

**WATER QUANTITY SURVEYS
COST SHARING AGREEMENT
CANADA - NEWFOUNDLAND
ANNUAL REPORT 1992-93**

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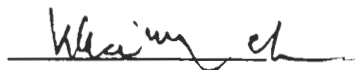


TO: Mr. D. G. Jeans
Administrator for Newfoundland

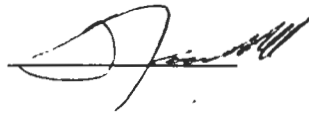
Mr. S. L. Fenety
Administrator for Canada

In accordance with Article XII of the Memorandum of Agreement covering Water Quantity Surveys in the Province of Newfoundland, we submit herewith the annual report for fiscal year 1992-93.

Members of the Coordinating Committee



W. Ullah
Member for Newfoundland
St. John's, Newfoundland



D. Randall
Member for Canada
Moncton, New Brunswick



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INTRODUCTION

The year ending March 31, 1993 was the eighteenth in which water quantity surveys in Newfoundland were conducted under a Memorandum of Agreement between the Federal and Provincial Governments.

The Agreement establishes the basis on which cooperative water quantity surveys are made. It is administered for Canada by the Regional Director of the Water Resources Directorate and for Newfoundland by the Assistant Deputy Minister, Department of Environment and Lands. A Co-ordinating Committee comprising the Head, Water Survey, Water Resources Directorate, and the Director, Water Resources Division, Department of Environment and Lands, reports to the Administrators. It is the responsibility of the Co-ordinating Committee to prepare annually Schedules A and D for approval by the Administrators.

The Memorandum of Agreement includes four schedules:

1. Schedule A is a list of water quantity stations operated under the terms of the Agreement and their responsibility classification as: federal, federal-provincial or provincial.
2. Schedule B is a list of items that are to be included for cost sharing under the Agreement.
3. Schedule C details procedures for computing annual payments.
4. Schedule D provides a summary of annual payments.

Schedules A and D for 1992-93 are attached to this report in appendices II and VII.

SUMMARY OF ACTIVITIES

SUMMARY OF ACTIVITIES CANADA/NEWFOUNDLAND AGREEMENT ON WATER QUANTITY SURVEYS 1992-93

A substantial re-organization of the Atlantic Region Inland Waters Directorate occurred during the year covered by this report. The process of merging the Water Quality Branch and the Water Resources Branch into the Monitoring and Evaluation Branch (MEB) was completed. This resulted in the transfer of Water Survey management to Moncton, the creation of an MEB Informatics Division with hydrometric data management responsibilities, and the merging of hydrology studies and network planning with the MEB Environmental Sciences Division. The Inland Waters Directorate was renamed the Water Resources Directorate.

The Co-ordinating Committee to the Canada/Newfoundland Agreement on Water quantity Surveys met once in 1992-93, on March 30, 1993 in St. John's. The main highlights of the meeting were as follows:

- A review of the cumulative balance of payments showed the Province deficit of \$28,326. at the end of 1990-91 had turned into a slight cumulative surplus of \$2,844.
- An update on P2000, the federal initiative to modernize the hydrometric programme, was given to the group. Some delays are being experienced.
- Schedule "A" for 1993-94 was approved with no additions or reductions. Two F/P flow stations will be built in Labrador in 1993 and added to the Schedule in 1994-95. Also, two provincial flow stations in support of the Model Forest project near Corner Brook will be established in 1993-94 and added to the Schedule in 1994-95.
- The suspended sediment sampling programme shifted away from a few seasonal stations towards more extensive miscellaneous sampling. The Committee agreed to cost share 50/50 all the sampling.
- Cost estimates for 1993-94 operations presented at the meeting were approved with following changes:
 - slight adjustments to Labrador and sediment figures;
 - an additional 10K (50/50 F/P) allocated for major maintenance;
 - an additional 20K (later revised to 12K) from the province to modernize two stations.

- The Newfoundland Hydrometric Network Review continued at the slow pace. Re-organization within Environment Canada and technical difficulties with the review software were the major cause of this slow down.
- The Humber River data collection network in support of flow forecasting continued to give good results. Two new data collection stations are in the process of being installed. Support to the network is coming from the Green Plan initiative of upgrading flood forecasting capabilities.

A copy of the notes from the Co-ordinating Committee meeting is included in Appendix VIII.

During 1992-93, 97 gauging stations were operated under the Agreement, designated as follows: Federal 23, Federal-Provincial 47, and Provincial 27. The Province paid \$273,482 in Schedule "D" payments toward the \$537,842 total operational cost of these stations.

Two sediment stations were operated, designated as follows: Federal-Provincial 1, Provincial 1. The Province paid \$3,825 in Schedule "D" payments toward the \$6,285 total operational cost of this sampling program.

After all actual costs for the year were tallied and compared to the cost estimates, a significant under expenditure in hydrometric surveys may be noted on pages no. 5 and 6. Salaries represented the main cost area for under expenditure. This was attributed to not filling a vacant technologist position at St. John's. Also, contributing to the under-expenditure was a general cutback in travel resulting in cuts in not only the travel costs but also employee overtime and helicopter charter.

The arrangement on the operation of 14 DCP equipped sites continued during the year. The Province paid the amount of \$11,678 in the form of imputed rental for this service.

A fairly ambitious maintenance and construction program was conducted during 1992/93. The major projects undertaken during the year were as follows:

- **Grandy Brook** - construction of helicopter landing pad.
- **Main River** - construction of helicopter landing pad.
- **Lloyds River** - construction of helicopter landing pad.
- **Peters River** - Replace building on stilling well and building repairs. This work was required due to the gauge shelter being pushed off its support, into the river, by vandals.

- **S/W Gander River** - Cableway upgrade. Loading platform and safety items addressed.
- **Middle Brook** - Cableway off loading platform repaired and upgraded.

Cost details on these projects are shown on Page No. 8.

At the request of Newfoundland and Labrador Hydro, a visit was made to all water level stations on the Lower Churchill River in Labrador during February, to ensure the operation of recording instrumentation.

Water Survey staff participated in the LRTAP lake sampling and bathymetry program. Helicopter flying was coordinated with Provincial water quality technicians when feasible.

Annual levelling of bench marks and general assistance was again carried out for Federal Fisheries at Western Arm Brook Salmon Research station on the Northern Peninsula.

WATER QUANTITY SURVEYS

PROVINCE OF NEWFOUNDLAND

ISLAND - 1992-93

OPERATIONAL COSTS FOR HYDROMETRIC SURVEYS

	<u>ESTIMATED</u>	<u>ACTUAL</u>
Personnel - Basic Pay - 01, 02, 03 (Salaries of hydrometric technical staff including overtime)	\$265,900	\$251,376
Transportation and Communications		
Travel - 07	23,000	17,815
Transportation and Postage - 09	2,000	767
Telecommunications - 10, 11	1,800	0
Professional and Special Services		
Professional Services - 18	1,800	1,710
Other Services - 22	6,000	5,367
Rentals		
Rentals - 25	55,000	48,485
Purchased Repair and Upkeep		
Equipment Purchased and Repairs - 28	6,500	5,682
Building and Structures Repairs - 29	1,000	234
Utilities, Materials and Supplies		
Public Utility Services - 32	1,600	1,255
Purchased Materials, Supplies, Misc. Goods - 33, 34	25,000	28,979
Parts and Consumable Tools - 35	7,000	12,770
Other Costs - Data Processing	13,600	12,640
- Depreciation of Vehicles (5)	16,500	16,976
- Depreciation of Field Equipment and Instruments	8,000	9,185
	-----	-----
TOTAL	\$434,700	\$413,241

WATER QUANTITY SURVEYS

PROVINCE OF NEWFOUNDLAND

LABRADOR - 1992-93

OPERATIONAL COSTS FOR HYDROMETRIC SURVEYS

	<u>ESTIMATED</u>	<u>ACTUAL</u>
Personnel - Basic Pay - 01, 02, 03 (Salaries of hydrometric technical staff including overtime)	\$ 63,100	\$ 54,921
Transportation and Communications		
Travel - 07	15,000	11,819
Transportation and Postage - 09	2,500	1,859
Telecommunications - 10, 11	-	-
Professional and Special Services		
Professional Services - 18	-	-
Other Purchased Services - 22	5,000	496
Rentals		
Rentals - 25	55,000	50,149
Purchased Repair and Upkeep		
Equipment Purchased and Repairs - 28	500	-
Building and Structures Repairs - 29	-	-
Utilities, Materials and Supplies		
Public Utility Services - 32	-	-
Purchased Materials, Supplies, Misc. Goods - 33, 34	3,000	650
Parts and Consumable Tools - 35	2,000	228
Other Costs - Data Processing Costs	2,000	1,920
- Depreciation of Field Equipment and Instruments	2,500	2,559
	<hr/>	<hr/>
TOTAL	\$150,600	\$124,601

WATER QUANTITY SURVEYS
PROVINCE OF NEWFOUNDLAND

1992-93

OPERATIONAL COSTS FOR SEDIMENT SURVEYS

Personnel - Basic Pay - 01, 02, 03	-	-
Transportation and Communication		
Travel - 07	\$ 100	134
Transportation and Postage - 09	100	258
Telecommunications - 10, 11	-	-
Professional and Special Services		
Professional Services - 18	-	96
Other Purchased Services - 22	100	-
Rentals		
Rentals - 25	-	-
Purchased Repair and Upkeep		
Equipment Purchased and Repairs - 28	100	-
Building and Structure Repairs - 29	-	-
Utilities, Materials and Supplies		
Public Utility Services - 32	-	-
Purchased Materials, Supplies,		
Misc. Goods - 33, 34	100	1,214
Parts and Consumable Tools - 35	100	95
Other Costs - Sample Analysis	3,300	3,560
- Depreciation of Field	1,200	928
Equipment and Instruments	—	—
TOTAL	\$5,100	\$6,285

