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ANNUAL REPORT

FOR THE YEAR ENDING MARCH 31, 1982



PRAIRIE PROVINCES WATER BOARD

CANADA ALBERTA SASKATCHEWAN MANITOBA

ANNUAL REPORT

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PRAIRIE PROVINCES WATER BOARD

306 - 1901 VICTORIA AVENUE REGINA, SASKATCHEWAN S4P 3R4

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INTRODUCTION

On October 30, 1969 Canada and the Provinces of Manitoba, Saskatchewan and Alberta entered into an agreement to share the flow and to consider the quality of eastward flowing interprovincial streams. Under Schedule C of that Master Agreement on Apportionment, the Prairie Provinces Water Board was reconstituted and was given the responsibility to administer the Agreement.

The Board met twice in the last fiscal year. The first meeting was held on May 6-7, 1981 in Winnipeg. The second meeting was held on November 18-19, 1981 in Regina. There were no changes in Board membership in the past year.

In the last fiscal year; the Committee on Hydrology met three times, the Committee on Water Quality four times, the Committee on Water Demand five times, the Committee on Interjurisdictional Agreements Administration once, and the Committee on Groundwater twice; a total of fifteen committee meetings.

This report summarizes the activities and the progress of the Prairie Provinces Water Board, its Committees, and the Secretariat for the period April 1, 1981 to March 31, 1982.

RECONSTITUTION OF BOARD ADMINISTRATION

The original Prairie Provinces Water Board was formed on July 28, 1948. During the next 22 years (1948 to 1969 inclusive), the Engineering Secretary to the Board was a Federal Government PFRA employee who served in this capacity as part of his regular duties. The support staff for studies and office accommodation during these 22 years were provided by the PFRA in Regina at no charge.

The Master Agreement on Apportionment was signed on October 30, 1969. Schedule C of that Agreement reconstituted the Prairie Provinces Water Board and provided for the necessary Board staff, accommodation and supplies to be jointly financed by the four governments party to the Agreement. Following the reconstitution of the PPWB the members also agreed to the establishment of a semi-autonomous Board Secretariat.

The Board's change in administration policy was implemented when an Executive Director was appointed on July 1, 1972. The Board now operates through an Executive Director and his staff, supported by committees as shown in the organization chart on page 41. With the appointment of a permanent staff, the By-laws, Rules, and Procedures also became effective on July 1, 1972. The 1969 Master Agreement on Apportionment, the By-laws, and the Rules and Procedures are appended to this Annual Report.

The employees of the Secretariat, for administrative purposes, are classified as Federal Public Servants but receive their direction entirely from the Board and have no working connection with any part of the Federal Government. The Board directly controls the operation of the Secretariat through approval of an Annual Budget. It currently has Federal spending authority up to an annual maximum expenditure of \$625,000. The Provincial Governments' shares of current expenditures are recovered after the current financial year is completed.

ADMINISTRATIVE DECISIONS

Several administrative decisions were made in the current fiscal year. They are summarized in the following sections:

Administration of Apportionment Agreement Reports

The Board, in fiscal year 1980-81, accepted a report from the Committee on Hydrology entitled "Report on Administration of the Apportionment Agreement". The Committee on Hydrology, at the request of the Board, prepared a second report entitled "Guidelines For Negotiating Equitable Apportionment" to illustrate how the recommendations in the first report might be implemented. This report was accepted by the Board at the May, 1981 meeting. The two reports were forwarded to the Ministers of all Member Agencies "to inform the Ministers that the Board has accepted the contents and recommendations of the Administration of Apportionment Agreement report and intends to implement the procedures recommended therein." The information was sent to the Ministers for information purposes only, because the reports define an area of work that is within the administrative responsibility of the Board.

Natural Flow Studies on Small Interprovincial Basins

The Board made no further commitments to conduct additional small basin studies during the last fiscal year, but did ask that member agencies be consulted to determine whether they could undertake any of the remaining studies in the near future.

Three small interprovincial natural flow studies were completed in the last fiscal year: Boxelder - Mackay Creeks, Graham Creek, and Assiniboine River. The reports were reviewed by the Committee on Hydrology and accepted by the Board.

The Board instructed the Secretariat to undertake a natural flow study of the Beaver River at the Alberta-Saskatchewan boundary using information originally prepared for the Churchill River Natural Flow Study Report and information currently being gathered for the Beaver River Basin Study by Alberta Environment.

Implementation of the First Order Long Term Water Quality Network

The systematic implementation of a permanent network of water quality stations is a matter of continuing concern to the Board. Board Members have agreed to investigate alternatives within their own agencies to

free resources and to establish agreements to expedite the implementation and maintenance of such a network. They have also directed the Committee on Water Quality to continue monitoring the implementation process and to report the network's current status to the Board on a regular basis.

Water Quality Task Force

The Board, in fiscal year 1980-81, approved terms of reference for a Task Force on Water Quality Methodology. This Task Force, functioning under the direction of the Committee of Water Quality, reported to the Board in that fiscal year. The Board directed the Task Force to continue to work toward the implementation of equivalent methodologies to develop a compatible long term water quality data base for streams in Western Canada.

The recommendations contained in the Committee's report were accepted, and the Board Chairman agreed to ask Inland Waters Directorate to provide the technical support services needed to implement the report's recommendations.

Formation of a Continuing Committee on Groundwater

The Board, having formed a Committee on Groundwater to deal with interprovincial groundwater concerns, agreed on terms of reference for the Prairie Provinces Water Board Committee on Groundwater. They also noted that the Master Agreement on Apportionment makes no specific mention of groundwater. In order that interprovincial groundwater matters may be addressed and studied, the Board members have asked their Ministers to refer "consideration of interprovincial groundwater management on a continuing basis, except the apportionment thereof, to the Prairie Provinces Water Board" under Section 4(c) of Schedule C of the Master Agreement on Apportionment.

Interprovincial Implications of Proposed Projects

The Board has agreed that a statement of the impact that any major project would have on the quantity and quality of water crossing interprovincial waters should be submitted through the appropriate provincial member, and reviewed by the Secretariat in consultation with Board Committees. The Board, in the past financial year, has been active in the evaluation of five such projects:

The Proposed Cold Lake Oil Sands Project

It was agreed that the Committees on Hydrology, Water Quality and Groundwater should maintain a watching brief on the development of the proposed Cold Lake Oil Sands Plant, and that they should keep the Board apprised of any plans which may affect the quantity and/or quality of water crossing the Alberta-Saskatchewan boundary.

The Proposed Qu'Appelle River Conveyance Project

The Saskatchewan and Manitoba members of the Board agreed to continue to exchange information on the Qu'Appelle River Conveyance

Project. A final decision on the proposal has been delayed until the Committees can complete their evaluation of this project.

The Proposed Control Structure at the Outlet of Cumberland Lake

Saskatchewan has proposed construction of a weir across Bigstone Cutoff and a bridge across the Tearing River. A report will be prepared by the project proponent to provide an assessment of the effects that this construction might have on the Saskatchewan River at the Manitoba-Saskatchewan boundary and on the Manitoba portion of Namew Lake.

The Proposed Cluff Lake Project

The Committees on Groundwater, Hydrology, and Water Quality completed their review of a report entitled "Potential Impact of the Cluff Lake Project at the Alberta-Saskatchewan Boundary". The Committee's review indicated that the Project should have no significant impact on the quantity or quality of the Douglas River at the Alberta-Saskatchewan boundary. It was agreed that the Alberta and Saskatchewan Board members would convey to their respective Ministers the results of the review.

The Proposed Bredenbury Potash Mine

A report entitled "Environmental Impact Study - Proposed Bredenbury Potash Mine, Volume 1(b), Impact on Interprovincial Waters of Interest to the Prairie Provinces Water Board, Abstracted Summary, November, 1981" was tabled at the November 1981 Board meeting. The Committees on Hydrology, Groundwater, and Water Quality reviewed this report and, based on that review, the Board forwarded a letter to the Ministers of all Member Agencies saying that the project should have no adverse effect on the quantity or the suitability of water for normal use at the Saskatchewan-Manitoba boundary. The Board concluded that the proposed project, if built and operated as proposed, would not violate any or the terms and/or conditions of the agreements administered by the Prairie Provinces Water Board.

Battle and Lodge Creeks Basins Apportionment Study

The Secretariat, with the Committee on Interjurisdictional Agreements Administration, prepared a report entitled "Battle and Lodge Basins Apportionment Study - PPWB Report No. 61". This report was submitted to the Board at the May 6-7, 1981 meeting, and the report and the recommendations in the report were approved.

The recommendations apportion the annual flow of Battle Creek, Lodge Creek, and Middle Creek basins at the Alberta-Saskatchewan boundary with Alberta agreeing to permit 75% of the annual natural flow of each of the three watercourses to flow into Saskatchewan. This equitably shares the Canadian portion of the waters of these three creeks between Alberta and Saskatchewan. The Board agreed that Article 6 in Schedule A of the 1969 Master Agreement should be amended to indicate this change in apportionment, and that the amendment should be formalized by ministerial approval. The

Board's Secretariat has been directed to prepare a formal amending agreement that might be used under the terms of Article 4 of the Master Agreement on Apportionment to implement this course of action.

Status of the Proposed Battle Creek Basin Study

The Board agreed, with the completion of the report establishing an apportionment methodology for Battle, Lodge, and Middle Creeks that Board involvement in this study is not required. They did agree, however, that the proposed study should be completed and that they would be interested in the results of the study.

A Study of Irrigation Return Flow Index Stations

The Board, at the recommendation of the Committee of Hydrology, instructed the Executive Director to ask Water Survey of Canada, Calgary, on a contractual basis to conduct a study of irrigation flow index stations being used to estimate return flow from Alberta irrigation districts. A study was initially made as part of the establishment of return flow methodology on the South Saskatchewan basis in 1971 and 1972. The characteristics of irrigation return flow in this basin is changing with greater emphasis being placed on mechanized sprinkler irrigation and potential decreases in return flows. Water Survey of Canada was asked to take additional measurements as required, and to submit a recommendation on the procedure that should now be used to estimate further return flow from Alberta irrigation districts. The results would be used to estimate net irrigation use for apportionment purposes.

Report on Saskatchewan-Nelson River Distances

PFRA, Hydrology Division, has completed a "Report on the Determination of River Distances for the Saskatchewan-Nelson River Basin". This report has been used by the Board's Committee on Water Demand to document the locations of water uses. The Board agreed that the report be used to determine river distances for Board purposes in future studies. It provides both a standardized methodology and a listing of river distances in Saskatchewan-Nelson River Basin. The methodology may be applied to any additional rivers and tributaries.

Observation of Phenoxy Herbicides at Water Quality Monitoring Sites.

The Board members, after reviewing monitoring results on 2,4-D and 2,4,5-T at PPWB stations, forwarded this data to the agencies responsible for regulating these herbicides in their respective jurisdiction. The agencies replied, thanking the Board and noting that there appears to be no problem at the present time. No further PPWB action is required but the Board will continue to monitor for these parameters.

Impact of Drainage on Downstream Watersheds

The Committee on Hydrology presented a brief letter report entitled "Applied Hydrology Research to Determine the Impact of Artificial Drainage on Downstream Flows". The Board, after reviewing this report, agreed that the Committee should maintain a watching brief on drainage and

report on drainage research studies that might be used to determine the effects of artificial drainage on downstream flows in prairie streams. As an interim working procedure, the Board agreed to use the approach developed by Saskatchewan Environment to assess the impact of drainage on runoff. There was concern that a criteria for identifying artificial drainage projects, that might have an impact on either the quantity or quality of waters, was needed. The Board agreed that the Committee on Hydrology should develop and recommend practical procedures that would permit Board agencies to maintain a watching brief on drainage projects that could have a significant impact on the quantity or quality of flow in interprovincial streams.

PPWB Budget for 1982-83

The Board approved a total budget of \$403 000 for fiscal year 1982-83 composed of \$313 000 for Board operation and \$90 000 for the Water Demand Study.

BOARD STUDIES

Water Demand Study

The Prairie Provinces Water Board, in 1970, established a task force to examine the need, and to develop terms of reference, for a water demand (or water use) study. In January 1972 that Task Force submitted a report to the Board outlining the need for such a study in the Prairie Region. Subsequently, at a meeting of the SNBB Committee of Ministers, it was agreed that the Study should be undertaken, but that it should be divided into two parts. The first part would document historical and current water uses; the second would forecast future water demands. An updated study plan was accepted by the Board in May 1976 but implementation for documenting historical and current water uses was postponed until May 18, 1977 when all members of the Board reaffirmed their desire to proceed with the proposed study at a total estimated cost of \$880 000. The final report of the Water Demand Study: HISTORICAL AND CURRENT WATER USES, was originally scheduled for completion by March 31, 1982. The Board agreed that the Water Demand Study be granted a six month extension to September 30, 1982, and that \$90 000 should be made available in 1982-83 to complete that Study.

The Water Demand Study has been divided into six sectors, each managed by a Sub-committee chaired by the Study Director and under the overall direction of the Committee on Water Demand.

Study Progress

The Study is now in its final stages. A draft of the final report has been prepared for submission to the Board. Similarly, all agency reports have been completed, although, in some cases, the final text for printing must still be prepared. Distribution lists and cover format have been decided upon and one of the six sector reports, the Regional Economic Base Sector report has been completed. Five sector reports will be completed in draft form by September 1982.

