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CANADA/ NEW BRUNSWICK

MIRAMICHI CHANNEL STUDY



FEBRUARY 17, 1975

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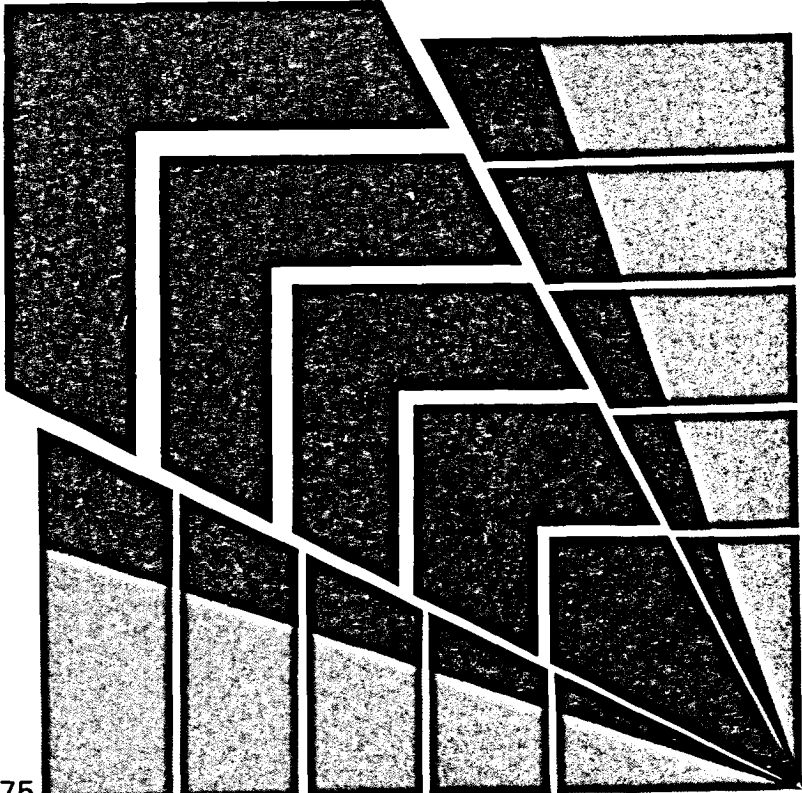


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CANADA/ NEW BRUNSWICK

MIRAMICHI CHANNEL STUDY



FEBRUARY 17, 1975

CANADA - NEW BRUNSWICK
SUBSIDIARY AGREEMENT
MIRAMICHI CHANNEL STUDY

THIS AGREEMENT made this 17th day of February, 1975

BETWEEN:

THE GOVERNMENT OF CANADA
(hereinafter referred to as "Canada"),
represented herein by the Minister of
Regional Economic Expansion,

OF THE FIRST PART,

AND:

THE GOVERNMENT OF THE PROVINCE OF
NEW BRUNSWICK (hereinafter referred
to as "the Province"), represented
herein by the Premier of New Brunswick,

OF THE SECOND PART.

WHEREAS Canada and the Province signed a General Development Agreement dated April 23, 1974, (hereinafter referred to as "the GDA"), to achieve the objectives stated in section 3 thereof;

AND WHEREAS in pursuit of these objectives, Canada and the Province have agreed to seek to achieve a coordinated application of relevant federal and provincial policies and programs through the process of identifying development opportunities and assisting in their realization through the coordinated and concentrated application of relevant federal and provincial programs, including the provision of specialized measures required for such realization;

AND WHEREAS Canada and the Province have agreed that the potential economic benefit of an improved navigation channel from Newcastle to the Gulf of St. Lawrence justifies special consideration of the technical and economic feasibility of maintaining a 26 foot navigation channel;

AND WHEREAS the Minister of Transport, the Minister of Public Works and the Minister of the Environment are also contributing to the support of this study;

AND WHEREAS the Governor in Council by Order in Council P.C. 1974-8/2876 of the 20th day of December, 1974, has authorized the Minister of Regional Economic Expansion to execute this Agreement on behalf of Canada;

AND WHEREAS the Lieutenant Governor in Council by Order in Council No. 74-846A of the eighth day of October, 1974, has authorized the Premier of New Brunswick to execute this Agreement on behalf of the Province;