MAJOR MAINTENANCE PROJECTS

NEWFOUNDLAND

1992-93

<u>STATION</u>	<u>PROJECT</u>		<u>COSTS</u>
Grandy Brook	Helicopter landing pad	Travel	105
		Flying	850
		Material	<u>710</u>
		TOTAL	1665
Main River	Helicopter landing pad	Travel	91
		Flying	850
		Material	<u>711</u>
		TOTAL	1652
Lloyds River	Helicopter landing pad	Travel	189
		Flying	1200
		Services	182
		Material	<u>786</u>
		TOTAL	2357
Peters River	Damage Repair	Services	<u>234</u>
		TOTAL	234
S/W Gander	Cableway upgrade	Travel	230
		Services	144
		Material	<u>271</u>
		TOTAL	645
Bottom Brook	Metering Bridge	Travel	39
		Services	12
		Material	<u>835</u>
		TOTAL	886
Middle Brook	Cableway upgrade	Travel	230
		Services	144
		Material	<u>121</u>
		TOTAL	495

WATER QUANTITY SURVEYS

PROVINCE OF NEWFOUNDLAND

SUMMARY OF ANNUAL COSTS AND PAYMENTS RECEIVED - 1992-93

HYDROMETRIC SURVEYS

Island

<u>Station Classification</u>	<u>Stations</u>	<u>Stations Units</u>
F1	6	6.0
F4	11	11.0
FP3	44	44.0
P1	<u>23</u>	<u>21.2*</u>
TOTALS	84	82.2

Average Cost/Station Unit = $\$413,241/82.2 = \$5,027$

Provincial Share = 50% of $44.0 \times \$5,027 + 100\%$ of $21.2 \times \$5,027 = \$217,166$

Labrador

<u>Station Classification</u>	<u>Stations</u>	<u>Station Units</u>
F2	2	2.0
F4	4	4.0
FP3	3	3.0
P1	<u>4</u>	<u>1.7**</u>
TOTALS	13	10.7

Average Cost/Station Unit = $\$124,601/10.7 = \$11,645$

Provincial Share = 50% of $3.0 \times \$11,645 + 100\%$ of $1.7 \times \$11,645 = \$37,264$

Provincial Share of Operational Cost for Hydrometric Surveys on the Island and Labrador ($\$217,166 + \$37,264$) \$254,430

Provincial Payment Received for Operational Costs for Hydrometric Surveys per Schedule "D" \$273,482

* Includes 3 WL stations (Deer Lake, Corner Brook Lake, Grand Lake) at 0.4 station units

** Includes 3 Churchill River WL stations at 0.4 station units and North Brook seasonal station at 0.5 station units

SEDIMENT SURVEYS

<u>Station Distribution</u>	<u>Stations</u>
Federal-Provincial	1
Provincial	1
TOTAL	2

Average Cost/Station = $\$6,285/2 = \$3,142$

Provincial Share of Operational Costs for Sediment Surveys

50% of 1 x \$3,142 + 100% of 1 x \$3,142 \$ 4,713

Provincial Payment Received for Operational Costs for Sediment Surveys per Schedule "D" \$ 3,825

DATA COLLECTION PLATFORMS

Annual Imputed Rental for Recovery of Costs from Purchase of 14 DCPs \$ 11,678

Provincial Payment Received for DCPs per Schedule "D" \$ 11,678

METEOROLOGICAL STATIONS

Operational Services Relating to Humber River Meteorological Stations \$ 3,173

Provincial Payment Received for Meteorological Stations \$ 3,173

TOTALS

Total Provincial Share for Operations, DCPs and Met Stations
 $(\$254,430 + \$4,713) + \$11,678 + \$3,173$ \$273,994

Total Provincial Payment Received for Operations, DCPs and Met Stations per Schedule "D"
 $(\$273,482 + \$3,825) + \$11,678 + \$3,173$ \$292,158

Province/Territory: NEWFOUNDLAND

TABLE 1
WATER QUANTITY SURVEYS
GAUGING STATION DATA FOR 1992-93

No. of Stations		Changes during 1991-92			Stn. Designation April 1, 1992			
April 1, 1991	April 1, 1992	Change	Added	Discontinued	Fed	F/P	Prov.	Contrib.
111	111	0	0	0	* 23	* 47 (1)	* 27 (1)	14

* Bracket Sediment Stations

TABLE 2
WATER QUANTITY SURVEYS
COMPARATIVE GAUGING STATION DATA April 1, 1975 - April 1, 1992

April 1, 1975	Federal Stations			F/P Stations			Provincial Stations			Total Stations	
	April 1, 1992	Change	April 1, 1975	April 1, 1992	Change	April 1, 1975	April 1, 1992	Change	April 1, 1975	April 1, 1992	Change
14	23	9	7	47	40	9	27	18	30	97	67

TABLE 3
WATER QUANTITY SURVEYS
DETAILED GAUGING STATION DATA 1992-93

F-1	*F-2	F-3	F-4	Total F	FP-1	FP-2	FP-3	Total F/P	P-1	P-2	Total P	Contrib.	Total-All
6	2	0	15	23	0	0	47 (1)	47	27 (1)	0	27	14	111

Bracket Sediment Stations in all categories

TABLE 4
WATER QUANTITY SURVEYS
TOTAL PROGRAM COSTS & SHAREABLE COSTS FOR 1992-93
(x \$1000)

Total Program Costs					Shareable Costs						
P/Yrs	Sal.	Oper.	Cap.	Total	P/Yrs	Sal.	Oper.	Const.	Total	F Share	P Share
9.95	487.4	232.3	58.0	777.7	6.45	306.3	237.8	0	544.1	285.0	259.1

TABLE 5
WATER QUANTITY SURVEYS
SUMMARY OF SCHEDULES D - 1992-93

Streamflow & Water Level		Sediment		Total
Operation	Construction	Operation	Construction	
273,482	0	3,825	0	277,307

TABLE 6
WATER QUANTITY SURVEYS
COMPARISON - SCHEDULED & ACTUAL COSTS FOR 1992-93
(Dollars)

Salary & Operations		Construction		Total		Amount Payment	Received Minus
Sch. D/F	Actual Cost	Sch. D/F	Actual Cost	Sch. D/F	Actual Cost	Received	Actual
277,307	259,143	0	0	277,307	259,143	277,307	+ 18,164

SUMMARY OF ANNUAL COSTS AND PAYMENTS

1975-76 TO 1992-93

NEWFOUNDLAND

<u>YEAR</u>	<u>SCHEDULE "D" PAYMENTS BY PROVINCE</u>			<u>ACTUAL PROVINCIAL SHARE</u>			<u>TOTAL</u>	<u>+CREDIT/DEBIT-</u>	
	<u>HYDROMET</u>	<u>SEDIMENT</u>	<u>CONSTR.</u>	<u>TOTAL</u>	<u>HYDROMET</u>	<u>SEDIMENT</u>			<u>CONSTR</u>
1975-76	37,800	-	3,600	41,400	36,238	-	2,177	38,415	+ 2,985
1976-77	32,340	-	12,000	44,340	37,840	-	1,573	39,413	+ 4,927
1977-78	35,520	-	24,480	60,000	38,700	-	13,963	52,663	+ 7,337
1978-79	56,775	1,400	11,825	70,000	51,371	679	26,000	78,050	- 8,050
1979-80	68,338	933	25,729	95,000	62,256	896	22,476	85,628	+ 9,372
1980-81	78,639	1,475	6,000	86,114	83,518	1,064	7,703	92,285	- 6,171
1981-82	83,523	3,750	14,000	101,273	100,726	3,114	16,560	120,400	-19,127
1982-83	96,542	3,744	55,000	155,286	102,735	5,886	47,224	155,845	- 559
1983-84	141,457	4,470	38,000	183,927	136,917	6,906	37,864	181,687	+ 2,240
1984-85	168,244	7,350	52,000	227,594	168,247	5,295	48,662	222,204	+ 5,390
1985-86	195,563	7,650	36,787	240,000	191,580	6,324	39,203	237,107	+ 2,893
1986-87	211,706	6,975	34,641	253,322*	222,843	4,413	35,136	262,392	- 9,070
1987-88	213,634	6,975	42,000	262,609*	220,934	3,597	47,957	272,488	- 9,879
1988-89	245,221	6,300	15,000	266,521*	237,249	4,683	16,148	258,080	+ 8,441
1989-90	253,392	5,173	30,000	288,567*	274,004	5,571	21,264	300,839	-12,272
1990-91	260,691	5,925	-	266,616**	266,058	4,809	2,532	273,399	- 6,783
1991-92	264,591	6,450	-	271,041**	234,222	5,649	-	239,871	+31,170
1992-93	273,482	3,825	-	277,307**	254,430	4,713	-	259,143	+18,164
							NET	NET	+21,008

