

**SUBMISSION TO  
INTERNATIONAL JOINT COMMISSION  
REQUESTING APPROVAL FOR  
RECONSTRUCTION OF VANCEBORO DAM**

APPLICATION OF  
THE ST. CROIX PAPER COMPANY, A SUBSIDIARY OF GEORGIA-PACIFIC CORPORATION  
TO  
THE INTERNATIONAL JOINT COMMISSION  
FOR  
THE APPROVAL OF PLANS TO RECONSTRUCT AN EXISTING TIMBER DAM  
IN THE ST. CROIX RIVER AT VANCEBORO, MAINE - ST. CROIX, NEW BRUNSWICK

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TO:

THE HONORABLE THE DEPARTMENT OF STATE  
Washington, D. C.

THE HONORABLE MINISTER OF EXTERNAL AFFAIRS  
Ottawa, Canada

For Transmittal to:

THE INTERNATIONAL JOINT COMMISSION  
Washington, D. C.

THE INTERNATIONAL JOINT COMMISSION  
Ottawa, Canada

The St. Croix Paper Company, a subsidiary of Georgia-Pacific Corporation (Hereinafter called "the Applicant"), respectfully represents:

Status of the Applicant

1. The Applicant is a corporation incorporated and existing under the laws of the State of Maine with its principal place of business in the Village of Woodland, in the Town of Baileyville, in Washington County, in the State of Maine.
2. The Applicant is authorized and empowered, inter alia, to acquire and hold water rights and privileges, develop, use and supply electric power, and to do all necessary or incidental things in connection therewith.

3. The Applicant is in a position financially to carry out the proposed works hereinafter referred to.

4. The St. Croix River forms a portion of the international boundary line between the United States and Canada, or between the State of Maine and the Province of New Brunswick, and is a boundary water within the meaning of the Treaty between the United States and Great Britain relating to boundary waters and questions arising between the United States and Canada, hereinafter referred to as the Treaty.

5. The Applicant owns, operates and maintains a mill for the production of newsprint paper in that part of Baileyville known as Woodland in the State of Maine on the St. Croix River. The Applicant together with the Sprague's Falls Manufacturing Company, Limited, a corporation duly incorporated by Act of Parliament, Canada, owns, operates and maintains a dam in the St. Croix River at said Baileyville, which was constructed prior to the Treaty, and also a dam in the St. Croix River at Grand Falls situated in the State of Maine and the Province of New Brunswick, which was approved by Order of Approval of the Honorable International Joint Commission under date of November 9, 1915, and reaffirmed with certain revisions by Order of said International Joint Commission, dated October 6, 1931, to which Orders reference is hereby made and the same are incorporated herein by said reference. These dams are the largest on the St. Croix River and are of permanent concrete construction. They are used for storage of water and production of power.

6. The St. Croix Water Power Company is a corporation duly incorporated by special statute of the Legislature of New Brunswick, with power, inter alia, to store water and under certain conditions to "take

such land and such material as may be necessary for erecting and maintaining its dams and other works" subject to the payment of damages. All the stock of the St. Croix Water Power Company (of New Brunswick) is owned by the Applicant.

7. The Applicant is the owner, on the United States side of the St. Croix River, and the St. Croix Water Power Company (of New Brunswick) is the owner, on the Canadian side of said river, of the storage dam situated at the foot of Spednic Lake at Vanceboro, Maine, and St. Croix, New Brunswick, said lake being a part of the so-called Chiputneticook Lakes, otherwise described as Chipneticook Lakes. This dam is the subject of this application. It is situated up-stream from the dams described in Paragraph 5 hereof and is an integral part of the developed international reservoirs on the St. Croix River. It provides storage facilities for water used to produce power by the manufacturing plant at Baileyville, Maine and the power station operated by the New Brunswick Electric Power Commission at Milltown, New Brunswick, and acts as a protective or controlling works in time of flood or freshet for the dams described in Paragraph 5 hereof and for other works on the river below them, and is undoubtedly one of the "storage dams" referred to in Paragraphs 3 and 6 of the Order of the Commission dated November 9, 1915, as reaffirmed and revised by Order of the Commission dated October 6, 1931, relating to the Grand Falls dam.

8. The Applicant is currently making a submission to the Federal Power Commission, requesting that a license be issued to cover the operation of the new Vanceboro Dam structure.

General Description of Project

9. Rebuild water storage dam located at Vanceboro, Maine - St. Croix, New Brunswick, spanning the international river boundary at these two points.
10. The existing dam was built in 1936 of squared timber treated with a brush coat of creosote. It is 27 years old and should be rebuilt just as soon as water conditions permit. We propose to replace this timber dam with a gravity-type concrete dam. The engineering is to be done by Charles T. Main, Inc. and the plans are to be drawn by this firm.
11. The location of the new dam will be a few feet upstream from the present location. There will be no change in water levels which are currently set at a maximum of 385.86 feet, mean sea-level datum. The drawdown is calculated to remain as it was before, i.e., 10.25 feet. The maximum head remains as it was, i.e., 14.36 feet. The sill remains in the same position, namely, 371.5 feet, mean sea-level datum.
12. The new construction will be concrete gravity type with the water levels controlled by means of two 22.5 foot Tainter gates. The new spillway measures 45 feet in width which is an increase of 11 feet over the total gate width of 34 feet in the present dam. Venting of the water in the old structure was accomplished by four vertical slide timber gates of varying width and, as previously stated, totalled 34 feet in width. The design of the fishway for the new dam has been referred to and approved by the Fisheries Departments of both the State of Maine and the Dominion of Canada. See Exhibit L attached hereto.
13. The water impounded above the proposed new dam will be used for hydroelectric generation at the plants owned by the Applicant at

Grand Falls, Maine, and Woodland, Maine, and also at the power station operated by the New Brunswick Electric Power Commission at Milltown, New Brunswick. These plants are located approximately 30 miles from the location of the proposed construction and have a total power generating capacity of approximately 15,000 k.w. plus 6,000 H.P. direct connected. Operation of the reservoir will be co-ordinated with that of other reservoirs in the system to firm the flow of the river and provide, to the greatest extent possible, continuous flow equal to the turbine capacity at these plants.

