

PRAIRIE PROVINCES WATER BOARD

REPORT NO. 11

APPORTIONMENT OF THE WATER OF INTERPROVINCIAL STREAMS
BETWEEN THE
PROVINCES OF ALBERTA, MANITOBA AND SASKATCHEWAN

Prepared by: Apportionment Committee
Prairie Provinces Water Board
November, 1965

APPORTIONMENT COMMITTEE
PRAIRIE PROVINCES WATER BOARD

23 November 1965

Members,
Prairie Provinces Water Board.

Gentlemen:

In accordance with your instructions, contained in minute 28-09 and 29-12, the Apportionment Committee has studied methods of apportioning water of interprovincial streams between the Prairie Provinces, methods of determining natural flow and depletions, and administrative arrangements necessary to implement apportionment. The findings of the Committee are contained in this report.

As a result of the study the Apportionment Committee has agreed on the following recommendations:

1. Apportionment should be based on an equitable division of the flow between the provinces, taking into consideration all factors that have a bearing on the matter, rather than on the restricted concept of "most beneficial use."
2. Apportionment should be final and not subject to periodic review.
3. The apportionment agreement should deal with the ^{total} entire flow of the Saskatchewan-Nelson River System rather than with part of it.
4. Apportionment should be accomplished by a percentage division of the entire yearly flow rather than by allotting fixed quantities of water to each province.
5. The apportionment agreement should provide for the inclusion of groundwater supplies at a future date insofar as these are of an interprovincial nature.
6. The effect of storage reservoirs for interprovincial use, as may be built by mutual agreement, should be dealt with by negotiations at the time construction of such reservoirs is undertaken.
7. Hydrometric data required to implement the apportionment should be collected and compiled by the Water Resources Branch of the Department of Northern Affairs and National Resources.

The Committee decided not to make definite recommendations regarding the following fundamental questions:

1. What are the percentages to be used in the apportionment of flow between the provinces?
2. To what extent and in what manner should existing allocations be recognized in the agreement?
3. Should the apportionment formula be applied to the flow of the Saskatchewan-Nelson River System as a whole, or separately to the flow in each tributary crossing an inter-provincial boundary?
4. What method is to be used in computing natural flows and net depletions?
5. What body will be charged with the supervision of apportionment?
6. What body will be given the task of making the necessary streamflow balance computations?
7. What procedures shall be followed with regard to review of the agreement and dispute about its interpretation or administration?

The Committee felt that it was unable to deal with these and other important matters at this time.

Respectfully submitted,

MEMBERS OF THE APPORTIONMENT COMMITTEE
OF THE PRAIRIE PROVINCES WATER BOARD

R. D. May Chairman
(R. D. May)

A. G. Underhill for ALBERTA
(A. G. Underhill)

R. B. Godwin for SASKATCHEWAN
(R. B. Godwin)

N. Mudry for MANITOBA
(N. Mudry)

C. Booy Engineering Secretary,
(C. Booy) Prairie Provinces Water Board.

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APPORTIONMENT OF THE WATER OF INTERPROVINCIAL STREAMS
BETWEEN THE PROVINCES OF ALBERTA, MANITOBA AND SASKATCHEWAN

I.

INTRODUCTION

The Prairie Provinces Water Board has been studying the problems associated with allocating water of interprovincial streams since its establishment in 1948. During that time it has made recommendations regarding allocations on the basis of the needs of specific projects. This method of allocation was adopted since the Board had not reached a general policy regarding the division of the flow of interprovincial streams. The Board has become increasingly aware of the difficulties inherent in a continuation of project-by-project allocation. As a greater part of the flow is allocated, it becomes more and more difficult to reach agreement. Moreover, the method tends to involve the Board unduly in matters of provincial water administration. For this reason the Board established a committee, in the fall of 1963, to investigate and report on the methods by which apportionment of the flow of interprovincial streams by provinces rather than by projects could be achieved. This report contains the findings of that committee.

