

CANADA - ALBERTA

MEMORANDUM OF AGREEMENT

FOR

WATER QUANTITY SURVEYS

ANNUAL REPORT 1994-95

TO: Administrator for Canada

Administrator for Alberta

We hereby submit an annual report for fiscal year 1994-95 which details the Memorandum of Agreement activities for Water Quantity Surveys in the Province of Alberta.

Government of Canada

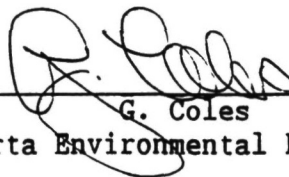
Province of Alberta



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September, 1995

EXECUTIVE SUMMARY

Re-organization and funding cuts were at the fore during the 1994-95 fiscal year and these topics dominated the discussions of the two Co-ordinating Committee Meetings held on April 26, 1994 and January 12, 1995. Network adjustments and Schedule "D" decisions at the meetings were governed by the funding cuts and re-organization. Other topics of the meetings included; provision of CD-ROM, EID Hydrometric program, Fisher/Porter network agreement, new technologies and water quality monitoring.

No major flood inducing storm events occurred during the year with only 3 minor storm events being recorded; one of which produced some minor road flooding in northern Alberta. For the most part Alberta was hot and dry although the flows in the Beaver River basin recovered to 65% of normal (in 1992/93 were in the 10% of normal range) and Cold Lake elevations recovered to low normal levels.

The 1993 hydrometric data computations were completed and submitted to Ottawa for data bank entry on March 30, 1994.

A significant reduction in the hydrometric network occurred as a result of the 7.8% cut to contracts by the Provincial Government. To achieve this cut, 26 gauging stations were discontinued and the operation of another was severely curtailed. In addition, four stations were re-designated from F-3 (International) to FP-2 as these stations were no longer deemed necessary for allocation calculation purposes. The construction program was limited to maintenance of 52 existing stations. In 1995-96 nine more stations will be discontinued and seven will be re-designated.

This was the last year of the pilot modernization project. The knowledge transfer and reporting phases began with the preparation of a record recovery report and the conducting of a workshop for staff not previously involved in the pilot project.

Staff training during the year was dominated by computer literacy training and safety issues. Courses included; DOS and Windows introduction and intermediary workshop, small boat handling skills, cableway inspections, Hanta virus familiarization, and a number of other workshops for selected staff.

Alberta Environmental Protection (AEP) paid \$964,400 for the operation of the program in 1994-95. At year end the true provincial share was calculated as \$956,377 resulting in a net overpayment of \$8,023.

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1.0 INTRODUCTION

This is the twentieth annual report summarizing the activities of the Canada-Alberta Co-ordinating Committee and the results and costs of the cost-shareable hydrometric and sediment programs. The Memorandum of Agreement on which this program was based was signed on March 31, 1975. This agreement establishes the basis on which cooperative water quantity surveys are carried out, and describes the costs which are shareable and those that are non-shareable. Details of the agreement are contained within the agreement, are detailed in the National Cost Sharing Reports and are explained in the manual "Water Quantity Surveys, Federal-Provincial Cost-Sharing Agreements, Compendium Report", 1985.

Section 2.0 of this report summarizes the hydrometric activities during the year and presents a summary of the runoff events.

Section 3.0 summarizes the activities of the Co-ordinating Committee during the year.

Section 4.0 discusses the hydrometric network detailing changes which have occurred during the life of the agreement and outlines specific changes to the network between 1993-94 and 1994-95 and anticipated changes between 1994-95 and 1995-96.

Section 5.0 presents an overview of the Construction and Maintenance program in 1994-95.

Section 6.0 details the costs of the program and the respective costs to each agency. The section also presents tables on the numbers of gauging stations in each designation category and respective units.

Details concerning each gauging station in the network (Schedule "A") are contained in Appendix "A". Appendix "B" details costing procedures and Appendix "C" contains a signed copy of Schedule "D", the annual provincial payment.

2.0 YEAR IN REVIEW; 1994-95

Both Alberta Environmental Protection (AEP) and the water programs of Environment Canada (EC) were re-organized late in 1993-94 with 1994-95 being the first full year of operation under the umbrella of the new organizations. Former Alberta Environment programs were merged with those of Forestry, Lands and Wildlife; and Parks and Recreation to form one large department, Alberta Environmental Protection. On the federal side the re-organization took place within the Department of Environment with a merger of the water and atmospheric programs. The organization within the Western and Northern Region of Environment Canada dealing with the Cost-Sharing Agreement is now known as the Monitoring Operations Division (MOD).

The year was also the first in which the agreement was affected by the deficit reduction measures imposed by the Government of Alberta. The impact on the Agreement was the 7.8% reduction to contract work (Agreement was considered a contract) and hence to achieve this reduction a total of 26 gauging stations were discontinued at the beginning of 1994-95. The re-organization of Environment Canada (EC) had no significant financial impact on the agreement in 1994-95 (although a hiring freeze was imposed) but the provincial costs were serendipitous in that with the network reductions, EC also realized significant savings. However, a major financial impact to EC is anticipated in 1995-96 and beyond.

For the most part weather conditions during 1994 were hot and dry. Only 3 summer storm events were recorded in Alberta (one West of Calgary, one in the Swan Hills and one in Northeastern Alberta). No major flooding occurred although some road flooding occurred during the northeastern event. In spite of the seemingly good spring snow packs, the prolonged runoff event (continuous freeze-thaw cycles) resulted in low peaks with less than expected volumes of runoff.

Table 1 which follows, provides a snapshot of runoff volumes across the province during 1994.

TABLE 1
ACCUMULATED STREAMFLOW VOLUMES AT
SELECTED LOCATIONS IN ALBERTA
(JANUARY 1 TO OCTOBER 31, 1994, INCLUSIVE)

STATION NUMBER	STATION NAME	1994 ACCUMULATED STREAMFLOW		COMPARATIVE ACCUMULATIVE STREAMFLOWS (DAM ³)			
		Volume (1,000 DAM ³)	Percentage of Long Term Mean	1993	1992	1991	1990
05AA023	OLDMAN R (WALDRON'S)	276	71	626	254	540	523
05AD003	WATERTON R (WATERTON)	336	60	455	325	675	543
05AJ001	S.SASK.R (MED.HAT)	3760	67	7305	2852	6063	5437
05BC024	HIGHWOOD R (MOUTH)	437	83	1072	601	623	732
05CC002	*RED DEER R (RED DEER)	1220	85	1840	1303	1557	2229
05GA003	MONITOR CREEK (MONITOR)	4	127	7	0.3	2	1
06AD006	BEAVER R (COLD L.)	395	64	189	59	127	255
07BB002	PEMBINA R (ENTWISTLE)	621	99	412	302	757	1191
07GR001	WAPITI R (GR. PRAIRIE)	2810	93	1488	1907	3146	3796

* INCLUDES STORAGE OF 20,700 DAM³ IN GLENNIFER LAKE.

From Table 1 it is evident that, with the exception of the plains area (volumes of runoff dominated by spring runoff volumes), runoff in southern Alberta was considerably below normal (60 to 85 percent of normal) whereas that in the northwestern portion of the province was near normal. Volume of runoff in the Beaver River basin was still well below the long term mean (64%) but was the largest in many years.

With the paucity of storm events, hydrometric field activities were primarily confined to routine field trips to service equipment and perform streamflow measurements. However, with the staffing freeze, replacement hydrometric technologists could not be hired. Therefore to maintain the program at the current level on August 1st the operation of the field district in the Cold Lake/Lloydminster area (19 gauging stations) was assumed by the staff of the Prince Albert Sub-office, of the Saskatchewan MOD District.

A concerted effort to upgrade the gauging station bench marks to national standards continued during 1994-95 such that nearly all sites now adhere to the standards. In addition, assistance to the Bow River cross-section program was provided by some of the hydrometric technologists. With the merger of air and water programs the Fisher/Porter servicing agreement (formerly between the Atmospheric Environment Service (AES) and AEP) became the responsibility of the MOD staff and hence joint trips with former AES staff were made to familiarize the hydrometric staff with the network, procedures and instrumentation.

1994-95 was the last year for the operation of the modernization pilot project. As such the assessment of the program and transfer of knowledge from the program began. A report, regarding record recovery, indicated that the failure rates of the Electronic Data Acquisition Systems (EDAS) and transducers were minimal and that most record loss was attributable to either power problems or due to human error.

Record losses due to either power failures or human error diminished as the pilot progressed. The transfer of knowledge from the modernization team to the traditional program was initiated with the conductance of workshops and the installation of some modernized instrumentation in each of the routine field supervisory areas. For most of the year the modernized computations procedure was disabled due to hardware problems but this was finally resolved and the Beta version of the software program (CompuMod) was installed. Limited application, due to time restraints, indicate that the procedure is a vast improvement over previous versions.

The 1993 data computations were completed on March 30, 1994 (two months earlier than previous years) but unfortunately there was again a long delay in the delivery of the CD from Ottawa.

Staff training emphases were on computer familiarization and safety issues. All field staff took introduction to DOS and Windows training while those that expressed interest were also provided with intermediate courses in these applications. Some specific application software training was also provided. Safety training for all field staff included a Cableway Inspection Workshop, a "Hanta Virus" Familiarization Workshop, and Small Boat Handling Training. Some of the field staff were provided with Survival Training. Additional training included an introduction to the GPS and a geomorphological training workshop at Battle Creek.

3.0 CO-ORDINATING COMMITTEE MEETINGS

Two Co-ordinating Committee Meetings were held in 1994-95; one on April 26 and the other on January 12, 1995.

3.1 April 26, 1994 Meeting

Action Items

All action items from the October 21, 1993 meeting were completed with the exception of a Workshop on Bow River Modelling which was to have been organized by L. A. Warner.

Re-Organization, Program Changes and Impacts

Federal

A review of the re-organization of Environment Canada was presented. This re-organization combined the former Conservation and Protection Service with the Atmospheric Environment Service and was driven by the need for downsizing. The Water Survey of Canada program now resides in the Monitoring Operations Division of the Environmental Monitoring and Systems Branch. Copies of the organization charts were provided to attendees.

The "Re-engineering of the Water Program" strategy was also presented. Under this strategy there is to be a 20% reduction in funding for Monitoring but there is to be a 10% re-investment in modernization.

Provincial

The re-organization of the Alberta Environmental Protection Department was presented. This department was formulated by combining the former departments; Alberta Environment, Forestry, Lands and Wildlife, and Parks and Recreation. The structure of the new department was described and an organization chart was distributed.

It was re-confirmed that the senior managers of the new department have a solid understanding of the water monitoring programs and are very supportive thereof. The 7.8% cut to contract work is being imposed on the cost-share program this year but the additional cuts to contracts in 1995-96 and 1996-97 will be absorbed elsewhere and no further cuts will be made to the Cost-Share Agreement.

Since the AEP water quality program is now within the AEP Co-ordinators' work group, AEP would like to pursue the possibility of closer cooperation between AEP and EC regarding water quality monitoring.

Schedule "D" for 1994-95

Schedule "D" is being signed for \$964.4K as compared to last year's amount of \$1,040K (this reflects the 7.8% cut to contract work.)

Network Changes

Twenty-six stations have been discontinued between 1993-94 and 1994-95.

The Prairie Provinces Water Board (PPWB) is commissioning a review of network requirements for natural flow computation and agreement purposes. It is anticipated that there will be a reduction in the number of stations required for these purposes.

Provision of CD-ROM's

AEP acknowledged that the receipt of 3 CD's is an improvement over the originally announced one copy. This still falls far short of their requirements. AEP also indicated that their correspondence regarding this matter remains unanswered by Ottawa. Another contact and address were provided for AEP to re-send their letter and follow-up correspondence.

EID Hydrometric Operations

Latest developments regarding Eastern Irrigation District (EID) gauging station operations within the District were detailed. Continuing efforts are to be made to review their efforts with the view of turning over all, or part, of the monitoring within the District to them.

Water Quality Contacts

AEP indicated that they were interested in closer ties with EC concerning water quality monitoring with the view of perhaps developing a cost sharing water quality agreement modelled on the water quantity agreement.

Other Items

EC enquired about AEP's interest in the Bow River Modelling project. AEP indicated some interest but functionality has not been demonstrated as yet.