The amount spent up to March 31, 1982, on the revised Study budget of \$945 000 is \$801 124.

Administration of Apportionment Study

The Committee on Hydrology prepared a report discussing the type of problems that might be encountered in administering the Apportionment Agreement as water use increases to the point where apportionment becomes critical. The report was entitled "Report on Administration of the

Apportionment Agreement" and its recommendations were accepted by the Board at its November, 1980 meeting.

The Committee on Hydrology has prepared a second report on the same subject entitled "Guidelines for Negotiating Equitable Apportionment". This report was accepted by the Board at its May 1981 meeting. It suggests steps that the Board and members agencies may take to maintain an equitable apportionment of interprovincial waters. Both reports were forwarded to the Ministers of Member Agencies. With this action, the Administration of the Apportionment Agreement Study is completed.

Natural Flow Studies on Small Interprovincial Basins

At the June 10, 1975 meeting of the Board, the Members recommended that a continuing effort be made by the Secretariat to define natural flow on small interprovincial river basins. A list of streams that fell into this category was prepared and the Board agreed that the speed with which the studies might be completed would depend on the availability of participating agencies.

Studies were completed in previous years on Pipestone Creek and Antler Creek. During the current fiscal year, 1981-82, studies were completed on the Assiniboine River, Boxelder Creek, Mackay Creek, and Graham Creek. Studies are presently underway on Big Gully Creek, Battle River, Gainsborough Creek, Eyehill Creek, and the Beaver River.

The above studies are prepared under the direction of the Secretariat and the Committee on Hydrology.

No commitment has been made to complete further studies on small interprovincial basins, but the need for such studies has been identified for the following ten streams:

Birch (Saskeram) River	Red Deer River (Saskatchewan)
Jackson Creek	Swan River
Elm Creek	Woody River
Stony Creek	Copher Creek
Overflowing River	Bosshill Creek

Site Specific Water Quality Objectives Study

The Committee on Water Quality and the Secretariat are systematically reviewing water quality data collected at the eleven PPWB monitoring stations. As a first step in making this review, they have prepared a report entitled "Water Quality Administrative Procedures". This report, proposing water quality administrative procedures that may be used to administer water quality at interprovincial sites, will be presented to the Prairie Provinces Water Board in 1982.

As an example of the way that water quality requirements at specific sites will be presented to the Board, the Committee has also prepared a draft report on "Water Quality Requirements for the Beaver River at the Alberta-Saskatchewan Boundary". This report is the first of eleven such reports that will define water quality requirements at each of the eleven

interprovincial PPWB monitoring sites. The next two sites to be addressed are the North Saskatchewan River at the Alberta-Saskatchewan boundary and the Assiniboine River at the Saskatchewan-Manitoba boundary.

Battle and Lodge Creek Basins Apportionment Study

The report prepared by the Committee on Interjurisdictional Agreements Administration entitled "Battle and Lodge Basins Apportionment Study - PPWB Report No. 61" was accepted by the Board at its May 1981 meeting, and was forwarded to the Ministers for all Member Agencies. This study is now completed.

Battle Creek Study

The Board, at its May 1981 meeting, agreed that there is no further need to involve the Board in a study of Battle Creek as the apportionment study has solved the problems in connection with interprovincial apportionment of water. The Board noted that they would like to be informed of the study's results when completed.

Westward Flowing Streams Study

The Board recognizes that streams which cross interprovincial boundaries in an east to west direction may not be covered by the 1969 Apportionment Agreement. At the November, 1973 meeting of the Board, the members observed that, although no problems have arisen, the situation should be considered in view of the probable time involved to develop a satisfactory solution.

The Committee on Hydrology in analyzing this problem, has divided the study of Westward Flowing Streams into two parts; the streams that are westward flowing tributaries of eastward flowing streams and the streams that are westward flowing streams that are not subsequently tributary to eastward flowing streams. Two separate reports will be prepared dealing with these two categories. The reports will comment on the number and size of streams involved, will consider possible apportionment problems, and will recommend possible solutions taking into account relevant precedents.

A draft report entitled "Westward Flowing Tributaries of Eastward Flowing Streams - Apportionment Study" is now being prepared by the Committee on Hydrology. When this report is completed, a similar draft report will be prepared on Westward Flowing Streams.

Interprovincial Drainage Task Force

The Board has accepted a reference from the provinces of Saskatchewan and Manitoba to deal with specific problems involving artificial drainage on a series of small interprovincial streams that affect the rural municipalities of Churchbridge, Langenburg, Shellmouth, and Russell. A Task Force has been struck consisting of the Executive Director of the Secretariat and one member each from Saskatchewan Environment and Manitoba Department of Natural Resources.

The Task Force has made a field tour to examine the problem,

and has discussed the situation with counsellors from the four rural municipalities involved. A plan of action has been approved by the Board. It proposes that the Province of Saskatchewan do studies to determine the effect of drainage to date on the volume and intensity of flow at the affected boundary points, and to evaluate what effect further drainage might have on these particular streams. Manitoba will then determine both the physical effect that the changes in flow will have on streams entering into the Assiniboine River, and whether the effects will increase flooding downstream from Shellmouth reservoir. Finally, the Task Force will recommend a solution that is acceptable to both provinces.

Updating of PPWB Monthly Natural Streamflow Estimates

The Board has agreed that the Secretariat should assume the continuing responsibility for updating the Saskatchewan-Nelson basin monthly natural streamflow estimates. They have instructed the Executive Director to bring the monthly streamflow files up to date as soon as practical and to ensure that they are updated annually.

This activity coincides with an Alberta Environment study to update monthly natural streamflow records for the South Saskatchewan River basin including the Red Deer River basin. Agency activities have been coordinated to ensure that the estimates produced by Alberta Environment will be usable for Board purposes as well as for planning purposes in Alberta. It is hoped that all flow records will be updated by the end of the 1982-83 fiscal year to coincide with completion of the current Water Demand Study.

Forest Management Study for Increased Water Yields

There has been considerable interest for several years in the Province of Alberta on the possibility of managing the eastern slopes of the Rockies to benefit water production and to control other uses of the forest area. Alberta Environment and the Alberta Forest Service, in co-operation with Federal Agencies, have the management responsibilities for this green zone. They will continue to keep the Board informed, through the Committee on Hydrology, of the conduct and results of these studies.

BOARD COMMITTEES

Committee on Hydrology

The Committee on Hydrology met three times in the last fiscal year. The meetings were held on September 9-10, 1981 in Calgary, December 8-9, 1981 in Regina, and March 30-31, 1982 in Winnipeg. The primary objective of all three meetings was the preparation of the Westward Flowing Tributaries Report. The Committee reached a consensus on an apportionment method that was in keeping with both the 1969 Agreement on Apportionment and the Board's intent with regards to equitable apportionment. A draft report has been prepared and it is anticipated that a final report will be presented to the Board at their fall 1982 meeting.

Progress on small interprovincial basin natural flow studies was reviewed at all three meetings. The possibility of undertaking future small basin studies was also raised and all members reported that at the present time they were unable to accept contracts for conducting additional studies in the near future. Reports for the Assiniboine River, Boxelder and Mackay Creeks, and Graham Creeks natural flow evaluations were reviewed and accepted in the current year, and progress on reports for Big Gully Creek, Eyehill Creek, Beaver River, Gainsborough Creek, and Battle River were reviewed. It is anticipated that all currently contracted studies will be completed in fiscal year 1982-83.

The report "Water Quality/Quantity Monitoring Program Cumberland Marshes Project - 1980 Annual Report" was reviewed as instructed by the Board. The Committee concluded that the database was adequate for determining natural flow of the Saskatchewan River at the Manitoba-Saskatchewan boundary, that the current database was not adequate to estimate preproject or natural flows of the Birch (Saskeram) River, and that the quality of hydrometric data documented in the 1980 report should be improved.

A hydrotechnical seminar was scheduled under the auspices of the Committee on Hydrology for February 9-11, 1982 in Lloydminster. This seminar was attended by some 35 employees from Member Agencies. It was very successful and it was agreed that similar workshops should be held in the near future. The workshop, under the direction of the Alberta Department of Environment, concentrated on following specific topics:

1. Assessment of impacts due to agricultural drainage.
2. Determination of evaporation and evapotranspiration.
3. Generation of historical streamflow.
4. Prairie snow accumulation and snowmelt.

Several actions were taken in connection with the Board's apportionment responsibilities. A list of PPWB hydrometric stations used for apportionment purposes was reviewed and updated for the current financial year. The Calgary office of Water Resources Branch, Environment Canada reported to the Committee that they have completed a review of the existing data system of the South Saskatchewan River at Medicine Hat and the Red Deer River near Bindloss gauging stations. The course of action concerning the improvement of the data transmission system at these two stations was reviewed by the Committee. Alberta and Saskatchewan Environment will also review that course of action to determine if it should be implemented. The Committee also reviewed progress made by the SSARR Sub-committee in revising the Qu'Appelle River Basin model and exchanged information on a number of hydrometric monitoring processes.

A brief letter report was prepared on the effects of artificial drainage on downstream flows. This report and the Committee's recommendations on this topic were presented to the Board at their November 18-19, 1981 meeting. The Board, at this meeting, instructed the Committee to maintain a watching brief on methodologies that were being developed to deal with the effect that artificial drainage would have on downstream flows in watersheds.

The Committee was also asked to prepare a practical methodology that could be used to determine when watersheds reached the point where drainage became a factor that affected downstream flow. Preliminary discussions were held by the Committee on this subject and a report will be prepared in the coming fiscal year.

The Committee also dealt with special monitoring procedures for the calculation of natural flow at boundary sites and reported to the Board on necessary modifications to current monitoring procedures for the South Saskatchewan and Qu'Appelle River Basins.

Committee on Water Quality

The Committee on Water Quality met four times in the 1981-82 fiscal year: in Winnipeg on June 1-2, 1981; in Regina on October 14-15, 1981; in Edmonton on January 12-13, 1982; and in Regina on March 23-24, 1982. Max Morelli replaced Jim Warrener as the Manitoba member and Bill Gummer replaced Ken Reid as the Environment Canada member in the last financial year.

The Committee worked on preparation of a draft report of the Prairie Provinces Water Board Water Quality Administrative Procedures at all four meetings. The draft report was completed and will be submitted to the Board in June, 1982. A draft of the "PPWB Beaver River Water Quality Requirements" was also prepared to illustrate to the Board how water quality procedures would be applied.

The Committee, during the year, maintained a watching brief on the Cold Lake Oil Sands Project receiving reports from the Alberta member at each of the four meetings.

No further action was taken on the PPWB Task Force on Water Quality pending a commitment from Environment Canada to proceed with

distribution of standard samples to Member Agencies. It is anticipated that this task will be continued in the coming fiscal year.

During the June 1-2, 1981 meeting in Winnipeg, the members visited the new W.M. Ward Technical Services Laboratory. Following the meeting they toured the Assiniboine River Basin to familiarize themselves with Basin characteristics, available water supply, and water treatment facilities in the Basin. The members reviewed the 1981 PPWB Water Quality Monitoring Program and made minor revisions to it, and accepted the proposed PPWB 1982 Water Quality Monitoring Program.

The results of a study conducted by Environment Canada's Water Quality Branch to determine the effects of Canadian Forces Base Cold Lake effluents on the quality of water crossing the Alberta-Saskatchewan boundary during low flow water conditions were reviewed. The study showed that effluent has no appreciable effect on dissolved oxygen levels at the boundary and confirmed that dissolved oxygen depressions detected during late winter on the Beaver River are from natural sources.

The Committee completed a review of the Cumberland Lakes Ducks Unlimited Project. They concluded that water quality monitoring at the Ducks Unlimited Project should be continued. They also recommended that Ducks Unlimited be asked to document dissolved oxygen levels in the Birch River below the project during periods of ice cover to see if dissolved oxygen depressions occur during winter in this area. A survey was conducted in the month of February 1982. The results, discussed at the March 1982 meeting, indicate that recent fish kills in the Cumberland Marshes area are a natural phenomenon and are not limited to the area below the Ducks Unlimited project.

Committee on Groundwater

The Committee on Groundwater met twice in the last fiscal year. The meetings were held on June 9-10, 1981 in Edmonton, and on February 1-2, 1982 in Winnipeg. The members reviewed a consultant's study proposal to determine the flow direction in underground aquifers that might be influenced by the proposed Cold Lake project.

The Committee agreed that a bibliography of groundwater reports in the three Prairie Provinces should be prepared with special reference to the interprovincial boundary areas. They invited a representative of WATDOC Canada to the February, 1982 meeting, and he gave a brief overview of the system and answered questions arising from the Committee. The Committee felt that a bibliography could best be maintained by inputting groundwater data to the WATDOC system rather than by preparing a groundwater bibliography report that would become outdated as new reports were printed.

A proposal to produce cross sections of hydrogeologic mapping of interprovincial groundwater aquifers along interprovincial boundaries was also reviewed by the Committee. It was suggested that further work be deferred until Alberta has completed the mapping of the Cold Lake area, and until all groundwater reports had been entered in the WATDOC system.