The scope of the study undertaken by the committee was limited by two practical considerations. On the one hand, it was felt that it would be premature to include detailed technical and administrative procedures concerning the implementation of apportionment. Such procedures could well be worked out by a technical committee once agreement on the main principles of apportionment is reached. On the other hand, it was recognized that the committee should not become involved in policy matters that will have to be negotiated at higher levels. Consequently, the committee has concentrated its efforts on the study of general methods and procedures applicable to the principle of apportionment, and to the administration of an apportionment agreement. It was resolved that definite recommendations would be presented only where the committee had reached agreement; otherwise the problems and possible solutions would be discussed without expressing preference.

The report deals with four main subjects:

- (a) the historical development leading to the need for apportionment;
- (b) the methods of apportionment;
- (c) the methods that may be used to determine the natural flow; and

- (d) administrative arrangements required to implement the apportionment.

Each subject is discussed in a separate chapter. A draft document for the apportionment of the waters of the Saskatchewan-Nelson River system between the three Prairie Provinces is included as an appendix. Also appended are the pertinent sections of the Alberta Water Resources Act, the Saskatchewan Water Rights Act and the Manitoba Water Rights Act, and a summary of all allocations and reservations presently in force.

II.

HISTORICAL DEVELOPMENT

The need for apportionment is best understood in relation to the past- and current-water-allocation problems of the Prairie Provinces. This chapter, therefore, begins with a brief historic outline of the administrative arrangements of water rights and allocations. A discussion of current-allocation problems follows. Finally, the pertinent decisions of the Prairie Provinces Water Board concerning the establishment of this committee and its terms of reference are listed.

1. HISTORY OF ADMINISTRATIVE ARRANGEMENTS

The Northwest Irrigation Act of 1894 provided legislation for the use of water in the territory which is now Alberta, Saskatchewan and Manitoba. The Act was based on the principle of priority in time. It made the ruling of the responsible minister final; his decision could not be appealed in the courts. Originally the Act defined only domestic use and irrigation use as distinguished from other purposes. In 1906, however, the Act was revised to provide for industrial uses. In addition, a section was added permitting the Governor-in-Council to make provision for the administration of the Act within the Provinces of Saskatchewan and Alberta (Section 53 of the Northwest Irrigation Act). This is probably the first mention of possible provincial participation in water administration and the formation of a prairie provinces water board.

In 1931 the water resources were transferred to the provinces. Each province adopted provincial statutes very similar to the Irrigation Act of Canada, recognizing all rights granted by the Federal Government prior to 1930. (Alberta Water Resources Act, Section 5 and 10; Saskatchewan Water Rights Act, Section 12; and Manitoba Water Rights Act, Section 9.)

The need for co-ordination of licensing procedures on interprovincial streams was soon felt. In December 1931 the Director of Water Resources in Alberta initiated correspondence suggesting a procedure whereby information on water-right applications would be exchanged between Saskatchewan and Alberta. This procedure was followed until early in 1938 when it was abandoned by mutual agreement. At that time the Director of the Saskatchewan Water Rights Division pointed out that in case of future problems the filing date of applications could presumably be used to establish priority.

Early in the 1930's the provinces felt that an improved form of co-ordination and co-operation was desirable in dealing with regional water problems. Consequently, several attempts were made at establishing a prairie provinces water board.

The idea of a regional water board was first suggested just prior to the transfer of the water resources to the provinces. In 1930 the Prairie Provinces actually signed an agreement for a Western Water Board. However, this agreement was not recognized by the Federal Government so that no board was formed at that time. After the transfer of water resources was effected, the Alberta Water Resources Act, the Saskatchewan Water Power Act, and the Manitoba Water Power Act did include a clause permitting the establishment of such a board. In 1937 the Saskatchewan Water Rights Act was amended to include a similar clause. In that year a new Water Board Agreement was proposed. Unanimity, however, could not be reached and for a while no further attempts were made to form a board.

