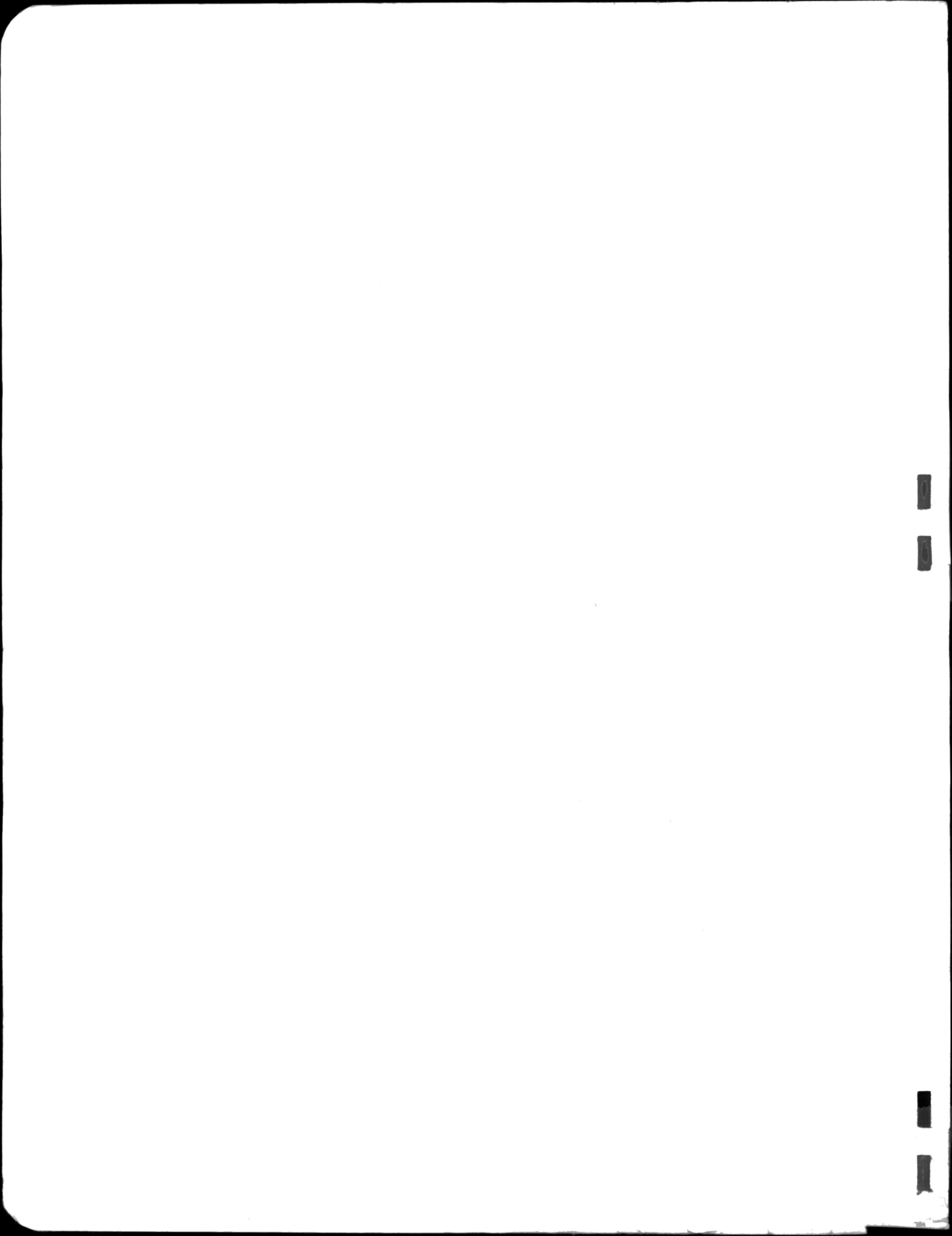
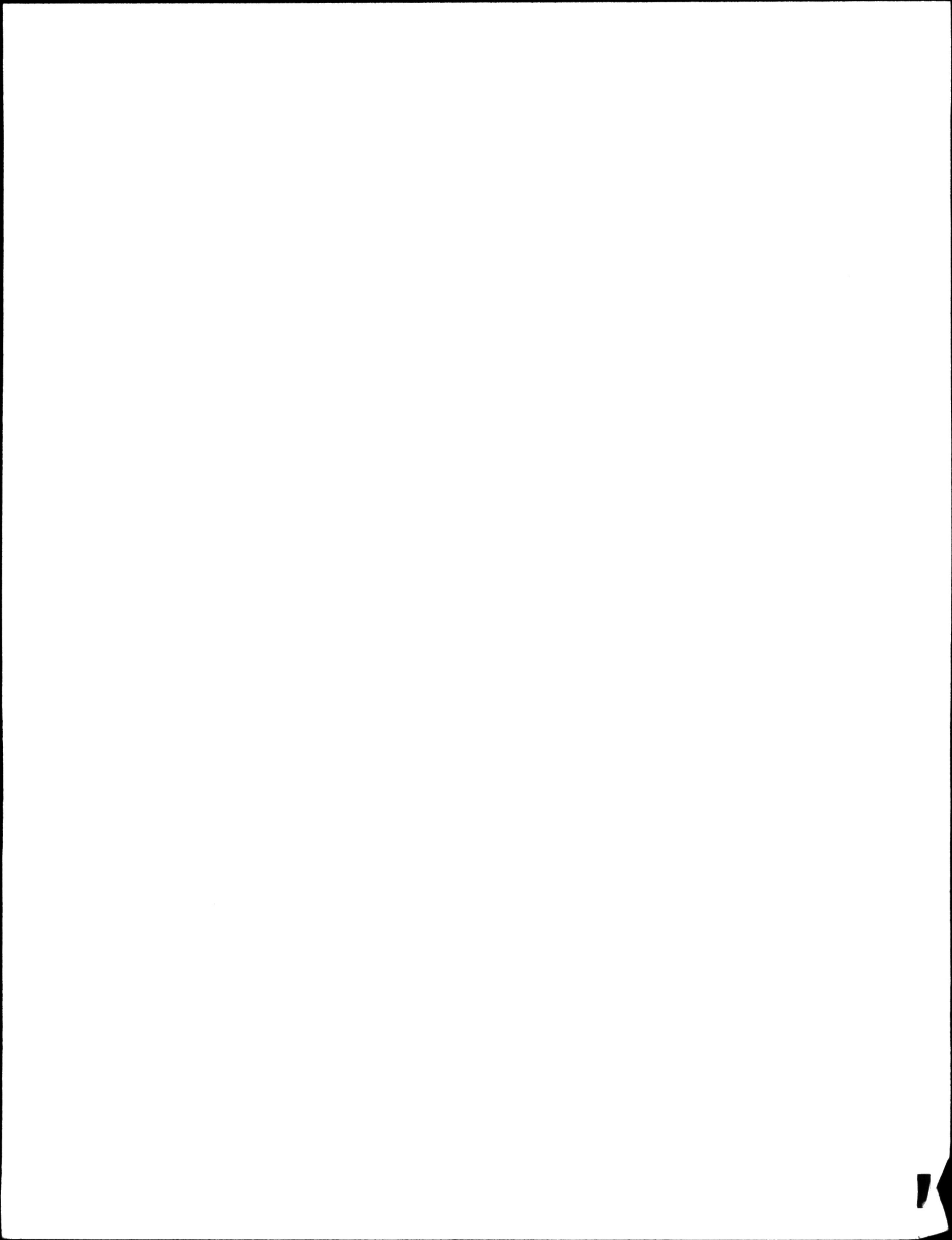


CANADA - ALBERTA
MEMORANDUM OF AGREEMENT
FOR
WATER QUANTITY SURVEYS
ANNUAL REPORT 1985-86



**CANADA — ALBERTA
MEMORANDUM OF AGREEMENT
FOR
WATER QUANTITY SURVEYS**

ANNUAL REPORT 1985-86



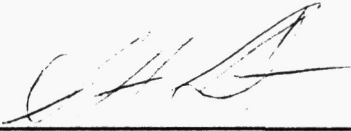
TO: R. K. Deeprise
Administrator for Alberta

R. A. Halliday
Administrator for Canada

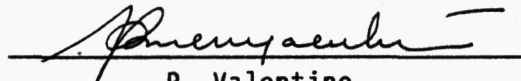
We hereby submit an annual report for fiscal year 1985-86 covering activities under the Memorandum of Agreement for Water Quantity Surveys for the Province of Alberta.

Government of Canada

Province of Alberta



G. H. Morton
Environment Canada



P. Valentine
Alberta Environment



M. O. Spitzer
Environment Canada

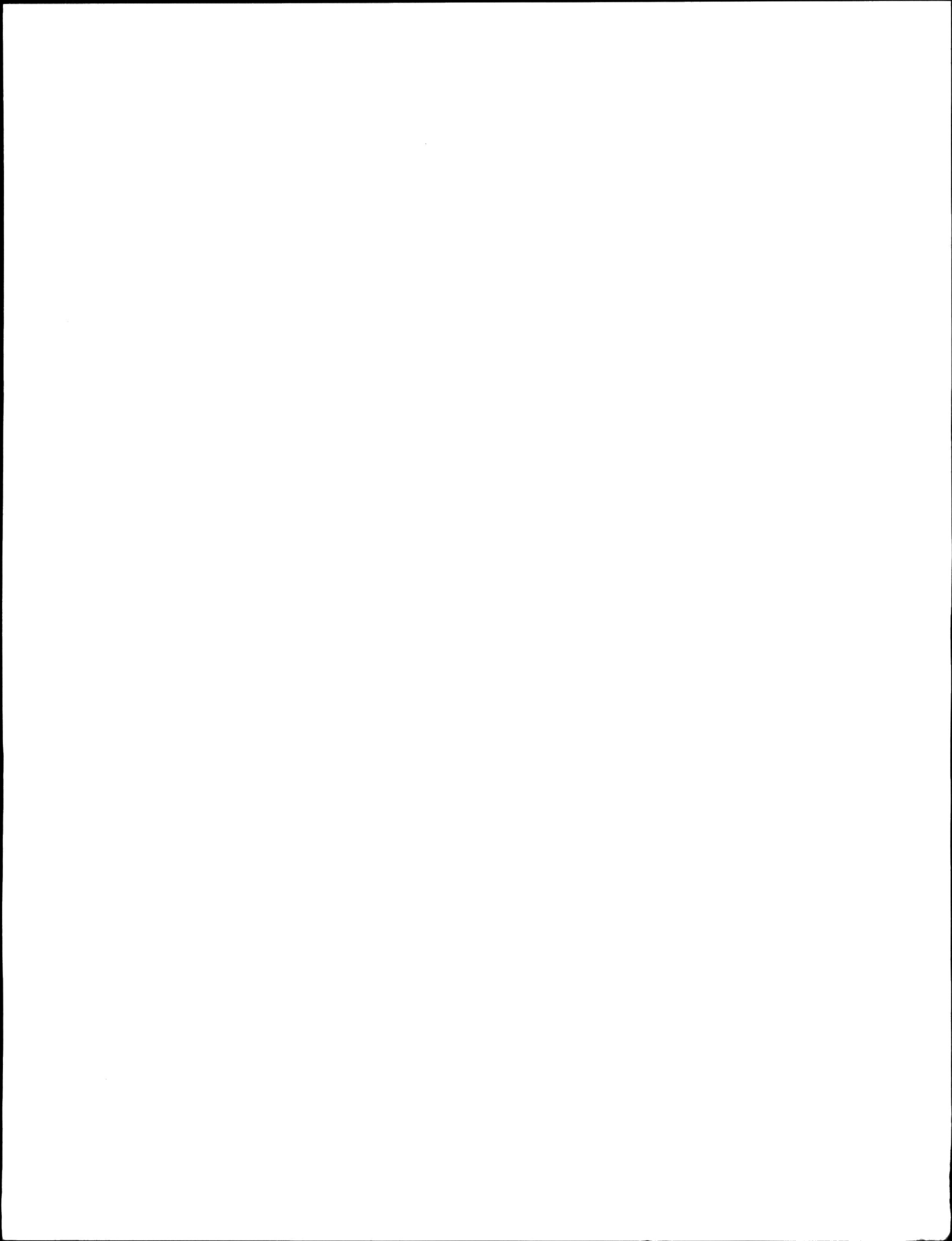


G. Coles
Alberta Environment

Members

Alberta Co-ordinating Committee

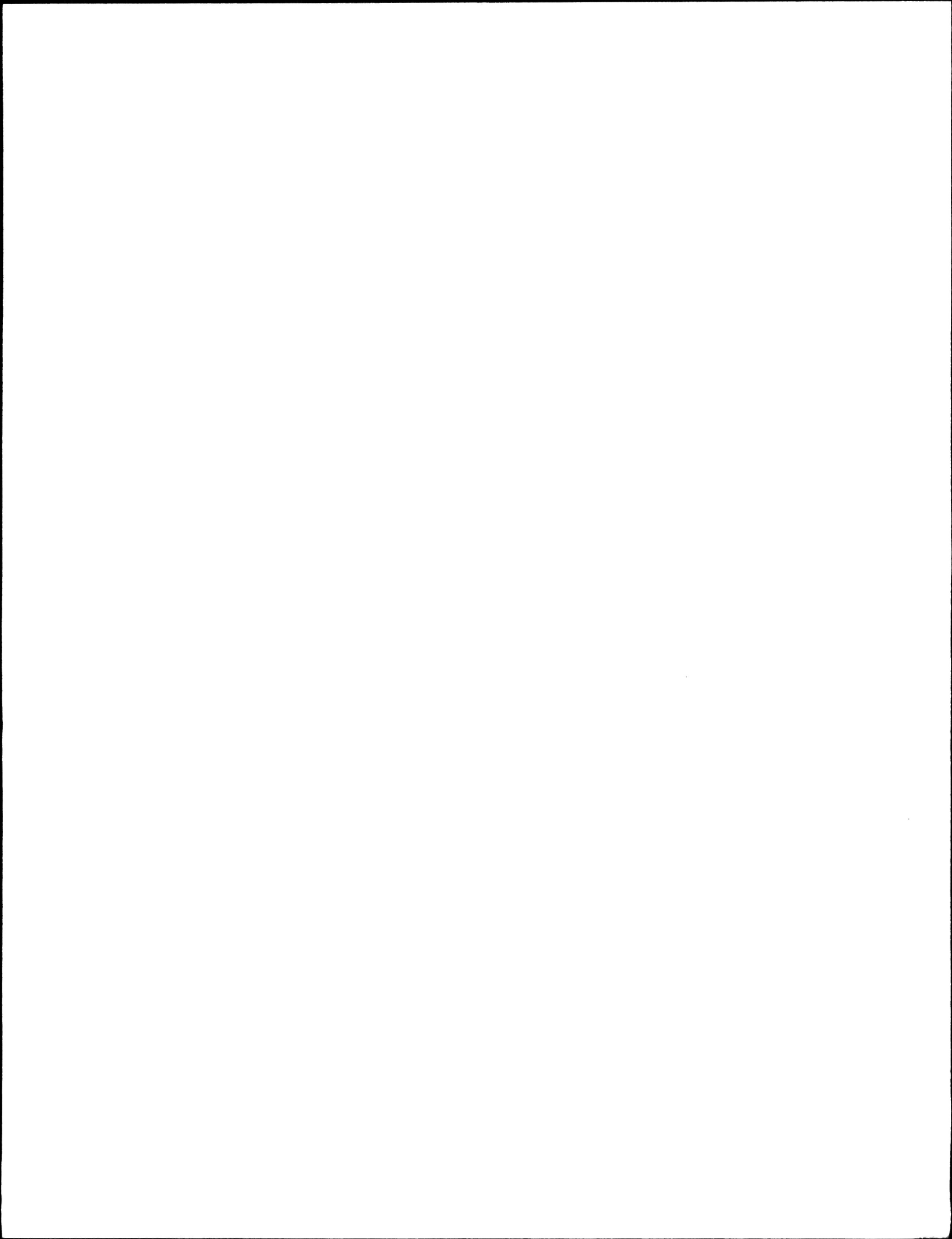
July 1986.



EXECUTIVE SUMMARY

The Canada-Alberta Co-ordinating Committee met once during the year and there were two informal meetings. Frequent contact was maintained between the members of the committee and senior staff of both agencies. Major items arising from the Co-ordinating Committee meeting were the 1986-87 construction and maintenance program; real-time data acquisition; plans for the current and future sediment survey program, including plans for analysis of long-term sediment stations; the sediment source study on the Oldman River to be funded equally by Water Survey of Canada and the Alberta Research Council; establishing a procedure for evaluating hydrometric stations with operational difficulties; and a reduction in federal funding for the operation after 1986 of hydrometric stations in the Peace-Athabasca Delta area and Marmot Creek Basin.

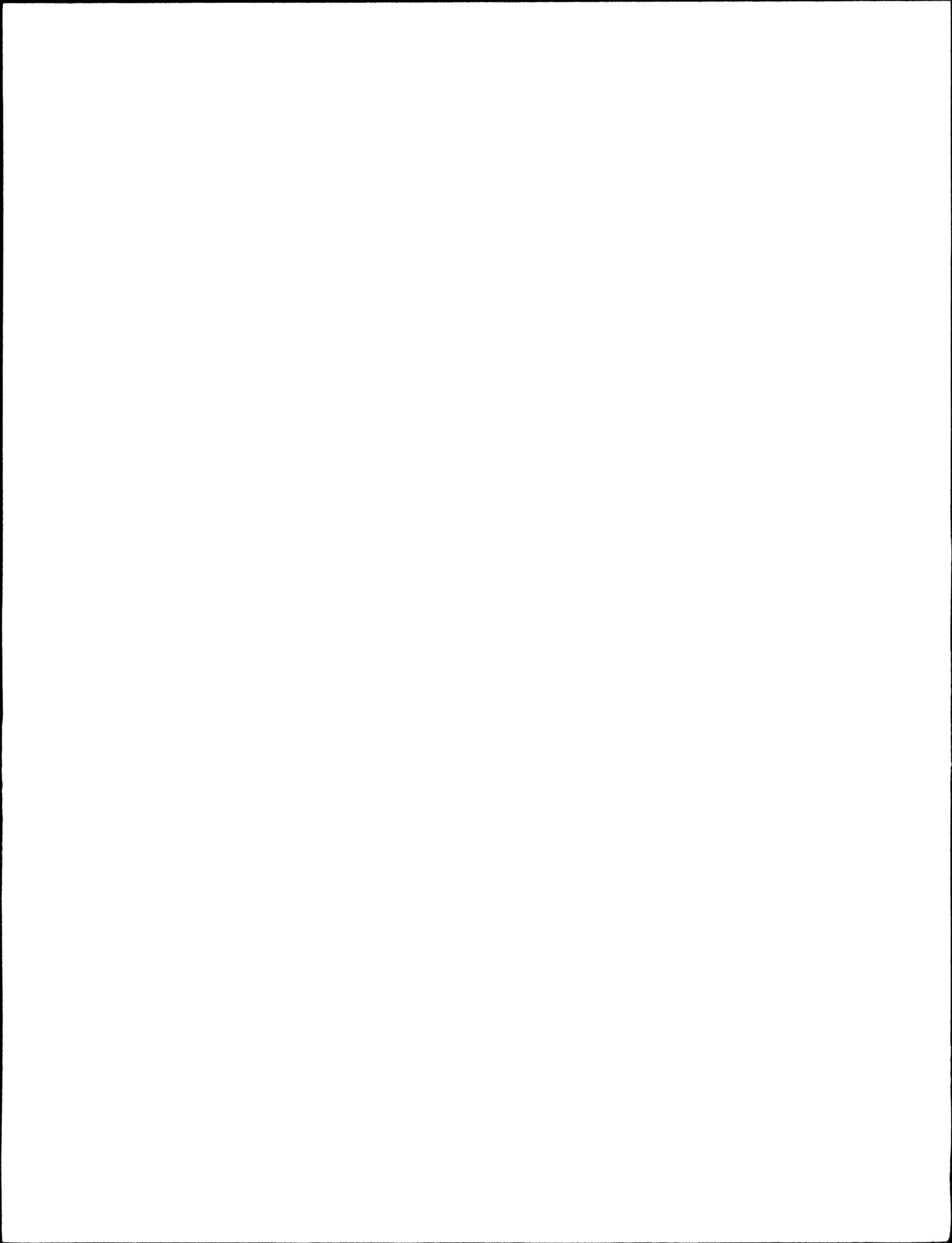
Hydrologic conditions during 1985-86 were very unusual. Significant volumes of spring runoff were recorded throughout the province, with many of the streams recording their largest spring runoff since 1974. This was followed by a dry summer with precipitation amounts in many areas of the province being less than 50% of normal during the period April 1 to June 30. Wet conditions of late August and storm events in September resulted in peaks for the year being recorded on many streams arising from the eastern Rockies. Overall volumes of runoff in 1985 were much below normal. Even with the broad variety of weather conditions, adequate field coverage was made at the majority of hydrometric stations.



Data computations for 1985 were again completed on schedule for publication. During 1985-86, 11 new hydrometric stations were established and 7 stations were discontinued. Additionally, maintenance was carried out at 69 hydrometric stations and this included installation of power at 18 stations.

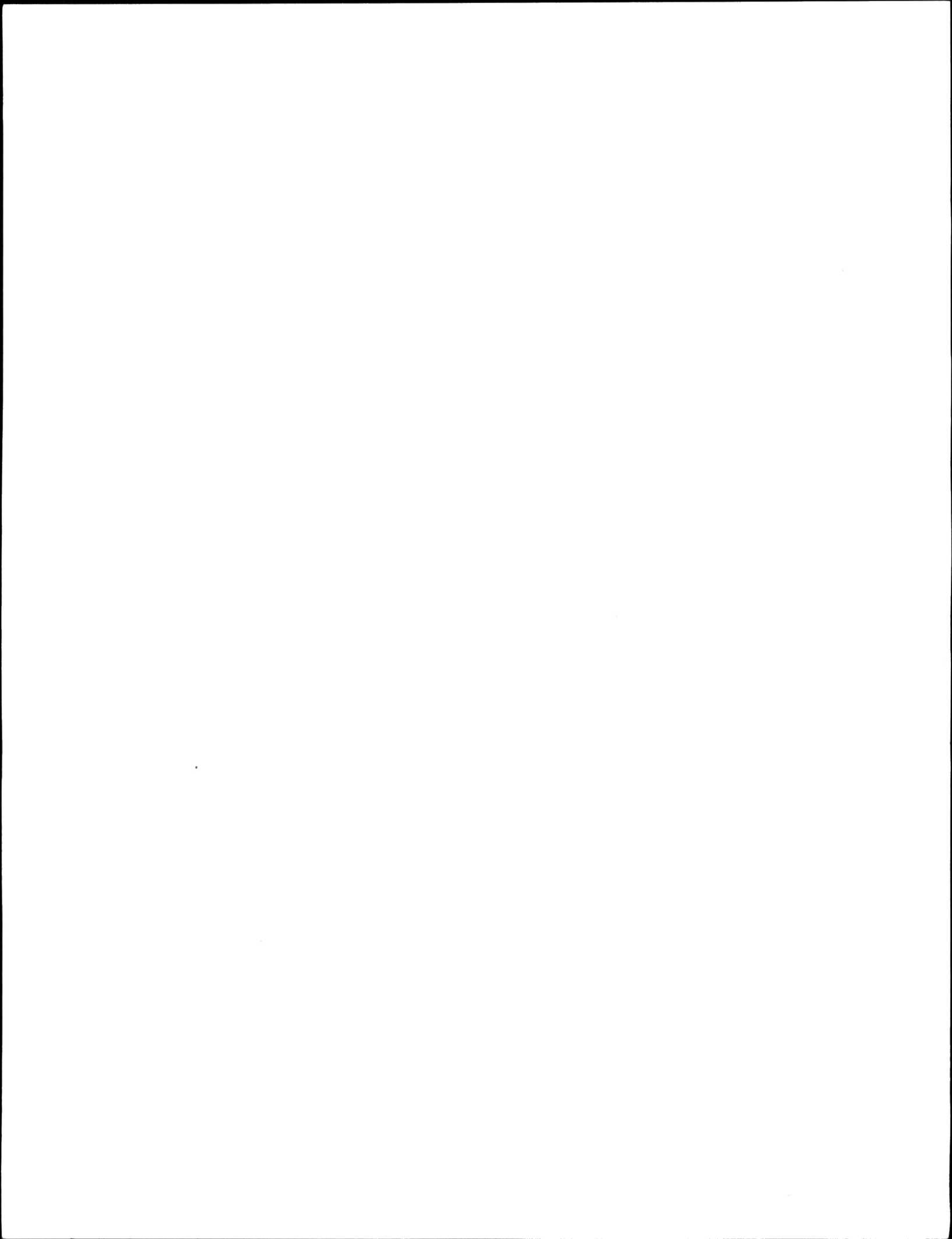
An analysis of long-term sediment stations was continued by Water Survey of Canada, Calgary and Ottawa staff. The reports produced by this analysis present all available data in concise and readily usable formats. They also provide a basis for determining if a long-term sediment station can be discontinued.

During 1985-86 Alberta paid \$927,000 to the hydrometric agreement, as listed in Schedule "D". The computed cost for the Alberta share of the program was \$917,865, which resulted in an overpayment of \$9,135 by the province. During 1985-86 there was a decrease in unit costs per hydrometric station of 0.4%. Although the unit salary costs showed a slight increase, this was offset by a decrease in unit O&M costs of 3.2%.



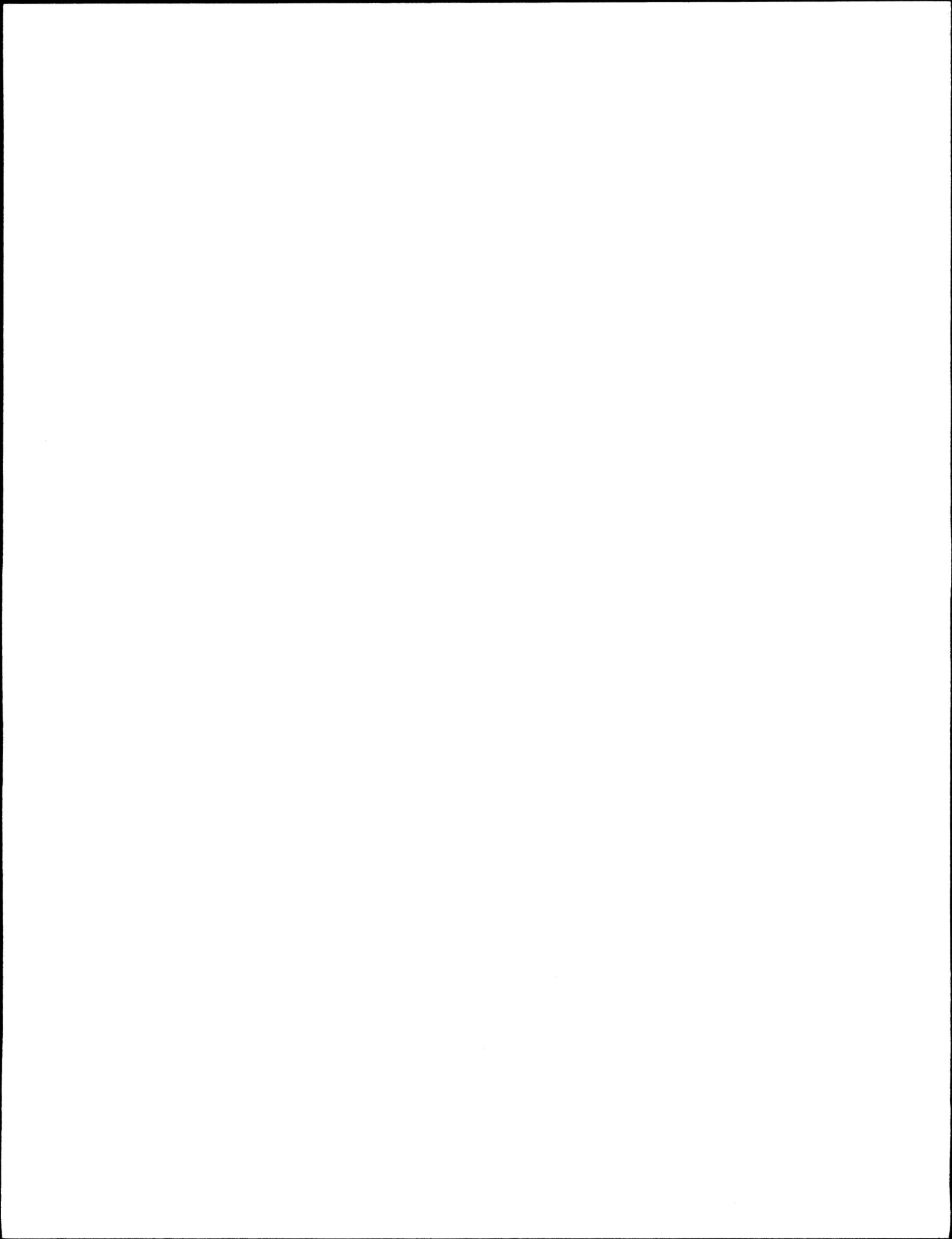
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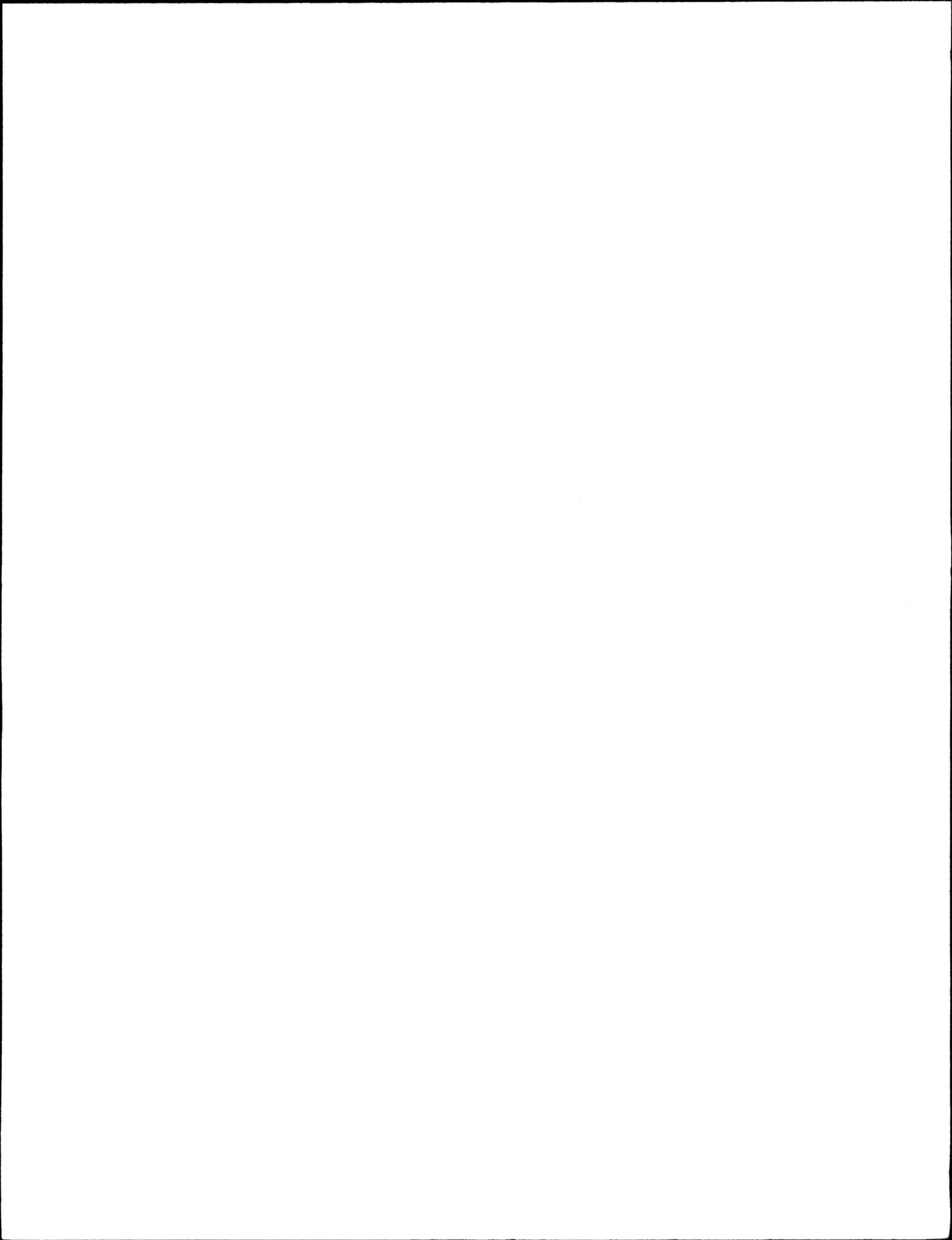
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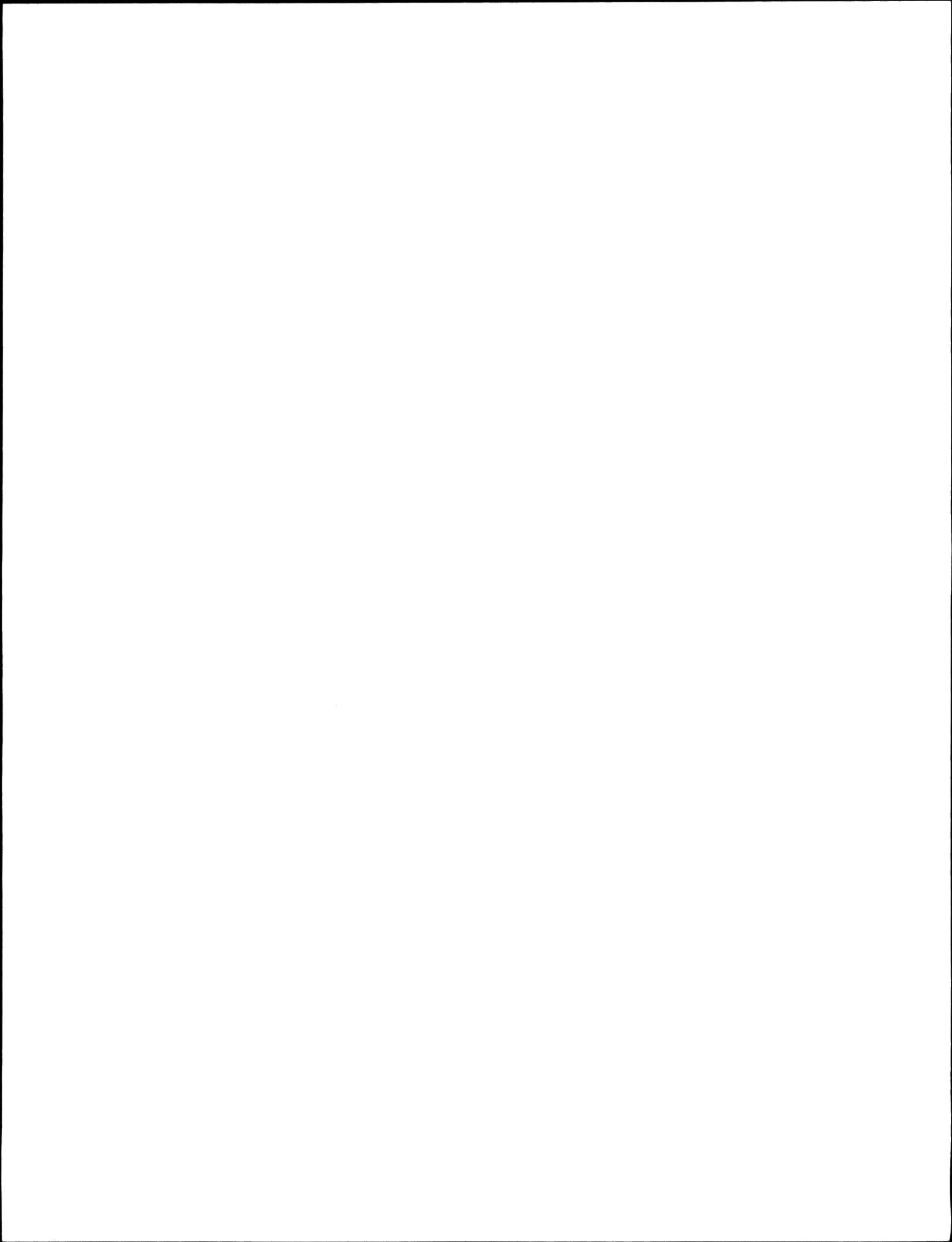


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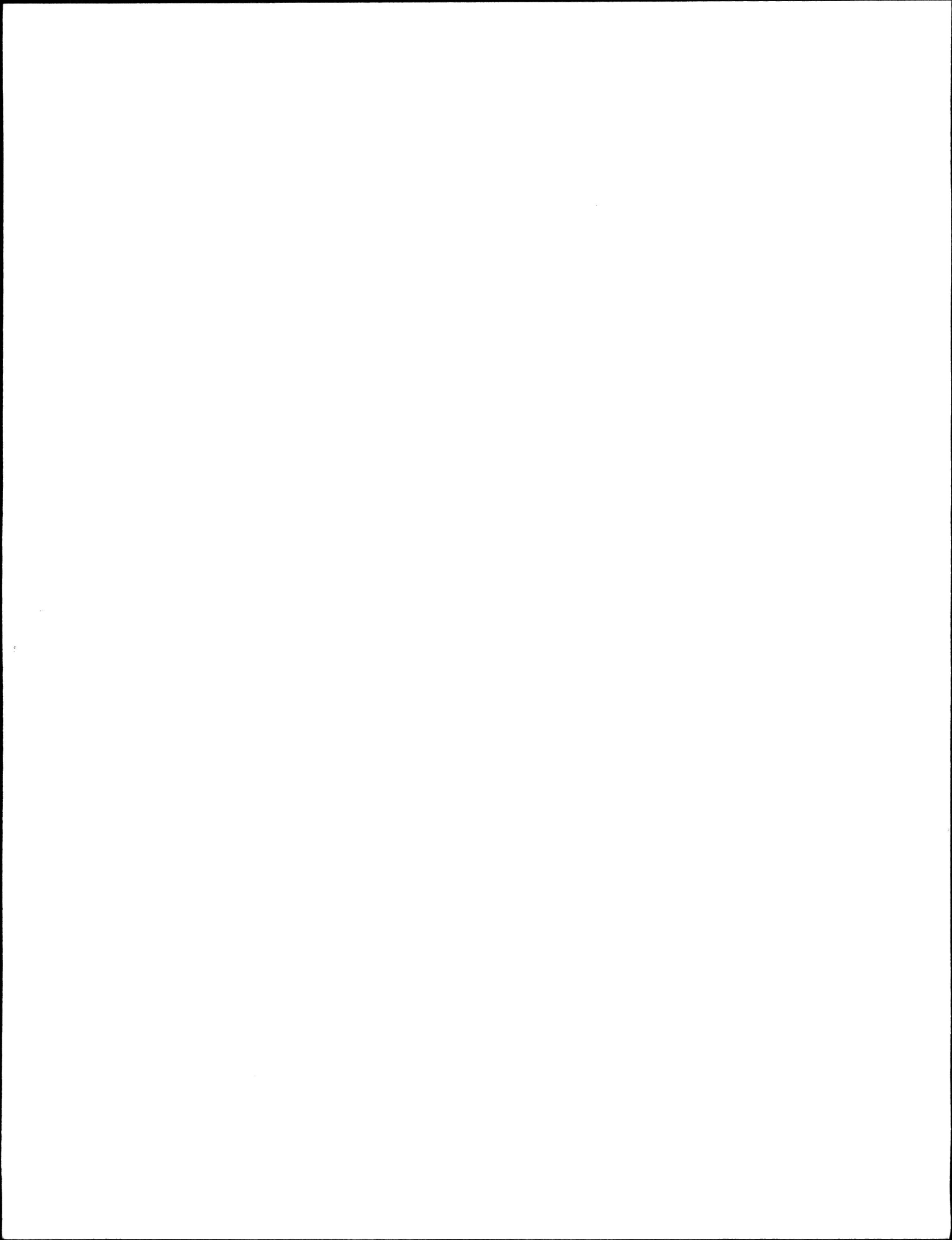


This is the eleventh annual report summarizing the activities of the Canada-Alberta Co-ordinating Committee established by the Memorandum of Agreement in 1975. A sample copy of the agreement, which is relatively similar for all provinces and the territories, is contained in the Annual National Cost Sharing Report.¹

The agreement establishes the basis on which co-operative water quantity surveys are carried out in Alberta and describes the costs which are shareable and the costs borne solely by the party operating the network. It requires that the Administrators of the agreement establish a Co-ordinating Committee to plan and review network operations and to prepare annually, Schedules "A" and "D" for approval by the Administrators. Schedule "A" (Appendix A) lists the gauging stations covered by the agreement, designation for cost sharing purpose, and operational responsibility. Schedule "D" (Appendix C) gives the annual cost sharing payment to be paid by Alberta to Canada.

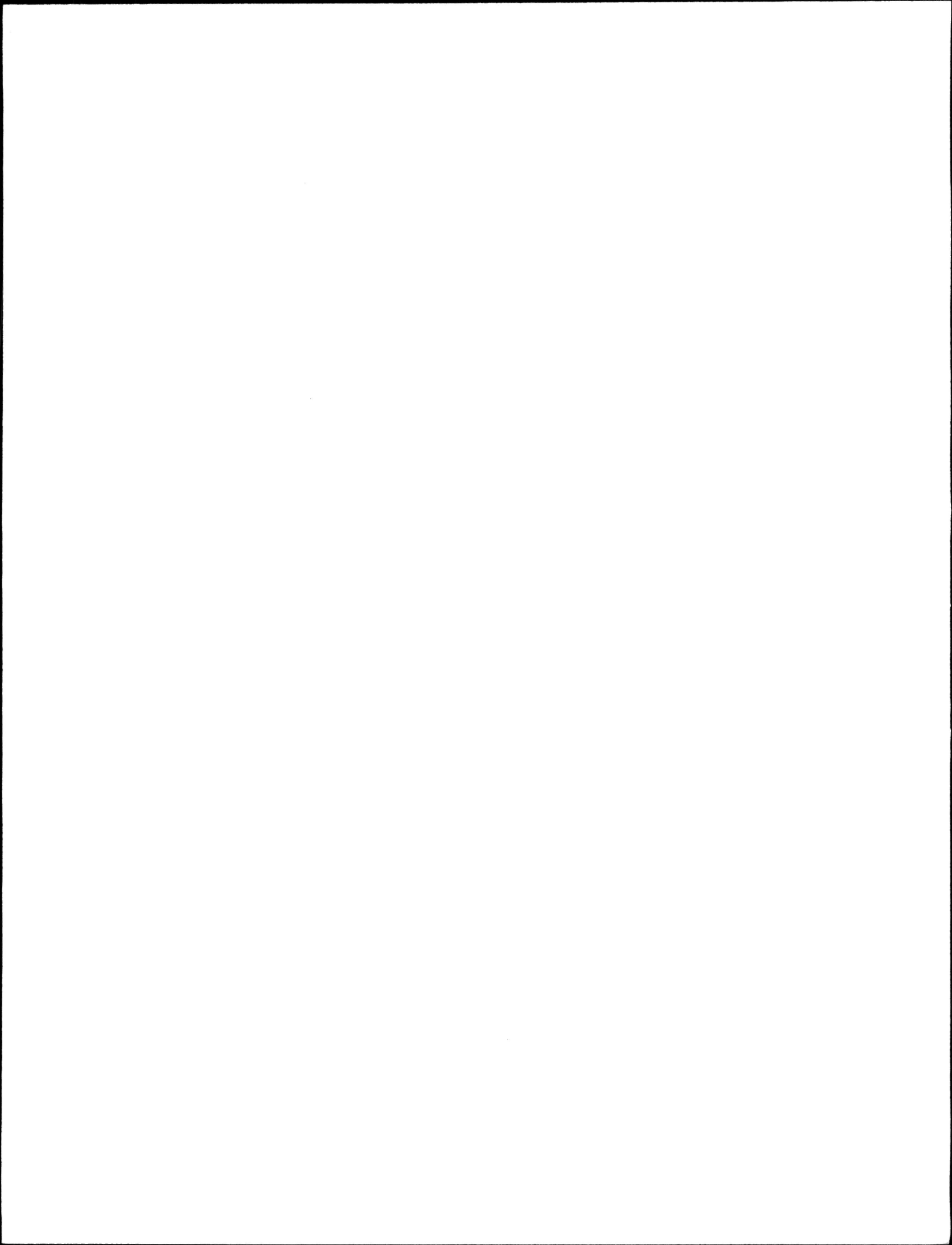
The water quantity survey network in operation on March 31, 1975 was reviewed to determine the division of responsibility between the federal and provincial governments. Each station was designated either 'Federal', 'Federal-Provincial' or 'Provincial', the designation not only indicating the prime need, but also the financial responsibility.

¹ Environment Canada, Water Quantity Surveys, Federal-Provincial Cost Sharing Agreements, Annual Report.



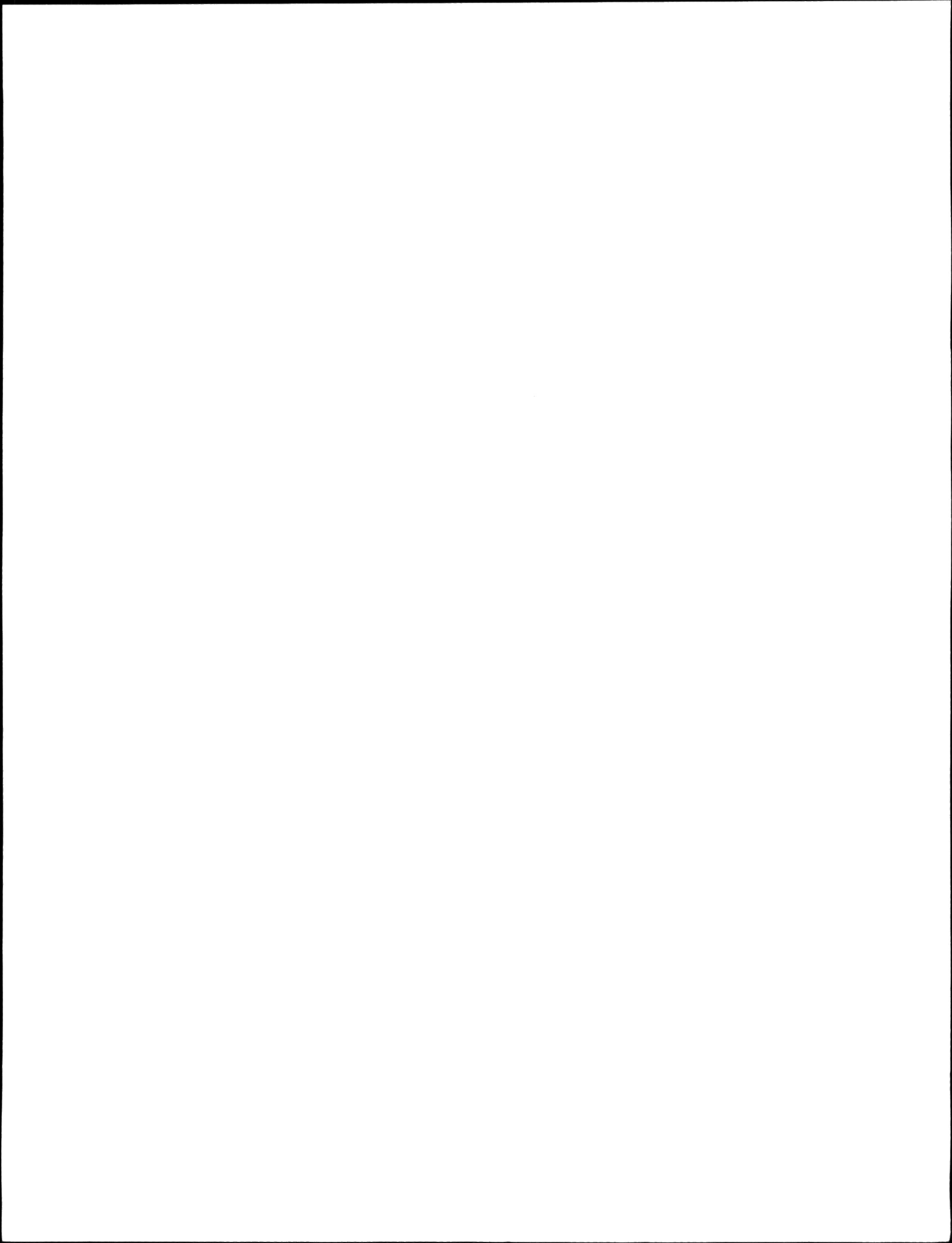
Schedule "B" (contained in the National Report) of the agreement, lists the items to be included in computing the annual payments. The federal government pays 100% of the cost of operation and construction of stations designated 'Federal' and 50% of the cost of stations designated 'Federal-Provincial'. The provincial government pays 100% of the cost of operation and construction of stations designated 'Provincial' and 50% of the cost of operation and construction of stations designated 'Federal-Provincial'. Initially, guidelines were developed for 'Federal' gauging stations with 'Federal-Provincial' and 'Provincial' gauging stations being designated by a review of user requests. In 1977 a set of guidelines was developed for the three categories. This set of guidelines was reviewed and discussed at many National Co-ordinating Committee meetings. During 1982-83 the guidelines were reviewed and rewritten by both Administrators and Co-ordinating Committees. At the end of 1982-83 agreement was reached on the new set of guidelines which were utilized commencing in 1984-85. A copy of the approved guidelines is contained in the National Report.

Section 2.0 of this report summarizes the operational considerations of the 1985-86 water quantity program. Significant issues discussed at the Co-ordinating Committee meetings are identified in sub-section 2.1. Operational achievements are then outlined in sub-section 2.2. Changes to the network, which were previously agreed upon but which affect Schedule "A" for April 1, 1986 are listed in the sub-section 2.3, "Water Quantity and Sediment Networks" and Tables 1 to 3 summarize the



designation of hydrometric stations. Sub-section 2.4 includes a brief summary of network planning activities. Figures are provided to indicate the financial responsibility and network changes from 1975 to 1986, and the history of the size of the hydrometric network. Histograms of gauging station maturity are also presented. The final subsection provides a description of program plans for 1986-87.