The AES/AEP agreement on the Fisher/Porter precipitation gauge network was discussed.

3.2 January 12, 1995 Meeting

Action Items

Action items had been actioned. It was also noted that the 1993 CD-ROM had been delivered. The next visit to the EID will be arranged for the spring of 1995.

National Administrators' Meeting

The provinces were united in their questioning of EC's commitment to water programs. EC officials indicated that indeed there was an interest in water and they expressed continued support for the Hydrometric Agreement. Three committees were struck to investigate; new partners, modernization and water issues.

Status of Federal Network Review

EC explained their review of hydrometric networks regarding federal interest. The review of the Alberta Network is well underway and preliminary results are to be presented soon.

The EC budget for monitoring for the Western and Northern Region is to be cut by \$1.5 million over three years. Most of the cuts to the Alberta program will be handled by attrition with details provided regarding imminent retirements.

Status of 1993-94 Cost Sharing Report

EC indicated that the report would be completed by the end of January.

1995-96 Network Changes

It was recommended that the EID data from stations on Coal, Twelve Mile and Onetree Creeks be contributed enabling WSC to discontinue these stations. AEP wants assurance that WSC would continue to review the data for standards adherence.

Schedule "D" for 1995-96

Schedule "D" for 1995-96 should be the same as that in 1994-95; \$964.4K.

Fisher/Porter Network

WSC is now the sole EC contact regarding this precipitation data collection agreement. Because of changes to instrumentation and operation schedules, the agreement is to be reviewed.

Confirm
schedule D payment.
95/96

New Technologies

Pilot Project 2000 is now over and successful parts of the program will be integrated into the regular operations.

Information Management

Envirodat plans were discussed. AEP is pursuing the purchase of hardware in 1994-95 and the hiring of a consultant in 1995-96. AEP's plans dovetail nicely with EC's.

CWRA Workshop on January 26, 1995

Details regarding outlines of subject matter for presentation had recently been received. Results of the various Canadian Water Resources Association (CWRA) meetings across the country are to be forwarded in February to the most senior level of the management of EC.

Water Quality Monitoring

It was decided that it would be best to wait until the fate of the water quantity agreement was more certain before proceeding with a super agreement combining quantity, quality and meteorological activities.

The Saskatchewan/Canada water issues agreement was outlined. It was agreed that this should be pursued in Alberta in the future.

4.0 NETWORK

4.1 HISTORICAL NETWORKS

The hydrometric agreement was signed in 1975-76. During the 20 year period very significant changes to the Alberta network have occurred which can be summarized as follows:

- 226 stations established
- 202 stations discontinued
- 114 stations re-designated

These numbers indicate that the network has been far from static and that the network responds to: needs for data, to available fiscal resources and to political factors. The network in 1975 consisted of 424 gauging stations and hence the apparent change in the network is 128%.

Table 2 which follows compares the number of gauging stations operated in Alberta by EC and AEP in 1975-76, in 1993-94, and in 1994-95.

TABLE 2
Networks in 1975, 1993 & 1994

STATION DESIGNATION	APRIL 1		
	1975	1993	1994
Federal	157	119	111
Federal/Provincial	221	211	208
Provincial	46	177	153
TOTAL	424	507	472

A history of network size is depicted in Table 2 of the "Canada-Alberta, Memorandum of Agreement for Water Quantity Surveys, Annual Report, 1993-94."

4.2 SPECIFIC NETWORK CHANGES: 1993-94 THROUGH 1995-96

4.2.1 Changes from 1993-94 to 1994-95

The following changes were either effected during the 1993-94 fiscal year or were decided on at the end of the year. In either case these changes are reflected in Schedule A, April 1, 1994.

New Gauging Stations

None!

Discontinued Gauging Stations

	<u>Station</u>	<u>Station Number</u>	<u>Type</u>	<u>Designation</u>
1	Snake Indian River nr the Mouth	07AB002	8MQN	F-1
2	South Saskatchewan River at Hwy.41	05AK001	8MQN	F-2
3	South Fork milk River nr. Babb	11AA033	8MQN	F-3
4	Swiftcurrent Creek nr. Sherburne	05AE033	8MQN	F-3
5	Peerless Lake Nr. Peerless Lake	07JB001	8MWLR	F-4
6	Deep Valley Creek nr. Valleyview	07GF008	8MQN	FP-3
7	Sheep Coulee nr. Carstairs	05CE019	8MQN	FP-3
8	Todd Creek at Elton's Ranch	05AA006	8MQN	FP-3
9	Wabasca River bel. Trout River	07JB002	12MQR	FP-3
10	Wainscott Coulee nr. Brownvale	07FD014	8MQN	FP-3
11	Canadian St.Mary Canal at Drop No.1	05AF028	8MQN	P-1
12	Fish Creek at Bow Bottom Trail	05BK003	8MQN	P-1
13	Hargrave Diversion from Boxelder Crk.	05AH051	8MQN	P-1
14	Hartley Creek nr. Fort McMurray	07DA009	8MQR	P-1
15	Highwood River nr. Aldersyde	05BL009	8MQN	P-1
16	Joslyn Creek nr. Fort Mackay	07DA016	8MQR	P-1
17	Kyiskap Creek nr. Granum	05AB038	8MQN	P-1
18	Little Bow River above Travers Res.	05AC034	8MQN	P-1
19	Mackay River nr. Graburn Gap	05AH042	8MQN	P-1
20	McGregor Lake Inflow nr. Milo	05AC024	8MQR	P-1
21	Mooselake River nr. Franchere	06AG006	8MQN	P-1
22	Paddle River at Highway 764	07BB013	8MWLN	P-1
23	Paddle River at Sangudo	07BB012	8MWLN	P-1
24	Peace River at Ft. Vermilion	07HF001	8MWLN	P-1
25	Unnamed Creek nr. Ft. Mackay	07DA011	8MQR	P-1
26	Whiskeyjack Creek nr. Hinton	07AD004	8MQN	P-1

Of these 26 stations, 23 were discontinued as a result of a joint review of the existing network performed by a subcommittee of the Co-ordinating Committee. This review was primarily done to meet the 7.8% reduction in contract work imposed by the Provincial Government on all contracts with the Province. The Cost-Share Agreement was deemed to be a contract with the Federal Government. Two (South Saskatchewan River at Highway 41 and Peerless Lake

nr. Peerless Lake) of the stations were actually Federally designated gauging stations. Discontinuing these does not directly reduce the number of chargeable provincial units but total operating costs are reduced and hence provincial share is also affected. This is particularly true with the Peerless Lake site as it was a remotely accessed station which was very expensive to operate and would be even more so if continued as the other remote station (Wabasca River below Trout River) in the area was also discontinued. In tight budgetary times stations which add slight refinements to data banks or hydrological computations must be seriously investigated to determine whether the refinement can be estimated or determined by correlation. This was the case with the South Saskatchewan River at Highway 41. Of the remaining twenty-three sites AEP determined that these were the ones which would be least missed from the total network.

The other three stations were discontinued for the following reasons:

Snake Indian River near the Mouth: Road access was no longer possible and other access means too expensive;

South Fork Milk River near Babb and Swiftcurrent Creek near Sherburne: Cuts to the United States Geological Service's budget forced them to discontinue these stations and since they are in the U.S.A. and not directly utilized in the apportionment of flow WSC went along with the discontinuance.

Designation Changes

<u>Station</u>	<u>Station Number</u>	<u>Designation From</u>	<u>Designation To</u>
1 Belly River nr Mountain View	05AD005	F-3	FP-2
2 Lee Creek at Cardston	05AE002	F-3	FP-2
3 Rolph Creek nr. Kimball	05AE005	F-3	FP-2
4 Sage Creek at Q-Ranch	11AA026	F-3	FP-2

Operation Schedule Changes

Pembina River below Paddy Creek	07BA001	8MQN	8MWLN
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4.2.2 Changes from 1994-95 to 1995-96

The following changes are reflected in Schedule "A", April 1, 1995.

New Gauging Stations

None.

Discontinued Gauging Stations

<u>Station</u>	<u>Station Number</u>	<u>Type</u>	<u>Designation</u>
1 Battersea Drain nr. the Mouth	05AD038	8MQN	F-2
2 BRD Drain A nr Hays	05AG004	8MQN	F-2
3 Drain L-5 nr. Diamond City	05AD040	8MQN	F-2
4 Dry Coulee nr. Magrath	05AE041	8MQN	F-2
5 Martineau River ab. Cold Lake	06AF008	12MQR	F-2
6 Dog River nr. Fitzgerald	07NB008	12MQR	FP-2
7 Hammer Hill Spillway nr. Gleichen	05BM005	8MQN	FP-2
8 Berry Creek bel. Deadfish Creek	05CH016	8MQN	P-1
9 Deadfish Inflow Canal nr. Cessford	05CH012	8MQN	P-1

Designation Changes

<u>Station</u>	<u>Station Number</u>	<u>Designation From</u>	<u>Designation To</u>
1 Berry Creek nr. the Mouth	05CH007	FP-2	P-1
2 Bullpound Creek nr. the Mouth	05CG003	FP-2	P-1
3 Coal Creek at Bow City	05BN014	F-2	F-1
4 Onetree Creek nr. Patricia	05CJ006	FP-2	F-1
5 Red Deer River at Red Deer	05CC002	F-4	F-2
6 Ross Creek nr. Irvine	05AH003	FP-3	F-2
7 Twelve Mile Creek nr. Cecil	05BN002	F-2	F-1

All 16 changes in network (9 discontinued stations and 7 re-designations) were implemented as a result of a review of the stations utilized by the PPWB. They determined that 14 of the 16 sites were no longer required for their purposes but that two sites not formerly required would be beneficial to their program.

4.3 1994-95 NETWORK

Table 3 which follows presents the 1994-95 Alberta network by designation and by operating agency.

TABLE 3
1994-95 Gauging Station Network

DESIGNATION	HYDROMETRIC STNS. OPERATED BY:			SEDIMENT STATIONS OPERATED BY MOD
	MOD	AEP	TRANS ALTA UTILITIES	
FEDERAL-1	18 ✓	8 ✓	-	-
FEDERAL-2	50 ✓	1 ✓	-	-
FEDERAL-3	22 ✓	-	-	-
FEDERAL-4	12 ✓	-	-	1
SUB-TOTAL	102	9	-	1
FEDERAL/PROV.-1	11 ✓	3 ✓	-	-
FEDERAL/PROV.-2	38 ✓	-	-	-
FEDERAL/PROV.-3	156 ✓	-	-	1
SUB-TOTAL	205	3	-	1
PROVINCIAL-1	111 ✓	42 ✓	-	1
PROVINCIAL-2	-	-	-	1
SUB-TOTAL	111	42	-	2
CONTRIBUTED	-	-	21*	-
TOTAL	418	54	21*	4

* One of these stations actually contributed by the City of Calgary.

493

Specifics regarding the 1994-95 network are contained in Schedule "A", April 1, 1994 which is contained in Appendix "A" of this report.

5.0 CONSTRUCTION AND MAINTENANCE PROGRAM

No new stations were built in 1994-95 with the construction program consisting entirely of maintenance projects. Major maintenance was carried out at 52 sites which can be broken down in types of maintenance as follows:

- removal of 9 discontinued gauging stations
- re-location of 3 gauging stations
- upgrading of 3 gauging stations
- cableway repairs at 13 gauging stations
- miscellaneous maintenance work at the remaining 24 sites

The total cost of the construction and maintenance program in 1994-1995 was \$125,942.07 of which the federal government was responsible for \$74,417.77 while the provincial government's share was \$51,524.37. The breakdown of costs and shares for each individual project are detailed in Table 4, Costs and Shares of 1994-95 Construction and Maintenance Program. This table is a direct extract from the report, "Alberta Gauging Station Construction and Maintenance Annual Report, 1994-95". Further details concerning the individual maintenance projects can also be found in this report.