NOW THEREFORE the parties hereto mutually agree as follows:

DEFINITIONS

1. In this Agreement:

- (a) "capital project" means any specific project, as determined by the Management Committee, in which construction or activities related to construction are involved;
- (b) "eligible cost" means those costs defined in section 5;
- (c) "Federal Minister" means the Minister of Regional Economic Expansion of Canada and includes anyone authorized to act on his behalf;
- (d) "fiscal year" means the period commencing on April 1 of any year and terminating on March 31 of the immediately following year;
- (e) "initiative" means the subject matter of this Agreement and includes any program, project or other activity designed to implement the objectives of the GDA;
- (f) "Management Committee" means the Committee referred to in section 8;
- (g) "Ministers" means the Federal Minister and the Provincial Minister;
- (h) "program" means a series of specific, related, individual activities;
- (i) "project" means a specific activity forming a self-contained unit within a program; and
- (j) "Provincial Minister" means the Premier of New Brunswick and includes anyone authorized to act on his behalf.

OBJECTIVE, PURPOSE AND SUBJECT MATTER

2. (1) Pursuant to section 3 of the GDA, the objective of this Agreement is to enable Canada and the Province to jointly participate in the support of studies directed towards the determination of costs related to known economic benefits to be derived from the establishment and maintenance of a 26 foot navigation channel in the Miramichi River from Newcastle to the Gulf of St. Lawrence.
- (2) Pursuant to the objective stated in subsection (1), contributions may be made for the purpose of undertaking certain field surveys required as part of the Miramichi River Navigation Channel Study.
- (3) Schedule "A" attached to and forming part of this Agreement contains details of the programs and projects identified for implementation.
- (4) Schedule "B" attached to and forming part of this Agreement contains background and rationale for the programs and projects.
3. (1) The Province shall take over, or arrange to be taken over on completion, each capital project undertaken under this Agreement and shall accept full responsibility for its operation, maintenance and repair, except in cases where other federal-provincial arrangements may apply.
- (2) The Province shall arrange for the takeover and acquisition of all lands and interests in lands that are required for program implementation.
- (3) It is understood and agreed that where a project under this Agreement, be it capital or non-capital, is to be undertaken by another institution or agency, such arrangements as are necessary with respect to such undertakings shall be the responsibility of the Province.
4. No program or project shall be approved after the expiry date of this Agreement and, unless the Federal Minister otherwise agrees, no claim made in respect of any program or project or parts thereof under this Agreement shall be paid unless it is received by Canada within one year following the said expiry date.
5. (1) Subject to subsection (3), the eligible costs of capital projects to be financed or shared under this Agreement in respect of the capital projects or portions thereof listed in Schedule "A" are:

- (a) all direct costs, including those relating to public information, that in the opinion of the Management Committee have been reasonably and properly incurred by the Province for the implementation of the capital projects, but excluding administrative, survey, engineering and architecture costs; and
 - (b) ten per cent (10%) of the costs pursuant to paragraph (a) as an allowance towards the exclusions specified therein.
- (2) Subject to subsection (3), the eligible costs of non-capital projects to be financed or shared under this Agreement in respect of the projects or portions thereof listed in Schedule "A" are:
 - (a) all costs reasonably and properly incurred by the Province under all contracts entered into in accordance with this Agreement by the Province with any person, corporation or agency for the acquisition of equipment or the performance of work or services for the execution of the project; and
 - (b) the gross salaries, employer's share of contributions for Canada Pension Plan and Unemployment Insurance, and reasonable travel and removal expenses in accordance with applicable provincial regulations of those provincial employees determined by the Management Committee to be or to have been engaged in the implementation of projects; provided that such costs, as determined by the Management Committee, are incremental to the Province and are in addition to such staff, services and facilities as are normally available or already in existence within the Province, it being expressly understood and agreed that costs for accommodation in provincially-owned buildings and costs for regular provincial telephone and other utility systems and other services shall be excluded, except as otherwise agreed by the Management Committee.
- (3) The costs to be shared by Canada do not include any costs relating to the acquisition of lands or interests in lands, or costs arising from conditions of acquisition, except where otherwise specified in Schedule "A".
- (4) Subject to the approval of the Federal Minister, costs incurred on approved programs and projects by either party are eligible if incurred within twelve months prior to the date of this Agreement.