The Committee reviewed a report entitled "Environmental Impact Study - Proposed Bredenburg Potash Mine" and discussed the possible project impacts that might affect groundwater in the Saskatchewan-Manitoba boundary area. They agreed that the proposed project would have no adverse affect on the quality or quantity of groundwater crossing the Saskatchewan-Manitoba boundary.

Standardized methods of sealing abandoned wells were discussed at the February meeting. The Committee felt that research is needed to identify the magnitude of problems encountered at abandoned wells and to provide technical solutions on how the abandoned wells may be sealed.

Committee on Interjurisdictional Agreements Administration

The Committee met on February 23-24, 1982 in Regina to discuss apportionment problems of Boxelder and Mackay Creek Basins, and to make recommendations and procedures that might be used by the Board to oversee the interprovincial apportionment of the above basins. Four alternative methods as described in the Boxelder Creek-Mackay Creek Natural Flow Study report were discussed, but no agreement was reached on the method to be recommended to the Board. Alberta and Saskatchewan Water Rights offices will update their water rights data in these Basins as a first step to developing a mutually acceptable solution to the basins' problems.

The Committee plans to take a one day field trip in June, 1982 to visit existing projects in the basin to achieve a better understanding of the actual water use in the Walsh Flats area of the Boxelder Creek Basin.

Committee on Water Demand

The Committee on Water Demand met five times during the 1981-82 financial year. Meetings were held in Winnipeg on June 16-17, 1981; in Regina on October 20, 1981; in Edmonton on January 26-27, 1982; in Regina on March 11, 1982; and in Winnipeg on March 25-26, 1982. Technical guidance for the Water Demand Study was provided including advice on matters pertaining to the conduct of the study sectors, and a review of draft reports. The Committee during the last fiscal year reviewed all draft chapters of the Main Report and prepared the report, in draft form, for review by the Board.

Recommendations to the Board were also made on report printing, purchase price for Reports and Appendices after the initial distribution is completed. A data storage and retrieval process was also approved. Covers for the Main report and Appendices were agreed upon. The Committee agreed that all sector reports will be approved by the COWD members prior to printing and that the Board would only be responsible for insuring the correctness of the Main Report. The Regional Economic Base Study was approved and completed in this financial year. At the end of March 1982 a final draft of the Main Report had been prepared, all agency reports had been completed, and at least one or more drafts of each sector report had been finished. The Study will be completed in the fall of 1982.

SECRETARIAT

Accommodation and Staff

The PPWB Secretariat is located in Room 306 of the Motherwell Building in Regina, Saskatchewan. The office is in the same building as the Western Regional Office of the Inland Waters Directorate of Environmental Conservation Services, Environment Canada and the Prairie Farm Rehabilitation Administration. Personnel and Financial Administrative Services are provided through the staff of the Inland Waters Directorate of the Environmental Conservation Services of Environment Canada.

There were five staff changes in the past year. The position of Secretary to the Executive Director was filled on April 6, 1981 by Glenda Mason. On July 24, 1981, Mr. Ken McTaggart, Systems Technician for the Secretariat, resigned his position to accept a more senior position with PFRA-DREE. On September 11, 1981 June Rumpel resigned and that position was filled by Carol Machin on October 5, 1981. On February 15, 1982 Mr. Elliott Allison resigned from the Secretariat. Mr. Allison was employed as Water Quality Specialist since August 1, 1974, and since April 1978 as Secretary to the Board.

Interviews have been held to replace both the Water Quality Specialist and the Systems Technician. It is anticipated that these two positions will be filled early in 1982. As of March 31, 1982, however, the Secretariat is two people short of being at full strength.

Reports

The Secretariat published and distributed, to Member Agencies, the sixth annual report containing water data collected at eleven Prairie Provinces Water Board monitoring stations. Because of the large size of this report, distribution was limited to people directly connected to the Board's quality of water activities.

Five Board reports were published in the past twelve months. They are listed below:

- PPWB Report #56 - Boxelder and MacKay Creeks at Alberta-Saskatchewan Boundary - Natural Flow - September 1981 (prepared for the PPWB by WSC).
- PPWB Report #62 - Graham Creek at Saskatchewan-Manitoba Boundary - Natural Flow - July 1981 (prepared for the PPWB by PFRA).

- Guidelines for Negotiating Equitable Apportionment - May, 1981
- Interprovincial Water Quality Data at PPWB Monitoring Stations - April, 1974 to December 31, 1981 - May, 1981
- Water Quantity/Quality Monitoring Program - Cumberland Marshes Project 1980 Annual Report - April 1981 (prepared for the PPWB by WSC, Regina)

Information

The work of the Secretariat for the past financial year has been primarily connected with Committee and Board studies. These activities have been reported under the section entitled "Board Studies" and "Board Committees." New job descriptions have been written for all PPWB positions and have been forwarded to the Personnel offices of Environment Canada for evaluation as part of an overall plan to more precisely develop and define work areas and job responsibilities of the PPWB Secretariat. During the year, members of the Secretariat attended courses on Management by Objectives and Project Management, Financial Management, The Use of Computers, and Introduction to Supervision.

Financial

Secretariat expenditures for the financial year 1981-82, are as shown on page 43. They indicate a total expenditure of \$436 785 composed of \$262 549 spent on Board activities and \$174 236 spent on Water Demand Study expenditures.

The accounts of the Prairie Provinces Water Board have been audited for the period April 1, 1979 to March 31, 1982 (three fiscal years). The Director of the Internal Audit Branch of Environment Canada has certified that "The Department agrees with the audited amount spent".

MONITORING RESPONSIBILITIES

The 1969 Master Agreement on Apportionment directs "that the Prairie Provinces Water Board shall monitor and report on the apportionment of waters set out in the provisions of the first and second agreement and ratified by this Master Agreement." In keeping with this and previous Board decisions, the following continuing action has been taken to monitor the quantity and quality of water at interprovincial boundaries.

Natural Flow Determination

The Board reviewed the list of hydrometric stations currently required to determine natural flows for Board purposes at Meeting No. 25. They agreed that the hydrometric stations listed in this review were needed to determine natural flow for PPWB purposes, and that the list should be reviewed annually by the Committee on Hydrology. At this same meeting, the Board agreed formally to recommend four specialized monitoring procedures to ensure that the Water Survey of Canada monitoring was adequate for apportionment purposes. These procedures involve: an increase in the number of streamflow measurements on the South Saskatchewan and Red Deer Rivers when the percentage difference between discharge measurements and the rated curve exceeds 5%; the use of streamflow calculations at Medicine Hat to improve and to verify streamflow record at Highway 41 when ice conditions at the later station create variable backwater conditions; an increase in the frequency of discharge measurements of EID diversion canals whenever the recorded flow of the South Saskatchewan below Red Deer River drops below 50 cubic metres/second during the irrigation season; and an increase in the frequency of streamflow monitoring of the Qu'Appelle River near Welby during low flow periods to compensate for shifting control problems.

The Quarterly Reports on natural flows consumptive uses, and storage changes for the South Saskatchewan River Basin at Alberta and the Qu'Appelle River Basin in Saskatchewan, were prepared and distributed on a regular basis. The accumulated total annual recorded flow of 9 318 000 cubic decametres in the South Saskatchewan River below its junction with the Red Deer River is 87% of the total annual natural flow of 10 750 000 cubic decametres. Recorded discharge of the South Saskatchewan at the apportionment point did not fall below 42.5 cubic metres per second or one-half of natural flow at any time during 1981, so the minimum flow criteria was met for the complete apportionment period. A summary of recorded and natural flows for 1981 at this site is shown on page 26 and 27.

The natural flow of the Qu'Appelle River from April 1, 1981 to March 31, 1982 was 29 700 cubic decametres. Recorded flow augmented by releases of 140 000 cubic decametres from Diefenbaker Lake was 59 500 cubic decametres, 200% of natural flow. Recorded and natural flow for the period January 1981 to December 1981 is shown on page 28.

Natural flows on the South Saskatchewan River basin were calculated using the project depletion method, and natural flows for the Qu'Appelle River Basin were calculated using the Streamflow Synthesis and Reservoir Regulation (SSARR) model. Both procedures have been approved by the Board to calculate natural flow on these two specific basins. The SSARR model is currently being reviewed by a Sub-committee of the Committee on Hydrology. Following this review the model will be modified and recalibrated to function in metric units.

Natural flows were also calculated for the North Saskatchewan River at the Alberta-Saskatchewan boundary, the Saskatchewan River at the Saskatchewan-Manitoba boundary, and the Churchill River at the Saskatchewan-Manitoba boundary. A summary of monthly recorded and natural flows for the 1981 calendar year at these three sites is shown on page 28. Recorded flow for 1981 at five other boundary sites is listed on page 29.

PPWB Water Quality Monitoring Program

At the request of the Prairie Provinces Water Board, the Water Quality Branch of Environment Canada continued reporting monthly or quarterly data collected at eleven PPWB monitoring stations for the 89 parameters listed on page 24. These water quality monitoring stations correspond with the interprovincial hydrometric locations mapped on pages 66 and 67.

This monitoring program started in April 1974 and has continued since that time. All data obtained at the eleven PPWB stations from April 1974 to December 31, 1981 have been validated, published in the PPWB Annual Water Quality Reports, and distributed to member agencies.

The data from these monitoring stations is collected to define water quality characteristics in rivers crossing interprovincial boundaries and to estimate compliance with the "1973 PPWB Water Quality Objectives" for those parameters marked with an asterik (*) on page 24. The Board, through the Secretariat, continually reviews the water quality data from the eleven PPWB stations.

Review of the 1981-82 water quality data from all PPWB monitoring stations indicates that the "1973 Water Quality Objectives" were exceeded at least once at each site for one or more parameters. Approximately one third of the parameters, with specific water quality objectives, were exceeded at least once during the 1981-82 fiscal year. The PPWB station with the highest frequency of exceeded objectives was the Assiniboine River below Kamsack.

The majority of PPWB stations during 1981-82 experienced winter dissolved oxygen levels well below the 1973 objective of 5.0 mg/litre. The "1973 Water Quality Objectives" for manganese were frequently exceeded (a total 35 times in the past year at eight of the eleven PPWB stations). Total

phosphorus was also exceeded repeatedly. The 1973 objective of 0.15 mg/litre was exceeded 30 times between March 1981 and March 1982 at a total of eight of the eleven PPWB stations. The acceptable level for cyanide was exceeded a total of nine times and phenols were exceeded seven times. Other water quality parameters with water quality objectives, seldomly if at all, exceeded the 1973 objectives.

Several biocides were detected at the PPWB water quality stations in the last year. Alpha BHC was detected in 88 percent of the samples collected between March 1981 and March 1982, and lindane was present in 14 percent of the samples. Thirty-one percent of the samples contain detectable levels of 2,4-D.

In reviewing the 1981-82 data, it is evident that the "1973 Surface Water Quality Objectives" are not practical for some streams. The Secretariat, under the direction of the Board, is now establishing site specific water quality requirements for each of the eleven PPWB water quality monitoring stations. These will more adequately reflect the specific characteristics of each stream being sampled.

Ducks Unlimited Cumberland Marshes Project

The Board as part of its interprovincial monitoring responsibilities has a continuing interest in the Ducks Unlimited Project recently constructed in the Cumberland Marshes area and the effect that project might have on downstream water quantity and quality. Reports on the Board's operations are prepared annually by Water Survey of Canada in consultation with the Water Quality Branch of Inland Waters Directorate, Ducks Unlimited, and Saskatchewan Environment. The third report describing the operation of this project during 1980 was submitted to the Board in May 1981 and is available upon request.

Other Reports Dealing with Monitoring

The Board has accepted a report entitled "Report on Administration of the Apportionment Agreement" and a second report entitled "Guidelines for Negotiating Equitable Apportionment". The material contained in these two reports will be used in future years to maintain and to establish new guidelines to administer the 1969 Apportionment Agreement. Similar documents are being prepared to establish more precise water quality requirements and procedures to be used in monitoring the quality of water passing from one province to another. These studies were reported in the section entitled "Board Studies".