TABLE 4

		STN NO	TOTAL	RECORDER	FED-SHARE	PROV-SHARE
FEDERAL STATION						
M-01	Athabasca River at Hinton	07AD002	\$ 15,982.79	\$ 2,500.00	\$ 15,982.79	\$ -
M-02	Lee Creek at Cardston	05AE002	\$ 339.24		\$ 339.24	\$ -
M-03	Little Bow River below Travers Dam	05AC012	\$ 572.36		\$ 572.36	\$ -
M-04	M.I.D. Canal near Spring Coulee	05AE021	\$ 512.61		\$ 512.61	\$ -
M-05	Matzhiwin Creek below Ware Coulee	05CJ012	\$ 133.97		\$ 133.97	\$ -
M-06	Milk River Project	?	\$ 551.48		\$ 551.48	\$ -
M-07	Milk Rr. at Western Crossing	11AA025	\$ 150.00		\$ 150.00	\$ -
M-08	North Milk near Intenational Boundary	11AA001	\$ 1,048.32		\$ 1,048.32	\$ -
M-09	Nose Creek at Calgary	05BH003	\$ 427.89		\$ 427.89	\$ -
M-10	Pekisko Creek Special Survey	?	\$ 1,677.61		\$ 1,677.61	\$ -
M-11	Stony Plain Upper Air Station	?	\$ 2,966.95		\$ 2,966.95	\$ -
M-12	Highvale Tower	?	\$ 1,012.86		\$ 1,012.86	\$ -
M-13	Rolph Creek near Kimball	05AE005	\$ 2,643.25		\$ 2,643.25	\$ -
M-14	S.Sask. Rr. at Highway 41	05AK001	\$ 4,503.93		\$ 4,503.93	\$ -
M-15	Smoky River at Watino	07GJ001	\$ 4,608.20		\$ 4,608.20	\$ -
M-16	Sunwapta Rr. at Athabasca Glacier	07AA007	\$ 257.80		\$ 257.80	\$ -
M-17	Verdigris Coulee near the Mouth	11AA038	\$ 2,597.37		\$ 2,597.37	\$ -
M-18	Whirlpool River near the Mouth	07AA009	\$ 248.20		\$ 248.20	\$ -
TOTAL FEDERAL MAINTENANCE COSTS			\$ 40,234.83	\$ 2,500.00	\$ 40,234.83	\$ -
FEDERAL/PROVINCIAL STATION						
M-19	Beaver Creek near Brocket	05AB013	\$ 7,330.40		\$ 3,665.20	\$ 3,665.20
M-20	Beaverlodge Rr. near Beaverlodge	07GD001	\$ 559.29		\$ 279.65	\$ 279.65
M-21	Cutbank Rr. near Grande Prairie	07GB001	\$ 1,771.94		\$ 885.97	\$ 885.97
M-22	Deer Creek Main Stem near Sundre	05CA003	\$ 1,696.10		\$ 848.05	\$ 848.05
M-23	Drywood Creek near the Mouth	05AD010	\$ 2,000.74		\$ 1,000.37	\$ 1,000.37
M-24	Gross Ventre Creek near Dunmore	05AH037	\$ 1,040.15		\$ 520.08	\$ 520.08
M-25	Heart River near Nampa	07HA003	\$ 736.24		\$ 368.12	\$ 368.12
M-26	Kakwa River near Grande Prairie	07GB002	\$ 3,649.62		\$ 1,824.81	\$ 1,824.81
M-27	Little Red Deer Rr. near the Mouth	05CB001	\$ 858.35		\$ 429.18	\$ 429.18
M-28	Little Smoky River near Guy	07GH002	\$ 3,170.82		\$ 1,585.41	\$ 1,585.41
M-29	Lovett River near the Mouth	07BA003	\$ 4,024.27		\$ 2,012.14	\$ 2,012.14
M-30	McLeod Rr. above Embarass River	07AF002	\$ 4,329.29		\$ 2,164.65	\$ 2,164.65
M-31	Medicine River near Eckville	05CC007	\$ 235.00		\$ 117.50	\$ 117.50
M-32	N.Sask. Rr. at Rocky Mountain House	05DC001	\$ 1,030.66		\$ 515.33	\$ 515.33
M-33	Oldman River near Brocket	05AA024	\$ 860.14		\$ 430.07	\$ 430.07
M-34	Ponton Rr. above Boyer River	07JF003	\$ 10,940.65	\$ 2,500.00	\$ 5,470.33	\$ 5,470.33
M-35	Ribstone Creek near Edgerton	05FD001	\$ 6,368.10		\$ 3,184.05	\$ 3,184.05
M-36	S.Sask. Rr. at Medicine Hat	05AJ001	\$ 365.17		\$ 182.59	\$ 182.58
M-37	Sheep Coulee near Carstairs	05CE019	\$ 29.50		\$ 14.75	\$ 14.75
M-38	Swan River near Kinuso	07BJ001	\$ 862.99		\$ 431.50	\$ 431.50
M-39	Wainscott Coulee near Brownvale	07FD014	\$ 1,006.08		\$ 503.04	\$ 503.04
M-40	Waskahigan River near the Mouth	07GG001	\$ 3,654.43		\$ 1,827.22	\$ 1,827.22
M-41	West Prairie Rr. near High Prairie	07BF002	\$ 1,845.86		\$ 922.93	\$ 922.93
TOTAL FIP MAINTENANCE COSTS			\$ 58,365.79	\$ 2,500.00	\$ 29,182.94	\$ 29,182.93
PROVINCIAL STATION						
M-42	Battle River near Forestburg	05FC001	\$ 787.74		\$ -	\$ 787.74
M-43	Berry Creek below Deadfish Creek	05CH016	\$ 2,030.06		\$ -	\$ 2,030.06
M-44	Deadfish Inflow Canal near Cessford	05HC012	\$ 1,633.80		\$ -	\$ 1,633.80
M-45	Dickson Dam Tunnel Outlet	05CB007	\$ 1,709.35		\$ -	\$ 1,709.35
M-46	Elder Creek at Highway 686	07HB002	\$ 2,115.30		\$ -	\$ 2,115.30
M-47	Highwood River near Aldersyde	05BL009	\$ (123.13)		\$ -	\$ (123.13)
M-48	McLeod River near Whitecourt	07AG004	\$ 9,509.33		\$ -	\$ 9,509.33
M-49	Paintearth Creek near Halkirk	05FC004	\$ 754.77		\$ -	\$ 754.77
M-50	Peace River at Fort Vermillion	07HF001	\$ 717.25		\$ -	\$ 717.25
M-51	Pembina River near Entwistle	07BB002	\$ 1,726.54		\$ -	\$ 1,726.54
M-52	Teepee Creek near La Crete	07JD004	\$ 1,480.43		\$ -	\$ 1,480.43
TOTAL PROVINCIAL MAINTENANCE COSTS			\$ 22,341.44	\$ -	\$ -	\$ 22,341.44
TOTAL COST OF CONSTRUCTION			\$ 120,942.06	\$ 5,000.00	\$ 69,417.77	\$ 51,524.37

6.0 COST OF OPERATION

The "Summary of Financial Considerations, 1994-95", Table No. 5 was calculated using the procedures contained in Appendix "B" to determine the total shareable cost of the hydrometric program and the respective shares of this total. Details concerning construction procedures are contained in the manual "Water Quantity Surveys, Federal-Provincial Cost Sharing Agreements, Compendium Report, 1985." Specifics regarding the cost calculations for 1994-95 are contained in the Monitoring Operations Division, Calgary District, File 1032-2-4.

For the 1994-95 fiscal year, Alberta paid \$964,400 for the hydrometric and sediment programs operation and maintenance. This total was made in four quarterly payments of \$241,100 at the ends of June, September, December, 1994 and March, 1995. As shown in Table 5, Alberta's share of the program was actually \$956,377 and therefore Alberta made a total overpayment of \$8,023 or 0.53 percent.

Table 6, "Cumulative provincial Over or Under Payments for Period of Agreement Operation Costs", presents an annual summary of Alberta's share of the program and of the payments made by them. Alberta's total share during the life of the agreement (20 years) is \$14,261,610 and they have paid a total of \$14,278,605, an overpayment of \$16,995 or 0.12% of the total.

The procedure utilized to determine the Alberta share of the operation of the hydrometric and sediment network is based on a gross accounting procedure; total shareable costs of program split into cost per gauging station unit and split accordingly. Table 7 "Hydrometric and Sediment Costings for 1994-95 (Stations Operated by MOD - Alberta District)" gives a breakdown of Station Units and Salary and Operation Costs which are charged to the program.

This table (No. 7) does not include Alberta's share of the "Capital" portion of the program (depreciation of major capital items plus construction and maintenance program) nor does this table include costs incurred by operation of stations in the network by other MOD agencies (e.g., Dog River nr. Fort Smith by the NWT District).

TABLE 5
SUMMARY OF FINANCIAL CONSIDERATIONS
1994-1995

Type of Expenditure	No. of Stns.	Total Cost	Share	
			Federal	Provincial
Hydrometric Network Operated by WSC	404	\$1,745,551	\$ 863,443	\$ 882,108
Hydrometric Depreciation		148,620	73,511	75,109
Sediment Network	3			
-Full program stations (a) operated by WSC		\$ 17,042	\$ 2,840	\$ 14,202
-Sed. Equip. Depreciation		179	79	100
-Analysis of AEP Stations		156	0	156
Construction and Maintenance				
Major Maintenance	52	\$ 120,942	\$ 69,418	\$ 51,524
Construction Depreciation		5,826	3,344	2,482
Total		\$2,038,316	\$1,012,635	\$1,025,681

ALBERTA NET SHARE: \$1,025,681 - \$69,304 (b) = \$956,377

(a) As specified in Appendix "B" of Agreement, these are incremental costs.

(b) Alberta credit for operating shareable cost stations (PAD area plus Oldman Reservoir).

11.80 Federal units x \$5,410.04	= \$63,838
Depreciation units: \$148,620 x (11.80/320.85)	= 5,466
	<u>\$69,304</u>

Schedule "D" for 1994-95 (Paid by AEP) was	\$964,400
AEP's Actual Share of Program	<u>956,377</u>
Alberta Credit	<u>\$ 8,023</u>

TABLE 6
 CUMULATIVE PROVINCIAL
 OVER OR UNDERPAYMENT
 OF
 AGREEMENT OPERATION COSTS
 (DOLLARS)

Year	Actual Share	Annual Payment	Overpayment (+) Underpayment(-)	% of Annual Payment
1975-76	197,852	197,400 ^②	(-) 452 ^①	(-) 0.23
1976-77	231,000	231,000	Nil	Nil
1977-78	247,430	240,000	(-) 7,430	(-) 3.10
1978-79	267,055	260,000	(-) 7,055	(-) 2.71
1979-80	353,768	370,000	(+) 16,232	(+) 4.39
1980-81	423,906	390,000	(-) 33,906	(-) 8.69
1981-82	556,741	568,240	(+) 11,499	(+) 2.02
1982-83	747,352	747,352	Nil	Nil
1983-84	812,593	796,033	(-) 16,560	(-) 2.08
1984-85	935,664	933,500	(-) 2,164	(-) 0.23
1985-86	917,865	927,000	(+) 9,135	(+) 0.99
1986-87	962,413	962,700	(+) 287	(+) 0.03
1987-88	819,624	830,579	(+) 10,955	(+) 1.32
1988-89	868,131	856,000	(-) 12,131	(-) 1.42
1989-90	922,430	920,000	(-) 2,430	(-) 0.26
1990-91	1,002,759	1,008,350	(+) 5,591	(+) 0.57
1991-92	957,200	995,600	(+) 38,400	(+) 3.86
1992-93	1,030,991	1,062,600	(+) 31,609	(+) 3.07
*1993-94		(-) 30,149	(-) 30,149	
1993-94	1,050,459	1,048,000	(-) 2,459	(-) 0.23
1994-95	956,377	964,400	(+) 8,023	(+) 0.53
Total: 85-96 96-97 97-98 98-99	14,261,610	14,278,605 ^②	(+) 16,995	(+) 0.12

* Credit to Alberta for Overpayment in 1992-93.