In 1945 the Prairie Provinces Advisory Water Board was established. The Federal Government was not a party to the agreement by which this Board was formed. Early recommendations of the Board were that Federal participation was needed, but this was not immediately forthcoming. In February 1947 the Advisory Board made recommendations concerning the interprovincial aspects of the water requirements in the Saskatchewan-Nelson River Basin and the possible conflicts of interests. It also recommended the establishment of a Water Board or a Committee to prepare a basin plan. These recommendations formed the basis of the negotiations which in July 1948 resulted in the establishment of the Prairie Provinces Water Board.

The Prairie Provinces Water Board Agreement provided:

"11. Each of the parties hereto agrees that it will not within the limits of its jurisdiction construct or permit the construction of any project that will interfere with the allocation of waters resulting from a recommendation of the Board duly adopted pursuant to Section 5 hereof.

"12. Any water development project already constructed or to be constructed by any one of the parties hereto shall be so operated as to maintain as far as possible the allocation of water determined by the Board."

A number of final and tentative allocations were made under this agreement. In addition, the Board made a number of water reservations for projects under study. A list of all allocations and the reservations presently in force are shown in Appendix 3.

2. CURRENT ALLOCATION PROBLEMS

The dry years (1961 and 1962) indicated that the allocations for many Alberta irrigation projects were being exceeded. Consequently, Alberta requested a review of its allocations in 1962. A 1963 report on "Irrigation Water Use" prepared for the Prairie Provinces Water

Board confirmed that Alberta's allocations were indeed insufficient for its actual needs, and in 1964 the Province filed a formal request with the Prairie Provinces Water Board for increased allocations. The problems which arose from this request and other actions were instrumental in causing the Prairie Provinces Water Board to instigate a thorough review of its method of allocating water. The background of these problems are briefly outlined in this section.

Provincial Water Legislation sets out the principles and machinery for licensing all forms of water use. Provincial agencies check proposed plans and issue licenses for approved projects. The terms of the licenses are defined by provincial law and regulation. Provincial law also empowers the responsible minister to reduce or cancel with adequate compensation, any existing license when the water is required for a use which has superior precedence, thus allowing for changes in water use in accordance with the economic growth of the province.

The function of the Prairie Provinces Water Board is "to recommend the best use to be made of interprovincial waters in relation to associated resources in Manitoba, Saskatchewan and Alberta, and to recommend the allocation of water as between each such province of streams flowing from one province into another province" (P.P.W.B. Agreement).

It was originally not the intention of the Board to recommend the allocation of water to specific projects. The intent was rather to allocate or apportion water between provinces. Yet, all allocations, duly approved and ratified by orders-in-council, have thus far been made for specific projects.

In fairness to those who adopted the present allocation procedure three points should be noted. In the first place, the Board felt at its initial meeting that the water rights of existing projects should receive immediate consideration. Secondly, in the early years the Board found it necessary to consider the South Saskatchewan River Project application as such because construction seemed imminent. Thirdly, on the occasions mentioned above, the Board considered that it lacked data to make intelligent and well-considered recommendations on the apportionment of water between provinces.

However, the practice of allocating water by project rather than between provinces has caused serious problems. Fifteen years after allocations were made for certain irrigation projects in Alberta, this province finds that the present allocations are insufficient to meet their requirements. Under Alberta law adjustments can be made to correct this situation, but the existence of allocations complicates matters and places Alberta in a dilemma if lack of agreement in the Board unduly delays the requested change in allocations. In that event Alberta can either proceed with the necessary adjustments without further reference to the Board, or defer the adjustments until the Board has reached agreement on a change in allocations. The former

procedure would place Alberta in the embarrassing position of breaking the 1948 Water Board Agreement, while the latter procedure would result in the Prairie Provinces Water Board indirectly exerting unwarranted control over the licensing powers of the provinces.

In the context of these recent problems the Board reached the conclusion that allocation of water by provinces rather than by projects would be a better procedure.

3. DECISIONS OF THE BOARD

In November 1963, the Board considered the following recommendation made by its Irrigation Water Use Committee:

"That the Board undertake, at some future date, a study of the allocation of water by provinces instead of allocation by projects-----."

The following excerpts from the minutes of the November 7th, 1963 meeting summarizes the Board's decision on this matter:

"-----the Board agreed that the objective of allocation of water by provinces is consistent with the functions of the Board set out in the 1948 Agreement, and that steps be taken immediately to achieve this objective."