PPWB WATER QUALITY MONITORING
1981 PARAMETER LIST

*Aldrin
Alkalinity, phenol.
Alkalinity, total
Aluminum, extractable
N-Alkanes
Aromatic Hydrocarbons
*Arsenic, diss.
*Barium, total
BHC-alpha
BHC-gamma(Lindane)
Bicarbonate, calc.
*Boron
*Cadmium, total
Calcium, diss.
Carbon, diss., organic
Carbon, organic, particulate
Carbonate, calc.
Chlordane-alpha
Chlordane-gamma
Chloride, diss.
Chlorophyll A
*Chromium
Cobalt, Total
Coliforms, fecal
Coliforms, total
*Color, true
*Copper, Total
*Cyanide, total
*P,P-DDD
*P,P-DDE
*O,P-DDT
*P,P-DDT
*Dieldrin
Endosulfan-alpha
Endosulfan-beta
*Endrin
*Fluoride, diss.
Free CO₂
Hardness, non carbonate
Hardness, total, CaCO₃
*Heptachlor
*Heptachlor, expoxide
Hexachloro-benzene
Hydroxide, calc.
*Iron, diss.
*Lead, Total
Magnesium, diss.
*Manganese, diss.
MCPA
*Mercury, total
P,P-methoxychlor
Mirex
Nickel, Total
Nitrogen, diss., NO₃+NO₂
Nitrogen, particulate
Nitrogen, total Ammonia as N
*Nitrogen, total, calc.
Nitrogen, total, diss.
*Oxygen, diss., DO
PCB, Arochlor 1248
PCB, Arochlor 1254
PCB, Arochlor 1260
PCB Arochlor Total
*pH
*Phenolics
Phosphorus Ortho as P
Phosphorous, particulate calc.
*Phosphorous, total, diss.
*Phosphorous, total, phosphate
Picloram (Tordon)
Potassium, diss.
Residue, fixed, nonfilterable
*Residue, nonfilterable
*Selenium, diss.
Silica, reactive
Silvex
*Sodium, diss.
Solids, Total diss., calc.
Specific Conductance
Sulphate, diss.
*Surfactants (MBAS)
*Temperature
*Turbidity
Vanadium, Total
*Zinc, Total
2,4-D
2,4-DB
2,4-DP
2,4,5-T

* Objectives exist

1981 FLOW DATA



**RECORDED AND NATURAL FLOWS,
CONSUMPTIVE USE, DIVERSION, AND STORAGE
(CUBIC DECAMETRES ROUNDED TO THREE SIGNIFICANT FIGURES)**

FOR THE YEAR 1961

SOUTH SASKATCHEWAN RIVER -- ALBERTA-SASKATCHEWAN BOUNDARY

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTALS
RECORDED FLOW	319 500	305 900	338 000	328 100	1 580 100	1 699 700	990 400	657 400	231 900	115 900	219 600	133 200	6 919 700
CONSUMPTIVE USE	-700	-400	1 000	36 600	214 000	257 900	341 000	257 500	243 900	178 200	-14 800	-3 800	1 510 400
CHANGE IN RESERVOIRS	-92 300	-68 400	-38 100	-12 600	89 900	108 700	170 500	-15 700	-82 800	-58 700	-48 800	-59 100	-107 400
DIVERSION FROM BASIN	0	0	0	0	13 500	35 800	42 400	33 000	22 600	21 800	3 900	0	173 000
NATURAL FLOW ALTA. BDY.	246 500	229 400	296 300	300 700	1 899 600	2 089 400	1 540 600	965 900	393 400	289 000	191 300	72 800	8 514 900

RED DEER RIVER -- ALBERTA-SASKATCHEWAN BOUNDARY

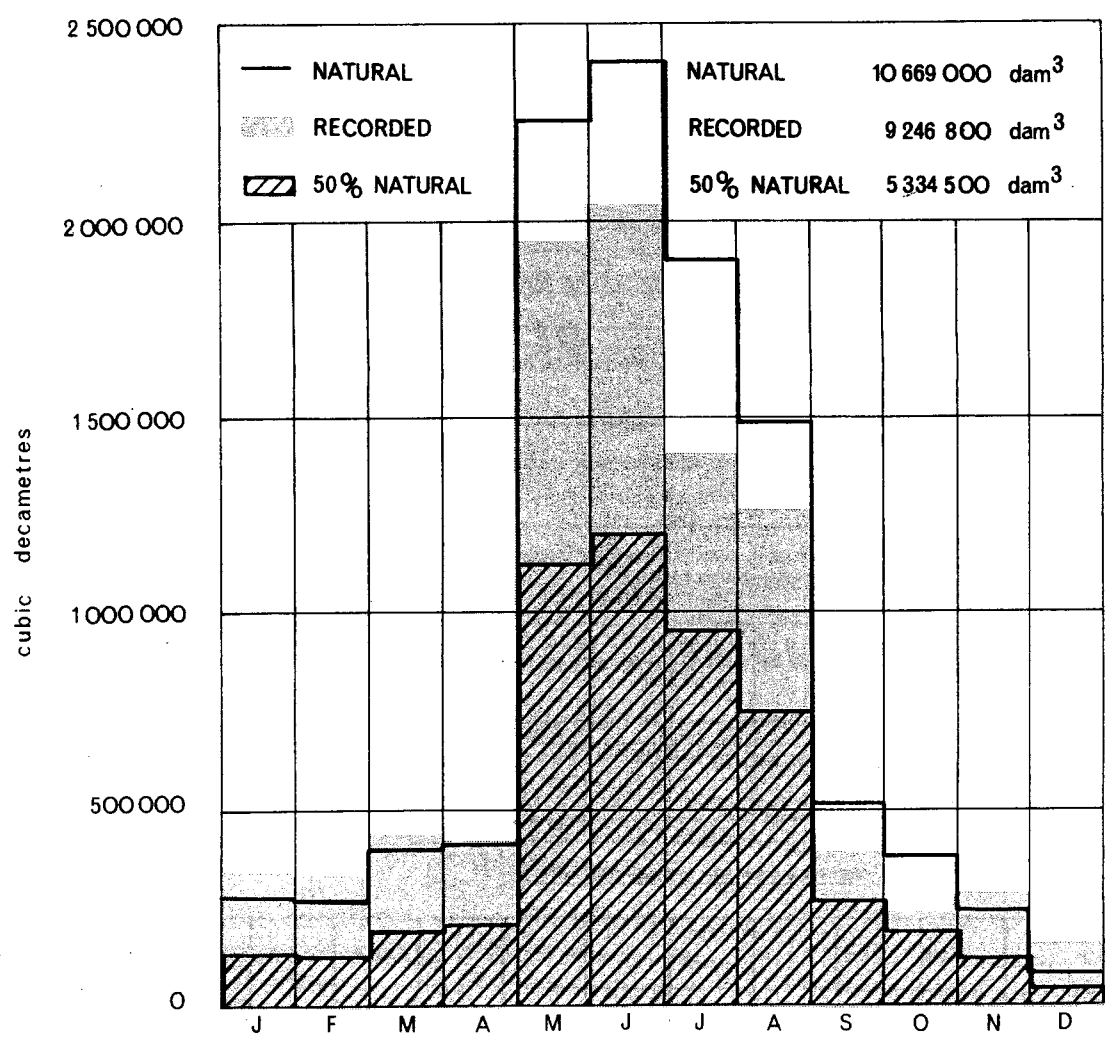
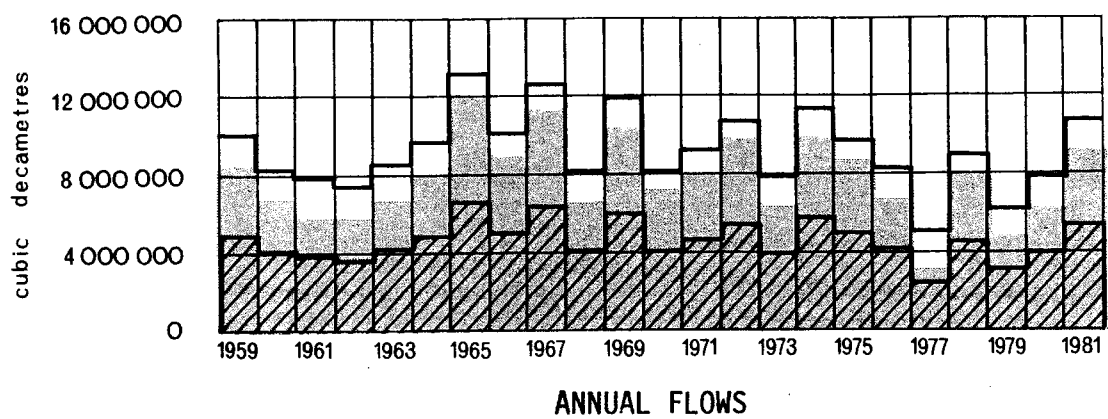
	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTALS
RECORDED FLOW	28 200	31 000	103 000	108 100	366 000	347 000	412 900	560 000	156 000	122 000	71 200	21 700	2 327 100
CONSUMPTIVE USE	0	0	0	0	0	0	0	0	0	0	0	0	0
DIVERSION FROM BASIN	0	0	0	0	-13 500	-35 800	-42 400	-33 000	-22 600	-21 800	-3 900	0	-173 000
NATURAL FLOW ALTA. BDY.	28 200	31 000	103 000	108 100	353 600	313 300	370 000	526 800	133 100	99 800	65 500	21 700	2 154 100

SOUTH SASKATCHEWAN RIVER -- BELOW JUNCTION WITH RED DEER RIVER

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTALS
RECORDED FLOW	347 700	336 900	441 000	436 200	1 946 100	2 046 700	1 403 300	1 217 400	387 900	237 900	290 800	154 900	9 246 800
NATURAL FLOW	274 700	260 400	399 300	408 800	2 253 200	2 402 700	1 910 600	1 492 700	526 500	388 800	256 800	94 500	10 669 000

Natural flow for the South Saskatchewan and Red Deer Rivers have been calculated using WSC's preliminary data and using the methodology described in "Natural Flow Report, South Saskatchewan River Below Red Deer River" March 1974 (PPWB Report No. 45).

Quantities shown in table have been routed to Alberta boundary.



SOUTH SASKATCHEWAN RIVER NEAR ALBERTA-SASKATCHEWAN BOUNDARY
(INCLUDES RED DEER RIVER)

1981 MONTHLY DATA

RECORDED AND NATURAL FLOWS - SUMMARY
SELECTED INTERPROVINCIAL STREAMS
(CUBIC DECAMETRES ROUNDED TO THREE SIGNIFICANT FIGURES)

FOR THE YEAR 1981

JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC. TOTALS

NORTH SASKATCHEWAN -- ALBERTA-SASKATCHEWAN BOUNDARY (NEAR DEER CREEK)

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTALS
RECORDED FLOW	297 000	241 000	339 000	588 000	1 040 000	822 000	1 160 000	1 370 000	595 000	449 000	422 000	375 000	7 700 000
NATURAL FLOW	98 000	102 000	192 000	442 000	1 036 000	997 000	1 861 000	1 751 000	690 000	349 000	196 000	84 000	7 796 000

CHURCHILL RIVER -- SASKATCHEWAN-MANITOBA BOUNDARY (AT SANDY BAY)

RECORDED FLOW	2 190 000	1 890 000	2 000 000	1 800 000	1 880 000	1 680 000	1 560 000	1 560 000	1 630 000	1 730 000	1 690 000	1 650 000	21 300 000
NATURAL FLOW	1 854 000	1 578 000	1 616 000	1 507 000	1 869 000	1 908 000	1 881 000	1 711 000	1 439 000	1 312 000	1 077 000	841 000	18 593 000

SASKATCHEWAN RIVER -- SASKATCHEWAN-MANITOBA BOUNDARY

RECORDED FLOW	1 110 000	1 080 000	1 110 000	1 950 000	1 460 000	2 300 000	2 010 000	2 860 000	1 740 000	1 300 000	1 070 000	636 000	18 600 000
APPORTIONMENT FLOW	812 000	708 000	863 000	1 923 000	1 886 000	3 419 000	3 335 000	2 837 000	1 311 000	840 000	704 000	300 000	18 938 000

QU'APPELLE RIVER -- SASKATCHEWAN-MANITOBA BOUNDARY (NEAR WELBY)

RECORDED FLOW	4 700	6 690	7 730	3 160	2 560	2 570	511	2 520	4 180	9 970	14 400	8 570	67 600
NATURAL FLOW	0	4 690	8 420	3 587	4 113	6 327	7 073	7 452	113	0	0	0	41 775

RECORDED DISCHARGE - SUMMARY
 SELECTED INTERPROVINCIAL STREAMS
 (CUBIC DECAMETRES ROUNDED TO THREE SIGNIFICANT FIGURES)

FOR THE YEAR 1981

JAN. FEB. MAR. APR. MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC. TOTALS

BEAVER RIVER -- ALBERTA-SASKATCHEWAN BOUNDARY (NEAR COLD LAKE)

12 100	11 600	25 500	63 600	41 600	23 300	63 500	24 800	9 470	7 990	6 990	5 780	296 000
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BATTLE RIVER -- ALBERTA-SASKATCHEWAN BOUNDARY (NEAR UNWIN)

5 060	3 820	22 200	57 200	23 700	18 000	8 510	14 800	26 900	13 500	10 100	370	210 000
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CARROT RIVER -- SASKATCHEWAN-MANITOBA BOUNDARY (NEAR TURNBERRY)

1 720	1 890	8 350	42 900	51 100	19 500	26 700	14 100	7 700	42 900	21 000	6 060	244 000
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RED DEER RIVER -- SASKATCHEWAN-MANITOBA BOUNDARY (NEAR ERWOOD)

773	264	5 060	28 900	25 000	9 380	11 100	6 340	1 740	27 400	17 700	1 380	135 000
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ASSINIBOINE RIVER -- SASKATCHEWAN-MANITOBA BOUNDARY (AT KAMSACK)

502	438	4 800	12 200	4 680	3 850	3 350	1 730	316	3 750	4 220	1 660	41 500
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APPENDIX



APPENDIX INDEX

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PPWB MEMBERS

Chairman	Dr. W.B. Mountain	Assistant Deputy Minister Environmental Conservation Service Environment Canada
	Dr. H.M. Hill	Director General Prairie Farm Rehabilitation Administration Department of Regional Economic Expansion
	Mr. R.E. Bailey	Special Projects Director Alberta Environment
	Mr. S.R. Blackwell	Executive Director Water Management Service Saskatchewan Environment
	Mr. T.E. Weber	Director Water Resources Branch Manitoba Department of Natural Resources
Secretary	Mr. E.W. Allison (April 1978 - February 1982)	Water Quality Analyst PPWB Secretariat

ALTERNATE MEMBERS

Mr. D.A. Davis

Regional Director
Western and Northern Region
Inland Waters Directorate
Environmental Conservation Service
Environment Canada

Mr. G.S. Brown
(August 1978 - August 1981)

Director
Soil and Water Conservation Branch
Prairie Farm Rehabilitation Administration
Department of Regional Economic Expansion

Mr. A.F. Lukey
(Appointed August 27, 1981)

Director
Engineering Branch
Prairie Farm Rehabilitation Administration
Department of Regional Economic Expansion

Mr. P.G. Melnychuk

Assistant Deputy Minister
Environmental Engineering Support Services
Alberta Environment

Mr. D.L. MacLeod

Director
Hydrology Branch
Water Management Service
Saskatchewan Environment

Mr. N. Mudry

Chief
Water Management
Water Resources Branch
Manitoba Department of Natural Resources

COMMITTEE ON HYDROLOGY

Terms of Reference

At the request of, and under the direction of the PPWB, the Committee on Hydrology shall investigate, oversee, review, report and recommend on matters pertaining to hydrology of interprovincial or interjurisdictional basins.

