



the

FOSSIL WATER report

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Great Artesian Basin Australia's Largest Aquifer

The Great Artesian Basin (GAB) covers an area of 1.7 million square kilometers or roughly 1/5 of the continent. The aquifer contains an estimated 8,700 cubic kilometers of water, some of which is almost 2 million years old. It ranges in thickness from 100 metres to more than 3 kilometers and is the sole source of water in many parts of central Australia, supporting rural communities, farms, mines, cultural and tourism activities.

GAB aquifers are recharged by infiltration of rainfall and leakage from streams into outcropping sandstones mainly on the eastern margins of the Basin along the western slopes of the Great Dividing Range. Groundwater flows under gravity towards mound springs in the west and south-west of the region.

Mound springs occur naturally where artesian flows have surfaced. These springs have high conservation value because of the "oasis" habitat they provide in otherwise arid lands for a variety of species including plants, fish, and snails that do not occur elsewhere. These spring ecosystems have been listed as threatened under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999.

Bores have been drilled into the aquifer since the 1880's, creating artesian water flows at the surface within what would otherwise be an extremely arid region. Before any bores were drilled, a natural equilibrium existed between inflows and outflows to the GAB aquifers. The drilling of artesian bores disrupted this equilibrium by allowing water to flow from the pressurised aquifer to the ground surface.

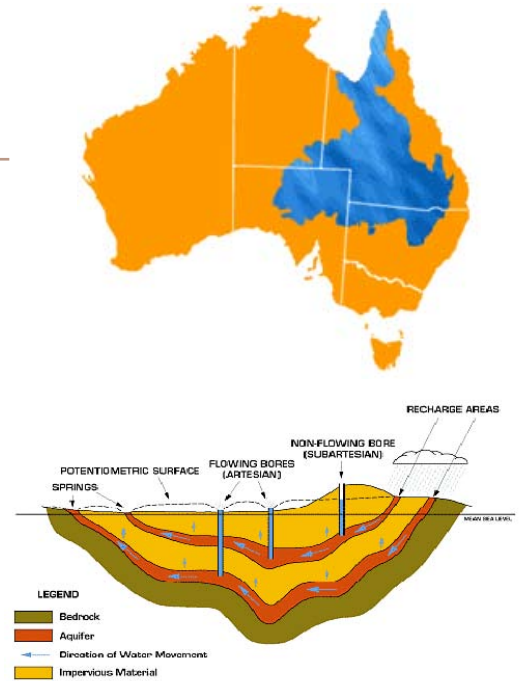
Scientific studies and anecdotal evidence point to declining pressures, wastage of water, invasion by weed and feral animal species and overall loss of productivity. These effects threaten continued

sustainability within communities that now rely on this fossil water resource. Groundwater extraction through water bores has resulted in 64% of springs in the discharge areas of the Basin ceasing to flow and total spring discharge from the Basin declining by about 30%.

To address this serious decline, the Great Artesian Basin Consultative Council was established in 1997. Membership consists of:

- Sector Representatives from: Aboriginal Groups, Tourism, Petroleum Production, Mining, Farming
- State Advisory Boards
- Technical Support Working Groups
- Government Departments

Each State (Queensland, New South Wales, South Australia and the Northern Territory) has a GAB Advisory Body that consults with water users to feed information back to the Council. The Advisory Bodies are analogous to Alberta's Watershed Planning and Advisory Councils, and are responsible for the preparation of Water Management Plans.



OPERATION OF AN ARTESIAN BASIN

Several programs have operated since 1989 to repair bores and replace the drain systems.

Costs are shared between Federal and State governments and bore owners. Collectively these programs are referred to as the "cap and pipe" programs. The cap and pipe programs have already had positive effects. In addition to improving aquifer pressures, feral pests can be better managed and bore drains can be removed reducing erosion and land salinisation problems.



Black Diamond, Turner Valley and Okotoks Promote Sustainable Water Management

When it comes to working together to address watershed issues and sustainability, three small communities in the foothills of Alberta have demonstrated significant results can be achieved through innovative thinking, risk-taking, collaborative partnerships and working closely with residents and elected officials.

Sharing a 100 year history of living and working in the Sheep River watershed, the Towns of Black Diamond, Turner Valley and Okotoks have been working together since 2002 on local water conservation and water management issues. The towns share the belief that water is an integral part of their landscape and formed a Tri Community Watershed Initiative (TCWI) to collab-

orate on managing their shared water resources. Activities of the TCWI have focused on working with partners, including the Bow River Basin Council to help secure funding from Environment Canada, hosting community events, engaging media, and assisting residents in water conservation efforts. Results have helped elected officials make more informed decisions about

water issues and have been successful in changing municipal policies, writing municipal water and river valley management plans, influencing regional water activities and sharing lessons learned with other municipalities.

The results are impressive. Program managers have visited more than 6,000 households and met with 15,000 residents on their doorsteps with water conservation campaigns, and annual tri-community river clean ups. They have provided volunteer training, facilitated media campaigns and made presentations to local schools. The communities themselves have completed leak detection and meter replacement programs and shared municipal bylaws. By continuing to identify community values the towns are able to monitor progress, increase community capacity to address watershed issues and use a broad range of information in their decision-making processes and best practices to protect and enhance the aquatic health of the Sheep River.

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Fossil Water Helps Secure Grant Funding for Bow Council for Invisible Water Conference June 2006

Fossil Water assisted the Bow River Basin Council (BRBC) in securing a \$35,000 grant from the Calgary Foundation to be used for the milestone groundwater conference held June 2006 in Calgary. The conference theme of "Invisible Water", reflects the fact that a significant % of river flows, particularly during dry seasons, are derived from source waters under the influence of groundwater. The conference will bring together planners and groundwater researchers within the Basin to

share groundwater data and identify information required for sustainable planning. The Calgary Foundation grant includes funds to support the development of a legacy information portal that will provide ongoing links for critical information. Fossil Water worked closely with Edie Smith, Fundraising Officer for the BRBC and Mark Bennett, Executive Director in preparing the proposal and presentation to the Foundation's grant committee.





FOSSIL WATER

About the Fossil Water Report

The Fossil Water Report is published monthly as a service to our clients and partners. Each issue will focus on three areas:

- (i) trends that are important to water managers in western Canada
- (ii) perspectives from our active projects
- (iii) news and views regarding fossil water resources around the world

If you would like to receive copies of our report, visit our website @ www.fossilwater.ca

About Fossil Water Corporation

Fossil Water Corporation provides turnkey water and wastewater solutions to the energy and development sectors. Our goal is to become part of our client's competitive advantage by delivering innovative solutions that consider the full life-cycle of our clients' projects.

Our name comes from our commitment to treat water as a non-renewable resource – we seek to unlock the hidden value in this precious resource.

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