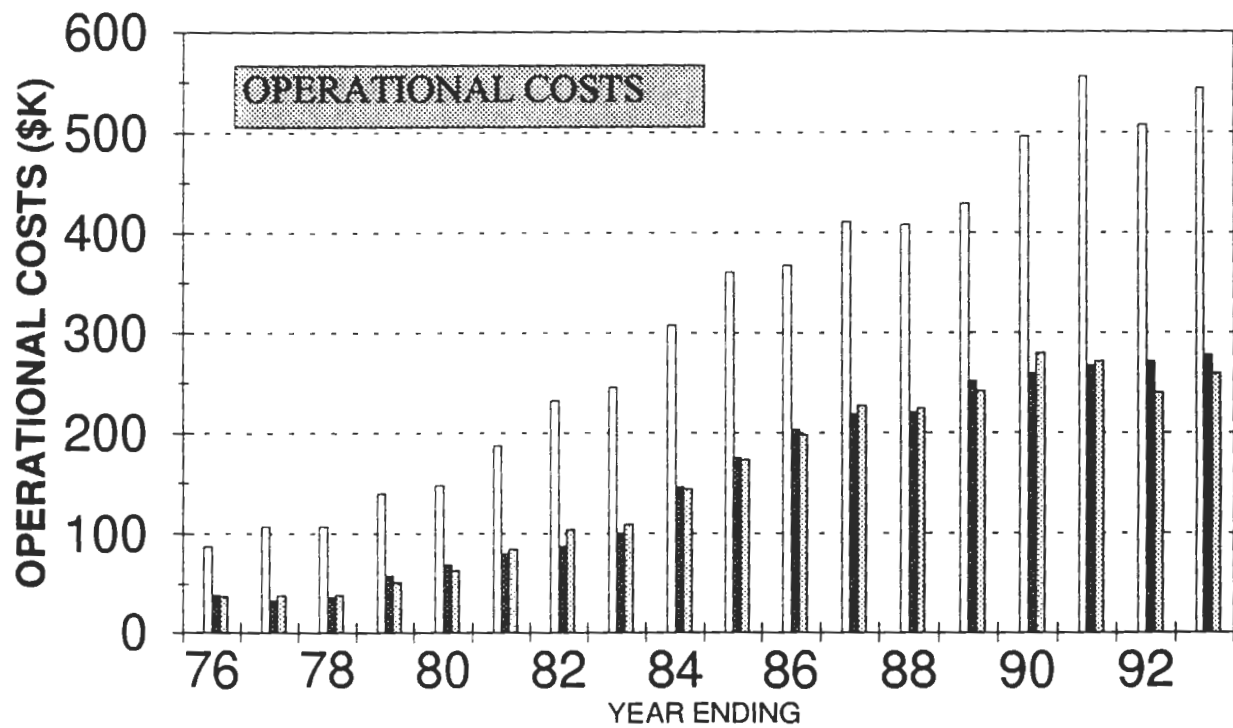
NOTE:

* Not including \$11,678 payment for imputed rental of 14 DCPs

** Not including \$11,678 DCP payment plus cost of operation of Humber River met sites.

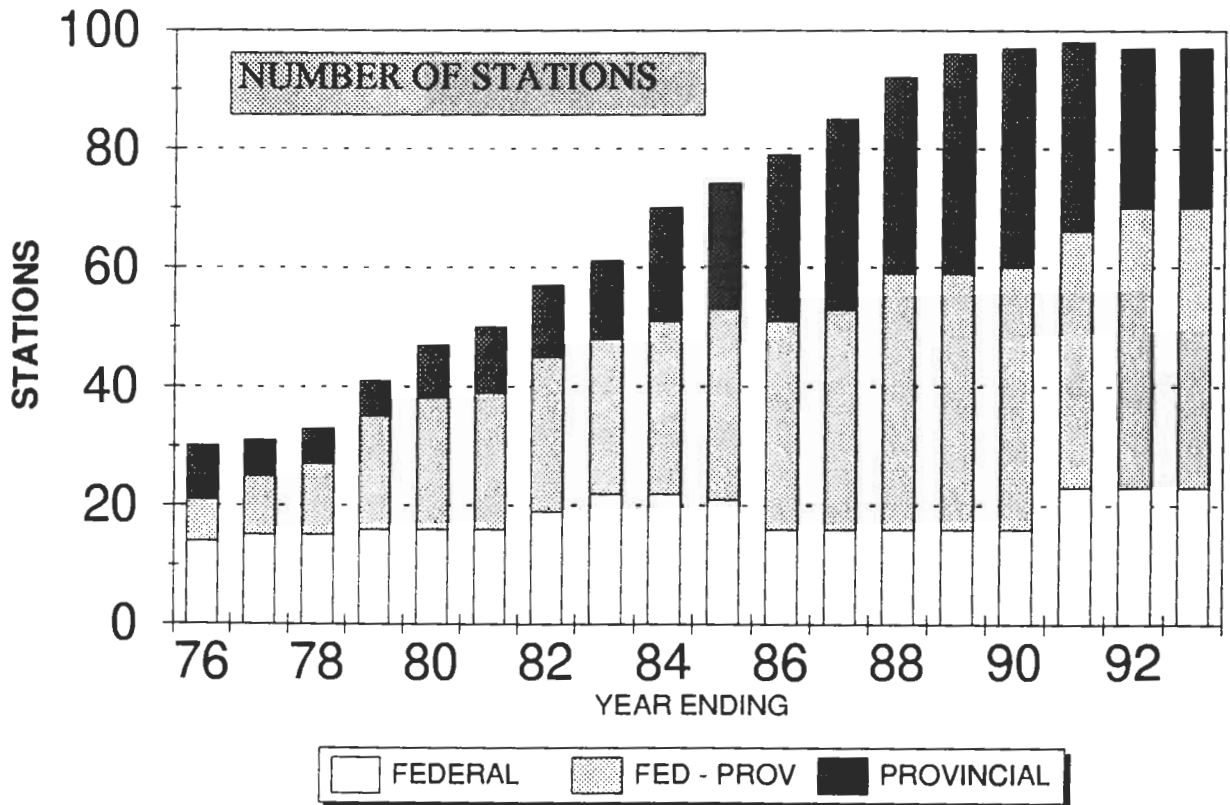
WATER QUANTITY SURVEYS

NEWFOUNDLAND



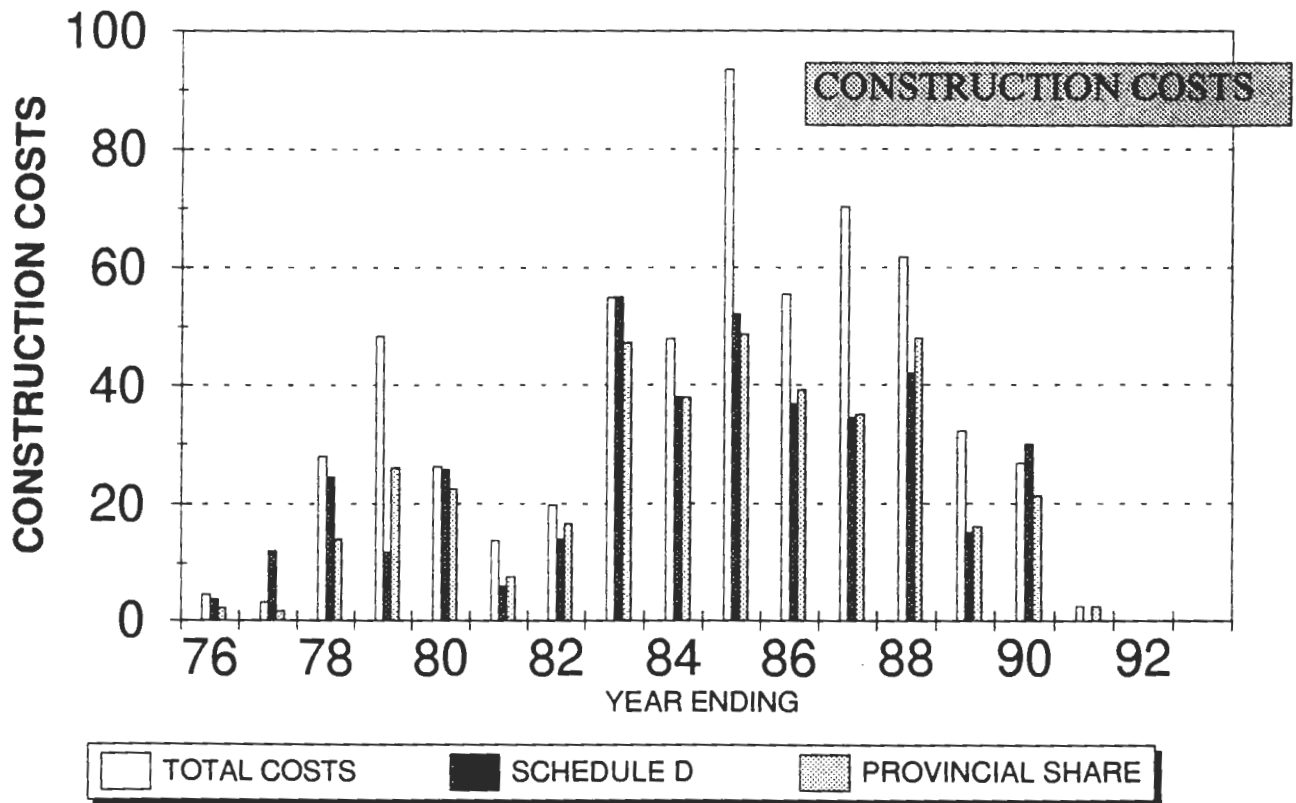
ACTUAL TOTAL COSTS
 SCHEDULE "D"
 PROVINCIAL SHARE

WATER QUANTITY SURVEYS NEWFOUNDLAND



WATER QUANTITY SURVEYS

NEWFOUNDLAND



APPENDIX I

MEMORANDUM OF AGREEMENT

(Sample only)

MEMORANDUM OF AGREEMENT made this twenty-fifth day of February, 1975,

BETWEEN:

The Government of Canada, hereinafter called "Canada", represented by the Minister of the Environment

OF THE FIRST PART

- and -

The Government of the Province of Newfoundland and Labrador hereinafter called the "Province" represented by the Minister responsible for Provincial Affairs and Environment

OF THE SECOND PART

WHEREAS co-operative water quantity surveys have been carried on for many years under various informal federal-provincial agreements in the Provinces of Canada by the Water Survey of Canada of the Department of the Environment, for the purpose of securing co-ordinated and standardized basic data to facilitate resource planning and management in general and the design and implementation of projects related to navigation, hydro-electric development, irrigation, drainage, flood control, recreation, domestic and industrial water supply and other purposes;

AND WHEREAS the Governor-in-Council has by Order-in-Council NO. PC 1975-1/172 dated January 28, 1975, authorized the Minister of Environment to execute this agreement on behalf of Canada, subject to funds being voted by the Parliament of Canada;

AND WHEREAS the Lieutenant Governor in Council has, by Order-in-Council No. 1412-74 dated December 5, 1974, authorized the Minister responsible for Provincial Affairs and Environment to execute this agreement on behalf of the Province subject to funds being voted by the Legislative Assembly.

