

The Purposes of the Existing Dams in the South Saskatchewan River Basin (Alberta)

In Alberta, water flows are extremely variable from year to year and even within a year. Flows are high during snowmelt in spring, then typically low in summer, fall and over the winter unless there are significant rainfall events. Some water users need a steady supply of water year-round but others need it most in seasons of low flow. For example, irrigated agriculture and recreational facilities such as golf courses have their greatest demand for water during summer and early fall. The dams and reservoirs of the South Saskatchewan River Basin (SSRB) in Alberta permit water to be stored when it is plentiful for use when it is most needed.

Red Deer River

Dickson Dam and Glennifer Lake:

Owned and operated by Alberta Environment.

Purpose: storage (flow control)

Primary operating objective:

The main water management objective of the Dickson Dam is to provide an assured down stream water supply, primarily during the winter months, by providing a minimum release rate of 16 cubic meters per second (cms).

Other operational functions:

- Improved water quality
- Flood attenuation
- Hydro-electric power generation
- Recreation
- Apportionment commitments
- Ice jam flood reduction

Bow River and its Tributaries

The major water power projects in the Bow River basin are owned and operated by TransAlta Corporation.

Eleven generation sites are located within the basin, each with its own provincial or federal licence.

Purpose: The dams associated with each site are operated primarily for the purpose of hydro-electric power generation.

Other operational functions: The dam sites and storage reservoirs also provide benefits for recreation, flow regulation and, in some cases, limited flood reduction .

Storage volumes and reservoir levels rise and fall through out the year depending on generation requirements. Typically, the reservoirs are filled during the spring and summer runoff period and are depleted during the winter months. Some generation sites have little or no storage capability and are considered "run of the river" developments where water is passed through the generation plant, as soon as it arrives from upstream sources.

The following hydro-electric energy generation plants are located within the Bow River Basin:

Bearspaw Power and Storage Development
Ghost Power and Storage Development
Horseshoe Falls Power Development
Kananaskis Falls Power Development
Barrier Power and Storage Development
Pocaterra Power and Storage Development
Interlakes Power and Storage Development
Cascade Power and Storage Development
Spray Power and Storage Development

The Bassano Dam is owned by the Eastern Irrigation District and diverts water into the district.

Oldman River and Southern Tributaries

Waterton-St. Mary Headworks System (including the Waterton River and St. Mary River Dams)

Owned and operated by Alberta Environment.

Purpose: To impound and divert water for water management, flood control, erosion control, flow regulation and recreation.

The primary use of the system is to deliver water to the irrigation districts south of the Oldman River. Hydro-electric power generation also occurs. The hydro-electric plants are operated by a private developer.

Oldman River Dam

Owned and operated by Alberta Environment

Purpose: To impound water for water management, flood control, erosion control, flow regulation, conservation and recreation.

Key conditions of the licence:

“The Licensee shall operate the Works in such a manner as to comply at all times with Alberta's South Saskatchewan River basin apportionment commitments to Saskatchewan.

The Controller may review the operational strategy of the licensee from time to time and may direct that revisions be made.”

Operational function:

- Supply existing and future consumptive water demands of municipalities, industries and agriculture;
- Provide flexibility in meeting Alberta's interprovincial commitments under the Master Agreement on Apportionment;
- Provide flows in the Oldman River downstream from the dam that will:
 - maintain water quality to ensure fish survival;
 - enhance downstream recreational opportunities;
 - sustain riparian vegetation.
- Hydro-electric power generation also occurs. The hydro-electric plant is operated by a private developer in concert with the operational requirements of Alberta Environment.