TABLE 7
HYDROMETRIC AND SEDIMENT COSTINGS FOR 1994-95
(Stations Operated by MOD-Alberta District)

Category	Operation Schedule	Number of Stations	Weight Factor	Weighted Units	Salaries	O&M	Total	Share	
								Federal	Provincial
FEDERAL									
Normal Access Flow	12	31	1.00	31.00					
	8	46	0.75	34.50					
Normal Access W.L.	12	7	0.40	2.80					
	8	2	0.25	0.50					
Remote Access Flow	12	3	1.80	5.40					
	8	0	1.50	0.00					
Remote Access W.L.	12	0	1.10	0.00					
	8	0	0.95	0.00					
Sub-Total		89		74.20	\$288,240	\$113,185	\$401,425	\$401,425	—
FEDERAL-PROVINCIAL									
Normal Access Flow	12	40	1.00	40.00					
	8	135	0.75	101.25					
Normal Access W.L.	12	3	0.40	1.20					
	8	10	0.25	2.50					
Remote Access Flow	12	2	1.80	3.60					
	8	13	1.50	19.50					
Remote Access W.L.	12	0	1.10	0.00					
	8	1	0.95	0.95					
Normal Access Sediment	8	1	1.05	1.05					
Sub-total		*204		170.05	\$660,584	\$259,395	\$919,979	\$459,990	\$459,989
PROVINCIAL									
Normal Access Flow	12	13	1.00	13.00					
	8	70	0.75	52.50					
Normal Access W.L.	12	1	0.40	0.40					
	8	23	0.25	5.75					
Remote Access Flow	12	0	1.80	0.00					
	8	4	1.50	6.00					
Remote Access W.L.	12	0	1.10	0.00					
	8	0	0.95	0.00					
Normal Access Sediment	8	2	1.05	2.10					
Sub-total		*111		79.75	\$309,800	\$121,651	\$431,451	-	\$431,451
TOTAL		*404		324.00	\$1,258,624	\$494,231	\$1,752,855	\$861,415	\$891,440

* Does not include sediment stations as these are already counted in the Hydrometric Station numbers.

Table 8 which follows compares Schedule "D", 1994-95 amounts with actual payments.

**TABLE 8
WATER QUANTITY SURVEYS**

COMPARISON - SCHEDULE "D" COSTS WITH ACTUAL COSTS AND PAYMENTS

1994-95

(\$1000s)

Salary & Operation		Construction		Total			Annual Payment	Payment Received
Schedule D	Actual Cost	Schedule D	Actual Cost	Schedule D	Actual Cost	Difference	Received	Minus Actual
911.8	902.4	52.6	\$54.0	\$964.4	956.4	\$8.0	\$964.4	8

The total units operated by MOD, Alberta District in 1994-95 were 324.0, a significant decrease from the 341.85 units operated in 1993-94. Table 9 following provides a comparison of stations and units operated by MOD, Alberta District over the past 5 years.

TABLE 9

NUMBER OF STATIONS AND UNITS

DESIGNATION	1994-95		1993-94		1992-93		1991-92		1990-91	
	Stations	Units	Stations	Units	Stations	Units	Stations	Units	Stations	Units
Hydrometric										
Federal	89	74.20	97	80.40	96	78.25	101	82.00	100	81.90
Federal-Provincial	204	169.00	207	172.30	210	175.85	207	173.35	205	176.05
Provincial	111	77.65	126	89.15	125	88.90	124	88.65	142	97.55
Sub-Total	404	320.85	430	341.85	431	343.00	432	344.00	447	355.50
Sediment										
Federal-Provincial	1	1.05	1	1.05	1	1.05	1	1.05	1	1.05
Provincial	2	2.10	2	2.10	2	2.10	2	2.10	2	2.10
Total	404	324.00	430	345.00	431	346.15	432	347.15	447	358.65

* - Does not include sediment stations as they are already included in the hydrometric station totals.

$$1989 \equiv 90$$

Information regarding units and station numbers throughout the period of the "Agreement" can be found in previous annual reports.

The MOD, Alberta District cost to operate one station unit during 1994-95 was \$5410.04 as compared to \$5460.72 in 1993-94 and \$4373.59 in 1992-93. The variation in unit costs over the last 3 years is less than 2% and is attributable to the vagaries of runoff conditions as well as the unpredictable nature of staff changes.

A total of 26.92 person-years were directly involved in the delivery of the Hydrometric Program. On average each person was responsible for slightly over 12 station units.

A P P E N D I X "A"

SCHEDULE "A"
OF
MEMORANDUM OF AGREEMENT
BETWEEN
GOVERNMENT OF CANADA
AND
GOVERNMENT OF ALBERTA

April 1, 1994

MAJOR DESIGNATION - FEDERAL

SUBDESIGNATION - FEDERAL DEPARTMENTAL PROGRAMS (1)

NO.	STATION NAME	STATION NUMBER	RECORD OBTAINED			OPERATION		ACCESS	
			FLOW	LEVEL	SED.	8M	12M	REMOTE	NORMAL
<u>OPERATED BY - WATER SURVEY OF CANADA, ALBERTA DISTRICT</u>									
1	ATHABASCA RIVER NEAR JASPER	07AA002	X				X		X
2	BOW RIVER AT BANFF	05BB001	X				X		X
3	BOW RIVER AT LAKE LOUISE	05BA001	X			X			X
4	BREWSTER CREEK NEAR BANFF	05BB004	X			X			X
5	CASCADE RIVER ABOVE LAKE MICHNEWANKA	05BD005	X			X			X
6	JOHNSTON CREEK NEAR THE MOUTH	05BA006	X			X			X
7	LESSER SLAVE RIVER AT SLAVE LAKE	07BK001	X				X		X
8	MALIGNE RIVER NEAR JASPER	07AA004	X				X		X
9	MIETTE RIVER NEAR JASPER	07AA001	X				X		X
10	MISTAYA RIVER NEAR SASKATCHEWAN CROSSING	05DA007	X				X		X
11	NORTH SASKATCHEWAN RIVER AT WHIRLPOOL POINT	05DA009	X				X		X
12	PIPESTONE RIVER NEAR LAKE LOUISE	05BA002	X				X		X
13	REDEARTH CREEK NEAR THE MOUTH	05BB005	X			X			X
14	SILVERHORN CREEK NEAR THE MOUTH	05DA010	X				X		X
15	SUNWAPTA RIVER ATHABASCA GLACIER	07AA007	X			X			X
16	WATERTON LAKE AT WATERTON PARK	05AD025		X			X		X
17	WATERTON RIVER NEAR WATERTON PARK	05AD003	X				X		X
18	WHIRLPOOL RIVER NEAR THE MOUTH	07AA009	X			X			X

OPERATED BY - ALBERTA GOVERNMENT

1	LAKE ATHABASCA AT BUSTARD ISLAND	07MD002		X			X		X
2	LAKE ATHABASCA AT FORT CHIPEWYAN	07MD001		X			X		X
3	LAKE CLAIRE NEAR OUTLET TO PRAIRIE RIVER	07KF002		X			X		X
4	MAMAWI LAKE CHANNEL AT OLD DOG CAMP	07KF003		X			X		X
5	PEACE RIVER BELOW CHENAL DES QUATRE FOURCHES	07KC005		X			X		X
6	RIVIERE DES ROCHERS ABOVE SLAVE RIVER	07NA001		X			X		X
7	RIVIERE DES ROCHERS EAST OF LITTLE RAPIDS	07NA007	X				X		X
8	RIVIERE DES ROCHERS WEST OF LITTLE RAPIDS	07NA008		X		X			X

MAJOR DESIGNATION - FEDERAL

SUBDESIGNATION - INTERPROVINCIAL WATERS (2)

NO.	STATION NAME	STATION NUMBER	RECORD OBTAINED			OPERATION		ACCESS	
			FLOW	LEVEL	SED.	8M	12M	REMOTE	NORMAL
OPERATED BY - WATER SURVEY OF CANADA, ALBERTA DISTRICT									
✓ 1	BATTERSEA DRAIN NEAR THE MOUTH	05AD038	X			X			X
2	*BATTLE RIVER NEAR THE SASKATCHEWAN BOUNDARY	05FE004	X				X		X
3	BEAVER RIVER AT COLD LAKE RESERVE	06AD006	X				X		X
4	BOUNTIFUL COULEE INFLOW NEAR CRANFORD	05AG026	X			X			X
5	BOW RIVER AT CALGARY	05BH004	X				X		X
6	BOW RIVER NEAR THE MOUTH	05BN012	X				X		X
7	B.R.D. DRAIN A NEAR HAYS	05AG004	X			X			X
8	B.R.D. MAIN CANAL	05AC004	X			X			X
9	-BOXELDER CREEK AT HARGRAVES RANCH	05AH050	X			X			X
10	-BOXELDER CREEK NEAR WALSH	05AH001	X			X			X
11	CANADIAN ST. MARY CANAL NEAR SPRING COULEE	05AE026	X			X			X
12	COAL CREEK AT BOW CITY	05BN014	X			X			X
13	CLEARWATER RIVER ABOVE CHRISTINA RIVER	07CD005	X				X	X	
14	COLD LAKE AT COLD LAKE	06AF002		X			X		X
15	-COLD RIVER AT OUTLET OF COLD LAKE	06AF001	X				X		X
16	CROWFOOT CREEK NEAR CLUNY	05BM008	X			X			X
17	DICKSON REVERVOIR NEAR DICKSEN	05CB006		X			X		X
18	DRAIN L-5 NEAR DIAMOND CITY	05AD040	X			X			X
19	DRY COULEE NEAR MAGRATH	05AE041	X			X			X
20	E.I.D. EAST BRANCH CANAL NEAR LATHOM	05CJ003	X			X			X
21	E.I.D. NORTH BRANCH CANAL NEAR BASSANO	05CJ001	X			X			X
22	E.I.D. SPRINGHILL CANAL NEAR LATHOM	05CJ004	X			X			X
23	EXPANSE COULEE NEAR THE MOUTH	05AG003	X			X			X
24	HIGHWOOD DIVERSION CANAL NEAR HEADGATES	05BL025	X			X			X
25	L.N.I.D. CANAL ABOVE OLDMAN FLUME	05AB019	X			X			X
26	LITTLE BOW CANAL AT HIGH RIVER	05BL015	X				X		X
27	LITTLE BOW RIVER AT CARMANGAY	05AC003	X				X		X
28	LITTLE BOW RIVER BELOW TRAVERS DAM	05AC012	X			X			X
29	LITTLE BOW RIVER NEAR THE MOUTH	05AC023	X			X			X
30	M.I.D. CANAL NEAR SPRING COULEE	05AE021	X			X			X
31	MARTINEAU RIVER ABOVE COLD LAKE	06AF008	X				X	X	
32	MATZHIWIN CREEK BELOW WARE COULEE	05CJ012	X			X			X
33	MOUNTAIN VIEW IRRIGATION DISTRICT CANAL	05AD017	X			X			X
34	NEW WEST COULEE NEAR THE MOUTH	05BN006	X			X			X
35	OLDMAN RIVER NEAR LETHBRIDGE	05AD007	X		X		X		X
36	\$PEACE RIVER AT PEACE POINT	07KC001	X				X	X	
37	POTHOLE CREEK AT RUSSELL'S RANCH	05AE016	X			X			X
38	RED DEER RIVER NEAR BINDLOSS	05CX004	X				X		X
39	RONALANE WASTEWAY NEAR HAYS	05BN007		X		X			X
40	ROSEBUD RIVER AT REDLAND	05CE005	X			X			X
41	ROSS CREEK AT MEDICINE HAT	05AH049	X			X			X
42	SEVEN PERSONS CREEK AT MEDICINE HAT	05AH005	X			X			X
43	SOUTH SASKATCHEWAN RIVER AT MEDICINE HAT	05AJ001	X				X		X
44	\$SLAVE RIVER AT FITZGERALD	07NB001	X		X		X	X	
45	ST. MARY RESERVOIR NEAR SPRING COULEE	05AE025		X			X		X
46	TWELVE MILE CREEK NEAR CECIL	05BN002	X			X			X
47	U.I.D. CANAL NEAR HILL SPRING	05AD013	X			X			X
48	WAPITI RIVER NEAR GRANDE PRAIRIE	07GE001	X				X		X
49	WATERTON RESERVOIR	05AD026		X			X		X
50	W.I.D. CANAL NEAR CHESTERMERE LAKE	05BN003	X			X			X

MA. DESIGNATION - FEDERAL

SUBDESIGNATION - INTERPROVINCIAL WATERS (2)

NO.	STATION NAME	STATION NUMBER	RECORD OBTAINED			OPERATION		ACCESS	
			FLOW	LEVEL	SED.	8M	12M	REMOTE	NORMAL

OPERATED BY - WATER SURVEY OF CANADA, ALBERTA DISTRICT

OPERATED BY - ALBERTA GOVERNMENT

1	OLDMAN DAM RESERVOIR NEAR PINCHER CREEK	05AA032		X			X		X
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-GAUGING STATION LOCATED ON SASKATCHEWAN SIDE OF ALBERTA-SASKATCHEWAN BOUNDARY BUT OPERATED BY THE ALBERTA DISTRICT.

