

power sites on the rivers flowing north across the line of the Transcontinental Railway into James Bay. Eight power sites in all were surveyed on the Abitibi, Blanche, Groundhog, Frederickhouse, Kapuskasing and Mettagami Rivers. These surveys, together with the stream flow measurements taken in that territory, will be of great assistance in working out schemes to supply the rapidly growing power market, and in supplying information which may lead to the establishment of industrial enterprises.

A survey was made during December, 1914, of a power site in the vicinity of the village of Cobden with a view to ascertaining whether or not it could be economically utilized as a source of power for the municipal and industrial requirements of the village.

A survey is being made near the mouth of the Saugeen River with a view to ascertaining whether sufficient head can be economically created to justify the development of power at this point as an adjunct to the water power now being developed by the Commission at Eugenia Falls. The high head and large storage capacity at Eugenia Falls afford unusually favorable facilities for peak load operation, and if it can be shown that the lower stages of flow on the Saugeen River can be developed within reasonable limits of cost, the two plants can be operated together in such a way as to very largely increase their effective capacity.

Eugenia Falls.—Before actual construction work was proceeded with in connection with the Eugenia Falls development, it was necessary to make detailed topographical surveys of the reservoir basin, the sites for dams, and various possible locations for the canal, head works, pipe lines and power house. The results of the survey of the reservoir site are summarized in the accompanying table:—

Eugenia Storage Basin—Summary of Capacities.

Contour.	Volume between contours. Cu. ft.	Total volume. Cu. ft.	Area in acres.
610	750,000	750,000	
615	3,210,000	3,960,000	6.9
620	8,032,500	11,992,500	22.9
625	15,660,000	27,652,500	51.1
630	41,612,500	69,265,000	92.8
635	161,600,000	230,765,000	291.0
640	284,250,000	515,015,000	1,194.0
645	336,875,000	851,890,000	1,420.0
650			1,675.0

The accompanying storage capacity curve shows the impounding capacity of the main reservoir for different contour elevations. As indicated on this curve, the gross capacity with 3 feet of flash boards is about 780 million cubic feet, of which 190 million cubic feet is secured by

the use of the flash boards. About 40 million cubic feet of this total capacity is not effective, as it is below the minimum limit of reservoir draft.

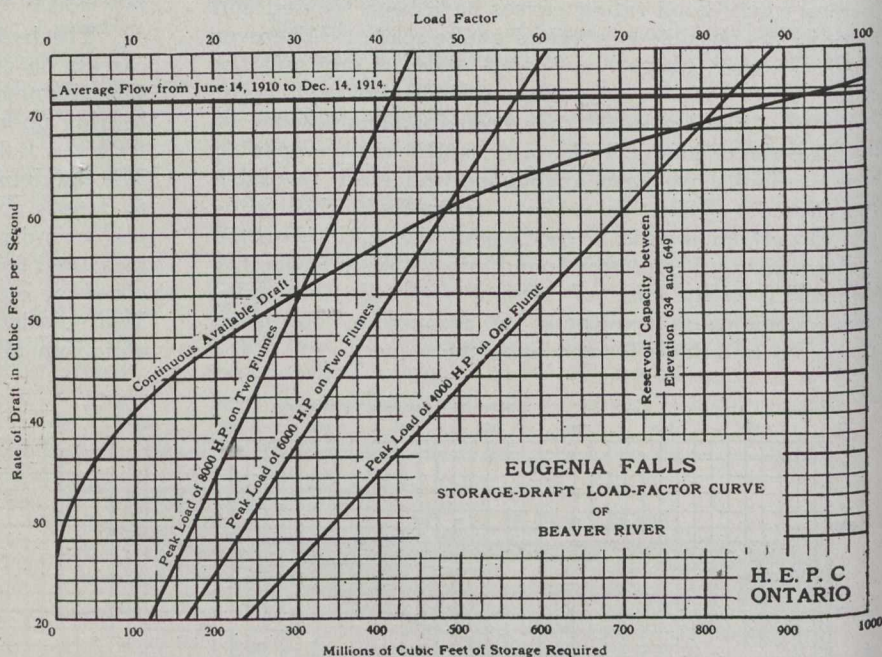


Fig. 4.

The above volume of storage capacity is obtainable at the head works of the plant as indicated in the appended illustration showing the general layout of the development.

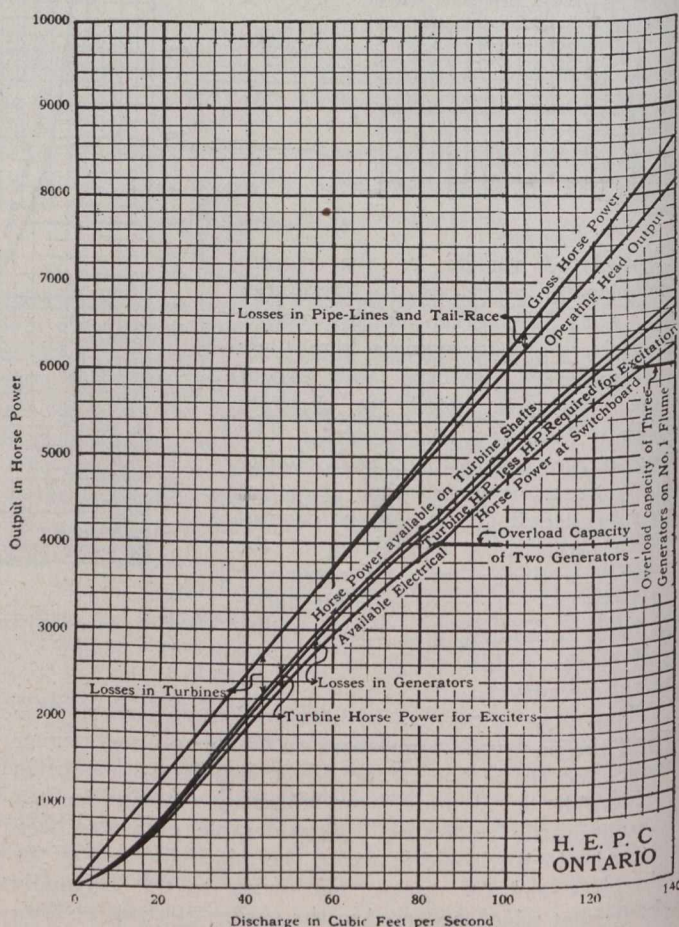


Fig. 5.—Efficiency Losses and Available Output for Initial Installation, Eugenia Falls. (Average Gross Head 545 Feet.)