

the highest major lake (1 171 m). Heights of the more important Canadian mountains and other elevations are given in Table 1.2.

### 1.1.2 Inland waters

Abundant water supplies have been essential to the development of Canada's fisheries and wildlife resources, hydroelectric power, agriculture, recreational activities, navigation, domestic water supply and industrial production.

Each year 7 254 478 million tonnes of water fall on Canada as rain and snow. Much of it evaporates, some is stored temporarily in lakes, groundwater reservoirs and glaciers, and a large amount drains as surface runoff following streams and rivers to the oceans. Rapid melting of snow in spring causes floods, erosion and other problems. Most of Canada has ample precipitation averaging about 76 to 91 centimetres annually in many regions. In areas of little precipitation, greatest demand for water occurs in the hot summer weather; prolonged dry spells may mean water shortages. Drought conditions prevailed during some of 1977 over large parts of the Prairies.

Much of Canada's water is in undeveloped areas. Some other areas, such as the Prairies, have insufficient water for present needs.

About 755 165 square kilometres or 7.6% of Canada's total area is covered by lakes (Table 1.1). Lake storage provides water in time of drought that is later replenished. Lakes are natural regulators of river flow; they smooth out peak flows during flooding and sustain stream flow during dry seasons. Among the largest freshwater bodies in the world are the Great Lakes with an area of almost 258 999 km<sup>2</sup>; 37% is in Canada and 63% in the United States (Table 1.3). These lakes are sufficiently large to have measurable, although slight, tides. Other large lakes in Canada are Great Bear Lake, Great Slave Lake and Lake Winnipeg, with areas from 24 390 to 31 328 km<sup>2</sup>. Countless smaller lakes are scattered throughout the country, particularly in the Canadian Shield. For example, southeast of Lake Winnipeg there are some 3,000 lakes in an area of 15 773 km<sup>2</sup>; and southeast of Reindeer Lake in Saskatchewan there are some 7,500 lakes in an area of 13 727 km<sup>2</sup>. The size and elevation of Canada's lakes more than 388 km<sup>2</sup> in area are listed in Table 1.4.

Groundwater is another important source of freshwater supply for communities, industries and irrigators, contributing about 10% of the water supplied by municipal water systems. Although the quantities are much smaller than from rivers and lakes, many communities and some industries are completely dependent on groundwater supplies. In some areas, particularly the Prairies, groundwater is the principal source of water streams during extended dry weather.

The volume of water stored as snow and ice in North America's glaciers is many times greater than all the lakes, rivers and reservoirs. Most of this is permanently frozen in the polar ice caps and is inaccessible, but polar ice masses have a strong indirect influence on the hydrologic cycle through their effect on weather patterns. In the temperate regions, however, the alpine glaciers exert a direct influence on the hydrologic cycle as water from melting glaciers frequently sustains stream flow during dry seasons. In hot summer months, glaciers may contribute up to 25% of the flow in part of the Saskatchewan and Athabasca rivers. About 150 000 km<sup>2</sup> or 75% of the glaciated areas of Canada are in the Arctic islands and 50 000 km<sup>2</sup> or 25% on the mainland. Of the latter figure 38 000 km<sup>2</sup> are in the Pacific drainage basin and 10 500 km<sup>2</sup> in the Yukon drainage basin. The remaining 3 885 km<sup>2</sup> are shared among the Arctic, Great Slave, Saskatchewan-Nelson and Labrador drainage basins. The number of glaciers in Canada is estimated at 75,000.

In Canada 90% of water used comes from streams and other surface sources such as lakes and man-made reservoirs. The combined mean annual flow of all streams has been estimated at 99.1 million cubic decimetres per second, equivalent to about 60% of Canada's mean annual precipitation.

Canada's history and industrial development has been influenced by its great rivers. Earliest settlements centred around water supplies and water was essential for transportation. Canada's fur trade flourished because of the ready access to the interior provided by the St. Lawrence River, the Great Lakes and many other waterways. Plentiful water supplies in the fertile plains of Southern Ontario and Quebec attracted an