Subsequently, the Board established an Apportionment Committee with the following terms of reference:

"The Committee shall consider and report on:-

- (a) methods of apportioning the water of interprovincial streams between the Provinces of Alberta, Manitoba and Saskatchewan;
- (b) methods of determining natural flow, depletions and any other factors necessary for apportionment of the waters of the Saskatchewan-Nelson River System;
- (c) methods and administrative arrangements necessary to implement apportionment;
- (d) prepare a draft document for apportioning the waters of the Saskatchewan-Nelson River System between the three Prairie Provinces;
- (e) the Committee is to complete its assignment by November 1965."

The composition of the Committee was as follows:

R.D. May	Chairman
A.G. Underhill	Member for Alberta
R.B. Godwin	Member for Saskatchewan
N. Mudry	Member for Manitoba
E.F. Durrant [*]	Engineering Secretary of the Prairie Provinces Water Board

^{*} In August 1965 Mr. Durrant was replaced by C. Booy who succeeded Mr. Durrant as Engineering Secretary of the Prairie Provinces Water Board.

III.

APPORTIONMENT PRINCIPLES AND METHODS

A number of basic questions must be considered before any formula can be derived for the division of water between provinces.

1. Will the apportionment be based on the "most beneficial use" concept or will it be based on an "equitable division" of the available water?
2. Is the apportionment to be final or will it be subject to periodic review?
3. Will the total amount of water available be apportioned at this time or only part of the total?
4. Will apportionment be based on a percentage of the available flow or will it be on a lump-sum basis?
5. In what manner and to what extent will existing uses be recognized?
6. Should the apportionment deal with surface water only or should groundwater be included in the apportionment?
7. What provision should be made to account for the possible effect of storage reservoirs built for inter-provincial use?
8. How will the apportionment of the available water in a stream be divided among its various tributaries?

These questions will be discussed in sequence in this chapter. Following this, the various apportionment methods will be illustrated by means of a few hypothetical examples.

1. MOST BENEFICIAL USE OR EQUITABLE DIVISION

Apportionment may be based on the concept of "most beneficial use," or on the concept of "equitable division."

The "most beneficial use" of the water means the best use of the water for the general good of the people as a whole. It could be based on economic considerations only, or it could include a number of intangibles such as regional considerations, recreation potential, aesthetic values, etc. While on the surface this concept appears attractive, its suitability as a basis for apportionment must be seriously doubted. Firstly, it would be difficult if not impossible to

find a workable definition of beneficial use that would be acceptable to all. What would be considered "most beneficial" in one province may not be regarded as such in another province. Secondly, once an acceptable definition was found, an exhaustive study would be required to determine the potential uses for the whole drainage basin and to obtain a complete development plan. Such a study would be time consuming and costly. In itself it would not provide the answers to the apportionment problem but merely a basis for negotiations.

If no common definition of "most beneficial use" could be found, each province could be asked to present its own study of potential use, based on its own definition. It is probable, however, that each province would then present a case for a greater share of the available water than it could ever hope to receive. In fact, each province would probably make a case for the future utilization of the entire flow within its own boundaries. Other factors than the beneficial use to which the water could be put would thus have to enter into the picture, which leads to the second alternative: apportionment by equitable division.

Equitable division simply means the division of the water by some acceptable formula. Webster defines "equitable" as according to natural right or natural justice. To determine "natural right" it can be argued that "best use" along with other considerations such as location and opportunity should be taken into account. "Natural justice" implies a consideration of water laws, riparian rights, constitutional matters and equality in satisfying the aspirations of regional populations. In this context, the equitable-division approach can be much broader than the beneficial-use concept. Furthermore, the addition of other factors provides greater flexibility than is available with the restrictive-beneficial-use concept. With the equitable-division approach, the judgement of many sectors of the water community can be fully utilized in reaching an apportionment agreement. Each province would receive its share of the available water, which it could plan for and use as it sees fit. Each province, therefore, would continue to be the sole judge of what constitutes most beneficial use within its own boundaries. A further advantage of equitable division is that it would not penalize a slower developing province, since each province would retain its rights to its share pending full development.

