ground to surface water supplies in Ontario. This has potential to cause hardship because many smaller and more remote communities do not have a population base that can bear the full costs of new infrastructure. CELA receives calls all the time from distraught seniors and others who fear they will lose their homes because their municipal councils are trying to pass on all of these costs to then. **Water conservation and efficiency programs have to work for Ontario's most vulnerable.** Consideration should also be given to having high users pay more and their fees used to assist low-income users.

Many municipalities have huge historic infrastructure deficits that will never be able to be addressed from their tax base and will require grants from the Federal and Provincial governments for improvements. These grants must be tied to improving human health, such as providing First Nations with safe and sustainable water supplies and replacing lead pipes throughout the Province, and to efficiency measures like eliminating leakage.

In summation we would answer yes to all questions 1 to 6 posed on this guideline.

Objective 3.
Improve monitoring and standardize data reporting among state and provincial water conservation and efficiency programs

CELA agrees that base reporting among the States and Provinces should be consistent and comparable. We are concerned as we have said in our general discussion (pages 2-3) that in past reporting the data is so aggregated as to be of little value in improving understanding, detecting trends and supporting decision-making. Data should move to being based on actual rather than estimated use as fast as possible. Projections of future use more often than not are inflated to fulfill the desire for growth in the Region. There needs to be a way to ground truth projections with official plans etc.

New data generation needs to be considered in order to fulfill the science and information needs articulated in the Agreement for more understanding of groundwater in the Basin and of climate change.

Questions

1. Yes, conservation and efficiency indicators should be established and tracked. Climate change indicators and perhaps indicators of groundwater aquifer stress should also be developed.
2. More information on consumption should be made available to all sectors and compared with best practices. We support Ontario's plan to develop new consumptive use targets for more sectors than suggested by the Agreement and hope these can be reported to the regional database.

Objective 4. Develop Science, technology and research priorities
Groundwater
We have found that this consultation has been light on discussions of closing the knowledge gaps on the groundwater portions of the watershed and its interactions with the surface water. Gaps that need to be filled, monitored and reported are:

- Identifying groundwater aquifers under stress now and concurrently which aquifers are healthy,
- Map these aquifers where possible,
- Determine the amount of rainfall needed to ensure recharge of these aquifers,
- Determine threats from pollution and overuse to these aquifers,
- Determine which tributaries to the Great Lakes are under the influence of groundwater, and
- Do conservation planning to protect groundwater that would include identifying best practices in groundwater protection.

Source Protection plans and water budgets should yield part of this information which should be publicly accessible in a web site. This will start to fill the gap in our understanding of the role of groundwater in the health of the largest source of drinking water for Canadians, the Great Lakes.

Climate Change
See paragraph 3 page 6.

Objective 5. Develop education programs and information sharing for all water users
CELA supports all of the proposals for the development of education and information sharing for all users. As we have learned there is no shortage of ideas on ways to conserve water being generated from all sectors that have been consulted. Where the work is needed is to create the political will to do it even in these hard times. Building the case for conservation is extremely important to debunk the myth of abundance. We should use tangible Ontario examples where conflicts are already developing among users, municipalities are scrambling to stake claims for water to feed potential future growth and there are real shortages to build the case. Our obligations to future generations, uncertainties of climate change and our unnecessary, profligate use compared to most of the rest of the world should be stressed in this re-education effort.

We should ensure that we have trained conservation specialists within each sector involved in PTTW reviews, and in the built environment for retrofits and designing for conservation. Key decision-making bodies that will be expected to implement conservation objectives such as the Municipal Engineers Association who directs the Class EA Process will need to fully understand the new conservation component of their work. Special educational programs will need to be directed to low-income Ontarians as well as their landlords on accessing the benefits of water conservation.

The new mapping contemplated offers an effective tool to communicate the complexities of water use decisions as they impact local sub-watersheds, regional watersheds, the connecting channels, each Great Lake and cumulatively on the whole system.