NOW THEREFORE this agreement witnesseth that water quantity surveys in the Province and the financing thereof shall be continued and maintained upon the following basis; -

INTRODUCTION

DEFINITIONS

- a) **ANNUAL PAYMENT** - a sum, agreed to by both parties in advance of the fiscal year, which shall represent the costs of operation and construction of water quantity survey stations.
- b) **CONSTRUCTION** - includes the construction of new water quantity survey stations and the maintenance, repair and reconstruction of existing water quantity survey stations.
- c) **CONSTRUCTION PERSONNEL** - includes foremen and labourers on full time duty as well as engineering and technical staff on part time supervisory duty or reconnaissance assignment.
- d) **FIELD PERSONNEL** - includes hydrometric supervisors and field technicians on full time duty as well as engineering and technical staff on temporary assignment.
- e) **NETWORKS** - an original system of gauging stations for collection of water quantity survey data.
- f) **OPERATING PARTY** - either party to this agreement which operates water quantity survey data.
- g) **PUBLISHED DATA** - includes streamflow, water level and sediment data. The data is to be available in publications and computer compatible data files.
- h) **SEDIMENT STATIONS** - any location where surveys are undertaken to collect data on suspended sediment or bed material or bed load data singly or in combination. Water temperature data is to be collected.
- i) **WATER QUANTITY SURVEY STATIONS** - any location where surveys are undertaken to collect streamflow or water level or suspended sediment or bed material or bed load data singly or in combination. Water temperature data may be collected.

OPERATIONAL CONSIDERATIONS

ARTICLE I

Each water quantity survey station presently in operation has been identified according to the designation federal, federal-provincial or provincial. The current designation is given in Schedule A, hereto attached. Schedule A may be revised to include a change in the designation of a station, the addition of new stations or the deletion of stations as agreed by the Co-ordinating Committee (Article XII) and approved by the officials named in Article XIII.

ARTICLE II

Canada will construct and operate and pay the cost of construction and the annual cost of operation of water quantity survey stations which have been designated as federal. Where Canada deems it desirable in the interest of efficiency of operation, the Province may be requested to construct and operate some federal water quantity survey stations. If the Province agrees to such arrangements, Canada would in such cases reimburse the Province for the cost of construction and annual cost of operation in accordance with Article VI.

ARTICLE III

Where Canada constructs and operates water quantity survey stations designated as federal-provincial, the Province will reimburse Canada for 50% of the construction costs and 50% of the annual cost of operation. Where the Province constructs and operates these stations, Canada will reimburse the Province for 50% of the construction costs and 50% of the annual cost of operation in accordance with Article VI.

ARTICLE IV

If requested by the Province, Canada will construct and operate water quantity survey stations designated as provincial provided the Province reimburses Canada for 100% of the construction cost and annual cost of operation. If the Province constructs and operates these stations the Province will assume 100% of the annual cost of construction and operation in accordance with Article VI.

ARTICLE V

- a) The operating party shall provide the staff to meet its responsibilities under this agreement.
- b) Canada will at its own expense publish data from stations that it operates. Canada will on request at its own expense, publish data from stations operated by the Province providing the data meets national standards.
- c) Water quantity surveys under this agreement shall be carried out to national standards in field procedures, equipment and instrumentation, data compilation and will use national guidelines for station designations. Such standards and guidelines shall be developed and maintained by Canada in consultation with all of the Provinces.
- d) Canada and the Province shall work together to take advantage of technological advancements which improve the quality of data and the efficiency of standard procedures and to develop methods and techniques to assist in planning water quantity survey networks.
- e) Canada at its own expense will provide calibration service for water quantity survey velocity instruments for both parties.

FINANCIAL CONSIDERATIONS

ARTICLE VI

- a) Procedures for computing the annual payment are given in Schedule C.
- b) The annual payment for 1975-76 is set out in Schedule D. The annual payment for subsequent years shall be determined according to the terms of this agreement and the procedures as set out in Schedule C.
- c) Annual operation costs, except for sediment stations, will be computed using average annual water quantity survey station costs and the number of stations to be operated. The average annual water quantity survey station costs shall be recomputed annually according to the items listed in Schedule B.

- d) Annual construction costs, except for sediment stations, will be the cost of constructing new water quantity survey stations plus repairs to and major reconstruction of existing water quantity survey stations.
- e) The annual operation costs for sediment stations will be the summation of the individual station operation costs.
- f) The annual construction costs of sediment stations will be the cost of constructing new sediment stations plus repairs to and major reconstruction of existing stations.

ARTICLE VII

- a) The party operating the water quantity survey stations in accordance with Articles II, III and IV, will be responsible for providing and paying the total cost of water level recording equipment.
- b) All costs associated with the purchase, installation and operation of specialized water quantity survey equipment will be paid for by the party or parties requiring the service.

ARTICLE VIII

Canada or the Province, depending on the operating responsibilities, shall submit invoices for one-quarter of the annual payment on July 1st., October 1st., January 1st. and March 1st. of each fiscal year in accordance with the annual payment set out in Schedule D. Payment is to be made as soon as possible after receipt of each quarterly claim but in no case later than March 31st. of each year.

ARTICLE IX

Except as agreed by the parties hereto where both parties have an interest, either operational or financial, the annual net change in the total number of water quantity survey stations, including federal, federal-provincial and provincial, as set out in Schedule A, is not to exceed 15% in any year.

ARTICLE X

Each party constructing or operating a water quantity survey station or stations shall keep complete records of all shareable expenditures made pursuant to this agreement and shall support such expenditures with proper documentation. Canada and the Province upon request shall make these records and documents available to auditors appointed by each other.

CO-OPERATION

ARTICLE XI

There shall be a free exchange of water quantity survey data between Canada and the Province. The party operating the water quantity survey station shall retain originals or a microfilm copy of observations, measurements, recorder charts and computations and these are to be available to the other party on request.

CO-ORDINATION

ARTICLE XII

The officials named in Article XIII shall establish a Co-ordinating Committee representing each of the parties affected by this agreement. The Co-ordinating Committee shall be responsible for:

- a) Planning and the continuing review of water quantity survey networks, including addition and deletion of all stations within Provincial boundaries.
- b) Determining and reviewing the designation of water quantity survey stations using national guidelines which may from time to time be changed, subject to ratification by Canada and all of the Provinces.

- c) Assuring the maintenance of standards in procedures, data compilation and instrumentation.
- d) Reviewing annual operating costs and establishing average annual station costs, as per Article VI, for revision of Schedule D.
- e) Preparation annually of new Schedule A and D which with the approval of the officials named in Article XIII would apply for the second and each subsequent year of the agreement.

The committee shall meet at least once a year and shall report to the officials named in Article XIII.

ADMINISTRATIVE ARRANGEMENTS

ARTICLE XIII

This agreement is to be administered for Canada by the Regional Director of the Inland Waters Directorate located at Halifax, Nova Scotia, and for the Province by the Assistant Deputy Minister, Environment, located at St. John's, Newfoundland.

IMPLEMENTATION

ARTICLE XIV

The parties hereto agree that water quantity surveys will be carried out at indicated in Article I to XIII inclusive and the Schedules attached hereto.

PERIOD OF AGREEMENT

ARTICLE XV

This agreement shall become effective and binding on the parties upon the first day of April, 1975. The agreement may be terminated by Canada or the Province on March 31st of any year provided that eighteen (18) months notice in writing is given. The agreement may be revised with the consent of the Governor-in-Council and the Lieutenant Governor-in-Council.

IN WITNESS WHEREOF the Honourable Jeanne Sauve, Minister of Environment has hereunto set her hand on behalf of Canada, and the Honourable W. Gorden Dawe, Minister of Provincial Affairs and Environment has hereunto set his hand on behalf of the Province of Newfoundland and Labrador.

Signed on behalf of Canada }
by the Honourable Jeanne Sauve }
Minister of Environment }.....

IN THE PRESENCE OF }
}.....

Signed on behalf of the Province of }
Newfoundland and Labrador by the }
Honourable W. Gorden Dawe, Minister }
of Provincial Affairs and Environment }.....

IN THE PRESENCE OF }
}.....