*GAUGING STATIONS LOCATED IN ALBERTA BUT OPERATED BY THE REGINA DISTRICT

\$GAUGING STATIONS LOCATED IN ALBERTA BUT OPERATED BY THE YELLOWKNIFE DISTRICT

SUBDESIGNATION - INTERNATIONAL WATERS (3)

NO.	STATION NAME	STATION NUMBER	RECORD OBTAINED			OPERATION		ACCESS	
			FLOW	LEVEL	SED.	8M	12M	REMOTE	NORMAL
OPERATED BY - WATER SURVEY OF CANADA, ALBERTA DISTRICT									
1	*BARE CREEK RESERVOIR NEAR ELKWATER	11AB094		X		X			X
2	BEAR CREEK NEAR INTERNATIONAL BOUNDARY	11AA028	X			X			X
3	BREED CREEK NEAR INTERNATIONAL BOUNDARY	11AA040	X			X			X
4	*CRESSDAY RESERVOIR NEAR CRESSDAY	11AB097		X		X			X
5	*GREASEWOOD RESERVOIR NEAR ELKWATER	11AB092		X		X			X
6	*JAYDOT RESERVOIR NEAR JAYDOT	11AB098		X		X			X
7	+LAKE SHERBURNE	05AE036		X			X		X
8	*MASSY RESERVOIR NEAR ELKWATER	11AB104		X		X			X
9	*MICHELE RESERVOIR NEAR ELKWATER	11AB091		X		X			X
10	*MIDDLE CREEK NEAR THE SASKATCHEWAN BOUNDARY	11AB009	X			X			X
11	+MILK RIVER AT EASTERN CROSSING OF INT'L BOUNDARY	11AA031	X			X			X
12	MILK RIVER AT MILK RIVER	11AA005	X				X		X
13	MILK RIVER AT WESTERN CROSSING OF INT'L BOUNDARY	11AA025	X			X			X
14	MINERS COULEE NEAR INTERNATIONAL BOUNDARY	11AA029	X			X			X
15	*MITCHELL RESERVOIR NEAR ELKWATER	11AB099		X		X			X
16	+NORTH FORK MILK RIVER ABOVE ST. MARY CANAL	11AA032	X			X			X
17	NORTH MILK RIVER NEAR INTERNATIONAL BOUNDARY	11AA001	X			X			X
18	*REESOR RESERVOIR NEAR ELKWATER	11AB090		X		X			X
19	+ST. MARY CANAL AT ST. MARY CROSSING	05AE029	X			X			X
20	ST. MARY RIVER AT INTERNATIONAL BOUNDARY	05AE027	X				X		X
21	VERDIGRIS COULEE NEAR THE MOUTH	11AA038	X			X			X
22	*WALBURGER COULEE BELOW DIVERSIONS	11AB086	X			X			X

* STATIONS OPERATED BY WATER SURVEY OF CANADA, REGINA DISTRICT

+ STATIONS LOCATED IN MONTANA

MAJOR DESIGNATION - FEDERAL

PAGE A 5

SUBDESIGNATION - NATIONAL WATER QUANTITY INVENTORY (4)

NO.	STATION NAME	STATION NUMBER	RECORD OBTAINED			OPERATION		ACCESS	
			FLOW	LEVEL	SED.	BM	12M	REMOTE	NORMAL
OPERATED BY - WATER SURVEY OF CANADA, ALBERTA DISTRICT									
1	ATHABASCA RIVER AT HINTON	07AD002	X				X		X
2	ATHABASCA RIVER BELOW McMURRAY	07DA001	X				X		X
3	LAC LA BICHE AT LAC LA BICHE	07CA004		X			X	X	X
4	LESSER SLAVE LAKE AT FAUST	07BJ002		X			X		X
5	MCLEOD RIVER NEAR ROSEVEAR	07AG007	X				X		X
6	NORTH SASKATCHEWAN RIVER AT EDMONTON	05DF001	X				X		X
7	NOTIKEWIN RIVER AT MANNING	07HC001	X				X		X
8	PEACE RIVER AT DUNVEGAN BRIDGE	07FD003	X				X		X
9	PEMBINA RIVER AT JARVIE	07BC002	X				X		X
10	RED DEER RIVER AT RED DEER	05CC002	X				X		X
11	SMOKY RIVER AT WATINO	07GJ001	X				X		X
12	WABASCA RIVER AT WADLIN LAKE ROAD	07JD002	X				X		X

SUBDESIGNATION - FEDERAL-PROVINCIAL AGREEMENTS (1)

NO.	STATION NAME	STATION NUMBER	RECORD OBTAINED			OPERATION		ACCESS	
			FLOW	LEVEL	SED.	BM	12M	REMOTE	NORMAL
OPERATED BY - WATER SURVEY OF CANADA, ALBERTA DISTRICT									
1	BEAVER RIVER ABOVE SYNCRUDE	07DA018	X						
2	BIRCH RIVER BELOW ALICE CREEK	07KE001	X				X		X
3	CLEARWATER RIVER AT DRAPER	07CD001	X				X		X
4	FIREBAG RIVER NEAR THE MOUTH	07DC001	X					X	X
5	GREGOIRE LAKE NEAR FORT McMURRAY	07CE001		X			X		X
6	HANGINGSTONE RIVER AT McMURRAY	07CD004	X				X		X
7	MACKAY RIVER NEAR FORT MACKAY	07DB001	X				X		X
8	MARMOT CREEK MAIN STEM	05BF016	X				X		
9	MUSKEG RIVER NEAR FORT MACKAY	07DA008	X				X		X
10	RICHARDSON RIVER NEAR THE MOUTH	07DD002	X				X		X
11	STEEP BANK RIVER NEAR FORT McMURRAY	07DA006	X				X		X
OPERATED BY - ALBERTA GOVERNMENT									
1	ATHABASCA RIVER NEAR OLD FORT	07DD011		X				X	X
2	EMBARRAS BREAKTHROUGH TO MAMAWI CREEK	07KF015	X				X		X
3	EMBARRAS RIVER BELOW DIVERGENCE	07DD003	X				X		X

MAJOR DESIGNATION - FEDERAL-PROVINCIAL

SUBDESIGNATION - RIVER BASIN MANAGEMENT (2)

NO.	STATION NAME	STATION NUMBER	RECORD OBTAINED			OPERATION		ACCESS	
			FLOW	LEVEL	SED.	8M	12M	REMOTE	NORMAL
OPERATED BY - WATER SURVEY OF CANADA, ALBERTA DISTRICT									
SYMBOL \$ INDICATING STATION LOCATED IN ALBERTA BUT OPERATED BY WSC YELLOWKNIFE DISTRICT									
1	BEAVER LAKE AT RANGER STATION	06AA003		X		X			X
2	BEAVERLODGE RIVER NEAR BEAVERLODGE	076D001	X			X			X
3	BELLY RIVER NEAR MOUNTAIN VIEW	05AD005	X				X		X
4	BERRY CREEK NEAR THE MOUTH	05CH007	X			X			X
5	BERRY CREEK RESERVOIR NEAR SUNNYNOOK	05CH014		X		X			X
6	BOW RIVER BELOW BASSANO DAM	05BM004	X			X			X
7	BOW RIVER BELOW CARSELAND DAM	05BM002	X			X			X
8	BULLPOUND CREEK NEAR THE MOUTH	05CG003	X			X			X
9	CASTLE RIVER NEAR BEAVER MINES	05AA022	X				X		X
10	CHAIN LAKES RESERVOIR NEAR NANTON	05AB037		X			X		X
11	COOKING LAKE AT COOKING LAKE	05EB012		X		X			X
12	\$DOG RIVER NEAR FITZGERALD	07NB008	X				X	X	
13	ETHEL LAKE NEAR COLD LAKE	06AC004		X		X			X
14	FORSTER RESERVOIR NEAR CESSFORD	05CH013		X		X			X
15	HAMMERHILL SPILLWAY NEAR GLEICHEN	05BM005	X			X			X
16	HAY RIVER NEAR MEANDER RIVER	070B003	X			X			X
17	HIGHWOOD RIVER NEAR THE MOUTH	05BL024	X				X		X
18	HILDA LAKE NEAR COLD LAKE	06AC003		X		X			X
19	KAKWA RIVER NEAR GRANDE PRAIRIE	076B002	X			X		X	
20	KLESKUN HILLS MAIN DRAIN NEAR GRANDE PRAIRIE	076E002	X			X			X
21	LEE CREEK AT CARDSTON	05AE002	X			X			X
22	MARIE LAKE NEAR COLD LAKE	06AC005		X		X			X
23	MOORE LAKE NEAR COLD LAKE	06AC002		X		X			X
24	MURIEL LAKE NEAR GURNEYVILLE	06AC007		X			X		X
25	NORTH SASKATCHEWAN RIVER NEAR ROCKY MOUNTAIN HOUSE	05DC001	X			X			X
26	OLDMAN RIVER BELOW OLDMAN DAM	05AA024	X		X		X		X
27	ONETREE CREEK NEAR PATRICIA	05CJ006	X			X			X
28	PEACE RIVER AT PEACE RIVER	07HA001	X				X		X
29	PIYAMI DRAIN NEAR PICTURE BUTTE	05AD037	X			X			X
30	RED DEER RIVER AT DRUMHELLER	05CE001	X				X		X
31	ROLPH CREEK NEAR KIMBALL	05AE005	X			X			X
32	SAGE CREEK AT Q RANCH NEAR WILDHORSE	11AA026	X			X			X
33	SMOKY RIVER ABOVE HELLS CREEK	076A001	X			X			X
34	ST. MARY RIVER NEAR LETHBRIDGE	05AE006	X				X		X
35	STEEN RIVER AT STEEN RIVER	070B004	X			X			X
36	SWAN RIVER NEAR KINUSO	07BJ001	X				X		X
37	VERDIGRIS LAKE TRIBUTARY NEAR MILK RIVER	11AA039	X			X			X
38	WABAMUN LAKE AT WABAMUN	05DE002		X			X		X

MAJOR DESIGNATION - FEDERAL-PROVINCIAL

SUBDESIGNATION - REGIONAL WATER QUANTITY INVENTORY (3)