THE FINAL QUESTIONS ON TIMETABLES AND FUNDING
What should be the timetable of the Strategy?
Timetables can be yardsticks and drivers of progress. As we stated on page 5 a series of nested timetables - short term objectives to meet Agreement obligations, medium term (five years) to see if the basic program is yielding results and longer term to track progress - would be ideal. Timetables can differ for Provincial as well as individual sectors. Provincial targets will allow us to measure how Ontario is doing compared to other Great Lakes jurisdictions and other countries. Sector timetables will be beneficial to capture wise use levels with best practices. Flexibility should be anticipated so that as we learn more about what is achievable we can lower our thresholds to continuously work toward deeper conservation. Per capita information is also useful for individuals to compare their conservation culture with others.

How should the strategy be funded?
Funding should come from multiple sources. One obvious source of funding is the pool of funds created by the charges raised from the PTTW. Full cost pricing can include

funding conservation efforts. However as we discussed above in the municipal section special measures need to be taken to ensure essential access to water and equitable access for low-income Ontarians to water conservation benefits. There is a role for all levels of government to fund this transition to conservation and to provide incentives for participation in these programs as well as disincentives for wasteful practices or practices that reward overuse and wastage.

Supporting Information and Science

- **Watershed boundaries and mapping**

Mapping the watershed from macro to micro will assist the public and decision-makers to understand the issues from Basin-wide to local perspectives. The government cartographers should not presume that people understand the meaning of primary and tertiary and include these definitions on the maps. For example, the Provincial Tertiary Watershed Boundary 2008 map is confusing as it includes five distinguishing colours which are indications of the data sources rather than the three primary watershed boundaries, the Nelson, James Bay and Great Lakes St. Lawrence River Basin. If the intent is to promote understanding of the watersheds then too much extraneous detail confuses. Landmarks that allow people to orient themselves are important.

In the future CELA hopes to see mapping of groundwater aquifers in the basin, and mapping of tributaries to the Great Lakes that are under the influence of groundwater. As well, threats and stressors to ground and surface water could be mapped. Once source protection data on threats and information from water budgets is available, this information should be incorporated into both the data bases and into mapping being done for Agreement implementation. Even though source protection's focus is on drinking water supplies, once it is reviewed through the lens of Agreement priorities this data could reveal a lot about cumulative impacts and impacts on the ecosystem. CELA and other groups have been calling for more integration and focus on Great Lake watersheds early on in source protection planning process so that this integration will occur.

- **Water Use Reporting Protocol**

Questions

1. CELA supports submission of data at a finer tertiary watershed level because this will facilitate knowledge about local impacts of withdrawals over time. It will also help us anticipate and protect watersheds under stress sooner. Local area trends will be more apparent as will ecological impacts on water dependent species. A more local focus will allow those responsible to understand their role and when they may need to take remedial action.
2. Consumptive use information reporting is important in our understanding of permanent losses to the Basin. While the method of applying one coefficient to each sector may be necessary initially, it is a crude approach. Requirements to start to report return flow by permit holders should start to generate more actual data over time. Perhaps Ontario should grant permits over shorter periods of time and require review of historical permits soon so actual data can

be generated quickly. Refined data should start to be reported as soon as possible.

3. CELA supports having more sectors reporting in Ontario and would hope we could report these refinements to the Regional data base. It should be recognized that there may be unique and diverse sectors within individual jurisdictions.
4. It is extremely important for Ontario to report information generated from our PTTW system to the Regional database. Over time the benefits of more information to sound decision-making will be demonstrated to the other jurisdictions. Ontario will likely be able to demonstrate more knowledge on cumulative impacts, groundwater, impacts of climate change and ecological impacts of withdrawals because they will have more information. This could result in earlier identification of trends and stressors for the rest of the Basin.
5. All water users should be required to report water diversions/transfers because they all will have increased risks of harm to the parts of the system deprived of those flows.

- **Consumptive Use**

Questions

1. CELA supports the tiered framework because it encourages large users to conduct a site assessment of their consumptive use. This assessment could lead to better understanding of local circumstances and act as an incentive for conservation.
2. a) CELA supports that **all** highly consumptive water uses defined in S.5 (5) of the Water Taking Regulation undertake a site specific assessment.
   b) A site specific assessment should be required in all stressed watersheds and for all diversions and transfers and for all other withdrawals over a threshold. The Province should have the powers to require site assessments of sectors they need more information from and sectors reluctant to implement conservation.

Additional Questions

CELA supports adding categories of users to generate more specific information. A blend of a sector specific approach and user specific in instances where individual operations seem to fall outside of sector estimates would be preferable. If a user does better than the sector average they should be studied to add to the understanding of best practices and if they fall below they should have conditions imposed to see they achieve the average.