APPENDIX II

SCHEDULE A

WATER QUANTITY SURVEY STATIONS

FEDERAL 1 FEDERAL DEPARTMENTAL PROGRAMS

<u>STA. NO.</u>	<u>STATION NAME</u>	<u>ESTAB.</u>	<u>D.A.</u>	<u>RECORDS</u>	<u>REMARKS</u>
02YH001	Bottom Creek near Rocky Harbour	1985	33.4	Q R C	SEDM
02ZB001	Isle aux Morts River below Highway Bridge	1962	205	Q R C	DCP TYP LRTAP
02ZM006	Northeast Pond River at Northeast Pond	1953	3.63	Q R C	
02ZK001	Rocky River near Colinet	1948	285	Q R C	DCP TYP WQ SEDM
02YS003	Southwest Brook at Terra Nova National Park	1967	36.7	Q R C	
02YL001	Upper Humber River near Reidville	1928	2110	Q R C	DCP TYP SEDM

FEDERAL 2 INTERPROVINCIAL WATERS

<u>STA. NO.</u>	<u>STATION NAME</u>	<u>ESTAB.</u>	<u>D.A.</u>	<u>RECORDS</u>	<u>REMARKS</u>
02XA003	Little Mecatina River above Lac Fourmont	1979	4540	Q R C	DCP RMT
02XA004	Rivière Joir near Provincial Boundary	1980	2060	Q R C	RMT

FEDERAL 4 NATIONAL WATER QUANTITY INVENTORY

<u>STA. NO.</u>	<u>STATION NAME</u>	<u>ESTAB.</u>	<u>D.A.</u>	<u>RECORDS</u>	<u>REMARKS</u>
02ZF001	Bay du Nord River at Big Falls	1950	1170	Q R C	DCP
03OE001	Churchill River above Upper Muskrat Falls	1948	92500	Q R C	DCP RMT REG71 WQ
03QC001	Eagle River above Falls	1966	10900	Q R C	DCP RMT WQ TYP
02YO005	Exploits River below Stony Brook	1969	8640	Q R C	REG WQ
02YQ001	Gander River at Big Chute	1949	4400	Q R C	DCP TYP
02ZG001	Garnish River near Garnish	1958	205	Q R C	LRTAP
02ZD002	Grey River near Grey River	1969	1340	Q R C	DCP RMT LRTAP MET
02YJ001	Harrys River below Highway Bridge	1968	640	Q R C	DCP SED WQ LRTAP
02YL003	Humber River at Humber Village Bridge	1982	7860	Q R C	DCP REG
02YG001	Main River at Paradise Pool	1986	627	Q R C	DCP RMT
03PB002	Naskaupi River below Maskaupi Lake	1978	4480	Q R C	RMT
02YD002	Northeast Brook near Roddickton	1980	200	Q R C	SED
02YS005	Terra Nova River at Glovertown	1985	2000	Q R C	DCP SEDM
02YC001	Torrent River at Bristol's Pool	1959	624	Q R C	WQ
03NF001	Ugjoktok River below Warp Lake	1979	7570	Q R C	RMT

FEDERAL-PROVINCIAL 3 REGIONAL WATER QUANTITY INVENTORY

<u>STA. NO.</u>	<u>STATION NAME</u>	<u>ESTAB.</u>	<u>D.A.</u>	<u>RECORDS</u>	<u>REMARKS</u>
03QC002	Alexis River near Port Hope Simpson	1978	2310	Q R C	DCP RMT MET
02YA002	Bartletts River near St. Anthony	1986	33.6	Q R C	DCP
02YJ002	Blanche Brook near Stephenville	1978	120	Q R C	REG
02ZH002	Come-by-Chance River near Goobies	1961	43.3	Q R C	
02ZE004	Conne River at Outlet of Comme Pond	1988	99.5	Q R C	
02YO011	Exploits River below Noel Pauls Brook	1985	6300	Q R C	DCP REG
02ZC002	Grandy Brook below Top Pond Brook	1982	230	Q R C	DCP RMT LRTAP
02YO008	Great Rattling Brook above Tote River Confluence	1984	823	Q R C	DCP
02YE001	Greavett Brook above Portland Creek Pond	1983	95.7	Q R C	
02ZA002	Highlands River at Trans-Canada Highway	1982	72.0	Q R C	SED
02YR003	Indian Bay Brook near Northeast Arm	1981	554	Q R C	
02YM001	Indian Brook at Indian Falls	1954	974	Q R C	WQ LRTAP REG SEDM
02YO010	Junction Brook near Badger	1985	61.6	Q R C	
03NG001	Kanairiktok River below Shegamook Lake	1979	8930	Q R C	DCP RMT
02YK002	Lewassechjeech Brook at Little Grand Lake	1952	470	Q R C	DCP RMT
02ZA001	Little Barachois Brook near St. George's	1978	343	Q R C	
02ZA003	Little Codroy River near Doyles	1982	139	Q R C	
02YN002	Lloyds River below King George IV Lake	1980	469	Q R C	RMT
02YG002	Middle Arm Brook below Flatwater Pond	1987	224	Q R C	
02YR001	Middle Brook near Gambo	1959	267	Q R C	
03OE003	Minipi River below Minipi Lake	1979	2330	Q R C	DCP RMT

<u>STA. NO.</u>	<u>STATION NAME</u>	<u>ESTAB.</u>	<u>D.A.</u>	<u>RECORDS</u>	<u>REMARKS</u>
02ZK002	Northeast River near Placentia	1979	89.6	Q R C	
02ZN001	Northwest Brook at Northwest Pond	1966	53.3	Q R C	RMT
02YQ004	Northwest Gander River near Gander Lake	1983	2150	Q R C	RMT
02YO006	Peters River near Botwood	1981	177	Q R C	SEDM
02YJ003	Pinchgut Brook at Outlet of Pinchgut Lake	1986	119	Q R C	
02ZH001	Pipers Hole River at Mothers Brook	1952	764	Q R C	WQ LRTAP
02YR002	Ragged Harbour River near Musgrave Harbour	1977	399	Q R C	
02ZG004	Rattler Brook near Boat Harbour	1981	42.7	Q R C	SEDM
02YL005	Rattler Brook near McIvers	1985	17.0	Q R C	SEDM
02YQ005	Salmon River near Glenwood	1987	80.8	Q R C	
02ZG003	Salmonier River near Lamaline	1980	115	Q R C	
02ZM009	Seal Cove Brook near Cappahayden	1979	53.6	Q R C	
02YK005	Sheffield Brook near Trans- Canada Highway	1972	391	Q R C	DCP SEDM
02ZJ003	Shoal Harbour River near Clarenceville	1985	106	Q R C	SEDM
02ZM016	South River near Holywood	1983	17.3	Q R C	
02ZJ001	Southern Bay River near Southern Bay	1976	67.4	Q R C	
02YO012	Southwest Brook at Lewisporte	1989	47.7	Q R C	
02YM003	South West Brook near Baie Verte	1980	93.2	Q R C	
02YQ006	Southwest Gander River below Larson Falls	1987	531	Q R C	RMT
02ZL003	Spout Cove Brook near Spout Cove	1979	10.8	Q R C	
02YN003	Star Brook below Star Lake	1987	427	Q R C	RMT DCP
02YA001	Ste. Geneviève River near Forresters Point	1969	306	Q R C	
02ZG002	Tides Brook below Freshwater Pond	1977	166	Q R C	DCP
02YL008	Upper Humber River above Black Brook	1988	471	Q R C	RMT DCP MET
02ZM018	Virginia River at Pleasantville	1984	10.7	Q R C	
02ZM008	Waterford River at Kilbride	1974	52.7	Q R C	SED

PROVINCIAL 1 PROVINCIAL DEPARTMENTAL PROGRAM

<u>STA. NO.</u>	<u>STATION NAME</u>	<u>ESTAB.</u>	<u>D.A.</u>	<u>RECORDS</u>	<u>REMARKS</u>
02ZL005	Big Brook at Lead Cove	1985	11.2	Q R C	
02YK008	Boot Brook at Trans-Canada Highway	1985	20.4	Q R C	
03OE007	Churchill River at Foot of Lower Muskrat Falls	1980		H R C DCP	REG71 RMT
03OE008	Churchill River at Grizzle Rapids	1988		H R C	REG71 RMT
03OE005	Churchill River between Upper and Lower Muskrat Falls	1978		H R C	REG71 RMT
02YL009	Corner Brook Lake at lake Outlet	1990		H R C	REG DCP MET
02YL007	Deer Lake at Deer Lake	1987		H R C	TMK
02YK007	Glide Brook below Glide Lake	1984	112	Q R C	
02YK010	Grand Lake East of Grand Lake Brook	1988		H R C	DCP RMT MET
02YM004	Indian Brook Diversion above Birchy Lake	1990		Q R C	DCP MET
02ZM020	Leary Brook at Prince Philip Drive	1985	17.8	Q R C	
02ZM017	Leary Brook at St. John's	1983	15.3	Q R C	
02YO007	Leech Brook near Grand Falls	1984	88.3	Q R C	
02ZK003	Little Barachois River near Placentia	1983	37.2	Q R C	
02ZG005	Little Barasway Brook near Molliers	1987	28.2	Q R C	
02ZK004	Little Salmonier River near North Harbour	1983	104	Q R C	
02XD002	North Brook near Red Bay	1984	35.5	Q R S	RMT
02ZM022	Raymond Brook at Outlet of Bay Bulls Big Pond	1988		Q R C	REG
02ZJ002	Salmon Cove River near Champneys	1983	73.6	Q R C	
02ZL004	Shearstown Brook at Shearstown	1983	28.9	Q R C	
02YP001	Shoal Arm Brook near Badger Bay	1982	63.8	Q R C	RMT
02YL004	South Brook at Pasadena	1983	58.5	Q R C	SEDM
02ZM021	South Brook at Pearl Town Road	1986	9.21	Q R C	
02ZN002	St. Shotts River near Trepassey	1985	15.5	Q R C	DCP
02ZK005	Trout Brook near Bellevue	1986	50.3	Q R C	
02ZM019	Virginia River at Cartwright Place	1985	5.55	Q R C	
02ZM010	Waterford River at Mount Pearl	1981	16.6	Q R C	