6. Notwithstanding anything in this Agreement, the total amount payable by Canada under this Agreement with respect to the programs listed in Schedule "A" shall not exceed seventy-five per cent (75%) of the total eligible costs up to an amount of \$263,580, which amount includes a fifteen per cent (15%) contingency allowance.
7.
 - (1) Unless otherwise agreed by the Ministers, the eligible costs of each program shall be limited to the estimated total costs specified in Schedule "A".
 - (2) If, at any stage of a program or project, it appears to the Province that the costs thereof will exceed the estimated costs specified in Schedule "A", the Province shall promptly so inform the Management Committee and state the reasons for such increase.
 - (3) Upon being informed, the Management Committee shall consider the circumstances which have contributed to the increase in the estimated costs and shall prepare and present a report and recommendations to the Ministers in respect of the action proposed to be taken if adjustments in program costs are required.
8.
 - (1) Canada and the Province shall through the Ministers appoint a Management Committee consisting of an equal number of representatives of each party.
 - (2) The Management Committee shall be responsible for the overall management of this Agreement and, in particular, for the following:
 - (a) approval of all programs and projects necessary for the implementation of this Agreement;
 - (b) submission for the approval of the Ministers annually, and no later than September 1, of the projected budget required for the subsequent fiscal year;
 - (c) coordination of all cost-shared programs and projects under this Agreement;
 - (d) modifications necessary in the course of the fiscal year within the annual budget, following its approval by Canada and the Province;
 - (e) reporting to the Ministers its evaluation of the progress of this Agreement and its recommendations with respect to the progress of implementation;

- (f) establishing at its discretion, in order to facilitate implementation, advisory, coordinating or steering committees consisting of representatives of the departments and agencies of Canada and the Province involved in the implementation of programs and projects under this Agreement;
 - (g) applying the procedures specified in section 11;
 - (h) recommending to the Ministers amendments to be made to this Agreement;
 - (i) performing any other functions that may be assigned to it by the parties hereto; and
 - (j) providing to the officials designated under subsection 9.2 of the GDA such information and advice as they may determine to be necessary for the performance of the functions assigned to them under the GDA by the Ministers designated therein.
- (3) (a) Except as otherwise specified in this Agreement or agreed by the Management Committee, the Province shall be responsible for operational program and project development and, under the overall supervision of the Management Committee, for implementing all cost-shared programs under this Agreement, and shall also ensure the provision of the staff and administrative machinery for the implementation of programs and projects under this Agreement assigned to the Province.
- (b) The Province, through its representation on the Management Committee, shall be responsible for liaison and program coordination between the agencies of the Province administering the programs included in this Agreement or whose activities affect the implementation of this Agreement.
- (4) The Department of Regional Economic Expansion, through its representation on the Management Committee, shall be responsible for liaison and program coordination between the agencies of Canada administering the programs included in this Agreement or whose activities affect the implementation of this Agreement.

PAYMENT PROCEDURES

9. Subject to section 10, payments by Canada shall be made promptly to the Province on the basis of provincially audited progress claims setting out the eligible costs incurred and paid for eligible programs and projects, and submitted in a form and verified in a manner satisfactory to the Federal Minister.
10. (1) In order to assist with the interim financing of programs and projects, Canada may, if the Province so requests, make interim payments to the Province of one hundred per cent (100%) of Canada's share of claims submitted, based on estimates of costs actually incurred, certified by a senior officer of the Province.
- (2) The Province shall account for each interim payment by submitting to Canada, within the quarter following such payment by Canada, a detailed statement of the actual costs incurred, and paid, verified in a manner satisfactory to the Federal Minister. Any discrepancy between the amounts paid by Canada by way of interim payments and the amounts actually paid by the Province shall be promptly adjusted between Canada and the Province.
- (3) Payment of claims under sections 9 and 10 shall be augmented by ten per cent (10%) for capital projects as provided for in paragraph 5 (1) (b).

IMPLEMENTATION PROCEDURES

11. The financing by Canada of the programs and projects listed in Schedule "A" is conditional upon the following procedures being observed in the implementation of each of the programs and projects:

A - Capital Projects (Cost Exceeding \$20,000)

(1) Definition

The Management Committee shall establish a definition of the project for the purpose of identifying the work to be financed.