1. Trained experts should review consumptive use with Provincial oversight. The Province should provide this additional capacity particularly when they will be relying on the outcomes to build, shape and promote policy and programs.

- **Averaging amounts**

Question

CELA prefers Option 3. We think that reporting on maximum daily use is the best and most meaningful way to continue to communicate use to the public. Given the choices we prefer to see data generated at more regular, smaller periods of time.

February 19th and 26th Meetings

Intra-basin Transfers (Diversions)

- **Establishing the baseline -**

Municipal Approvals Instruments

The options for establishing municipal baselines are all process based rather than science based. CELA is reticent to wholeheartedly endorse a system that has not first established the "carrying capacity" and sustainability of aquifers, tributaries and lakes. We recognize that the science is not yet there and that predictability due to seasonality and climate will be variable. However we need to begin to establish water budgets for these portions of the bigger Great Lakes watersheds to have confidence that allocations we are making today will not be depriving future generations of users and water dependent creatures of water. Municipalities as well as non municipal users should have some yardstick for determining future demand not only for their own growth needs but for the needs of other users they share their water supply with. We are not confident that the official and/or master planning process now adequately does this. The scope of the considerations is up to the proponent and there is not necessarily planning that is carried out on a watershed or ecosystem basis, and allowances are not made for future needs for all who share waters.

We presume that all current instruments Master Planning, Official Plans, Places to Grow, Sewer Use and Water C of As, the *Safe Drinking Water Act*, EA and Class EA, PTTW, Provincial Plans for the Oak Ridges Moraine, Green Belt, and Lake Simcoe, and the *Clean Water Act* will all need revisions to comply and be consistent with the Agreement. Because the *Ontario Water Resources Act* and the Permits-to-take-Water are water focused instruments they should be the primary instruments used for Agreement implementation. The *Clean Water Act* (CWA) also offers a number of important provisions which could assist in determinations of future water supply. The threats assessments required in the CWA are to include threats to quality and quantity. If threats are found there are powers to impose further protective measures.

1. CELA recommends that the science and data strategy being developed for the Agreement integrate the water budgets from the Source Protection Plans and be integrated as soon as possible into decisions establishing baselines. These baselines for Great Lakes watershed sources should then become the primary consideration for both municipal as well as non-municipal takings.
2. There should also be a continuing requirement for Municipalities to secure C of A for operational standards and PTTW. We strongly agree that the assessment of the adequacy and security of the long term water availability should be made much earlier in the process and should be based on sound science. The

issuing of the PTTW should also happen earlier in the process depending on adequate supplies being available. The PTTW system offers the most thorough approvals system for water allocation.

3. As we have said, the current Municipal Class EA process for Water and Wastewater is inadequate to examine large withdrawals, transfers and consumptive uses from a basin-wide, ecosystem or regional perspective. An undertaking the scale of the current York Region projects or other regional scales are not guaranteed to be bumped up to a full EA where scoping could result in a full examination of need and alternatives. There is a continuing risk in the class EA process that small scale projects are evaluated on local impacts even though those projects are part of a larger delivery system. The full cumulative impacts of the project escape assessment.
4. CELA has voiced our concerns during these consultations that the recommended way forward allows the greatest access by the public to Ontario decisions regarding large withdrawals, transfers and consumptive uses. The public notice for water and sewer EA projects is most commonly through advertising in local newspapers rather on the Environmental Registry. Large takings will likely be of interest to the whole Great Lakes communities and they may well want to be involved in early comment on large Ontario transfers. Allowances will need to be made for Basin-wide notice.
5. Even when there is a full EA it is not guaranteed that public hearings will be held or that the public would necessarily become a Party to those hearings. Even though the public has an expectation that an EA involves a hearing, there has not been a full EA hearing in twenty years in Ontario.
6. Ontarians should have parity in practice to appeal decisions on large water takings in Ontario on par with the enforcement rights that US public has under the compact. The existing tribunal with the expertise to review these matters is the Environmental Review Tribunal. We would be concerned if these matters were considered to be primarily planning matters and would be directed to the Ontario Municipal Board.
7. CELA is concerned that the Municipal Engineers Association has not participated in this consultation and will not have an appreciation of the context and need to reform their processes to allow for Agreement implementation.
8. During consultations, MOE staff were concerned that there are now sequences of approvals that need to be in place prior to the issuance of a PTTW. The sequencing of those approvals will need to be reviewed in light of Agreement implementation and the recognized need to make determinations about water availability earlier in the planning process.
9. Most of the questions on process hinge on sequencing and what approval comes first. A hierarchy will need to be determined and the first determination needs to be based on baseline watershed or sub-watershed budgets for all current and future uses. We need to begin to assess whether all demands for growth can be met.

