

The Ingersoll diversion is another example of a local method. At one time the Thames River between Beachville and Ingersoll meandered back and forth across the broad flats and did considerable damage to Ingersoll and the industries located in the valley. The improved channel, designed to carry a flow of 8,000 c.f.s., now contains the flood waters; the channel is over 6 miles long and required the excavation of 1,612,000 cubic yards of earth and about 26,000 cubic yards of rock. The earth excavation was used to construct dikes along the banks of the channel and the rock for rip-rapping along the sides.

Dikes and flood walls are additional man-made encroachments on a flood plain which, while giving protection, tend to further increase peak flood stages. Their construction is only recommended when valuable property is concentrated in a hazard area.

Among the many municipalities which have parts protected by dikes are: London, Brantford, Paris, Walkerton, Bridgeport, Chatham, Ingersoll and St. Marys. A typical scheme of diking is that along the Grand River at the village of Bridgeport. Approximately 3,600 feet of dike averaging 6 feet in height with a top width of 8 feet was constructed with ancillary works for a cost of about \$22,500.

Measures 1, 2 and 3 provide a degree of flood control but do not conserve water. They do not reduce the size of the flood but merely ensure that the water is safely passed through a given locality. The benefit is only local and water which will be needed later is wasted. However, such measures are needed to provide immediate relief or for reasons of economy.

Flood control plans prepared for a number of the Conservation Authorities recommend the construction of widespread systems of dams and reservoirs. The larger and more important dams and reservoirs constructed to date are described herewith:

The Fanshawe Dam and Reservoir is located on the Thames River, North Branch, 7 miles upstream of London. The reservoir, built primarily for flood control and recreation, retains flows in excess of the channel capacity through London. When the danger of flood is passed the reservoir is lowered to its "recreational pool level". The Fanshawe Reservoir has also become a valuable source of water supply for London. Fanshawe is the largest of six units required to give adequate flood protection and water conservation storage in the Upper Thames Watershed. Construction will start on two more units this year and the whole system is expected to be completed by 1970.

Construction of Fanshawe Dam was started in September 1950 and was substantially completed in time for the spring break-up of 1953. The dam, which is 77 feet high and 2,050 feet long, has rolled earth embankments with a crest-gated concrete overflow spillway. The lake at maximum level has a storage capacity of 38,880 acre feet and is over 7 miles long. At recreational pool level the lake contains 10,000 acre feet and has a surface area of 650 acres. The total cost of the project, including the reservoir, property, roads and bridges, was \$5,315,000. Of this sum the Government of Canada paid 37½ per cent, the Government of Ontario 37½ per cent and the Upper Thames River Conservation Authority 25 per cent.

Three large multi-purpose reservoirs have been established on the Grand River Watershed:

The Shand Dam—four miles upstream from Fergus established the first large conservation reservoir built in Ontario. This one unit has stopped many of the smaller floods and substantially reduced the flooding along the Grand River.