(2) Tenders and Contract Awards

- (a) Unless the Management Committee otherwise agrees, all construction, purchase and other contracts shall be

reviewed by the Management Committee and shall be let pursuant to tenders invited by public advertisement acknowledging the financial participation of the parties hereto;

- (b) opening of all tenders shall be public and the Management Committee shall be supplied with copies of each advertisement for tender together with notice of the time and place for tender opening, in sufficient time to enable any member of the Management Committee or his representative to be present at all tender openings and to participate in the evaluation of tenders;
- (c) all contracts shall be awarded to the responsible and responsive tenderer who submitted the lowest evaluated bid, unless otherwise agreed by the Management Committee; and
- (d) all announcements of contract awards shall be made jointly by Canada and the Province.

(3) Construction and Implementation

- (a) All substantive amendments to contracts shall require the prior approval of the Management Committee;
- (b) any member of the Management Committee or his representative shall be permitted to inspect the project at all reasonable times for the purpose of verifying progress claims and obtaining any other information concerning the project which may be required by the Federal Minister or the Provincial Minister; and
- (c) the Province shall forward to the Management Committee a report as to the progress of the work, in such detail and at such time as may be required by the Management Committee.

B - Non-capital Projects

(1) Definition

The Management Committee shall establish a definition of the project for the purpose of identifying the work to be financed, outlining the work program, method of implementation, types of services to be employed, equipment and materials required and estimates of cost.

(2) Implementation

- (a) All contracts for professional services in excess of \$25,000 shall be awarded and supervised in accordance with procedures to be established by the Management Committee, unless in its opinion it is impractical to do so;
- (b) reports produced by consultants or resulting from projects under this Agreement shall become the property of both parties hereto; and
- (c) the Province shall forward to the Management Committee a report as to the progress of the work, in such detail and at such time as may be required by the Management Committee.

12. Subject to the express provisions of subsection 5 (4), contracts and purchases made and work done prior to the date of this Agreement in respect of projects listed in Schedule "A" may be accepted as complying with the provisions of this Agreement if they are consistent with the provisions of the GDA and if they are approved in writing by the Federal Minister on the recommendation of the Management Committee.

13. Public Information

- (1) Canada and the Province agree to cooperate in the development and implementation of a program of public information respecting implementation of projects under this Agreement, and further agree to supply, erect and maintain on the direction of the Management Committee:
 - (a) during the course of construction of capital projects, a project sign or signs specifying that the relevant project is a Canada-New Brunswick Regional Development Project financed by contributions by the Department of Regional Economic Expansion of the Government of Canada (and any other Federal agency, where relevant) and the Government of the Province of New Brunswick or such other wording to the like effect as may be agreed to by the Ministers; and
 - (b) where relevant upon completion of each project, a permanent sign or plaque to the effect set forth in (a).
- (2) Any public announcement of the measures covered by this Agreement, and any official opening ceremony for each

project outlined in Schedule "A", shall be arranged jointly by the Ministers.

RECORDS AND AUDIT

14. Each of the parties hereto shall keep detailed and accurate accounts and records of its expenditures in respect of all programs and projects the cost of which is to be shared between them under this Agreement, and shall make such accounts and records available at all reasonable times for inspection and audit by the other party. Any discrepancy between the amounts paid by either party and the amounts actually payable by it, as disclosed by any such audit, shall be adjusted by means of subsequent progress claims.

GENERAL

15. (1) The provision of financing by Canada and the Province for the implementation of programs under this Agreement is subject to the Parliament of Canada and the Province having provided funds for such financing for the fiscal year in which such financing is required.
- (2) No member of the House of Commons or of the Legislative Assembly of New Brunswick shall be admitted to any share or part of any contract, agreement, or commission made pursuant to this Agreement, or to any benefit to arise therefrom.
- (3) Any dispute between the parties hereto on any question of law or fact arising out of this Agreement shall be submitted to and determined by the Federal Court of Canada pursuant to the Federal Court Act of Canada.
- (4) Where one party hereto is responsible for the implementation of a cost-shared program or project it shall indemnify and save harmless the other party, its officers, servants and agents, against all claims and demands of third parties in any way arising out of the implementation of such program or project, except as such claims or demands relate to the act or negligence of any officer, employee or agent of the other party.
- (5) No project shall be approved after March 31, 1975, under this Agreement and Canada shall not be responsible for any costs incurred after this date nor will it pay any claim which is not received by March 31, 1976.