Section 3.0 summarizes the cost of operation for the 1985-86 program. This section contains a summary of the federal and provincial costs associated with the water quantity network operations and construction activities. Detailed cost calculations for the 1985-86 fiscal year are presented in Appendix B. Tables 4 and 5 summarize the Total Program and Shareable Costs, Schedule "D", and a Comparison of Schedule "D" Costs with Actual Costs.



2.0 SUMMARY OF OPERATIONAL CONSIDERATIONS

2.1 CO-ORDINATING COMMITTEE MEETINGS

2.1.1 Canada-Alberta Co-ordinating Committee Meeting,
February 25, 1986

2.1.1.1 Construction and Maintenance Program in 1986-87

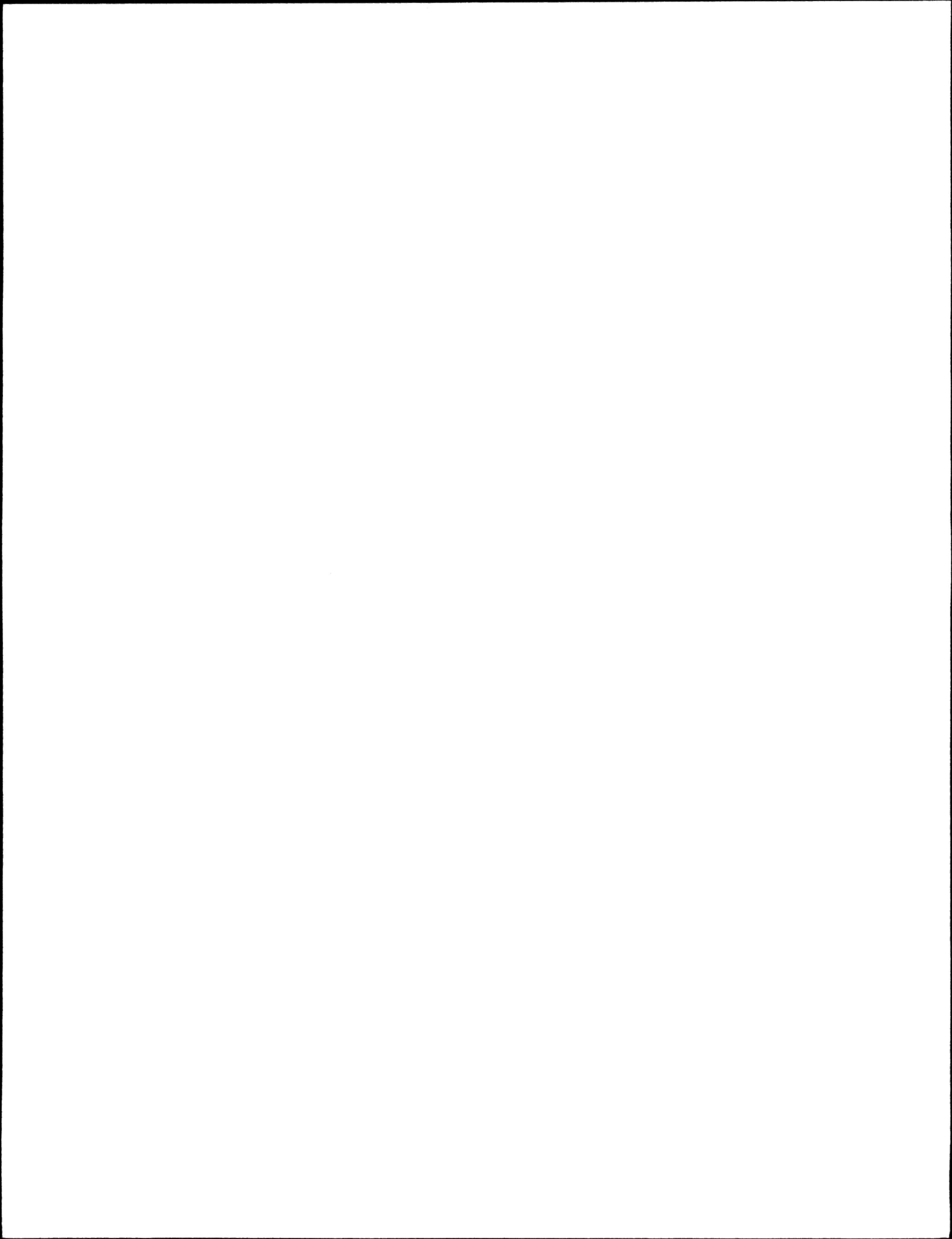
It was agreed that construction would be undertaken at five sites, and that construction wouldn't proceed at sites previously identified in the Hay-Zama Lakes area. It was agreed that the maintenance program would be expanded in 1986-87 with emphasis placed on power installations.

2.1.1.2 Real-Time Data Acquisition

The paper prepared by the headquarters of the Federal Water Resources Branch was discussed. The province indicated the proposal was of no benefit to them in terms of both cost and capability. It was agreed that a task force should be established to investigate fully utilizing the existing data acquisition facilities for exchange of data.

2.1.1.3 Sediment Survey Program

The sediment program proposed for 1986-87 was discussed. It was noted that by applying some of the



conclusions from the recently completed sediment survey studies there would be less emphasis on full program stations. More effort would be directed towards analysis of the data and this work would be done both in-house and by contracting out.

2.1.1.4 Sediment Source Study

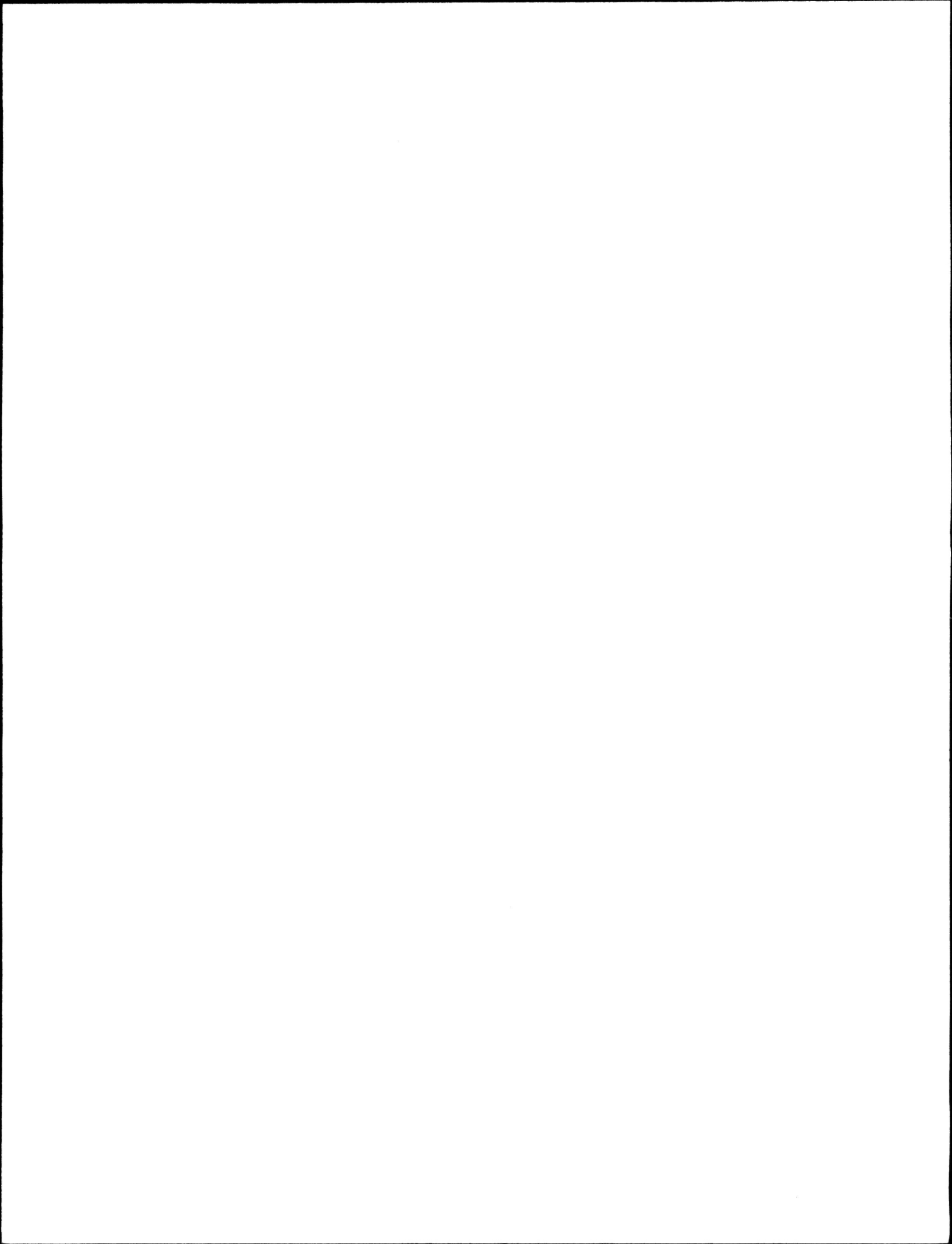
This study, proposed for the Oldman River Basin, was felt to be worthwhile. It was agreed that the work could be undertaken by the Alberta Research Council with equal funding by Water Survey of Canada and the Research Council.

2.1.1.5 Quality of Hydrometric Data

It was noted that operational difficulties, such as beaver activity or lack of power, were affecting the quality of data at many stations. To address this problem it was agreed that the Water Resource Branch would prepare an annual list, with a short report on these problem stations. This list would be reviewed by the province's Hydrometric Network Review Committee.

2.1.1.6 Reduction of Federal Funding

With the possible windup of the Peace-Athabasca Delta Implementation Committee in 1986, it was noted that federal funding of hydrometric stations in this area may be reduced. It was also noted that after 1986 the



Water Resources Branch would only support one of the hydrometric stations in the Marmot Creek Basin.

2.2 OPERATIONAL ACHIEVEMENTS

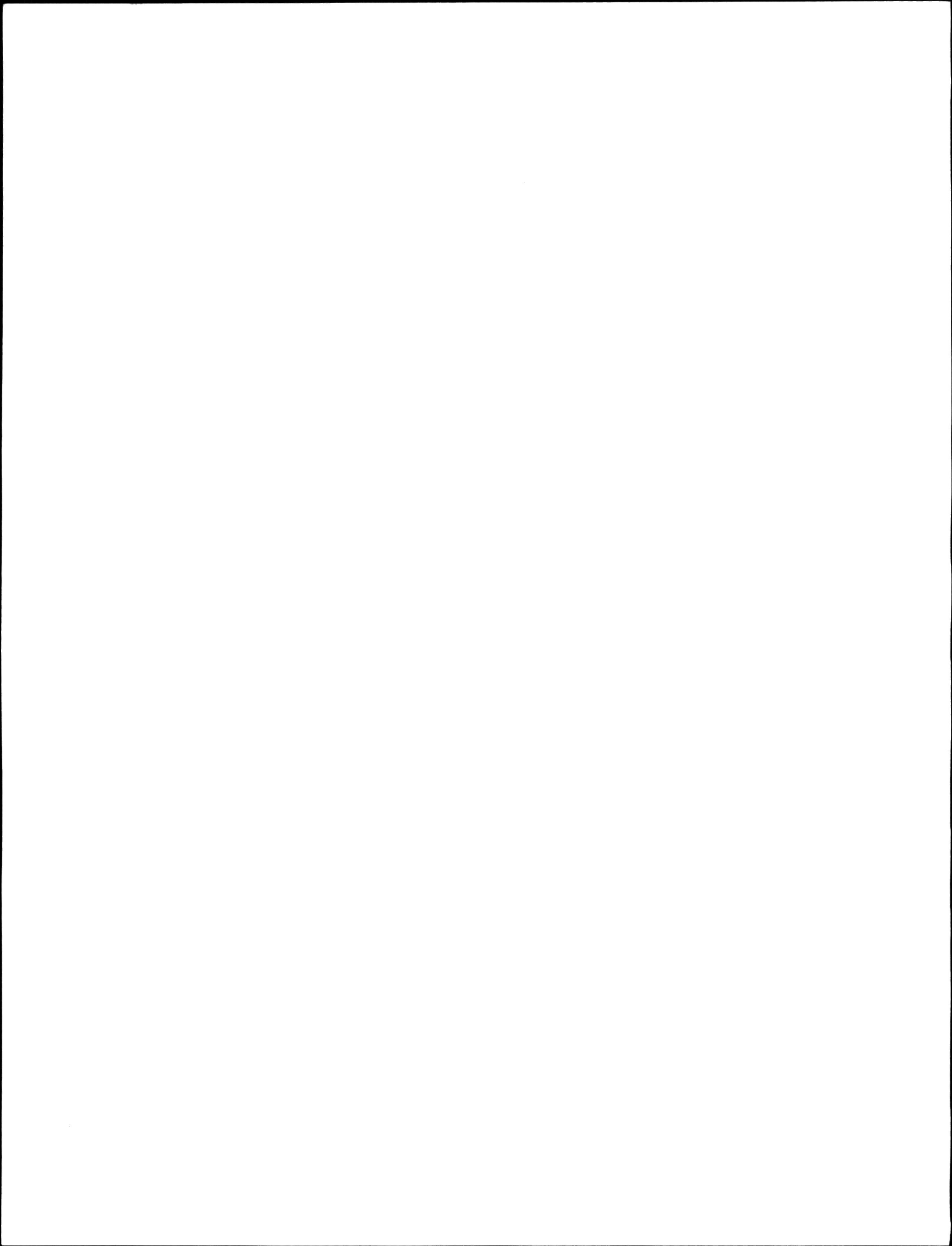
Problems during 1985-86 were minimal due to little staff turnover. Main achievements during the year were meeting the November 1 deadline for the annual "Sediment Data" publication, meeting the May 1 deadline for the annual "Surface Water Data" publication, satisfactory completion of the construction and maintenance program, and training staff in a variety of hydrometric program activities.

2.2.1 Training Program

The Headquarters Hydrometric Methods Section sponsored a DCP training course for staff involved in the operation of DCPs. Training was provided in the new mini-computer system by Headquarters and Alberta District data control staff. All staff received training in First Aid and CPR, and transport of dangerous goods. At the time of a district staff meeting, a manometer workshop was conducted.

2.2.2 Construction and Maintenance Program

The construction program was of a significantly lesser size than during preceding years in the 1980s; however, the



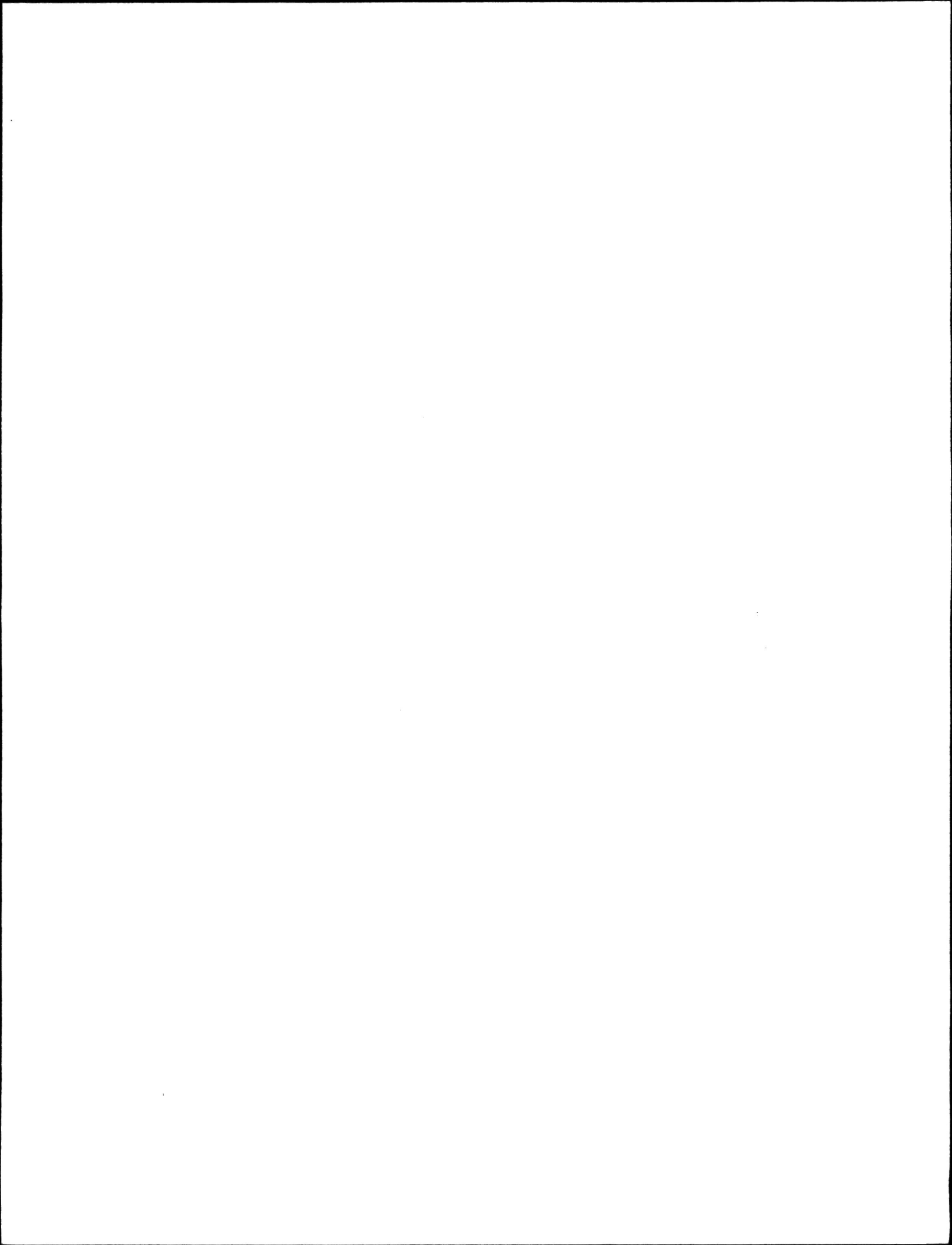
maintenance program was larger. All aspects of the program were satisfactorily completed. A total of 11 new hydrometric stations were installed. Maintenance was carried out at 66 stations and major reconstruction was conducted at 3 stations. Localities where both maintenance and construction were carried out are indicated in Appendix B, Table II and Figure I. Additional details regarding the construction and maintenance program are provided in the annual report "Alberta Gauging Station Construction and Maintenance, 1985-86".

2.3 WATER QUANTITY AND SEDIMENT NETWORKS

Changes which are reflected in Schedule "A", April 1, 1986 are summarized as follows:

2.3.1 New Stations Established during 1985-86

| <u>Station Name</u> | <u>Station No.</u> | <u>Designation</u> |
|--|--------------------|--------------------|
| 1. L.N.I.D. Canal above Oldman River Flume | 05AB016 | F-2 |
| 2. Verdigris Coulee near the Mouth | 11AA038 | F-3 |
| 3. Belly River near Glenwood | 05AD041 | FP-3 |
| 4. Berland River near the Mouth | 07AC007 | FP-3 |
| 5. Meeting Creek near Donalda | 05FC006 | FP-3 |
| 6. Pinto Creek near Grande Prairie | 07GC002 | FP-3 |
| 7. Gregg River near the Mouth | 07AF015 | P-1 |
| 8. Little Berland River at Hwy. #40 | 07AC008 | P-1 |
| 9. Salt Creek near Grouard | 07BF009 | P-1 |
| 10. Wabatanisk Creek at Hwy. #676 | 07GH005 | P-1 |
| 11. West Arrowwood Creek near Ensign | 05BM018 | P-1 |



2.3.2 Discontinued Hydrometric Stations at end of 1985-86

| <u>Station</u> | <u>Station No.</u> | <u>Designation</u> |
|--|--------------------|--------------------|
| 1. Athabasca River at Embarras Airport | 07DD001 | F-2 |
| - 2. L.N.I.D. Canal at Menzaghies Bridge | 05AB016 | F-2 |
| 3. Milk River at Hwy. #880 Bridge | 11AA036 | F-3 |
| *4. Athabasca River above Fletcher Channel | 07DD010 | FP-1 |
| 5. Belly River near Stand Off | 05AD002 | FP-3 |
| - 6. Highwood River below Picklejar Creek | 05BL021 | FP-3 |
| - 7. Meeting Creek near the Mouth | 05FC003 | FP-3 |
| 8. Ross Creek at Outlet of Elkwater Lk. | 05AH046 | FP-3 |

* Operated by Alberta Environment

2.3.3 Changes to Sediment Program (Sediment Program Discontinued)

| <u>Station</u> | <u>Station No.</u> | <u>Sediment Program Designation</u> |
|--|--------------------|-------------------------------------|
| 1. Athabasca River at Embarras Airport | 07DD001 | FP |

Table 1 indicates additions and deletions to the hydrometric network during 1985-86, which resulted in an increase of 4 stations operated by Water Survey of Canada, and the station designation effective April 1, 1985.

TABLE 1
WATER QUANTITY SURVEYS
GAUGING STATION DATA FOR 1985-86

| No. of Stations | | | No. of Stations Added 1985/86(1) | No. of Stations Discontinued 1985-86(1) | Stn. Designation April 1, 1985 | | | |
|-----------------|------------|----------|----------------------------------|---|--------------------------------|---------|---------|-------------|
| April 1/84 | April 1/85 | Change | | | FED. | F/P | PROV. | CONTRIBUTED |
| 553 (18) | 571 (14) | +18 (-4) | 11 (0) | 7 (1) | 124 (1) | 219 (5) | 169 (8) | 59 |

(1) Stations operated by WSC.

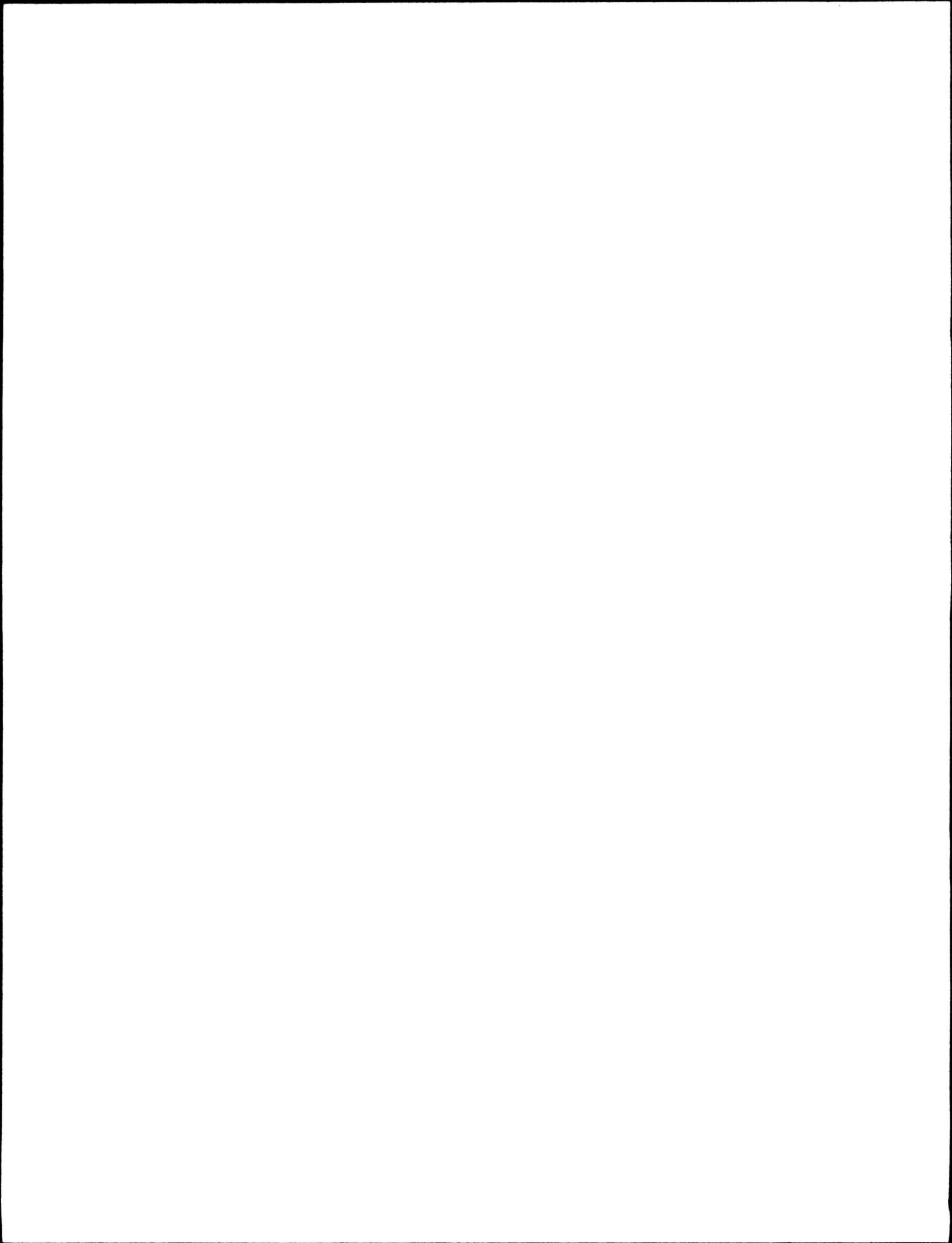


Table 2 illustrates the changes which have occurred in each of the designation categories from the commencement of the cost sharing agreement in April 1975 to April 1, 1985. Table 3 provides detailed gauging station data as of April 1, 1985.

TABLE 2
 WATER QUANTITY SURVEYS
COMPARATIVE GAUGING STATION DATA, APRIL 1/75 TO APRIL 1/85

| Federal Stations | | | F/P Stations | | | Provincial Stations | | | Total Stations | | |
|------------------|-----------|--------|--------------|-----------|--------|---------------------|-----------|--------|----------------|-----------|--------|
| Apr. 1/75 | Apr. 1/85 | Change | Apr. 1/75 | Apr. 1/85 | Change | Apr. 1/75 | Apr. 1/85 | Change | Apr. 1/75 | Apr. 1/85 | Change |
| 157 | 124 | -33 | 221 | 219 | -2 | 46 | 169 | +123 | 424 | 512 | +88 |

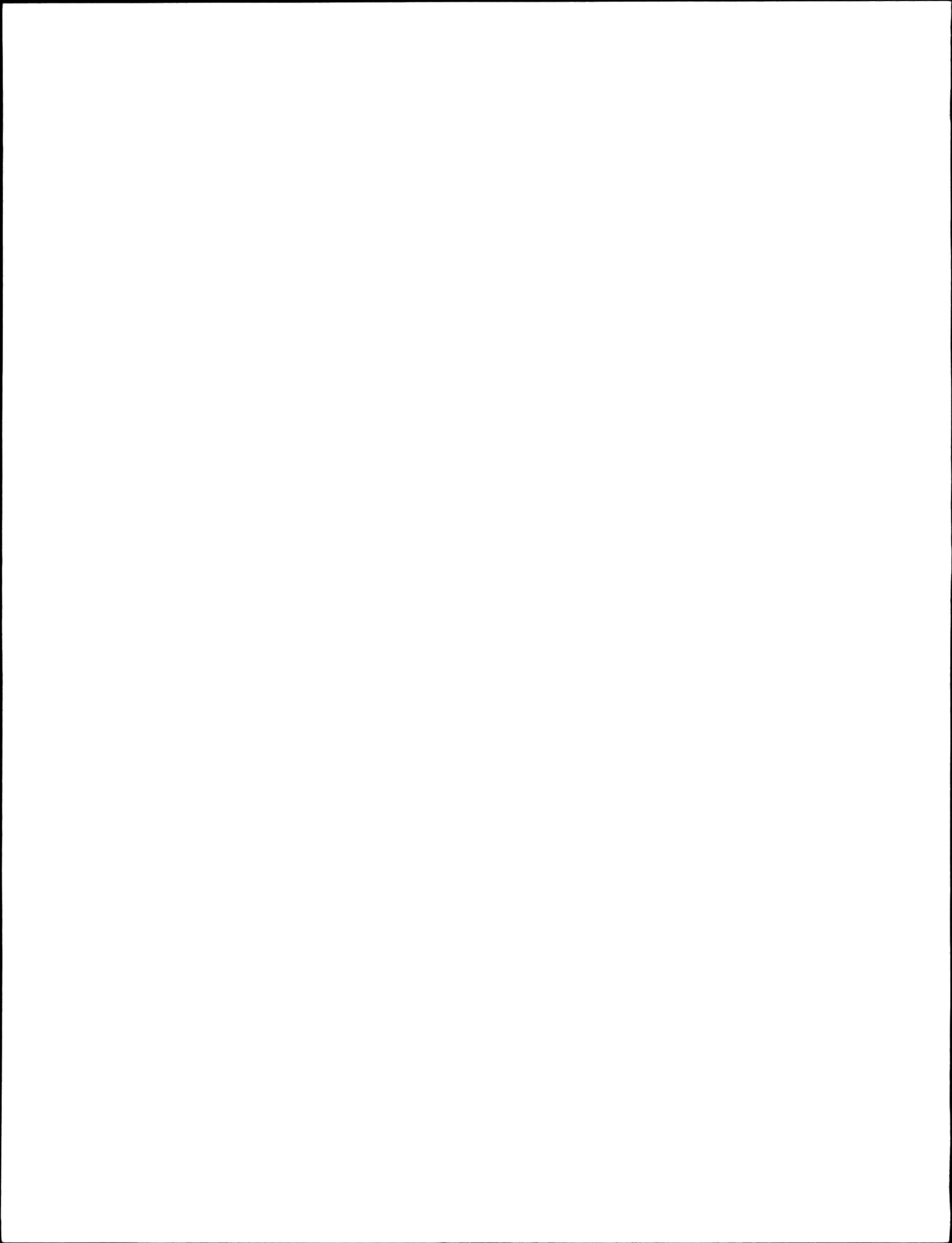
TABLE 3
 WATER QUANTITY SURVEYS
DETAILED GAUGING STATION DATA, APRIL 1, 1985

| F-1 | F-2 | F-3 | F-4 | Total F | F/P-1 | F/P-2 | F/P-3 | Total F/P | P-1 | Total P | Contri- buted | Total All |
|--------|--------|--------|--------|---------|--------|--------|---------|-----------|---------|---------|------------------|-----------|
| 26 (0) | 58 (1) | 30 (0) | 10 (0) | 124 (1) | 21 (0) | 24 (0) | 174 (5) | 219 (5) | 169 (8) | 169 (8) | 59 (0) | 571 (14) |

2.4 NETWORK PLANNING ACTIVITIES

2.4.1 Sediment

The report "Sediment Station Analysis - Highwood River near the Mouth (updated)" was finalized and distributed. A similar report for Oldman River near Brocket was also completed and distributed. Planning analysis studies for



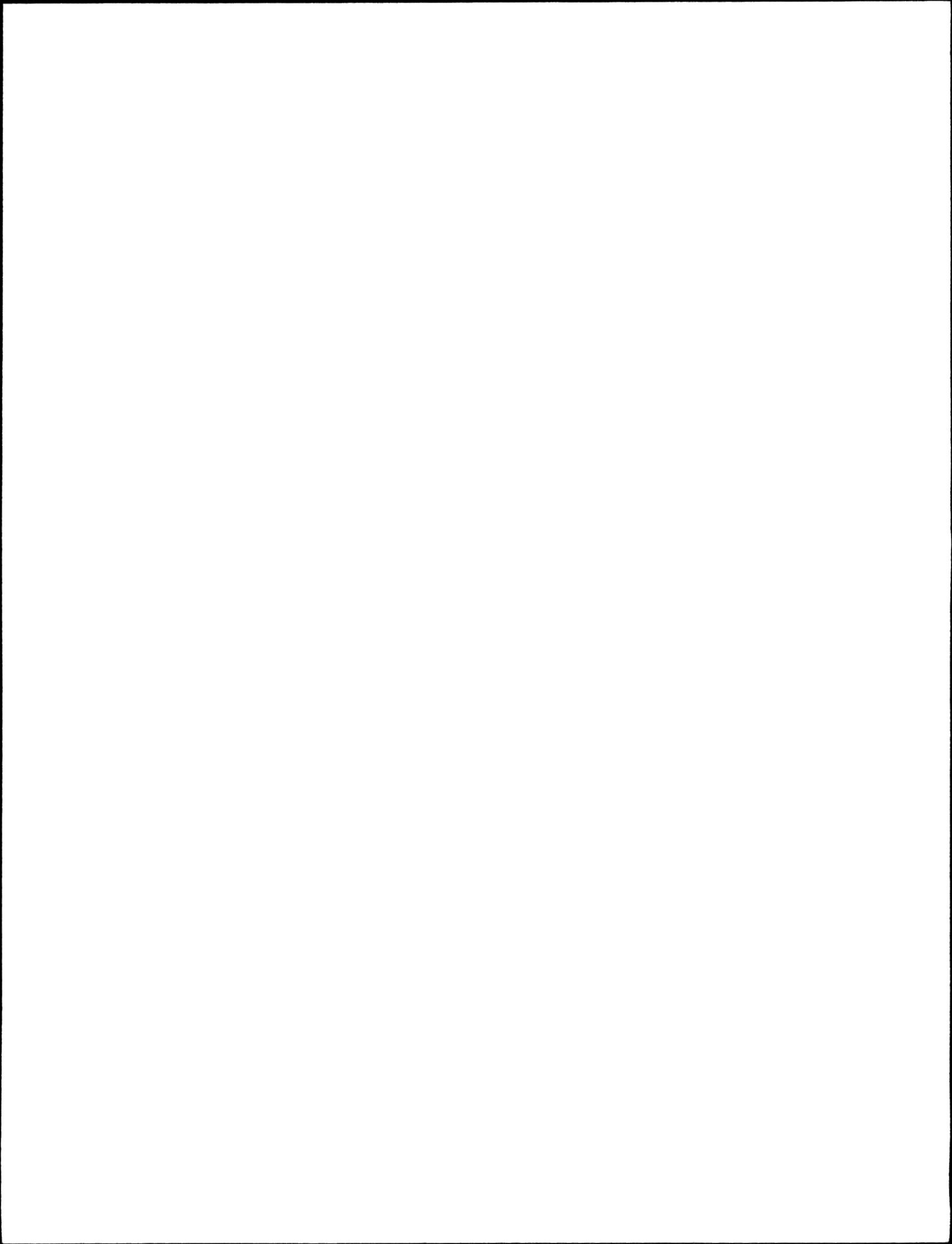
other long-term sediment stations will continue to remain a high priority project during 1986-87.

2.4.2 Network Planning Project

A first draft of the "Summary Report - Western and Northern Region Hydrometric Network Evaluation and Planning Activities" was completed in March 1986. Part I of the report describes the evaluation and planning process which focussed on two priorities for the hydrometric network in the W&NR: a definition of network requirements to satisfy present and near-term future federal water management responsibilities, and a definition of network requirements to satisfy regional hydrological information needs.

2.4.3 Historical Network Changes

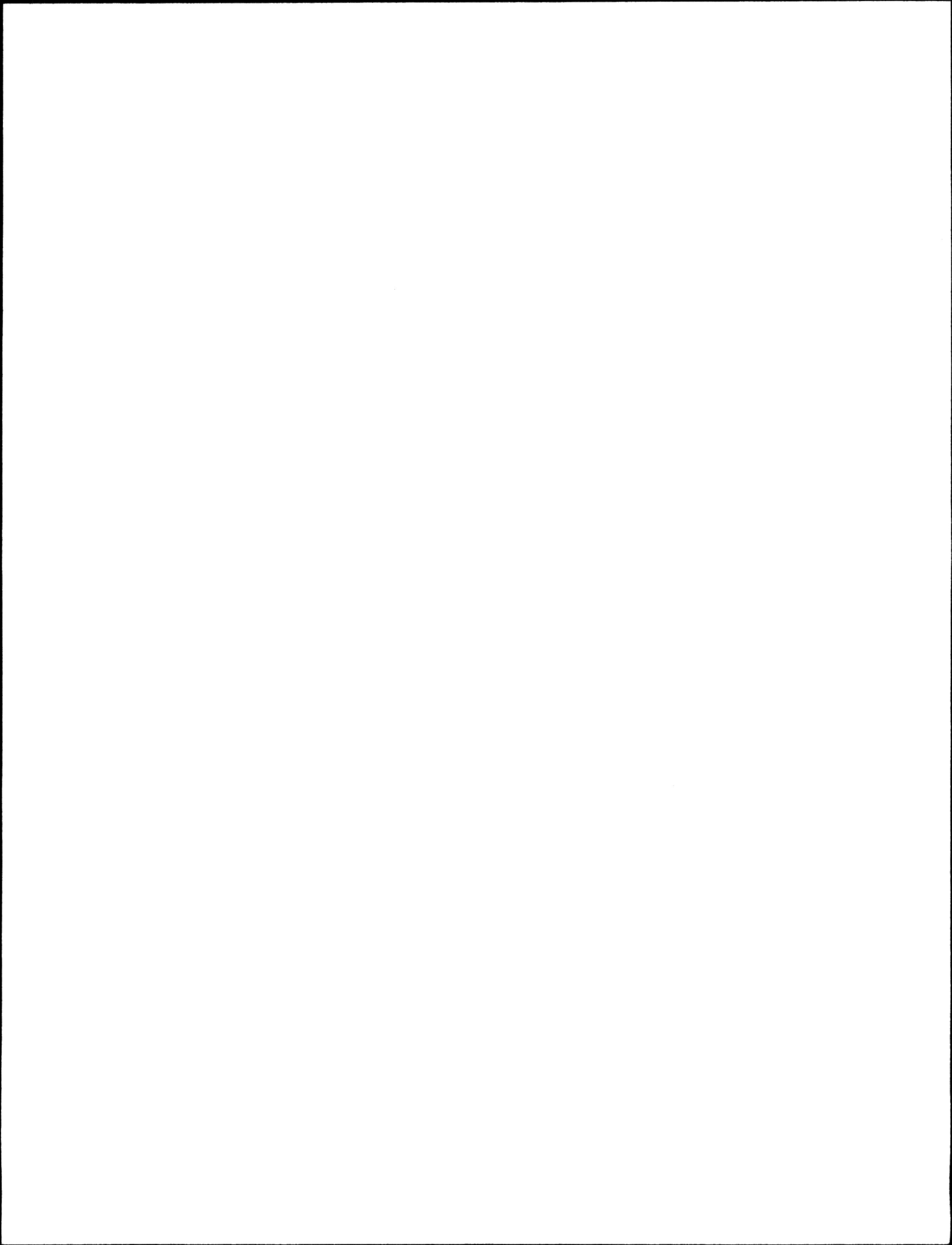
As the total number of stations in the hydrometric network may remain the same or change by a small amount from year to year, it can appear that the network is dormant and that network planning is not occurring. This is actually far from the truth, and in fact, dynamic changes have occurred in the network from the inception of the cost sharing agreement, as indicated in the following summary:



| <u>Year</u> | <u>New Stations Established</u> | <u>Stations Discontinued</u> |
|-------------|---------------------------------|------------------------------|
| 1975-76 | 33 | 14 |
| 1976-77 | 21 | 9 |
| 1977-78 | 11 | 25 |
| 1978-79 | 15 | 11 |
| 1979-80 | 5 | 5 |
| 1980-81 | 17 | 8 |
| 1981-82 | 17 | 0 |
| 1982-83 | 17 | 2 |
| 1983-84 | 22 | 8 |
| 1984-85 | 27 | 14 |
| 1985-86 | <u>11</u> | <u>7</u> |
| Total: | 196 | 103 |

The new stations established over this eleven-year period represent 36% of the hydrometric network operated by Water Survey of Canada and Alberta Environment as of April 1, 1986 and the discontinued stations represent 19% of the network.

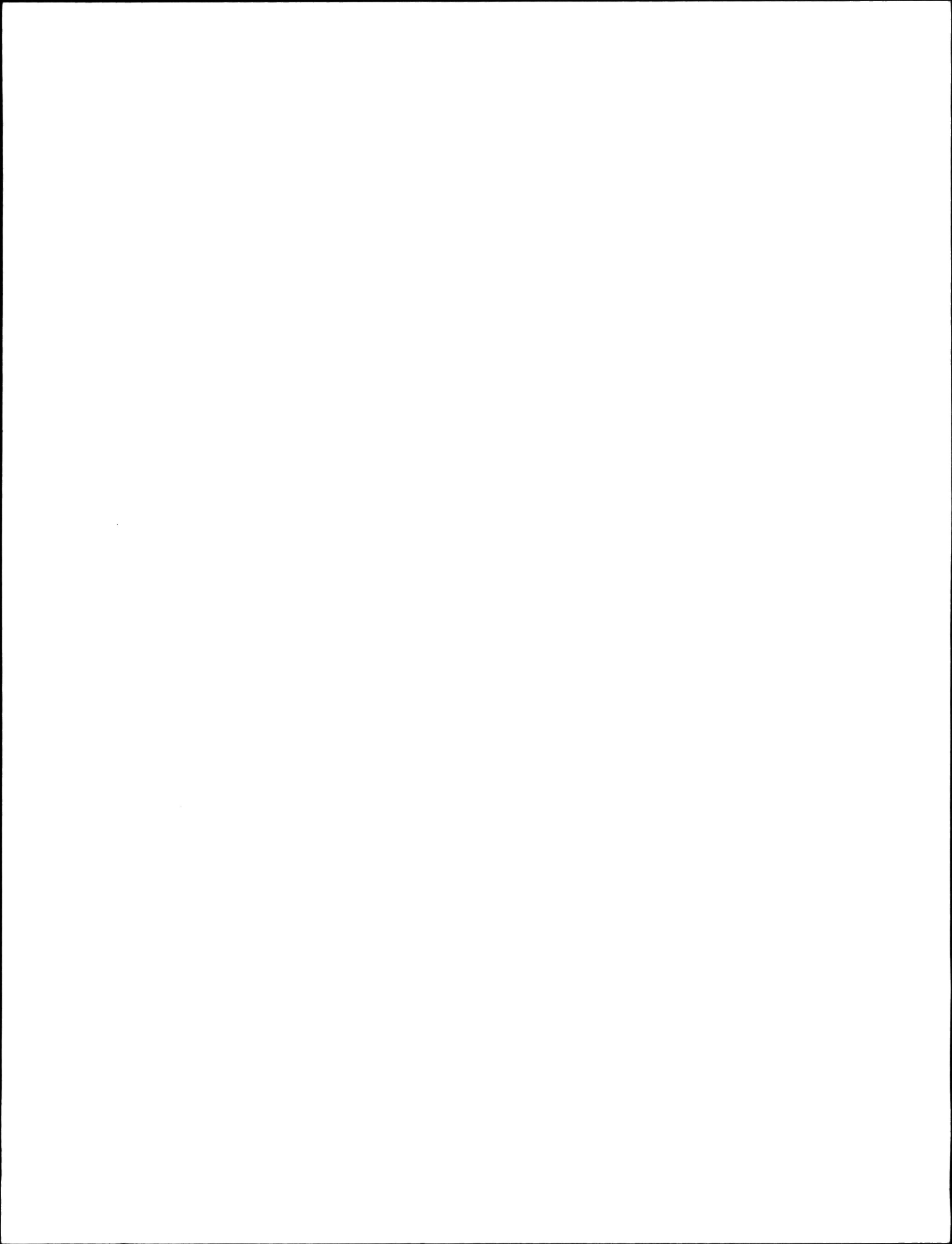
In addition to the 299 stations which have been added or deleted from the network, a large number of station designation changes have also occurred over the eleven-year period and these are summarized as follows:



| <u>Designation Change</u> | <u>Number of Stations</u> |
|---------------------------|---------------------------|
| F to F-P | 15 |
| F to P | 14 |
| F-P to F | 7 |
| F-P to P | 27 |
| F-P to Contributed | 1 |
| P to F | 2 |
| P to F-P | 1 |
| F to F-P (Sediment) | 5 |
| F-P to P (Sediment) | <u>5</u> |
| Total: | 77 |

These designation changes represent 14% of the network and therefore between designation changes, new station construction and station discontinuance, there has been a change of 69% during the period of the cost-sharing agreement.