The Committee may consider such things as natural flow; forecasting; network design; collection, processing and transmission of data; basin studies and other items of interprovincial interest involving hydrology.

Current Members

R.B. Godwin Chairman	Executive Director Prairie Provinces Water Board
G.H. Morton	Water Resources Branch Environment Canada
D.W. Lawson (Feb. 1979 - Dec. 1981)	Prairie Farm Rehabilitation Administration Department of Regional Economic Expansion
F.R.J. Martin (Appointed January 1982)	Prairie Farm Rehabilitation Administration Department of Regional Economic Expansion
R.K. Deeprose	Environmental Engineering Support Services Alberta Environment
V.M. Austford	Water Resources Branch Manitoba Department of Natural Resources
D.L. MacLeod	Hydrology Branch Saskatchewan Environment
R.F. Hopkinson	Atmospheric Environment Service Environment Canada
<hr/>	
A.J. Chen Secretary	Operations Engineer PPWB Secretariat

COMMITTEE ON WATER QUALITY

Terms of Reference

At the request of and under the direction of the Prairie Provinces Water Board, the Committee on Water Quality shall investigate, oversee, review, report and recommend on matters pertaining to water quality of interprovincial and interjurisdictional basins.

Carrying out the above responsibilities may include such things as natural quality assessment; quality forecasting; network design; processing and dissemination of data; determination of implications of proposed projects that may significantly alter the water quality of interprovincial streams; consideration of special problems; establishment of procedures for emergency situations; and other items of interprovincial interest involving water quality.

Members

R.B. Godwin Chairman	Executive Director Prairie Provinces Water Board
K.W. Reid (June 1975 - May 1981)	Water Quality Branch Environment Canada
W.D. Cummer (Appointed May 1981)	Water Quality Branch Environment Canada
D.W. Lawson (Feb. 1979 - Dec. 1981)	Prairie Farm Rehabilitation Administration Department of Regional Economic Expansion
J.N. Warrener (Oct. 1972 - Nov. 1981)	Environmental Management Division Manitoba Department of Consumer and Corporate Affairs and the Environment
M. Morelli (Appointed Dec. 1981)	Environmental Management Division Manitoba Department of Consumer and Corporate Affairs and the Environment
R.A. McDonald	Water Pollution Control Branch Saskatchewan Environment
P.G. Shewchuk	Standards and Approvals Division Alberta Environment
<hr/>	
E.W. Allison (Aug. 1974 - Feb. 1982)	Water Quality Analyst PPWB Secretariat

COMMITTEE ON GROUNDWATER

Committee on Groundwater Terms of Reference - November, 1981

Recognizing the inter-relationship between surface and groundwater, the Committee on Groundwater shall, at the request of, and under the direction of the Prairie Provinces Water Board, investigate, oversee, review, report, and recommend on matters pertaining to quantity and quality of groundwater at or near interprovincial boundaries.

Responsibilities of the Committee will include: exchange of information; compilation and interpretation of existing data; recommendations on groundwater information and monitoring requirements; determination of implications of proposed projects which may impact the quantity and/or quality of waters at interprovincial boundaries; and other items of interjurisdictional interest involving groundwater.

Approved: November 18-19, 1981
PPWB Minute 26-25

Members

R.B. Codwin Chairman	Executive Director Prairie Provinces Water Board
J.A. Gilliland	National Hydrology Research Institute Environment Canada
D.H. Pollock	Engineering Services Prairie Farm Rehabilitation Administration
H.A. Kerr	Earth Sciences Division Alberta Environment
R.J. Stewart	Groundwater Division Saskatchewan Environment
L. Gray	Water Resources Branch Manitoba Department of Natural Resources
<hr/>	
A.J. Chen Secretary	Operations Engineer PPWB Secretariat

COMMITTEE ON [REDACTED] INTERJURISDICTIONAL AGREEMENTS ADMINISTRATION

It was agreed that a committee consisting of the Executive Director, one member from Saskatchewan, one member from Alberta, and Mr. E.F. Durant be struck to handle the problem of developing a methodology for the efficient administration of interjurisdictional agreements, particularly as regards Battle and Lodge Creek Basins.

(8:35: March 20, 1973)

Members

R.B. Codwin Chairman	Executive Director Prairie Provinces Water Board
B.N. Johnson	Inland Waters Directorate Environment Canada
A.L. Jones	Water Rights Branch Saskatchewan Environment
B.W. Boyson	Water Resources Management Division Alberta Environment

A.J. Chen Secretary	Operations Engineer PPWB Secretariat
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Alternate Members

D.D. Nargang	Water Rights Branch Saskatchewan Environment
A.J. Ferrett	Water Rights Branch Alberta Environment

COMMITTEE ON WATER DEMAND

Terms of Reference

The Committee on Water Demand shall be composed of one member representing each of the Provinces of Alberta, Saskatchewan and Manitoba, two members representing Canada, and the Executive Director of the Prairie Provinces Water Board who shall be Chairman. The Committee shall function during the life of the Water Demand Study in the Saskatchewan-Nelson Basin and shall have the responsibility of providing technical guidance and financial management for the Water Demand Study on behalf of the Board.

The Water Demand Study shall be divided into two parts. Part One shall be done under the auspices of the Prairie Provinces Water Board and consist of a study of water demand based on current needs and historical uses in accordance with the Terms of Reference for Part One. Part Two may be done at a later date and would provide estimates for future water demands. Throughout Part One of the study the Committee shall: monitor and oversee the technical and financial aspects of the study as directed by the Board; ensure that there is no duplication of studies; report regularly to the Board on the progress of the study.

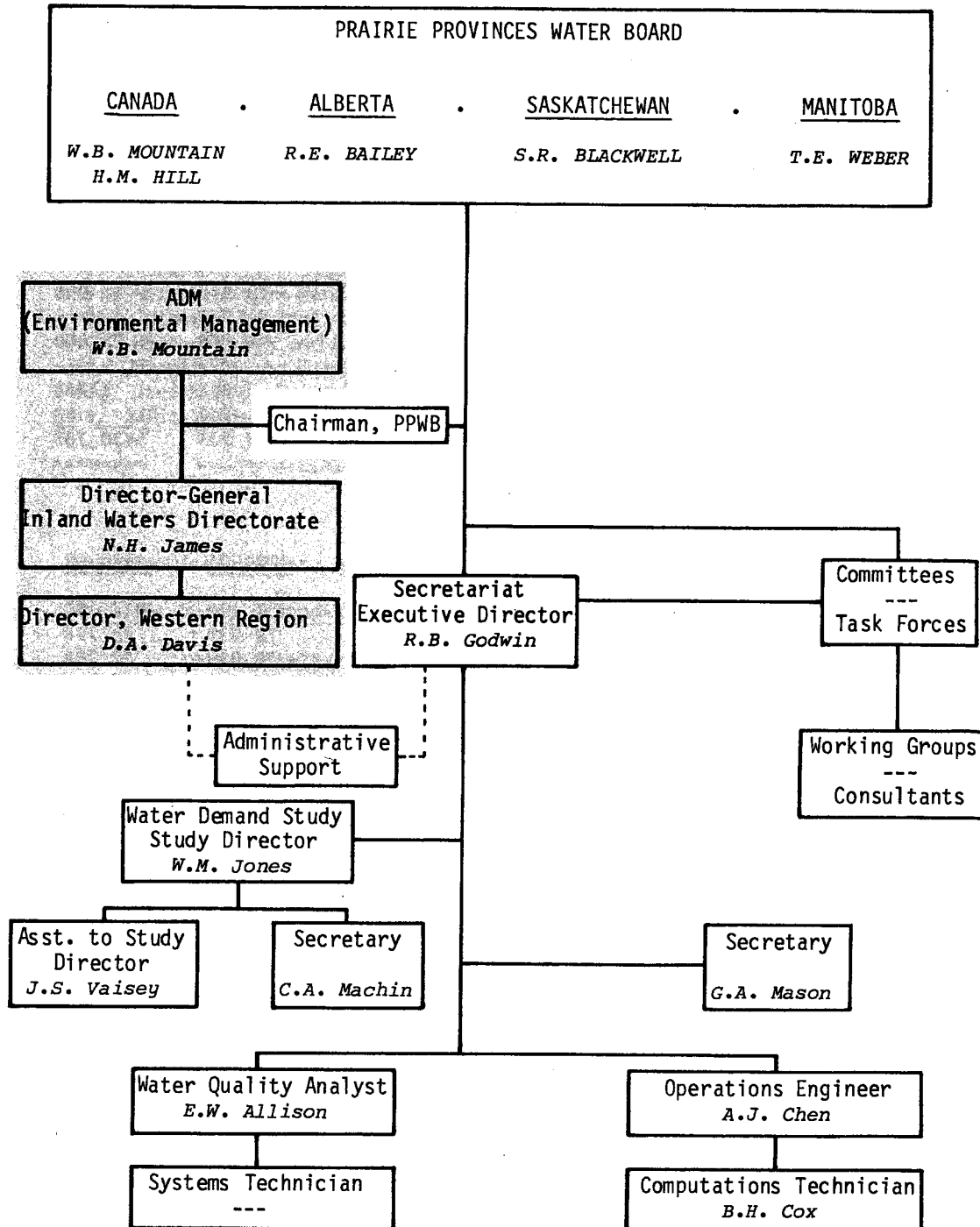
Members

R.B. Godwin Chairman	Executive Director Prairie Provinces Water Board
H. Foerstel	Planning Division Water Planning and Management Branch Environment Canada
V.M. Austford	Water Resources Branch Manitoba Department of Natural Resources
J.E. Foraie	Environmental Assessment Secretariat Saskatchewan Environment
C. Primus	Planning Division Alberta Environment
B.T. Abrahamson	Hydrology Division Prairie Farm Rehabilitation Administration Department of Regional Economic Expansion

E.W. Allison
(Aug. 1974 - Feb. 1982)

Water Quality Analyst
PPWB Secretariat

ORGANIZATION CHART



STATEMENT OF EXPENDITURES

	1979-80	Final Claim 1980-81	1981-82
Salaries	\$185 691	\$222 961	\$245 689
Travel and Transportation	24 421	21 011	18 624
Postage, Freight and Express	361	475	671
Telephone and Telegraph	5 084	6 275	7 318
Professional and Special Studies	246 348	157 062	56 987
Computing Services	6 153	13 673	18 027
Stenographic and Typing Services	6 444	5 223	663
Miscellaneous Special Services	4 361	---	---
Accommodation Rental	12 000	12 000	12 000
Computer Equipment Rentals	1 332	742	---
Photocopying and Office Equipment Rentals	2 451	24 508	73 040
Furniture, Fixtures and Office Equipment	1 132	123	---
Stationery, Printed Matter & Office Supplies	4 509	3 463	3 703
Miscellaneous	100	719	63
	<u>\$500 387</u>	<u>\$468 235</u>	<u>\$436 785</u>

Final Claim includes Water Demand Study expenditures.

Shares:	1979-80	1980-81	1981-82
Canada : one half	250 194	234 118	218 391
Alberta : one sixth	83 398	78 039	72 798
Manitoba : one sixth	83 398	78 039	72 798
Saskatchewan : one sixth	83 398	78 039	72 798

The accounts of the Prairie Provinces Water Board have been audited for the period April 1, 1979 to March 31, 1982 and the Director of the Internal Audit Branch has certified that "The Department agrees with the audited amount."

81-82

FINAL CLAIM

For expenditures in accordance with the Prairie Provinces Water Board Agreement dated October 30, 1969. (See Section 10, Schedule C and Section 15 of the By-laws).