It is the opinion of the committee that apportionment should be based on an equitable division of the water rather than on the concept of "most beneficial use," thus taking into account all factors that have a bearing on the matter.

2. FINAL APPORTIONMENT OR PERIODIC REVIEW

The next question to be considered is whether the apportionment should be final or subject to periodic review. To some extent this

question ties in with the preceding one on most beneficial use or equitable division.

Final apportionment does not eliminate the possibility of employing the "most-beneficial-use" concept in the original negotiations. It is, however, not really compatible with this concept because the relative values of different water uses will change and require a periodic review of the apportionment decision if the principle of "most beneficial use" is to be maintained in the future. Under equitable division a final apportionment would be more acceptable.

An advantage of periodic review is that it provides for consideration of changes in water-use concepts and allows adjustment in the light of changing economics and technology.

A principal disadvantage is that making any change in apportionment could prove to be extremely difficult. Any water user, whether an individual, a company or a province, having invested in a water use, would be most reluctant to subsequently relinquish his right to the water in favour of another use, even though that is considered to be more beneficial.

An advantage of final apportionment is that it provides each province with a definite basis for planning its water and associated resources. There would be no reason for a premature acceleration of project development in order to establish a right to a greater part of this available supply. While slower development in some provinces would result temporarily in local surpluses, each province would eventually use its full share. The result would be an equitable development in each province. A further advantage of final apportionment is that, once agreement is reached, prolonged and perhaps continual negotiations at future dates will be avoided.

An obvious disadvantage of final apportionment is that a province, having agreed to apportionment on the basis of today's knowledge and projected needs, would find it much more difficult to present a case for a greater share of the supply at some future time, no matter how reasonable its request would seem. In this regard it should be mentioned that, without necessarily adopting the principle of periodic review, the agreement could contain a provision allowing a higher priority use in one province to acquire water rights from a lower priority use in another province by compensation.

The committee is of the opinion that the advantages of final apportionment outweigh the disadvantages and feels that this principle should be adopted.

3. TOTAL OR PARTIAL APPORTIONMENT

The question must be answered whether the entire flow of the Saskatchewan-Nelson River system would be apportioned at this time or only part of it. Partial apportionment could conceivably include the division of the entire flow of some of the interprovincial tributaries.

Partial apportionment best allows the beneficial-use concept to be employed at the time of the division, since a minimum of projection into the future would be needed. With total apportionment the beneficial-use concept would require an exhaustive study of potential uses prior to the negotiation of an apportionment. On the other hand, total apportionment provides each province with a knowledge of its ultimate share of the available supply, thus enabling it to better plan the development of its resources.

Partial apportionment is to some extent similar to the procedure now used by the Prairie Provinces Water Board in that sufficient water is allocated only to meet immediate needs. This system could conceivably induce individual provinces to make premature capital expenditures aimed at ensuring larger partial apportionments. In addition, the system requires repeated negotiations to reach agreement between all parties involved.

It is the opinion of the committee that of the two methods, total apportionment would be preferable.

4. PERCENTAGE OR LUMP-SUM APPORTIONMENT

The apportionment agreement may provide that each province receives a certain percentage of the flow or it may assign to each province a fixed amount of water, a "lump sum." The present system of allocating definite amounts of water to specific projects is basically a lump-sum apportionment.

The variability of the river flow creates difficult problems for any lump-sum apportionment. In dry years, a system of priorities, some form of rationing or both would be needed to provide for inevitable shortages. In years of above average flow the question would arise as to who has the right to store or use the surplus. These problems are reduced when adequate storage is available as may be the case in the future.

Percentage apportionment has the basic advantage that both shortages and surpluses are shared and that the entire flow is accounted for. This makes the system easier to administer. In addition, it would guarantee that riparian flows will be available in the river at

all times. A complication of percentage apportionment is that the total annual flow is not known till the end of the year. Each province must thus be prepared to take care of shortages and surpluses as they happen and must make the necessary adjustments.