The changing nature for financial responsibility of the hydrometric network since the inception of the cost-sharing agreement is illustrated in Figure 1. This figure includes stations in Schedule "A" operated by the province. It is readily apparent from this graph that there has been a decrease in the percentage of the federal financial contribution to the network and a significant increase in the percentage of the provincial contribution since the inception of the agreement; however, at the same time, it should be noted that initially the federal government financed the majority of the network and it wasn't until April 1, 1982 that the respective shares were approximately equal. One of the major reasons for the shift in financial responsibility is that a thorough review of 'Federal' and 'Federal-Provincial'



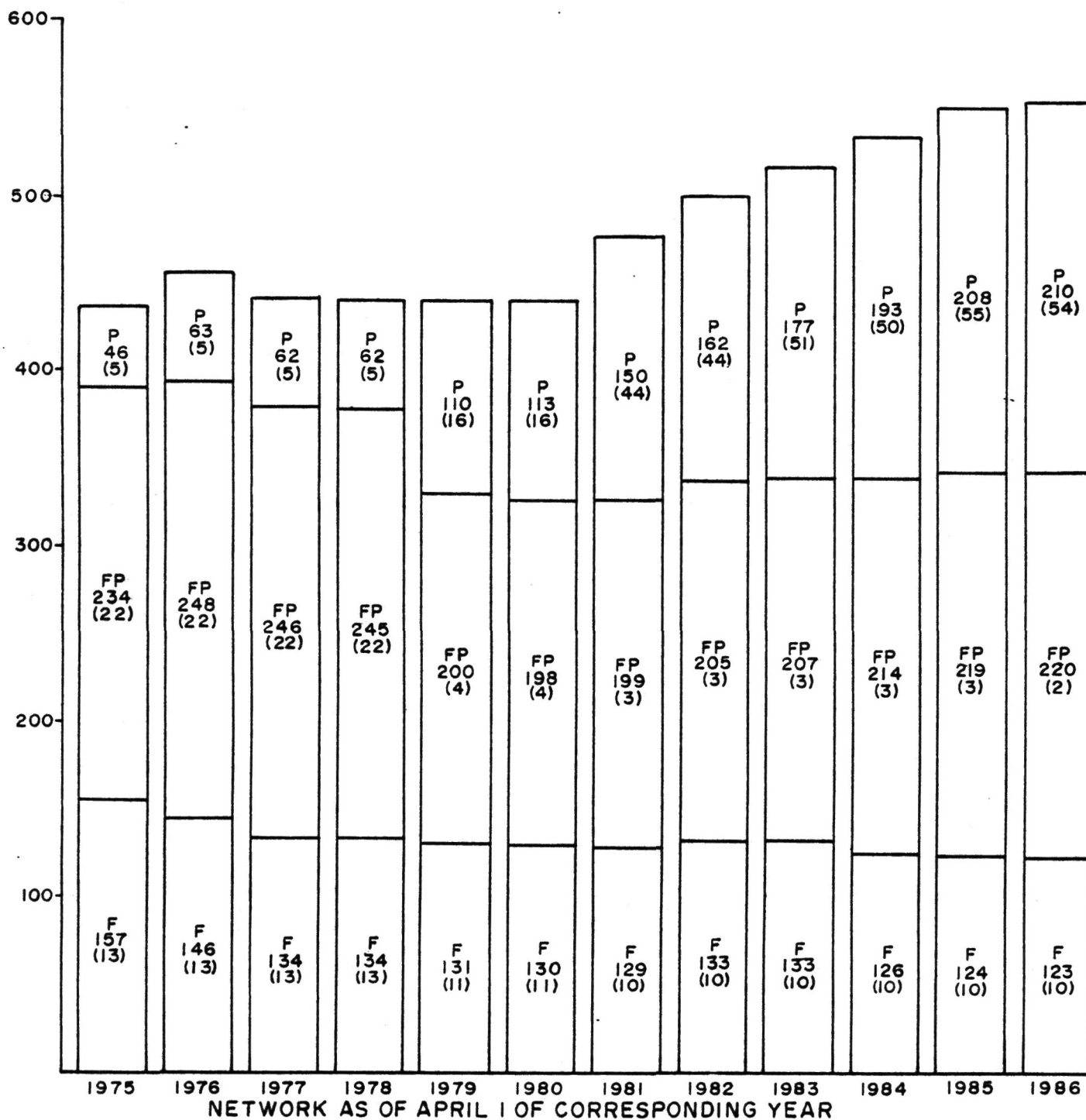
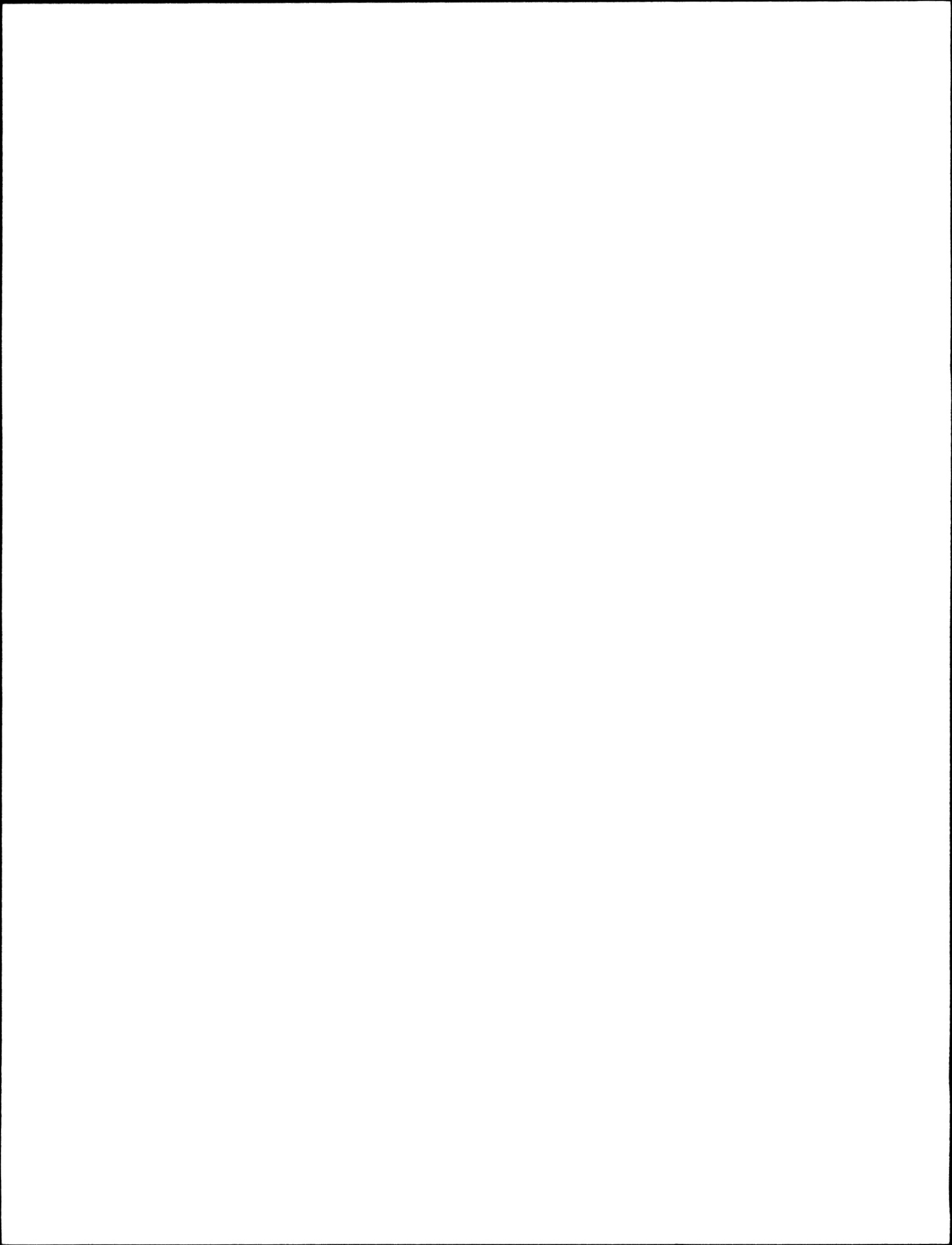


Figure 1

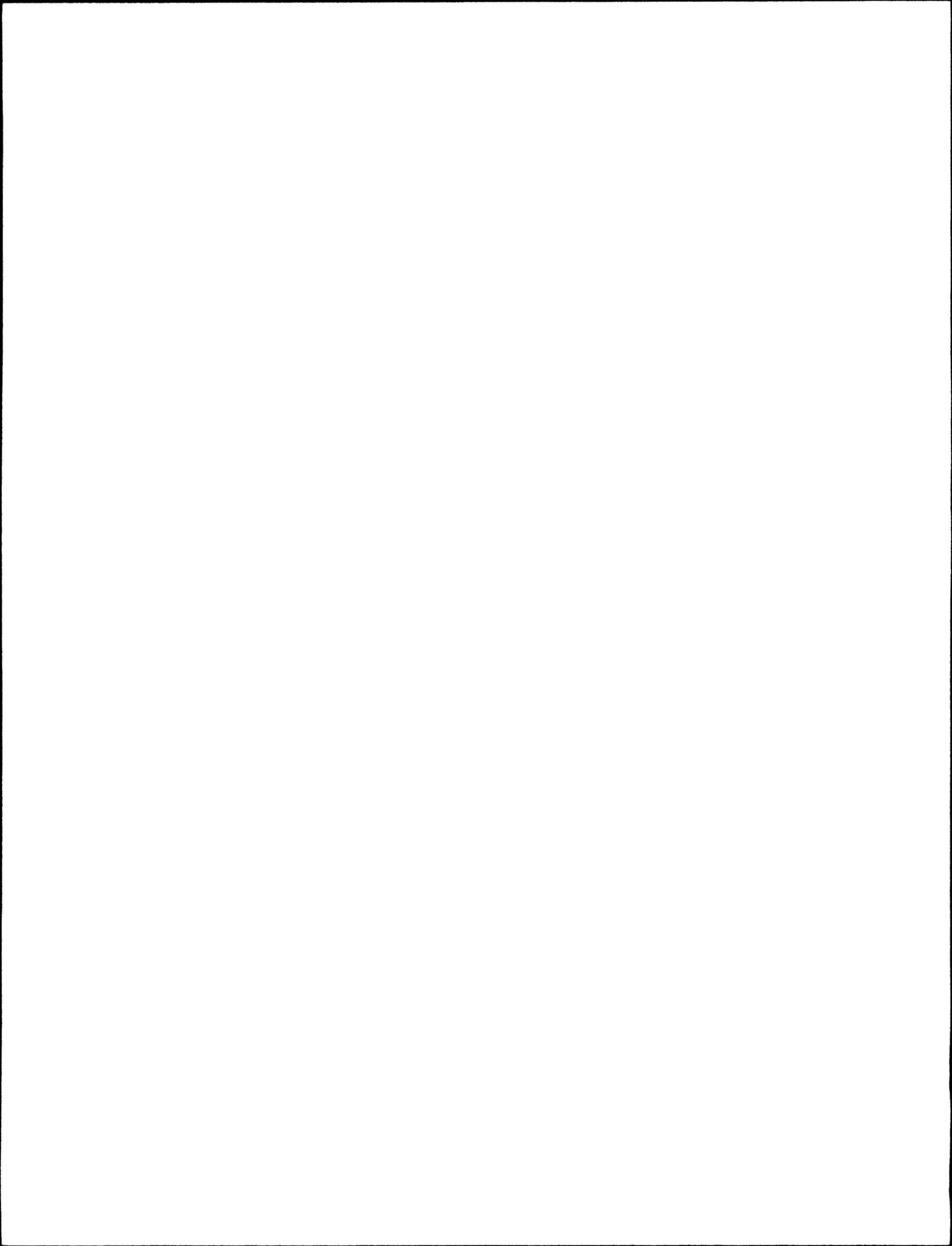
**FINANCIAL RESPONSIBILITY AND NETWORK CHANGES
IN ALBERTA 1975 - 1986**

NOTE: Bracketed values indicate the number of stations operated by Alberta Environment, and these are included in the non-bracketed value. Prior to 1981 only stations operated in the Peace-Athabasca Delta and Spring Creek basin are shown in the bar graph.



designated stations indicated that there was no longer a federal interest in a large number of stations and the province assumed financial responsibility for these stations. Also, since the inception of the agreement, the requirements for additional stations have mainly been of a provincial nature for regional water resource inventory and analysis, water allocation and management, and flow forecasting.

The history of the size of the hydrometric network in Alberta is illustrated in Figure 2. In terms of the current era, it can be seen that the hydrometric network increased rapidly from the mid-50's until the signing of the cost-sharing agreement in 1975. Since the implementation of the agreement, the network has remained relatively stable in size with an increase of 18% of the stations in the cost sharing agreement occurring from April 1, 1975 to the end of 1985-86. The majority of this increase has occurred during the few years preceding the Alberta hydrometric enhancement program and during the enhancement program period.



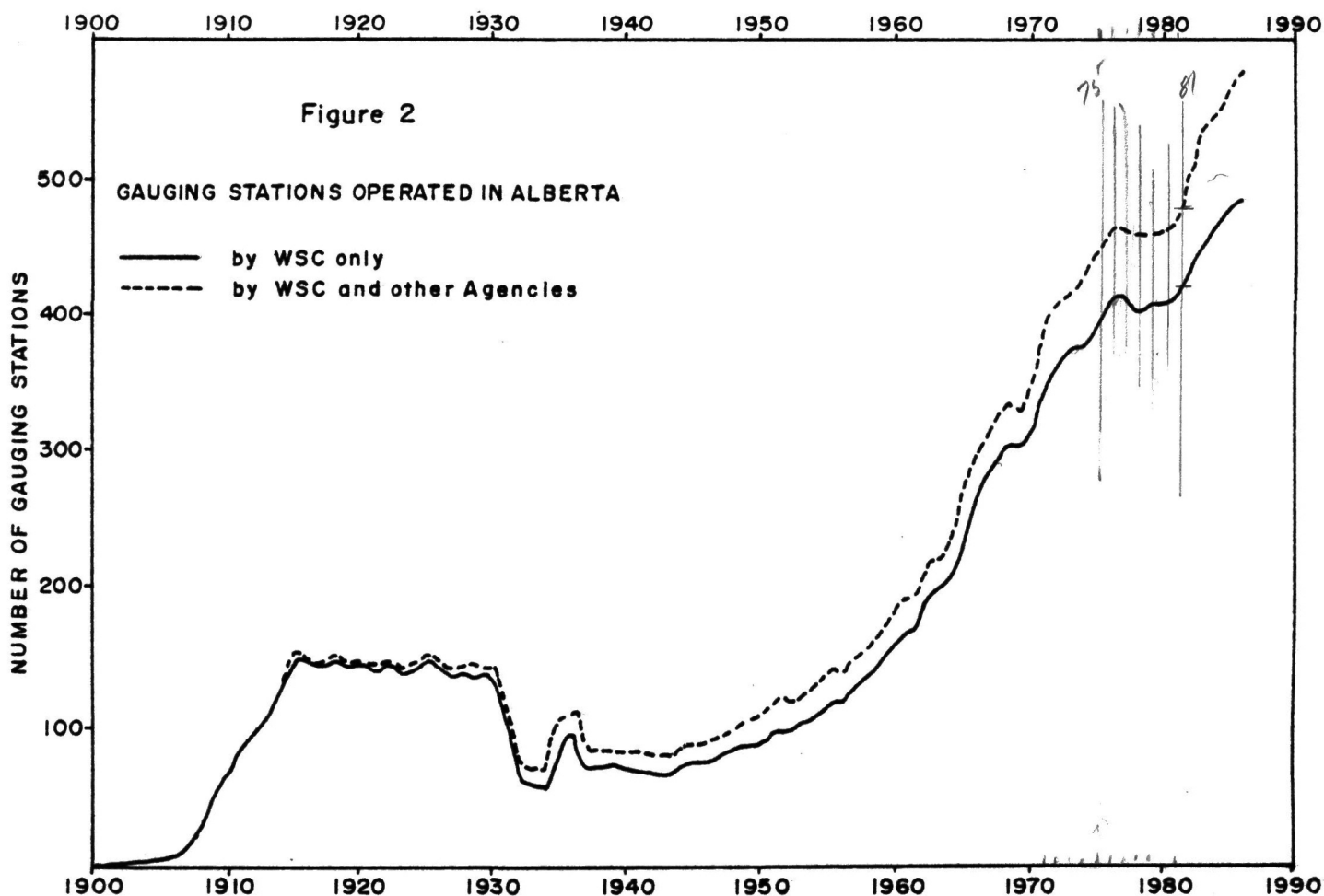
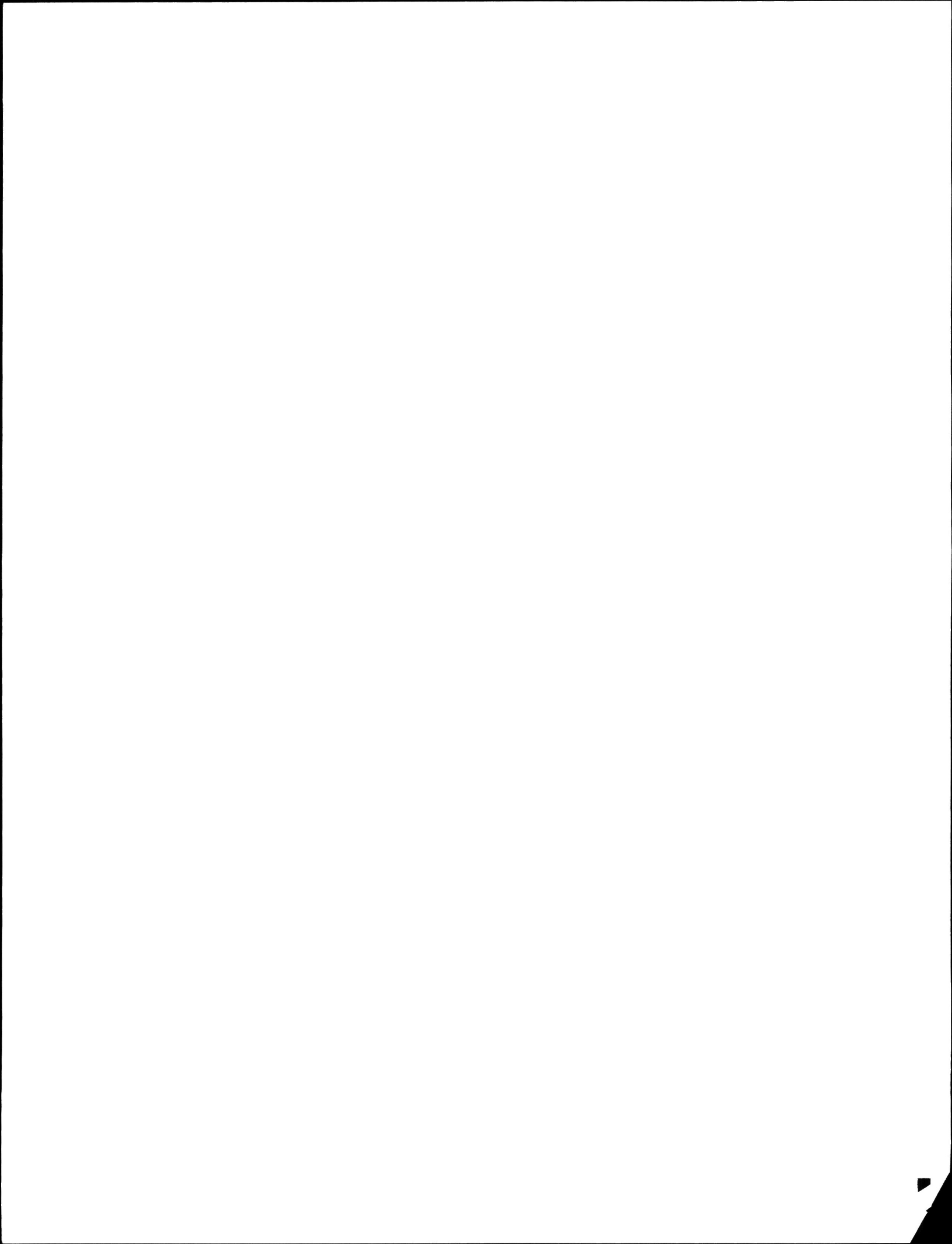
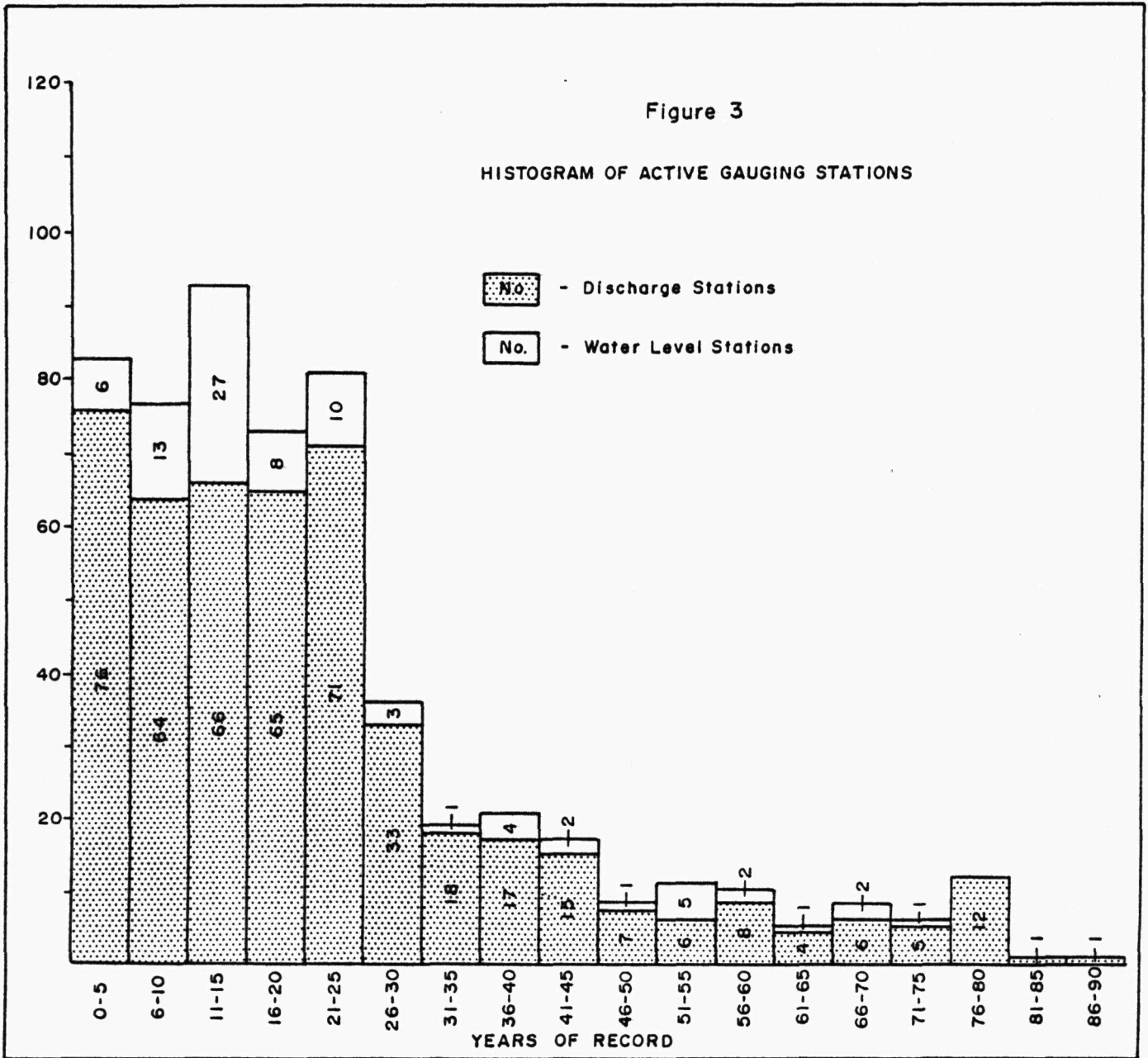
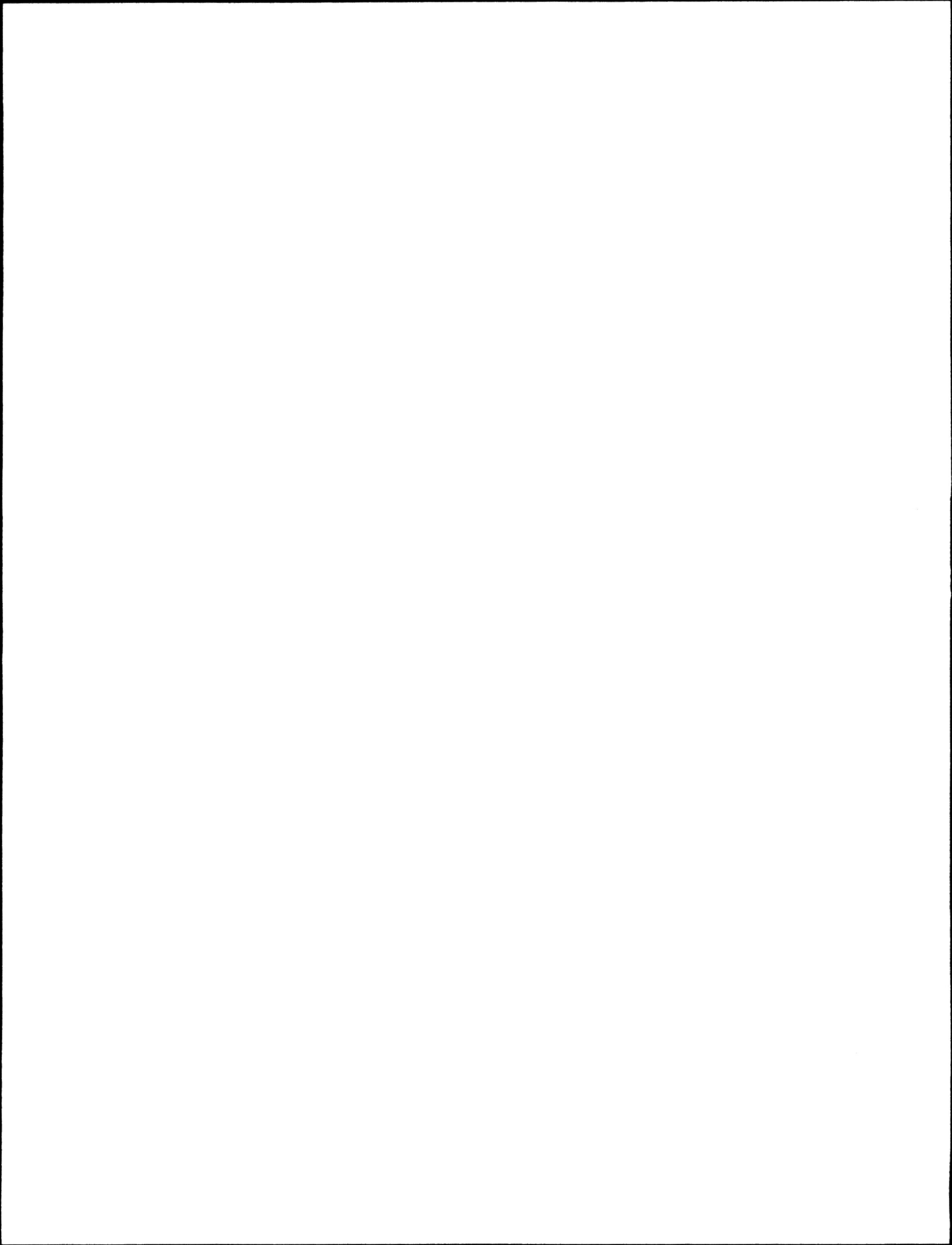
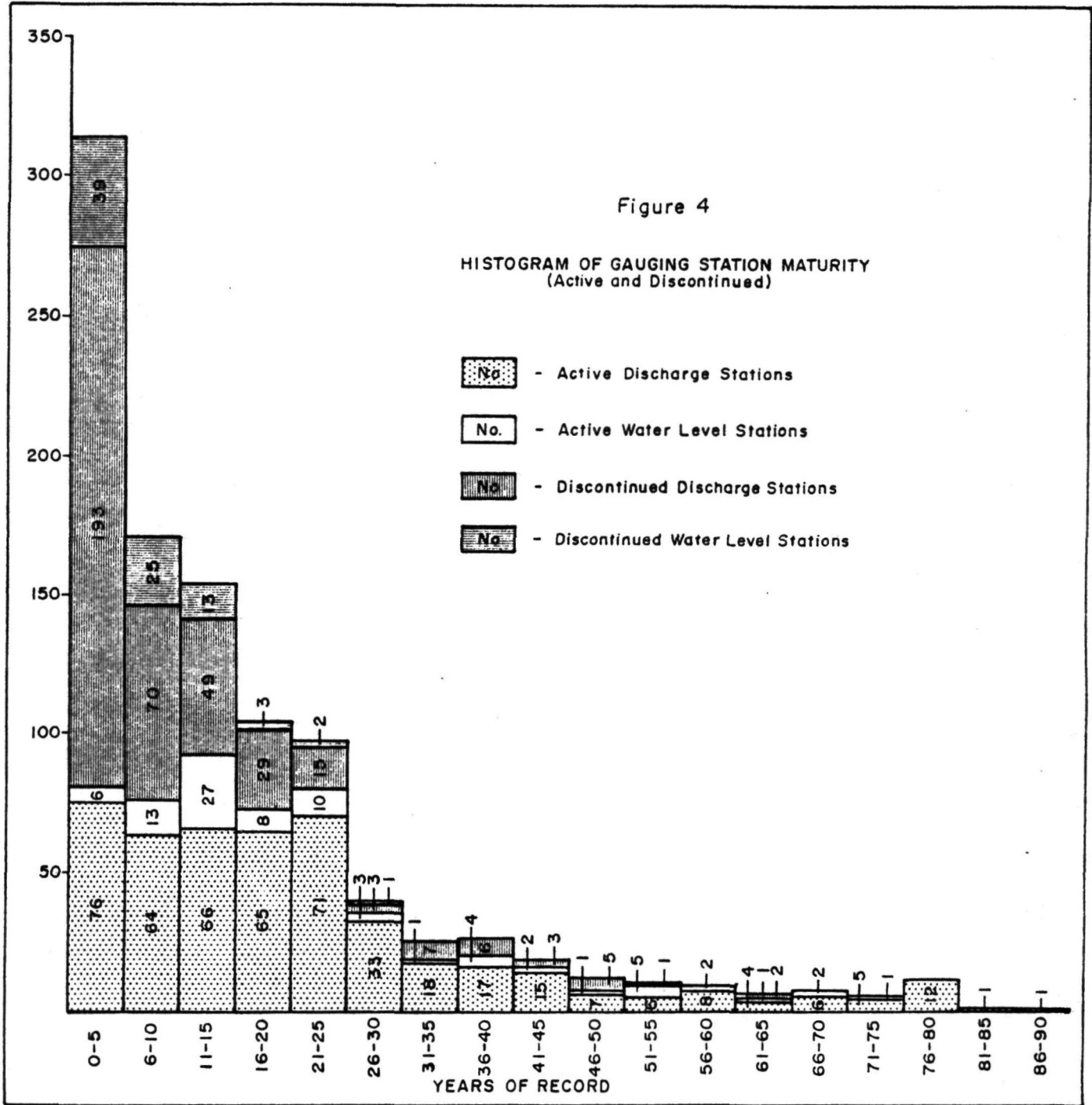


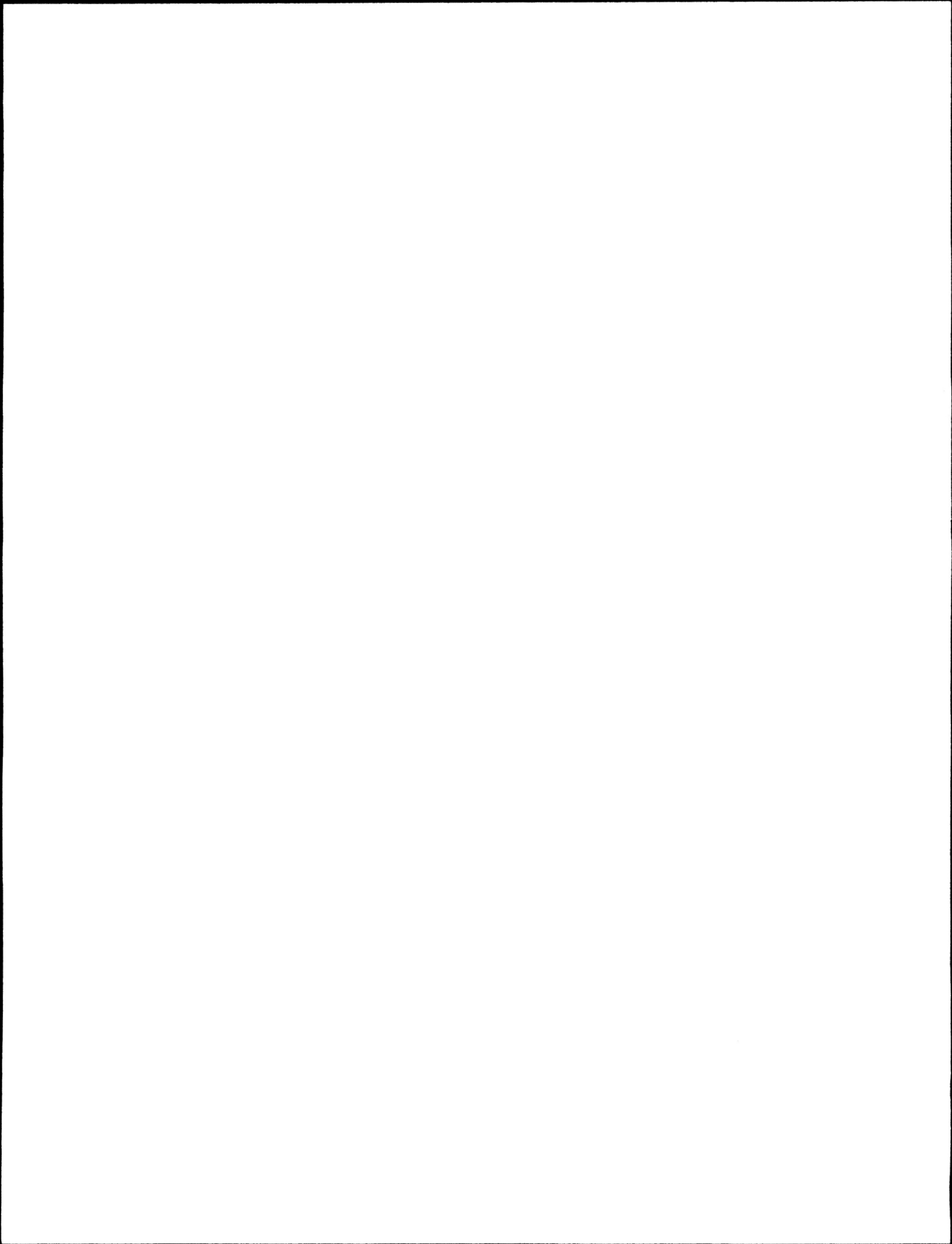
Figure 3 is a histogram of active gauging station maturity in Alberta and Figure 4 is a similar histogram which also includes discontinued gauging stations. The histogram of active gauging stations depicts the lack of maturity of the Alberta network. Twenty-eight percent of the network has ten years or less of record and the median value of years of data for the active network is only 17.







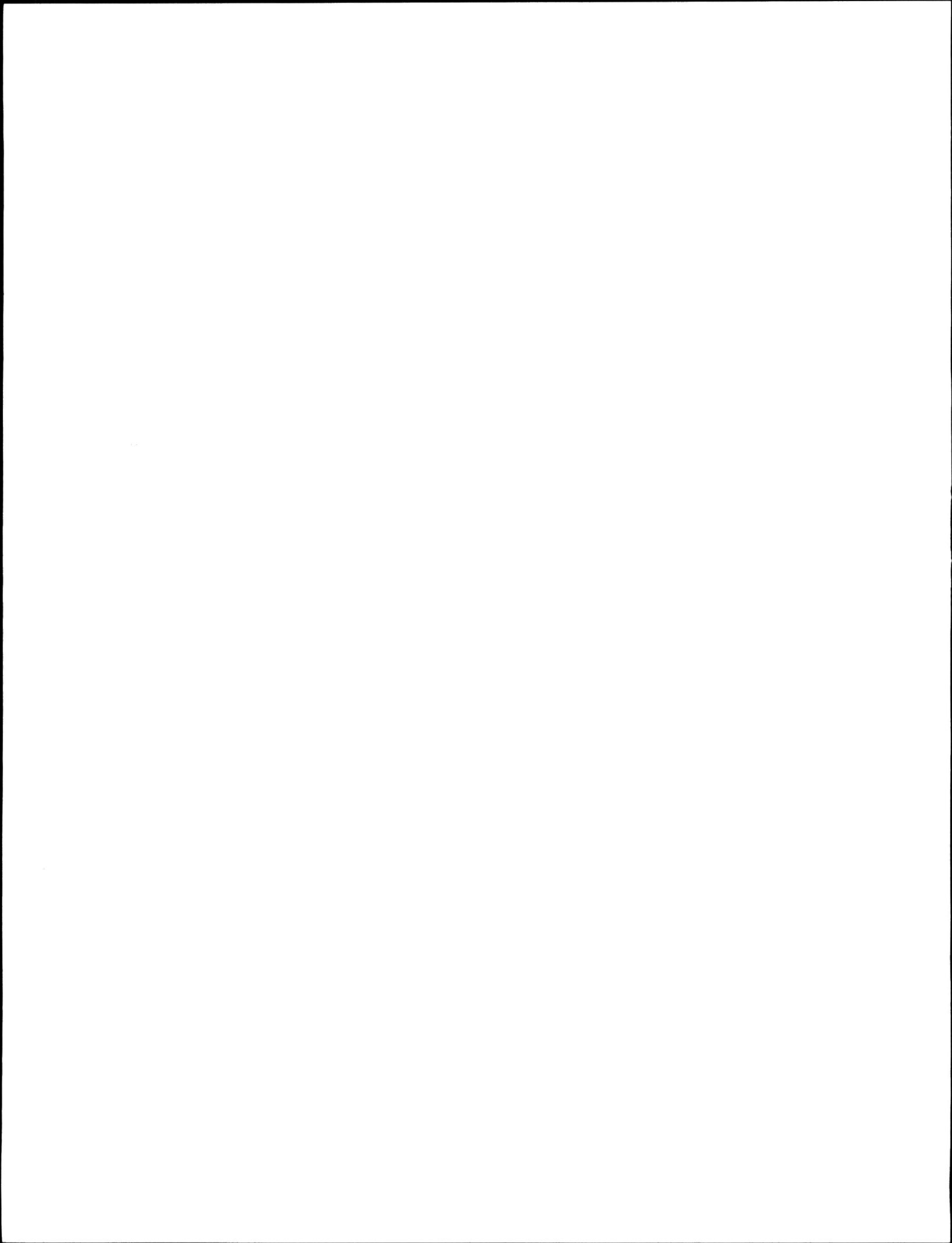




2.5 PROGRAM PLANS FOR 1986-87

The major program plan for 1986-87 is the operation of the hydro-metric and sediment networks, which will be listed in Schedule "A" dated April 1, 1986. Co-operative program plans for 1986-87 include continuing work on a study similar to that which produced the report 'Selected Characteristics of Streamflows in Alberta'. Office studies conducted by the federal Water Resources Branch will include an updated method of determination of Milk River natural flow, analysis of long-term sediment stations, completion of the 1982 Smoky River Basin Flood report, and a network planning study to re-evaluate short and long term federal hydrometric network requirements.

The construction and maintenance program for 1986-87 also comprises a significant portion of program plans. This includes construction at 7 sites and maintenance and major reconstruction at approximately 39 stations. The construction program is much smaller in size to that conducted the last few years; however, the maintenance program is significantly larger.



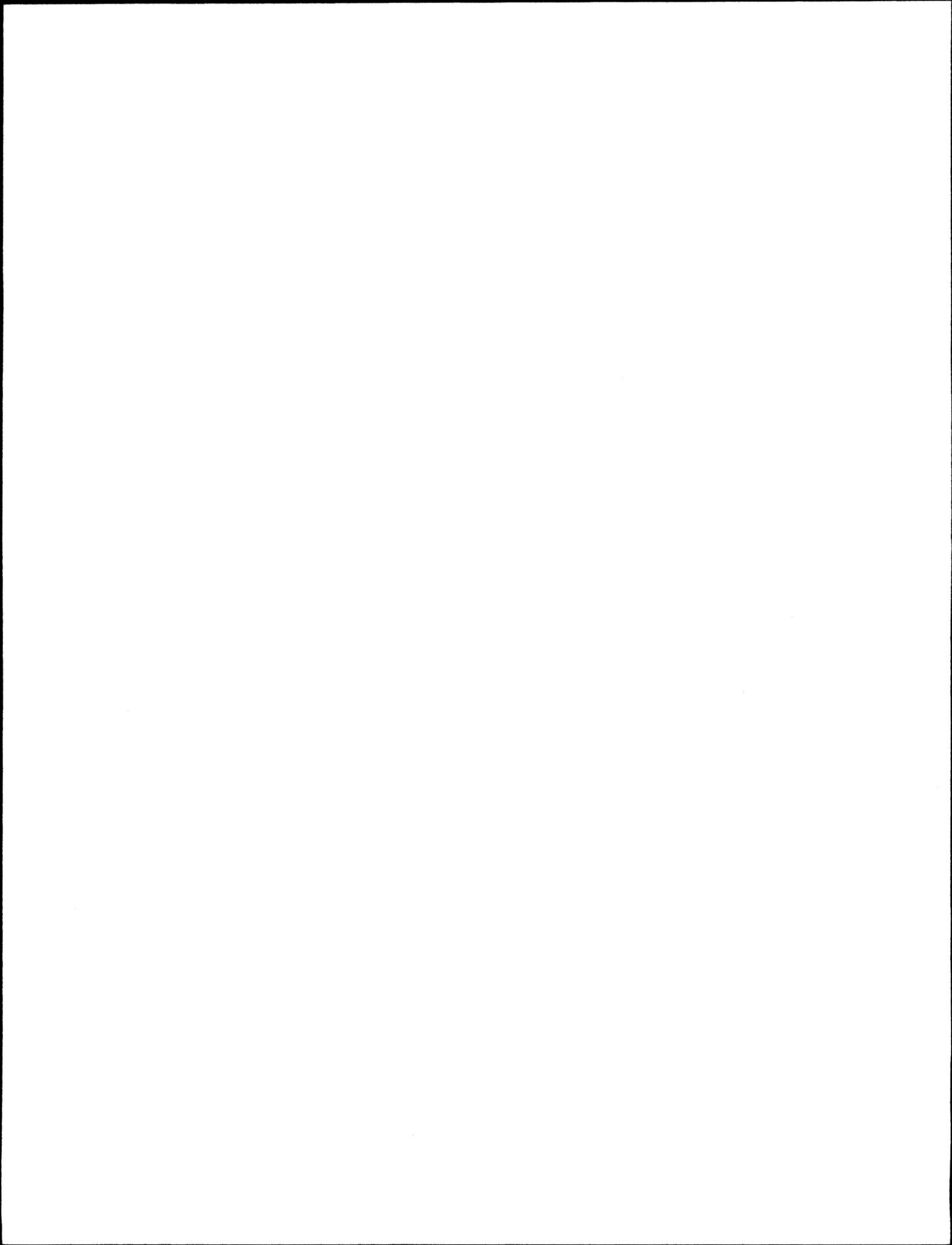
3.0

COST OF OPERATION

The Summary of Financial Considerations 1985-86 (p.20) is largely based upon information contained in Appendix "B", which provides detailed information on the respective federal and provincial shares of salaries and O&M for the hydrometric and sediment networks. Appendix "B" also provides a detailed breakdown of hydrometric station construction and maintenance costs and a brief description of the procedure utilized for the calculation of depreciation. During 1985-86 Alberta paid the Schedule "D" amount of \$927,000 to the hydrometric agreement, whereas the Alberta net share was \$917,865.

The reason for the difference in the 1985-86 payment and Alberta net share was mainly due to a significant decrease in unit O&M costs from 1984-85 to 1985-86. This decrease in costs occurred due to a reduction in the number of field trips to remote locations and lesser expenditures on stock and miscellaneous items. During 1985-86 the decrease in unit costs per hydrometric station was 0.4%. In terms of total program costs the decrease was partially due to depreciation being less than the previous year, as much of the equipment in use had been fully depreciated by 1984-85.

A summary of hydrometric units per staff indicates a steady increase from the inception of the hydrometric agreement in 1975-76 to 1980-81 with the first decrease occurring in 1981-82. During



SUMMARY OF FINANCIAL CONSIDERATIONS

1985-86

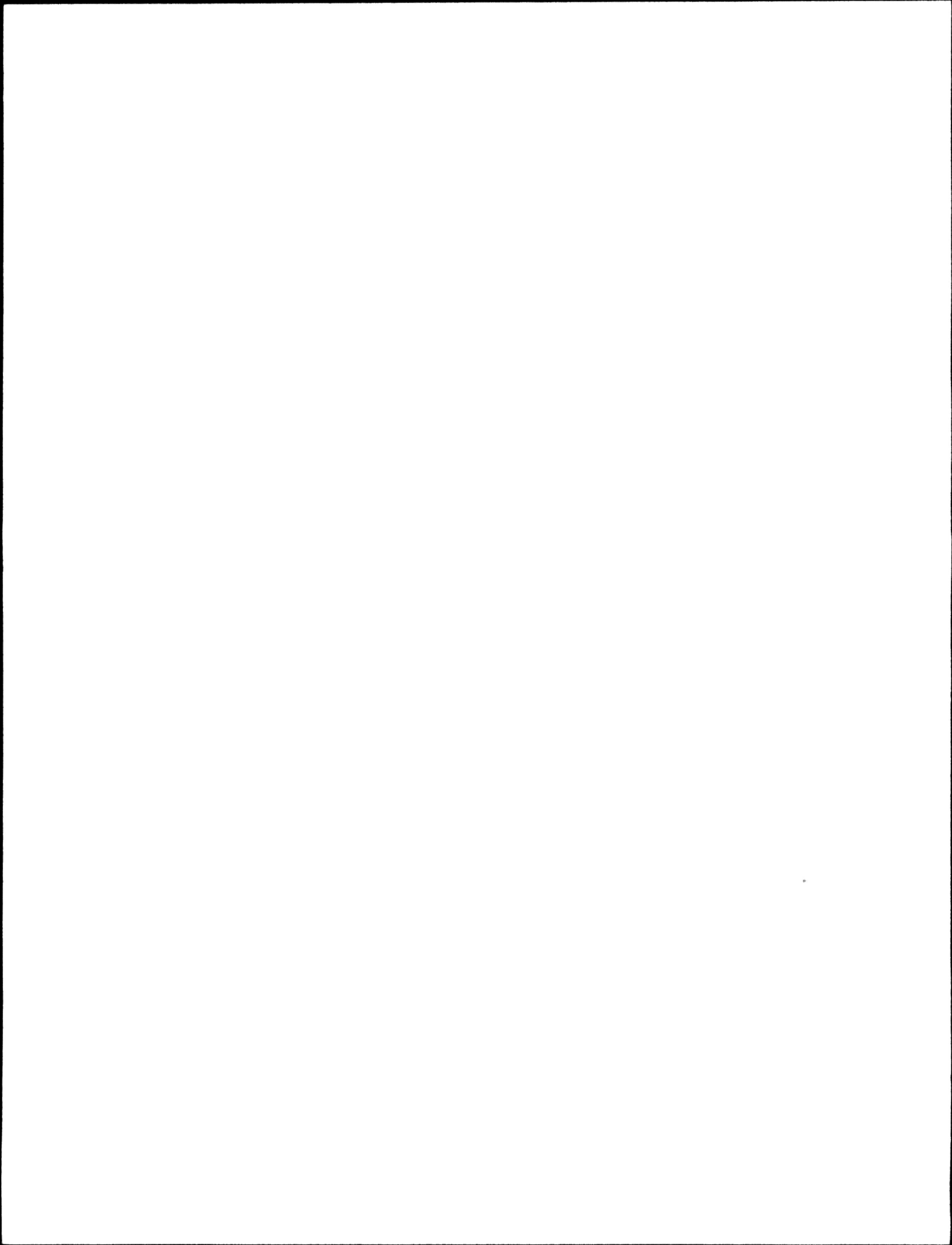
| | No. of Stns. | Total Cost | Share | |
|---|--------------|------------------|----------------|----------------|
| | | | Federal | Alberta |
| 1. <u>Hydrometric Network</u> | | | | |
| Operated by Water Survey of Canada | 470 | 1,463,187 | 688,396 | 774,791 |
| Depreciation-Hydrometric Equipment and Vehicles | | 73,100 | 34,392 | 38,708 |
| 2. <u>Sediment Stations</u> | | | | |
| Full program operated by Water Survey of Canada(a) | 13 | 47,594 | 11,182 | 36,412 |
| Depreciation - Sediment Equipment | | 600 | 141 | 459 |
| Laboratory-Alberta Program | | 7,778 | - | 7,778 |
| 3. <u>Construction & Maintenance</u> | | | | |
| Construction of 11 hydro-metric stations and maintenance of 69 hydrometric stations | 80 | 199,433 | 100,609 | 98,824 |
| Depreciation - Construction Equipment and Vehicles | | 7,600 | 3,834 | 3,766 |
| TOTAL: Equipment & Vehicles | | 1,799,292 | 838,554 | 960,738 |

Alberta Net Share: 960,738 - 41,439(b) - 1,434(c) = 917,865

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

(b) Credit to Alberta for stations of federal interest operated in the Peace-Athabasca Delta (PAD) Area by Alberta Environment
(10.40 units x 3,822.83) + (10.40 units x 155.53 per unit depreciation)

(c) Credit to Alberta for F-P station Spring Creek near Valleyview

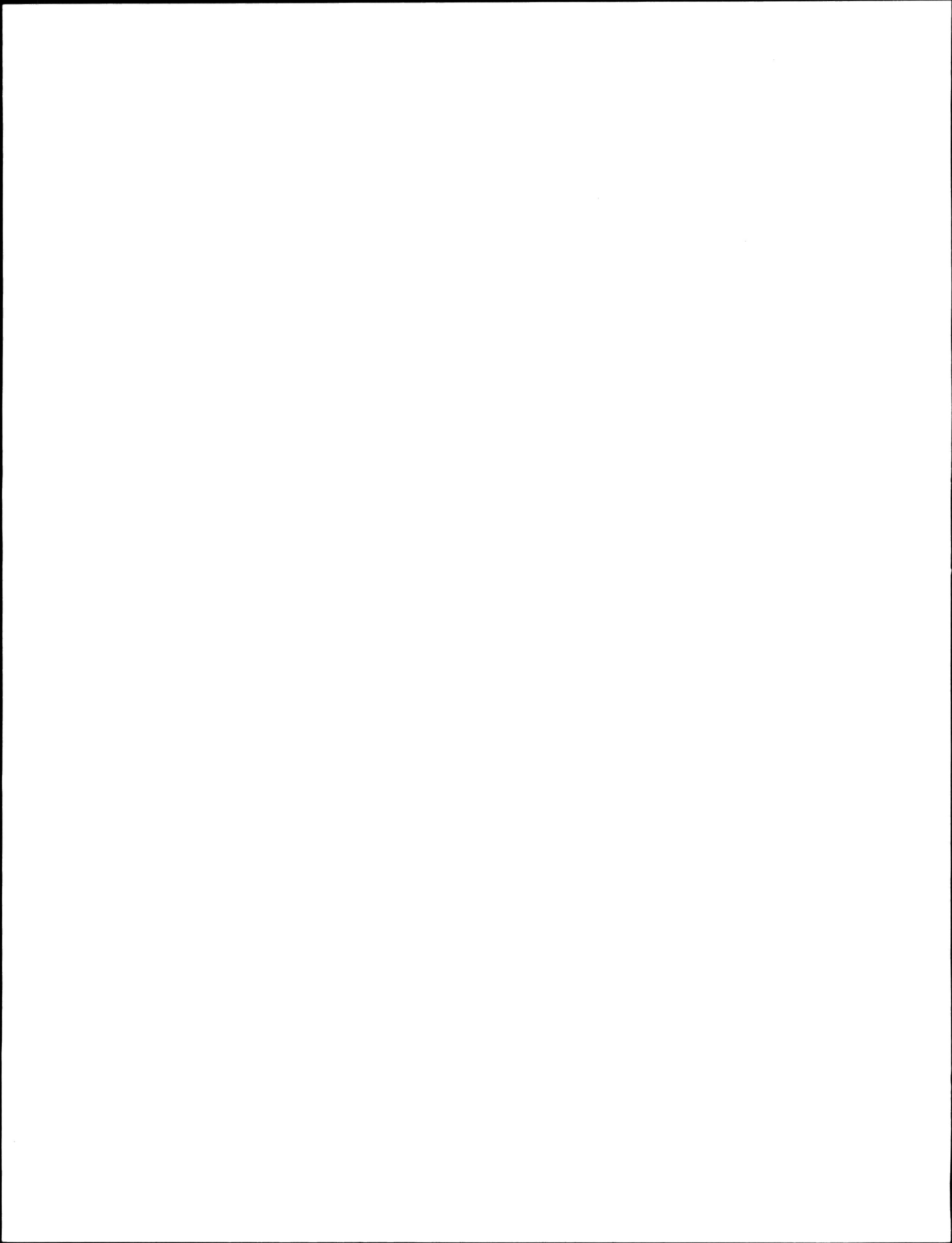


1982-83 the units per staff again rose to the 1980-81 level; however, it should be recognized that units/staff of 13.25 is excessive, with data collection and computations stretched to the limit in terms of providing quality data.

HYDROMETRIC UNITS VERSUS HYDROMETRIC STAFF

| Year Item | 1975-76 | 1976-77 | 1977-78 | 1978-79 | 1979-80 | 1980-81 | 1981-82 | 1982-83 | 1983-84 | 1984-85 | 1985-86 |
|--------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Hydrometric Units | 289.55 | 309.80 | 302.41 | 326.20 | 342.95 | 346.00 | 351.15 | 364.35 | 374.30 | 382.45 | 393.40 |
| Hydrometric Person-Years | 32.4 | 32.7 | 28.6 | 26.5 | 26.4 | 26.1 | 27.9 | 27.5 | 29.3 | 30.8 | 31.8 |
| Hydrometric Units/staff | 8.94 | 9.47 | 10.57 | 12.31 | 12.99 | 13.26 | 12.59 | 13.25 | 12.77 | 12.42 | 12.37 |

A similar type of summary for hydrometric station unit costs indicates a minimal annual increase during the first five years of the agreement. During 1980-81 a significant increase in unit costs occurred and this trend remained to the end of 1982-83. A significant decrease in the percent increase from the previous year occurred in 1983-84 and is a reflection of the federal government's 6 and 5 program. The principal reason for the small increases which occurred during the initial years of the agreement is due to the large increase in each year of the hydrometric units/staff. The decrease which occurred in 1985-86 is unusual, and this trend shouldn't be expected to continue.