CONTRIBUTED STATIONSNEWFOUNDLAND
1992-93

<u>STA. NO.</u>	<u>STATION NAME</u>	<u>ESTAB.</u>	<u>D.A.</u>	<u>AGENCY</u>	<u>REMARKS</u>
03OA001	Ashuanipi River at Menihek Rapids	1952	19000	IOCCL	REG RMT
03OC006	Atikonak River at Gabbro Lake	1973	21400	CFLCO	REG73 RMT
03OD006	Atikonak River at Ossakmanuan Lake Control Structure	1977		CFLCO	REG64 RMT
03OD005	Churchill River at Churchill Falls Powerhouse	1972	69200	CFLCO	REG71 RMT
02YL002	Corner Brook at Watsons Brook Powerhouse	1959	127	DLPCL	REG
02YO001	Exploits River at Grand Falls	1914	8390	AB-PR	REG
02YK006	Hinds Brook at Hinds Brook Powerhouse	1981	651	N&LHY	REG81
02YK001	Humber River at Grand Lake Outlet	1898	5020	DLPCL	REG
02ZM003	Mobile River at Mobile First Pond	1962	112	NLPCL	REG
02ZM001	Petty Harbour River at Second Pond	1962	134	NLPCL	REG
02ZM002	Pierres Brook at Gull Pond	1962	117	NLPCL	REG
02YO003	Rattling Brook at Rattling Brook Powerhouse	1962	378	NLPCL	REG
02ZE003	Salmon River at Bay D'Espoir Powerhouse	1967	5910	N&LHY	REG67
02YO004	Sandy Brook at Sandy Brook Powerhouse	1964	508	NLPCL	REG

EXPLANATION OF SYMBOLS & ABBREVIATIONS

TYPE OF RECORD

H _ water level data

Q - flow data

TYPE OF GAUGE

M - manual gauge

R - automatic recording gauge

OPERATION SCHEDULE

C - continuous record

M - miscellaneous record

S - seasonal record

REMARKS

DCP - data collection platform

LRTAP - samples collected for acid precipitation monitoring

MET - data available from meteorological sensors

REG - regulated flow

REG78 - regulated flow since 1978

RMT - remote station accessed by aircraft

SED - sediment data currently being collected

SEDM - miscellaneous sediment samples obtained

TMK - telephone interrogated telemark

TYP - typical stream; data used to produce statement on runoff conditions

WQ - samples collected for water quality national overview network

HUMBER RIVER DATA COLLECTION NETWORK

Real Time Instrumentation To Be Operated and Maintained By Water Survey of Canada In Accordance With Memorandum of Understanding.

<u>Station</u>	<u>Response Time</u>
1. Burgeo Road near Buchans Access	48 Hrs.
2. Grand Lake at Southwest End	48 Hrs.
3. Grand Lake on Glover Island	48 Hrs.
4. Upper Humber River above Black Brook	48 Hrs.
5. Corner Brook Lake at Lake Outlet	48 Hrs.
6. Sandy Lake at Howley Road	48 Hrs.
7. Indian Brook Diversion to Birchy Lake	48 Hrs.
8. Lewassechjeech Brook at Little Grand Lake	48 Hrs.
9. Sheffield Brook near T.C.H.	48 Hrs.
10. Humber River at Humber Village Bridge	48 Hrs.
11. Upper Humber River near Reidville	48 Hrs.
12. Deer Lake near Generating Station	48 Hrs.

Station 8-12 are not equipped with meteorological sensors but are included in this list of "Response Time Repair" due to the significance of the data in supporting the "Humber River Basin Data Collection Network".

APPENDIX III

NATIONAL GUIDELINES FOR DESIGNATION
WATER QUANTITY SURVEY STATIONS

October 20, 1982

NATIONAL GUIDELINES FOR DESIGNATING WATER QUANTITY SURVEY STATIONS

These national guidelines of the Federal-Provincial Memoranda of Agreement for Water Quantity Surveys have been prepared by Canada in consultation with the Provinces for the purpose of designating federal, federal-provincial and provincial water quantity survey stations. In compliance with the agreements, the assignment and review of station designations is the responsibility of each Co-ordinating Committee.

The intent of these guidelines is to provide a uniform and consistent manner for designating water quantity survey stations throughout Canada. In these guidelines, "water quantity survey stations" have the same definition as in the Memoranda of Agreement and include water level, streamflow and sediment survey stations. The word "station" in these guidelines means "water quantity survey stations". Where not otherwise specified the word "Province" means "Province" or "Territory". The designation of each sediment station can be considered separately from the corresponding water quantity survey station designation.

FEDERAL STATIONS

There are stations that support programs of primary interest to the Government of Canada. These stations are funded 100 per cent by Canada in accordance with Article II and the procedures described in Schedules B, C, and D (F for the Yukon) (and Schedules E,D, and F for Quebec) of the Memoranda of Agreement.

1. Federal Department Programs

These are stations required under statutory obligations that have developed in response to federal legislation and priorities, and as a result of programs of various federal government departments or agencies to provide quantity information on inland waters. These include stations operated in support of specific federal works, benchmark basins, studies or investigations, research projects, and to meet navigational requirements and management responsibilities. A station may be so designated where Canada has formally accepted responsibility for the continued operation of the station under an implementation agreement.

2. Interprovincial Rivers

These are stations required for monitoring of waters flowing across or forming part of provincial or territorial boundaries where federal responsibility has been established by an agreement or where justified by an inter-jurisdictional concern.

3. International Waters

These are stations associated with federal responsibilities arising from international agreements, treaties, orders or studies. These include:

- a) Stations specifically named under the Boundary Waters Treaty and those approved officially as "International Gauging Stations".
- b) Stations specifically stipulated under IJC orders, or required to support such orders; to provide for control of waters crossing or forming part of the international boundary and for IJC related study, surveillance, flow regulation or appointment purposes. Such stations may also be required for similar studies carried out under unilateral or bilateral mechanisms and undertaken in anticipation of the need for formal orders.

- c) Stations related to international treaties and agreements which involve waters crossing or forming part of the international boundary and which specifically stipulate the reaches of streams required to be monitored or special arrangements that need to be made to meet water quantity survey needs.
- d) Stations on streams flowing across or forming part of the international boundary for which Canada has determined that monitoring is required for water management purposes.

4. National Water Quantity Inventory

These are stations that provide information for a national inventory of surface waters. They consist of those stations required to determine water quantity trends in the major drainage basins in Canada that serve to provide an assessment of the total surface water resources and to measure significant discharge to the oceans.

FEDERAL-PROVINCIAL AND/OR FEDERAL-TERRITORIAL STATIONS

These are stations that support programs of joint interest to Canada and the Province. The construction and operation of these stations are funded in accordance with Article III and procedures described in Schedules B, C, and D (F for the Yukon) (and Schedules E, D and F for Quebec) of the Memoranda of Agreement.

1. Federal-Provincial Agreement

These are stations where joint federal and provincial (or territorial) responsibility is established under the terms and conditions of an agreement between Canada and one or more Province or Territories.

The joint funding arrangements for any particular agreement must be taken into consideration before designating a station in order to ensure the intended division of financial responsibility. Following the completion of federal-provincial water study, a station may be designated in this category only if its continuation would be in the joint interest of Canada and the Province.

2. River Basin Management

These are stations where both Canada and the Province have stated an interest in the need for information to support the management of the water resources of a river basin.

3. Regional Water Quantity Inventory

These are stations that provide an assessment of the quantity of water resources available in distinct hydrologic zones within each Province through representative sampling taking into consideration climatic variability, geographic and geologic differences, levels of population and development, basin size, streamflow regime, relationship to major groundwater resources and length of record.

PROVINCIAL AND/OR TERRITORIAL STATIONS

These are stations that support programs of primary interest to a Province. They are funded 100 per cent by the Province in accordance with Article IV and procedures described in Schedules B, C, and D (F for the Yukon) (and Schedules E, D, and F for Quebec) of the Memoranda of Agreement.

1. Provincial Department Programs

These are stations required strictly for provincial programs where water quantity information on inland waters is needed.

2. Specific Purpose Monitoring Requirements

These are stations established as a result of specific requests of provincial/territorial agencies, municipalities, or non-government organizations. All such requests shall be referred to the Province for screening and funding arrangements before being presented to the applicable Co-ordinating Committee.

CRITERIA FOR DESIGNATING STATIONS
UNDER GUIDELINE FEDERAL 4
NATIONAL WATER QUANTITY INVENTORY

1. Stations established on the main stem of large rivers discharging directly to the oceans as defined in the Hydrologic Atlas of Canada as those whose mean annual flow at the outlet of the river basin exceeds 400 m³/sec.
2. Stations established on rivers for the purpose of determining water quantity trends or those located on rivers contributing discharge to the oceans whose mean annual flow at the mouth of the river is at least 85 m³/sec.
3. Stations established for the purpose defined above whose drainage areas are greater than 200 km².
4. Stations of drainage area less than 200 km² may be established on rivers to determine discharge to the ocean and/or to assess the total water resource available in major hydrologic and climatic zones which are defined as follows:

Island Provinces - P.E.I. and Newfoundland,
Islands forming integral parts of Provinces/Territories,
Major Peninsulas
Distinctly identified hydrologic and/or climatic zones.