No change in the present operation is proposed. The full spring run-off is retained, with waste only in exceptional years. The reservoir is drawn between June and November. There is usually a partial refill in November and December which is again drawn before the start of the spring run-off. Figure 1, attached, shows recorded elevations for the past 6 years. The range is typical.

Figure 2, attached shows rule curves for the Vanceboro discharge. A minimum discharge of 200 cfs is maintained. This has been agreed upon as satisfactory to the fishing clubs and other users of the stream between Vanceboro and Grand Falls reservoirs. There is no development in this stretch of the river so that pollution is not a factor. Figure 2 also shows the reservoir volume curve.

The spillway gates remain partially closed during the spring thaw period so there is no ice discharge from the reservoir. The reservoir is drawn down in the winter, minimizing ice damage around the shore line.

During flood inflows the spillway gates will be raised to prevent reservoir rise until the gates are fully open. Beyond that point the spillway will have free discharge.

To prove the adequacy of the proposed spillway capacity, Flood inflow hydrographs were developed from unit hydrographs of the various sub-areas, with assumed precipitation and run-off rates. The sub-area hydrographs were routed through East Grand Lake and the natural lakes to obtain a final inflow hydrograph to Vancaboro reservoir. Three types of storms were analyzed with assumptions and results as follows:

Maximum Probable Storm. Precipitation was taken as the maximum probable for the area, over a 24-hour period and 400 sq. mi., as given in U. S. Weather Bureau Technical Paper No. 40; total rainfall - 15.6 inches, run-off - 9.3 inches. This was assumed to accompany a hurricane storm during the period July - October, incl. Reservoir at start of the storm was assumed at Elev. 380.0, which might be expected 50% of the time. The results were:

Maximum Inflow	-	77,000 cfs
Maximum Outflow	-	7,320 cfs
Maximum Reservoir	--	Elev. 386.3
Minimum Freeboard	-	3.7 ft.

Snow Melt Storm. 100-year rainfall, as given by Technical Paper No. 40, (5.0 Inches) was assumed to occur over an average snow cover (5.0 inch water content), producing 7.0 inches total run-off. During this period the reservoir is always down in anticipation of the spring fill.

Assuming the reservoir at Elev. 378 (the average for the period):

Maximum Inflow	-	55,000 cfs
Maximum Outflow	-	5,100 cfs
Maximum Reservoir	-	Elev. 383.1

Assuming the reservoir at Elev. 383 (exceeded 10% of the time)

Maximum Inflow	-	55,000 cfs
Maximum Outflow	-	7,350 cfs
Maximum Reservoir	-	Elev. 386.4
Minimum Freeboard	-	3.6 ft.

Storm with Reservoir Full. A storm approximating 1,000 - year frequency, as given by Technical Memorandum No. 40, was assumed to occur with the reservoir full; total rainfall - 6.5 inches, total run-off 4.5 inches. The results were:

Maximum Inflow	-	36,000 cfs
Maximum Outflow	-	7,700 cfs
Maximum Reservoir	-	Elev. 386.9
Minimum Freeboard	-	3.1 ft.

It is apparent from the above that the proposed project will afford substantial flood control.

The reservoir is available to the public for all recreation activities. St. Croix Paper Company cooperates fully with the Maine Department of Inland Fisheries & Game and with the Canadian Department of Fisheries regarding conservation.

14. We are including with this application a general plan of the proposed construction showing the proposed structure in plan and sections, and the arrangement of coffer dams for diversion of water during the construction period. The estimated duration of construction is planned for approximately five months, work to start just as soon as the water is under control in the spring. See Exhibit L attached hereto.



15. The drawdown will be effected with no detrimental effect to downstream property owners. This drawdown will start, as previously stated, in the spring of 1965 and will be orderly and systematic to the end that all of the water will be used for power generation at the plants owned and operated by the Applicant as well as the New Brunswick Electric Power Commission plant located at Milltown, New Brunswick. In harmony with our programing of the drawdown, low water will be accomplished upstream from the dam as soon as possible and to some degree of inconvenience to a relatively small number of cottage owners (36 at last count) resident along the shore of Spednic Lake.

16. We cannot visualize any possibility of there being resulting damage to persons or property in connection with the proposed construction activities but if there be claims which are found to be valid, the Applicant assumes responsibility.

17. The Applicant will bear the cost for the construction of the proposed dam and no part of the cost will be borne by the Governments of the United States and Canada.

18. The Applicant is including with this application, a map of the St. Croix River Basin showing the location of installations for water storage within the watershed.

19. The Applicant also wishes to stress the importance of this construction with reference to the prosperity and safety of the watershed. We have previously pointed out that it is fast becoming time to renew this structure which was built in 1936. We hope that the Commission will find it possible and advisable to give this application its early

approval so that we may be in a position to proceed with construction in 1965.

Respectfully submitted and dated this 1st day of March, 1964.

ST. CROIX PAPER COMPANY  
A subsidiary of  
GEORGIA-PACIFIC CORPORATION

By:



Henry W Fales  
Vice President - Operations