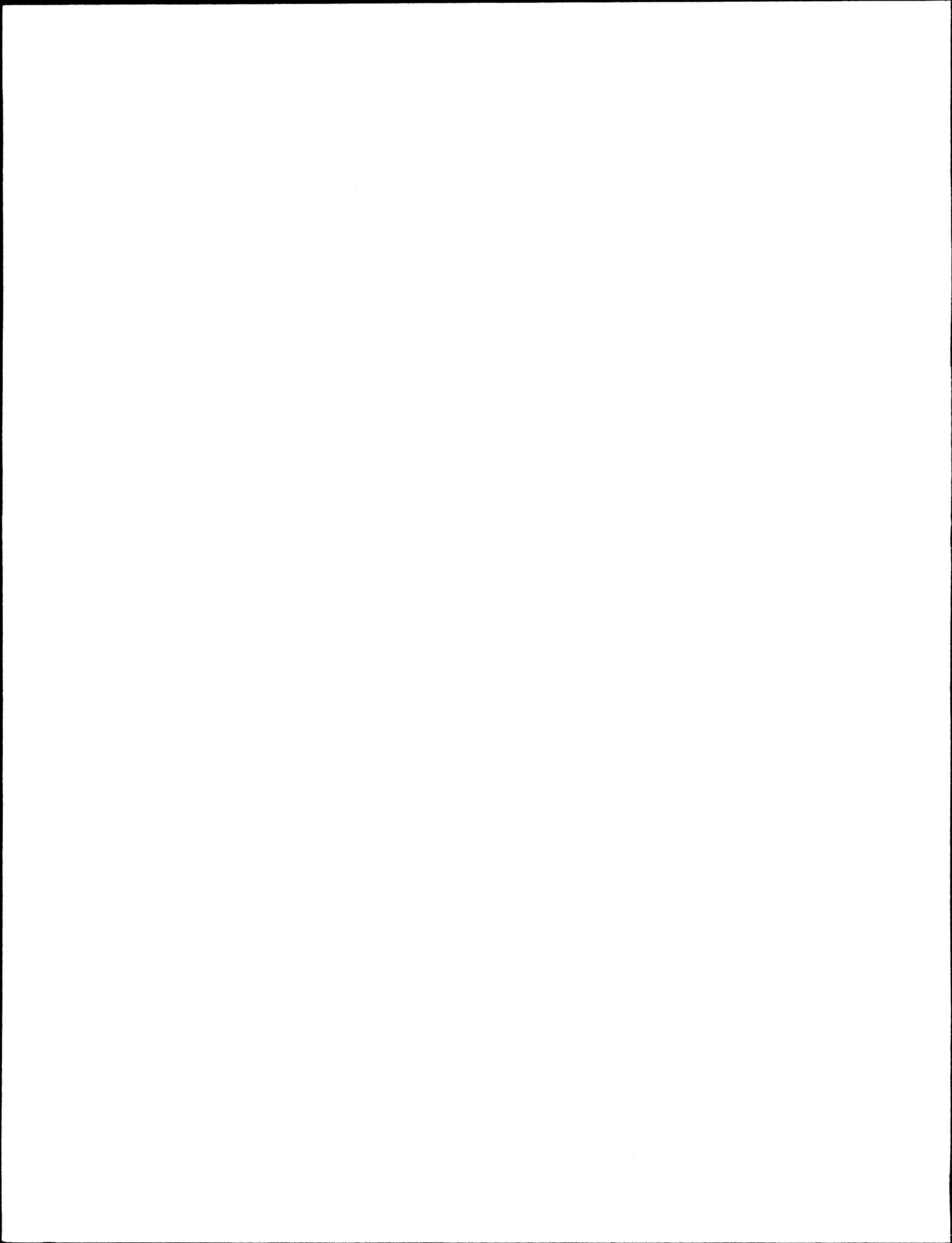


UNIT COSTS PER HYDROMETRIC STATION

| Year Item | 1975-76 | 1976-77 | 1977-78 | 1978-79 | 1979-80 | 1980-81 | 1981-82 | 1982-83 | 1983-84 | 1984-85 | 1985-86 |
|-------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Unit Cost per Station | \$2,072 | \$2,137 | \$2,264 | \$2,242 | \$2,250 | \$2,529 | \$2,945 | \$3,285 | \$3,521 | \$3,840 | \$3,823 |
| % Increase from Previous Year | - | 3.1 | 5.9 | (-)1.0 | 0.4 | 12.4 | 16.4 | 11.5 | 7.2 | 9.1 | (-)0.4 |

The following summary of over and under annual payments by Alberta for the period of the agreement indicates that although Alberta had underpaid during the initial years of the agreement, the overpayment in 1979-80 had brought the payments for the five-year period up to that time to be almost identical to the actual cost of the program to Alberta (N.B. The actual cost for 1978-79 differs from the amount in the National Memorandum of Agreement report and the reason for this is provided in the 1978-79 Alberta Memorandum of Agreement report). At the end of the eleven-year period from 1975-76 to 1985-86 the underpayment by Alberta was 0.5% of the total payment Alberta made during this period.

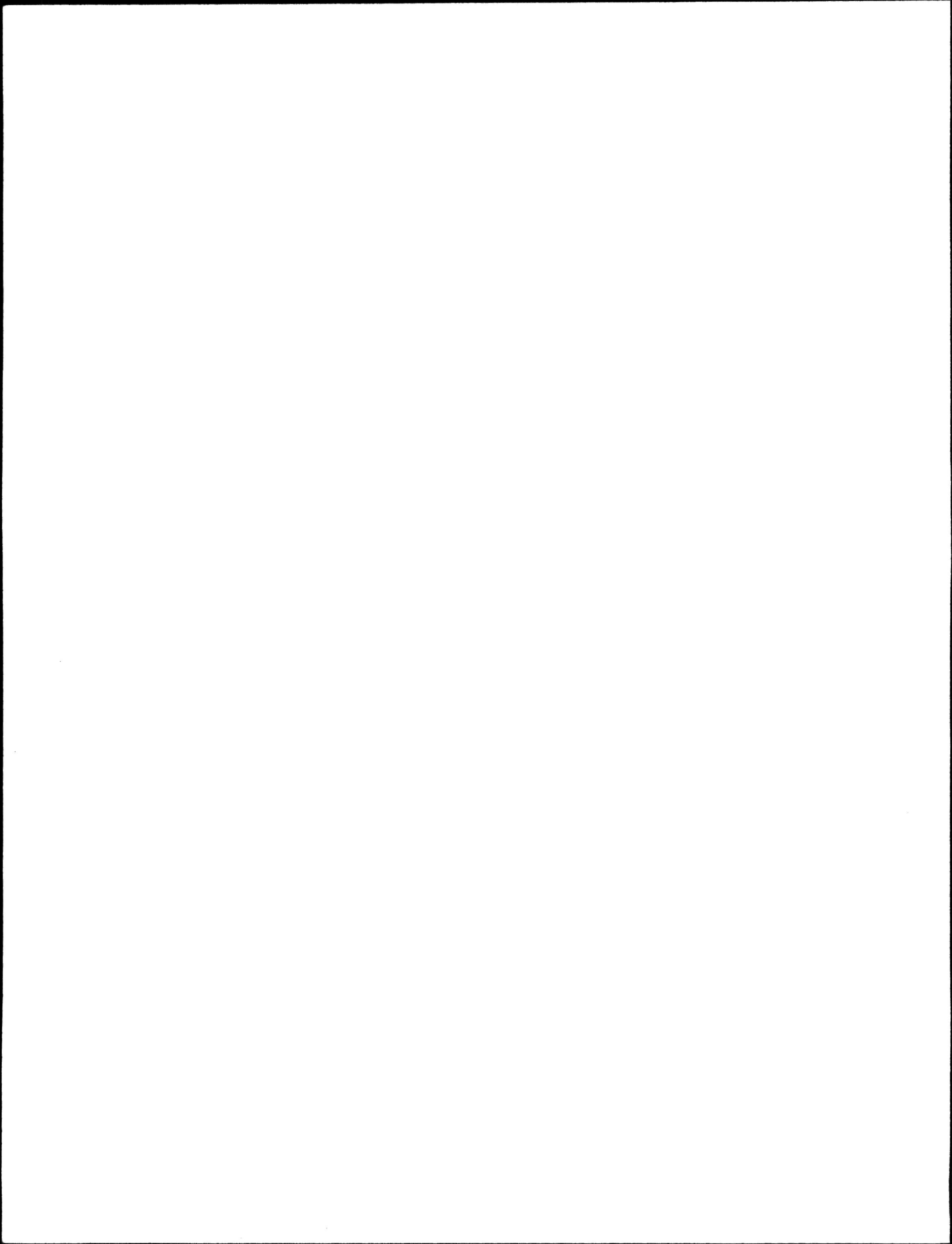
Schedule "C" of the Memorandum of Agreement for Water Quantity Surveys describes procedures for preparation of annual reports. The procedure described in Schedule "C" is designed to make an approximation of Schedule "D" for the forecast year of 1987-88 for utilization by both the federal and provincial agencies for



Cumulative Provincial
Over or Underpayment
for Period of Agreement (Dollars)

| <u>Year</u> | <u>Actual Cost</u> | <u>Annual Payment</u> | <u>Overpayment (+) Underpayment(-)</u> | <u>% of Annual Payment</u> |
|-------------|--------------------|-----------------------|--|----------------------------|
| 1975-76 | 197,852 | 197,400 | (-) 452 | (-) 0.23 |
| 1976-77 | 231,000 | 231,100 | 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 | <u>917,865</u> | <u>927,000</u> | <u>(+) 9,135</u> | <u>(+) 0.99</u> |
| Total: | 5,691,226 | 5,660,625 | (-)30,701 | (-) 0.54 |

budgetary purposes. Data contained in this report with respect to annual unit costs for operating water quantity survey and sediment stations, Schedule "A" estimated for 1987-88, depreciation, a cost index factor and an estimate of construction and maintenance costs for 1987-88 are utilized in the preparation of the cost estimate for the forecast year. Based upon the average annual unit costs contained in this report, and proposed designation and operation changes, it was possible to calculate the estimated operation costs of Schedule "D" for 1987-88 and this is provided in Appendix "D".



The financial information contained in Tables 4 and 5 are a summary for input to the Annual National Cost-Sharing Report. The format and required input to Table 4 vary from the determination of the cost-sharing amounts in Alberta and thus these values should not be compared.

TABLE 4
W A T E R Q U A N T I T Y S U R V E Y S
 TOTAL PROGRAM COSTS & SHAREABLE COSTS FOR 1985-86
 (\$1000)

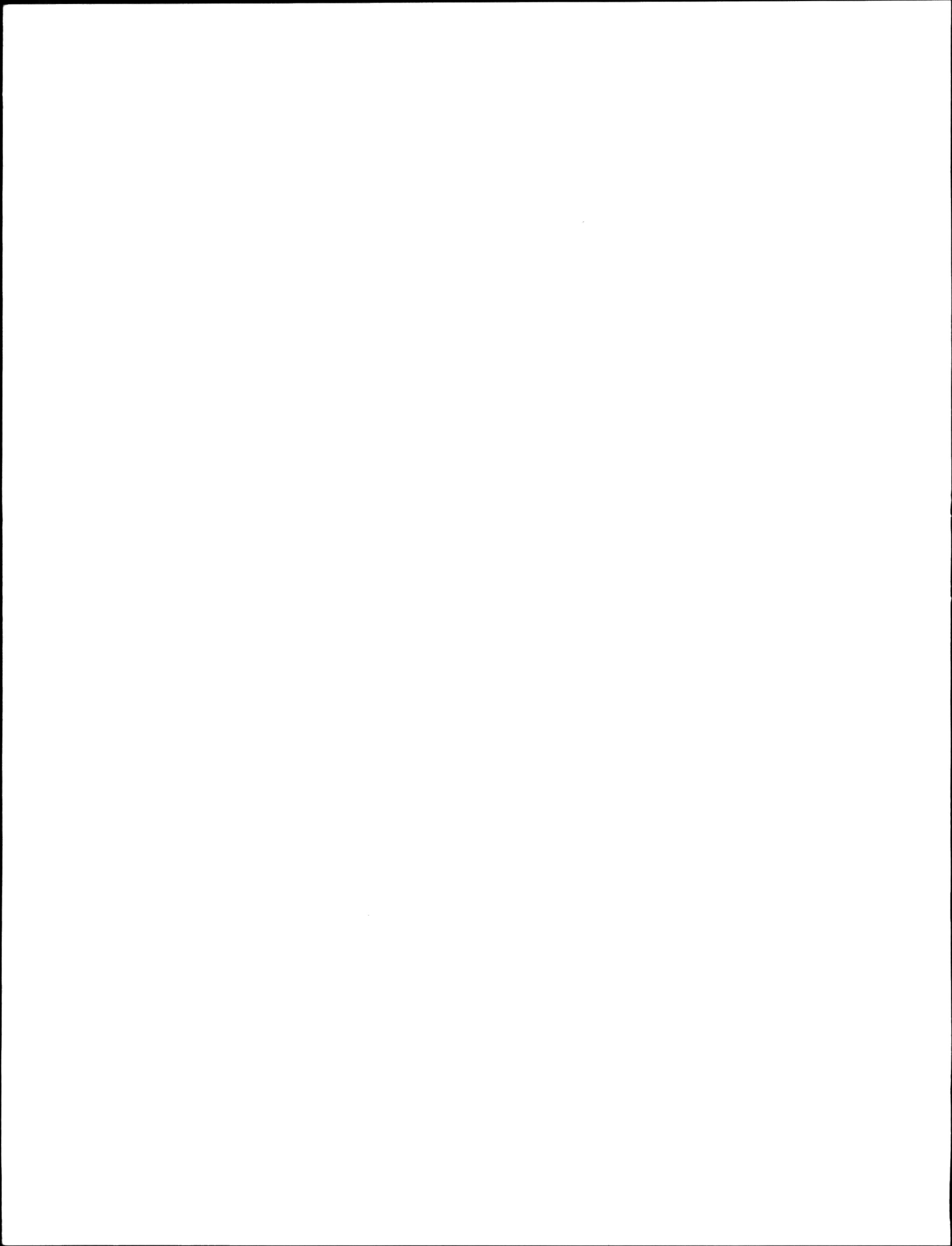
| Province | Total Program | | | | | Shareable Costs | | | | | | |
|----------|---------------|--------|-----------|---------|--------|-----------------|--------|------------------------|--------|--------|------------|--------------------------|
| | P/Yrs | Salary | Operating | Capital | Total | P/Yrs | Salary | Operating ¹ | Const. | Total | Fed. Share | Prov. Share ² |
| Alberta | 49.5 | 1708.7 | 754.9 | 240.4 | 2704.0 | 31.8 | 972.9 | 619.4 | 207.0 | 1799.3 | 838.6 | 960.7 |

NOTE: ¹ Operating costs are comprised of \$537.9K as described in Appendix "B", \$73.7K for depreciation and \$7.8K for Alberta sediment laboratory costs, as shown in Summary of Financial Considerations.

² Credit to Alberta for operation of Federal and Federal-Provincial stations in the Peace-Athabasca Delta and operation of a Federal-Provincial station in the Spring Creek Basin resulted in an Alberta actual cost of \$917.9K, as shown in Table 5.

TABLE 5
W A T E R Q U A N T I T Y S U R V E Y S
 COMPARISON - SCHEDULE "D" COSTS WITH ACTUAL COSTS & PAYMENTS
 1985-86 (Dollars)

| Province | Salary & Operation | | Construction | | Total | | | Annual Payment Received | Received Minus Actual |
|----------|--------------------|-------------|--------------|-------------|------------|-------------|------------|-------------------------|-----------------------|
| | Sched. "D" | Actual Cost | Sched. "D" | Actual Cost | Sched. "D" | Actual Cost | Difference | | |
| Alberta | 833,700 | 815,275 | 93,300 | 102,590 | 927,000 | 917,865 | 9,135 | 927,000 | + 9,135 |



A P P E N D I X "A"

SCHEDULE "A"

OF

MEMORANDUM OF AGREEMENT

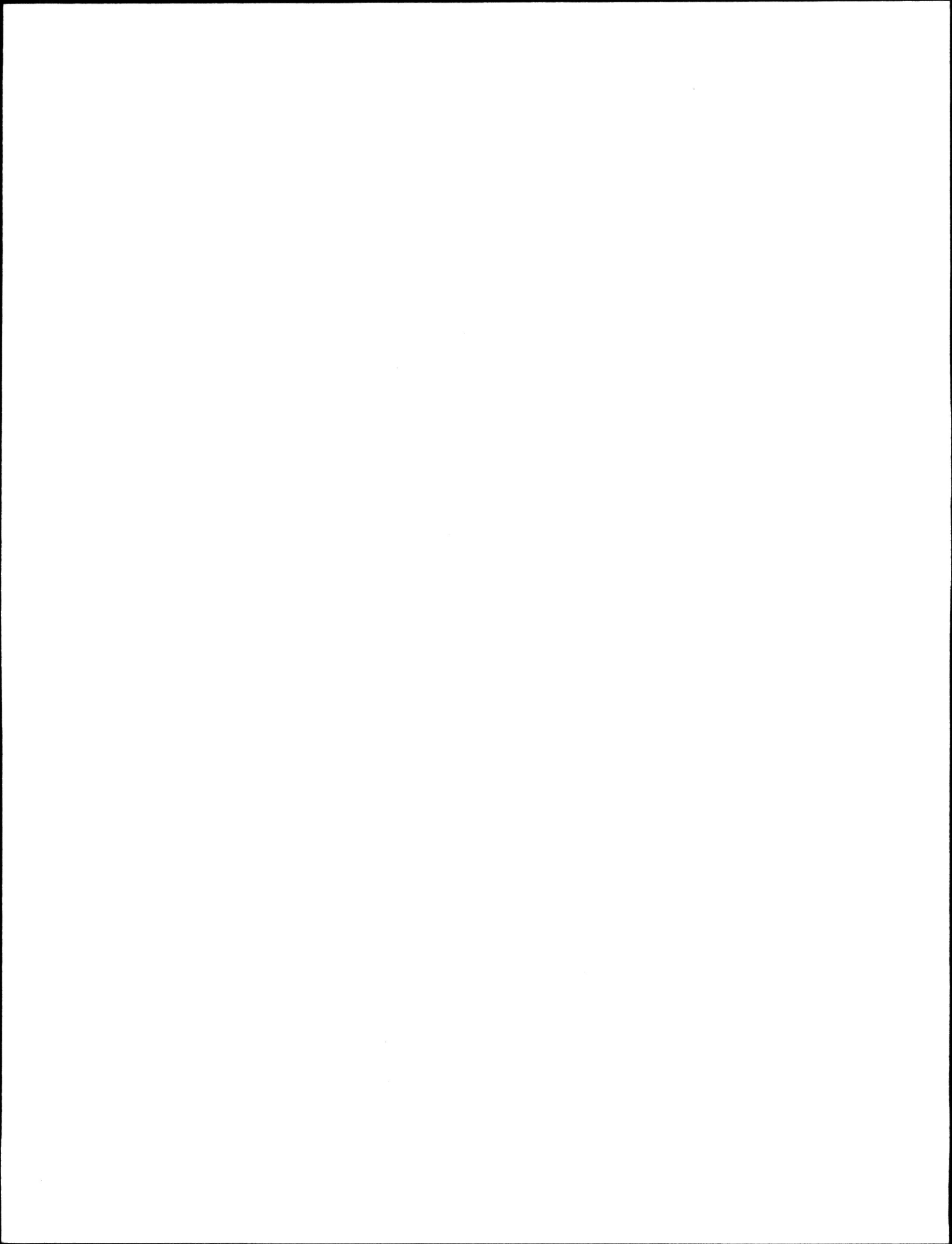
BETWEEN

GOVERNMENT OF CANADA

AND

GOVERNMENT OF ALBERTA

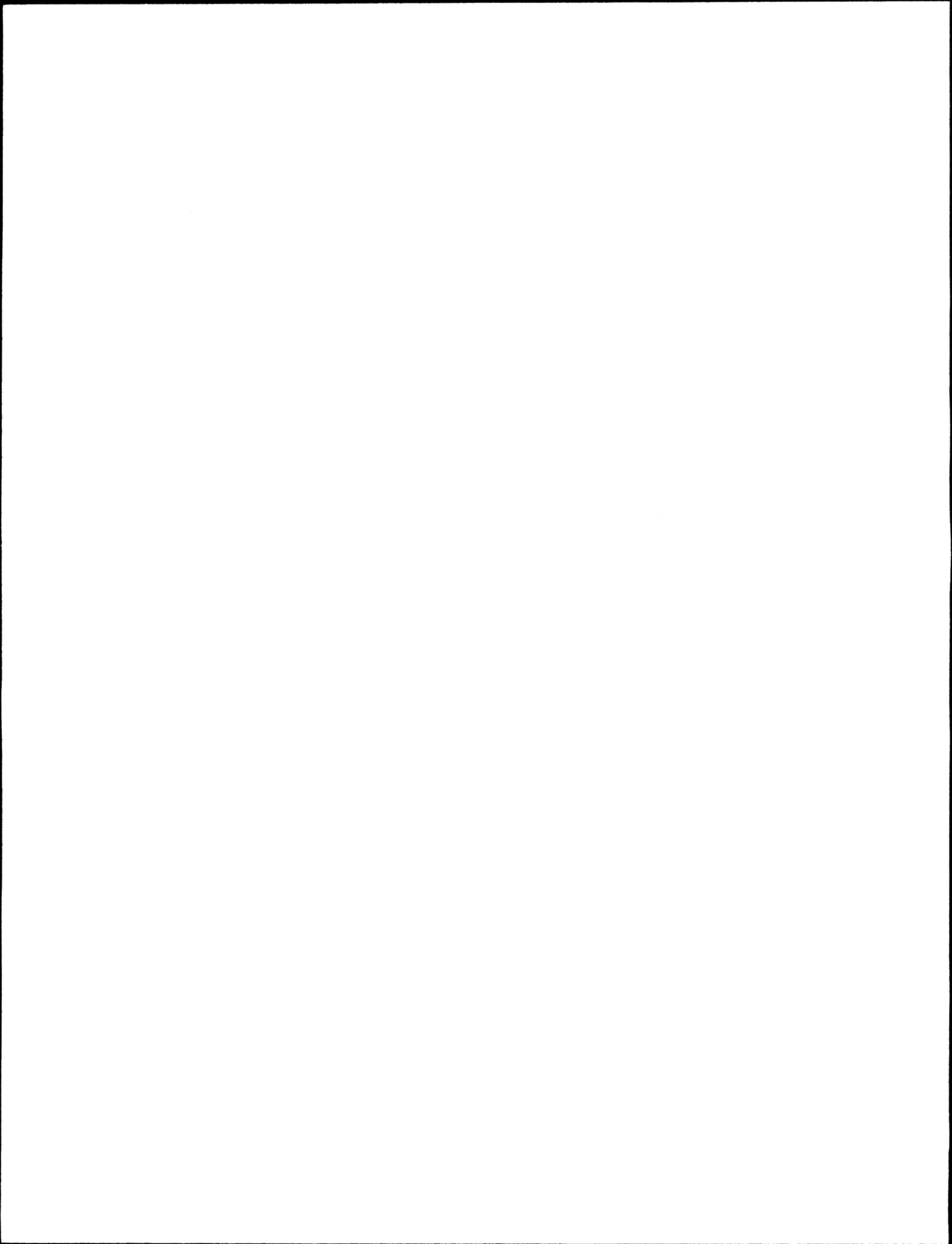
April 1, 1985



MAJOR DESIGNATION - FEDERAL

SUBDESIGNATION - FEDERAL DEPARTMENTAL PROGRAMS (1)

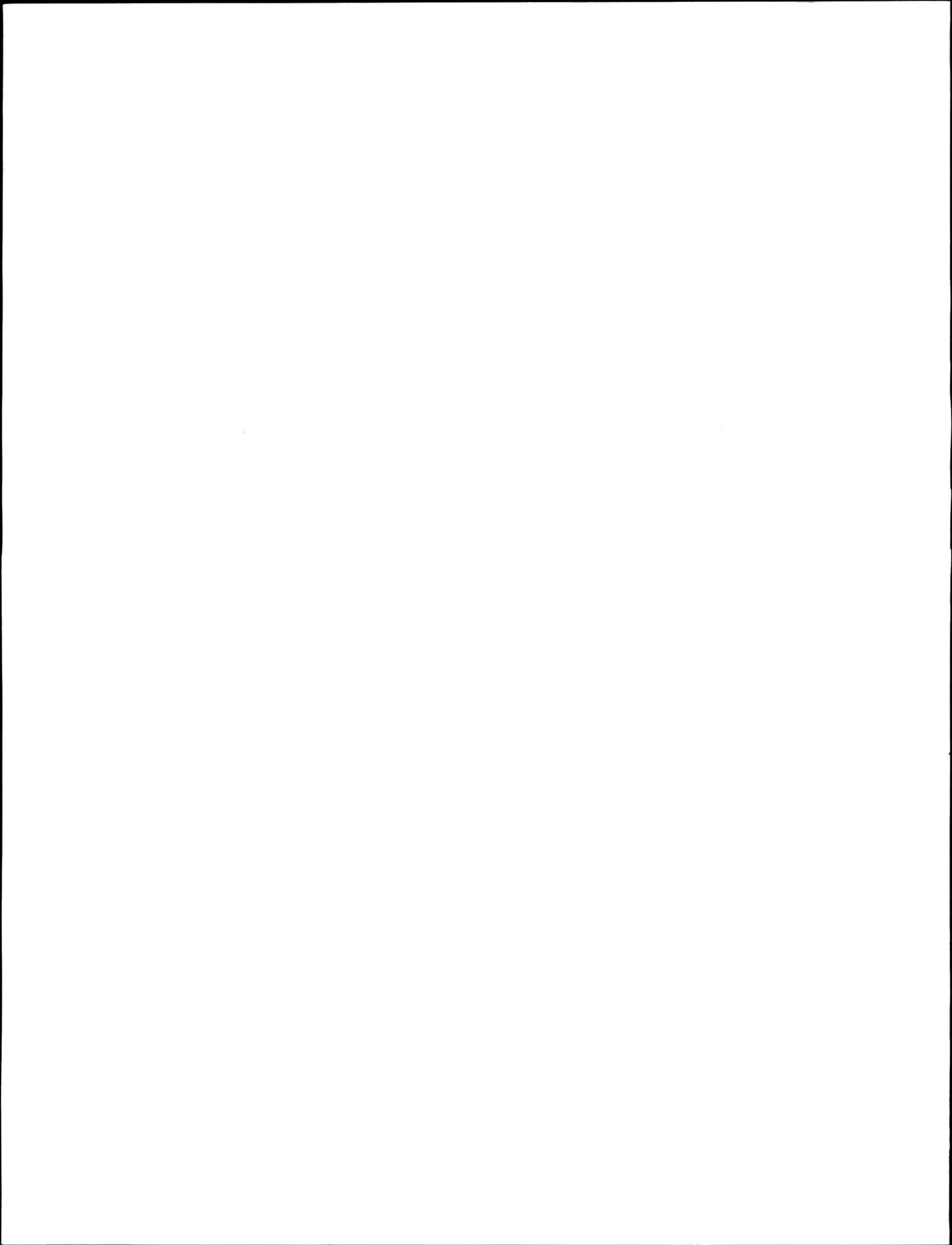
| NO. | STATION NAME | STATION NUMBER | RECORD OBTAINED | | | OPERATION | | ACCESS | |
|---|---|----------------|-----------------|-------|------|-----------|-----|--------|--------|
| | | | FLOW | LEVEL | SED. | 8M | 12M | REMOTE | NORMAL |
| <u>OPERATED BY - WATER SURVEY OF CANADA, CALGARY DISTRICT</u> | | | | | | | | | |
| 1 | ATHABASCA RIVER NEAR JASPER | 07AA002 | X | | | | X | | X |
| 2 | BOV RIVER AT BANFF | 05BB001 | X | | | | X | | X |
| 3 | BOV RIVER AT LAKE LOUISE | 05BA001 | X | | | | X | | X |
| 4 | BREWSTER CREEK NEAR BANFF | 05BB004 | X | | | X | | | X |
| 5 | CASCADE RIVER ABOVE LAKE MINNEWANKA | 05BD005 | X | | | X | | | X |
| 6 | JOHNSTON CREEK NEAR THE MOUTH | 05BA006 | X | | | X | | | X |
| 7 | LESSER SLAVE RIVER AT HIGHWAY NO. 2 | 07BK006 | X | X | | | X | | X |
| 8 | MALIGNE RIVER NEAR JASPER | 07AA004 | X | | | | X | | X |
| 9 | NIETTE RIVER NEAR JASPER | 07AA001 | X | | | | X | | X |
| 10 | NISTAYA RIVER NEAR SASKATCHEWAN CROSSING | 05DA007 | X | | | | X | | X |
| 11 | NORTH SASKATCHEWAN RIVER AT WHIRLPOOL POINT | 05DA009 | X | | | | X | | X |
| 12 | REDEARTH CREEK NEAR THE MOUTH | 05BB005 | X | | | X | | | X |
| 13 | SILVERHORN CREEK NEAR THE MOUTH | 05DA010 | X | | | | X | | X |
| 14 | SNAKE INDIAN RIVER NEAR THE MOUTH | 07AB002 | X | | | X | | | X |
| 15 | SUNVAPTA RIVER ATHABASCA GLACIER | 07AA007 | X | | | X | | | X |
| 16 | WHIRLPOOL RIVER NEAR THE MOUTH | 07AA009 | X | | | X | | | X |
| <u>OPERATED BY - ALBERTA GOVERNMENT</u> | | | | | | | | | |
| 1 | ATHABASCA RIVER ABOVE JACKFISH CREEK | 07DD007 | | X | | | X | | X |
| 2 | CHEVAL DES QUATRE FOURCHES AT QUATRE FOURCHES | 07KF001 | | X | | X | | | X |
| 3 | CHEVAL DES QUATRE FOURCHES BELOW FOUR FORKS | 07KF006 | MISC X | | | | X | | X |
| 4 | LAKE ATHABASCA AT FORT CHIPEVYAN | 07HD001 | | X | | | X | | X |
| 5 | LAKE CLAIRE NEAR OUTLET TO PRAIRIE RIVER | 07KF002 | | X | | | X | | X |
| 6 | MANAWI LAKE CHANNEL AT DOG CAMP | 07KF010 | MISC X | | | X | | | X |
| 7 | PEACE RIVER BELOW CHEVAL DES QUATRE FOURCHES | 07KC005 | | X | | | X | | X |
| 8 | RIVIERE DES ROCHERS ABOVE SLAVE RIVER | 07NA001 | | X | | | X | | X |
| 9 | RIVIERE DES ROCHERS EAST OF LITTLE RAPIDS | 07NA007 | | X | | X | | | X |
| 10 | 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, CALGARY DISTRICT | | | | | | | | | |
| 1 | ANTELOPE COULEE SPILLWAY | 05BN010 | X | | | X | | | X |
| 2 | ATHABASCA RIVER AT EMBARRAS AIRPORT | 07DD001 | X | | X | X | | X | |
| 3 | BATTERSEA DRAIN NEAR THE MOUTH | 05AD038 | X | | | X | | | X |
| 4 | *BATTLE RIVER NEAR ALBERTA BOUNDARY | 05FE004 | X | | | | X | | X |
| 5 | BEAVER RIVER AT COLD LAKE RESERVE | 06AD006 | X | | | | X | | X |
| 6 | BERRY CREEK NEAR THE MOUTH | 05CH007 | X | | | X | | | X |
| 7 | BOUNTIFUL COULEE INFLOW NEAR CRANFORD | 05AG026 | X | | | X | | | X |
| 8 | BOW RIVER AT CALGARY | 05BH004 | X | | | | X | | X |
| 9 | BOW RIVER NEAR THE MOUTH | 05BN012 | X | | | | X | | X |
| 10 | B.R.D. DRAIN K NEAR VAUXHALL | 05BN009 | X | | | X | | | X |
| 11 | B.R.D. MAIN CANAL | 05AC004 | X | | | X | | | X |
| 12 | -BOXELDER CREEK NEAR WALSH | 05AH001 | X | | | X | | | X |
| 13 | BULLPOUND CREEK NEAR THE MOUTH | 05CB003 | X | | | X | | | X |
| 14 | CAIRN HILL SPILLWAY NEAR THE MOUTH | 05BN012 | X | | | X | | | X |
| 15 | CANADIAN ST. MARY CANAL NEAR SPRING COULEE | 05AE026 | X | | | X | | | X |
| 16 | CLEARWATER RIVER ABOVE CHRISTINA RIVER | 07CD005 | X | | | | X | X | |
| 17 | COAL LAKE RESERVOIR NEAR METASKIMIN | 05FA016 | | X | | | X | | X |
| 18 | COLD LAKE AT COLD LAKE | 06AF002 | | X | | | X | | X |
| 19 | CROMFOOT CREEK NEAR CLJNY | 05BN008 | X | | | X | | | X |
| 20 | DICKSON REVERVOIR NEAR DICKSON | 05CB006 | | X | | | X | | X |
| 21 | DRAIN L-3 NEAR DIAMOND CITY | 05AD040 | X | | | X | | | X |
| 22 | DRAIN 9-4 NEAR GRASSY LAKE | 05AJ002 | X | | | X | | | X |
| 23 | DRAIN 9-10 NEAR BOW ISLAND | 05AJ003 | X | | | X | | | X |
| 24 | DRAIN T-1 NEAR TABER | 05AG027 | X | | | X | | | X |
| 25 | DRY COULEE NEAR MAGRATH | 05AE041 | X | | | X | | | X |
| 26 | E.I.D. EAST BRANCH CANAL NEAR LATHOM | 05CJ003 | X | | | X | | | X |
| 27 | E.I.D. NORTH BRANCH CANAL NEAR BASSANO | 05CJ001 | X | | | X | | | X |
| 28 | E.I.D. SPRINGHILL CANAL NEAR LATHOM | 05CJ004 | X | | | X | | | X |
| 29 | EXPANSE COULEE NEAR THE MOUTH | 05AG003 | X | | | X | | | X |
| 30 | HIGHMOOD DIVERSION CANAL NEAR HEADGATES | 05BL025 | X | | | X | | | X |
| 31 | L.N.I.D. CANAL AT MENZAGHIES BRIDGE | 05AB016 | X | | | X | | | X |
| 32 | LITTLE BOW CANAL AT HIGH RIVER | 05BL015 | X | | | | X | | X |
| 33 | LITTLE BOW RIVER AT CARMANGAY | 05AC003 | X | | | X | | | X |
| 34 | LITTLE BOW RIVER BELOW TRAVERS DAM | 05AC012 | X | | | X | | | X |
| 35 | LITTLE BOW RIVER NEAR THE MOUTH | 05AC023 | X | | | X | | | X |
| 36 | M.I.D. CANAL NEAR SPRING COULEE | 05AE021 | X | | | X | | | X |
| 37 | MATZIMIN CREEK ABOVE WARE COULEE | 05CJ007 | X | | | X | | | X |
| 38 | NEW WEST COULEE NEAR THE MOUTH | 05BN006 | X | | | X | | | X |
| 39 | OLDMAN RIVER NEAR LETHBRIDGE | 05AD007 | X | | X | | X | | X |
| 40 | ONETREE CREEK NEAR PATRICIA | 05CJ006 | X | | | X | | | X |
| 41 | *PEACE RIVER AT PEACE POINT | 07KC001 | X | | | | X | X | |
| 42 | PIYAMI DRAIN NEAR PICTURE BUTTE | 05AD037 | X | | | X | | | X |
| 43 | POTHOLE CREEK AT RUSSELL'S RANCH | 05AE016 | X | | | X | | | X |
| 44 | RED DEER RIVER NEAR BINDLOSS | 05CX004 | X | | | | X | | X |
| 45 | RONALANE WASTEWAY NEAR HAYS | 05BN007 | X | | | X | | | X |
| 46 | ROSEBUD RIVER AT REDLAND | 05CE005 | X | | | X | | | X |
| 47 | ROSS CREEK AT MEDICINE HAT | 05AH049 | X | | | X | | | X |
| 48 | SEVEN PERSONS CREEK AT MEDICINE HAT | 05AH005 | X | | | X | | | X |
| 49 | SOUTH SASKATCHEWAN RIVER AT HIGHWAY NO. 41 | 05AK001 | X | | | X | | | X |
| 50 | *SLAVE RIVER AT FITZGERALD | 07NB001 | X | | X | | X | X | |



MAJOR DESIGNATION - FEDERAL

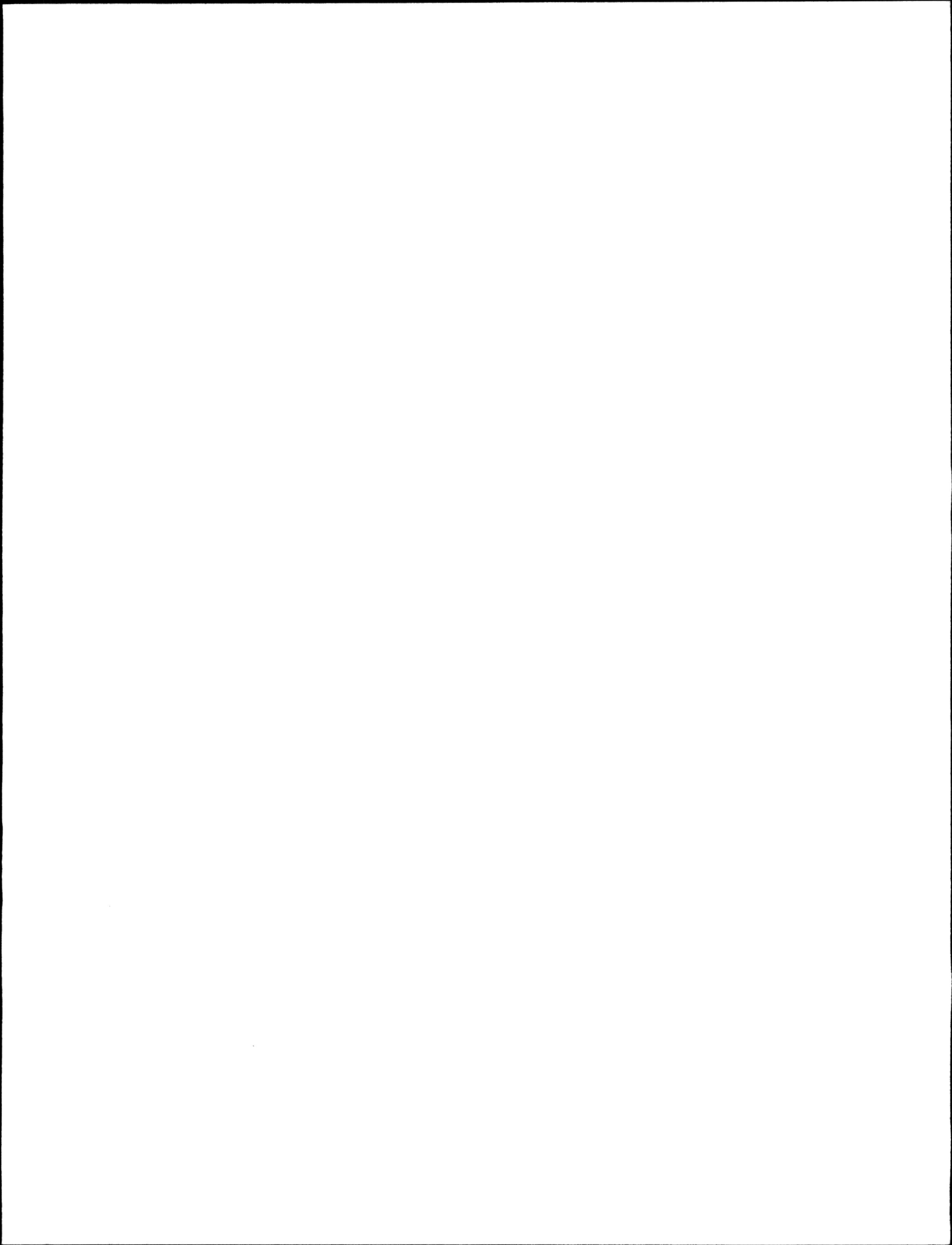
SUBDESIGNATION - INTERPROVINCIAL WATERS (2)

| NO. | STATION NAME | STATION NUMBER | RECORD OBTAINED | | OPERATION | | ACCESS | |
|---|--|----------------|-----------------|------------|-----------|-----|--------|--------|
| | | | FLOW | LEVEL SED. | 8H | 12H | REMOTE | NORMAL |
| OPERATED BY - WATER SURVEY OF CANADA, CALGARY DISTRICT | | | | | | | | |
| 51 | ST. MARY RESERVOIR NEAR SPRING COULEE | 05AE025 | | X | | | X | X |
| 52 | TWELVE HILE COULEE SPILLWAY NEAR CARSELAND | 05BN009 | X | | | X | | X |
| 53 | TWELVE HILE CREEK NEAR CECIL | 05BN002 | X | | | X | | X |
| 54 | U.I.D. CANAL NEAR HILL SPRING | 05AD013 | X | | | X | | X |
| 55 | VAPITI RIVER NEAR GRANDE PRAIRIE | 07GE001 | X | | | | X | X |
| 56 | WARE COULEE ABOVE MATZIHIVIN CREEK | 05CJ008 | X | | | X | | X |
| 57 | WATERTON RESERVOIR | 05AD026 | | X | | | X | X |
| 58 | W.I.D. CANAL NEAR CHESTERMERE LAKE | 058N003 | X | | | X | | X |

-GAUGING STATION LOCATED ON SASKATCHEWAN SIDE OF ALBERTA-SASKATCHEWAN BOUNDARY BUT OPERATED BY THE CALGARY DISTRICT.

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

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



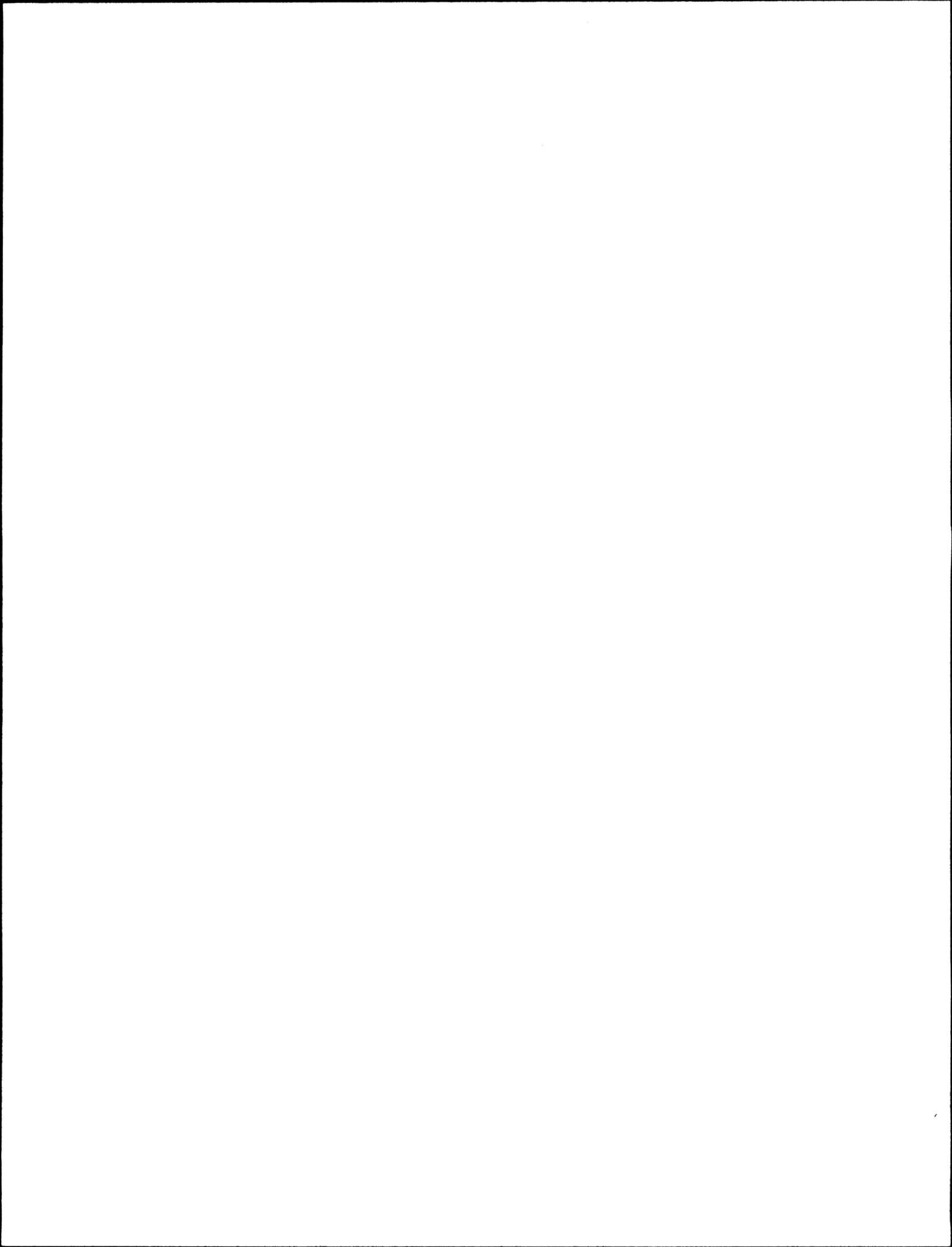
MAJOR DESIGNATION - FEDERAL

SUBDESIGNATION - INTERNATIONAL WATERS (3)

| NO. | STATION NAME | STATION NUMBER | RECORD OBTAINED | | | OPERATION | | ACCESS | |
|--|---|----------------|-----------------|-------|------|-----------|-----|--------|--------|
| | | | FLOW | LEVEL | SED. | 8H | 12H | REMOTE | NORMAL |
| OPERATED BY - WATER SURVEY OF CANADA, CALGARY DISTRICT | | | | | | | | | |
| 1 | *BARE CREEK RESERVOIR NEAR ELKVATER | 11AB094 | | X | | X | | | X |
| 2 | BEAR CREEK NEAR INTERNATIONAL BOUNDARY | 11AA028 | X | | | X | | | X |
| 3 | BELLY RIVER NEAR MOUNTAIN VIEW | 05AD005 | X | | | | X | | X |
| 4 | *CRESSDAY RESERVOIR NEAR CRESSDAY | 11AB097 | | X | | X | | | X |
| 5 | *GREASEWOOD RESERVOIR NEAR ELKVATER | 11AB092 | | X | | X | | | X |
| 6 | *JAYDOT RESERVOIR NEAR JAYDOT | 11AB098 | | X | | X | | | X |
| 7 | +LAKE SHERBURNE | 05AE036 | | X | | | X | | X |
| 8 | LEE CREEK AT CARDSTON | 05AE002 | X | | | | X | | X |
| 9 | *HASSY RESERVOIR NEAR ELKVATER | 11AB104 | | X | | X | | | X |
| 10 | *NICHELE RESERVOIR NEAR ELKVATER | 11AB091 | | X | | X | | | X |
| 11 | *MIDDLE CREEK NEAR ALBERTA BOUNDARY | 11AB009 | X | | | X | | | X |
| 12 | +MILK RIVER AT EASTERN CROSSING OF INT'L BOUNDARY | 11AA031 | X | | | X | | | X |
| 13 | MILK RIVER AT HWY 890 BRIDGE | 11AA036 | | X | | X | | | X |
| 14 | MILK RIVER AT MILK RIVER | 11AA005 | X | | | | X | | X |
| 15 | MILK RIVER AT WESTERN CROSSING OF INT'L BOUNDARY | 11AA025 | X | | | X | | | X |
| 16 | MINERS COULEE NEAR INTERNATIONAL BOUNDARY | 11AA029 | X | | | X | | | X |
| 17 | *MITCHELL RESERVOIR NEAR ELKVATER | 11AB099 | | X | | X | | | X |
| 18 | MOUNTAIN VIEW IRRIGATION DISTRICT CANAL | 05AD017 | X | | | X | | | X |
| 19 | +NORTH FORK MILK RIVER ABOVE ST. MARY CANAL | 11AA032 | X | | | X | | | X |
| 20 | NORTH MILK RIVER NEAR INTERNATIONAL BOUNDARY | 11AA001 | X | | | X | | | X |
| 21 | *REESOR RESERVOIR NEAR ELKVATER | 11AB090 | | X | | X | | | X |
| 22 | ROLPH CREEK NEAR KIMBALL | 05AE005 | X | | | X | | | X |
| 23 | SAGE CREEK AT Q RANCH NEAR WILD HORSE | 11AA026 | X | | | X | | | X |
| 24 | +SOUTH FORK MILK RIVER NEAR BABB | 11AA033 | X | | | X | | | X |
| 25 | +ST. MARY CANAL AT ST. MARY CROSSING | 05AE029 | X | | | X | | | X |
| 26 | ST. MARY RIVER AT INTERNATIONAL BOUNDARY | 05AE027 | X | | | | X | | X |
| 27 | +SWIFTCURRENT CREEK AT SHERBURNE | 05AE033 | X | | | X | | | X |
| 28 | *WALBURGER COULEE BELOW DIVERSIONS | 11AB086 | X | | | X | | | X |
| 29 | VATERTON LAKE AT VATERTON PARK | 05AD025 | | X | | | X | | X |
| 30 | VATERTON RIVER NEAR VATERTON PARK | 05AD003 | X | | | | X | | X |