Non-Municipal Approval Instruments
CELA agrees that non-municipal approvals should be done under the PTTW process. However, there could be surprise requests in the future for new uses that we have not anticipated today, just as the NOVA proposal was not anticipated at the time. Consideration should be given to granting the Minister the powers to request more in-depth assessments of projects of this nature under the OWRA.

Baseline for Consumptive Use
Overall, CELA recommends that Ontario evaluate lowering the threshold in their Act for consumptive uses to offer a greater level of protection. This option is allowed by the Agreement.
CELA agrees that the refined coefficients developed for Ontario to inform decision-making on regulations are improvements as they will provide more detailed data on current uses in the Province. We agree that the use of coefficients should be blended with science and site specific information as we attempt to move from estimates to actual data. We should encourage modification of coefficients when real data becomes available. We need to be confident that amounts assigned to related transferors are as accurate as possible and should use multiple approaches if necessary to determine these amounts. We expect that as we assign these amounts, lessons will be learned about Best Practices. We will need flexibility to adopt these as they emerge.

Related Transferor
The work that has been done on the related transferor issues are particularly important in Ontario where so many of the Great Lake watersheds are in close proximity, there is more opportunity for diversions and transfers of return flows and wastewater. CELA agrees that the PTTW should be amended to capture and assign responsibilities to related transferors. This will go a long way to assist the primary withdrawer in understanding the fate of the water they are distributing as well as assign responsibility to the actual user. We would recommend that the related user be required to report to both the MOE as well as to the original transferor. The increased understanding this will foster might greatly assist municipalities in capturing the costs of their services to actual users. Reporting of return flows should be a key part of the reporting required. We agree that the Director should have the authority to amend approvals related to the new or increased transfer and where there is a conflict provide the most protective term and condition. A blended but prescriptive approach focusing on a water balance will be necessary. However as we have already recommended growth allowances should not be assumed until it can be demonstrated that they are sustainable.

- **Connecting Channels**

CELA has considered the identification of connecting channels for the purposes of evaluating intra-Basin transfers and have concluded that the St. Lawrence River should be included in the considerations as a connecting channel because there is potential to take water from Lake Ontario and return it to a downstream portion of the River. This approach would not exclude the downstream users in Ontario and

Quebec from seeking the same remedies as others downstream from significant takings. This would not override the recognition that the River is also a watershed within the Basin.

We would expect that the Welland Canal and the Trent-Severn waterways must not become vectors for increased transfers between watersheds because the IJC has raised concerns about the impacts of diversions on the Great Lakes watersheds and favours a watershed approach for water management in the Great Lakes protection. At present there is public concern about the potential weakening of provisions of the federal *Navigable Waters Act* for environmental assessment of projects. The Federal Government has prohibited bulk water exports in their *Boundary Waters Treaty Act.* Discussions should be held with the Federal government as to the potential for Intra-Basin diversions, transfers or consumptive uses in federal waters of the Great Lakes-St. Lawrence River Basin. The recent exemption from posting their PTTW on the EBR given to Detroit for a historic withdrawal granted by the Federal Government from Canadian waters illustrates this potential.

Ontario's decision on how to handle connecting channels has the potential to show leadership on a significant issue that negotiators of the Agreement and Compact may not have understood or anticipated. Ontario's examination has determined several intra-basin transfers that already exist. In our opinion all new and increased intra-basin diversion and transfer requests should be considered and scrutinised as **diversions** for their potential to cause equivalent harm to the parts of the system deprived of the flows diverted. We presume that the degree, nature and potential for harm will increase as the distance between the withdrawal and discharge locations increases. This makes it prudent to assure that we start to build a process that will prevent these diversions between basins, mandate return flow close to the source of the intake and study impacts of existing and new proposals to move water between Basins. It would be a mistake to exempt upcoming proposals for intra-basin diversions/transfers from the full scrutiny of the Regional Body. CELA hopes that the requirement of return flow so fundamental to the protection of the Great Lakes ecosystem is pursued rigorously in Ontario at the outset. We are dismayed to discover that achieving this rests on an interpretation of and acceptance of the definition of connecting channels.