The density of such stations shall be limited to those determined by official scientifically conducted station network analysis as required to determine the desired hydrologic parameters of the major geographical zones within the Province, Territory or Region.

APPENDIX IV

SCHEDULE B

ANNUAL PAYMENTS - ITEMS TO BE INCLUDED

SCHEDULE B

ANNUAL PAYMENTS - ITEMS TO BE INCLUDED

The items to be included in computing the annual payments of water quantity survey stations are:

- I. OPERATIONAL COSTS WATER QUANTITY SURVEY STATIONS EXCLUDING SEDIMENT
 - a) Salaries and overtime of field personnel and casual labour;
 - b) Field travel expenses, board and lodging costs for field personnel;
 - c) The computer costs associated with computing daily mean hydrometric data;
 - d) Observer pay;
 - e) Depreciation, operation and maintenance of vehicles and boats;
 - f) Maintenance of gauging station structures including material and labour for minor repairs;
 - g) Maintenance and depreciation of all field equipment and instruments (except as noted in Article VII of this agreement);
 - h) Fuels such as propane for heating recorder installations and gas such as nitrogen for operating pressure sensing equipment, electricity charges;
 - i) Rental of aircraft, vehicles, boats, etc., supplied by either party or chartered;
 - j) The annual cost of land leases;

SCHEDULE B (cont'd)

- k) Services, e.g. cost of establishing gas caches, operation of line cabins, etc.

II. OPERATIONAL COSTS SEDIMENT STATIONS

All items in I OPERATIONAL COST plus:

- 1) The computer costs associated with computing daily mean sediment data;
- 2) Cost of analysis of sediment samples.

III. NEW CONSTRUCTION REPAIR AND MAJOR RECONSTRUCTION COSTS FOR

WATER QUANTITY SURVEY STATIONS:

- a) Salaries and overtime of construction personnel;
- b) Field travel expenses, board and lodging costs of construction personnel;
- c) Depreciation, operation and maintenance of vehicles;
- d) Construction materials;
- e) Maintenance, depreciation and operation of construction equipment;
- f) Rental of aircraft, vehicles, boats, construction equipment, etc. supplied by either party or chartered;
- g) Land acquisition costs including legal survey costs;
- h) Construction contract payments.

APPENDIX V

PROCEDURE FOR
APPLICATION OF SCHEDULE B TO THE
ATLANTIC REGION AGREEMENTS

PROCEDURE FOR
APPLICATION OF SCHEDULE B TO THE
ATLANTIC REGION AGREEMENTS

The procedures used by Water Resources Branch, Atlantic Region, to determine operational costs under the Water Quantity Surveys Cost Sharing Agreements are based on the financial system called AFMAS. Under the Departmental coding structure, costs are divided into various object groups (01 to 35) and coded accordingly, by province.

SCHEDULE B

I. OPERATIONAL COSTS - WATER QUANTITY SURVEY STATIONS EXCLUDING SEDIMENT

Objective Groups 01, 02, 03 - Salaries and Overtime

This includes salaries and overtime payments of field technicians and supervisors. To account for work on activities outside the Agreement on Water Quantity Surveys, adjustments are applied to reasonably reflect the work time.

Object Group 07 - Travel

This group of costs includes field travel expenses for field personnel and other employees required for hydrometric survey work in the respective province.

Object Group 09 - Transportation and Postage

Included under this object group are costs for the transportation of goods and materials by truck, air, rail, and water.

Object Group 10 - Telecommunication, Telephone and Voice

Expenses included within group are telephone services directly related to hydrometric operations.

Object Group 11 - Telecommunication, Message Data

This group includes message and data services directly related to the hydrometric survey, excluding data processing costs which are considered separately below.

Object Group 18 - Professional Services

This object group includes salaries of gauge readers at hydrometric stations.

Object Group 22 - Other Services

This group includes costs associated with graphic services, short term employment, photographic services, brokerage fees, storage, printing, and department of Supply and Services service charges.

Object Group 25 - Rentals

- (i) Includes rentals of aircraft, vehicles, boats and light machinery used for maintenance of gauging facilities.
- (ii) Annual cost of land leases for the establishment of or access to gauging stations (includes recorder shelters and cableways).

Object Group 28 - Repairs to Equipment

Repair and upkeep of such items as road motor vehicles, instrumentation, electrical equipment, survey equipment, snowmobiles, motor boats, ATVs, trailers, etc.

Object Group 29 - Building and Structure Repairs

This object group deals with all work done under contract toward the repair and upkeep of gauging facilities including shelter, stilling wells, cableways, weirs, flumes, bridges, stairways, access roads, etc.

Object Group 32 - Public Utility Services

Electrical services obtained through a public utility company.

Object Group 33, 34 - Purchased Materials; Supplies; Personal Household, Miscellaneous Goods

Gasoline and oil for road motor vehicles is the major cost item in this cost group. Other costs include gas and oil for other motorized equipment, building materials, nitrogen for manometer stations, propane, working clothes and footwear, recorder charts, etc.

Object Group 35 - Parts and Consumable Tools

Includes items such as plumbing equipment and fittings, electrical equipment and fittings, batteries, scientific equipment, heating equipment, measuring equipment, safety equipment, hand tools, boats, rubber tires, etc.

Data Processing Costs

Up to and including 1983-84, all data processing was done using the main frame computer facilities located at Bedford Institute of Oceanography. For 1983-84 the data processing cost amounted to \$25,000.

During 1983-84, a PDP 11/44 mini computer system was installed at the offices of Water Resources Branch, Dartmouth. For 1984-85 the new facility was completely operational.

In accordance with "Compendium of Practices, Interpretations and Administrative Procedures used by Co-ordinating Committee in Implementing the Water Quantity Survey Agreements", the annual computing cost would include the capital expenditure for the mini computer system, the annual operating cost (AOC) and the annual maintenance cost (AMC). The capital is recovered over a ten year period through an imputed rental charge (IRC), determined by amortizing the capital expenditure over a period of ten years. Therefore, the evolving formula would be:

Total Shareable Annual Computing Cost = IRC + AOC + AMC

If the Total Shareable Annual Computing Cost exceeds the cost for the base year, 1983-84, multiplied by the annual national cost increase factors, then the latter cost will be used. This has been the case for the years 1984-85 to 1990-91, therefore, the base year cost updated by the national cost increase factors, has been used.

During 1990-91 a more modern/powerful micro VAXII (Q5 series) computer system was purchased as surplus equipment at considerably less cost than the PDP 11/44 computer. All existing software was adapted for use on the new computer and the PDP 11/44 was gradually phased out. For 1991-92 all data processing has been handled by the VAX system. At the same time a detailed inventory of all data processing equipment at Dartmouth and sub-offices is maintained annually. Starting with 1991-92 the data processing cost has been determined from the above formula. The IRC (Imputed Rental has been determined as 10% of all current equipment on inventory, as updated once per year.

In the Atlantic Region the Total Shareable Annual Computing Cost is proportioned among the four cost sharing agreements by the number of gauging station records processed.

Depreciation of Vehicles

Road motor vehicles in the Atlantic Region are depreciated in accordance to the "Compendium of Practices, Interpretations and Administrative Procedures Used by Co-ordinating Committees in Implementing the Water Quantity Survey Agreements". By this compendium Report the Multi-Purpose Vehicles, vans and trucks used in

he Atlantic Region are depreciated over a term of six years from the original capital purchase cost.

To calculate this depreciation, the actual capital cost of the vehicle is divided by 72 months to give a monthly depreciation. The monthly depreciation is multiplied by the actual number of months that a vehicle served in a particular province, to give the annual depreciation for the vehicle.

During the past three years pick-up trucks fitted with special enclosures for housing field equipment have been purchased to satisfy health and safety requirements. The enclosures are expected to serve for two vehicle lifetimes, and therefore, half the value of the enclosure is added to the vehicle purchase price for depreciation purposes.

Depreciation of Field Equipment and Instrumentation

Field equipment and instrumentation are depreciated at a rate of 10% of the current value of the cost-shareable inventory as determined once a year. Normally, only items acquired through capital purchases are included on the cost-shareable inventory.

II. THE OPERATIONAL COST OF SEDIMENT STATIONS

All cost items included in Section I except salaries, overtime and depreciation of vehicles, as they relate to Sediment Surveys, are included in the operational costs for the Sediment Network. Also included is the cost of laboratory analysis for suspended concentration and particle size distribution.

III. CONSTRUCTION AND MAJOR REPAIR COSTS FOR WATER QUANTITY SURVEY STATIONS

Once a major repair or new construction project has been identified, it is assigned a cost code to which all related costs are assigned. Some of this work is contracted out with the initial reconnaissance and the general supervision on-site provided by Water Survey of Canada.

If contracted out, the total cost is comprised of:

- Overtime of Water Survey of Canada supervisory personnel.
- Field travel expenses, board and lodging costs of supervisory personnel provided by Water Survey of Canada.
- If a pressure installation, the cost of the manometer and pressure unit accessory equipment such as gas and cylinders. The water level recorder is not charged.
- Charter aircraft.
- Land acquisition costs if any.
- Construction contract payments.

Department of Supply and Services contract procedures are followed.

If constructed by Water Survey of Canada personnel, costs include:

- Overtime of Water Survey of Canada supervisory personnel.
- Field travel expenses, board and lodging costs of Water Survey of Canada staff. Expenses associated with reconnaissance and construction.
- If a pressure installation, the cost of the pressure unit and accessory equipment such as gas and cylinders.
- Construction materials - All items required for the construction of stilling wells, shelters, cableways, controls and survival shelters.
- Rental of aircraft, vehicles, boats, construction equipment associated with the project.
- Land acquisition costs if required.
- Construction contract payments - The services of construction equipment operators for backhoe and bulldozer are usually involved.