* STATIONS OPERATED BY WATER SURVEY OF CANADA,
REGINA DISTRICT

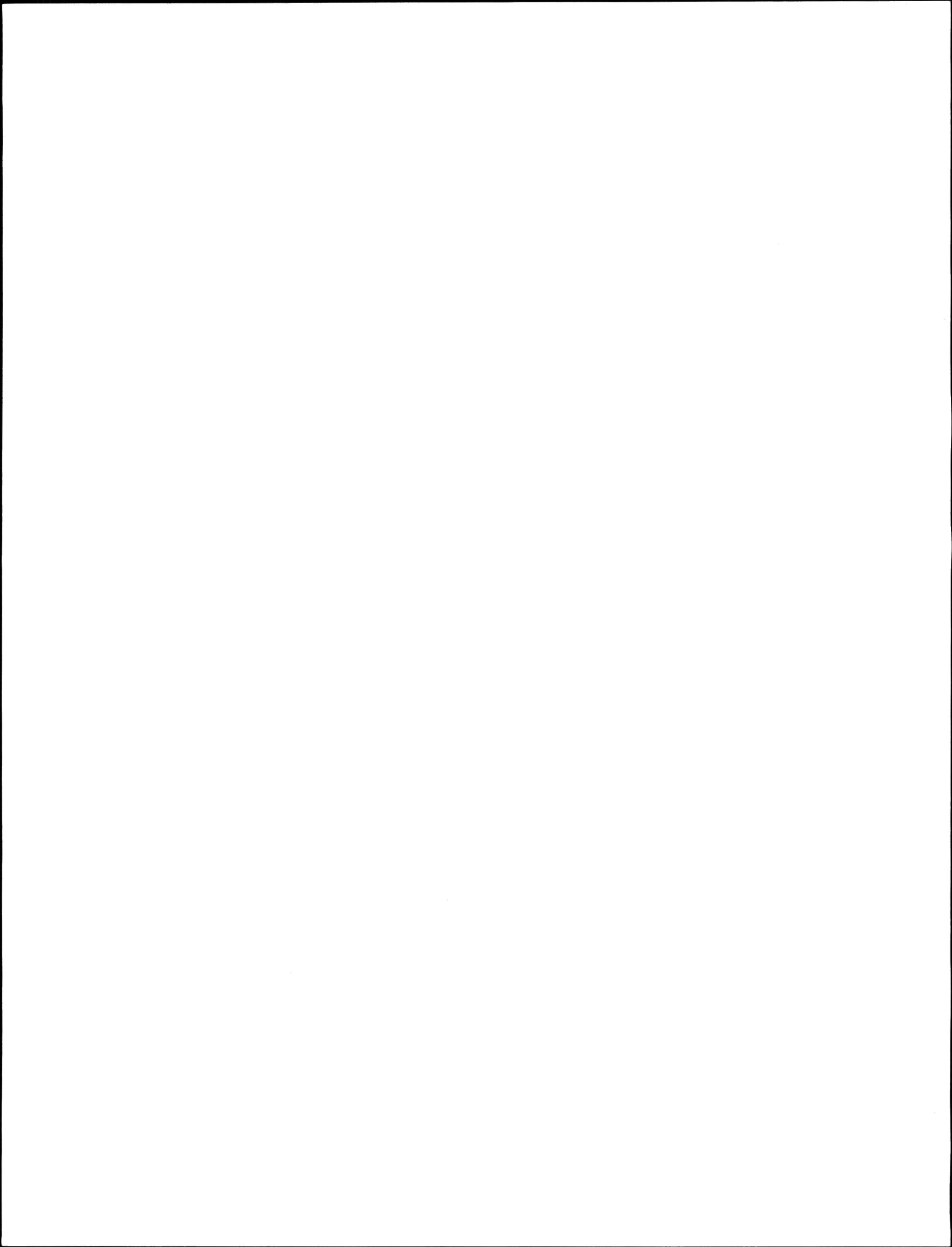
+ STATIONS LOCATED IN MONTANA



MAJOR DESIGNATION - FEDERAL

SUBDESIGNATION - NATIONAL WATER QUANTITY INVENTORY (4)

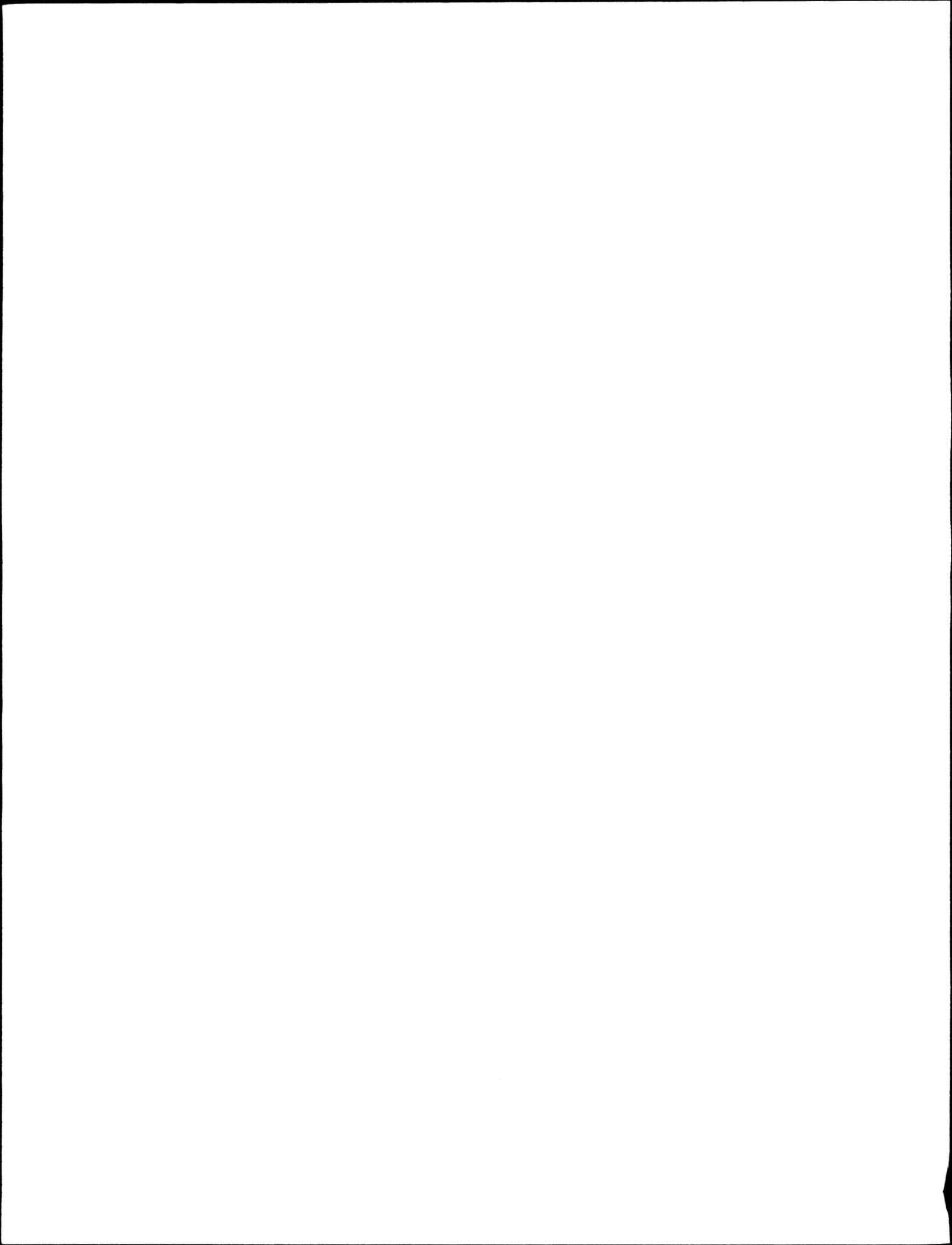
| NO. | STATION NAME | STATION NUMBER | RECORD OBTAINED | | | OPERATION | | ACCESS | |
|---|--------------------------------------|-------------------|-----------------|-------|------|-----------|-----|--------|--------|
| | | | FLOW | LEVEL | SED. | 8M | 12M | REMOTE | NORMAL |
| <u>OPERATED BY - WATER SURVEY OF CANADA, CALGARY DISTRICT</u> | | | | | | | | | |
| 1 | ATHABASCA RIVER AT HINTON | 07AD002 | X | | | | X | | X |
| 2 | ATHABASCA RIVER BELOW McHURRAY | 07DA001 | X | X | | | X | X | |
| 3 | McLEOD RIVER NEAR ROSEVEAR | 07AG007 | X | | | | X | | X |
| 4 | NORTH SASKATCHEWAN RIVER AT EDMONTON | 05DF001 | X | | | | X | | X |
| 5 | NOTIKEVIN RIVER AT MANNING | 07HC001 | X | | | | X | | X |
| 6 | PEACE RIVER AT DUNVEGAN BRIDGE | 07FD003 | X | | | X | | | X |
| 7 | PENBINA RIVER AT JARVIE | 07BC002 | X | | | | X | | X |
| 8 | RED DEER RIVER AT RED DEER | 05CC002 | X | | | | X | | X |
| 9 | SNOKY RIVER AT VATINO | 07GJ001 | X | | | | X | | X |
| 10 | WABASCA RIVER AT VADLIN LAKE ROAD | 07JD002 | X | | | | X | | X |



MAJOR DESIGNATION - FEDERAL-PROVINCIAL

SUBDESIGNATION - FEDERAL-PROVINCIAL AGREEMENTS (1)

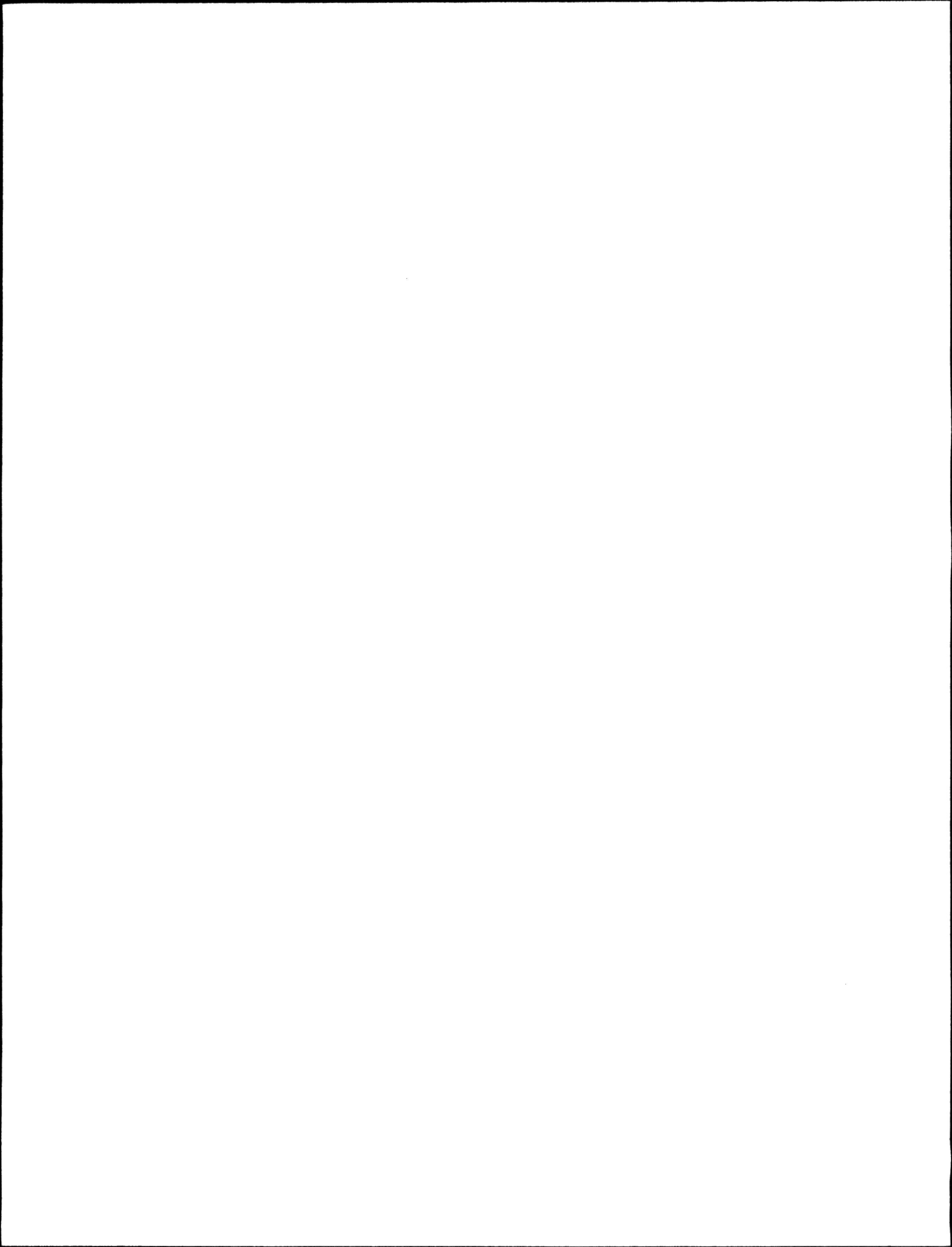
| NO. | STATION NAME | STATION NUMBER | RECORD OBTAINED | | OPERATION | | ACCESS | |
|---|--|----------------|-----------------|------------|-----------|-----|--------|--------|
| | | | FLOW | LEVEL SED. | 8M | 12M | REMOTE | NORMAL |
| <u>OPERATED BY - WATER SURVEY OF CANADA, CALGARY DISTRICT</u> | | | | | | | | |
| 1 | BEAVER RIVER ABOVE SYNCRUDE | 07DA018 | X | | | X | X | |
| 2 | BIRCH RIVER BELOW ALICE CREEK | 07KE001 | X | | | X | X | |
| 3 | CLEARWATER RIVER AT DRAPER | 07CD001 | X | X | | X | X | |
| 4 | ELLS RIVER NEAR THE MOUTH | 07DA017 | X | | | X | X | |
| 5 | EUNICE CREEK NEAR HINTON | 07AF005 | X | X | X | | | X |
| 6 | FIREBAG RIVER NEAR THE MOUTH | 07DC001 | X | | | X | X | |
| 7 | GREGOIRE LAKE NEAR FORT McNURRAY | 07CE001 | | X | X | | X | |
| 8 | HANGINGSTONE RIVER AT McNURRAY | 07CD004 | X | | | X | X | |
| 9 | HACKAY RIVER NEAR FORT HACKAY | 07DB001 | X | | | X | X | |
| 10 | HARROT CREEK MAIN STEM | 05BF016 | X | | | X | | X |
| 11 | MIDDLE FORK CREEK IN CIRQUE NEAR SEEBE | 05BF020 | X | | X | | | X |
| 12 | MIDDLE FORK CREEK NEAR SEEBE | 05BF017 | X | | | X | | X |
| 13 | HUSKEG RIVER NEAR FORT HACKAY | 07DA008 | X | | | X | X | |
| 14 | RICHARDSON RIVER NEAR THE MOUTH | 07DD002 | X | | | X | X | |
| 15 | STEEP BANK RIVER NEAR FORT McNURRAY | 07DA006 | X | | | X | X | |
| 16 | STREETER CREEK MAIN STEM NEAR WANTON | 05AB030 | X | | X | | | X |
| 17 | TWIN CREEK NEAR SEEBE | 05BF018 | X | | | X | | X |
| 18 | WHISKEYJACK CREEK NEAR HINTON | 07AD004 | X | | X | | | X |
| <u>OPERATED BY - ALBERTA GOVERNMENT</u> | | | | | | | | |
| 1 | ATHABASCA RIVER ABOVE FLETCHER CHANNEL | 07DD010 | | X | | X | | X |
| 2 | ATHABASCA RIVER NEAR OLD FORT | 07DD011 | | X | | X | | X |
| 3 | SPRING CREEK NEAR VALLEYVIEW | 07GF002 | X | X | X | X | | X |



MAJOR DESIGNATION - FEDERAL-PROVINCIAL

SUBDESIGNATION - RIVER BASIN MANAGEMENT (2)

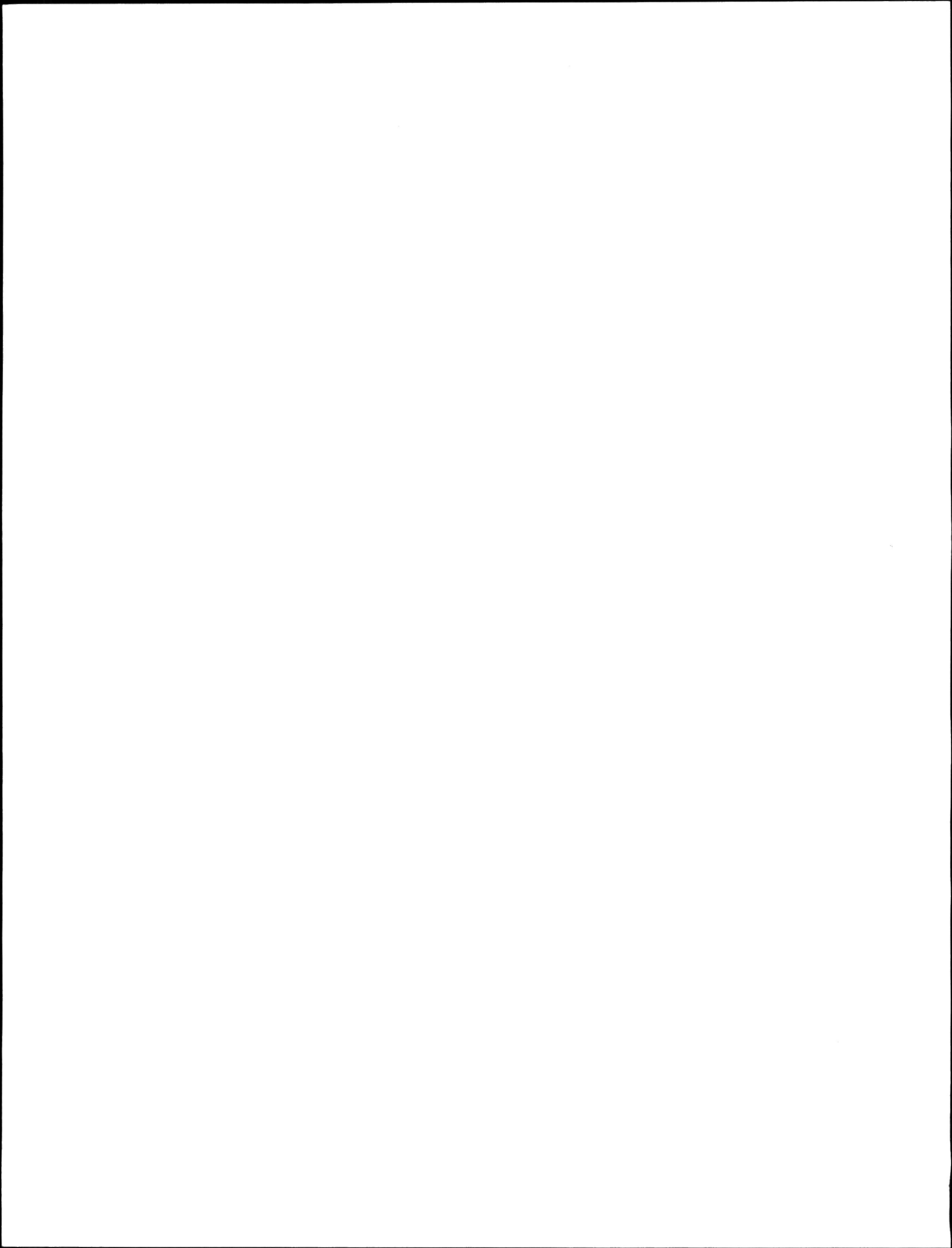
| NO. | STATION NAME | STATION NUMBER | RECORD OBTAINED | | OPERATION | | ACCESS | |
|--|--|----------------|-----------------|------------|-----------|-----|--------|--------|
| | | | FLOW | LEVEL SED. | 8H | 12H | REMOTE | NORMAL |
| OPERATED BY - WATER SURVEY OF CANADA, CALGARY DISTRICT | | | | | | | | |
| SYMBOL * INDICATING STATION LOCATED IN ALBERTA BUT OPERATED BY WSC YELLOWKNIFE DISTRICT | | | | | | | | |
| 1 | BEAVERLODGE RIVER NEAR BEAVERLODGE | 07GD001 | X | | | X | | X |
| 2 | BOY RIVER BELOW BASSANO DAM | 05BN004 | X | | | X | | X |
| 3 | BOY RIVER BELOW CARSELAND DAM | 05BN002 | X | | | X | | X |
| 4 | BOY RIVER BELOW GHOST DAM | 05BE006 | X | | | | X | X |
| 5 | CASTLE RIVER NEAR BEAVER HINES | 05AA022 | X | | | | X | X |
| 6 | CHAIN LAKES RESERVOIR NEAR WANTON | 05AB037 | | X | | X | | X |
| 7 | *DOG RIVER NEAR FITZGERALD | 07NB008 | X | | | | X | X |
| 8 | ETHEL LAKE NEAR COLD LAKE | 06AC004 | | X | | X | | X |
| 9 | HAY RIVER NEAR MEANDER RIVER | 07DB003 | X | | | X | | X |
| 10 | HIGHWOOD RIVER NEAR THE MOUTH | 05BL024 | X | | | | X | X |
| 11 | KAKVA RIVER NEAR GRANDE PRAIRIE | 07GB002 | X | | | X | | X |
| 12 | KLESKUM HILLS MAIN DRAIN NEAR GRANDE PRAIRIE | 07GE002 | X | | | X | | X |
| 13 | LESSER SLAVE LAKE AT FAUST | 07BJ002 | | X | | X | | X |
| 14 | MARIE LAKE NEAR COLD LAKE | 06AC005 | | X | | X | | X |
| 15 | MARTINEAU RIVER ABOVE COLD LAKE | 06AF008 | X | | | | X | X |
| 16 | NORTH SASKATCHEWAN RIVER NEAR ROCKY MOUNTAIN HOUSE | 05DC001 | X | | | X | | X |
| 17 | OLDMAN RIVER NEAR BROCKET | 05AA024 | X | | X | | X | X |
| 18 | PEACE RIVER AT PEACE RIVER | 07HA001 | X | | X | | X | X |
| 19 | RED DEER RIVER AT DRUMHELLER | 05CE001 | X | | | | X | X |
| 20 | SMOKY RIVER ABOVE HELLS CREEK | 07GA001 | X | | | | X | X |
| 21 | SOUTH SASKATCHEWAN RIVER AT MEDICINE HAT | 05AJ001 | X | | | | X | X |
| 22 | ST. MARY RIVER NEAR LETHBRIDGE | 05AE006 | X | | | | X | X |
| 23 | STEEN RIVER AT STEEN RIVER | 07DB004 | X | | | X | | X |
| 24 | SWAN RIVER NEAR KINUSO | 07BJ001 | X | | X | | X | X |



MAJOR DESIGNATION - FEDERAL-PROVINCIAL

SUBDESIGNATION - REGIONAL WATER QUANTITY INVENTORY (3)

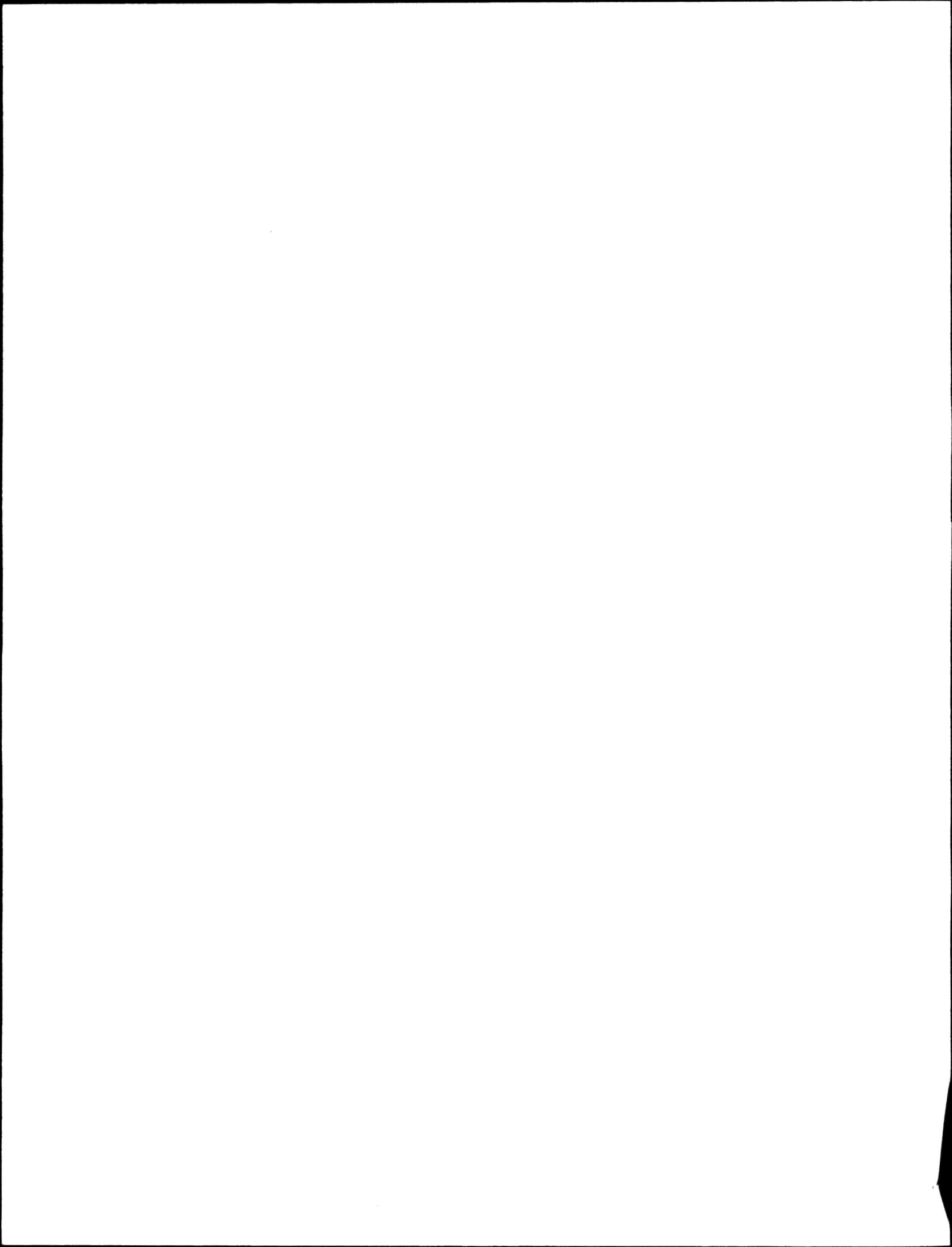
| NO. | STATION NAME | STATION NUMBER | RECORD OBTAINED | | | OPERATION | | ACCESS | |
|--|--|----------------|-----------------|-------|------|-----------|-----|--------|--------|
| | | | FLOW | LEVEL | SED. | 8M | 12M | REMOTE | NORMAL |
| OPERATED BY - WATER SURVEY OF CANADA, CALGARY DISTRICT | | | | | | | | | |
| 1 | ADAMS CREEK NEAR KINUSO | 07BJ004 | X | | | X | | | X |
| 2 | ALKALI CREEK NEAR THE MOUTH | 05CK005 | X | | | X | | | X |
| 3 | ANISK CREEK NEAR SHONTS | 05EB016 | X | | | X | | | X |
| 4 | ANISK RIVER AT HIGHWAY NO. 36 | 06AA002 | X | | | X | | | X |
| 5 | ATHABASCA RIVER AT ATHABASCA | 07BE001 | X | | | | X | | X |
| 6 | ATINDSWE 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 | BEAVERDAM CREEK NEAR COCHRANE | 05CB005 | X | | | X | | | X |
| 11 | BEAVERHILL CREEK NEAR THE MOUTH | 05EB015 | X | | | X | | | X |
| 12 | BELLY RIVER NEAR STAND OFF | 05AD002 | X | | | | X | | X |
| 13 | BERRY CREEK NEAR ROSE LYNN | 05CH008 | X | | | X | | | X |
| 14 | BIGKNIFE CREEK NEAR GADSBY | 05FC002 | X | | | X | | | X |
| 15 | BLACKNUD CREEK NEAR ELLERSLIE | 05DF003 | X | | | X | | | X |
| 16 | BLINDMAN RIVER NEAR BLACKFALDS | 05CC001 | 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 BELOW CADOTTE LAKE | 07HB001 | X | | | X | | | X |
| 24 | CARDINAL RIVER NEAR THE MOUTH | 05DD008 | X | | | X | | | X |
| 25 | CASTLE RIVER AT RANGER STATION | 05AA028 | X | | | X | | | X |
| 26 | CATARACT CREEK NEAR FORESTRY ROAD | 05BL022 | X | | | | X | | X |
| 27 | CHINCHAGA RIVER NEAR HIGH LEVEL | 070C001 | X | | | | X | | X |
| 28 | CHRISTINA RIVER NEAR CHARD | 07CE002 | X | | | X | | X | X |
| 29 | CHRISTMAS CREEK NEAR BLUE RIDGE | 07AH002 | X | | | X | | | X |
| 30 | CLEAR RIVER NEAR BEAR CANYON | 07FD009 | X | | | X | | | X |
| 31 | CLEARWATER RIVER ABOVE LIMESTONE CREEK | 05DB003 | X | | | X | | | X |
| 32 | CLEARWATER RIVER NEAR DOVERCOURT | 05DB006 | X | | | | X | | X |
| 33 | CROWSNEST RIVER AT FRANK | 05AA008 | X | | | | X | | X |
| 34 | CUTBANK RIVER NEAR GRANDE PRAIRIE | 07GB001 | X | | | X | | X | X |
| 35 | DAPP CREEK AT HIGHWAY NO. 44 | 07BC006 | X | | | X | | | X |
| 36 | DEEP VALLEY CREEK NEAR VALLEYVIEW | 07GF008 | X | | | X | | | X |
| 37 | DEER CREEK MAIN STEM | 05CA003 | X | | | X | | | X |
| 38 | DRIEDMEAT CREEK NEAR THE MOUTH | 05FA018 | X | | | X | | | X |
| 39 | DRIFTPILE RIVER NEAR DRIFTPILE | 07BH003 | X | X | | X | | | X |
| 40 | DRIFTWOOD RIVER NEAR THE MOUTH | 07BK007 | X | | | | X | | X |
| 41 | DRYWOOD CREEK NEAR TWIN BUTTE | 05AD016 | X | | | X | | | X |
| 42 | DUTCH CREEK NEAR THE MOUTH | 05AA026 | X | | | X | | | X |
| 43 | EAST PRAIRIE RIVER NEAR EMILDA | 07BF001 | X | | | X | | | X |
| 44 | ELBOV RIVER AT BRAGG CREEK | 05BJ004 | X | | | | X | | X |
| 45 | EUREKA RIVER NEAR WORSLEY | 07FD013 | X | | | X | | | X |
| 46 | FISH CREEK NEAR PRIDDIS | 05BK001 | X | | | X | | | X |
| 47 | FLAT CREEK NEAR BOYLE | 07CA003 | X | | | X | | | X |
| 48 | FREEMAN RIVER NEAR FORT ASSINIBOINE | 07AH001 | X | | | X | | | X |
| 49 | GHOST RIVER ABOVE WAIPOROUS CREEK | 05BG010 | X | | | | X | | X |
| 50 | GRANDE PRAIRIE CREEK NEAR SEXSMITH | 07GE003 | X | | | X | | | X |



MAJOR DESIGNATION - FEDERAL-PROVINCIAL

SUBDESIGNATION - REGIONAL WATER QUANTITY INVENTORY (3)

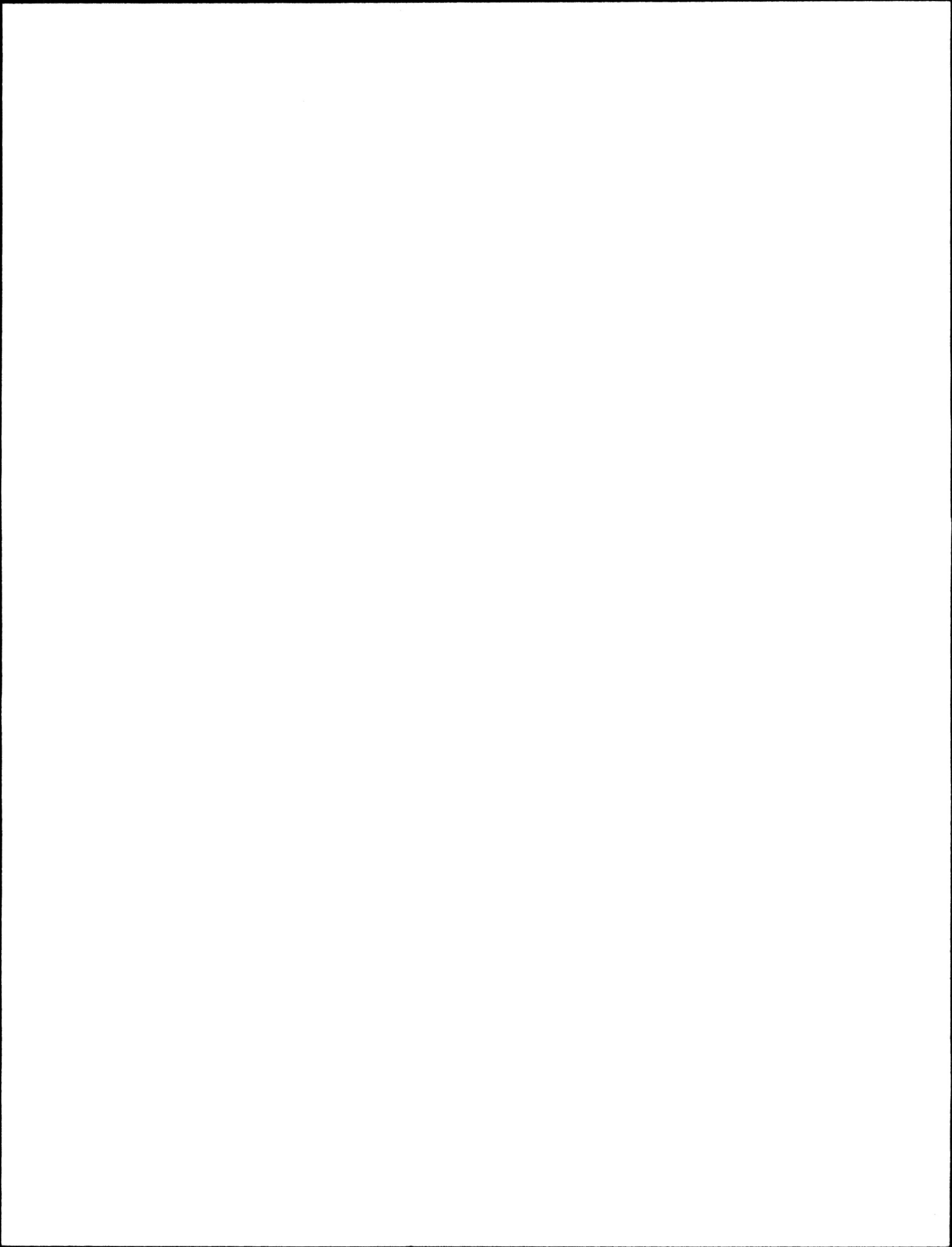
| NO. | STATION NAME | STATION NUMBER | RECORD OBTAINED | | OPERATION | | ACCESS | |
|--|---|----------------|-----------------|------------|-----------|-----|--------|--------|
| | | | FLOW | LEVEL SED. | 8M | 12M | REMOTE | NORMAL |
| OPERATED BY - WATER SURVEY OF CANADA, CALGARY DISTRICT | | | | | | | | |
| 51 | GROS VENTRE CREEK NEAR DUNMORE | 05AH037 | X | | X | | | X |
| 52 | HAYNES CREEK NEAR HAYNES | 05CD006 | X | | X | | | X |
| 53 | HEART RIVER NEAR WANPA | 07HA003 | X | | | X | | X |
| 54 | HIGHWOOD RIVER AT DIEBEL'S RANCH | 05BL019 | X | | X | | | X |
| 55 | HIGHWOOD RIVER BELOW PICKLEJAR CREEK | 05BL021 | X | | X | | | X |
| 56 | HINES CREEK ABOVE GERRY LAKE | 07FD011 | X | | X | | | X |
| 57 | HOUSE RIVER AT HIGHWAY NO.63 | 07CB002 | X | | X | | X | |
| 58 | HUTCH LAKE TRIBUTARY NEAR HIGH LEVEL | 070B007 | X | | X | | | X |
| 59 | IOSEGUN RIVER NEAR LITTLE SMOKY | 07GG003 | X | | X | | | X |
| 60 | IRON CREEK NEAR HARDISTY | 05FB002 | X | | X | | | X |
| 61 | JACKFISH CREEK NEAR LA COREY | 06AC001 | X | | X | | | X |
| 62 | JACKPINE CREEK AT WADLIN LAKE ROAD | 07JD003 | X | | X | | | X |
| 63 | JAMES RIVER NEAR SUNDRE | 05CA002 | X | | X | | | X |
| 64 | JUMPINGPOUND CREEK NEAR COX HILL | 05BH013 | X | | X | | | X |
| 65 | JUMPINGPOUND CREEK NEAR THE MOUTH | 05BH009 | X | | | X | | X |
| 66 | KEG RIVER AT HIGHWAY NO. 35 | 07HF002 | X | | X | | | X |
| 67 | KNEEHILLS CREEK NEAR DRUMHELLER | 05CE002 | X | | X | | | X |
| 68 | LA BICHE RIVER AT HIGHWAY 63 | 07CA011 | X | | | X | | X |
| 69 | LAFOND CREEK NEAR RED EARTH CREEK | 07JC001 | X | | X | | | X |
| 70 | LALBY CREEK NEAR GIROUXVILLE | 07GJ005 | X | | X | | | X |
| 71 | LITTLE PADDLE RIVER NEAR MAYERTHORPE | 07BB005 | X | | X | | | X |
| 72 | LITTLE RED DEER RIVER NEAR THE MOUTH | 05CB001 | X | | | X | | X |
| 73 | LITTLE RED DEER RIVER NEAR WATER VALLEY | 05CB002 | X | | X | | | X |
| 74 | LITTLE SMOKY RIVER NEAR GUY | 07GB002 | X | | | X | | X |
| 75 | LLOYD CREEK NEAR BLUFFTON | 05CC009 | X | | X | | | X |
| 76 | LOBSTICK RIVER NEAR STYAL | 07BB003 | X | | | X | | X |
| 77 | LOGAN RIVER NEAR THE MOUTH | 07CA012 | X | | X | | X | |
| 78 | LOVETT RIVER NEAR THE MOUTH | 07BA003 | X | | X | | | X |
| 79 | LUTOSE CREEK NEAR STEEN RIVER | 070B006 | X | | X | | | X |
| 80 | MACKAY CREEK AT WALSH | 05AH002 | X | | X | | | X |
| 81 | MANYBERRIES CREEK AT BRODIN'S FARM | 05AF010 | X | | X | | | X |
| 82 | MASKVA CREEK NO. 1 ABOVE BEARHILLS LAKE | 05FA014 | X | | X | | | X |
| 83 | McLEOD RIVER ABOVE EMBARRAS RIVER | 07AF002 | X | | | X | | X |
| 84 | MEADOW CREEK NEAR THE MOUTH | 05AB029 | X | | X | | | X |
| 85 | MEANDER RIVER AT OUTLET HUTCH LAKE | 070B005 | X | | X | | | X |
| 86 | MEDICINE RIVER NEAR ECKVILLE | 05CC007 | X | | | X | | X |
| 87 | MEETING CREEK NEAR THE MOUTH | 05FC003 | X | | X | | | X |
| 88 | HILL CREEK NEAR THE MOUTH | 05AA011 | X | | X | | | X |
| 89 | MONITOR CREEK NEAR MONITOR | 05GA003 | X | | X | | | X |
| 90 | MONTAGNEUSE RIVER NEAR EUREKA RIVER | 07FD012 | X | | X | | | X |
| 91 | MUSKEG RIVER NEAR GRANDE CACHE | 07GA002 | X | | | X | | X |
| 92 | NAMEPI CREEK NEAR THE MOUTH | 05EC004 | X | | X | | | X |
| 93 | NORDEGG RIVER AT SUNCHILD ROAD | 05DD009 | X | | | X | | X |
| 94 | NORTH RAM RIVER AT FORESTRY ROAD | 05DC011 | X | | X | | | X |
| 95 | OLDMAN RIVER NEAR WALDRON'S CORNER | 05AA023 | X | X | | X | | X |
| 96 | OWL RIVER BELOW PICHE RIVER | 07CA013 | X | | X | | X | |
| 97 | PADDLE RIVER AT BARRHEAD | 07BB006 | X | | X | | | X |
| 98 | PADDLE RIVER NEAR ROCHFORD BRIDGE | 07BB004 | X | | X | | | X |
| 99 | PARFLESH CREEK NEAR CHANCELLOR | 05BH007 | X | | X | | | X |
| 100 | PEAVINE CREEK NEAR FALHER | 07GH004 | X | | X | | | X |



MAJOR DESIGNATION - FEDERAL-PROVINCIAL

SUBDESIGNATION - REGIONAL WATER QUANTITY INVENTORY (3)

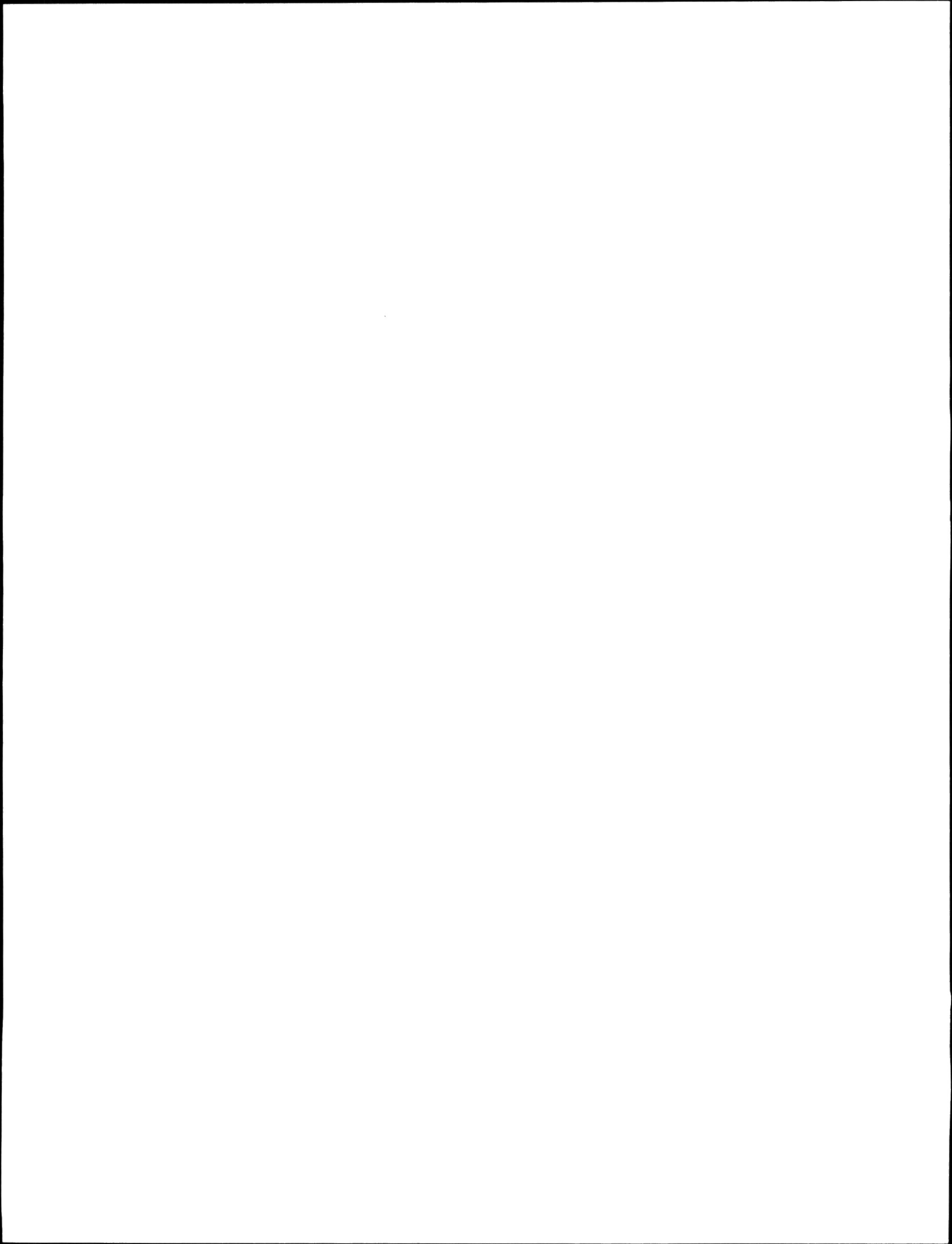
| NO. | STATION NAME | STATION NUMBER | RECORD OBTAINED | | OPERATION | | ACCESS | |
|--|--|----------------|-----------------|------------|-----------|-----|--------|--------|
| | | | FLOW | LEVEL SED. | 8H | 12M | REMOTE | NORMAL |
| OPERATED BY - WATER SURVEY OF CANADA, CALGARY DISTRICT | | | | | | | | |
| 101 | PEIGAM CREEK NEAR PAKOWKI ROAD | 05AH041 | X | | | X | | X |
| 102 | PEKISKO CREEK NEAR LONGVIEW | 05BL023 | X | | | X | | X |
| 103 | PERBINA RIVER BELOW PADDY CREEK | 07BA001 | X | | | X | | X |
| 104 | PICHE RIVER NEAR IMPERIAL HILLS | 07CA010 | X | | | X | | X |
| 105 | PIGEON LAKE CREEK NEAR USONA | 05FA019 | X | | | X | | X |
| 106 | PINCHER CREEK AT PINCHER CREEK | 05AA004 | X | | | X | | X |
| 107 | PINE CREEK NEAR GRASSLAND | 07CA005 | X | | | X | | X |
| 108 | PIPESTONE CREEK BELOW BIGSTONE CREEK | 05FA022 | X | | | X | | X |
| 109 | PIPESTONE RIVER NEAR LAKE LOUISE | 05BA002 | X | | | | X | X |
| 110 | PONTON RIVER ABOVE BOYER RIVER | 07JF003 | X | | | X | | X |
| 111 | PRAIRIE BLOOD COULEE NEAR LETHBRIDGE | 05AD035 | X | | | X | | X |
| 112 | PRAIRIE CREEK BELOW LICK CREEK | 05DB005 | X | | | X | | X |
| 113 | PRAIRIE CREEK NEAR ROCKY MOUNTAIN HOUSE | 05DB002 | X | | | | X | X |
| 114 | PUNK CREEK NEAR THE MOUTH | 06AB003 | X | | | X | | X |
| 115 | RACEHORSE CREEK NEAR THE MOUTH | 05AA027 | X | | | X | | X |
| 116 | RAN RIVER NEAR THE MOUTH | 05DC006 | X | | | | X | X |
| 117 | RAT CREEK NEAR CYNTHIA | 07BA002 | X | | | X | | X |
| 118 | RAVEN RIVER NEAR RAVEN | 05CB004 | X | | | | X | X |
| 119 | RAY CREEK NEAR INWISFAIL | 05CE010 | X | | | X | | X |
| 120 | RED DEER RIVER ABOVE PANTHER RIVER | 05CA004 | X | | | X | | X |
| 121 | RED DEER RIVER BELOW BURNT TIMBER CREEK | 05CA009 | X | | | | X | X |
| 122 | REDWATER RIVER NEAR THE MOUTH | 05EC005 | X | | | X | | X |
| 123 | REITA CREEK NEAR OUTLET ANGLING LAKE | 06AD013 | X | | | | X | X |
| 124 | RENVICK CREEK NEAR THREE HILLS | 05CE011 | X | | | X | | X |
| 125 | RIBSTONE CREEK NEAR CZAR | 05FD005 | X | | | X | | X |
| 126 | RIBSTONE CREEK NEAR EDGERTON | 05FD001 | X | | | X | | X |
| 127 | RIBSTONE CREEK TRIBUTARY NEAR CORONATION | 05FD006 | X | | | X | | X |
| 128 | ROSE CREEK NEAR ALDER FLATS | 05DE007 | X | | | X | | X |
| 129 | ROSEBUD RIVER BELOW CARSTAIRS CREEK | 05CE006 | X | | | X | | X |
| 130 | ROSS CREEK NEAR IRVINE | 05AH003 | X | | | X | | X |
| 131 | SADDLE RIVER NEAR WOKING | 07FD006 | X | | | X | | X |
| 132 | SAKWATANAU RIVER NEAR WHITECOURT | 07AH003 | X | | | X | | X |
| 133 | SAN LAKE TRIBUTARY NEAR SCHULER | 05AH047 | X | | | X | | X |
| 134 | SAND RIVER NEAR THE MOUTH | 06AB001 | X | | | X | | X |
| 135 | SAULTEAUX RIVER NEAR SPURFIELD | 07BK005 | X | | | X | | X |
| 136 | SAVRIDGE CREEK NEAR SLAVE LAKE | 07BK009 | X | | | X | | X |
| 137 | SHEEP COULEE NEAR CARSTAIRS | 05CE019 | X | | | X | | X |
| 138 | SHEEP RIVER AT BLACK DIAMOND | 05BL014 | X | | | | X | X |
| 139 | SIFFLEUR RIVER NEAR THE MOUTH | 05DA002 | X | | | X | | X |
| 140 | SIMONETTE RIVER NEAR GOODWIN | 07GF001 | X | | | | X | X |
| 141 | SOUNDING CREEK NEAR OYEN | 05GA008 | X | | | X | | X |
| 142 | SOUSA CREEK NEAR HIGH LEVEL | 070A001 | X | | | X | | X |
| 143 | STINSON CREEK NEAR PEKISKO | 05BL007 | X | | | X | | X |
| 144 | STRAWBERRY CREEK NEAR THE MOUTH | 05DF004 | X | | | X | | X |
| 145 | STRETTON CREEK NEAR HARWAYNE | 05EE005 | X | | | X | | X |
| 146 | STURGEON RIVER NEAR FORT SASKATCHEWAN | 05EA001 | X | | | X | | X |
| 147 | SUNDANCE CREEK NEAR BICKERDIKE | 07AF010 | X | | | X | | X |
| 148 | SWAN RIVER NEAR SWAN HILLS | 07BJ003 | X | | | X | | X |
| 149 | THREEHILLS CREEK BELOW RAY CREEK | 05CE018 | X | | | X | | X |
| 150 | THREEHILLS CREEK NEAR CARBON | 05CE007 | X | | | X | | X |