1. CELA strongly recommends that Ontario refine the definition of connecting channel for the purposes of evaluating proposals for new or increased diversions, consumptive uses or withdrawals in Ontario. This definition should be based on hydrology and flows through the ecosystem. Priority should be given to options that maintain rather than detract from those flows. For this reason **we favour Option 2 Only including upstream connecting channels in each Great Lake Watershed.**
2. Additionally CELA recommends that Ontario make representations to the Regional Body and to States that might have enshrined another approach in their legislation to refine their definitions in formal amendments to the Compact and the Agreement to State and Provincial legislation so that we can

have a consistent approach Basin-wide. Ontario should be congratulated for identifying and publicly discussing stricter protections for proposals that are most likely to originate within their boundaries.

3. The issue of return flow to a tributary that flows to a connecting channel is a challenge. To determine our position we considered how we would want to see the current London diversion evaluated. We would want the cumulative impacts of their two withdrawals from Erie and Huron to be evaluated with the needs to return the flows as close as possible to the point of withdrawal to avoid impacts of loss of flows to the system. More likely than not these return flows will be waste water and will have greater impacts on tributaries than on larger connecting channels and individual Lake watersheds. For these reasons we prefer the third option which discourages return flow to a tributary to a watershed of a connecting channel.
4. Travel time from the point of taking to the point of return should be a factor in deciding the degree of harm that could occur.
5. Ontario should make special representation to Michigan and other States who might discover they have similar transfer opportunities to consider closing the loophole caused by the definition of connecting channels in the Agreement and Compact that would result no review of intra basin transfers.

- **Technical Bulletin**

CELA has made previous submissions on our preference for a short moratorium on any Ontario proposals for intra-basin transfers and diversions in this interim period to allow for the full development of new regulations to implement the *Great Lakes St. Lawrence River Basin Sustainable Water Resources Agreement*. We feel that the full scope of the Agreement including Ontario's new conservation strategy should be operable before all large withdrawals, diversions and consumptive use proposals over trigger levels are considered. The delay of a few years should not be that significant. In this interval these municipalities could get started on extending supplies through conservation practices. We appreciate that this Technical Bulletin informs Municipalities of the current expectations under the Great Lakes Charter as well as the process under development in regards to the Agreement. It has sparked interest in this consultation from areas where such proposals are under consideration like London, Collingwood and Kitchener-Waterloo. While the York Region proposal's Environmental Assessment is already well underway, we have all benefited from their participation in the Annex Advisory Panel dialogue and they are making efforts to comply with the spirit of the Agreement.

We were glad to see that the Ontario Government is already seizing opportunities to insert Agreement implementation into new legislation in their recent Bill 150 *Green Energy Act* by prohibiting energy projects from transferring water from the three watersheds in the Province.

Regulating new and increased transfers

- **Regional Review Process**

During Annex negotiations, CELA was on an Advisory Panel to the Council of Great Lakes Governors and in that capacity was involved in a number of discussions on the Regional Review Process. As well, we worked closely on submissions with our US counterparts and gained an appreciation of the differences in our systems that led to there being two separate documents the Agreement and the Compact. One thing we hope for is that despite our different systems that there will be equitable public access to decision-making. We have concluded that the opportunities for public involvement may come at different junctures in the process for Ontarians.
Our primary opportunity for input in the process outlined in the diagram on page 5 is at the time that Ontario does its Technical Review of applications that originate in Ontario.

It is less clear if and how Ontarians could be involved in Ontario applications once they go to the Regional Body and after the Regional Body makes its Declaration of Findings.

It is also unclear how effectively Ontarians can be involved in decision-making on applications originating in other Great Lakes jurisdictions. This was made abundantly clear when Ontario negotiators sought to have more influence over the most prominent diversion in the Great Lakes, the Chicago Diversion. This diversion has been exempted from both Agreements because it is regulated by the US Supreme Court. It is unlikely that the US Supreme Court would give Ontario standing in future matters considering this diversion. The outcome of the discussions of Ontario's role was inconclusive. US members of the Regional Body did state they would endeavour to represent Ontario's interests in US courts.