- (6) Subject to the terms and conditions of section 14 of the GDA, this Agreement may be renewed for any further period agreed upon by the parties hereto, but such renewal shall be subject to the approval of the Governor in Council and Lieutenant Governor in Council.
- (7) The following conditions relevant to employment and the award of contracts shall apply in respect of all programs and projects carried out under this Agreement:
- (a) recruiting of labour shall be conducted through the Canada Manpower Centres unless the Management Committee considers that this service cannot reasonably be provided;
 - (b) in the employment of persons on a project, there shall be no discrimination by reason of race, sex, age, marital status, national origin, colour, religion or political affiliation; it being agreed, however, that the foregoing shall not prevent the implementation of special measures designed to benefit native people or disadvantaged groups;
 - (c) the provisions of the Labour Standards Arrangement proposed by the Federal Department of Labour in 1970 shall be applicable to this Agreement; and
 - (d) Canadian material and manpower shall be used in respect of all programs and projects to the extent to which it is procurable and consistent with proper economy and the expeditious performance of the initiatives.

EVALUATION

16. During this Agreement, Canada and the Province shall jointly effect an assessment of the programs listed in Schedule "A" with regard to the stated objectives. Annual progress reports shall be submitted by the Management Committee to the Ministers on or before the annual meeting of the Ministers as prescribed under subsection 9.1 of the GDA. In addition, Canada and the Province shall also jointly effect an evaluation of all the programs with respect to the general economic and socioeconomic development objectives of this Agreement.

AMENDMENTS

17. (1) Substantive changes to this Agreement, and to Schedule "A" thereof, may be effected as agreed from time to time by the Ministers in writing. Each program added to Schedule "A" shall form part of this Agreement as if it had originally been included in this Agreement. It is expressly understood and agreed, however, that any amendment to section 6 shall require the approval of the Governor in Council and Lieutenant Governor in Council.
- (2) Subject to subsection (1), the Management Committee may make adjustments during the fiscal year to the programs in Schedule "A" to this Agreement provided, however, that such adjustments do not increase the total amounts of the Schedule nor conflict with the objectives of this Agreement.

IN WITNESS WHEREOF this Agreement has been executed on behalf of Canada by the Minister of Regional Economic Expansion, the Minister of Transport, the Minister of Public Works, and the Minister of the Environment, and on behalf of the Province by the Premier of New Brunswick, the Minister of Economic Growth, and the Minister of Fisheries and Environment.

In the Presence of:

GOVERNMENT OF CANADA

Witness

Minister of
Regional Economic Expansion

Witness

Minister of Transport

Witness

Minister of Public Works

Witness

Minister of the Environment

GOVERNMENT OF THE PROVINCE OF NEW
NEW BRUNSWICK

Witness

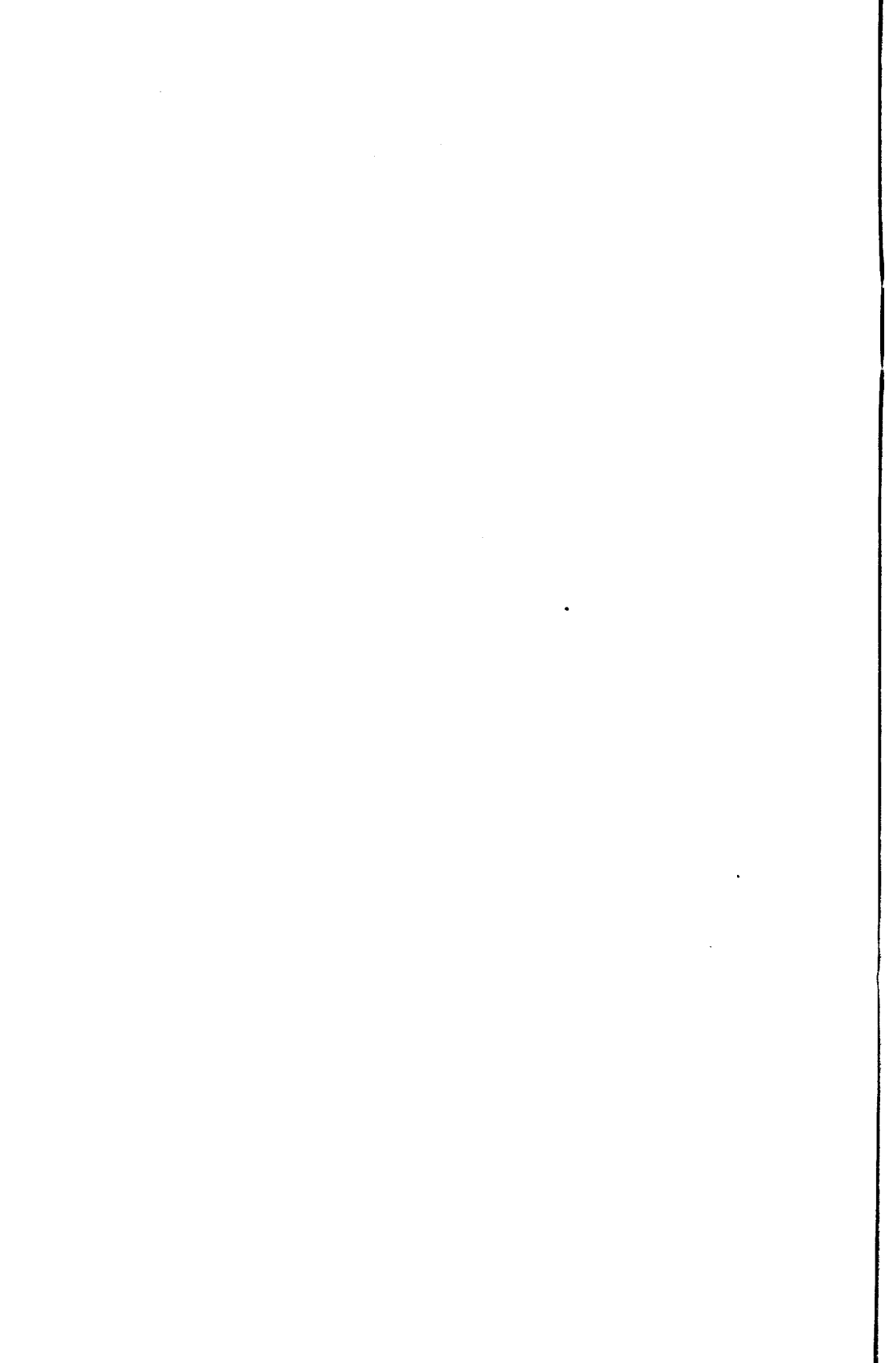
Premier of New Brunswick

Witness

Minister of Economic Growth

Witness

Minister of
Fisheries and Environment



CANADA-NEW BRUNSWICK
SUBSIDIARY AGREEMENT
MIRAMICHI CHANNEL STUDY

SCHEDULE "A"

<u>Program Description</u>	<u>Estimated Cost of Program</u>	<u>Federal Share, Including</u> <u>(a) Direct Cost</u> <u>(b) 10% Allowance (where applicable)</u>
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1. <u>Miramichi Channel Field Surveys</u>	\$305,600	
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A program of financial support for the first year projects of a two year field survey of the Miramichi Bay and River. The survey is part of in-depth hydraulic studies being undertaken to determine the feasibility of establishing and maintaining a 26 foot navigation channel in the Miramichi River from Newcastle to the Gulf of St. Lawrence.

The projects included in this program are:

1.1 Main Field Work:	\$218,250
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This project involves soundings of the Miramichi River and Bay and also the area outside the islands up to the 20m contour line to determine the topography of the entire area, and a comprehensive survey of bottom sediments of the entire river and bay area from Chatham to the outer 20m contour line. Measurements of water elevations, currents, salinity, temperature and suspended sediments will be carried out as well to enable construction and testing of the hydraulic model and to obtain a better understanding of the estuary generally.