MAJOR DESIGNATION - FEDERAL-PROVINCIAL

SUBDESIGNATION - REGIONAL WATER QUANTITY INVENTORY (3)

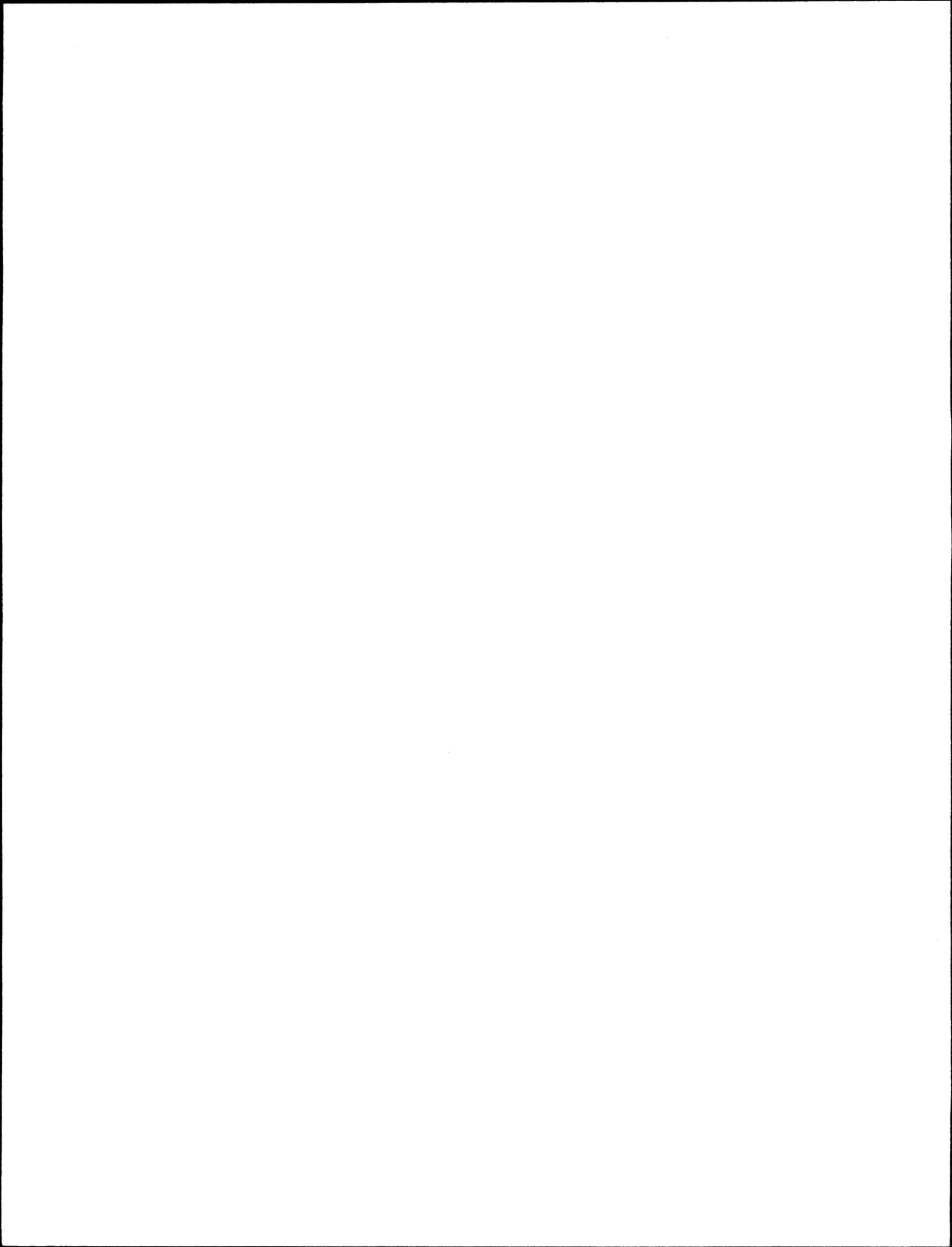
| NO. | STATION NAME | STATION NUMBER | RECORD OBTAINED | | | OPERATION | | ACCESS | |
|--|--|----------------|-----------------|-------|------|-----------|-----|--------|--------|
| | | | FLOW | LEVEL | SED. | 8H | 12H | REMOTE | NORMAL |
| OPERATED BY - WATER SURVEY OF CANADA, CALGARY DISTRICT | | | | | | | | | |
| 151 | THREEPOINT CREEK NEAR MILLARVILLE | 05BL013 | X | | | | X | | X |
| 152 | TODD CREEK AT ELTON'S RANCH | 05AA006 | X | | | | X | | X |
| 153 | TOMAHAWK CREEK NEAR TOMAHAWK | 05DE009 | X | | | | X | | X |
| 154 | VERMILION RIVER NEAR HARWAYNE | 05EE007 | X | | | | X | | X |
| 155 | VABANUN CREEK NEAR DUFFIELD | 05DE003 | X | | | | X | | X |
| 156 | VABASCA RIVER BELOW TROUT RIVER | 07JB002 | X | | | | X | | X |
| 157 | VABASH CREEK NEAR PIBROCH | 07BC007 | X | | | | X | | X |
| 158 | WAINSCOTT COULEE NEAR BROWNVALE | 07FD014 | X | | | | X | | X |
| 159 | WAIPAROUS CREEK NEAR THE MOUTH | 05BG006 | X | | | | | X | X |
| 160 | WANDERING RIVER NEAR WANDERING RIVER | 07CA006 | X | | | | | X | X |
| 161 | WASKAHIGAN RIVER NEAR THE MOUTH | 07GG001 | X | | | | | X | X |
| 162 | WASKATENAU CREEK NEAR WASKATENAU | 05EC002 | X | | | | X | | X |
| 163 | WELCH CREEK TRIBUTARY NEAR LEEDALE | 05CC010 | X | | | | X | | X |
| 164 | WEST ARROWWOOD CREEK NEAR ARROWWOOD | 05BN014 | X | | | | X | | X |
| 165 | WEST PRAIRIE RIVER NEAR HIGH PRAIRIE | 07BF002 | X | | | | | X | X |
| 166 | WHITENUD CREEK NEAR ELLERSLIE | 05DF006 | X | | | | X | | X |
| 167 | WHITENUD CREEK (WEST BRANCH) NEAR IRETOM | 05DF007 | X | | | | X | | X |
| 168 | WHITENUD RIVER NEAR DIXONVILLE | 07HA005 | X | | | | | X | X |
| 169 | WILDHAY RIVER NEAR HINTON | 07AC001 | X | | | | X | | X |
| 170 | WILLOW CREEK ABOVE CHAIN LAKES | 05AB028 | X | | | | | X | X |
| 171 | WILLOW CREEK NEAR NOLAN | 05AB002 | X | | | | X | | X |
| 172 | WILLOW RIVER NEAR VABASCA | 07JA004 | X | | | | X | | X |
| 173 | WOLF CREEK AT HIGHWAY NO. 16A | 07AG003 | X | | | | | X | X |
| 174 | WOLF RIVER AT OUTLET OF WOLF LAKE | 06AB002 | X | | | | | X | X |



MAJOR DESIGNATION - PROVINCIAL

SUBDESIGNATION - PROVINCIAL DEPARTMENTAL PROGRAMS

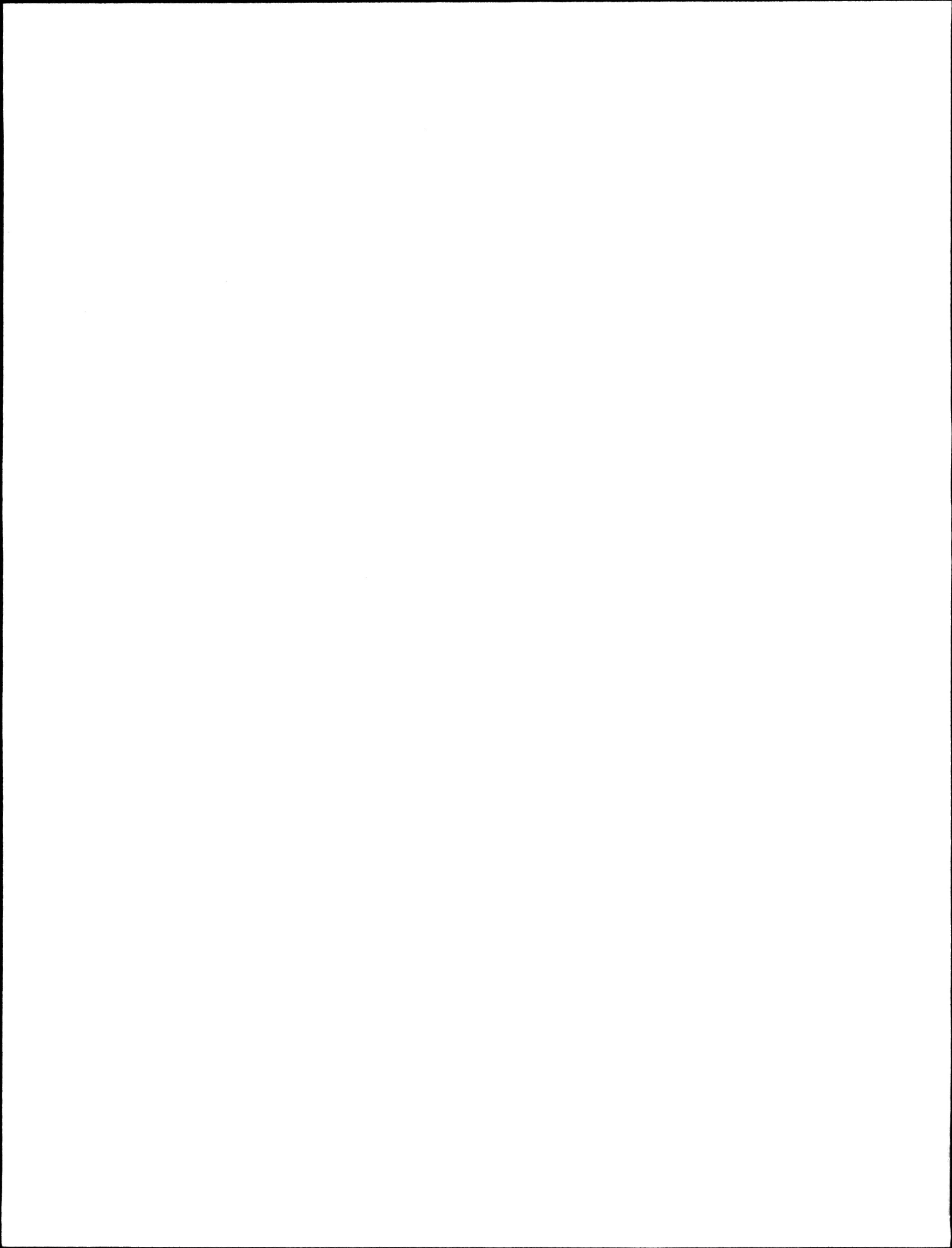
| NO. | STATION NAME | STATION NUMBER | RECORD OBTAINED | | | OPERATION | | ACCESS | |
|--|---------------------------------------|----------------|-----------------|-------|------|-----------|-----|--------|--------|
| | | | FLOW | LEVEL | SED. | 8H | 12H | REMOTE | NORMAL |
| OPERATED BY - WATER SURVEY OF CANADA, CALGARY DISTRICT | | | | | | | | | |
| 1 | APL COOLING POND OUTLET | 05CH015 | X | | | | X | | X |
| 2 | ATHABASCA RIVER NEAR WINDFALL | 07AE001 | X | | | | X | | X |
| 3 | ATLAS MINE COULEE AT WESTERN MONARCH | 05CG005 | X | | | | X | | X |
| 4 | BABETTE CREEK NEAR COLINTON | 07CA008 | X | | | | X | | X |
| 5 | BAPTISTE LAKE NEAR ATHABASCA | 07BE002 | | X | | | X | | X |
| 6 | BAPTISTE RIVER NEAR THE MOUTH | 05DC012 | X | | | | X | | X |
| 7 | BATTLE RIVER ABOVE PIPESTONE CREEK | 05FA023 | X | | | | X | | X |
| 8 | BATTLE RIVER NEAR FORESTBURG | 05FC001 | X | | | | X | | X |
| 9 | BEAR CREEK NEAR VALHALLA CENTRE | 07GE007 | X | | | | X | | X |
| 10 | BEAR LAKE NEAR CLAIRMONT | 07GE004 | | X | | | X | | X |
| 11 | BEAR RIVER NEAR GRANDE PRAIRIE | 07GE005 | X | | | | | X | X |
| 12 | BEAVER LAKE AT RANGER STATION | 06AA003 | | X | | | X | | X |
| 13 | BEAVERTAIL CREEK NEAR HYPHE | 07GD002 | X | | | | X | | X |
| 14 | BELLY-ST. MARY DIVERSION CANAL | 05AD021 | X | | | | X | | X |
| 15 | BERRY CREEK BELOW DEADFISH CREEK | 05CH016 | X | | | | X | | X |
| 16 | BERRY CREEK RESERVOIR NEAR SUNWYNOOK | 05CH014 | | X | | | X | | X |
| 17 | BERRY CREEK RESERVOIR OUTLET | 05CH011 | X | | | | X | | X |
| 18 | BIRCH CREEK NEAR CONKLIN | 07CE006 | X | | | | X | X | X |
| 19 | BLINDMAN RIVER NEAR BLOFFTON | 05CC008 | X | | | | X | | X |
| 20 | BLOOD INDIAN CREEK NEAR CABIN LAKE | 05CK007 | X | | | | X | | X |
| 21 | BLOOD INDIAN CREEK NEAR THE MOUTH | 05CK001 | X | | | | X | | X |
| 22 | B.R.D. DRAIN D NEAR VAUXHALL | 05BN008 | X | | | | X | | X |
| 23 | B.R.D. DRAIN T NEAR HAYS | 05AG005 | X | | | | X | | X |
| 24 | BOYER RIVER NEAR PADDLE PRAIRIE | 07JF004 | X | | | | X | | X |
| 25 | BUFFALO LAKE NEAR ERSKINE | 05CD005 | | X | | | X | | X |
| 26 | CABIN CREEK NEAR SEEBE | 05BF019 | X | | | | | X | X |
| 27 | CALLING LAKE AT RANGER STATION | 07CB001 | | X | | | X | | X |
| 28 | CANADIAN ST. MARY CANAL AT DROP NO. 1 | 05AF028 | X | | | | X | | X |
| 29 | CAVAN LAKE DIVERSION NEAR DUNMORE | 05AH044 | X | | | | X | | X |
| 30 | CAVAN LAKE NEAR DUNMORE | 05AH048 | | X | | | X | | X |
| 31 | CHIP LAKE AT OUTLET TO LOBSTICK RIVER | 07BB008 | | X | | | X | | X |
| 32 | CLEAR BROOK NEAR STAVELY | 05AC033 | X | | | | X | | X |
| 33 | COAL CREEK AT BOV CITY | 05BN014 | X | | | | X | | X |
| 34 | COLQUHOUN CREEK NEAR GRANDE PRAIRIE | 07GE006 | X | | | | X | | X |
| 35 | COLUMBINE CREEK NEAR GLENDON | 06AA004 | X | | | | X | | X |
| 36 | CONNOR CREEK NEAR SANGUDO | 07BB009 | X | | | | X | | X |
| 37 | COOKING LAKE AT COOKING LAKE | 05EB012 | | X | | | X | | X |
| 38 | COYOTE CREEK NEAR CHERHILL | 07BB014 | X | | | | X | | X |
| 39 | DEADFISH INFLOW CANAL NEAR CESSFORD | 05CH012 | X | | | | X | | X |
| 40 | DEERLICK CREEK NEAR HINTON | 07AF004 | X | | X | | X | | X |
| 41 | DICKSON DAN TUNNEL OUTLET | 05CB007 | X | | | | | X | X |
| 42 | DRYWOOD CREEK NEAR THE MOUTH | 05AD010 | X | | | | | X | X |
| 43 | ELBOW RIVER ABOVE ELBOV FALLS | 05BJ006 | X | | | | X | | X |
| 44 | ELBOW RIVER BELOW GLENMORE DAN | 05BJ001 | X | | | | | X | X |
| 45 | ELDER CREEK AT HIGHWAY NO. 586 | 07BB002 | X | | | | X | | X |
| 46 | ELKWATER LAKE AT ELKWATER | 05AH025 | | X | | | X | | X |
| 47 | EMBARASS RIVER NEAR VEALD | 07AF014 | X | | | | X | | X |
| 48 | FAWCETT LAKE NEAR SMITH | 07BK008 | | X | | | X | | X |
| 49 | FISH CREEK ABOVE LITTLE FISH LAKE | 05CG006 | X | | | | X | | X |
| 50 | FORSTER RESERVOIR NEAR CESSFORD | 05CH013 | | X | | | X | | X |



MAJOR DESIGNATION - PROVINCIAL

SUBDESIGNATION - PROVINCIAL DEPARTMENTAL PROGRAMS

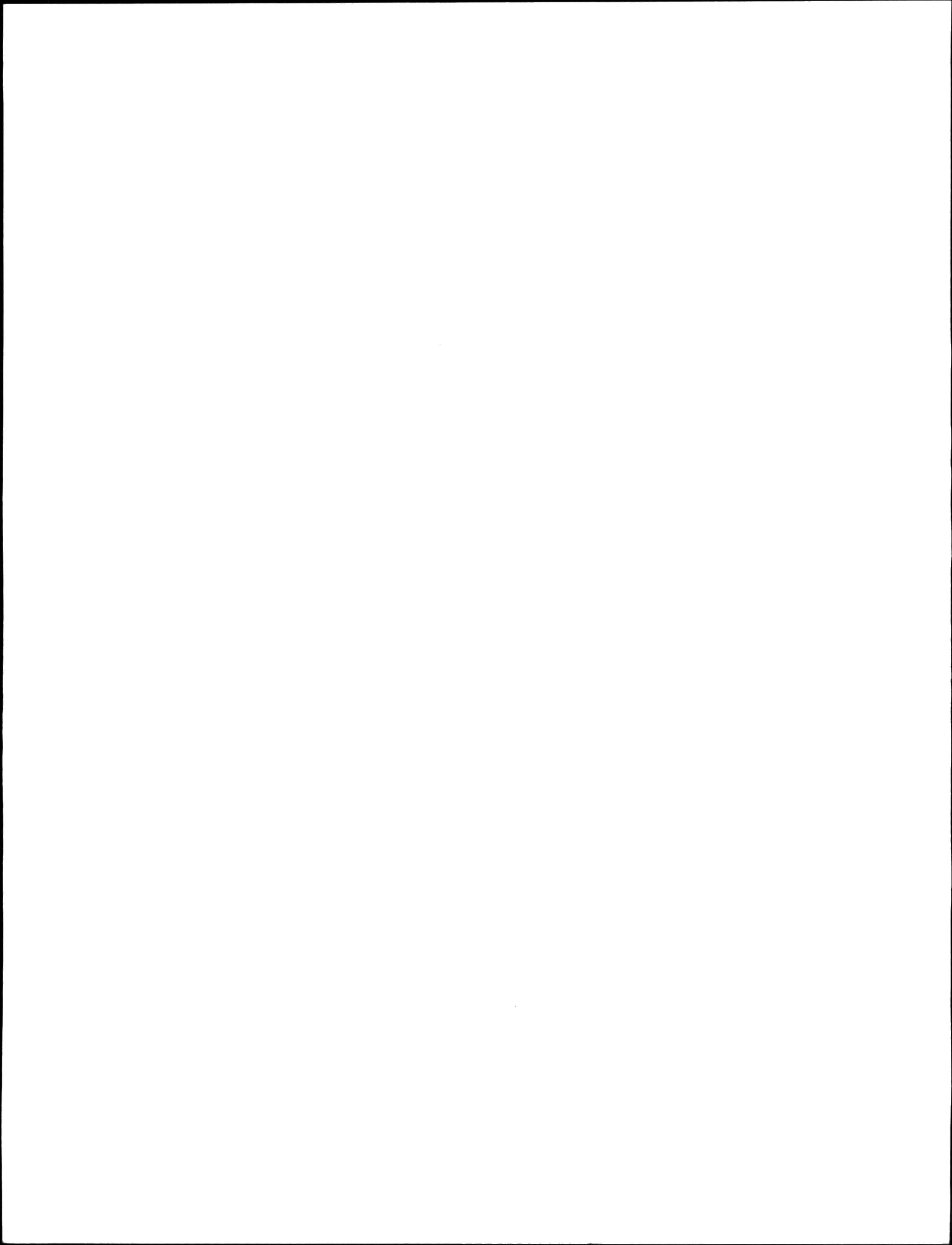
| NO. | STATION NAME | STATION NUMBER | RECORD OBTAINED | | | OPERATION | | ACCESS | |
|--|--|----------------|-----------------|-------|------|-----------|-----|--------|--------|
| | | | FLOW | LEVEL | SED. | 8M | 12M | REMOTE | NORMAL |
| OPERATED BY - WATER SURVEY OF CANADA, CALGARY DISTRICT | | | | | | | | | |
| 51 | GOLD CREEK NEAR FRANK | 05AA030 | X | | | | X | | X |
| 52 | GROAT CREEK NEAR WHITECOURT | 07AG008 | X | | | | X | | X |
| 53 | GULL LAKE AT ASPEN BEACH | 05CC006 | | X | | | X | | X |
| 54 | HAMNER HILL SPILLWAY NEAR GLEICHEN | 05BN005 | X | | | | X | | X |
| 55 | HARTLEY CREEK NEAR FORT HACKAY | 07DA009 | X | | | | | X | X |
| 56 | HASTINGS LAKE NEAR DEVILLE | 05EB011 | | X | | | X | | X |
| 57 | HIGHWOOD RIVER AT HIGH RIVER | 05BL003 | X | | | | | X | X |
| 58 | HIGHWOOD RIVER NEAR ALDERSYDE | 05BL009 | X | | | | X | | X |
| 59 | HILDA LAKE NEAR COLD LAKE | 06AC003 | | X | | | X | | X |
| 60 | HINES CREEK NEAR FAIRVIEW | 07FD008 | X | | | | X | | X |
| 61 | IRON CREEK NEAR VIKING | 05FB003 | X | | | | X | | X |
| 62 | ISLE LAKE AT EUREKA BEACH | 05EA008 | | X | | | X | | X |
| 63 | JACKFISH RIVER BELOW CHRISTINA LAKE | 07CE005 | X | | | | X | | X |
| 64 | JOSLYN CREEK NEAR FORT HACKAY | 07DA016 | X | | | | X | | X |
| 65 | KENNEDY COULEE NEAR ACADIA VALLEY | 05CK006 | X | | | | X | | X |
| 66 | KILLARNEY LAKE TRIBUTARY NEAR CHAUVIN | 05GA010 | X | | | | X | | X |
| 67 | KIRKPATRICK LAKE TRIBUTARY NEAR SPONDIN | 05GA009 | X | | | | X | | X |
| 68 | KYISKAP CREEK NEAR GRANUM | 05AB038 | X | | | | X | | X |
| 69 | LAC LA BICHE AT LAC LA BICHE | 07CA004 | | X | | | X | | X |
| 70 | LAC LA NONNE AT LAC LA NONNE | 07BB007 | | X | | | X | | X |
| 71 | LAC STE. ANNE AT ALBERTA BEACH | 05EA006 | | X | | | X | | X |
| 72 | LATERAL 10 SPILLWAY NEAR CHIN | 05AG007 | X | | | | X | | X |
| 73 | LESSER SLAVE LAKE AT SLAVE LAKE | 07BJ006 | | X | | | | X | X |
| 74 | LITTLE ELBOW RIVER ABOVE NIHAHI CREEK | 05BJ009 | X | | | | X | | X |
| 75 | LITTLE SMOKY RIVER AT LITTLE SMOKY | 07GG002 | X | | | | X | | X |
| 76 | LONOND LATERAL NEAR HEADGATE | 05AC017 | X | | | | X | | X |
| 77 | LOYALIST CREEK NEAR CONSORT | 05GA013 | X | | | | X | | X |
| 78 | HACKAY CREEK NEAR GRABURN GAP | 05AH042 | X | | | | X | | X |
| 79 | HACKAY RIVER ABOVE DUNKIRK RIVER | 07DB005 | X | | | | X | | X |
| 80 | HAMATOKAN RIVER NEAR IRON RIVER | 06AC009 | X | | | | X | | X |
| 81 | McALPINE CREEK (EAST FORK) NEAR ELKWATER | 05AH043 | X | | | | X | | X |
| 82 | McGILLIVRAY CREEK NEAR COLEMAN | 05AA013 | X | | | | X | | X |
| 83 | McGREGOR LAKE INFLOW NEAR MILO | 05AC024 | X | | | | X | | X |
| 84 | McGREGOR-TRAVERS CANAL NEAR CHAMPION | 05AC025 | X | | | | X | | X |
| 85 | McLEOD RIVER NEAR CADONIN | 07AF013 | X | | | | X | | X |
| 86 | McLEOD RIVER NEAR WHITECOURT | 07AG004 | X | | | | X | | X |
| 87 | NICHICHI CREEK AT DRUMHELLER | 05CE020 | X | | | | X | | X |
| 88 | MILK RIVER RIDGE RESERVOIR | 05AF030 | | X | | | X | | X |
| 89 | MINISTIK LAKE NEAR NEW SAREPTA | 05EB013 | | X | | | X | | X |
| 90 | NIQUELON LAKE AT PROVINCIAL PARK | 05EB014 | | X | | | X | | X |
| 91 | MONITOR CREEK NEAR CONSORT | 05GA011 | X | | | | X | | X |
| 92 | MOORE LAKE NEAR COLD LAKE | 06AC002 | | X | | | X | | X |
| 93 | MOOSEHILLS CREEK NEAR ELK POINT | 05ED003 | X | | | | X | | X |
| 94 | MOOSELAKE RIVER NEAR FRANCHERE | 06AC006 | X | | | | | X | X |
| 95 | MOSQUITO CREEK NEAR THE MOUTH | 05AC031 | X | | | | X | | X |
| 96 | MURIEL LAKE NEAR GURNEYVILLE | 06AC007 | | X | | | | X | X |
| 97 | NINE MILE COULEE NEAR LETHBRIDGE | 05AE042 | X | | | | X | | X |
| 98 | NORTH SASKATCHEWAN RIVER NEAR LODGEPOLE | 05DE006 | | X | | | X | | X |
| 99 | NOSE CREEK AT CALGARY | 05BH003 | X | | | | X | | X |
| 100 | OLDMAN RIVER NEAR THE MOUTH | 05AG006 | 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, CALGARY DISTRICT | | | | | | | | | |
| 101 | PADDLE RIVER AT HWY. 764 | 07BB013 | | X | | X | | | X |
| 102 | PADDLE RIVER NEAR ANSELMO | 07BB011 | X | | | X | | | X |
| 103 | PADDLE RIVER NEAR SANGUDO | 07BB012 | | X | | X | | | X |
| 104 | PAINTEARTH CREEK NEAR HALKIRK | 05FC004 | X | | | X | | | X |
| 105 | PARLBY CREEK AT ALIX | 05CD007 | X | | | X | | | X |
| 106 | PEACE RIVER AT FORT VERMILION | 07HF001 | | X | | X | | | X |
| 107 | PEERLESS LAKE AT PEERLESS LAKE | 07JB001 | | X | | X | | X | |
| 108 | PENBINA RIVER NEAR ENTWISTLE | 07BB002 | X | | | | X | | X |
| 109 | PIGEON LAKE AT GRANDVIEW | 05FA013 | | X | | X | | | X |
| 110 | PONY CREEK NEAR CHARD | 07CE003 | X | | | X | | X | |
| 111 | POPLAR CREEK NEAR FORT McMURRAY | 07DA007 | X | | | | X | X | |
| 112 | PORTER CREEK ABOVE BAPTISTE LAKE | 07BE003 | X | | | X | | | X |
| 113 | POTHOLE TURNOUT NEAR MAGRATH | 05AE038 | X | | | X | | | X |
| 114 | RED WILLOW CREEK NEAR RED WILLOW | 05FC005 | X | | | X | | | X |
| 115 | RED WILLOW RIVER NEAR BEAVERLODGE | 07GD003 | X | | | | X | | X |
| 116 | REDWATER RIVER NEAR VINY | 05EC007 | X | | | X | | | X |
| 117 | ROBERT CREEK NEAR ANZAC | 07CE004 | X | | | X | | X | |
| 118 | ROLLING HILLS CANAL NO. 1 SPILL | 05BN015 | X | | | X | | | X |
| 119 | ROLLING HILLS CANAL NO. 2 SPILL | 05BN019 | X | | | X | | | X |
| 120 | ROSS CREEK AT OUTLET OF ELKWATER LAKE | 05AH046 | X | | | X | | | X |
| 121 | SOUNDING CREEK NEAR CHINOOK | 05GA012 | X | | | X | | | X |
| 122 | SOUTH HEART RESERVOIR NEAR McLENNAN | 07BF008 | | X | | X | | | X |
| 123 | SNAKE CREEK NEAR VULCAN | 05AC030 | X | | | X | | | X |
| 124 | SOUTH WABASCA LAKE NEAR DESMARAIS | 07JA002 | | X | | X | | | X |
| 125 | SPRAY RIVER AT BANFF | 05BC001 | X | | | | X | | X |
| 126 | STEELE LAKE NEAR JARVIE | 07BC005 | | X | | X | | | X |
| 127 | STIRLING LAKE OUTFLOW NEAR STIRLING | 05AF029 | X | | | X | | | X |
| 128 | STONY CREEK NEAR TAVATINAV | 07BE004 | X | | | X | | | X |
| 129 | STURGEON LAKE AT WILLIAMSON PARK | 07GH003 | | X | | X | | | X |
| 130 | STURGEON RIVER AT ST. ALBERT | 05EA002 | X | | | X | | | X |
| 131 | STURGEON RIVER NEAR MAGNOLIA BRIDGE | 05EA010 | X | | | X | | | X |
| 132 | STURGEON RIVER NEAR VILLENEUVE | 05EA005 | X | | | | X | | X |
| 133 | SYLVAN LAKE AT SYLVAN LAKE | 05CC003 | | X | | X | | | X |
| 134 | TEEPEE CREEK NEAR LA CRETE | 07JD004 | X | | | X | | | X |
| 135 | TRAPP CREEK NEAR LONGVIEW | 05BL027 | X | | | X | | | X |
| 136 | TROUT CREEK NEAR GRANUM | 05AB005 | X | | | X | | | X |
| 137 | TYRELL LAKE OUTFLOW NEAR NEW DAYTON | 05AF031 | X | | | X | | | X |
| 138 | UNNAMED CREEK NEAR FORT MACKAY | 07DA011 | X | | | X | | X | |
| 139 | UTIKUMA LAKE NEAR WIPISI | 07JA001 | | X | | X | | | X |
| 140 | VERMILION PARK LAKE NEAR VERMILION | 05EE008 | | X | | X | | | X |
| 141 | VERMILION RIVER NEAR VEGREVILLE | 05EE003 | X | | | X | | | X |
| 142 | VERMILION RIVER TRIBUTARY NEAR BRUCE | 05EE006 | X | | | X | | | X |
| 143 | WABAMUN LAKE AT WABAMUN | 05DE002 | | X | | | X | | X |
| 144 | WAMPUS CREEK NEAR HINTON | 07AF003 | X | | X | X | | | X |
| 145 | WASKASOO CREEK AT RED DEER | 05CC011 | X | | | X | | | X |
| 146 | WATERTON RIVER NEAR GLENWOOD | 05AD028 | X | | | | X | | X |
| 147 | WATERTON-BELLY DIVERSION CANAL | 05AD027 | X | | | X | | | X |
| 148 | WEILLER CREEK NEAR WETASKAVIN | 05FA024 | X | | | X | | | X |
| 149 | WESTERN IRRIGATION DISTRICT CANAL B NEAR HEADGATE | 05BN017 | X | | | X | | | X |
| 150 | WHITE EARTH CREEK NEAR SMOKY LAKE | 05EC006 | X | | | X | | | X |



MAJOR DESIGNATION - PROVINCIAL

SUBDESIGNATION - PROVINCIAL DEPARTMENTAL PROGRAMS

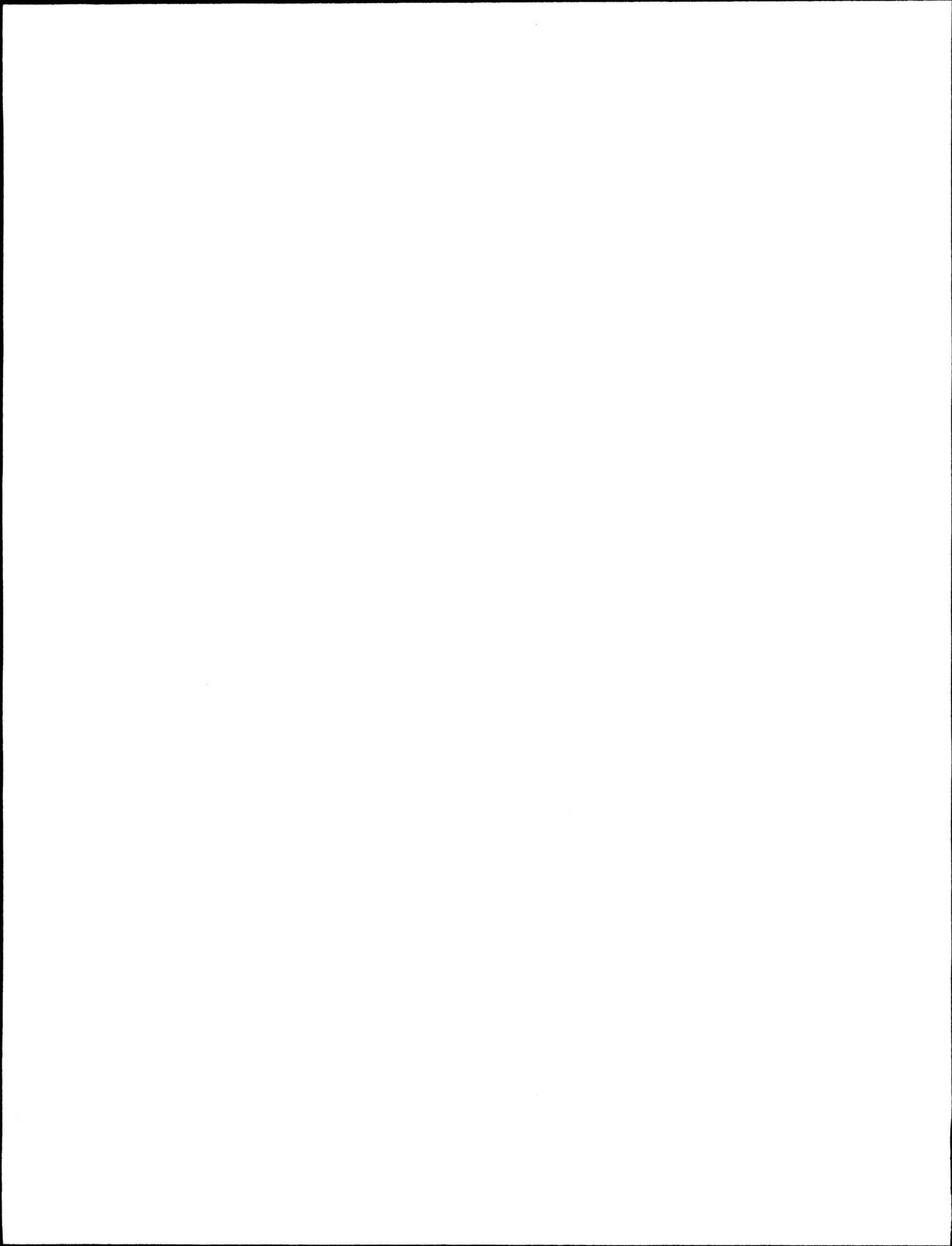
| NO. | STATION NAME | STATION NUMBER | RECORD OBTAINED | | | OPERATION | | ACCESS | |
|---|---|----------------|-----------------|-------|------|-----------|-----|--------|--------|
| | | | FLOW | LEVEL | SED. | 8M | 12M | REMOTE | NORMAL |
| <u>OPERATED BY - WATER SURVEY OF CANADA, CALGARY DISTRICT</u> | | | | | | | | | |
| 151 | WILLOW CREEK BELOW LAKE CREEK | 05AB039 | X | | | X | | | X |
| 152 | WILLOW CREEK NEAR CLARESHOLM | 05AB021 | X | | | | X | | X |
| 153 | WINAGANI LAKE AT SPILLWAY GATES | 07BF006 | | X | | X | | | X |
| <u>OPERATED BY - ALBERTA GOVERNMENT</u> | | | | | | | | | |
| 1 | BIG POINT CHANNEL BELOW DIVERGENCE | 07DD006 | MISC X | | | | X | X | |
| 2 | BRIDLEBIT CREEK NEAR VALLEYVIEW | 07GF005 | X | | X | X | | | X |
| 3 | EMBARRAS RIVER BELOW DIVERGENCE | 07DD003 | 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 | HORSE CREEK NEAR VALLEYVIEW | 07GF007 | X | | X | X | | | X |
| 7 | LAKE ATHABASCA AT BUSTARD ISLAND | 07HD002 | | X | | | X | X | |
| 8 | MANAWI LAKE CHANNEL AT OLD DOG CAMP | 07KF003 | | X | | | X | X | |
| 9 | PRAIRIE RIVER NEAR LAKE CLAIRE | 07KF014 | MISC X | | | X | | X | |
| 10 | REVILLON COUPE BELOW RIVIERE DES ROCHERS | 07NA004 | MISC X | | | | | X | |
| 11 | RICHARDSON LAKE AT THE OUTLET | 07DD008 | | X | | X | | X | |
| 12 | RIVIERE DES ROCHERS AB. CONFLUENCE REVILLON COUPE | 07NA003 | | X | | | X | X | |
| 13 | RIVIERE DES ROCHERS AT BEN HOULE'S CABIN | 07NA002 | MISC X | | | | X | X | |
| 14 | ROCKY CREEK NEAR VALLEYVIEW | 07GF006 | X | | X | X | | | X |
| 15 | SPRING CREEK (UPPER) NEAR VALLEYVIEW | 07GF004 | X | | X | X | | | X |
| 16 | WOLVERINE CREEK NEAR VALLEYVIEW | 07GF003 | X | | X | X | | | X |

1

MAJOR DESIGNATION - CONTRIBUTED DATA

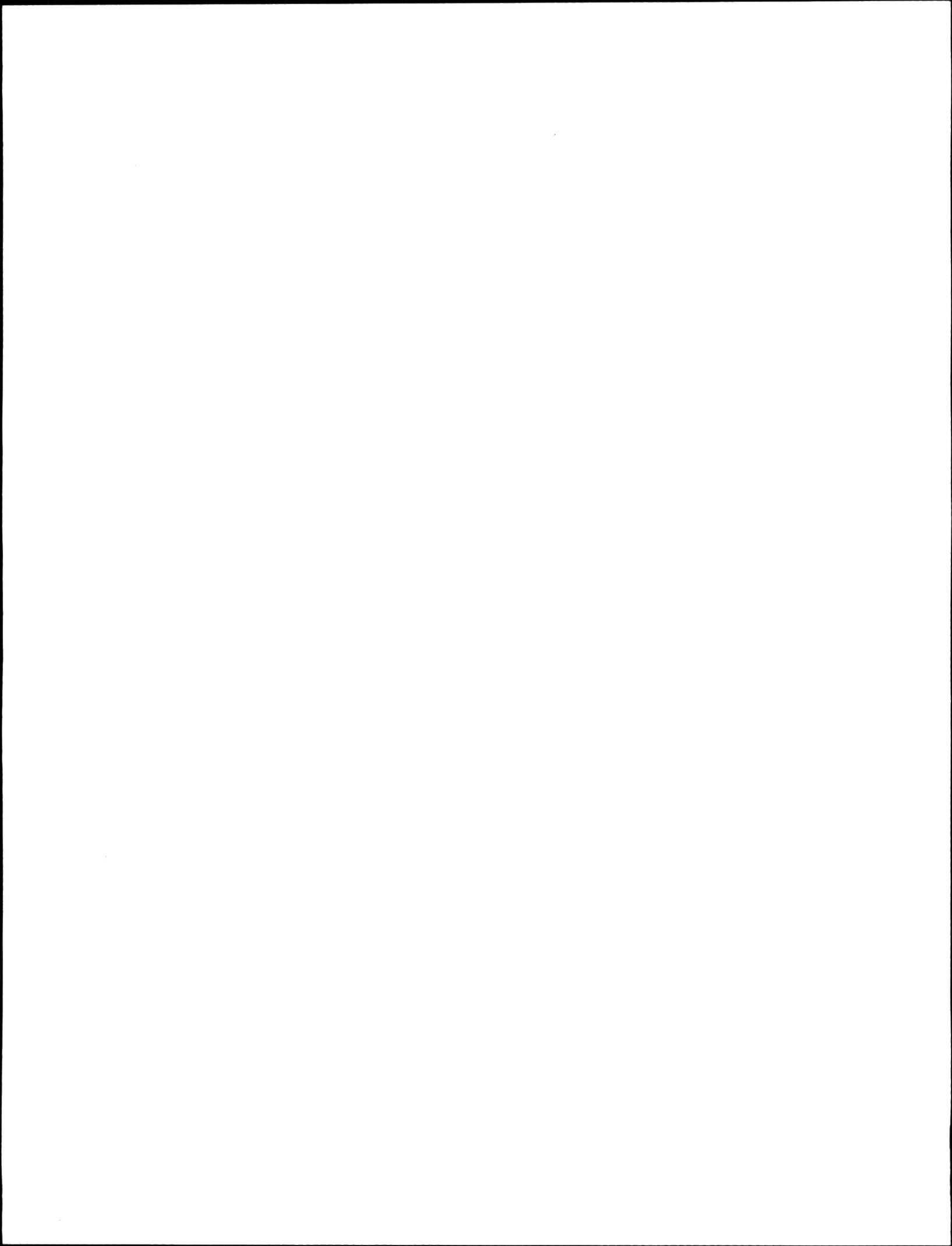
A-17

| NO. | STATION NAME | STATION NUMBER | RECORD OBTAINED | | | OPERATION | | ACCESS | |
|-------------------------------------|---|----------------|-----------------|-------|------|-----------|-----|--------|--------|
| | | | FLOW | LEVEL | SED. | 8M | 12M | REMOTE | NORMAL |
| CONTRIBUTED BY TRANS-ALTA UTILITIES | | | | | | | | | |
| 1 | BARRIER LAKE NEAR SEEBE | 05BF024 | | X | | | X | | X |
| 2 | BOW RIVER NEAR SEEBE | 05BE004 | | X | | | X | | X |
| 3 | BRAZEAU RESERVOIR | 05DD006 | | X | | | X | | X |
| 4 | BRAZEAU RIVER BELOW BRAZEAU PLANT | 05DD005 | X | | | | X | | X |
| 5 | CASCADE POWER DIVERSION NEAR BANFF | 05BD004 | X | | | | X | | X |
| 6 | GHOST LAKE NEAR COCHRANE | 05BE005 | | X | | | X | | X |
| 7 | GHOST RIVER DIVERSION TO LAKE MINNEMANKA | 05B8003 | X | | | | X | | X |
| 8 | GHOST RIVER NEAR BLACK ROCK MOUNTAIN | 05B8002 | X | | | X | | | X |
| 9 | GOAT CREEK AT BANFF PARK BOUNDARY | 05BC008 | X | | | | X | | X |
| 10 | KANANASKIS RIVER BELOW BARRIER DAM | 05BF025 | X | | | | X | | X |
| 11 | KANANASKIS RIVER ABOVE POCATERRA CREEK | 05BF003 | X | | | | X | | X |
| 12 | LAKE ABRAHAM NEAR NORDEGG | 05DC009 | | X | | | X | | X |
| 13 | LAKE MINNEMANKA NEAR BANFF | 05BD003 | | X | | | X | | X |
| 14 | LOWER KANANASKIS LAKE AT POCATERRA DAM | 05BF009 | | X | | | X | | X |
| 15 | MUD LAKE DIVERSION CANAL | 05BF013 | X | | | | X | | X |
| 16 | NORTH SASKATCHEWAN RIVER BELOW BIGHORN PLANT | 05DC010 | X | | | | X | | X |
| 17 | SPRAY POWER DIVERSION AT CANNORE | 05BE007 | X | | | | X | | X |
| 18 | SPRAY RESERVOIR AT THREE SISTERS DAM | 05BC006 | | X | | | X | | X |
| 19 | UPPER KANANASKIS LAKE AT MAIN DAM | 05BF005 | | X | | | X | | X |
| CONTRIBUTED BY ALBERTA ENVIRONMENT | | | | | | | | | |
| 1 | ATIM CREEK NEAR SPRUCE GROVE | 05EA009 | X | | | | X | | X |
| 2 | BABETTE CREEK NEAR COLINTON | 07CA008 | X | | | | X | | X |
| 3 | BEARBERRY CREEK NEAR SUNDRE | 05CA011 | X | | | | X | | X |
| 4 | BEDDINGTON CREEK NEAR CALGARY | 05BH904 | X | | | | X | | X |
| 5 | BIGELOW RESERVOIR NEAR WIMBOURNE | 05CE901 | | X | | | X | | X |
| 6 | B.R.I.D. MAIN 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 | COTTONWOOD CREEK NEAR TWIN BUTTE | 05AD903 | X | | | | X | | X |
| 9 | DRIEDMEAT LAKE AT OUTFLOW | 05FA020 | | X | | | X | | X |
| 10 | ELBOW RIVER AT SARCEE BRIDGE | 05BJ010 | X | | | | X | | X |
| 11 | EMBARRAS RIVER AT ROBB | 07AF909 | X | | | | X | | X |
| 12 | ERITH RIVER BELOW HANLAN CREEK | 07AF907 | X | | | | X | | X |
| 13 | ETZIKOM COULEE NEAR NEMISKAM | 05AF905 | X | | | | X | | X |
| 14 | FALLENIMBER CREEK NEAR SUNDRE | 05CA012 | X | | | | X | | X |
| 15 | FOOTHILLS CREEK NEAR PINCHER CREEK | 05AD901 | X | | | | X | | X |
| 16 | GALWEY BROOK NEAR WATERTON PARK | 05AD904 | X | | | | X | | X |
| 17 | GREGG RIVER NEAR HINTON | 07AF906 | X | | | | X | | X |
| 18 | KRANCHUK DRAINAGE NEAR McLENNAN | 07HA902 | X | | | | X | | X |
| 19 | LEE CREEK AT BEAZER | 05AE037 | X | | | | X | | X |
| 20 | LEE CREEK BELOW CONFLUENCE OF EAST FORK | 05AE905 | X | | | | X | | X |
| 21 | LEE CREEK (EAST BRANCH) NEAR BEAZER | 05AE040 | X | | | | X | | X |
| 22 | L.N.I.D. CANAL BELOW KEHO OUTFLOW | 05AC026 | X | | | | X | | X |
| 23 | L.N.I.D. CANAL BELOW MONARCH HEADGATES | 05AC029 | X | | | | X | | X |
| 24 | L.N.I.D. MONARCH BR CANAL BEL MONARCH HEADGATES | 05AC028 | X | | | | X | | X |
| 25 | LODGE CREEK AT HIGHWAY NO.41 | 11AB902 | X | | | | X | | X |
| 26 | MUSKEG CREEK NEAR WESTROSE | 05FA912 | X | | | | X | | X |
| 27 | NOSE CREEK NEAR THE MOUTH | 05BH901 | X | | | | X | | X |
| 28 | PARLBY CREEK NEAR MIRROR | 05CD902 | X | | | | X | | X |
| 29 | POINTE-AUX-PINS CREEK NEAR ARDOSSAN | 05EB902 | X | | | | X | | X |
| 30 | POINTE-AUX-PINS TRIBUTARY 1 NEAR ARDOSSAN | 05EB909 | X | | | | X | | X |
| 31 | POINTE-AUX-PINS TRIBUTARY 2 NEAR ARDOSSAN | 05EB910 | X | | | | X | | X |



MAJOR DESIGNATION - CONTRIBUTED DATA

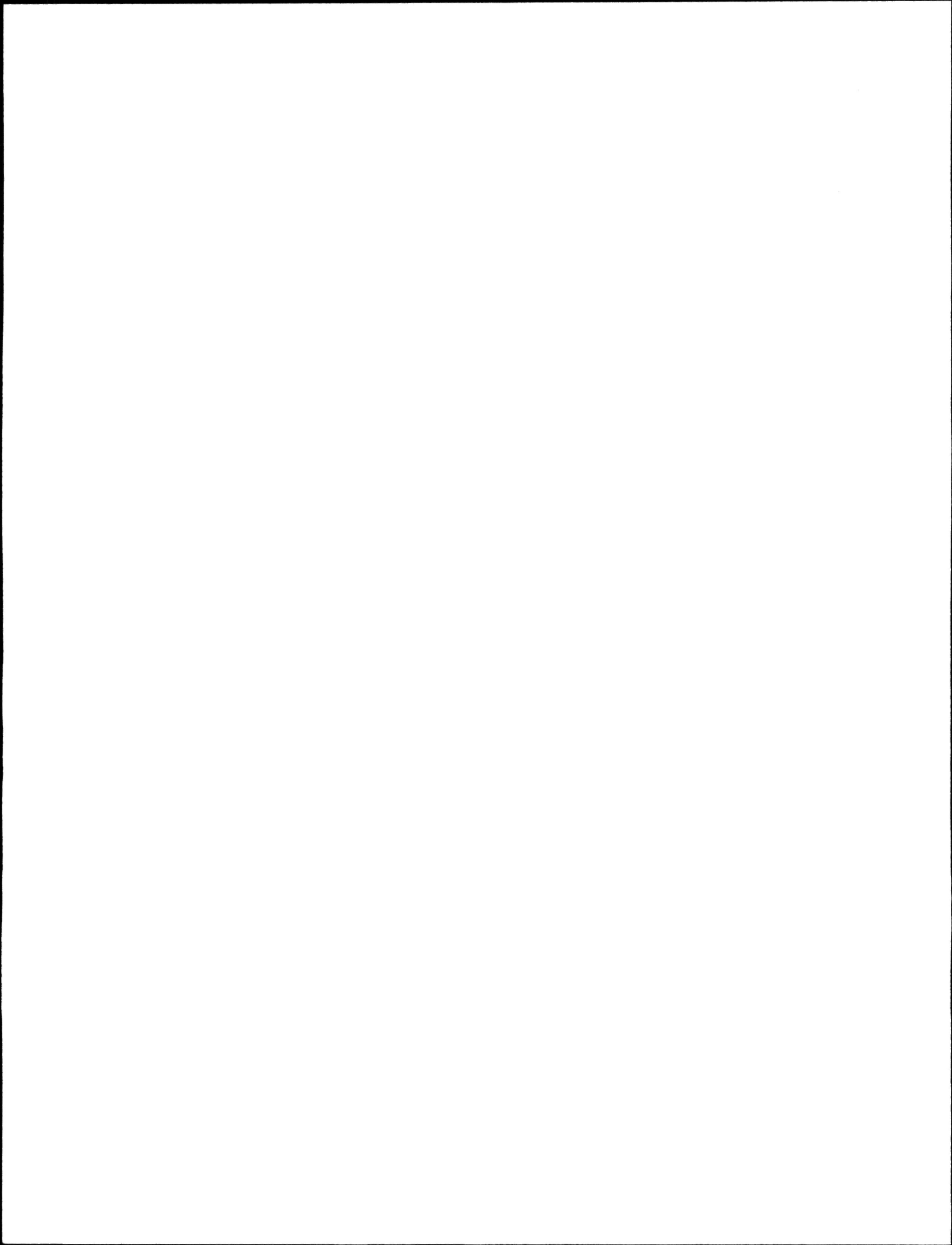
| NO. | STATION NAME | STATION NUMBER | RECORD OBTAINED | | | OPERATION | | ACCESS | |
|--------------------------------|--|-------------------|-----------------|-------|------|-----------|-----|--------|--------|
| | | | FLOW | LEVEL | SED. | 8M | 12M | REMOTE | NORMAL |
| 32 | POINTE-AUX-PINS TRIBUTARY 3 NEAR ARDROSSAN | 05EB911 | X | | | X | | X | |
| 33 | ROMED CREEK ABOVE ROMED LAKE | 07BB903 | X | | | X | | X | |
| 34 | RYCROFT SURVEY #3 NEAR RYCROFT | 07FD910 | X | | | X | | X | |
| 35 | TODD CREEK NEAR HIGHWAY 22 | 05AA909 | X | | | X | | X | |
| 36 | TOUGH CREEK NEAR BEAZER | 05AE039 | X | | | X | | X | |
| 37 | VERMILION RIVER DRAINAGE NEAR HOLDEN | 05EE913 | X | | | X | | X | |
| 38 | VIXEN CREEK NEAR BELLOY | 07FD921 | X | | | X | | X | |
| 39 | YOUNG DRAINAGE NEAR SPIRIT RIVER | 07FD913 | X | | | X | | X | |
| CONTRIBUTED BY CITY OF CALGARY | | | | | | | | | |
| 1 | GLENMORE RESERVOIR AT CALGARY | 05BJ008 | | | X | | X | X | |



MAJOR DESIGNATION - SEDIMENT PROGRAM

| NO. | STATION NAME | STATION NUMBER | HYDROMETRIC DESIGNATION | OPERATION | | ACCESS | |
|-----------------------------|-------------------------------------|----------------|-------------------------|-----------|-----|--------|--------|
| | | | | 8M | 12M | REMOTE | NORMAL |
| <u>FEDERAL</u> | | | | | | | |
| 1 | SLAVE RIVER AT FITZGERALD | 07NB001 | F-2 | X | | X | |
| <u>FEDERAL - PROVINCIAL</u> | | | | | | | |
| 1 | ATHABASCA RIVER AT EMBARRAS AIRPORT | 07DD001 | F-2 | X | | X | |
| 2 | ATHABASCA RIVER AT McMURRAY*** | 07CC002 | FP-1 | X | | X | |
| 3 | CLEARWATER RIVER AT DRAPER | 07CD001 | FP-1 | X | | X | |
| 4 | OLDMAN RIVER NEAR LETHBRIDGE | 05AD007 | F-2 | X | | | X |
| 5 | PEACE RIVER AT PEACE RIVER | 07HA001 | F-4 | X | | | X |
| <u>PROVINCIAL</u> | | | | | | | |
| 1 | DEERLICK CREEK NEAR HINTON | 07AF004 | P-1 | X | | | X |
| 2 | DRIFTPILE RIVER NEAR DRIFTPILE | 07BH003 | FP-3 | X | | | X |
| 3 | ELNICE CREEK NEAR HINTON | 07AF005 | FP-1 | X | | | X |
| 4 | LESSER SLAVE RIVER AT HIGHWAY NO.2 | 07BK006 | F-1 | X | | | X |
| 5 | OLDMAN RIVER NEAR BROCKET | 05AA024 | FP-2 | X | | | X |
| 6 | OLDMAN RIVER NEAR WALDRONS CORNER | 05AA023 | FP-3 | X | | | X |
| 7 | SWAN RIVER NEAR KINUSO | 07BJ001 | FP-2 | X | | | X |
| 8 | WAMPUS CREEK NEAR HINTON | 07AF003 | P-1 | X | | | X |

***NO HYDROMETRIC STATION AT THIS SITE. FLOWS ARE DETERMINED BY ARITHMETICALLY MANIPULATING FLOW DATA FROM THE STATIONS ATHABASCA RIVER BELOW McMURRAY (07DA001) AND CLEARWATER RIVER AT DRAPER (07CD001).

