water for life

Alberta’s Strategy for Sustainability

Kate Rich
Alberta Environment
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Need for Water for Life

- Alberta is facing a number of pressures on its water resources:
  - Economic growth
  - Population growth
  - Environmental factors

- A strategy to effectively conserve, manage and protect water supplies, while maintaining a high quality of life for Albertans.
Economic & Population Growth

Growth in selected Economic Indicators

% Change, 1992 - 2002

Population: 19.2, 10.7
Employment: 30.3, 20.8
G.D.P.: 50.4, 40.4
Exports: 174.6, 136.3
Investment: 146.4, 62.0

Alberta | Canada

Alberta Government of Alberta
Changes in Bow Glacier

Bow Glacier in 1898

...and in 2002

(Source: Graeme Pole, 2003)
Annual River Flows

Where does Alberta’s water go?
- 87% flows north
- 13% flows east
- 0.1% flows south

On average, Alberta “generates” about 60 billion m³ of surface runoff annually
- equivalent to 90 mm spread over entire province
The Solution – Development of *Water for Life*

- Ideas Generation (November 2001)
- Public Outreach and Consultation (March and April 2002)
- Minister’s Forum on Water (June 2002)
- Draft *Water for Life* (March 2003)
- Consultation (June 2003)

... Shift to implementation
Water for Life – What is it?

What it is…

- Confirmation of foundations in the Water Act
- Initiative to change the culture around water
- Cross-ministry initiative / commitment

What it is not…

- New legislation and regulations
Water for Life
Signals a Change

- From process to outcomes
- From water management to watershed management
- From regulating to shared responsibility

Alberta’s water management system is a shared responsibility.
Water for Life - Outcomes

- Safe, secure drinking water supply
- Healthy aquatic ecosystems
- Reliable, quality water supplies for a sustainable economy
Water for Life –

Key Directions

- Knowledge and research
- Partnerships for watershed management and stewardship
- Water conservation
Partnerships for Watershed Management and Stewardship

- Focuses on shared responsibility for watershed management
- Three types of partnerships that have distinct roles and are complementary to one another:
  - Alberta Water Council
  - Watershed Planning and Advisory Councils
  - Watershed Stewardship Groups
Partnerships for Watershed Management and Stewardship

- Alberta Water Council:
  - Advise on provincial water management issues
  - Steward implementation of Water Strategy
  - Develop water conservation targets
  - Identify research priorities
  - Wetland policy

Member Categories:
Provincial Government
Industry
NGO
Other Government
Partnerships for Watershed Management and Stewardship

- Watershed Planning & Advisory Councils
  - Develop watershed management plans
  - Promote best management practices
  - Report on state of the watershed

Oldman  Cold Lake-Beaver R.
Bow    Battle
North Sask. Lesser Slave
Peace  Red Deer
Athabasca Milk

![Map of Major River Basins in Alberta](image)
Place-based approach

Surface and Groundwater Allocations (2004)

Athabasca River
- 63% oil and gas
- 3% agriculture

South Saskatchewan
- 1% oil and gas
- 76% agriculture
Partnerships for Watershed Management and Stewardship

Watershed Planning changing:

... water management framework (allocation) to watershed planning (quality, land use impact, etc. integrated)

... government-led planning to WPAC-led planning.
Water Conservation

- Ensure water efficiency and productivity improves by 30% from 2005 levels by 2015. (Firm water conservation targets will be determined by the Alberta Water Council.)

- Implement sector plans for water use improvements (oilfield injection)
  - understand current use by each sector; and
  - develop plans for improvement.
Advisory Committee on Water Use Practice and Policy

- During the public consultation phases of *Water for Life* (2002-2003), Albertans raised a number of concerns regarding water used for the enhanced recovery of oil (oilfield injection).

- Concerned about reductions in the availability of useable water (loss from the hydrologic cycle).

- Multi-stakeholder Advisory Committee established.
Water Use for Injection Purposes in Alberta

- Conventional ER projects
- Water Sources

☐ Thermal ER Areas

Location of Projects and Source Water

Geowa Information Technologies, Ltd.
Water Allocations in Alberta by Specified Use
(Surface plus Groundwater, as of 2004)

- Ag - Agricultural 1.8%
- Ag - Irrigation 42.6%
- Com - Commercial 6.4%
- Com - Cooling 25.6%
- Ind - Industrial (Oil, Gas) 5.3%
- Ind - Drilling 0.14%
- Ind - Injection 1.9%
- Mun - Municipal 10.9%
- Othr - Recreation 0.25%
- Othr - Habitat 1.4%
- Othr - Fish/Wildlife 0.31%
- Othr - Water Mgmt. 3.3%
- Othr - Other 0.03%

Total Licensed Volumes: 9,725,760,000 m³ (9,442,673,000 m³ Surface Water; 283,087,000 m³ Groundwater)

Agriculture 44.4% Commercial 32%
Municipal 11% Oil & Gas 6.3%
Source Water Diversion for Oilfield Injection

1972 Oilfield Injection Total Volumes – Source Water
Total Diversion = 69,497,060 m³

2001 Oilfield Injection Total Volumes – Source Water
Total Diversion = 47,525,748 m³

- Surface Water – 74%
- Non-Saline Groundwater – 24%
- Saline Groundwater – 2%

- Surface Water – 57%
- Non-Saline Groundwater – 22%
- Saline Groundwater – 21%
Advisory Committee on Water Use Practice and Policy

Recommendation -

“... a concerted effort must be made to reduce or eliminate, on a case-by-case basis, the use of non-saline water for underground injection.”
Advisory Committee on Water Use Practice and Policy

- Develop a more stringent *regulatory process* for underground injection applications and approvals.
- Identify and assess alternatives to non-saline water sources (surface and groundwater).
- Review new applications and existing licences.
- Focus the highest urgency in “water short” areas, as part of ongoing water management planning.
WATER SHORT AREAS

• Areas naturally water short (less than 5 mm / yr runoff)

• Development pressures (closed or potentially closed to new licences)

• Potentially water short areas (yellow, orange)
Advisory Committee on Water Use Practice and Policy

- Incorporate oilfield use reduction strategies into the Provincial Water Conservation Plan to be overseen by the Alberta Water Council.

- Coordinate with the conservation schedule in *Water for Life*.
Implications for the Future

- Water Supply – tougher decisions to make because of limited and variable water supply, need to ensure maximum availability.

- Water Demand – need to start managing water demand as the population and economy continue to grow.

- Regional Differences – need provincial direction, regionally-based solutions.

- Planning and Decision-making – need better science-based information, improved reporting to the public, increased stakeholder and public involvement.