APPENDIX VI

SCHEDULE C

PROCEDURES FOR PREPARATION OF ANNUAL PAYMENTS

SCHEDULE C

PROCEDURES FOR PREPARATION OF ANNUAL PAYMENTS

- a) The annual payment is composed of two parts, the annual operating costs and the costs of construction for streamflow and water level installations and sediment installations.
- b) The annual payment shall be computed for each year the agreement is in effect.
- c) Cost data to be used as a basis for computing each annual payment will be the cost data from the latest available full fiscal year.
- d) A cost index factor is to be used in computing the annual payment for the year in question commensurate with sound engineering practice.
- e) The average annual unit costs for operating water quantity survey stations listed in Schedule A but not including sediment stations will be determined from the cost data of c) above and where necessary, because of significant differences in transportation costs, these average annual unit costs will be computed for more than one area or condition of operation.
- f) The total annual operation cost of the water quantity survey stations listed in Schedule A but not including sediment stations will be the summation of the appropriate average annual unit cost for each station multiplied by the cost index factor as determined in item d) above.
- g) The total annual operation cost of the sediment stations listed in Schedule A will be the summation of the annual operating cost for each station multiplied by the cost index factor as determined in item d) above.

- h) The construction cost to be apportioned in accordance with Articles II, III and IV will be the summation of the construction cost for each new, or reconstructed water quantity survey station. The entire cost of construction is to be included in the annual payment. Construction costs are to be determined using data from reconnaissance surveys, standard plans, etc. and incorporating the cost index factor from item d) above.
- i) In cases where there is a significant deviation between the cost determined in (f), (g) and (h) and actual costs because of the cost index factor used, or changes in the construction program due to unforeseen circumstances such as flooding, an adjustment may be made in the final quarterly payment (March 1st) or the next fiscal year to more accurately reflect the cost shares of the parties to this agreement.

APPENDIX VII

SCHEDULE D

SUMMARY OF ANNUAL PAYMENT

SCHEDULE D

This schedule provides a summary of the annual payment. The details of the calculations for operation and construction are available and have been jointly reviewed by officers of each party.

ANNUAL PAYMENT FOR 1992-93 TO BE PAID TO THE RECEIVER GENERAL FOR CANADA BY THE PROVINCE OF NEWFOUNDLAND.

	<u>Operation</u>	<u>Construction</u>	<u>Total</u>
a) Streamflow and water level installations	\$273,482	--	\$273,482
b) Sediment installations	3,825	--	3,825
c) Data collection platform installations	11,678	--	11,678
d) Humber River meteorological stations	3,173	--	3,173
			<hr/>
		ANNUAL PAYMENT	\$292,158



D. G. Jeans
Assistant Deputy Minister
Department of Environment
and Lands

Administrator for Province



S. L. Fenety
Director, Atlantic Region
Water Resources Directorate

Administrator for Canada

APPENDIX VIII

MINUTES OF COORDINATING COMMITTEE MEETING

CO-ORDINATING COMMITTEE MEETING

CANADA-NEWFOUNDLAND COST SHARING AGREEMENT

WATER QUANTITY SURVEYS

1992-93

The Co-ordinating Committee for the Canada-Newfoundland Cost Sharing Agreement on Water Quantity Surveys met on March 30, 1993 at Confederation Building, St. John's, Newfoundland. In Attendance at the meeting were the following:

J-G. Deveau	Monitoring and Evaluation Branch, Moncton
C. Baker	Monitoring and Evaluation Branch, St. John's
W. Ullah	Dept. of Environment & Lands, St. John's
R. Picco	Dept. of Environment & Lands, St. John's
A. Beersing	Dept. of Environment & Lands, St. John's

The agenda was approved with no additional topics added.

J-G. Deveau referred to the table on page 13 of the 1991-92 Annual Report which compares the payments made by the Province with the actual cost over the years of the Agreement. The cumulative net balance shows an overpayment by the Province of \$2,844.

It was pointed out by J-G. Deveau that the turn around in the balance of payments, from a cumulative deficit of \$28,326 in 1990-91 to a surplus of \$2,844 in 1991-92 was largely due to the estimated salaries for 1991-92. The salary projection was based on a full complement of staff. However, a vacant position in St. John's was not filled during the year and there were delays in the staffing of a vacant position in Corner Brook.

A preliminary review of the 1992-93 expenditures up to date shows under spending by the federal side could be in the vicinity of \$20K. W. Ullah suggested this accumulated credit could be applied towards the imputed rental of 14 DCP's. J-G. Deveau was receptive to the suggestion, however, he would

verify the possibility with Environment Canada Finance services and respond when a final wrap-up was done for the fiscal year.

2. Review of 1992-93

WRD re-organization status:

J-G. Deveau gave an overview of the present status of the re-organization of the Water Resources Directorate. He indicated that the Water Quantity Surveys Agreement Co-ordinating Committee would be kept informed as to any changes that might impact on the Agreement.

P2000:

J-G. Deveau reviewed the progress of P2000. He stated that at first the modernization initiative was conceived only for the hydrometric programme. However, monitoring integration requirements have made it necessary to include a water quality monitoring component and this has delayed the development of the project. Also, the P2000 working group has been requested by management to look at available software prior to continuing the contract work on CompuMod.

Humber River Data Collection Network:

R. Picco provided background information on the network and reported on the general operation during the past year. All parties to the Agreement are pleased with the results being obtained. He stated that the Agreement is set to expire at the end of August. An extension will be discussed during the annual meeting of the technical committee and he anticipates no problem in maintaining the present status.

Review of 92-93

C. Baker presented an overview of "Highlights for 1992-93". This included requests for data, information, and assistance outside the normal ongoing contacts.

Draft New Classification for Federal Stations:

J-G. Deveau submitted to the committee a draft document which looks at new classification criteria for federal stations within the Agreement. A federal working group is assessing the proposal to finalize the working document. It is anticipated that the new classification criteria would then be reviewed at a national Co-ordinator meeting.

3. Newfoundland Hydrometric Network Review

A. Beersing gave an update of progress on the Review. He indicated that the program was 8 months behind in its schedule. This is largely due to the WRD re-organization which resulted in the new staff being affected to the review project. Technical difficulties in review software (GLS, L-Moments) have also caused some delays. The Federal lead is now being handled by Charles LeBlanc out of the Moncton WRD office.

A Beersing also commented on operational problems with the latest CD ROM. It is expected that the next edition will have overcome these difficulties.

4. Review of Schedule "A" for 93-94

Hydrometric Stations

- Station Classification:

All stations listed in the 1992-93 Schedule "A " will be operated during 1993-94 with the same classification.

- **Additions:**

In response to an action item in the minutes of the 1992-93 co-ordinating meeting, reconnaissance surveys were conducted on two relatively small basins in the immediate Goose Bay area in Labrador. The Committee agreed to proceed with the addition of these 2 stations. Construction will proceed in the summer of 1993. The estimated cost for those two stations will be \$24K. These construction costs will be shared 50/50 except for the loggers, a federal responsibility. The classification agreed to is FP3 and addition of stations to Schedule "A" will start in 1994-95.

The provincial Department of Environment and Lands proposed two hydrometric stations on streams flowing into Corner Brook lake in support of the Model Forest Program. C. Baker reported that reconnaissance surveys were conducted last fall and two sites were selected. If the go ahead is given, construction can commence this summer. Drawing and specifications along with technical advice would be provided by Water Survey while the actual construction would be handled by the City of Corner Brook who is the proponent of the project. R. Picco advised that an instrument list has been forwarded to the city. The Committee agreed with this proposal and their operation within the Agreement as provincial stations. The stations will be added to the Schedule "A" in 1994-95.

- **Closures:**

There were no closures proposed for the network.

Sediment Stations:

Sediment stations at Highlands River and Waterford River, both equipped with PS-82 automatic sediment samplers, will be maintained.

- **Classification:**

All seasonal and miscellaneous sediment stations will be operated as Federal/Provincial stations.

- **Additions/Closures:**

In lieu of the closed Northeast Brook sediment seasonal station, two miscellaneous sediment stations on the Northern Peninsula will be established. Samples will be collected on station visits by Water Survey field staff.

5. **Construction and Major Maintenance for 1993-94**

C. Baker presented a list of proposed projects for the summer season and their estimated cost. J-G. Deveau explained that it has been the practice to share all construction and maintenance costs except for installing a new station. The Committee agrees to increase initial 93-94 budget estimates by approximately \$10K to accommodate projected maintenance costs.

The province also indicated interest in investing in the modernization of two gauging stations.

6. **Operational Cost Estimates - 1993-94**

The operation cost estimates for 1993-94 were reviewed and adjustments were made to take into account:

- the construction of the two proposed F/P stations in the Goose Bay area;
- the adjustment made to the sediment network - the addition of 2 miscellaneous stations.
- the province request to pay for the modernization of two existing hydrometric network stations.

7. **Other**

C. Baker reported on the status of the proposed Green Plan initiative to establish two data collection stations in the Humber Basin for flow forecasting. Two data loggers c/w antennas have been received by Water Survey in Corner Brook. The specific parameters and location of stations are to be identified in a consultant's report by Cummings and Cockburn. C. Baker will check on the extra funding required for the purchase of sensors required to collect the proposed data.

8. **Adjournment**

The meeting adjourned at 1230