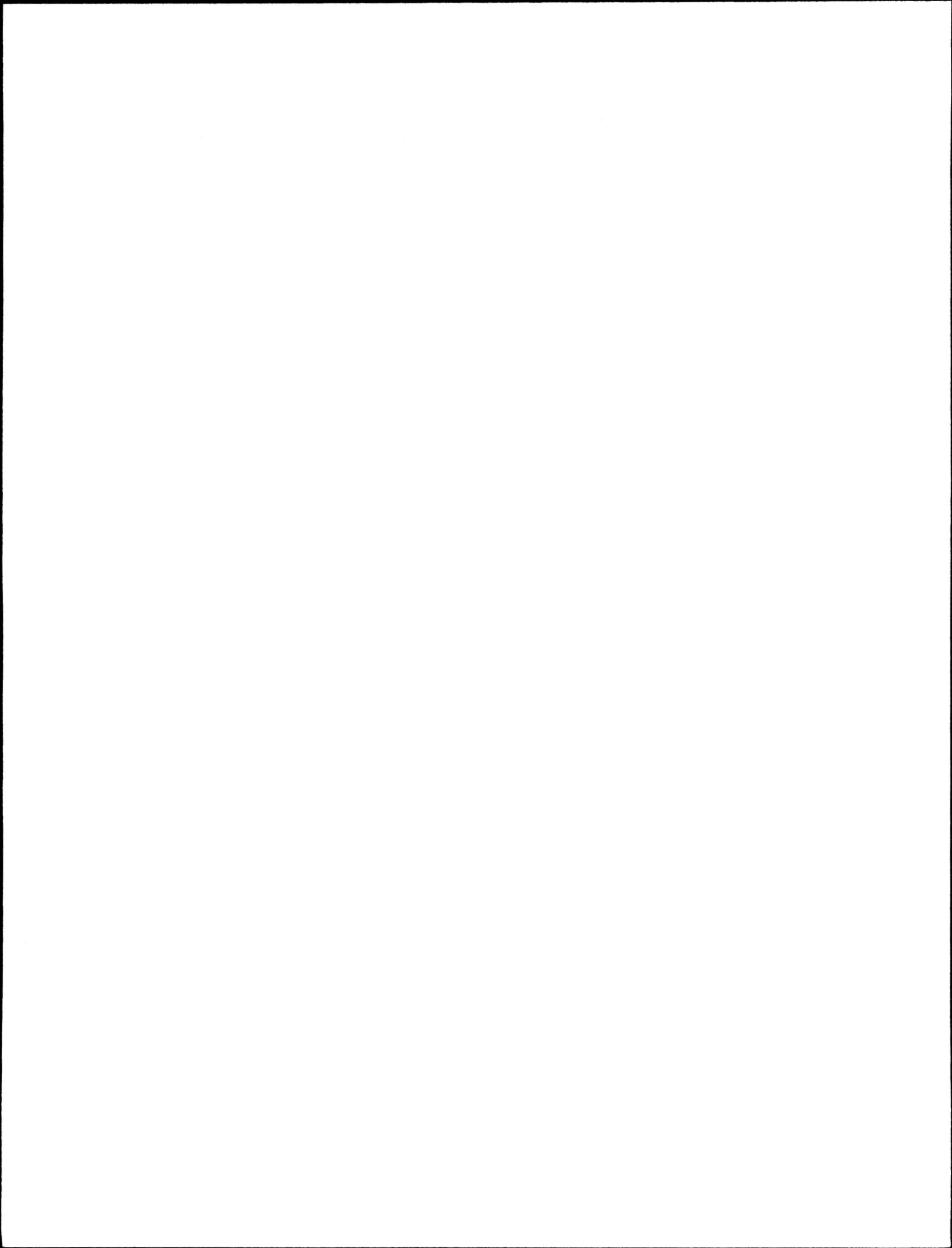


A P P E N D I X "B"

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

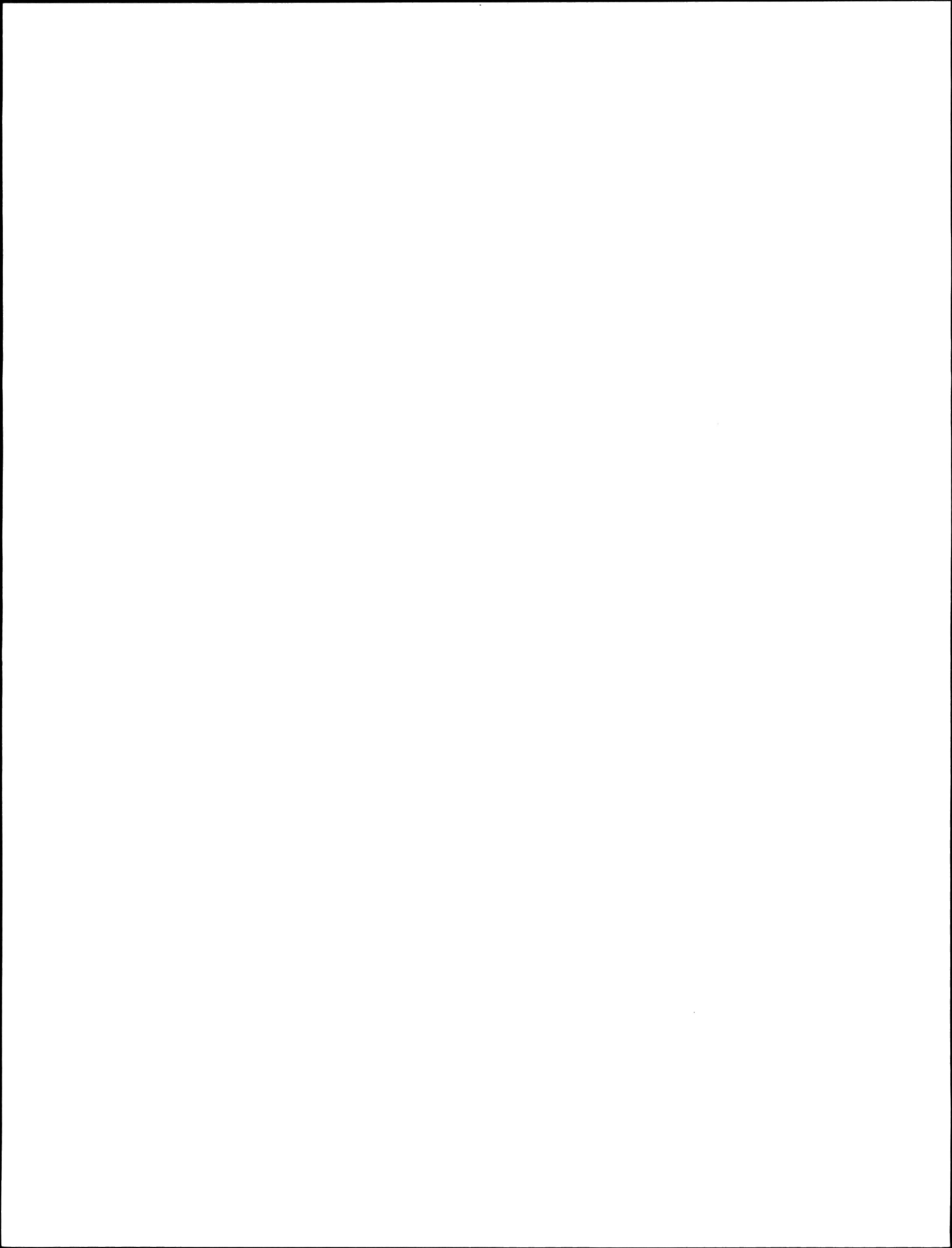
The costs shared include only the salaries and expenses of the staff directly involved in the field and office in the collection and compilation of water quantity data. Depreciation, operation, and maintenance of field transportation and equipment are included costs.

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 Reconstruction

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.

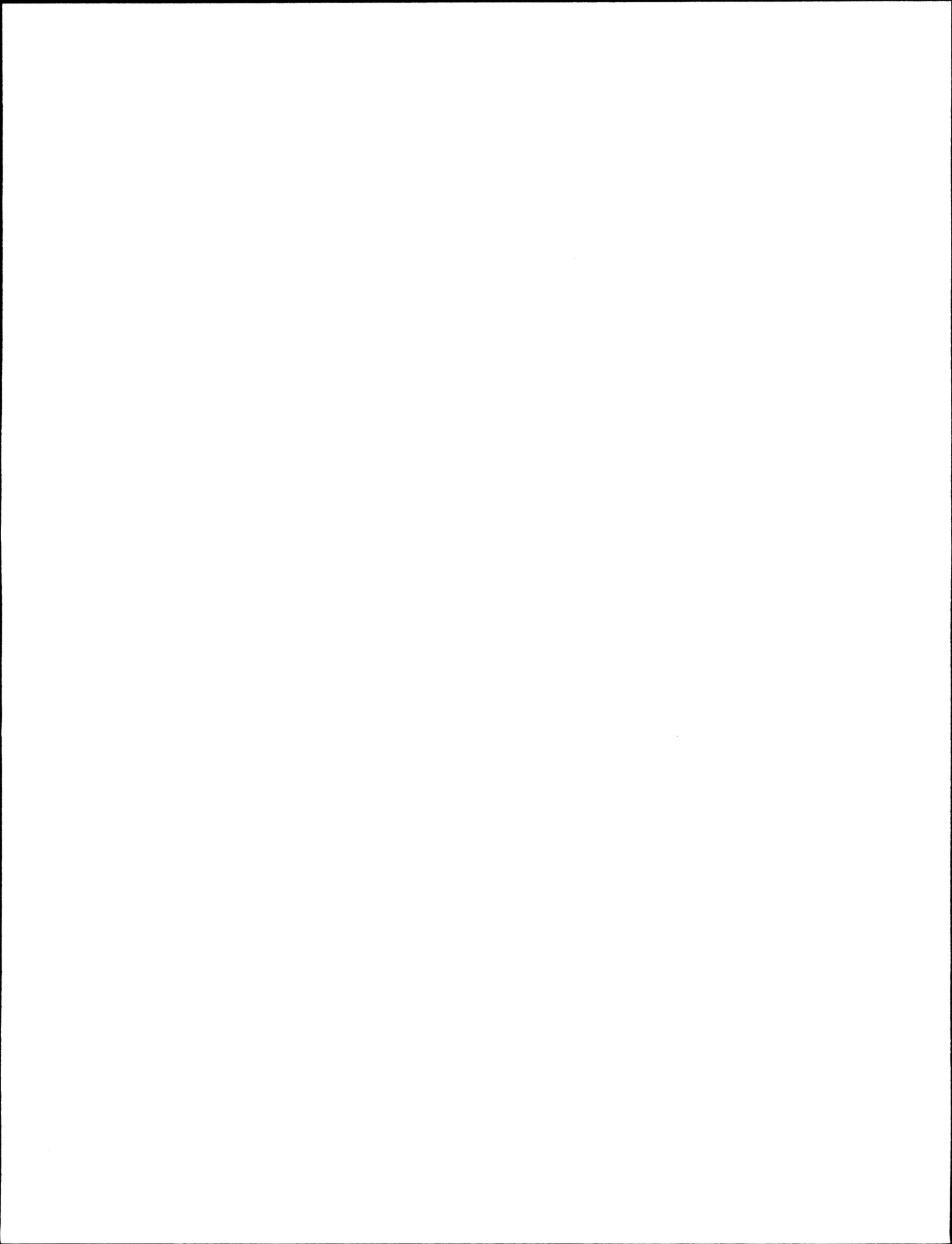
B. APPLICATION OF PROCEDURE

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

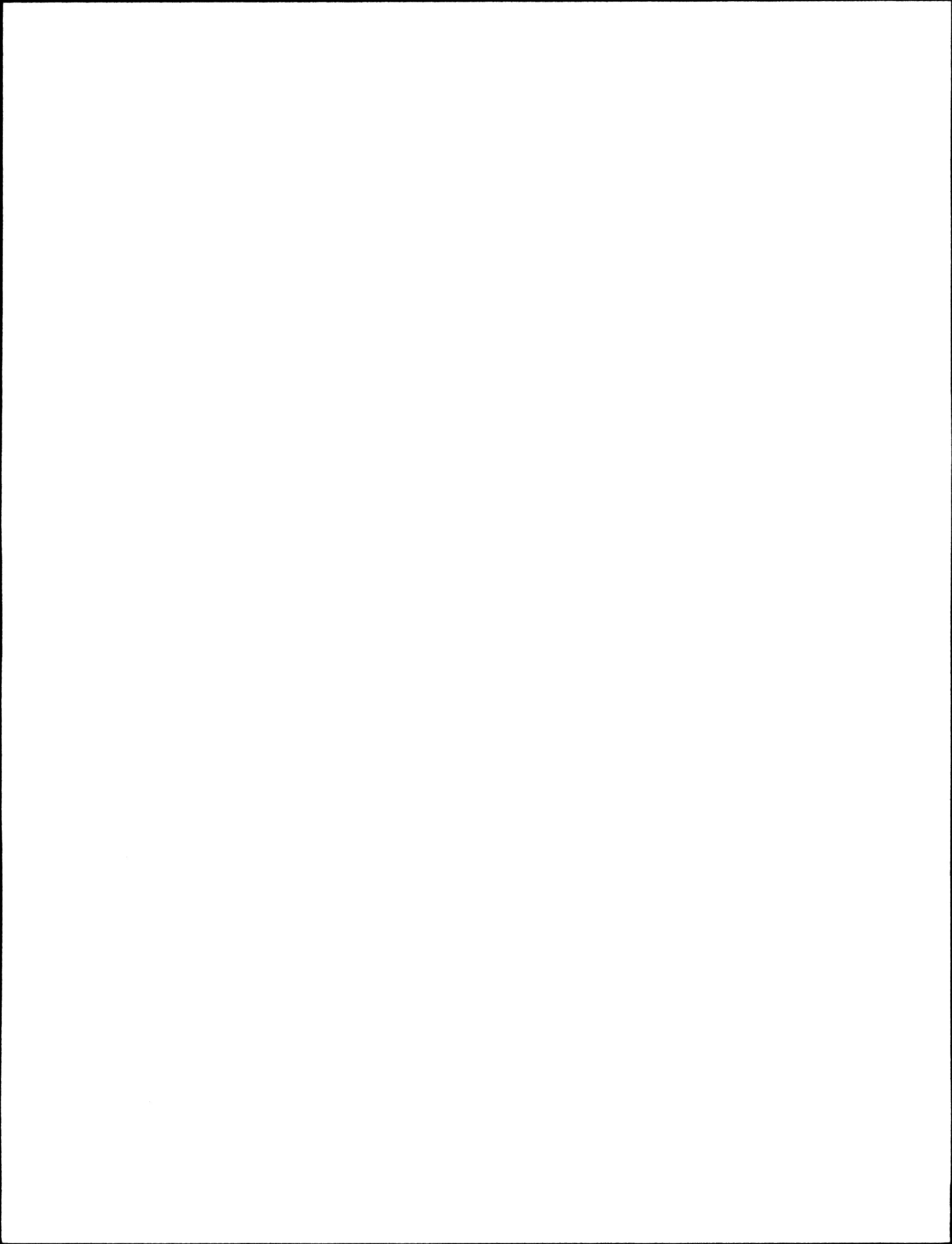
Salary and operation costs exceed those for normal access stations. This is to account for aircraft costs, additional preparation and travelling time on a field trip and maintenance problems in a sparse network located in a harsh environment. Weighting factors have, therefore, been assigned as follows:

| <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 |



C. SPECIAL CONSIDERATIONS

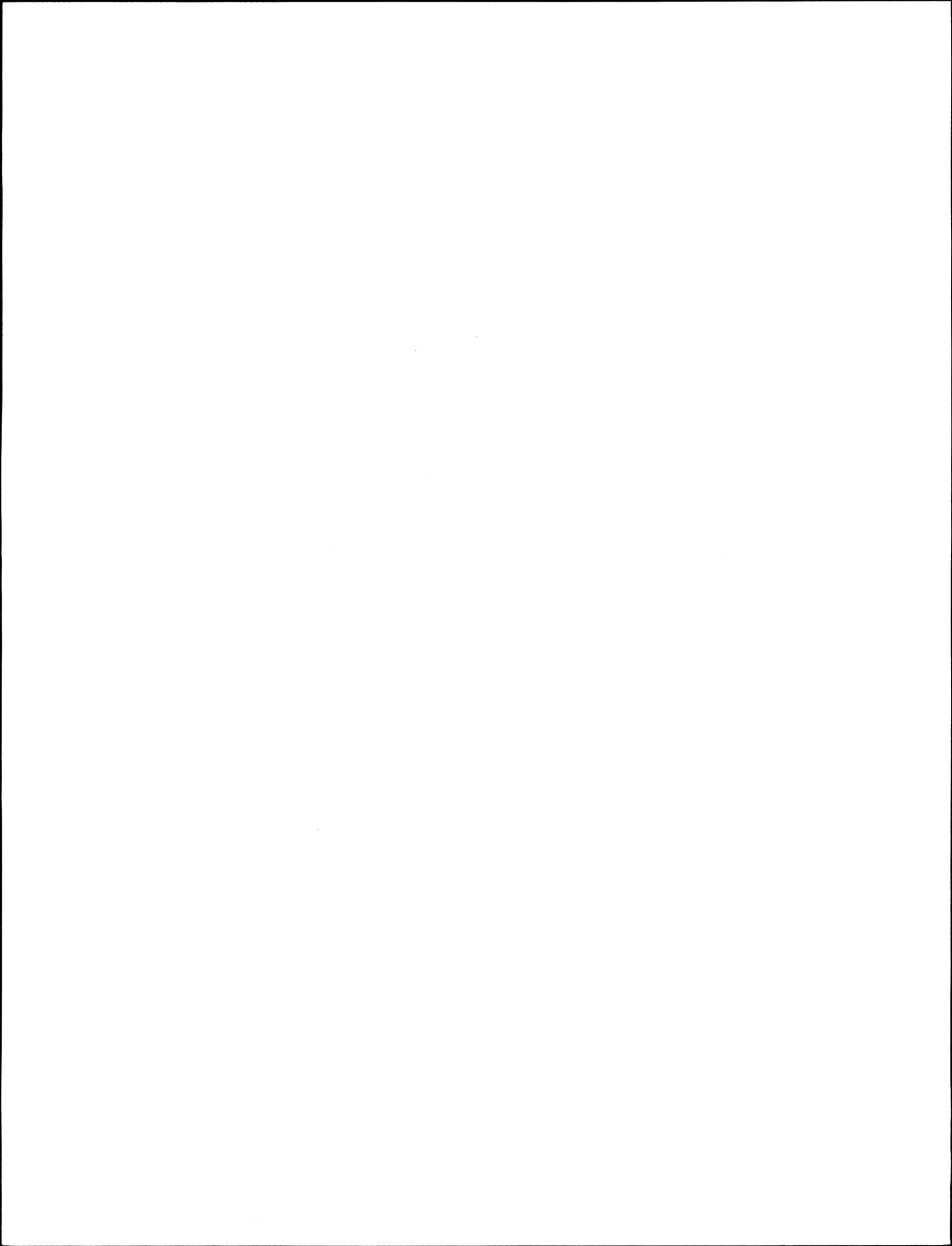
Due to the complexity of the operation it is necessary to apply a number of practical considerations which are described as follows:

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.

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. Although these stations have not been utilized in the costing, they are included in Tables 1, 2 and 3 of the main body of this report. 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 the 393.40



weighted units but comprises 1.80 weighted units. Based upon the unit cost of \$3,822.83 the cost of operating 'Dog River near Fitzgerald' is \$6,881.10. One-half of this amount was added to the share of each party in Table I to obtain the costs shown in 'Summary of Financial Considerations' and Tables 4 and 5 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.

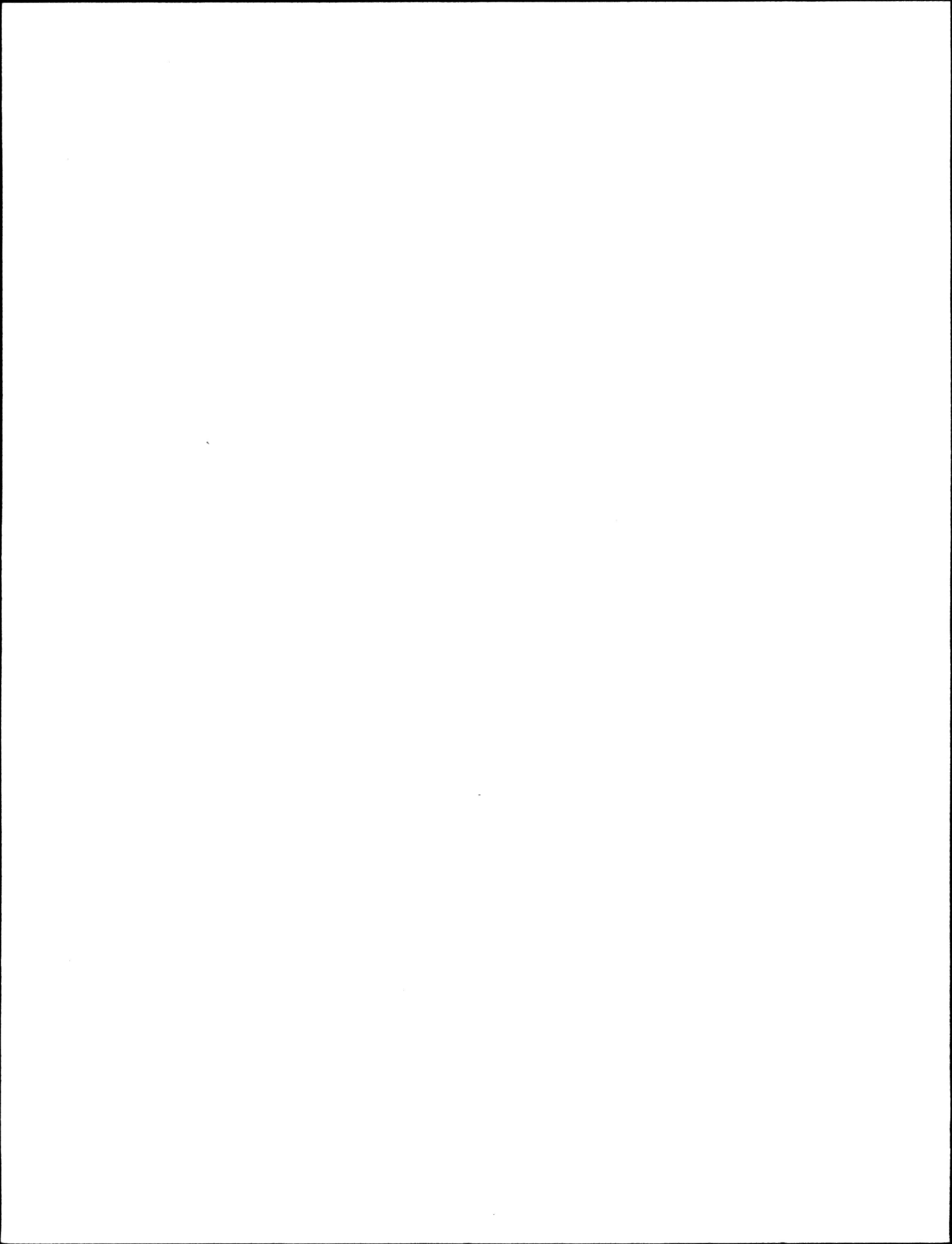


TABLE I
 HYDROMETRIC AND SEDIMENT COSTINGS FOR 1985-86 (Stations Operated by WSC-Calgary)

| Category | Month | Number of Stations | Weight Factor | Weighted Units | Salaries | O & M | TOTAL | Share | |
|---------------------------|-------|--------------------|---------------|----------------|----------|---------|-----------|---------|------------|
| | | | | | | | | Federal | Provincial |
| FEDERAL | | | | | | | | | |
| Normal Access Flow | 12 | 32 | 1.00 | 32.00 | | | | | |
| | 8 | 59 | 0.75 | 44.25 | | | | | |
| Normal Access W.L. | 12 | 7 | 0.40 | 2.80 | | | | | |
| Remote Access Flow | 12 | 2 | 1.80 | 3.60 | | | | | |
| | 8 | 1 | 1.50 | 1.50 | | | | | |
| Sub-total | | | | 84.15 | 207,166 | 114,525 | 321,691 | 321,691 | - |
| FEDERAL-PROVINCIAL | | | | | | | | | |
| Normal Access Flow | 12 | 51 | 1.00 | 51.00 | | | | | |
| | 8 | 140 | 0.75 | 105.00 | | | | | |
| Normal Access W.L. | 8 | 4 | 0.25 | 1.00 | | | | | |
| Remote Access Flow | 12 | 12 | 1.80 | 21.60 | | | | | |
| | 8 | 7 | 1.50 | 10.50 | | | | | |
| Remote Access W.L. | 8 | 1 | 0.95 | 0.95 | | | | | |
| Normal Access Sediment | 8 | 2 | 1.05 | 2.10 | | | | | |
| Remote Access Sediment | 8 | 3 | 1.25 | 3.75 | | | | | |
| Sub-total | | | | 195.90 | 482,281 | 266,611 | 748,892 | 374,446 | 374,446 |
| PROVINCIAL | | | | | | | | | |
| Normal Access Flow | 12 | 14 | 1.00 | 14.00 | | | | | |
| | 8 | 90 | 0.75 | 67.50 | | | | | |
| Normal Access W.L. | 12 | 3 | 0.40 | 1.20 | | | | | |
| | 8 | 36 | 0.25 | 9.00 | | | | | |
| Remote Access Flow | 12 | 2 | 1.80 | 3.60 | | | | | |
| | 8 | 7 | 1.50 | 10.50 | | | | | |
| Remote Access W.L. | 8 | 1 | 0.95 | 0.95 | | | | | |
| Sediment Re-search | 8 | 3 | 0.45 | 1.35 | | | | | |
| Normal Access Sediment | 8 | 5 | 1.05 | 5.25 | | | | | |
| Sub-total | | | | 113.35 | 279,053 | 154,264 | 433,317 | - | 433,317 |
| TOTAL | | | | 393.40 | 968,500 | 535,400 | 1,503,900 | 696,137 | 807,763 |

Unit O&M = \$1,360.96 Unit Salary = \$2,461.87

One Unit = \$3,822.83

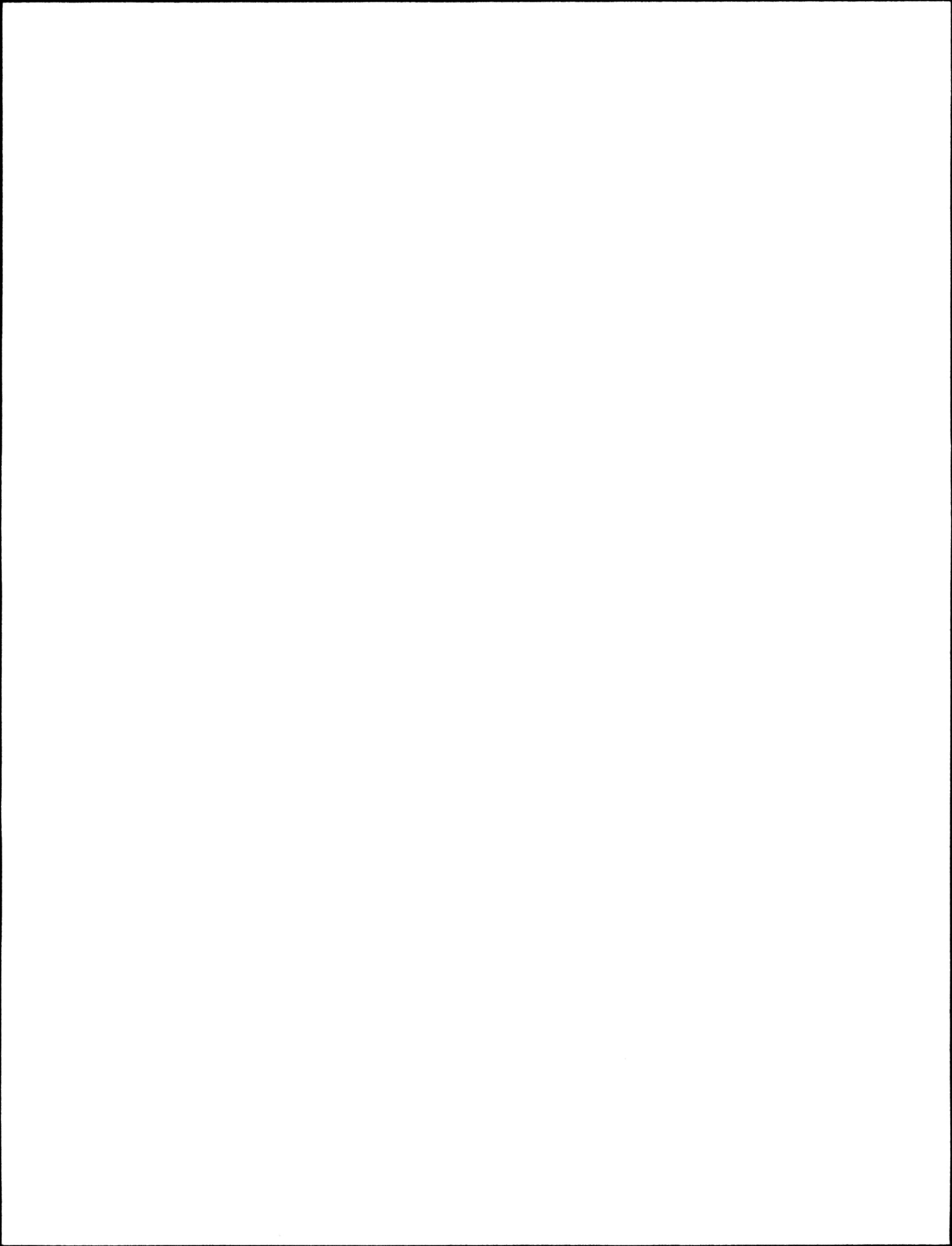


TABLE II
SUMMARY OF CONSTRUCTION COSTS - ALBERTA

1985/86

| Station | Construction Cost | Instrumentation | | Share | |
|---|---------------------|--------------------|--------------------|--------------------|--------------------|
| | | Provincial | Federal | Provincial | Federal |
| Federal-Provincial | | | | | |
| C-1 Belly River near Glenwood (05AD041) | \$ 1,859.32 | | | | |
| C-2 Berland River near the Mouth (07AC007) | 6,945.89 | \$ 2,000.00 | \$ 4,500.00 | | |
| C-3 Meeting Creek near Donalda (05FC006) | 4,064.59 | | | | |
| C-4 Pinto Creek near Grande Prairie (07GC002) | \$ 2,202.65 | \$ 2,000.00 | \$ 4,500.00 | | |
| | \$15,072.45 | \$ 4,000.00 | \$ 9,000.00 | \$11,536.22 | \$16,536.22 |
| M-1 Adams Creek near Kinuso (05BJ004) | \$ 1,076.35 | | | | |
| M-2 Belly River near Stand Off (05AD002) | 821.58 | | | | |
| M-3 Bow River at Carseland (05EM002) | 3,013.32 | \$ 2,000.00 | \$ 2,000.00 | | |
| M-4 Bow River below Bassano Dam (05EM004) | 6,786.98 | | | | |
| M-5 Cutbank River near Grande Prairie (07GB001) | 3,734.18 | | | | |
| M-6 Runice Creek near Hinton (07AF005) | 4,260.50 | | 135.00 | | |
| M-7 Haynes Creek near Haynes (05CD006) | 2,243.39 | | 135.00 | | |
| M-8 Heart River near Nampa (07HA003) | 837.73 | | | | |
| M-9 Manyberries Creek at Brodin's Farm (05AF010) | 7,150.00 | | | | |
| M-10 Meander River at Outlet of Hutch Lake (07OB005) | 962.61 | | | | |
| M-11 Muskeg River near Grande Cache (07GA002) | 665.52 | | | | |
| M-12 Natural Flow C near Bow City (05BN024) | 708.31 | | | | |
| M-13 Natural Flow B near Princess (05CJ011) | 1,069.95 | | | | |
| M-14 Pekisko Creek near Longview (05BL023) | 690.39 | | | | |
| M-15 Pine Creek near Grassland (07CA005) | 4,546.13 | | | | |
| M-16 Ross Creek near Irvine (05AH003) | 2,970.01 | | | | |
| M-17 Threepoint Creek near Millarville (05BL013) | 1,477.52 | | | | |
| M-18 Vermilion River near Marwayne (05EE007) | 2,309.34 | | | | |
| M-19 Waiparous Creek near the Mouth (05BG006) | 2,481.15 | | | | |
| | \$47,804.96 | \$ 2,000.00 | \$ 2,270.00 | \$25,902.48 | \$26,172.48 |
| Federal | | | | | |
| C-5 Drain L-5 near Diamond City (05AD040) | \$ 693.77 | | \$ 2,500.00 | | |
| C-6 Drain T-1 near Taber (05AG027) | 355.07 | | | | |
| C-7 Milk River Site 2 () | 794.40 | | | | |
| C-8 Ross Creek at Medicine Hat (05AH049) | 767.00 | | 2,706.00 | | |
| C-9 Verdigris Coulee near the Mouth (11AA038) | 2,720.58 | | 2,635.00 | | |
| | \$ 5,330.82 | | \$ 7,641.00 | | \$12,971.82 |
| M-20 Athabasca River at Hinton (07AD002) | \$ 1,339.67 | | | | |
| M-21 Boutiful Coulee near Cranford (05AG026) | 375.58 | | | | |
| M-22 Canadian St. Mary Canal nr Spring Coulee (05AE026) | 2,108.13 | | | | |
| M-23 Drain T-2 near Taber (05AG023) | 355.02 | | | | |
| M-24 Drain T-11 near Pincastle (05AG025) | 320.06 | | | | |
| M-25 E.I.D. North Branch Canal nr Bassano (05CJ001) | 394.45 | | | | |
| M-26 E.I.D. Springhill Canal nr Lathom (05CJ004) | 394.45 | | | | |
| M-27 McLeod River above Embarras River (07AF002) | 706.34 | | | | |
| M-28 Milk River at Milk River (11AA005) | 1,372.57 | | | | |
| M-29 Milk River at 880 Bridge (11AA036) | 998.84 | | | | |
| M-30 Notikewin River at Manning (07HC001) | 2,919.63 | | | | |
| M-31 Red Creek at Highway No. 4 (11AA037) | 681.89 | | | | |
| M-32 Rosebud River at Redlands (05CE005) | 5,105.85 | | 2,635.00 | | |
| M-33 Waterton River at Waterton Park (05AD003) | 905.92 | | | | |
| | \$17,978.40 | | \$ 2,635.00 | | \$20,613.40 |
| Provincial | | | | | |
| C-10 Gregg River near the Mouth (07AF015) | \$ 2,614.00 | | \$ 2,635.00 | | |
| C-11 Little Berland River at Hwy. 40 (07AC008) | 4,137.40 | | 2,635.00 | | |
| C-12 Salt River near Grouard (07BF009) | 2,658.81 | \$ 4,000.00 | 2,500.00 | | |
| C-13 Wabatanisk River at Hwy. 676 (07GH005) | 1,983.57 | 4,000.00 | 2,500.00 | | |
| C-14 West Arrowwood Creek near Ensign (05EM018) | 3,296.03 | | 2,635.00 | | |
| | \$14,689.81 | \$ 8,000.00 | \$12,905.00 | \$22,689.81 | \$12,905.00 |
| M-34 Atlas Mine Coulee at Western Monarch (05CG005) | \$ 122.00 | | | | |
| M-35 B.R.D. Drain "A" near Hays (05AG004) | 300.83 | | | | |
| M-36 Bow River at Canmore (05BE008) | 800.97 | | | | |
| M-37 Clear Lake near Stavely (05AC032) | 271.21 | | | | |
| M-38 Lac La Biche at Lac La Biche (07CA004) | 1,532.57 | | | | |
| M-39 Manatokan Creek nr Iron River (06AC009) | 2,568.74 | | | | |
| M-40 Michichi Creek at Drumheller (05CE020) | 329.56 | | | | |
| M-41 Moose Lake River near Franchere (06AC006) | 1,191.32 | 4,000.00 | | | |
| M-42 New West Coulee near the Mouth (05EM006) | 3,274.60 | | | | |
| M-43 Pembina River near Entwistle (07BB002) | 274.50 | | | | |
| M-44 Redwater River near Vimy (05EC007) | 677.67 | | | | |
| M-45 Redwillow Creek near Red Willow (05FC005) | 547.84 | | | | |
| M-46 Ronalane Wasteway near Hays (05BN007) | 3,118.15 | | \$ 135.00 | | |
| M-47 Ross Creek Diversion Canal (05AH045) | 860.16 | | | | |
| M-48 Waiparous Creek below Meadow Creek (05BG009) | 385.21 | | | | |
| | \$16,255.33 | \$ 4,000.00 | \$ 135.00 | \$20,255.33 | \$ 135.00 |
| SUB-TOTAL: | \$117,131.77 | \$18,000.00 | \$34,586.00 | \$80,383.84 | \$89,333.93 |
| ...cont'd. | | | | | |

C = Construction
M = Maintenance

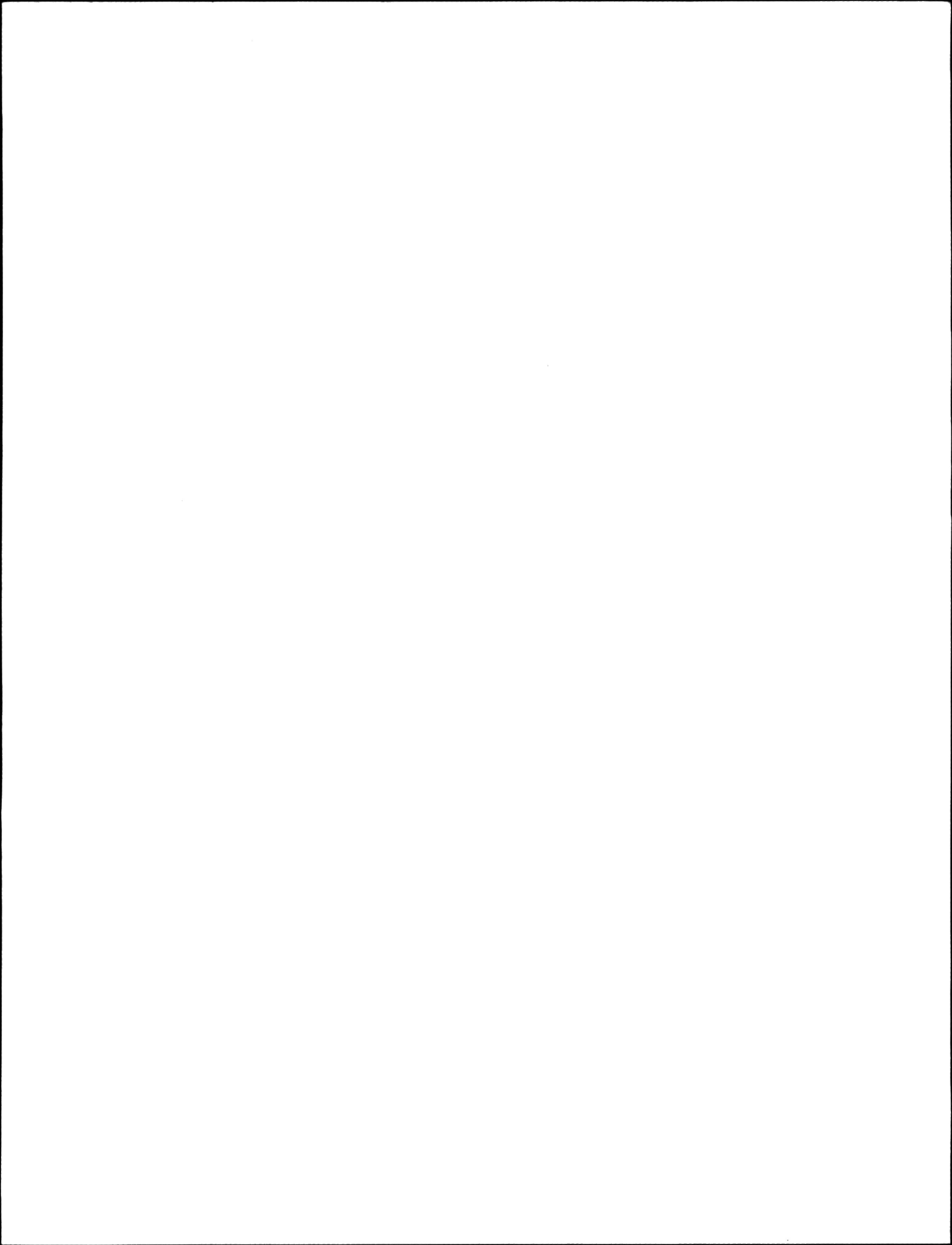
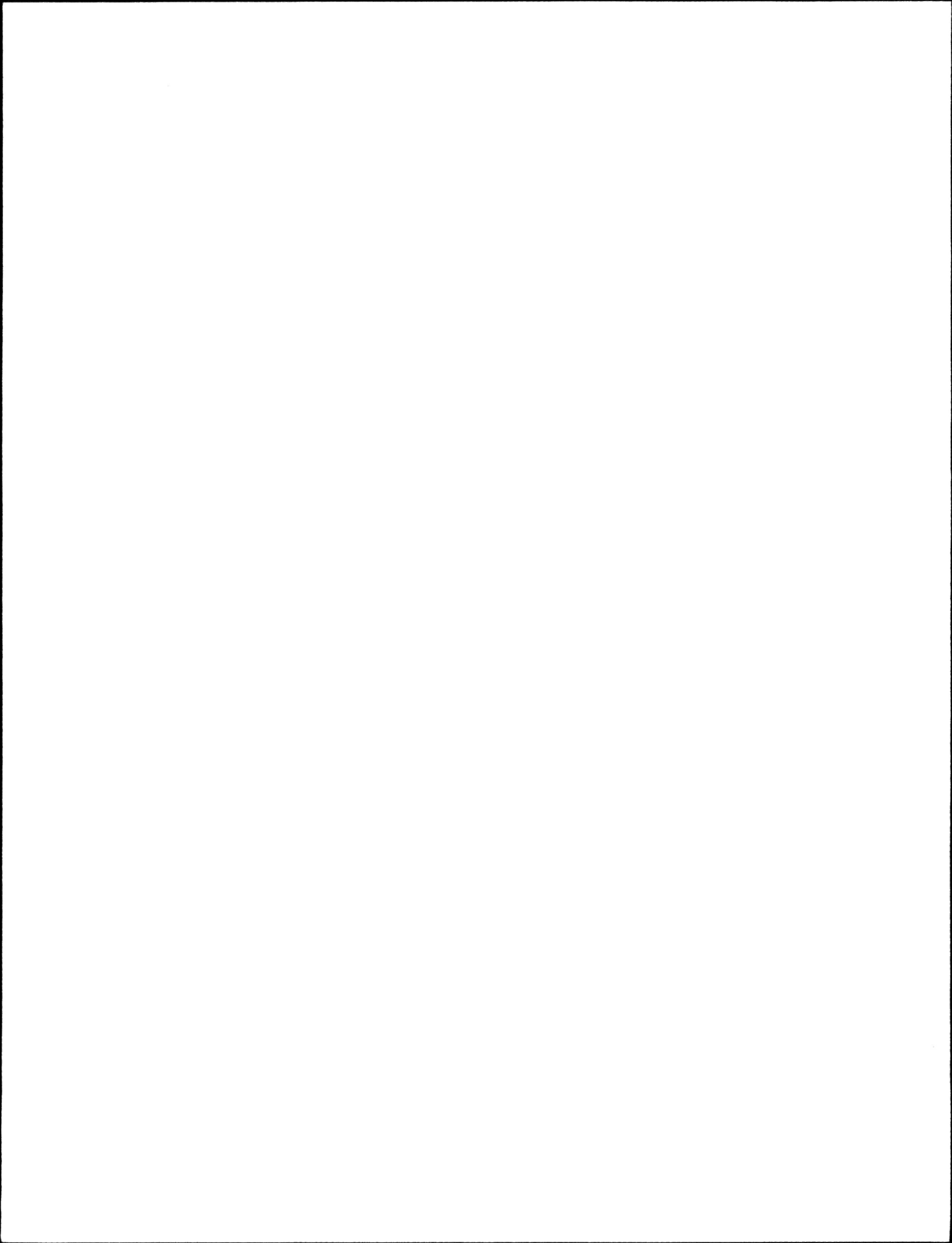