FINANCIAL YEAR 1980-81

	<u>SECRETARIAT</u>	<u>WATER DEMAND STUDY</u>	<u>TOTALS</u>
1. Salaries	\$158 216	\$ 87 472	\$245 688
2. Travel and Transportation	14 645	3 979	18 624
3. Postage, Freight and Express	491	180	671
4. Telephone and Telegraph	4 973	2 345	7 318
5. Professional and Special Services	39 658	11 362	51 020
6. Computing Services	12 453	5 574	18 027
7. Stenographic Services	663	0	663
8. Miscellaneous Special Services	94	0	94
9. Accommodation Rental	12 000	0	12 000
10. Computer Equipment Rentals	0	0	0
11. Photocopying and Other Equipment Rentals	6 567	552	7 119
12. Furniture and Fixtures	0	0	0
13. Stationery, Printed Matter and Supplies	9 660	62 316	71 976
14. Miscellaneous	3 129	456	3 585
	<u> </u>	<u> </u>	<u> </u>
TOTAL	\$262 549	\$174 236	\$436 785
	<u> </u>	<u> </u>	<u> </u>

Each Province's Share of Expenditures (one-sixth) = \$72,798

Previous Board Expenditures

Fiscal 1970-71	0
Fiscal 1971-72	105,174
Fiscal 1972-73	136,816
Fiscal 1973-74	158,274
Fiscal 1974-75	109,547
Fiscal 1975-76	143,805
Fiscal 1976-77	139,381
Fiscal 1977-78	163,008
Fiscal 1978-79	224,477
Fiscal 1979-80	500,387
Fiscal 1980-81	468,235

MASTER AGREEMENT ON APPORTIONMENT 

MASTER AGREEMENT ON APPORTIONMENT

THIS AGREEMENT is made in quadruplicate this THIRTIETH day of OCTOBER, 1969, A.D.

BETWEEN:

HER Majesty, the Queen, in right of Canada, represented herein by the Minister of Energy, Mines and Resources

(Hereinafter called "Canada")

- and -

HER Majesty, the Queen, in right of Alberta, represented herein by the Minister in charge of Water Resources for Alberta

(Hereinafter called "Alberta")

- and -

HER Majesty, the Queen, in right of Saskatchewan, represented herein by the Minister in charge of The Water Resources Commission Act of the said Province

(Hereinafter called "Saskatchewan")

- and -

HER Majesty, the Queen, in right of Manitoba, represented herein by the Minister in charge of The Water Control and Conservation Branch Act of the said Province

(Hereinafter called "Manitoba")

WHEREAS under natural conditions the waters of the watercourses hereinafter referred to arising in or flowing through the Province of Alberta would flow into the Province of Saskatchewan and under the said conditions the waters of some of the said watercourses arising in or flowing through the Province of Saskatchewan would flow into the Province of Manitoba;

AND WHEREAS the Governor-in-Council has authorized Canada to enter into this agreement by Order-in-Council P.C. 1969-8/2051 dated October 29, 1969, and the Lieutenant Governors-in-Council for Alberta, Manitoba and Saskatchewan, respectively, have authorized them to enter into this agreement by the following Orders-in-Council:

Alberta - O.C. 2053/69
Manitoba - O.C. 1359/69
Saskatchewan - O.C. 1612/69

AND WHEREAS the parties hereto deem it to be in their mutual interest that an agreement be reached among the four parties as to the apportionment as described in the schedules attached hereto of such interprovincial waters among the three Provinces;

AND WHEREAS Alberta and Saskatchewan have entered into an agreement, which agreement is attached to this agreement as Schedule A, that permits the Province of Alberta to make a net depletion of one-half the natural flow of water arising in or flowing through the Province of Alberta and that permits the remaining one-half of the natural flow of each such watercourse to flow into the Province of Saskatchewan, subject to certain prior rights as are set forth in the said agreement;

AND WHEREAS Saskatchewan and Manitoba have entered into an agreement, which agreement is attached to this agreement as Schedule B, that permits the Province of Saskatchewan to make a net depletion of one-half the natural flow of water arising in, and one-half of the water flowing into the Province of Saskatchewan, and that permits the remaining one-half of the flow of each such watercourse to flow into the Province of Manitoba, subject to such conditions and agreements as therein contained;

AND WHEREAS the parties are desirous that the Prairie Provinces Water Board (referred to herein as the Board), reconstituted by this agreement will be responsible for the administration of this agreement;

AND WHEREAS the parties hereto recognize the continuing need for consultation and co-operation as between themselves with respect to the matters herein referred to so that the interests of all the parties are best served;

NOW THEREFORE, THIS AGREEMENT (hereinafter known as the Master Agreement) witnesseth that each party agrees as follows:

Interprovincial Agreements

1. Alberta and Saskatchewan agree that the agreement between them (hereinafter called the First Agreement), a copy of which is set out in Schedule A to the Master Agreement, will become binding upon them upon the date that the Master Agreement is executed.
2. Saskatchewan and Manitoba agree that the agreement between them (hereinafter called the Second Agreement), a copy of which is set out in Schedule B to the Master Agreement, will become binding upon them upon the date that the Master Agreement is executed.
3. The parties agree to the apportionment of water between Alberta and Saskatchewan and Manitoba as provided in the First and Second Agreements and each party agrees to be bound by the said agreements as they relate to apportionment as if it were a party thereto.
4. The parties agree that the First or Second Agreement, or both, may be altered by an agreement in writing among the four parties to the Master Agreement, but not otherwise.
5. The parties agree that the First and Second Agreements will continue in force and effect until cancelled by an agreement in writing among the four parties to the Master Agreement.

Water Quality

6. The parties mutually agree to consider water quality problems; to refer such problems to the Board; and to consider recommendations of the Board thereon.

Monitoring

7. The parties agree that the monitoring of the quantity and quality of waters as specified in the First and Second Agreements, the collection, compilation and publication of water quantity and quality data required for the implementation and maintenance of the provisions of this agreement shall be conducted by Canada, subject to provision of funds being voted by the Parliament of Canada.

Administration

8. The parties agree, subject to Clause 9 of this agreement that if at any time, any dispute, difference or question arises between the parties with respect to this agreement or the construction, meaning and effect thereof, or anything therein, or the rights and liabilities of the parties thereunder or otherwise in respect thereto, then every such dispute, difference or question will be referred for determination to the Exchequer Court under the provisions of the Exchequer Court Act of Canada and each of the parties hereto agrees to maintain or enact the necessary legislation to provide the Exchequer Court with jurisdiction to determine any such dispute, difference, or question in the manner provided under the Exchequer Court Act.
9. The parties also agree that the Board, with the consent of the parties in dispute, may cause to be prepared, a factual report of the dispute for consideration by the parties hereto prior to the referral of the dispute to the Exchequer Court.
10. The parties agree that the Prairie Provinces Water Board shall monitor and report on the apportionment of waters as set out in the provisions of the First and Second Agreements and ratified by this Master Agreement.
11. The parties agree to revoke the agreement dated July 28, 1948, establishing the Prairie Provinces Water Board and to reconstitute the

Prairie Provinces Water Board in the form of Schedule C hereto and the said Schedule shall form and become part of this Master Agreement.

12. Because the Orders-in-Council referred to in Schedule D hereto will become redundant upon the execution of this Master Agreement, the parties agree to take steps to have them revoked.
13. The parties agree for the future application of the provisions of the Master Agreement (and the First and Second Agreements thereunder), to work together and to cooperate to the fullest extent each with the other for the integrated development and use of water and related resources to support economic growth according to selected social goals and priorities and to participate in the formulation and implementation of comprehensive planning and development programs according to their national, regional and provincial interest and importance.
14. No Member of the Parliament of Canada or Member of the Legislative Assemblies of the Provinces party to this agreement shall hold, enjoy, or be admitted to any share or part of any contract, agreement, commission or benefit arising out of this agreement.

IN WITNESS HEREOF Canada has caused its presents to be executed by its Minister of Energy, Mines and Resources, and Alberta has caused its presents to be executed by its Minister in charge of Water Resources, and Saskatchewan has caused its presents to be executed by its Minister in charge of The Water Resources Commission Act, and Manitoba has caused its presents to be executed by its Minister in charge of The Water Control and Conservation Branch Act on the day and year first mentioned above.

"A. Davidson"

Witness to the signature of the Minister
(Energy, Mines and Resources) for Canada

"J.J. Greene"

Minister (Energy, Mines and Resources) for
Canada

October 30, 1969

Date

"R. E. Bailey"

Witness to the signature of the Minister in
charge of Water Resources for Alberta

"Henry A. Ruste"

Minister in charge of Water Resources for
Alberta

October 30, 1969

Date

"Harold W. Pope"

Witness to the signature of the Minister in
charge of The Water Resources Commission
Act for Saskatchewan

"Allan R. Guy"

Minister in charge of The Water Resources
Commission Act for Saskatchewan

October 30, 1969

Date

"Thomas E. Weber"

Witness to the signature of the Minister in
charge of The Water Control and Conserva-
tion Branch Act for Manitoba

"Lenard S. Evans"

Minister in charge of The Water Control
and Conservation Branch Act for Manitoba

October 30, 1969

Date

SCHEDULE A

THIS AGREEMENT is made in quadruplicate this THIRTIETH day of OCTOBER, 1969, A.D.

BETWEEN:

HER Majesty, the Queen, in right of Alberta, represented herein by the Minister in charge of Water Resources for Alberta

(Hereinafter called "Alberta")

- and -

HER Majesty, the Queen, in right of Saskatchewan, represented herein by the Minister in charge of The Water Resources Commission Act of the said Province

(Hereinafter called "Saskatchewan")

WHEREAS under natural conditions the waters of the watercourses hereinafter referred to arising in or flowing through the Province of Alberta would flow into the Province of Saskatchewan and under the said conditions the waters of some of the said watercourses arising in or flowing through the Province of Saskatchewan would flow into the Province of Manitoba;

AND WHEREAS the parties hereto deem it to be in their mutual interest and in the interest of Manitoba that an agreement in principle be reached among the said three Provinces as to the apportionment of such interprovincial waters among them;

AND WHEREAS the parties hereto are of the opinion that an equitable apportionment of such waters as between the adjoining Provinces of Alberta and Saskatchewan would be to permit the Province of Alberta to make a net depletion of one-half the natural flow of water arising in or flowing through the Province of Alberta and to permit the remaining one-half of the natural flow of water of each such watercourse to flow into the Province of Saskatchewan, subject to certain

prior rights as are hereinafter set forth or may hereafter be mutually agreed upon in writing;

AND WHEREAS on the basis of the foregoing apportionment as between the Provinces of Alberta and Saskatchewan the parties hereto are of the opinion that in a similar manner, an equitable apportionment of the remainder of the natural flow of the said watercourses that flow into the Province of Manitoba after permitting the Province of Alberta to make its depletion of one-half thereof would be to permit the Province of Saskatchewan to make a net depletion of one-half of the said remainder and to permit the other one-half thereof to flow into the Province of Manitoba; and that the natural flow of any tributaries to the said watercourses which tributaries join the said watercourses in the Province of Saskatchewan without arising in or first flowing through the Province of Alberta could be apportioned one-half to the Province of Saskatchewan and one-half to the Province of Manitoba in a manner similar to the apportionment of waters as between the Provinces of Alberta and Saskatchewan, in all cases subject to such prior rights as may be mutually acknowledged by the said Provinces of Manitoba and Saskatchewan;

AND WHEREAS the parties hereto recognize the continuing need for consultation and co-operation as between themselves and with Manitoba with respect to the matters herein referred to so that the best and most beneficial use of the said waters may be made and the interests of all said provinces best served:

NOW THIS AGREEMENT witnesseth as follows:

1. IN THIS AGREEMENT:

- (a) "Natural flow" means the quantity of water which would naturally flow in any watercourse had the flow not been affected by human interference or human intervention, excluding any water which is part of the natural flow in Alberta but is not available for the use of Alberta because of the provisions of any international treaty which is binding on Alberta.

- (b) "Watercourse" means any river, stream, creek, or other natural channel which from time to time carries a flowing body of water from the Province of Alberta to the Province of Saskatchewan and includes all tributaries of each such river, stream, creek or natural channel which do not themselves cross the common boundary between the Provinces of Alberta and Saskatchewan. Such tributaries as do themselves cross the said common boundary between the Provinces of Alberta and Saskatchewan shall be deemed to be "watercourses" for the purpose of this agreement.
- (a) The parties hereto shall mutually establish a method by which to determine the natural flow of each watercourse flowing across their said common boundary.
- (b) For the purpose of this agreement, the said natural flow shall be determined at a point as near as reasonably may be to their said common boundary.
- (c) Notwithstanding sub-paragraph (b) the point at which the natural flow of the watercourses known as the South Saskatchewan and Red Deer Rivers is to be determined may be, at the option of Alberta, a point at or as near as reasonably may be below the confluence of the said two rivers.
3. Alberta shall permit a quantity of water equal to one-half the natural flow of each watercourse to flow into the Province of Saskatchewan, and the actual flow shall be adjusted from time to time on an equitable basis during each calendar year, but this shall not restrict or prohibit Alberta from diverting or consuming any quantity of water from any watercourse provided that Alberta diverts water to which it is entitled of comparable quality from other streams or rivers into such watercourse to meet its commitments to Saskatchewan with respect to each watercourse.
4. Notwithstanding paragraph 3 hereof, the following special provisions shall apply as between the parties hereto with respect to the watercourse known as the South Saskatchewan River.
- (a) Alberta shall be entitled in each year to consume, or to divert or store for its consumptive use a minimum of 2,100,000 acre-feet net depletion out of the flow of the watercourse known as the South Saskatchewan River even though its share for the said year, as calculated under paragraph 3 hereof, would be less than 2,100,000 acre-feet net depletion, provided however Alberta shall not be entitled to so consume or divert, or store for its consumptive use, more than one-half the natural flow of the said South Saskatchewan watercourse if the effect thereof at any time would be to reduce the actual flow of the said watercourse at the common boundary of the said Provinces of Saskatchewan and Alberta to less than 1,500 cubic feet per second.
- (b) The consumption or diversion by Alberta provided for under the preceding sub-paragraph shall be made equitably during each year, depending on the actual flow of water in the said watercourse and the requirements of each Province, from time to time.
5. The parties hereto shall work together and co-operate to the fullest extent, each with the other, for the most effective, economical and beneficial use of waters flowing from the Province of Alberta into the Province of Saskatchewan, including the construction and operation of approved projects of mutual advantage to our Provinces on a cost-share basis proportionate to the benefits derived therefrom by each Province, (the approval of which projects shall not be unreasonably withheld by either of the parties hereto) and shall enter into such other arrangements, agreements or accords with each other, and with the Governments of Canada and other Provinces to best achieve the principles herein agreed upon.