NO.	STATION NAME	STATION NUMBER	RECORD OBTAINED			OPERATION		ACCESS	
			FLOW	LEVEL	SED.	8M	12M	REMOTE	NORMAL
OPERATED BY - WATER SURVEY OF CANADA, ALBERTA DISTRICT									
1	ADAMS CREEK NEAR KINUSO	07BJ004	X			X			X
2	ALKALI CREEK NEAR THE MOUTH	05CK005	X			X			X
3	AMISK CREEK NEAR SHONTS	05EB016	X			X			X
4	AMISK RIVER AT HIGHWAY NO. 35	06AA002	X			X			X
5	ATHABASCA RIVER AT ATHABASCA	07BE001	X				X		X
6	ATIMOSWE CREEK NEAR ELK POINT	05ED002	X			X			X
7	BATTLE RIVER NEAR PONOKA	05FA001	X				X		X
8	BEAVER CREEK NEAR BROCKET	05AB013	X			X			X
9	BEAVER RIVER NEAR GOODRIDGE	06AA001	X			X			X
10	BELLY RIVER NEAR GLENWOOD	05AD041	X				X		X
11	BERLAND RIVER NEAR THE MOUTH	07AC007	X			X			X
12	BERRY CREEK NEAR ROSE LYNN	05CH008	X			X			X
13	BIGKNIFE CREEK NEAR GADSBY	05FC002	X			X			X
14	BLACKMUD CREEK NEAR ELLERSLIE	05DF003	X			X			X
15	BLINDMAN RIVER NEAR BLACKFALDS	05CC001	X				X		X
16	BLOCK CREEK NEAR LEEDALE	05CC010	X			X			X
17	BOYER RIVER NEAR FORT VERMILION	07JF002	X			X			X
18	BRAZEAU RIVER BELOW CARDINAL RIVER	05DD007	X			X			X
19	BROWN CREEK AT FORESTRY ROAD	05DD004	X			X			X
20	BUCHANAN CREEK NEAR MANNING	07HC002	X			X			X
21	BUFFALO CREEK AT HIGHWAY NO. 41	05FE002	X			X			X
22	BULLPOUND CREEK NEAR WATTS	05CG004	X			X			X
23	CADOTTE RIVER AT OUTLET CADOTTE LAKE	07HB001	X			X			X
24	CASTLE RIVER AT RANGER STATION	05AA028	X			X			X
25	CATARACT CREEK NEAR FORESTRY ROAD	05BL022	X				X		X
26	CHINCHAGA RIVER NEAR HIGH LEVEL	07DC001	X				X		X
27	CHRISTINA RIVER NEAR CHARD	07CE002	X			X		X	
28	CHRISTMAS CREEK NEAR BLUE RIDGE	07AH002	X			X			X
29	CLEAR RIVER NEAR BEAR CANYON	07FD009	X			X			X
30	CLEARWATER RIVER NEAR DOVERCOURT	05DB006	X				X		X
31	CROWNEST RIVER AT FRANK	05AA008	X				X		X
32	CUTBANK RIVER NEAR GRANDE PRAIRIE	07GB001	X			X		X	
33	DAPP CREEK AT HIGHWAY NO. 44	07BC006	X			X			X
34	DEER CREEK MAIN STEM	05CA003	X			X			X
35	DRIEDMEAT CREEK NEAR THE MOUTH	05FA018	X			X			X
36	DRIFTWOOD RIVER NEAR THE MOUTH	07BK007	X				X		X
37	DRYWOOD CREEK NEAR THE MOUTH	05AD010	X				X		X
38	DUTCH CREEK NEAR THE MOUTH	05AA026	X			X			X
39	EAST PRAIRIE RIVER NEAR ENLDA	07BF001	X			X			X
40	ELBOW RIVER AT BRASS CREEK	05BJ004	X				X		X
41	EUREKA RIVER NEAR WORSLEY	07FD013	X			X			X
42	FISH CREEK NEAR PRIDDIS	05BK001	X			X			X
43	FLAT CREEK NEAR BOYLE	07CA003	X			X			X
44	FREEMAN RIVER NEAR FORT ASSINIBOINE	07AH001	X			X			X
45	GHOST RIVER ABOVE WAIPOROUS CREEK	05BG010	X				X		X
46	GRANDE PRAIRIE CREEK NEAR SEXSMITH	07GE003	X			X			X
47	GROS VENTRE CREEK NEAR DUNMERE	05AH037	X			X			X
48	HAYNES CREEK NEAR HAYNES	05CD006	X			X			X
49	HEART RIVER NEAR NANPA	07HA003	X				X		X
50	HIGHWOOD RIVER AT DIEBEL'S RANCH	05BL019	X			X			X

MAJOR DESIGNATION - FEDERAL-PROVINCIAL

SUBDESIGNATION - REGIONAL WATER QUANTITY INVENTORY (3)

NO.	STATION NAME	STATION NUMBER	RECORD OBTAINED			OPERATION		ACCESS	
			FLOW	LEVEL	SED.	8M	12M	REMOTE	NORMAL
OPERATED BY - WATER SURVEY OF CANADA, ALBERTA DISTRICT									
51	HINES CREEK ABOVE GERRY LAKE	07FD011	X			X			X
52	HOUSE RIVER AT HIGHWAY NO. 63	07CB002	X			X			X
53	IOSEGUN RIVER NEAR LITTLE SMOKY	07GG003	X			X			X
54	IRON CREEK NEAR HARDISTY	05FB002	X			X			X
55	JACKPINE CREEK AT WADLIN LAKE ROAD	07JD003	X			X			X
56	JAMES RIVER NEAR SUNDRE	05CA002	X			X			X
57	JUMPINGPOUND CREEK NEAR COX HILL	05BH013	X			X			X
58	JUMPINGPOUND CREEK NEAR THE MOUTH	05BH009	X				X		X
59	KEG RIVER AT HIGHWAY NO. 35	07HF002	X			X			X
60	KNEEHILLS CREEK NEAR DRUMHELLER	05CE002	X			X			X
61	LA BICHE RIVER AT HIGHWAY NO. 63	07CA011	X				X		X
62	LAFOND CREEK NEAR RED EARTH CREEK	07JC001	X			X			X
63	LALBY CREEK NEAR GIROUXVILLE	07GJ005	X			X			X
64	LITTLE PADDLE RIVER NEAR MAYERTHORPE	07BB005	X			X			X
65	LITTLE RED DEER RIVER NEAR THE MOUTH	05CB001	X				X		X
66	LITTLE RED DEER RIVER NEAR WATER VALLEY	05CB002	X			X			X
67	LITTLE SMOKY RIVER NEAR GUY	07GH002	X				X		X
68	LLOYD CREEK NEAR BLUFFTON	05CC009	X			X			X
69	LOGAN RIVER NEAR THE MOUTH	07CA012	X			X		X	
70	LOVETT RIVER NEAR THE MOUTH	07BA003	X			X			X
71	LUTOSE CREEK NEAR STEEN RIVER	07OB006	X			X			X
72	MACKAY CREEK AT WALSH	05AH002	X			X			X
73	MANYBERRIES CREEK AT BRODIN'S FARM	05AF010	X			X			X
74	MASKWA CREEK NO. 1 ABOVE BEARHILLS LAKE	05FA014	X			X			X
75	MCLEOD RIVER ABOVE EMBARRAS RIVER	07AF002	X				X		X
76	MEADOW CREEK NEAR THE MOUTH	05AB029	X			X			X
77	MEANDER RIVER AT OUTLET HUTCH LAKE	07OB005	X			X			X
78	MEDICINE RIVER NEAR ECKVILLE	05CC007	X				X		X
79	MONITOR CREEK NEAR MONITOR	05GA003	X			X			X
80	MONTAGNEUSE RIVER NEAR HINES CREEK	07FD012	X			X			X
81	MUSKEG RIVER NEAR GRANDE CACHE	07GA002	X			X			X
82	NAMEPI CREEK NEAR THE MOUTH	05EC004	X			X			X
83	NORDEGG RIVER AT SUNCHILD ROAD	05DD009	X				X		X
84	NORTH RAM RIVER AT FORESTRY ROAD	05DC011	X			X			X
85	OLDMAN RIVER NEAR WALDRON'S CORNER	05AA023	X		X		X		X
86	OML RIVER BELOW PICHE RIVER	07CA013	X			X		X	
87	PADDLE RIVER AT BARRHEAD	07BB006	X			X			X
88	PADDLE RIVER NEAR ROCHFORD BRIDGE	07BB004	X			X			X
89	PARFLESH CREEK NEAR CHANCELLOR	05BH007	X			X			X
90	PEAVINE CREEK NEAR FALHER	07GH004	X			X			X
91	PEIGAN CREEK NEAR PAKOMKI ROAD	05AH041	X			X			X
92	PEKISKO CREEK NEAR LONGVIEW	05BL023	X			X			X
93	PEMBINA RIVER BELOW PADDY CREEK	07BA001		X		X			X
94	PIGEON LAKE CREEK NEAR USONA	05FA019	X			X			X
95	PINCHER CREEK AT PINCHER CREEK	05AA004	X			X			X
96	PINE CREEK NEAR GRASSLAND	07CA005	X			X			X
97	PINTO CREEK NEAR GRANDE PRAIRIE	07GC002	X			X			X
98	PIPESTONE CREEK BELOW BIGSTONE CREEK	05FA022	X			X			X
99	PONTON RIVER ABOVE BOYER RIVER	07JF003	X			X			X
100	PRAIRIE BLOOD COULEE NEAR LETHBRIDGE	05AD035	X			X			X

MAJOR DESIGNATION - FEDERAL-PROVINCIAL

SUBDESIGNATION - REGIONAL WATER QUANTITY INVENTORY (3)

NO.	STATION NAME	STATION NUMBER	RECORD OBTAINED			OPERATION		ACCESS	
			FLOW	LEVEL	SED.	8M	12M	REMOTE	NORMAL
OPERATED BY - WATER SURVEY OF CANADA, ALBERTA DISTRICT									
101	PRAIRIE CREEK BELOW LICK CREEK	05DB005	X			X			X
102	PRAIRIE CREEK NEAR ROCKY MOUNTAIN HOUSE	05DB002	X				X		X
103	RACEHORSE CREEK NEAR THE MOUTH	05AA027	X			X			X
104	RAM RIVER NEAR THE MOUTH	05DC006	X				X		X
105	RAT CREEK NEAR CYNTHIA	07BA002	X			X			X
106	RAVEN RIVER NEAR RAVEN	05CB004	X				X		X
107	RAY CREEK NEAR INNISFAIL	05CE010	X			X			X
108	RED DEER RIVER ABOVE PANTHER RIVER	05CA004	X			X			X
109	RED DEER RIVER BELOW BURNT TIMBER CREEK	05CA009	X				X		X
110	REDEARTH CREEK NEAR RED EARTH	07JC002	X			X			X
111	REDWATER RIVER NEAR THE MOUTH	05EC005	X			X			X
112	RENWICK CREEK NEAR THREE HILLS	05CE011	X			X			X
113	RIBSTONE CREEK NEAR EDGERTON	05FD001	X			X			X
114	ROSE CREEK NEAR ALDER FLATS	05DE007	X			X			X
115	ROSEBUD RIVER BELOW CARSTAIRS CREEK	05CE006	X			X			X
116	ROSS CREEK NEAR IRVINE	05AH003	X			X			X
117	SADDLE RIVER NEAR WOKING	07FD006	X			X			X
118	SAKWATAMAU RIVER NEAR WHITECOURT	07AH003	X			X			X
119	SAM LAKE TRIBUTARY NEAR SCHLER	05AH047	X			X			X
120	SAND RIVER NEAR THE MOUTH	06AB001	X			X			X
121	SAULTEAUX RIVER NEAR SPURFIELD	07BK005	X			X			X
122	SAWRIDGE CREEK NEAR SLAVE LAKE	07BK009	X			X			X
123	SHEEP RIVER AT BLACK DIAMOND	05BL014	X				X		X
124	SIFFLEUR RIVER NEAR THE MOUTH	05DA002	X			X			X
125	SIMONETTE RIVER NEAR GOODWIN	07GF001	X			X			X
126	SOUNDING CREEK NEAR OYEN	05GA008	X			X			X
127	SOUSA CREEK NEAR HIGH LEVEL	07DA001	X			X			X
128	SOUTH WABASCA LAKE NEAR DESMARAIS	07JA002		X		X			X
129	STIMSON CREEK NEAR PEKISKO	05BL007	X			X			X
130	STRAWBERRY CREEK NEAR THE MOUTH	05DF004	X			X			X
131	STRETTON CREEK NEAR MARWAYNE	05EE005	X			X			X
132	STURGEDON RIVER NEAR FORT SASKATCHEWAN	05EA001	X			X			X
133	SUNDANCE CREEK NEAR BICKERDIKE	07AF010	X			X			X
134	SWAN RIVER NEAR SWAN HILLS	07BJ003	X			X			X
135	THREEHILLS CREEK BELOW RAY CREEK	05CE018	X			X			X
136	THREEHILLS CREEK NEAR CARBON	05CE007	X			X			X
137	THREEPOINT CREEK NEAR MILLARVILLE	05BL013	X			X			X
138	TOMAHAWK CREEK NEAR TOMAHAWK	05DE009	X			X			X
139	UTIKUMA LAKE NEAR NIPISI	07JA001		X		X			X
140	VERMILION RIVER NEAR MARWAYNE	05EE007	X			X			X
141	WABAMUN CREEK NEAR DUFFIELD	05DE003	X			X			X
142	WABASH CREEK NEAR PIBROCH	07BC007	X			X			X
143	WAIPAROUS CREEK NEAR THE MOUTH	05BG006	X				X		X
144	WANDERING RIVER NEAR WANDERING RIVER	07CA006	X				X		X
145	WASKAHIGAN RIVER NEAR THE MOUTH	07GG001	X				X		X
146	WEST ARROWWOOD CREEK NEAR ARROWWOOD	05BM014	X			X			X
147	WEST PRAIRIE RIVER NEAR HIGH PRAIRIE	07BF002	X				X		X
148	WEST WHITEMUD CREEK NEAR IRETON	05DF007	X			X			X
149	WHITEMUD CREEK NEAR ELLERSLIE	05DF006	X			X			X
150	WHITEMUD RIVER NEAR DIXONVILLE	07HA003	X			X			X