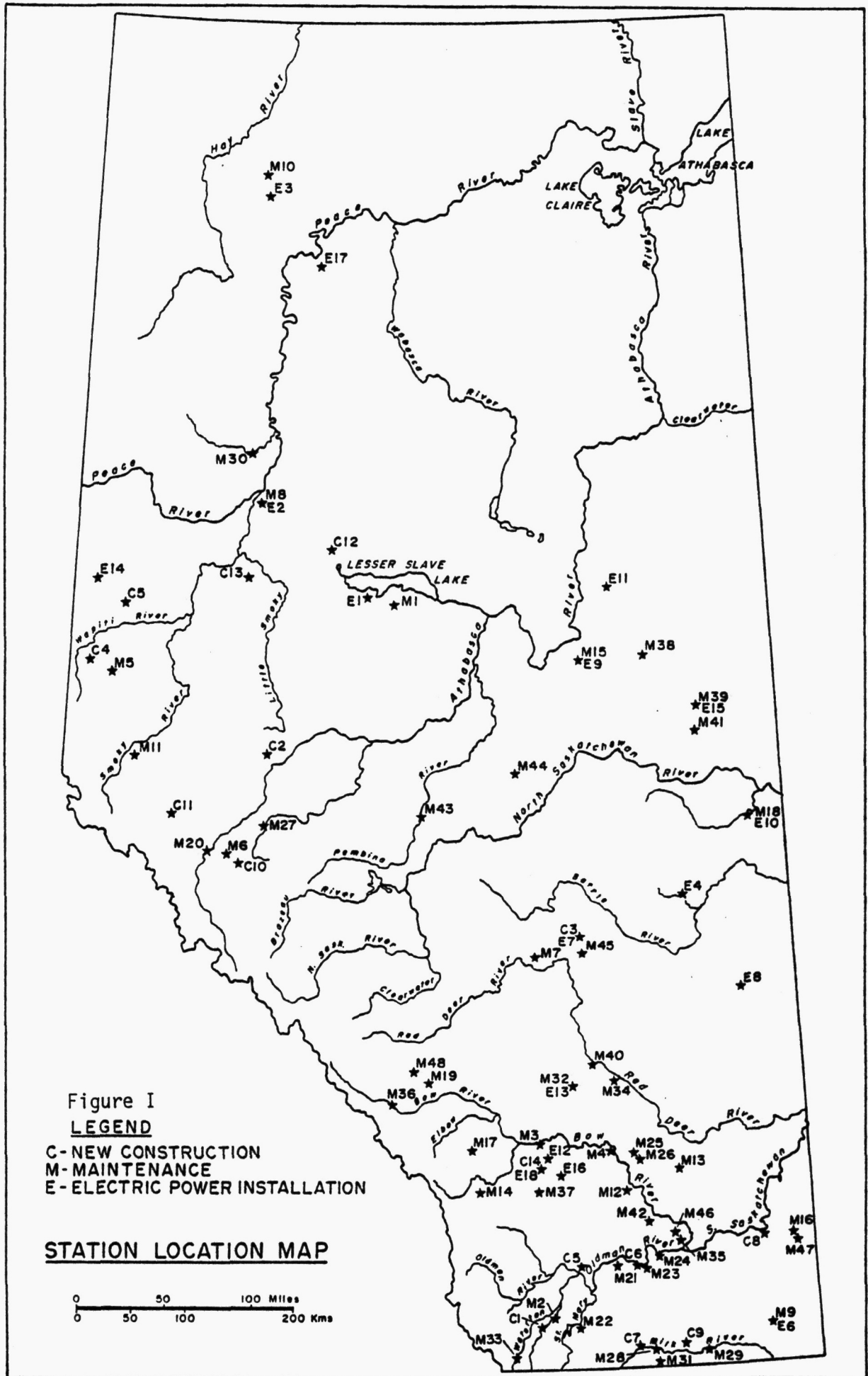
TABLE II (cont'd)

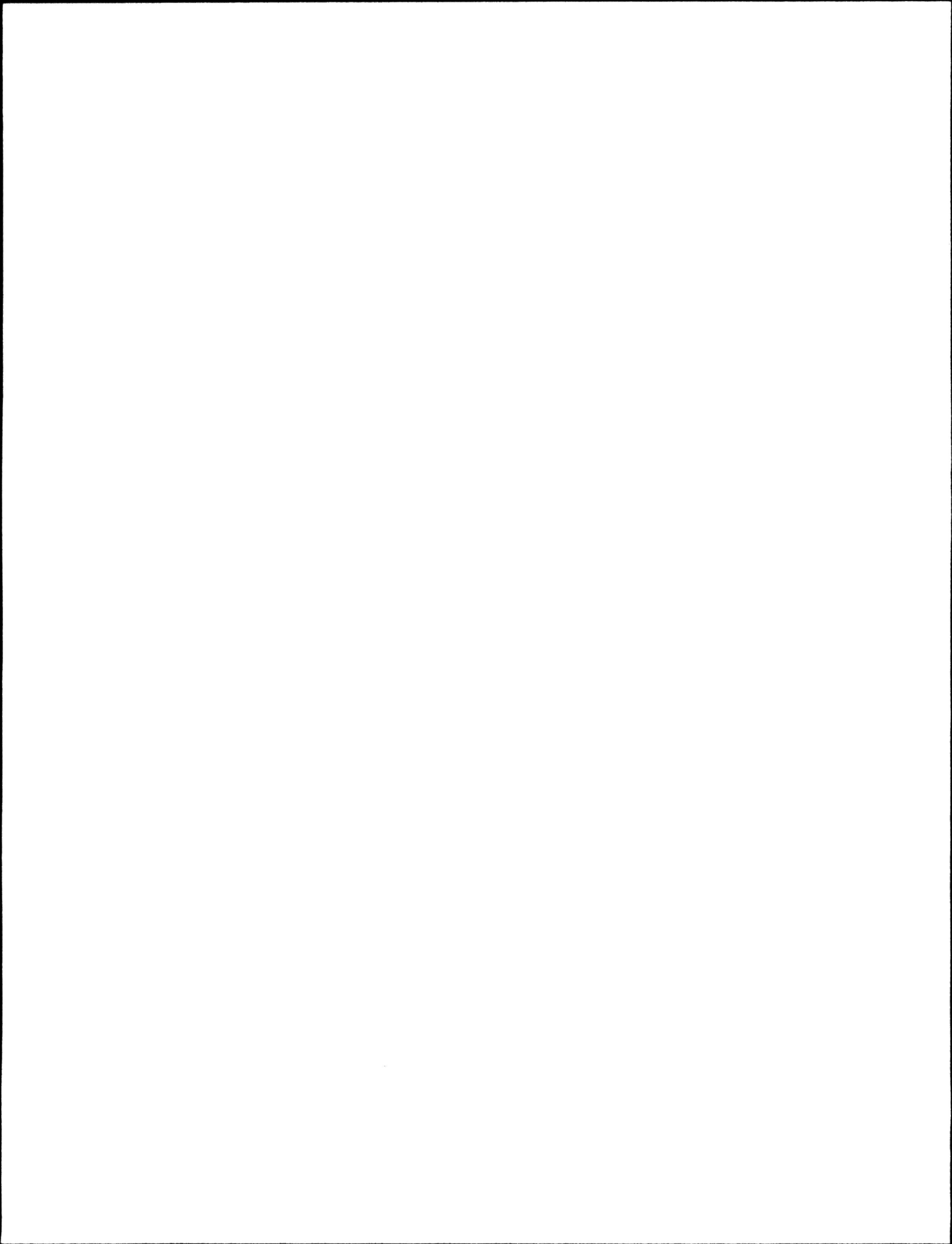
SUMMARY OF CONSTRUCTION COSTS - ALBERTA

1985/86

| Station | Construction Cost | Instrumentation | | Share | |
|--|---------------------|--------------------|--------------------|--------------------|---------------------|
| | | Provincial | Federal | Provincial | Federal |
| <u>Power Installations</u> | | | | | |
| <u>Federal-Provincial</u> | | | | | |
| E-1 Driftwood River near the Mouth (07BK007) | \$ 1,719.94 | | | | |
| E-2 Heart River near Nampa (07HA003) | 1,844.00 | | | | |
| E-3 Hutch Lake Tributary near High Level (07OB007) | 1,714.11 | | | | |
| E-4 Iron Creek near Hardisty (05FB002) | 1,352.00 | | | | |
| E-5 Kleskun Hills Main Drain near Grande Prairie (07GE002) | 1,788.00 | | | | |
| E-6 Manyberries Creek at Brodin's Farm (05AF010) | 1,947.00 | | | | |
| E-7 Meeting Creek near Donalds (05FC006) | 1,066.00 | | | | |
| E-8 Monitor Creek near Monitor (05GA003) | 2,173.75 | | | | |
| E-9 Pine Creek near Grassland (07CA005) | 2,400.00 | | | | |
| E-10 Vermilion River near Marwayne (05EE007) | 892.00 | | | | |
| E-11 Wandering River near Wandering River (07CA006) | 500.00 | | | | |
| E-12 West Arrowwood Creek near Arrowwood (05EM014) | <u>\$ 2,013.00</u> | | | | |
| | \$19,409.80 | | | \$ 9,704.90 | \$ 9,704.90 |
| <u>Federal</u> | | | | | |
| E-13 Rosebud River at Redlands (05CE005) | <u>\$ 1,570.00</u> | | | | |
| | \$ 1,570.00 | | | | \$ 1,570.00 |
| <u>Provincial</u> | | | | | |
| E-14 Bear Creek near Valhall Centre (07GE007) | 430.00 | | | | |
| E-15 Manatokan Creek near Iron River (06AC009) | 2,061.75 | | | | |
| E-16 Snake Creek near Vulcan (05AC030) | 2,038.00 | | | | |
| E-17 Teepee Creek near LaCrete (07JD004) | 2,310.65 | | | | |
| E-18 West Arrowwood Creek near Ensign (05EM018) | <u>1,895.00</u> | | | | |
| | \$ 8,735.40 | | | \$ 8,735.40 | |
| SUB-TOTAL | \$29,715.20 | | | \$18,440.30 | \$ 11,274.90 |
| TOTAL: | \$146,846.97 | \$18,000.00 | \$34,586.00 | \$98,824.14 | \$100,608.83 |



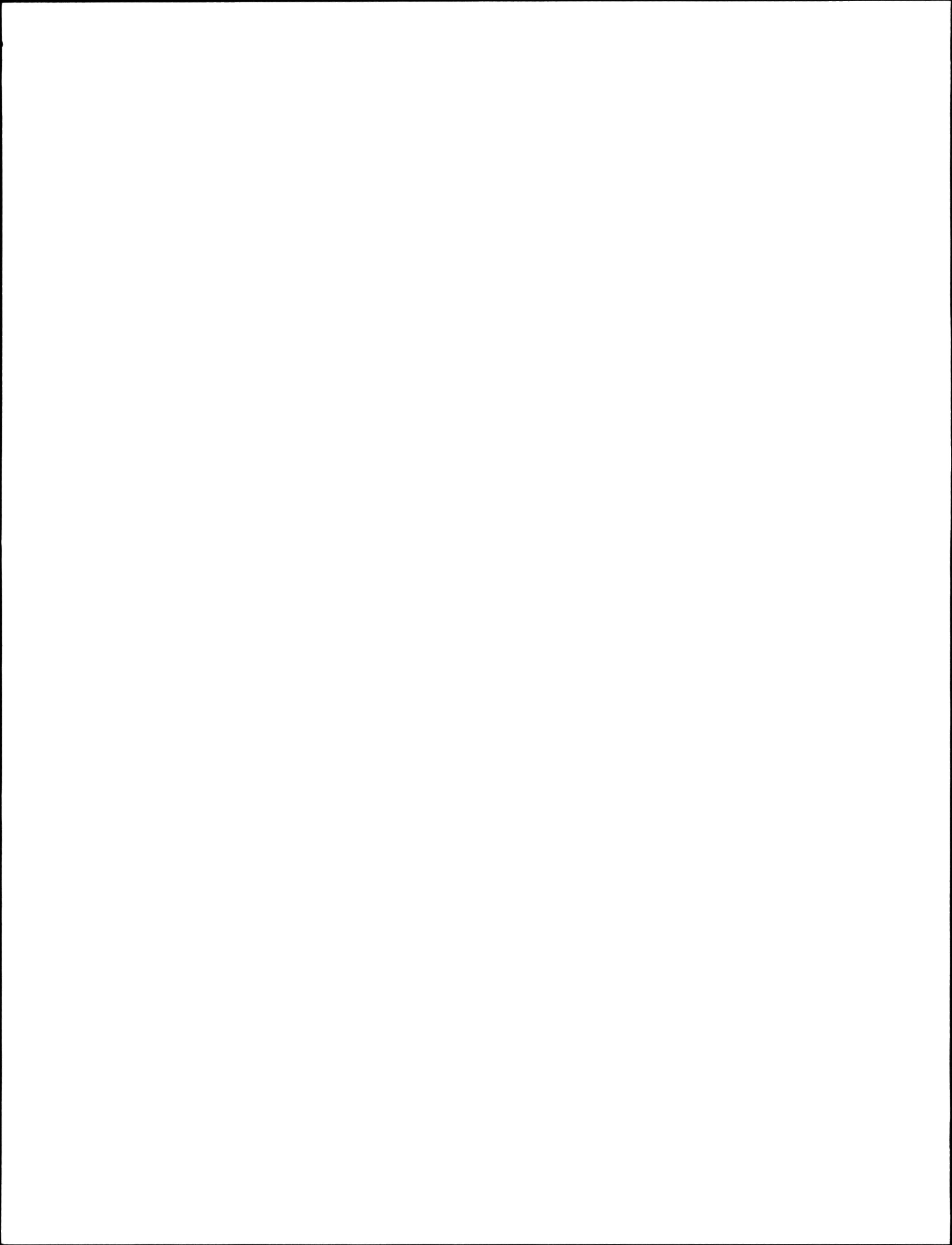




A P P E N D I X "C"

SCHEDULE "D"

1985-86




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 1985/86 TO BE PAID TO CANADA BY ALBERTA:

| | <u>Operation</u> | <u>Construction</u> | <u>Total</u> |
|---|------------------|---------------------|----------------------------------|
| a) Streamflow and water level installations | \$ 794.0K | \$ 93.3K | \$ 887.3K |
| b) Sediment installations | \$ 39.7K | | <u>\$ 39.7K</u> |
| | | | ANNUAL PAYMENT: <u>\$ 927.0K</u> |

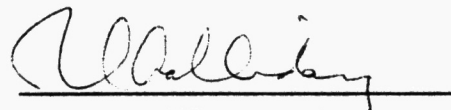
Administrator for Alberta



(Signature)

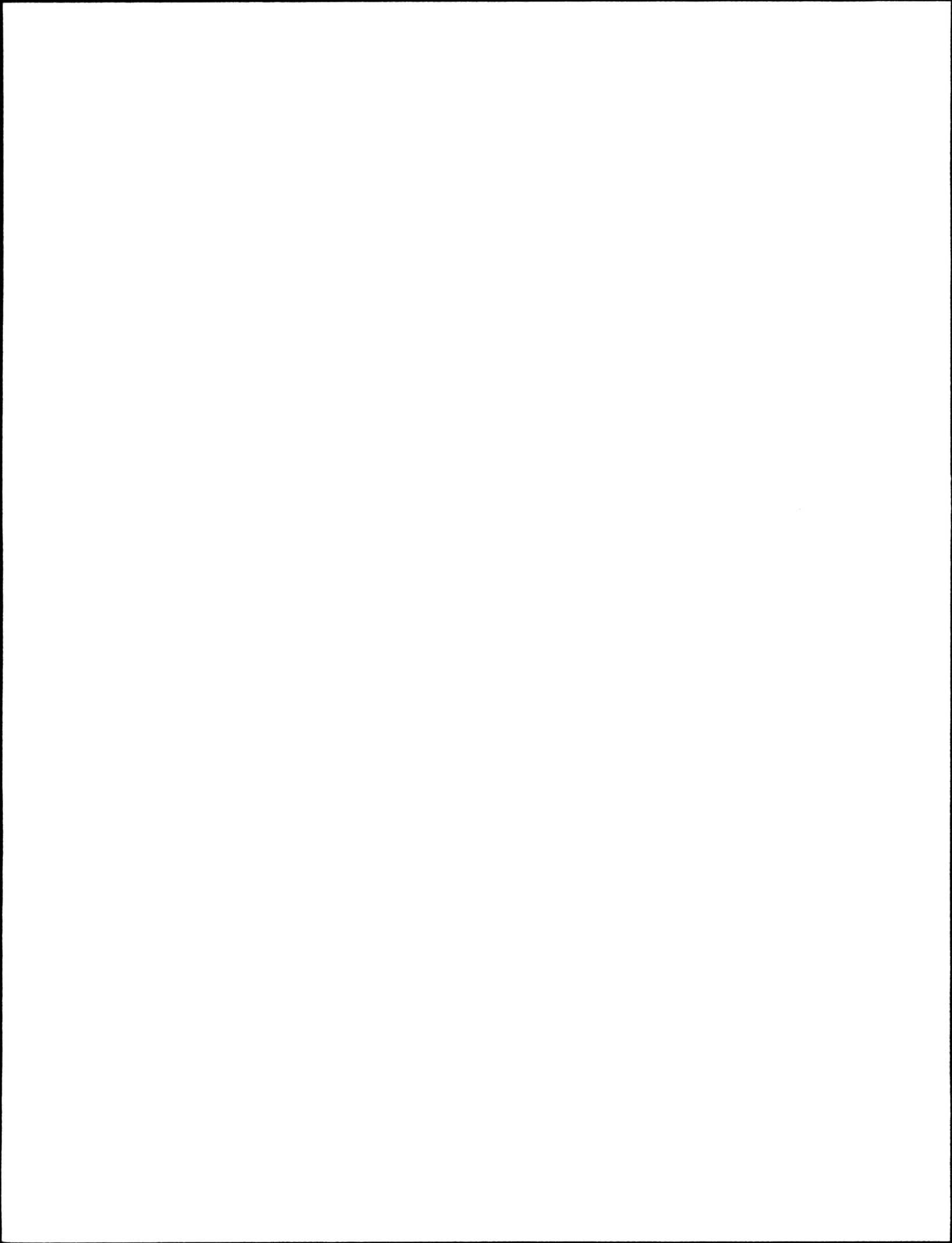
Assistant Deputy Minister
Water Resources Management Services
ALBERTA DEPARTMENT OF ENVIRONMENT

Administrator for Canada



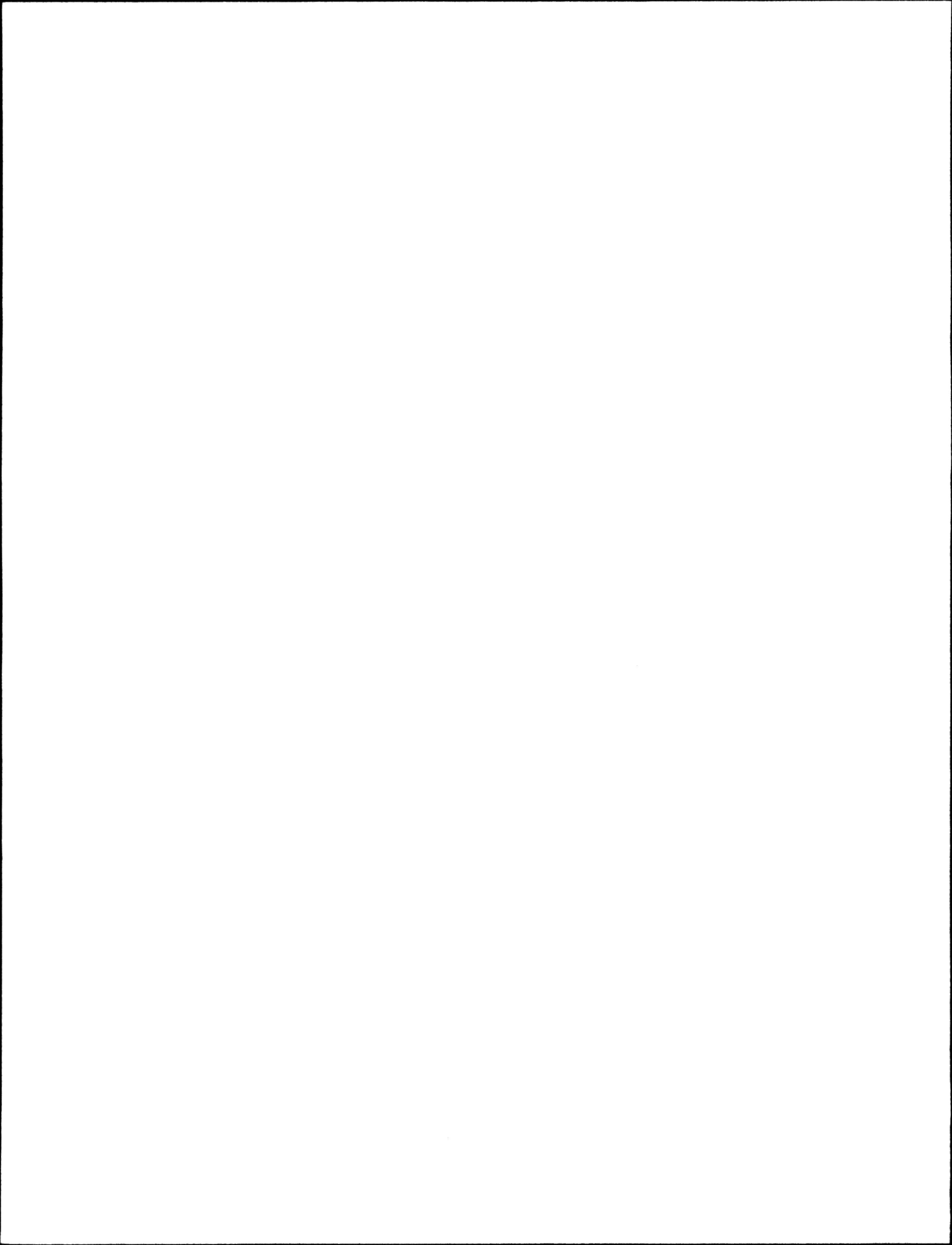
(Signature)

Regional Director
Inland Waters Directorate
ENVIRONMENT CANADA



A P P E N D I X "D"

ESTIMATE OF ALBERTA
ANNUAL PAYMENT FOR 1987-88
BASED ON PROCEDURES
FOR PREPARATION OF
ANNUAL PAYMENTS (SCHEDULE "C")



ESTIMATES FOR APPENDIX "D"
FOR 1987-88

1. Station Units Costs

| | |
|---|-------------|
| 1.1 Unit Cost for 1985-86 | \$ 3,822.83 |
| (Unit Salary = \$2,461.87; Unit O&M \$1,360.96) | |
| 1.2 Estimated Unit Cost for 1986-87 | \$ 3,975.74 |
| (Assume 4% Cost Increase) | |
| 1.3 Estimated Unit Cost for 1987-88 | \$ 4,134.77 |
| (Assume 4% Cost Increase) | |

2. Provincial Station Units (Operated by WSC)

2.1 Station Units in 1985-86

| | |
|-------------------|---------|
| Hydrometric | 201.775 |
| Sediment | 9.525 |

2.2 Station Units in 1986-87

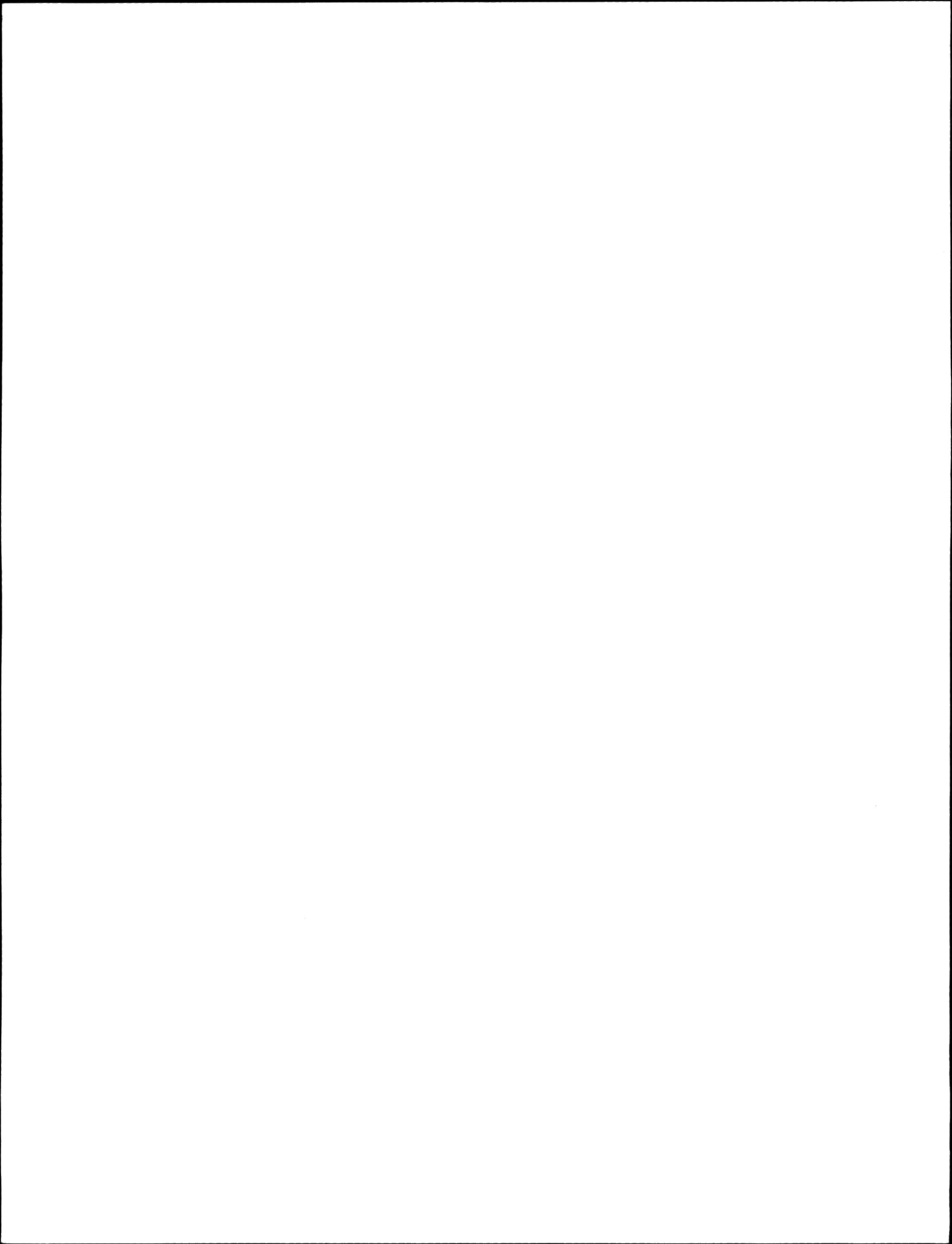
| | |
|-------------------|--------|
| Hydrometric | 205.05 |
| Sediment | 8.90 |

Hydrometric

Fed/Prov

| <u>Type</u> | <u>No.</u> | <u>Unit</u> | <u>Total Units</u> |
|-------------|------------|-------------|--------------------|
| 12MQN | 51 | 1.00 | 51.00 |
| 8MQN | 141 | 0.75 | 105.75 |
| 12MWLN | 0 | 0.40 | 0.00 |
| 8MWLN | 4 | 0.25 | 1.00 |
| 12MQR | 13 | 1.80 | 23.40 |
| 8MQR | 7 | 1.50 | 10.50 |
| 12MWLR | 0 | 1.10 | 0.00 |
| 8MWLR | 1 | 0.95 | 0.95 |
| | <u>217</u> | | <u>192.60</u> |

Prov. = 96.30



Provincial

| <u>Type</u> | <u>No.</u> | <u>Unit</u> | <u>Total Units</u> | |
|-------------|------------|-------------|--------------------|-----------------------|
| 12MQN | 15 | 1.00 | 15.00 | |
| 8MQN | 91 | 0.75 | 68.25 | |
| 12MWLN | 3 | 0.40 | 1.20 | |
| 8MWLN | 37 | 0.25 | 9.25 | |
| 12MQR | 2 | 1.80 | 3.60 | |
| 8MQR | 7 | 1.50 | 10.50 | |
| 12MWLR | 0 | 1.10 | 0.00 | |
| 8MWLR | 1 | 0.95 | 0.95 | |
| | | | <u>108.75</u> | Prov. = 108.75 |
| | | | Total: | Prov. = <u>205.05</u> |

SedimentFed/Prov

| | | | |
|---------------------|------------|-------------|--------------|
| 2 - 8 Month Remote: | 2 x 1.25 = | 2.50 | |
| 2 - 8 Month Normal: | 2 x 1.05 = | <u>2.10</u> | |
| | | 4.60 | Prov. = 2.30 |

Provincial

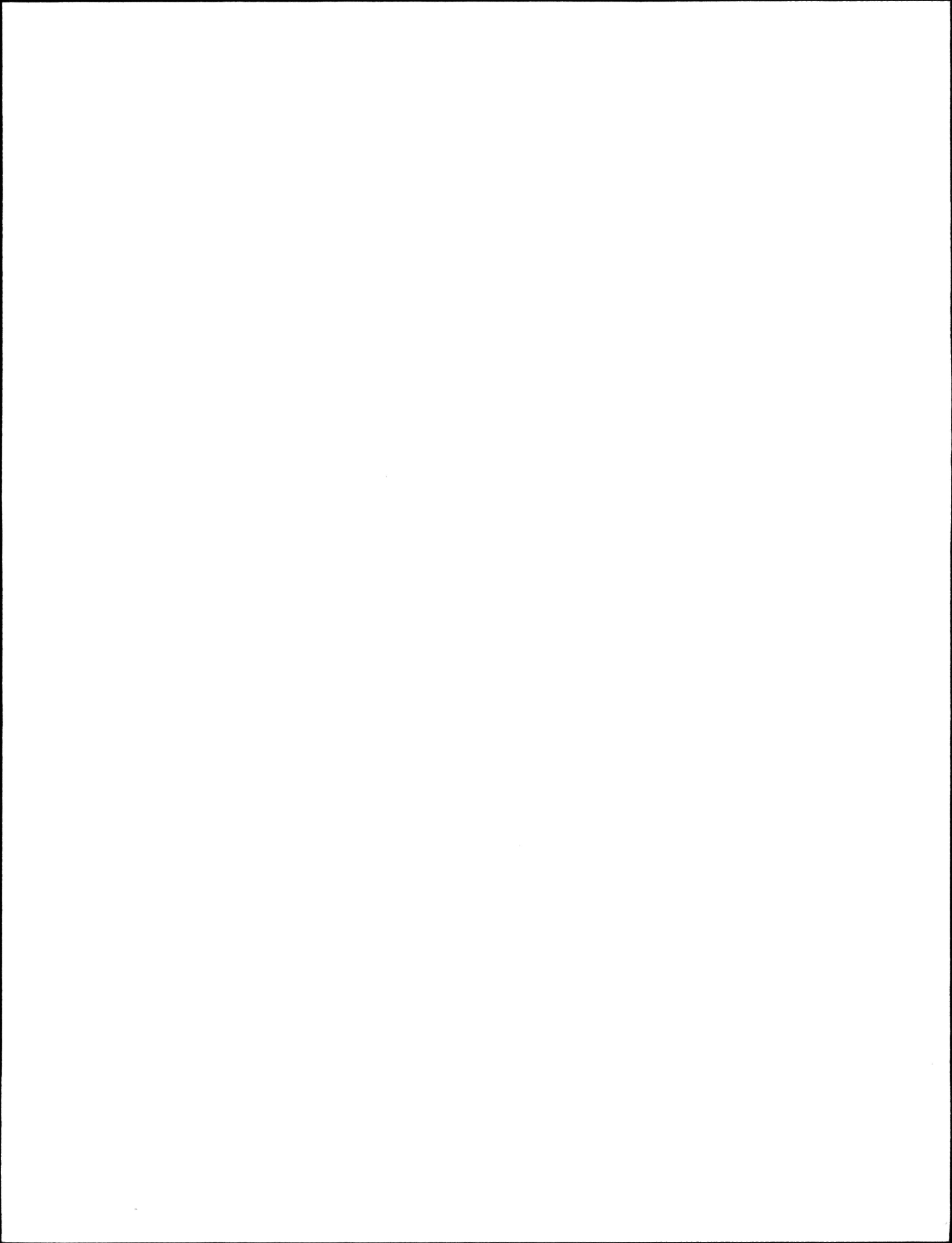
| | | | |
|------------------------|------------|----------------|--------------|
| 3 - Sediment Research: | 3 x 0.45 = | 1.35 | |
| 5 - 8 Month Normal: | 5 x 1.05 = | <u>5.25</u> | |
| | | 6.60 | Prov. = 6.60 |
| | | Total: Prov. = | <u>8.90</u> |

2.3 Known Changes to Provincial Units at end of 1986-87

| | | | |
|--------------------------|------------|-------------------------------------|---------------------------|
| 2 New 8MQN F/P Stations= | 2 x 0.75 = | 1.50 | |
| | | | Prov. Units = 0.75 |
| 3 New 8MQN P Stations = | 3 x 0.75 = | 2.25 | |
| | | | Prov. Units = <u>2.25</u> |
| | | Total New Hydrometric Prov. Units = | 3.00 |

2.4 Estimated Provincial Units in 1987/88

| | |
|-------------------|--------|
| Hydrometric | 208.05 |
| Sediment | 8.90 |



3. Alberta Credit for Network Operations (1987/88)

| | | |
|---|-----------------|--------------------|
| PAD Operations (10.4 x 4,134.77) | \$43,001.61 | |
| Spring Creek Basin (1/2 x 0.75 x 4,134.77) | <u>1,550.54</u> | |
| | \$44,553.15 | <u>\$44,553.15</u> |

4. Alberta Share of Maintenance & Replacement
of Hydrometric Equipment and Vehicles

| | | |
|---|-------------|--------------------|
| 1985/86 Alberta Share | \$38,708.00 | |
| 1986/87 Alberta Share (205.05/201.775 x 38,708.00) | 39,336.27 | |
| 1987/88 Alberta Share (208.05/205.05 x 39,336.27) | 39,911.78 | |
| Alberta Credit in 1987/88 (10.775 x 39,911.78/208.05) | 2,067.05 | |
| Alberta Share of Hydrometric Depreciation is: 39,911.78 - 2,067.05 = | 37,844.73 | <u>\$37,844.73</u> |

5. Alberta Share of Depreciation Sediment Equipment

| | | |
|---|--------|------------------|
| 1985/86 Alberta Share | 459.00 | |
| 1986/87 Est. Alberta Share: (8.90/9.525 x 459) | 428.88 | |
| 1987/88 Est. Alberta Share | 428.88 | <u>\$ 428.88</u> |

6. Additional Depreciation for DCPs1986/87

6 Additional DCPs @ \$30,000
10% Depreciation = 3,000

Alberta Share

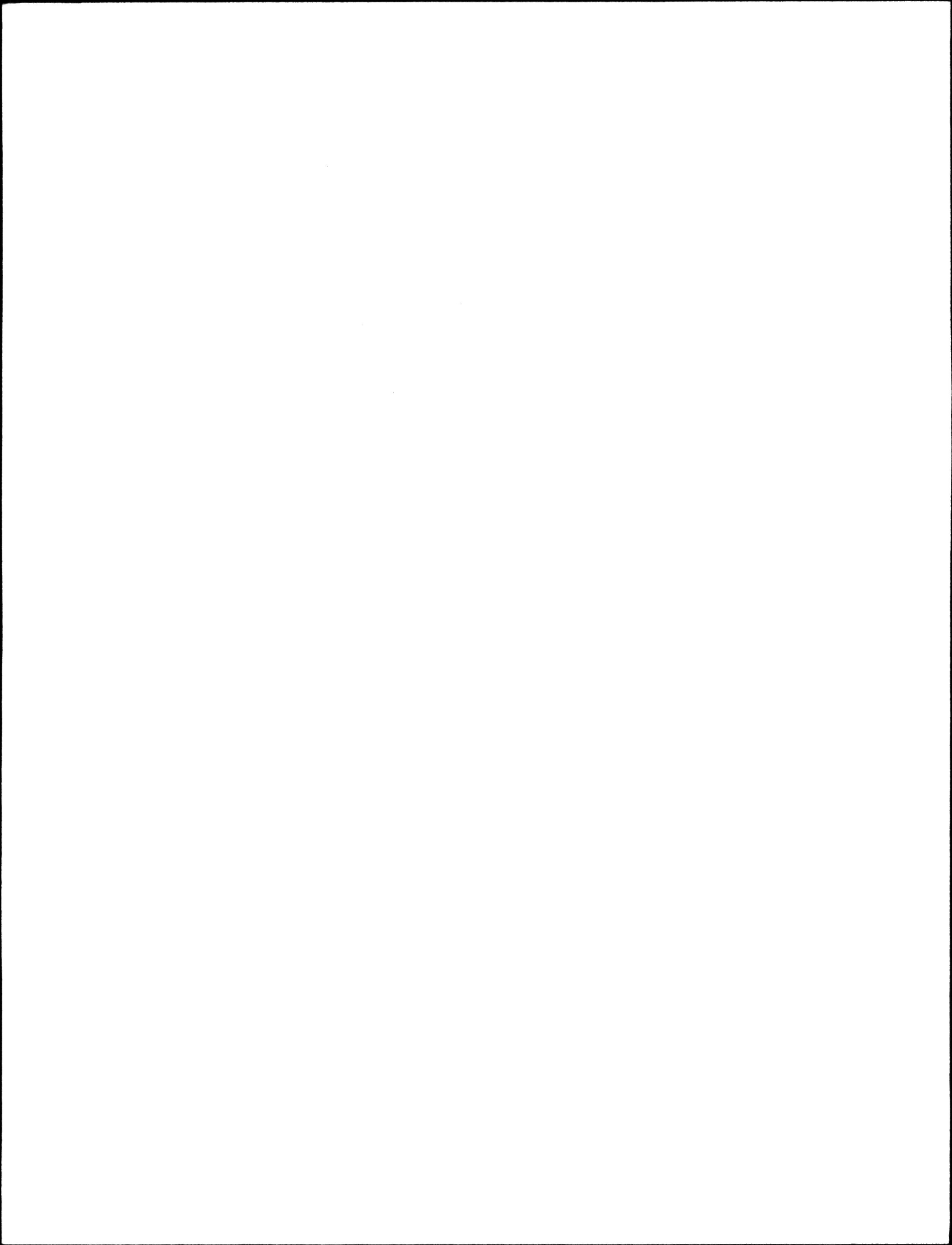
205.05/385E x \$3000 1,597.79
USE: 1,600.00

1987/88

6 Additional DCPs

Alberta Total Additional: 2 x 1,600

\$ 3,200.00



7. Estimated Alberta Share of Hydrometric Costs in 1986-87

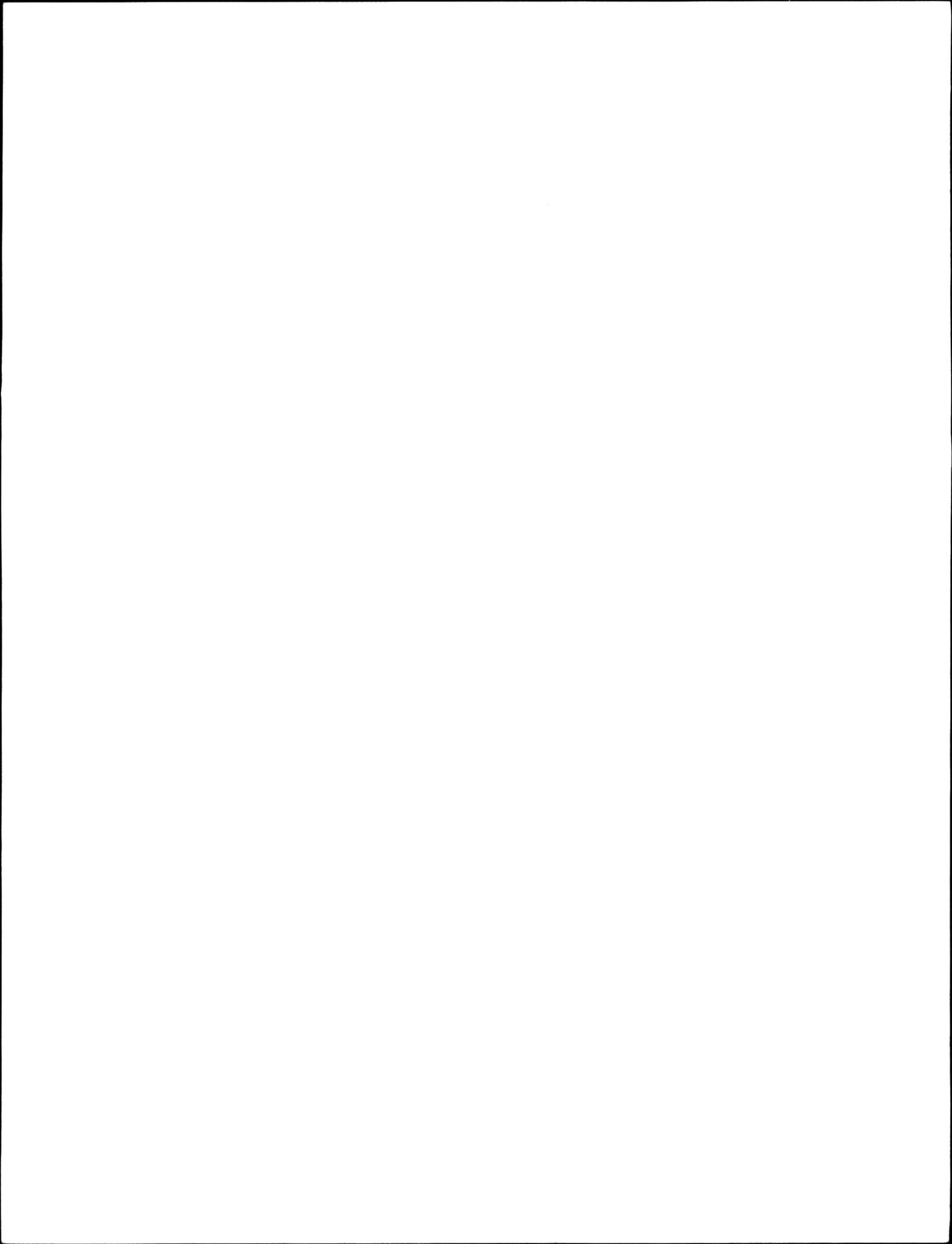
| | |
|--|-----------------|
| Hydrometric Network Operations (205.05 x \$3,975.74) = | \$815,225.49 |
| Alberta Credits [10.4 x 3,975.74 + 1/2 (0.75)(3,975.74)] ... | (-)42,838.60 |
| Alberta Share of Hydrometric Depreciation | 39,336.27 |
| Alberta Credit for Hydrometric Depreciation (39,336.27/205.05 x 10.775) | (-) 2,067.05 |
| Alberta Share of Additional DCPs | <u>1,600.00</u> |
| | \$811,256.11 |

8. Estimated Share of Sediment Costs in 1986-87

| | |
|---|-----------------|
| Sediment Network Operations (8.90 x 3,975.74) | \$ 35,384.09 |
| Sediment Equipment Depreciation | 428.88 |
| Analysis Costs for Alberta Sediment Operations [7,778 + .04 (7,778)] | <u>8,089.12</u> |
| | \$ 43,902.09 |

9. Total Estimated Alberta Share for 1986/87

| | |
|--|-------------------------|
| Hydrometric | \$811,256.11 |
| Sediment | <u>43,902.09</u> |
| | Sub-Total: \$855,158.20 |
| Construction Equipment Depreciation: (205.05/201.775 x 3,766) | <u>3,827.13</u> |
| | Sub-Total: \$858,985.33 |
| New Construction Estimate | 23,500.00 |
| Maintenance Estimate | <u>60,197.00</u> |
| | Total: \$942,682.33 |



10. Estimated Alberta Share of Hydrometric Costs in 1987-88

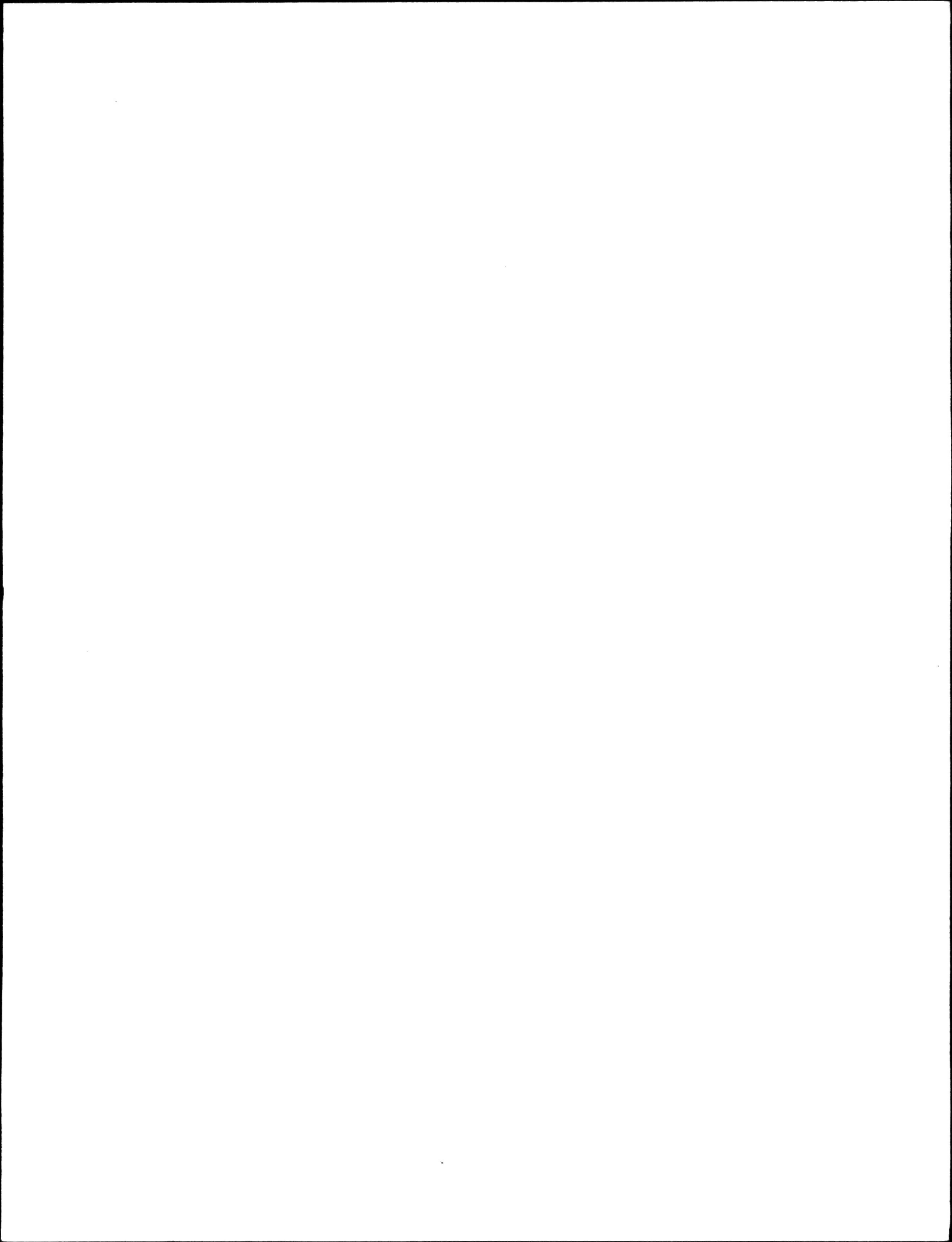
| | |
|---|---------------------|
| Hydrometric Network Operations (208.05 x 4,134.77) | \$860,238.90 |
| Alberta Credit (item 3) | (-)44,553.15 |
| Alberta Share of Hydrometric Depreciation | 37,844.73 |
| Alberta Share of DCP Expansion Depreciation ... | <u>3,200.00</u> |
| | <u>\$856,730.48</u> |

11. Estimated Alberta Share of Sediment Costs in 1986-87

| | |
|---|---------------------|
| Sediment Network Operations (8.90 x 4,134.77) | \$ 36,799.45 |
| Sediment Equipment Depreciation | \$ 428.88 |
| Analysis Costs for Alberta Sediment Operations [.04 (8,089.12) + 8,089.12] | <u>8,412.68</u> |
| | <u>\$ 45,641.01</u> |

12. Total Estimated Alberta Share in 1987/88
(excluding new construction)

| | | |
|---|-----------------|----------------------------|
| Hydrometric | \$856,730.48 | |
| Sediment | 45,641.01 | |
| Construction Equipment Depreciation (208.05/205.05 x 3,827.13) | <u>3,883.12</u> | |
| | \$906,254.61 | USE: <u>\$906,000.00</u> |
| Maintenance Requirement | | USE: <u>60,000.00</u> |
| | | TOTAL: <u>\$966,000.00</u> |



Agr-ALTA-11

AUTHOR

WRB - Calgary.

TITLE CANADA-ALBERTA MEMORANDUM OF

AGR. FOR WATER QUANT. SURVEYS

~~DATE~~
DATE

BORROWER'S NAME

Borrowed

Ann. Rept. 85/86

Ret'd.