A combination of percentage and lump-sum apportionment could be adopted if existing allocations would require permanent protection. In that case a lump-sum apportionment may cover the existing rights, while the remainder of the flow would be divided on a percentage basis.

The committee is of the opinion that, in principle, apportionment on a percentage basis is to be preferred over lump-sum apportionment.

5. EXISTING USES AND RIGHTS

Existing water uses have been recognized by the Prairie Provinces Water Board and by the provinces concerned. The question now arises whether or not these rights are to be incorporated in an apportionment agreement and if they are to be incorporated, to what extent and in what manner this should be done. Existing allocations could conceivably be perpetuated by means of a corresponding lump-sum apportionment. On the other hand, existing rights could be given appropriate consideration when deciding on the actual percentages in an apportionment agreement.

The committee has not reached any conclusion in the matter of existing rights.

6. INCLUSION OF GROUNDWATER

The apportionment agreement may deal with surface water only or it may also deal with groundwater supplies insofar as they are of an interprovincial nature. At the present time the inclusion of groundwater does not seem to be urgent and lack of information makes a detailed consideration impractical. However, this factor may become of considerable importance in the future. It is the opinion of the committee that the apportionment agreement should provide for the inclusion of groundwater supplies at a future date. This should not affect the method of apportionment.

7. STORAGE RESERVOIRS FOR INTERPROVINCIAL USE

At a future date storage reservoirs for interprovincial use may be built by mutual agreement. Such reservoirs could materially affect the apportionment by raising the amount of water available on a firm basis. This problem should probably be left to be dealt with in future negotiations which doubtless will be needed whenever the building of co-operative storage is undertaken.

8. TRIBUTARY FLOW

An important question is whether the apportionment formula is to be applied to the flow in the Saskatchewan-Nelson River system as a whole, or to the flow in each tributary that crosses an interprovincial boundary. A discussion of this problem would involve details of the apportionment which are not being considered in this report. It should be mentioned though, that a basin formula as opposed to tributary formulae would require some safeguards to ensure acceptable minimum flows in each tributary.

9. EXAMPLES OF APPORTIONMENT

A number of hypothetical examples of different apportionment methods have been prepared for illustration. It must be emphasized that the figures and percentages shown are arbitrary and do not in any way reflect acceptance by the committee.

For the sake of simplicity it is assumed that the apportionment will be based on the total flow of all interprovincial tributaries measured at the interprovincial boundaries rather than on the flow of each tributary separately. No attempt has been made in these examples to devise rules for safeguarding an acceptable level of flow in the individual tributaries.

It will be recalled that apportionment may be made on a percentage basis, on a lump-sum basis or on a combination of lump sum and percentage. These three methods are illustrated in the examples given. However, the combination of lump-sum and percentage distribution will be shown as a percentage apportionment with a firm reservation for existing rights in the form of a lump sum.

Three levels of flow will be used in the sample computations to illustrate for a dry, an average, and a wet year what amounts of flow would result from apportionment. The annual flows that are exceeded 90%, 50% and 10% of the time were chosen for this purpose. Table 1 lists the natural flows of the interprovincial tributaries corresponding to these frequencies. The data were obtained from frequency curves of reconstructed natural flows for the period 1911 to 1947.

In the examples of percentage apportionment two percentage divisions have been used. The first assigns to each province 33 1/3% of the total natural flow of the interprovincial tributaries measured at the Saskatchewan-Manitoba boundary. The second gives Alberta 50% of the natural flow at the Alberta-Saskatchewan boundary, while Saskatchewan and Manitoba each receive 50% of the remaining flow as measured at the Saskatchewan-Manitoba boundary. These percentages are used for illustration only.

Examples of percentage apportionment are shown with and without including a lump-sum reservation for existing rights. For the purpose of the study the rights were assumed to consist of 2,100,000 acre-feet for the existing irrigation projects in Alberta, 1,000,000 acre-feet for the Saskatchewan River Project, and 700,000 acre-feet for the Wm. Pearce Project.