6. This agreement shall not adversely affect any right to water in Battle or Lodge Creeks which has been given by the Government of Canada prior to the transfer of the natural resources to the Provinces and is still subsisting, or any right to such water given by either Province heretofore which has been recognized and approved by both Provinces.
7. If at any time any dispute, difference or question shall arise between the parties or their representatives touching this agreement or the construction, meaning and effect thereof, or anything therein, or the rights or liabilities, of the parties or their representatives thereunder or otherwise in respect thereto then every such dispute, difference or question shall be referred for determination to the Exchequer Court under the provisions of The Exchequer Court Act of Canada, and each of the parties hereto agrees to enact the necessary legislation to provide the Exchequer Court with jurisdiction to determine any such dispute, difference or question in the manner provided under Section 30 of The Exchequer Court Act.
8. This agreement shall become effective upon the execution of an agreement by Canada, Alberta, Manitoba and Saskatchewan relative to the apportionment of waters referred to in this agreement.

"R. E. Bailey"

Witness to the signature of the Minister
in charge of Water Resources for Alberta

"Henry A. Ruste"

Minister in charge of Water Resources
for Alberta

"Harold W. Pope"

Witness to the signature of the Minister
in charge of The Water Resources Com-
mission Act

IN WITNESS WHEREOF Alberta has caused these presents to be executed on its behalf by its Minister in charge of Water Resources, and Saskatchewan has caused these presents to be executed by its Minister in charge of The Water Resources Commission Act, both on the day and year first above mentioned.

"Allan R. Guy"

Minister in charge of The Water Re-
sources Commission Act

SCHEDULE B

THIS AGREEMENT is made in quadruplicate this THIRTIETH day of OCTOBER, 1969, A.D.

BETWEEN:

HER Majesty, the Queen, in right of Saskatchewan, represented herein by the Minister in charge of The Water Resources Commission Act of the said Province

(Hereinafter called "Saskatchewan")

- and -

HER Majesty, the Queen, in right of Manitoba, represented herein by the Minister in charge of The Water Control and Conservation Branch Act of the said Province

(Hereinafter called "Manitoba")

WHEREAS under natural conditions the waters of the watercourses hereinafter referred to arising in or flowing through the Province of Saskatchewan would flow into the Province of Manitoba;

AND WHEREAS the parties hereto deem it to be in their mutual interest and in the interest of Alberta that an agreement in principle be reached among the said three Provinces as to the apportionment of interprovincial waters among them;

AND WHEREAS the parties hereto are of the opinion that an equitable apportionment of such waters as between the adjoining Provinces of Saskatchewan and Manitoba would be to permit the Province of Saskatchewan to make a net depletion of one-half the natural flow of water arising in, and one-half the flow of water flowing into, the Province of Saskatchewan, and to permit the remaining one-half of the flow of water of each such watercourse to flow into the Province of Manitoba, subject to certain rights as may hereafter be mutually agreed upon in writing;

AND WHEREAS on the basis of the foregoing apportionment as between the Provinces of Saskatchewan and Manitoba, the parties hereto are of the opinion that in a similar manner, an equitable apportionment of the natural flow of the said watercourses arising in or flowing through the Province of Alberta would be to permit the Province of Alberta to make a net depletion of one-half thereof, subject to such prior rights as may be mutually acknowledged by the said Provinces of Alberta, Saskatchewan and Manitoba;

AND WHEREAS the parties hereto recognize the continuing need for consultation and co-operation as between themselves and with Alberta with respect to the matters herein referred to so that the interests of all said Provinces are best served;

NOW THIS AGREEMENT witnesseth as follows:

1. IN THIS AGREEMENT:

- (a) "Natural flow" means the quantity of water which would naturally flow in any watercourse had the flow not been affected by human interference or human intervention.
- (b) "Watercourse" means any river, stream, creek, or other natural channel which from time to time carries a flowing body of water from the Province of Saskatchewan to the Province of Manitoba and includes all tributaries of each such river, stream, creek or natural channel which do not themselves cross the common boundary between the Provinces of Saskatchewan and Manitoba. Such tributaries as do themselves cross the said common boundary between the Provinces of Saskatchewan and Manitoba shall be deemed to be "watercourses" for the purpose of this agreement.

2. (a) The parties hereto shall mutually establish a method by which to determine the natural flow of each watercourse flowing across their said common boundary.
 - (b) For the purpose of this agreement, the said natural flow shall be determined at a point as near as reasonably may be to their said common boundary.
3. Saskatchewan shall permit in each watercourse the following quantity of water to flow into Manitoba during the period from April 1 of each year to March 31 of the year following: A quantity of water equal to the natural flow for that period determined at the point referred to in paragraph 2(b) hereof, less
 - (a) one-half the water flowing into Saskatchewan in that watercourse from Alberta, and
 - (b) any water which would form part of the natural flow in that watercourse but does not flow into Saskatchewan because of the implementation of any provision of any subsisting water apportionment agreement made between Alberta and Saskatchewan and approved by Manitoba, and
 - (c) one-half the natural flow arising in Saskatchewan.

The actual flow shall be adjusted from time to time by mutual agreement on an equitable basis during such period but this shall not restrict or prohibit Saskatchewan from diverting, storing or consuming any quantity of water from any watercourse provided that Saskatchewan diverts water to which it is entitled of comparable quality from other streams or rivers into such watercourse to meet its commitments to Manitoba with respect to each watercourse.
 4. Saskatchewan shall be entitled during such period to consume or to divert or store for its consumptive use the water it is not required to permit to flow into Manitoba in each watercourse under paragraph 3 hereof, but such consumption or diversion shall be made equitably depending on the actual flow of water in each watercourse and the requirements of each Province from time to time, but Saskatchewan shall permit sufficient water to flow into Manitoba to meet its commitments during such period under paragraph 3 hereof.
 5. The parties hereto shall work together and co-operate to the fullest extent, each with the other, for the use of waters flowing from the Province of Saskatchewan into the Province of Manitoba, including the construction and operation of approved projects of mutual advantage to the said Provinces on a cost-share basis proportionate to the benefits derived therefrom by each Province (the approval of which projects shall not be unreasonably withheld by either of the parties hereto) and shall enter into such other arrangements, agreements or accords with each other, and with the Governments of Canada and other Provinces to best achieve the principles herein agreed upon.
 6. If at any time any dispute, difference or question shall arise between the parties or their representatives touching this agreement or the construction, meaning and effect thereof, or anything therein, or the rights or liabilities of the parties or their representatives thereunder or otherwise in respect thereto then every such dispute, difference or question shall be referred for determination to the Exchequer Court under the provisions of The Exchequer Court Act of Canada, and each of the parties hereto agrees to maintain or enact the necessary legislation to provide the Exchequer Court with jurisdiction to determine any such dispute, difference or question in the manner provided under The Exchequer Court Act.

- 7.- This agreement shall become effective upon the execution of an agreement by Canada, Alberta, Manitoba and Saskatchewan relative to the apportionment of waters referred to in this agreement.

IN WITNESS WHEREOF Saskatchewan has caused these presents to be executed by its Minister in charge of The Water Resources Commission Act, and Manitoba has caused these presents to be executed by its Minister in charge of The Water Control and Conservation Branch Act on the day and year first above mentioned.

"Harold W. Pope"

Witness to the signature of the Minister in charge of The Water Resources Commission Act

"Allan R. Guy"

Minister in charge of The Water Resources Commission Act

"Thomas E. Weber"

Witness to the signature of the Minister in charge of The Water Control and Conservation Branch Act

"Leonard S. Evans"

Minister in charge of The Water Control and Conservation Branch Act.

SCHEDULE C

PRAIRIE PROVINCES WATER BOARD AGREEMENT

THIS AGREEMENT made this THIRTIETH day of OCTOBER, 1969, A.D.

BETWEEN:

THE GOVERNMENT OF CANADA,
hereinafter called "Canada"

- and -

THE GOVERNMENT OF MANITOBA,
hereinafter called "Manitoba"

- and -

THE GOVERNMENT OF SASKATCHEWAN,
hereinafter called "Saskatchewan"

- and -

THE GOVERNMENT OF ALBERTA,
hereinafter called "Alberta"

1. Manitoba, Saskatchewan, Alberta and Canada agree to establish and there is hereby established a Board to be known as the Prairie Provinces Water Board to consist of five members to be appointed as follows:

- (a) two members to be appointed by the Governor General in Council, one of whom shall be Chairman of the Board, on the recommendation of the Minister of Energy, Mines and Resources,
- (b) one member to be appointed by the Lieutenant Governor in Council of each of the Provinces of Manitoba, Saskatchewan and Alberta.

2. Functions

The Board shall oversee and report on the Master Agreement (including the First and

Second Agreements thereunder) executed by Canada, Alberta, Manitoba and Saskatchewan for the apportionment of waters flowing from one Province into another Province; shall take under consideration, comprehensive planning, water quality management and other questions pertaining to water resource management referred to it by the parties hereto; shall recommend appropriate action to investigate such matters and shall submit recommendations for their resolution to the parties hereto.

3. Composition of Board

The members of the Board shall be chosen from those engaged in the administration of water resources or related duties for Manitoba, Saskatchewan, Alberta or Canada, as the case may be, and shall serve as members of the Board in addition to their other duties.

4. Duties of the Board

In accordance with its functions, the duties of the Board shall be as follows:

- (a) to review, collate, and analyze stream-flow data and prepare reports and recommendations on the apportionment of water,
- (b) to review water quality problems, particularly such problems located at the interprovincial boundaries, and to recommend to the parties hereto, appropriate management approaches for their resolution including the establishment of new institutional arrangements,
- (c) to develop recommendations on other water matters, in addition to problems on water quality, referred to the Board by any party hereto including the review and analysis of existing information and the requesting of additional studies and assistance by appropriate governmental agencies to provide information for formulating its recommendations,

- (d) to promote through consultation and the exchange of information the integrated development of water resources of inter-provincial streams,
- (e) to cause to be prepared with the consent of the parties involved factual reports on disputes arising out of the water apportionment for consideration by the parties hereto,
- (f) to ensure the co-ordination of such technical programs as water quantity and quality monitoring and streamflow forecasting required for the effective apportionment of water.

5. Confirmation of the Board's Recommendations

A recommendation of the Board with respect to any matters referred to it under Section 2 shall, subject to the Master Agreement for the apportionment of water, become effective when adopted by Orders-in-Council passed by Canada and each of the Provinces.

6. Authority of Board

The Board shall have authority to correspond with all Governmental organizations and other sources of information in Canada or abroad concerned with the administration of water resources, and such other authority as may be conferred on the Board from time to time by agreement between the parties hereto; all agencies of the four governments having to do with the water and associated resources in the area covered by the Agreement shall be required to supply the Board with all data in their possession requested by the Board.

7. Records

The records relating to the water resources of the three provinces collected and compiled by the P.F.R.A. organization at Regina shall be made available to the Board.

8. Meetings of the Board

The Board shall meet at the call of the Chairman and meetings shall be called at least twice annually; the expenses of the members shall be borne by their respective governments.

9. Reports

The Board shall submit an annual progress report outlining work done and work contemplated in the agreed program to each of the responsible Ministers of the parties hereto and such other reports as may be requested by any one of such Ministers.

10. Operation of the Board

The Secretary for the Board and such other technical and clerical staff as may be required, with a headquarters at Regina, shall be Federal or Provincial public servants. The cost of administration, excluding the cost of monitoring as described in Section 7 of the Master Agreement, but including staff, accommodation, supplies and incidental expenses of the Board, shall be borne by the parties hereto on the basis of one-half by Canada and one-sixth by each of the Provinces. The Board shall prepare for approval of the parties hereto, work program, staff requirements, annual budgets and five-year forecasts and such other reports as may be required in the operation of the Board.

11. Any water development project already constructed or to be constructed by any one of the parties shall be so operated as to maintain the apportionment of water as set out in the Master Agreement (and the First and Second Agreements thereunder) for the apportionment of waters of interprovincial streams.

