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Environmental Impact of Flooding in the Main (Smallwood) Reservoir of the Churchill Falls Power Plant, Labrador, Canada. I. Background and Descriptions of Flooded Conditions Related to Vegetation and Land Cover Types

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ABSTRACT

This paper, the first in a series provides the background of the project, reports on the early phases of construction with the descriptions of the pre and post flooded conditions related to vegetation and land cover types surrounding the reservoir. Currently there are plans to develop the so called " Lower Churchill Area" by establishing new power plants at Gull Island and at Muskrat Falls with associated reservoirs. These new plants would use the discharged water of the plant from Churchill Falls and the additional water collected from some of the Churchill River Basin. The information provided by these papers could have relevance to the environmental evaluation of these new developments. The Churchill Falls Hydro Project (called the " Upper Churchill Development") in Labrador, Canada, was initiated in the late 1960s and the 5428-MW hydro generating plant constructed was then among the largest in the world. At that time, in general, not much attention was paid to the impact of such development on the flooding of vegetation especially forest stands. Both forested and un-forested terrestrial vegetation types were flooded (244 915 ha). Some islands were created and in addition portions of existing areas were flooded to form islands (74 075 ha) in the Main (Smallwood) Reservoir area. The flooded area of forest and un-forested land in the reservoir is 77% while the islands is 23 percent. The percentages of forested and un-forested areas lost to flooding are 64% and 36% respectively. The percent of commercial forests lost to flooding is approximately 1% and the non-commercial forests is 99% (with a total volume of approximately 10 million cubic meters of wood).

KEYWORDS

New Reservoirs, Flooding, Boreal, Hydroelectric Power

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