

Table I.—Monthly Discharge of Severn River at Wasdell's Falls for 1913.

Month	Discharge in second-feet			Discharge in second-feet			Run-off Depth in inches on drainage area
	Maximum	Minimum	Mean	Per square mile Maximum	Per square mile Minimum	Per square mile Mean	
Jan. ..	4,840	1,840	2,419	2.33	.89	1.17	1.39
Feb. ..	3,120	2,050	2,432	1.51	.99	1.17	1.26
Mar. ..	8,785	1,640	4,231	4.24	.79	2.04	2.42
Apr. ..	9,050	5,600	7,790	4.36	2.70	3.76	4.20
May ..	5,525	3,375	4,175	2.66	1.63	2.01	2.32
June ..	3,375	2,225	2,680	1.63	1.07	1.29	1.44
July ..	2,200	1,175	1,644	1.06	.57	.79	.91
Aug. ..	1,075	800	937	.52	.39	.45	.52
Sept. ..	1,025	700	815	.49	.34	.39	.43
Oct. ..	875	260	570	.42	.13	.27	.31
Nov. ..	1,475	450	897	.71	.21	.43	.50
Dec. ..	1,505	905	1,276	.73	.44	.62	.73
Total ..	9,050	260	2,489	4.36	.13	1.19	16.43

It may be mentioned that some doubt attaches to the figures for minimum flow as shown in Table I. owing to the extremely low velocities which obtained at the metering station during periods of very low water. The actual minimum discharge is doubtless somewhat greater than indicated above, but in the interests of safety the figures relative to minimum flow have been left exactly as recorded.

The dams now being constructed at the outlet of Lake Couchiching in connection with the Trent Canal project will make available at least 12 inches depth of storage on Lake Simcoe. Properly regulated flow from this storage alone would meet the maximum requirements of the Wasdell's Falls plant for a period of six months in any ordinary dry year, while the records to date show that the period of deficient flow in an abnormally dry year is not of more than three months duration.

Permanent Works.—The dam is of the pier and stop-log type with six 14-foot sluices and a central overflow section 25 feet long which can be used during the high-water periods for driving logs. This section of the dam is closed by vertical needles, which will sustain a head of about 4 feet at maximum headwater level. When wide open, the dam can safely pass a discharge of 15,000 second-feet.

The power-house foundations, including inlets, wheel-chambers and draft tubes, are of mass concrete, only the wheel-chamber and generator arches and a portion of the draft-tube arches being reinforced. The whole of the superstructure, including the roof and crane-girders, is of reinforced concrete. The panel sections between the main columns consist of two layers of hy-rib reinforcement so placed as to provide a 4-inch air-space. The outer layer is plastered with a 2-inch coat of 1 : 2½ cement mortar and the inner layer with a coat 1¼ inches thick. The forebay walls, and the partition wall between the generator room and the forebay, consist of a single coat of plaster 2½ inches thick laid on hy-rib. The hy-rib was set in 2-inch checks left in the columns and girders and was further supported by light 4-inch channels set vertically in the air-space on 5-foot centres.

The wheel-chamber inlets are divided by a centre pier and in each of the four openings is placed a wooden head-gate spanning a clear waterway of 12 feet 1½ inches.

These gates are built of 8-in. x 8-in. and 8-in. x 10-in. yellow pine, and in one gate of each pair is placed a 16-in. x 16-in. wicket gate for filling the wheel-chambers. The head-gates are not intended to be opened under full static pressure under normal conditions, although the operating mechanism is sufficiently powerful to admit of such operation if necessary.

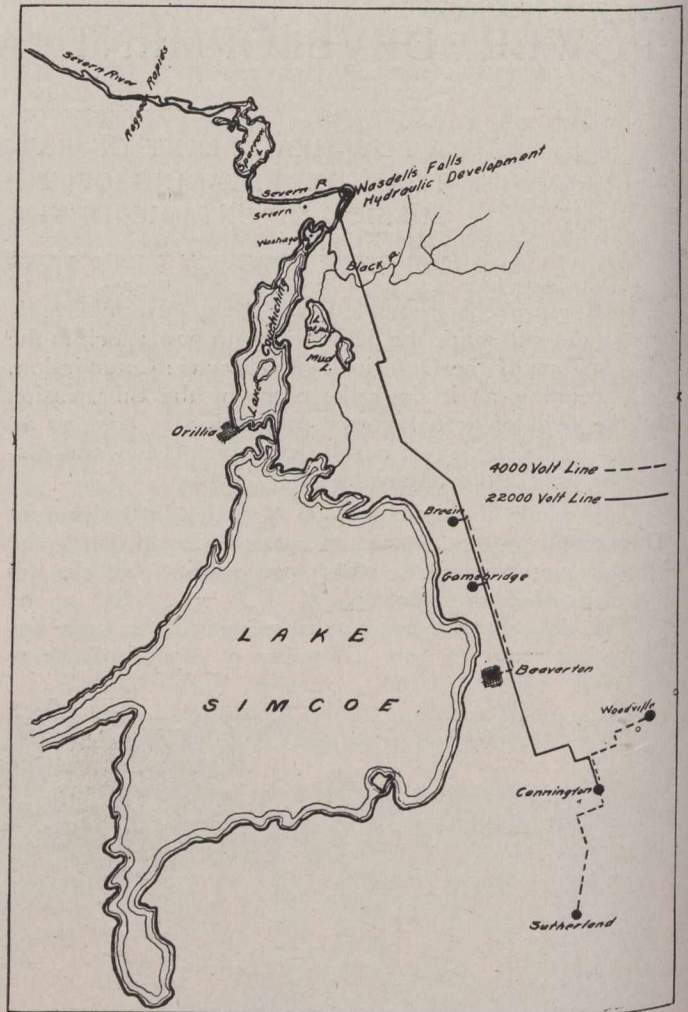


Fig. 3.—Location of Development on Severn River and Main Transmission Lines.

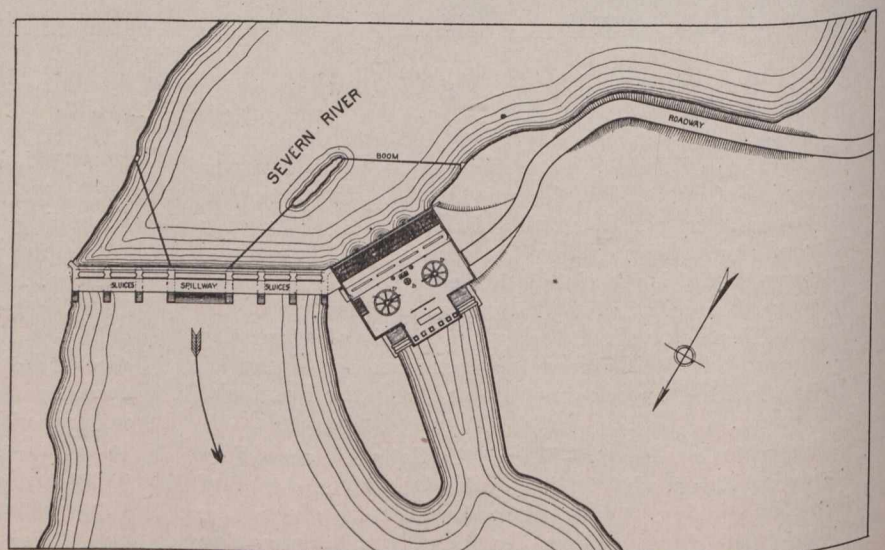


Fig. 4.—Layout of the Development at Wasdell's Falls.