SCHEDULE D

PREVIOUS ALLOCATIONS OF INTERPROVINCIAL WATERS
 APPROVED BY ORDERS-IN-COUNCIL BY THE GOVERNMENTS OF
 CANADA, ALBERTA, MANITOBA, AND SASKATCHEWAN

<u>Item</u>	<u>Order-in-Council</u>			
	<u>Canada</u>	<u>Alberta</u>	<u>Saskatchewan</u>	<u>Manitoba</u>
Allocation of water for specific projects in Alberta	4030/49	857/49	1307/51	1121/49
Allocation of water for specific projects in Saskatchewan	1874/51	1091/51	1310/51	1264/51
Allocation of water for South Saskatchewan River Project in Sask- atchewan	973/53	991/53	1271/53	924/53

BY-LAWS

PART I

1. In these By-Laws:

- (a) "Agreement" means the Prairie Provinces Water Board Master Agreement (including the First and Second Agreements thereunder) executed the Thirtieth day of October, 1969, A. D. by Canada, Alberta, Saskatchewan and Manitoba.
- (b) "Alternate" means Alternate Member of the Prairie Provinces Water Board.
- (c) "Board" means the Prairie Provinces Water Board.
- (d) "By-Laws" means the ordinances adopted by the Board for the regulation of the Board's internal affairs.
- (e) "Chairman" means Chairman of the Prairie Provinces Water Board.
- (f) "Executive Director" means the senior officer of the Secretariat.
- (g) "Member" means Member of the Prairie Provinces Water Board.
- (h) "Ministers" means the responsible ministers of the governments which are party to the Agreement.
- (i) "Secretariat" means the operational unit established by the Board to carry out the day-to-day affairs of the Board.
- (j) "Schedule C" means the Prairie Provinces Water Board Agreement under the Master Agreement (1969) executed by Canada, Alberta, Saskatchewan and Manitoba establishing the Prairie Provinces Water Board.

PART II

The following shall be the By-Laws of the Prairie Provinces Water Board.

1. Objectives

The objectives of the Board shall be to promote the integrated development and use of water and related resources to support economic growth according to selected social goals and priorities, and to participate in the formulation and implementation of comprehensive planning and development programs according to their national, regional and provincial interest and importance.

In general, the Board will provide coordination and liaison between water resource agencies and will advise governments on the planning, development and management of interprovincial waters.

In particular, the Board will ensure the equitable apportionment of water flowing from one province into another province in accordance with the Agreement and will promote effective water quality management of interprovincial streams relative to standards and procedures adopted by the Board from time to time.

2. Membership

In accordance with Section I of Schedule "C", the Prairie Provinces Water Board shall consist of five Members to be appointed as follows:

- (a) two Members to be appointed by the Governor General in Council, one of whom shall be Chairman of the Board;
- (b) one Member to be appointed by the Lieutenant Governor in Council of each of the Provinces of Manitoba, Saskatchewan and Alberta.

3. Alternate Members

Each Member, including the Chairman, shall arrange for the appointment of an Alternate Member to act on his behalf during his absence, in which case the Alternate shall enjoy all the rights and privileges conferred on the Member.

4. Meetings and Notice

The Board shall meet at least twice a year by the call of the Chairman. Any Member may request a meeting of the Board at any time, in which case the Chairman must call the meeting within one month (30 days).

Meetings of the Board shall be called with at least 14 days notice unless every Member agrees otherwise.

5. Quorum

Meetings of the Board shall be official when all Members or their appointed Alternates are present.

6. Voting

All recommendations to government, all By-Laws and budgets-in-total shall require unanimous approval. The majority of votes determines a question on any other matter. In the event of a tie, the Chairman shall cast the deciding vote.

7. Powers

In accordance with the duties, functions and operations of the Board, as contained in Schedule "C", the Board shall have the power to authorize expenditures within the limits of approved budgets for the operations of the Secretariat, for the employment of staff, or for any other purposes necessary for administering the Agreement and furthering the objectives of the Board.

8. Authority

Within the general responsibilities given to it, the Board shall determine its technical and administrative functions from time to time and

shall decide all matters regarding the authority of the Board and the delegation thereof.

9. Financial Year

The financial year shall end on the 31st day of March in each year.

10. Budgets

The Chairman shall submit fiscal year program and budget estimates to the Board and to the parties to the Agreement for their approval. Such estimates shall be submitted not later than the first day of August preceding the financial year to which they pertain.

11. Secretariat

(a) There shall be a permanent Secretariat with offices at Regina, Saskatchewan.

(b) The Secretariat shall be the "operational arm" of the Board, charged with the responsibility of conducting programs approved by the Board for collating and analyzing data and reporting the apportionment and water quality of interprovincial streams; for conducting approved studies, and for furthering the policies and objectives of the Board.

(c) Except as otherwise provided for under subsection (f) herein, employees of the Secretariat shall be federal civil servants, subject to federal public service regulations and classification and collective agreements.

(d) The chief officer of the Secretariat shall be the Executive Director whose actions shall at all times be subject to the approval of the Board.

(e) The Board shall approve the establishment of salaried positions within the Secretariat and shall approve job descriptions prior to submission to the appropriate federal authority. The Board shall be consulted on the appointment of employees to the Secretariat which role may be delegated to the Executive Director.

- (f) The Board may arrange by agreement for secondment to the Secretariat, the employees of the agencies of those party to the Agreement, at cost, whenever in the opinion of the party concerned the services of such employees are available. Such employees shall remain under the administrative control and public service regulations of the appropriate party.

12. Assignments to Associated Agencies and Consultants

- (a) The Board shall have the authority to engage agencies of those party to the Agreement, at cost, to undertake assignments from the Board, whenever in the opinion of the party concerned, the services of such agencies are available.
- (b) Agencies may enter into sub-contracts with consultants for purposes of professional interpretation subject to the approval of the Executive Director. Sub-contracts for the collection of basic data shall not require the approval of the Executive Director.
- (c) The Board may engage consultants to undertake assignments from the Board where such services are deemed necessary.
- (d) The services of consultants and of agencies of those party to the Agreement shall be engaged under a contractual arrangement. Contracts shall be entered into by the Chairman and/or the Executive Director subject to delegated authorities under the federal government contract regulations. Contracts for services shall also be subject to budgetary appropriations and any other controls imposed by the Board for the conduct of the work.

13. Terms of Payment for Services Provided by Associated Agencies

- (a) Canada, through the Board, shall reimburse the Provinces of Alberta, Saskatchewan and Manitoba on a monthly basis, for expenditures made pursuant to the Agreement and approved by the Board. Payment for such expenditures will be made by Canada upon the submission of a claim in a mutually agreed manner and form.

- (b) Canada, and the Provinces of Alberta, Saskatchewan and Manitoba shall keep complete records of all expenditures made severally pursuant to the Agreement and shall support such expenditures with proper documentation. Canada and the Provinces of Alberta, Saskatchewan and Manitoba shall make these records and documents available to auditors appointed by the other.

14. Cost of Administration of the Board

- (a) In accordance with Section 10 of Schedule "C", all budgeted expenditures, which shall not include the cost of monitoring, as described in Section 7 of the Master Agreement, but including staff, accommodation, supplies and incidental expenses of the Board, shall be borne by the parties to the Agreement on the basis of one-half by Canada and one-sixth by each of the Provinces.

15. Financing the Operations of the Board

- (a) Canada shall assume responsibility for financing the operations of the Board.
- (b) Subject to the cost sharing provisions of the Agreement, the Provinces of Alberta, Saskatchewan and Manitoba shall pay to Canada their shares of approved expenditures made by Canada for the operations of the Board.
- (c) *On or before July 1st of each year, Canada shall prepare and submit to each of the provinces party to the Agreement, statements of claim respecting provincial shares of monies due Canada for financing the operations of the Board during the previous financial year. Statements of claim shall be certified by a senior official of Canada. Once every three years, commencing with fiscal 1981-82, these claims shall be audited and shall bear a Canada audit certificate. (Amended 1980)*

- (d) Within sixty (60) days after receipt of a claim by Canada, submitted as prescribed in Article 15(c), the Provinces of Alberta, Saskatchewan and Manitoba shall reimburse Canada for their shares of expenditures incurred during the previous financial year for the operations of the Board.

16. Annual Report

Within six (6) months after the end of the financial year, the Chairman shall submit to the Ministers the Annual Report of the Board. (Amended 1980)

17. Amendment of By-Laws

By-Laws may be enacted, amended or repealed by unanimous approval of the Board. "Notice of Motion" to enact, amend or repeal By-Laws must be served on Members at least sixty (60) days prior to a vote on such issue.

18. Rules and Procedures

The Board shall formulate and adopt "Rules and Procedures" governing the day-to-day affairs of the Board and the operations of the Secretariat. These "Rules and Procedures" may be amended, adopted or repealed in accordance with Article 6 of these By-Laws.

PART III

EXECUTIVE DIRECTOR

1. Functions

- (a) The Executive Director shall be the senior employee of the Secretariat; subject to the Board's direction, he shall be responsible for the technical and administrative activities of the Secretariat and the day-to-day management of the Board.
- (b) He shall record or cause to be recorded all votes and minutes of all proceedings in books to be kept for that purpose.
- (c) He shall give or cause to be given notice of all meetings of the Board.
- (d) He shall keep the Board informed at all times of matters pertinent or relevant to the programs and operations of the Board.
- (e) He shall have charge of all records of the Board, together with copies of all reports made by the Board and such other books or papers as the Board may direct.
- (f) He shall implement all orders and resolutions of the Board and perform any other duties that the Board may prescribe.

Approved at PPWB Meeting No. 5
- November 2nd, 1971

*Section 15(c) amended at
PPWB Meeting No. 23 - May 5, 1980.*

*Section 16 amended at
PPWB Meeting No. 24 - Nov. 3, 1980.*

RULES AND PROCEDURES

SECRETARIAT

The Prairie Provinces Water Board hereby adopts the following Rules and Procedures governing the operations of the Prairie Provinces Water Board Secretariat.

Financial Administration

1. The Executive Director is authorized to make disbursements of funds in conformity with the main items of expenditure allotted in the budget estimates approved by the Board, subject to those restrictions specified elsewhere in these Rules and Procedures.
2. The Executive Director shall prepare the annual program and budget estimates for the operations of the Prairie Provinces Water Board. Such estimates shall be submitted to the Chairman not later than the first day of July preceding the financial year to which they pertain.
3. Contracts with private consultant firms and individuals shall conform to accepted practices and procedures of the Federal Treasury Board.
4. A contract for services with a person or persons may be undertaken by the Executive Director providing that no such contract is made with a single person, a single firm of persons, or government agency exceeding \$5,000 without the approval of the Board.
5. Contracts not exceeding \$5,000 shall be executed on behalf of the Board under the signature of the Executive Director. Contracts exceeding \$5,000 shall be executed under the signature of the Chairman of the Board.
6. Payment of accounts will be made only after they have been approved by the Executive Director.

Establishment of Salaried Positions, Appointments and Administration of Salaries

7. The establishment of salaried positions in the Secretariat shall be approved by the Board.
8. The Board shall approve the duties of all positions in the Secretariat including those of Executor Director.
9. The classification and remuneration of salaried positions within the Secretariat shall be governed by the appropriate federal authority.
10. The financial and personnel administration of the Secretariat shall be carried out in accordance with federal government practices.
11. To facilitate the operations of the Secretariat, personnel and financial administrative support services shall be provided, at cost, by the Federal Department of the Environment.

Board Offices

12. The Executive Director is authorized to lease and maintain property within which to conduct Board affairs providing that terms of such leasing shall be sanctioned by the Board.
13. Costs for the operation of the Board offices shall include, but shall not necessarily be limited to, expenditures for the following items:
 - (a) Salaries and wages and related benefits of Board employees or personnel seconded to the Board offices, including removal expenses, both at the commencement and termination of the appointment, where applicable, and living expenses for seconded personnel where approved by the Board.

- (b) Field surveys and investigations including travel and living expenses when applicable, by personnel engaged in conducting studies or field investigations.
- (c) Rentals for office space and equipment and charges for utilities and related services for the operation of Board offices.
- (d) Purchases of furniture, and equipment not available on a rental basis.
- (e) Operating, maintenance and transportation expenses for equipment.
- (f) Contracts awarded by the Board including, where applicable, arbitration, settlements, legal fees and other matters, made in accordance with the provisions of the contract.
- (g) Settlement and legal fees arising out of property damaged or public liability made or incurred by an employee of the Secretariat or a party to the Agreement working for the Secretariat and engaged in the activities of the Board offices.
- (h) Other items required for conducting the work and for operations of the Board offices which have been approved by the Board.
- (c) Normal operating maintenance and transportation expenses for equipment where such expenses are not included in the rental rate.
- (d) All contracts as provided under the provisions of Article 12(b) of the By-Laws.
- (e) Other items required for conducting the work of the Board and approved by the Executive Director.

Board Members, Alternates and Advisory Committees

15. The costs incurred by Board Members and their Alternates in representing their respective governments at Board functions shall be paid for by the appropriate government. The salaries and travelling expenses of government officials appointed to represent those party to the Agreement on Committees established to advise the Board and/or the Executive Director shall be paid by the appropriate party.

Approved at PPWB Meeting No. 5
- November 2nd, 1971

Payment for Services Provided by Participating Government Agencies

14. Costs of participating government agencies for services, field investigations, planning studies, etc., specifically requested by the Board shall include the following items:
- (a) Salaries, wages, travel and living expenses for employees engaged in providing the service.
 - (b) Rental charges for equipment and operators.

MAP