SUBDESIGNATION - REGIONAL WATER QUANTITY INVENTORY (3)

NO.	STATION NAME	STATION NUMBER	RECORD OBTAINED			OPERATION		ACCESS	
			FLOW	LEVEL	SED.	8M	12M	REMOTE	NORMAL
OPERATED BY - WATER SURVEY OF CANADA, ALBERTA DISTRICT									
151	WILDHAY RIVER NEAR HINTON	07AC001	X			X			X
152	WILLOW CREEK ABOVE CHAIN LAKES	05AB028	X				X		X
153	WILLOW CREEK NEAR NOLAN	05AB002	X			X			X
154	WILLOW RIVER NEAR WABASCA	07JA003	X			X			X
155	WOLF CREEK AT HIGHWAY NO. 16A	07AG003	X				X		X
156	WOLF RIVER AT OUTLET OF WOLF LAKE	06AB002	X				X	X	

MAJOR DESIGNATION - PROVINCIAL

SUBDESIGNATION - PROVINCIAL DEPARTMENTAL PROGRAMS

NO.	STATION NAME	STATION NUMBER	RECORD OBTAINED			OPERATION		ACCESS	
			FLOW	LEVEL	SED.	8M	12M	REMOTE	NORMAL
OPERATED BY - WATER SURVEY OF CANADA, ALBERTA DISTRICT									
1	ALBERTA POWER LIMITED COOLING POND OUTLET	05C6007	X			X			X
2	ATHABASCA RIVER NEAR WINDFALL	07AE001	X			X			X
3	BABETTE CREEK NEAR COLINTON	07CA008	X			X			X
4	BAPTISTE LAKE NEAR ATHABASCA	07BE002		X		X			X
5	BAPTISTE RIVER NEAR THE MOUTH	05DC012	X				X		X
6	BATTLE RIVER NEAR FORESTBURG	05FC001	X			X			X
7	BEAR CREEK NEAR VALHALLA CENTRE	07GE007	X			X			X
8	BEAVERTAIL CREEK NEAR HYTHE	07GD002	X			X			X
9	BELLY-ST. MARY DIVERSION CANAL	05AD021	X				X		X
10	BERRY CREEK BELOW DEADFISH CREEK	05CH016	X			X			X
11	BERRY CREEK RESERVOIR OUTLET	05CH011	X			X			X
12	BIRCH CREEK NEAR CONKLIN	07CE006	X			X		X	
13	BLINDMAN RIVER NEAR BLUFFTON	05CC008	X			X			X
14	BLOOD INDIAN CREEK NEAR CABIN LAKE	05CK007	X			X			X
15	BLOOD INDIAN CREEK NEAR THE MOUTH	05CK001	X			X			X
16	B.R.D. DRAIN D NEAR VAUXHALL	05BN008	X			X			X
17	B.R.D. DRAIN T NEAR HAYS	05AG005	X			X			X
18	BOYER RIVER NEAR PADDLE PRAIRIE	07JF004	X			X			X
19	BUFFALO LAKE NEAR ERSKINE	05CD005		X		X			X
20	CALLING LAKE AT RANGER STATION	07CB001		X		X			X
21	CAVAN LAKE DIVERSION NEAR DUNMORE	05AH044	X			X			X
22	CHIP LAKE AT OUTLET TO LOBSTICK RIVER	07BB008		X		X			X
23	COAL LAKE RESERVOIR NEAR METASKIWIN	05FA016		X		X			X
24	COLQUHOUN CREEK NEAR GRANDE PRAIRIE	07GE006	X			X			X
25	COYOTE CREEK NEAR CHERHILL	07BB014	X			X			X
26	DEADFISH INFLOW CANAL NEAR CESSFORD	05CH012	X			X			X
27	DICKSON DAM TUNNEL OUTLET	05CB007	X				X		X
28	ELBOW RIVER ABOVE ELBOW FALLS	05BJ006	X			X			X
29	ELBOW RIVER BELOW GLENMORE DAM	05BJ001	X				X		X
30	ELDER CREEK AT HIGHWAY NO. 686	07HB002	X			X			X
31	ELKWATER LAKE AT ELKWATER	05AH025		X		X			X
32	EMBARASS RIVER NEAR WEALD	07AF014	X			X			X
33	ERITH RIVER BELOW HANLAN CREEK	07AF016	X			X			X
34	FANCETT LAKE NEAR SMITH	07BK008		X		X			X
35	FISH CREEK ABOVE LITTLE FISH LAKE	05CG006	X			X			X
36	GOLD CREEK NEAR FRANK	05AA030	X			X			X
37	GREGG RIVER NEAR THE MOUTH	07AF015	X			X			X
38	GROAT CREEK NEAR WHITECOURT	07AG008	X			X			X
39	GULL LAKE AT ASPEN BEACH	05CC006		X		X			X
40	HASTINGS LAKE NEAR DEVILLE	05EB011		X		X			X
41	HIGHWOOD RIVER BELOW LITTLE BOW CANAL	05BL004	X				X		X
42	IRON CREEK NEAR VIKING	05FB003	X			X			X
43	ISLE LAKE AT EUREKA BEACH	05EA008		X		X			X
44	JACKFISH RIVER BELOW CHRISTINA LAKE	07CE005	X			X		X	
45	KENNEDY COULEE NEAR ACADIA VALLEY	05CK006	X			X			X
46	KILLARNEY LAKE TRIBUTARY NEAR CHAUVIN	05GA010	X			X			X
47	LAC LA NONNE AT LAC LA NONNE	07BB007		X		X			X
48	LAC STE. ANNE AT ALBERTA BEACH	05EA006		X		X			X
49	LATERAL 10 SPILLWAY NEAR CHIN	05AG007	X			X			X
50	LESSER SLAVE LAKE AT SLAVE LAKE	07BJ006		X			X		X

MAJOR DESIGNATION - PROVINCIAL

SUBDESIGNATION - PROVINCIAL DEPARTMENTAL PROGRAMS

NO.	STATION NAME	STATION NUMBER	RECORD OBTAINED			OPERATION		ACCESS	
			FLOW	LEVEL	SED.	8M	12M	REMOTE	NORMAL
OPERATED BY - WATER SURVEY OF CANADA, ALBERTA DISTRICT									
51	LILY CREEK NEAR SLAVE LAKE	07B6004	X				X		X
52	LITTLE BERLAND RIVER AT HIGHWAY NO. 40	07AC008	X				X		X
53	LITTLE ELBOW RIVER ABOVE NIHAHI CREEK	05BJ009	X				X		X
54	LITTLE SMOKY RIVER AT LITTLE SMOKY	07G6002	X				X		X
55	LONDON LATERAL NEAR HEADGATE	05AC017	X				X		X
56	LOYALIST CREEK NEAR CONSORT	05GA013	X				X		X
57	McALPINE CREEK (EAST FORK) NEAR ELKWATER	05AH043	X				X		X
58	McGREGOR-TRAVERS CANAL NEAR CHAMPION	05AC025	X				X		X
59	McLEDD RIVER NEAR CADOMIN	07AF013	X				X		X
60	McLEDD RIVER NEAR WHITECOURT	07A6004	X				X		X
61	MICHICHI CREEK AT DRUMHELLER	05CE020	X				X		X
62	MILK RIVER RIDGE RESERVOIR	05AF030		X			X		X
63	MINISTIK LAKE NEAR NEW SAREPTA	05EB013		X			X		X
64	MIGUELON LAKE AT PROVINCIAL PARK	05EB014		X			X		X
65	MONITOR CREEK NEAR CONSORT	05GA011	X				X		X
66	MOOSEHILLS CREEK NEAR ELK POINT	05ED003	X				X		X
67	MOSQUITO CREEK NEAR THE MOUTH	05AC031	X				X		X
68	NORTH SASKATCHEWAN RIVER NEAR LODGEPOLE	05DE006		X			X		X
69	OLDMAN RIVER NEAR THE MOUTH	05AG006	X					X	X
70	PADDLE RIVER NEAR ANSELMO	07BB011	X				X		X
71	PAINT EARTH CREEK NEAR HALKIRK	05FC004	X				X		X
72	PARLBY CREEK AT ALIX	05CD007	X				X		X
73	PEMBINA RIVER NEAR ENTWISTLE	07BB002	X					X	X
74	PIGEON LAKE AT GRANDVIEW	05FA013		X			X		X
75	PONY CREEK NEAR CHARD	07CE003	X				X		X
76	PORTER CREEK ABOVE BAPTISTE LAKE	07BE003	X				X		X
77	POTHOLE TURNOUT NEAR MAGRATH	05AE038	X				X		X
78	REDWATER RIVER NEAR VIMY	05EC007	X				X		X
79	REDWILLOW RIVER NEAR BEAVER LODGE	07GD003	X					X	X
80	ROBERT CREEK NEAR ANZAC	07CE004	X				X		X
81	RUSH LAKE DRAIN NEAR NEW DAYTON	05AF031	X				X		X
82	SALT CREEK NEAR GROUARD	07BF009	X				X		X
83	SNAKE CREEK NEAR VULCAN	05AC030	X				X		X
84	SOUNDING CREEK NEAR CHINOOK	05GA012	X				X		X
85	SOUTH HEART RESERVOIR NEAR McLENNAN	07BF008		X			X		X
86	SPRAY RIVER AT BANFF	05BC001	X					X	X
87	STEELE LAKE NEAR JARVIE	07BC005		X			X		X
88	STIRLING LAKE OUTFLOW NEAR STIRLING	05AF029	X				X		X
89	STONY CREEK NEAR TAWATINAW	07BE004	X				X		X
90	STURGEDON LAKE AT WILLIAMSON PARK	07GH003		X			X		X
91	STURGEDON RIVER NEAR MAGNOLIA BRIDGE	05EA010	X				X		X
92	STURGEDON RIVER NEAR VILLENELVE	05EA005	X					X	X
93	SYLVAN LAKE AT SYLVAN LAKE	05CC003		X			X		X
94	TEEPEE CREEK NEAR LA CRETE	07JD004	X				X		X
95	TINDASTOLL CREEK NEAR MARKERVILLE	05CC012	X				X		X
96	TRAP CREEK NEAR LONGVIEW	05BL027	X				X		X
97	TROUT CREEK NEAR GRANUM	05AB005	X				X		X
98	VERMILION PARK LAKE NEAR VERMILION	05EE008		X			X		X
99	VERMILION RIVER AT VEGREVILLE	05EE009	X				X		X
100	VERMILION RIVER TRIBUTARY NEAR BRUCE	05EE006	X				X		X