Conversely, Ontario will need to consider how other Great Lakes jurisdictions and the public from other jurisdictions can be involved in Ontario's process at an appropriate time to make submissions on proposals that will go to review. How and when others will be given notice of these projects will be important.

Once a project goes to Regional Review public written comments will be considered in that review. The other avenue for input from the Ontario public to that review would be to continue to involve the Province's Annex Advisory Panel (AAP). The Panel could work through positions that Ontario takes on the Regional Review of those projects prior to each review. This forum was very effective during the negotiation of these Agreements. However, the Regional Body has chosen a consensus building process for decision making on applications. This means that their review of projects will involve negotiations. This may make it difficult for the Ontario representatives to use their AAP once they have commenced those review sessions. It is still unclear what timetables will be set for regional review and how this could influence public participation.

Under the US compact any person has the right to appeal a Compact Council decision or to ask for judicial review in US District Courts. There are **not** parallel powers in the Agreement to seek legal remedies on a decision made by the Regional Body. It is also

unpredictable whether Ontario would ever be granted standing in US courts if they were to voice similar objections.

All of these matters of access of the government and of the public in the Great Lakes to the full application review and Regional Review decision-making are critical. Those participating in the drafting of Regional Review Procedures should try to give as broad access at all stages of consideration when possible.

Questions
Immediate and Critical Priorities

Coming into Effect
CELA raised the concern during the consultation that we do not yet know the timetables for implementation of key commitments set out on page 7 of your Regional Review presentation. The dates that various commitments come into effect commence "after the last Party notifies others that measures are in place." Quebec's legislation has been delayed and needs to be reintroduced because of their election. That legislation is omnibus legislation and includes other water measures other than implementation of the Agreement. Not knowing their legislative schedule is making it difficult to work to Agreement timetables for regulations. Ontario agreed to make efforts to determine when this might occur. We are concerned that we might lose momentum if there is too much delay.

Regional Procedures
The Regional Procedures Committee needs to map the stages where the public can have access to review of proposals within their jurisdictions and in decisions in other jurisdictions. They need to scope their own procedures and timetables for Regional Review and the mechanisms they will utilise to resolve disputes and reach consensus. They will need to determine procedures if they do not reach consensus. Good educational materials will be needed to inform applicants, governments and the public of key opportunities to access decision-making.

Standing Advisory Committee to the Regional Body
CELA supports that this Committee be renewed. It will be important to continue to engage sectors involved in the previous Advisory Committee for continuity. However, we would like to see some more balance of interests reflected on this Committee. It is difficult to balance Canadian and American interests because there are 8 States and 2 Provinces. That has meant that there is a concentration of large US industrial associations on the Advisory Committee. We would hope to see at least one equivalent Canadian representative. Much of the Agreement and Compact implementation falls on municipalities. For that reason CELA would like to see municipal leaders have a place on this committee. This could be accomplished if the Great Lakes Cities Initiative moved from being observers to participants.

The Tribes and First Nations should determine how they wish to be engaged. We have always asked that they be part of the Regional Advisory Committee from the onset of

negotiations of these Agreements and would certainly welcome their voice around the table. Perhaps they could continue to have a parallel process and participate here as well. Now that we are enshrining practices and proposals which will impact generations to come, their wisdom is needed.

We think that the Ontario representatives on the Regional Advisory Committee should report back to their Annex Advisory Panel and in turn take the Panel's advice back to the Regional Advisory Committee where possible.

Draft Procedural Manual
CELA regrets that the Draft Procedural Manual was not carried forward with the Agreements after they were released. The Manual was a part of the package released with the first draft of the Agreement. This manual was drafted and based on a considerable amount of work that was done by the Great Lakes Commission (GLC) and by other studies sponsored by the Great Lakes Protection Fund to support decision-making. CELA was involved in some of that work with the GLC and found that the detail and specificity of this work was very helpful in framing the next steps to implement the Agreement and Compact recommendations in practical programs. CELA recommends that Ontario encourage the Regional Body to use this manual in their implementation process and evaluation of proposals. This might result in a more harmonised system basin-wide.