CANADA-NEW BRUNSWICK
 SUBSIDIARY AGREEMENT
MIRAMICHI CHANNEL STUDY

SCHEDULE "A"

Program Description	Estimated Cost of Program	Federal Share, Including (a) Direct Cost (b) 10% Allowance (where applicable)
1.2 Channel Bottom Sampling Survey: An intermittent sampling and testing of the bottom of the navigation channel from Chatham to Lower Escuminac, to obtain an indication of the effect of navigation on the natural deposition pattern in the bay.		\$10,950
TOTALS	\$305,600	\$229,200

CANADA-NEW BRUNSWICK
SUBSIDIARY AGREEMENT
MIRAMICHI CHANNEL STUDY
SCHEDULE "B"

Guidelines for Program Administration

BACKGROUND

The ports of Newcastle and Chatham on the Miramichi River in Northeast New Brunswick have been important to the economy of the region for nearly 200 years and there has been a continuous history of shipping from these ports since 1779. The present day shipping activity is centred around the shipment of pulp, particle board and ore from these ports and the unloading of petroleum products for distribution by truck and rail to other points in the region.

Traffic

<u>Year</u>	<u>City</u>	<u>No. Ships</u>	<u>Cargo Loaded or Unloaded</u>
1971	Chatham	30	111,471 tons (1)
1971	Newcastle	146	583,703 tons (2)

(1) Petroleum products unloaded from coastal vessels.

(2) 256,027 tons loaded for export.

At the present time, the available navigation depth is in the order of 20 feet governed mainly by limiting depths and restricted widths in the areas of the outer bays and Inner Miramichi Bay, but the limiting natural depth without dredging is believed to be less than 15 feet.

Both capital and maintenance dredging have been carried out intermittently by the Department of Public Works since Confederation. Between 1909 and 1913, a major effort was devoted to capital dredging to increase the navigable depth to 21 feet and the minimum channel width to 200 feet.

Substantial volumes of maintenance dredging were undertaken throughout the 1920's and into the 1930's, and high standards of channel maintenance were attained. However, since that time, the level of maintenance dredging, particularly in the Inner Bay, has been much reduced, with significant deterioration of the channel. It is believed by some that the Grande Dune Flats section of the channel, which consists of soft mud, is only kept open by the passage of ships. Vessels having a draught of up to 21.5

feet can negotiate the channel making passage through the Inner Bay only at high tide.

From time to time, plans and proposals have been put forward to improve the channel and to increase the navigable depth to 26-28 feet, which would make Newcastle and Chatham accessible to the 15,000 DWT general cargo vessels which are expected to be the most common cargo carriers for a number of years to come. The most serious investigation to date of this possibility was carried out from 1962 to 1968 by the Department of Public Works. This investigation included a detailed channel survey and implementation of experimental dredging in a number of areas of the existing channel, as well as along a possible alternative alignment short-cutting across the outer bay.

The experimental dredged cuts were surveyed periodically up to 1971 to determine the stability and silting characteristics. From this work, according to evaluation criteria then applied, it was concluded that the expenditure likely to be necessary to dredge and maintain a deeper channel would not be economically justified.

In October 1972, the Government of Canada and the Government of New Brunswick engaged the consulting firm of Lalonde, Valois, Lamarre, Valois and Associates to carry out a Northeast New Brunswick Transportation Study. The main objective of the Study was "to recommend priorities for public and private investments in a transportation system required to provide economic, adequate and efficient transportation services for the movement of goods within Northeast New Brunswick and between Northeast New Brunswick and other regions" and it was emphasized that "possible rationalization and improvement of ports are to be major components of the study". The final report of the Northeast New Brunswick Transportation Study was submitted to the two Governments in November 1973.

The consultants recommended:

1. That in-depth hydraulic and ecological studies be made of the technical aspect of dredging the Miramichi River to 26 feet to be able to assess the feasibility of maintaining the channel at 26 feet and the impact of these maintenance operations on the environment.
2. That if the maintenance of a 26 foot channel in the Miramichi River is feasible from the environmental standpoint, and if the cost of maintenance over the 1973 to 1991 period is, on the average, less than \$1.9 million per year,
 - the Miramichi River be dredged to 26 feet at an estimated cost of \$5.33 million;
 - the berth and wharves at Newcastle be built to the new water depth at an estimated cost of \$2.5 million; and

- a new paper shed of approximately 27,000 square feet be built at Newcastle.