MAJOR DESIGNATION - PROVINCIAL

SUBDESIGNATION - PROVINCIAL DEPARTMENTAL PROGRAMS

NO.	STATION NAME	STATION NUMBER	RECORD OBTAINED			OPERATION		ACCESS	
			FLOW	LEVEL	SED.	8M	12M	REMOTE	NORMAL
OPERATED BY - WATER SURVEY OF CANADA, ALBERTA DISTRICT									
101	WAMPUS CREEK NEAR HINTON	07AF003	X			X			X
102	WASKASOO CREEK AT RED DEER	05CC011	X			X			X
103	WATERTON RIVER NEAR GLENWOOD	05AD028	X				X		X
104	WATERTON-BELLY DIVERSION CANAL	05AD027	X				X		X
105	WEILLER CREEK NEAR WETASKAMIN	05FA024	X			X			X
106	WEST ARROWWOOD CREEK NEAR EYNSIGN	05BM018	X			X			X
107	WHITE EARTH CREEK NEAR SMOKY LAKE	05EC006	X			X			X
108	WILLOW CREEK BELOW LANE CREEK	05AB039	X			X			X
109	WILLOW CREEK NEAR CLARESHOLM	05AB021	X				X		X
110	WINAGAMI LAKE AT PROVINCIAL PARK	07BF006		X		X			X
111	YOUNG CREEK NEAR CASTOR	05FC007	X			X			X
OPERATED BY - ALBERTA GOVERNMENT									
PAD AREA									
1	ATHABASCA RIVER ABOVE JACKFISH CREEK	07DD007		X			X		X
2	BIG POINT CHANNEL BELOW DIVERGENCE	07DD006 MISC	X				X		X
3	CHENAL DES QUATRE FOURCHES BELOW FOUR FORKS	07KF006 MISC	X				X		X
4	FLETCHER CHANNEL BELOW DIVERGENCE	07DD004 MISC	X				X		X
5	GOOSE ISLAND CHANNEL BELOW DIVERGENCE	07DD005 MISC	X				X		X
6	MAMAWI LAKE CHANNEL AT DOG CAMP	07KF010 MISC	X			X			X
7	PRAIRIE RIVER NEAR LAKE CLAIRE	07KF014 MISC	X			X			X
8	REVILLON COUPE BELOW RIVIERE DES ROCHERS	07NA004 MISC	X						X
9	RIVIERE DES ROCHERS BELOW REVILLON COUPE	07NA902 MISC	X				X		X
OTHER AREAS OF ALBERTA									
1	ATIM CREEK NEAR SPRUCE GROVE	05EA009	X			X			X
2	BEARBERRY CREEK NEAR SUNDRE	05CA011	X			X			X
3	BEAR LAKE NEAR CLAIRMONT	07GE004		X		X			X
4	BEDDINGTON CREEK NEAR CALGARY	05BH904	X			X			X
5	BIGELOW RESERVOIR NEAR WIMBECURNE	05CE901		X		X			X
6	BRD CANAL AT DROP NO. 3	05AC902	X			X			X
7	B.R.I.D. WESTERN BLOCK LATERAL A NEAR HEADGATES	05AC013	X			X			X
8	CHESTERMERE LAKE AT SOUTH OUTLET	05BM904		X		X			X
9	COLUMBINE CREEK NEAR THE MOUTH	06AA004	X			X			X
10	DRIEDMEAT LAKE AT OUTFLOW	05FA020		X		X			X
11	ELBOW RIVER AT SARCEE BRIDGE	05BJ010	X			X			X
12	ETZIKOM COULEE NEAR NEMISKAN	05AF905	X			X			X
13	FALLEN TIMBER CREEK NEAR SUNDRE	05CA012	X			X			X
14	FOOTHILLS CREEK NEAR PINCHER CREEK	05AD901	X			X			X
15	JACKFISH CREEK NEAR LACOREY	06AC001	X			X			X
16	KEHO LAKE NEAR NOBLEFORD	05AC914		X		X			X
17	LAKE MCGREGOR AT SOUTH DAM	05AC022		X		X			X
18	LITTLE BOW RESERVOIR NEAR EPOCHANT	05AC922		X		X			X
19	L.N.I.D. MONARCH BRANCH CANAL BELOW HEADWORKS	05AC028	X			X			X
20	PADDLE RIVER RESERVOIR NEAR ROCHFORD BRIDGE	07BB914		X			X		X

MAJOR DESIGNATION - PROVINCIAL

SUBDESIGNATION - PROVINCIAL DEPARTMENTAL PROGRAMS

NO.	STATION NAME	STATION NUMBER	RECORD OBTAINED			OPERATION		ACCESS	
			FLOW	LEVEL	SED.	8M	12M	REMOTE	NORMAL
<u>OPERATED BY - ALBERTA GOVERNMENT</u>									
21	PARLBY CREEK NEAR MIRROR	05CD902	X				X		X
22	POINTE-AUX-PINS CREEK NEAR ARDROSSAN	05EB902	X				X		X
23	POINTE-AUX-PINS TRIBUTARY 1 NEAR ARDROSSAN	05EB909	X				X		X
24	POINTE-AUX-PINS TRIBUTARY 2 NEAR ARDROSSAN	05EB910	X				X		X
25	POINTE-AUX-PINS TRIBUTARY 3 NEAR ARDROSSAN	05EB911	X				X		X
26	ROMED CREEK ABOVE ROMED LAKE	07BB903	X				X		X
27	RYCROFT SURVEY #3 NEAR RYCROFT	07FD910	X				X		X
28	SPOTTED LAKE NEAR MIRROR	05CD903			X		X		X
29	SQUAW COULEE DIVERSION BELOW SQUAW COULEE DAM	05AC917	X				X		X
30	TODD CREEK NEAR HIGHWAY NO. 22	05AA909	X				X		X
31	WASKATENAU CREEK NEAR WASKATENAU	05EC002	X				X		X
32	WHITBURN DRAINAGE PROJECT NEAR SPIRIT RIVER	07FD912	X				X		X
33	YOUNG DRAINAGE PROJECT NEAR SPIRIT RIVER	07FD913	X				X		X

MAJOR DESIGNATION - CONTRIBUTED DATA

NO.	STATION NAME	STATION NUMBER	RECORD OBTAINED			OPERATION		ACCESS	
			FLOW	LEVEL	SED.	8M	12M	REMOTE	NORMAL
OPERATED BY - TRANSALTA UTILITIES LTD.									
1	BARRIER LAKE NEAR SEEBE	05BF024			X			X	X
2	BOW RIVER BELOW BEARSPAW DAM	05BH008	X				X		X
3	BOW RIVER NEAR SEEBE	05BE004	X				X		X
4	BRAZEAU RESERVOIR	05DD006			X		X		X
5	BRAZEAU RIVER BELOW BRAZEAU PLANT	05DD005	X				X		X
6	CASCADE POWER DIVERSION NEAR BANFF	05BD004	X				X		X
7	GHOST LAKE NEAR COCHRANE	05BE005			X		X		X
8	GHOST RIVER DIVERSION TO LAKE MINNEWANKA	05B6003	X				X		X
9	GHOST RIVER NEAR BLACK ROCK MOUNTAIN	05B6002	X				X		X
10	GOAT CREEK AT BANFF PARK BOUNDARY	05BC008	X				X		X
11	KANANASKIS RIVER ABOVE POCATERRA CREEK	05BF003	X				X		X
12	KANANASKIS RIVER BELOW BARRIER DAM	05BF025	X				X		X
13	LAKE ABRAHAM NEAR NORDEGG	05DC009			X		X		X
14	LAKE MINNEWANKA NEAR BANFF	05BD003			X		X		X
15	LOWER KANANASKIS LAKE AT POCATERRA DAM	05BF009			X		X		X
16	MUD LAKE DIVERSION CANAL	05BF013	X				X		X
17	NORTH SASKATCHEWAN RIVER BELOW BIGHORN PLANT	05DC010	X				X		X
18	SPRAY POWER DIVERSION AT CANMORE	05BE007	X				X		X
19	SPRAY RESERVOIR AT THREE SISTERS DAM	05BC006			X		X		X
20	UPPER KANANASKIS LAKE AT MAIN DAM	05BF005			X		X		X

OPERATED BY - CITY OF CALGARY

1	GLENMORE RESERVOIR AT CALGARY	05BJ008			X			X	X
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NO.	STATION NAME	STATION NUMBER	HYDROMETRIC DESIGNATION	OPERATION		ACCESS		
				8M	12M	REMOTE	NORMAL	
<u>FEDERAL - 4</u>								
1	SLAVE RIVER AT FITZGERALD	07NB001	F-2	X		X		
<u>FEDERAL - PROVINCIAL - 3</u>								
1	OLDMAN RIVER NEAR LETHBRIDGE	05AD007	F-2	X			X	
<u>PROVINCIAL - 1</u>								
1	OLDMAN RIVER NEAR WALDRONS CORNER	05AA023	FP-3	X			X	
<u>PROVINCIAL - 2</u>								
1	OLDMAN RIVER NEAR BROCKET	05AA024	FP-2	X			X	

A P P E N D I X "B"

SCHEDULE "B"

COSTING PROCEDURE

COMPUTATION OF ALBERTA SHARE

CALCULATION OF ANNUAL PAYMENTS

A. COSTING PROCEDURE

Schedule "B" of the Memorandum of Agreement (included in the National Report) outlines the items to be included in the preparation of the annual report.

I. Water Quantity Stations

The costs shared include only the salaries and expenses of the staff directly involved in the field and office in the collection and compilation of water quantity data. Depreciation, operation, and maintenance of field transportation and equipment are included costs.

II. Sediment Stations

In the case of sediment stations, the cost of sample analysis is added to the costs outlined in I above.

III. New Construction, Major Maintenance, and Re-construction

Construction costs include both new construction and major maintenance and are shared on the basis of station designation as being 'Federal', 'Federal-Provincial' or 'Provincial'. If a station is designated as 'Federal-Provincial' the cost would be shared fifty-fifty; otherwise 100% to either Canada or Alberta. Water level instrumentation is at the expense of the agency operating the station irrespective of designation; special instrumentation (telemark, data platform) is a cost to the party requiring the service.

B. APPLICATION OF PROCEDURE

The cost of operations varies as to the type and duration of records so standard units have been developed and assigned. The figures used are based upon experience over the years and have been adopted as standards in the Western and Northern Region.



I. Normal Access

A 12 month discharge station defines the hydrology regime under both ice cover and open water. The period of operation for an 8 month discharge station is normally March 1 to October 31 and is intended to define the period beginning with snowmelt runoff to freeze-up in the fall.

<u>Weight Factor</u>	<u>Type of Station</u>
1.00	12 month discharge
0.75	8 month discharge
0.40	12 month water level
0.25	8 month water level

II. Remote Access

Salary and operation costs exceed those for normal access stations. This is to account for aircraft costs, additional preparation and travelling time on a field trip and maintenance problems in a sparse network located in a harsh environment. Weighting factors have, therefore, been assigned as follows:

<u>Weight Factor</u>	<u>Type of Station</u>
1.80	12 month discharge
1.50	8 month discharge
1.10	12 month water level
0.95	8 month water level

III. Sediment Stations

The third category of stations requiring weighting factors are sediment stations. A hydrometric station designated 'Federal' for the collection of streamflow data may be designated either 'Federal', 'Federal-Provincial' or 'Provincial' for sediment data. Therefore, the resultant sediment weighting factors, as listed, are only the incremental sediment costs.

<u>Weight Factor</u>	<u>Type of Station</u>
1.05	12 month normal access Q & 8 month sediment
1.05	8 month normal access
1.25	12 month remote access Q & 8 month sediment
1.25	8 month remote access
0.45	8 month research



SPECIAL CONSIDERATIONS

Due to the complexity of the operation it is necessary to apply a number of practical considerations which are described as follows:

I. Stations Operated by Regina

Twelve F stations in Alberta were operated by the Saskatchewan District. These stations and their operations costs have not been included in Table I of this Appendix as they are of no value in computing the provincial share. The effect of neglecting these stations is that the federal share shown is less than the actual share. Although these stations have not been utilized in the costing, they are included in Tables 2 and 4 of the main body of this report, as are the following stations operated in the NWT.

II. Stations Operated by Yellowknife

Three F stations and one FP station in Alberta are operated by the Northwest Territories District. The federal stations have not been included in Table I of this Appendix as they are of no value in computing the provincial share. As the Yellowknife salaries and O&M to operate the FP station on 'Dog River near Fitzgerald' were not readily available from accounting statements, it was necessary to determine these costs based upon Alberta costs. The one FP station operated by Yellowknife isn't included in Table 1, but comprises 1.80 weighted units. Based upon the unit cost of \$ 5,410.04 the cost of operating 'Dog River near Fitzgerald' is \$ 9,738.07. One-half of this amount was added to the share of each party in Table B-1 to obtain the costs shown in 'Summary of Financial Considerations' and Tables 5 and 6 in the main body of the report.

III. Depreciation

Depreciation was determined by utilizing standard accounting and 'national' procedures. The total depreciation costs shown in the 'Summary of Financial Considerations' was pro rated, based on the respective Federal and Alberta shares of hydrometric and sediment operations.

A P P E N D I X "C"

SCHEDULE "D"

1994-95

SCHEDULE "D"

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

ANNUAL PAYMENT FOR 1994/95 TO BE PAID TO CANADA BY ALBERTA:

	<u>Operation</u>	<u>Construction</u>	<u>Total</u>
a) Streamflow and water level installations	\$ 896.9K	\$ 52.6K	\$949.5K
b) Sediment installations	\$ 14.9K		<u>\$ 14.9K</u>

ANNUAL PAYMENT: \$964.4K


Administrator for Canada



(Signature)

R. A. Halliday
 Director
 National Hydrology
 Research Institute
 ENVIRONMENT CANADA

Administrator for Alberta



(Signature)

P. Valentine
 Director
 Technical Services and Monitoring Division
 Water Resources Services
 ALBERTA ENVIRONMENTAL PROTECTION