- **How to apply the exception criteria**

No one existing process in Ontario is adequate to address the full scope, alternatives to and the individual and cumulative impacts of exception proposals at the appropriate scale. The process selected will need to be as thorough and transparent as possible and allow for full public participation. Timing, scoping, proposal scale, and public participation all have to be factors in determining how to apply the exception criteria.

Questions
Process Options for Individual and Cumulative Impacts
CELA recommends OPTION 2 for both individual and cumulative impacts because it allows us to improve existing instruments to address new requirements in ways that will improve Ontario's water management regime and our own understanding of water use.
Additional Requirements
A means to determine and evaluate return flow applicability to proponents that request an exception should be developed in the PTTW. The cost recovery for return flow infrastructure will become more feasible if it is projected over a longer timeframe.
Cumulative impact assessments should be required on a sub-watershed, watershed and basin scale.

Conservation Options
Questions
1. CELA supports the principle that water conservation requirements for **new or increased** transfers should go beyond the Ontario Conservation and Efficiency Strategy.

2. While it is difficult to determine now if Ontario's pending Conservation Strategy will have adequate measures for existing transfers, CELA recommends that these users be asked to demonstrate how their historic transfers measure up to the current tests for new transfers. This should include requirements to carry out conservation planning, measure actual return flow, environmental harm and economic feasibility not only of infrastructure cost but of harm as well. Some cumulative assessments should be done to combine historical with increased requests for transfers. Proponents should be asked to determine economic feasibility over a longer timeframe so they can determine if their infrastructure investments are sustainable.
3. All options suggested should be used in combination.

- **When to apply the exception criteria**

Options page 10
CELA prefers Option 2, requiring the PTTW application for new or increased applications before the Class EA. We would suggest that all permit applications for municipal and other takings over Agreement thresholds be subject to all Part II requirements of the EBR.

Options page 14
CELA prefers Option 2 because the water evaluations under the PTTW evaluation occur earlier in the process. An early notification is given to the Regional Body. There also needs to be a way to broadly notify others in the Great Lakes that might want to have input on a proposal in Ontario early on in the consideration process.

Ensuring adequate public notification of applications
Prior notice EBR Posting of Permits to Take Water for Agriculture

CELA has found the issues pertaining to agriculture in the Agreement and the Compact very challenging because they do not easily fit into solutions and requirements for other sectors. Agricultural use for irrigation is seasonal and confined to 90 days of the growing season in the Great Lakes. Approvals threaten delays that could result in the loss of whole growing seasons with serious economic consequences for farmers.

Many of the stresses and perceived continental threats to the Great Lakes come from presumptions that we can always move water to grow crops in more arid areas. If logic prevailed, this assumption would be derailed and food would be grown closer to water supplies. This shift could lead to growth in food production and the agricultural economy in the Great Lakes. Many consumers are now also endeavouring to buy their

food locally so Great Lakes farmers will likely be serving more local markets. These trends are both more sustainable. Few individual agricultural proposals in Ontario would trigger Agreement thresholds. However, in the interest of efficiency and conservation some farm operations are banding together to create cooperative irrigation systems that could draw water volumes larger than Agreement thresholds. One such system in the tender fruit lands of the Niagara Region endeavoured to respond to the expectations of the Agreement by responding to all of the criteria with costly technical studies. The time it took to do these studies led to delays that meant this cooperative lost funding from the Federal Government to assist in the construction of their system. This was a regrettable outcome since their efforts were being made to achieve conservation.

CELA recommends that all of the provisions of the Agreement and other recent water requirements arising from Source Protection and other water management environmental requirements for farms be integrated in a way that makes water management requirements transparent and achievable for farmers. Not having to report on these requirements piecemeal but in one report would be one way there could be integration and time savings for farmers.

Questions: Page 10
While we are uncomfortable in giving one sector exemption from appeal, we do think steps should be taken to ensure that agricultural permits are submitted well in advance of growing seasons so that all approvals including appeals are dealt with prior to the growing season. Perhaps a special timeframe for Agricultural permit applications, postings to the EBR and response deadlines and appeals could be set out. Some means should be considered to ensure that there are the resources to meet deadlines for agriculture.

Please feel free to contact us if any of our comments need clarification. Thank you for the opportunity to be part of this consultation.

Yours truly,
Canadian Environmental Law Association

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