The federal and provincial agencies most concerned with the subject organized under the leadership of the Ministry of Transport to examine the feasibility of completing the required investigation within two years. A working group comprised of representatives of Department of Public Works (Chairman), Ministry of Transport, Department of the Environment, National Research Council and the Department of Economic Growth of New Brunswick prepared a report outlining the extent of in-depth hydraulic studies necessary to determine the feasibility of establishing and maintaining the channel recommended in the Transportation Study. The working group determined that a selective field survey program would be required, particularly with respect to the development and testing of a hydraulic model of Miramichi Bay. It estimated that the study would last about two years at a cost of approximately \$600,000.

Also recommended was a parallel but separate ecological study to be carried out to assess the environmental impact of the channel deepening project and to provide ecology protective guidelines. It is anticipated that commencement of this study will await the initial findings concerning technical feasibility, which should be available early in 1975.

INVOLVEMENT OF GOVERNMENT AGENCIES

Reflecting the responsibility and interest of various federal and provincial departments in the examination of the feasibility of a 26 foot channel, financial support for the Miramichi River Navigation Channel Study is being provided by a number of agencies. The anticipated financial arrangements for the two-year study is as follows.

- a) Project Management:
 - i) Department of Public Works - direct cost of \$95,000.

- b) Field Studies:
 - i) Department of Regional Economic Expansion - direct cost of \$229,200.
 - ii) New Brunswick Department of Economic Growth - direct cost of \$76,400.
 - iii) Department of the Environment (Hydrographic Service) - direct cost of \$68,000 and indirect costs, including contract and field survey supervision and loan of equipment.

c) Hydraulic Model:

- i) Ministry of Transport - direct costs of \$78,000.
- ii) National Research Council - provision of staff and facilities.

STRATEGY

Because of the potential for significant economic benefit from a 26 foot navigation channel from Newcastle to the Gulf of St. Lawrence, the Department of Economic Growth will contribute to the financing of the field surveys component of the Miramichi River Navigation Channel Study.

PROGRAM

The Agreement provides support for extensive field surveys of the Miramichi River and Bay from Newcastle to the Gulf of St. Lawrence. This program will produce the bulk of the field information and data required for the Miramichi River Navigation Channel Study, enabling the construction and testing of a hydraulic model and providing in general a better understanding of all physical processes taking place in the Miramichi estuary. If additional surveys are required in the summer of 1975, these will be supported under the normal operations of the Canadian Hydrographic Service and other participating agencies.

The following brief descriptions indicate the major projects to be carried out under the field surveys program of this Agreement.

1.1 Main Field Work

The present hydrographic charts of the Miramichi River and Bay are not of sufficient quality, in either vertical or horizontal control, as an input to a hydraulic model study of the entire area. This project will include, therefore, a survey of the Miramichi River and Bay, and also the area outside the islands up to the 20m contour line, to produce a 1:20,000 metric hydrographic chart, with depths recorded at approximately 100m intervals. In the navigation channels and at a limited number of other locations of interest the intervals will be closer, in the order of 10-25m.

To control the tidal boundaries of the model, water elevations will be recorded at four locations. To calibrate the model, simultaneous water levels will be taken at another six locations. A minimum of 14 days of continuous simultaneous recordings will be obtained from all gauges. In addition, directional velocity measurements will be required at eight locations.

To obtain a first evaluation of the general salinity regime of the estuary, a limited survey will be carried out of the salinity, temperature and suspended sediment content of the water. These measurements will be taken at the same eight locations where current observations are to be made.

A comprehensive survey will be undertaken of bottom sediments of the entire river and bay area from Chatham to the outer 20m contour line. A detailed sampling will be carried out in areas of special interest, such as the navigation channel, the spoil areas, and the natural gullies.

1.2 Channel Bottom Sampling Survey

In addition to the comprehensive survey described under project 1, there will be an intermittent sampling of the bottom of the navigation channel from Chatham to Lower Escuminac. The samples will be taken in approximately the centre line of the shipping channel, with a view to determining the effects of navigation on the natural deposition pattern in the bay. This survey is listed as a separate project for administrative convenience, as it involves a separate contract.

