

REPORT RE HUMBER RIVER WATERSHED.

OCTOBER 29TH, 1900.

E. A. Macdonald, Esq., (Mayor), and Members of the Council :

GENTLEMEN,—Referring to the following extract from Report No. 16 of the Board of Control, adopted in Council on April 30th, 1900 :

“The Board beg to recommend that the Committee on Works be requested to direct the City Engineer to prepare a report on the available water of the Humber River watershed, and the power available therefrom, and also to report the approximate cost of developing the same.”

I beg to submit the enclosed report, prepared by Mr. C. B. Smith, Assistant Engineer of this Department.

Respectfully submitted,

C. H. RUST,
City Engineer.

October 20th, 1900.

Mr. C. H. Rust, City Engineer.

HUMBER RIVER WATER POWER.

DEAR SIR,—Referring to the following extract from Report No. 16 of the Board of Control adopted in Council.

“The Board beg to recommend that the Committee on Works be requested to direct the City Engineer to prepare a report on the available water of the Humber River water shed, and the power available therefrom, and also to report the approximate cost of developing the same.”

I beg to report as follows :-

I have had presented to me various cross sections for dam sites at Baby's Point and Weston, and such profiles and plans as enable me to make a reasonably close estimate of the cost of construction of these two dams, and have also had the report of Mr. Willis Chipman, C. E., on the available water of the Humber River watershed. The sites of these two dams have been visited, and the drill holes that have been put down by Mr. Sharp at these two dam sites, examined. This has enabled me to determine somewhat closely the probable depth to which the foundation of these two dams would have to be carried. My estimate on this water power development is as follows :

(a) Baby's Point Dam water power. (Known as the “first” section.) The cost of a Rubble concrete dam faced with Ashlar, 925 ft. long at top, 510 ft. long at bottom and 134 ft. high including tailrace (see Chipman's report of Reservoir Area) \$1,060,200



Cost of installing an hydraulic electric plant of 6,000 H. P. gross (4,800 H. P. net) (see Chipman's report of Available Power), and transmitting the same 7 miles to the centre of the City of Toronto.....	\$191,900
Total.....	\$1,252,100
Add for engineering and legal expenses and incidentals 15 per cent....	187,900
Total	\$1,440,000

Equals \$300 per 10 hour H. P.

Land damages, unstated.

Reconstruction of railway bridges, unstated.

Reconstruction of highway bridges and roads.

(b) Weston Dam (known as the second section).

Cost of constructing Rubble concrete dam, faced with Ashlar, 650 ft. long at top, 430 ft. long at bottom, and 80 ft. high, including tailrace, and the necessary valve house, valves, pipes, waste weir, headrace, etc., to pass the water through this dam in order to utilize it at Baby's Point Dam only, \$360,000.

This dam could either be used in this way as a feeder to the Baby's Point power house during dry periods, or as a special power or both. Taking it as a feeder only we have the following estimate based on the assumption that this reservoir is so extensive as to afford complete storage to the Humber River water shed, which may be drawn upon during dry periods. This assumption is made merely from a general view of the Humber River Valley at this point, but this reservoir appears to be fully as extensive as Baby's Point Reservoir would be.

(c) Baby's Point and Weston's water power combined—

Baby's Point Dam.....	\$1,060,200
Weston Dam	360,000
Total.....	\$1,420,200

The hydraulic electric plant necessary to develop 12,000 gross H.P.

(9,600 H.P. net—see Chipman's report of Available Power)

including transmitting to the centre of the City of Toronto....

Total.....	\$1,786,800
Add for engineering and legal expenses, etc., 15%.....	268,000
Total.....	\$2,054,800

Equals \$214 per 10 hour H.P.

Land damages, unstated.

Reconstruction of railway bridges, unstated.

Reconstruction of highway bridges and roads, unstated.

(d) In addition to this the Weston Dam has 66 feet total workable head, and while feeding the lower power can work under say an average of 33 feet head during dry seasons. The reservoir capacity has not been measured. There should either be established here a small plant of say 1,000 gross H.P. (800 net H.P.)

costing say \$40,000, or additional smaller reservoirs could be built further up the Humber River so as to conserve the water at points further up the stream and in this way develop 66 feet head at Weston and 140 feet at Baby's Point, or say 205 feet total head. With such supplemental reservoirs, the gross H.P. during three dry seasons should be say 20,500 ten-hour H.P. gross, or say 16,000 ten-hour H.P. net.

The cost of installing the necessary machinery to develop this power and place it on the Toronto market could easily be estimated, but as the information needed for estimating the cost of the necessary supplemental dams and consequential damages is not at hand, this phase cannot be entered upon.

(e) Additional water from the Credit River can also be carried to the basin of the Humber near Inglewood, by constructing a dam on the Credit River and an open cut to the watershed of the Humber, but there is not sufficient information at hand to determine whether the cost of this work would be justified by the addition of about 100 square miles of watershed, to that of the Humber River.

(f) The opening of a channel from Lake Simcoe, which has 1,200 square miles of drainage area, would render an enormous power available at these two dams, and at other dams which would be built higher up the Humber River.

A rough estimate of the cost of cutting a canal, say 50 feet wide at the bottom, and carrying in it 10 feet depth of water from Lake Simcoe at a speed of say $1\frac{1}{2}$ feet per second, would be 48,000,000 cubic yards at 25 cents per cubic yard, equals \$12,000,000. This water would develop under head of 205 feet at these two dams 24,410 gross H. P. for 24 hours, or 19,200 net H. P. for 24 hours.

Yours truly,

(Sgd.) CECIL B. SMITH,
Assistant Engineer.