Table 2 shows the distribution of the water on the basis of the 33 1/3% split, as outlined above, (a) with no lump-sum reservation for existing rights; (b) with a lump-sum reservation of 2,100,000 acre-feet for Alberta, and 1,000,000 acre-feet for Saskatchewan; and (c) with a lump-sum reservation of 2,800,000 acre-feet for Alberta, and 1,000,000 acre-feet for Saskatchewan. Table 3 shows the distribution on the basis of the 50% split outlined above, for the same lump-sum reservations.

Examples of a lump-sum apportionment have been based on the following arbitrary assumption. The natural annual flow at the Saskatchewan-Manitoba boundary that is exceeded in 75% of the total number of years on record is divided equally between the provinces. Each portion then constitutes the lump-sum apportionment to each province. Computations have been performed first with no provision for existing rights, secondly by subtracting an amount of 2,100,000 acre-feet for Alberta, and 1,000,000 for Saskatchewan prior to dividing the flow into three equal parts; and thirdly, by subtracting an additional 700,000 acre-feet for the Wm. Pearce Project in Alberta prior to the division. Table 4 shows the distribution of flow in accordance with the lump-sum apportionments. Also shown are the resulting excesses and shortages for the three levels of flow used.

TABLE 1PRELIMINARY ESTIMATES OF NATURAL FLOWS

	Flow exceeded 90% of time	Flow exceeded 50% of time	Flow exceeded 10% of time
	Ac.Ft.	Ac.Ft.	Ac.Ft.
<u>AT ALBERTA-SASKATCHEWAN BOUNDARY</u>			
South Saskatchewan River	3,600,000	5,500,000	8,200,000
Red Deer River (Alberta)	900,000	1,750,000	3,600,000
South Saskatchewan (including Red Deer)	4,500,000	7,250,000	11,800,000
North Saskatchewan River	4,500,000	6,050,000	7,700,000
Battle River & Other Tributaries	200,000	300,000	500,000
Total Flow of Interprovincial Tributaries	9,200,000	13,600,000	20,000,000
<u>AT SASKATCHEWAN-MANITOBA BOUNDARY</u>			
Saskatchewan River	11,900,000	17,800,000	26,000,000
Assiniboine River	100,000	170,000	450,000
Qu'Appelle River	60,000	100,000	210,000
Red Deer River (Saskatchewan)	190,000	350,000	700,000
Swan River	120,000	180,000	310,000
Misc. Tributaries	130,000	200,000	330,000
Total Flow of Interprovincial Tributaries	12,500,000	18,800,000	28,000,000

NOTE:

The figures in this Table are preliminary estimates only and are subject to revision.

TABLE 2

33 1/3% PERCENTAGE DIVISION

	<u>90% of time</u> Ac.Ft.	<u>50% of time</u> Ac.Ft.	<u>10% of time</u> Ac.Ft.
Natural Flow at Saskatchewan- Manitoba Boundary	12,500,000	18,800,000	28,000,000
(a) <u>NO LUMP-SUM RESERVATION FOR EXISTING RIGHTS</u>			
To Alberta	4,200,000 33 1/3%	6,300,000 33 1/3%	9,300,000 33 1/3%
To Saskatchewan	4,200,000 33 1/3%	6,300,000 33 1/3%	9,300,000 33 1/3%
To Manitoba	4,200,000 33 1/3%	6,300,000 33 1/3%	9,300,000 33 1/3%
(b) <u>LUMP-SUM RESERVATION OF 3,100,000 AC.FT. FOR EXISTING RIGHTS[*]</u>			
To Alberta	5,200,000 41.8%	7,300,000 39.0%	10,400,000 37.1%
To Saskatchewan	4,100,000 33.1%	6,200,000 33.2%	9,300,000 33.2%
To Manitoba	3,100,000 25.1%	5,200,000 27.8%	8,300,000 29.7%
(c) <u>LUMP-SUM RESERVATION OF 3,800,000 AC.FT. FOR EXISTING RIGHTS AND RESERVATIONS^{**}</u>			
To Alberta	5,700,000 45.6%	7,800,000 41.5%	10,900,000 38.9%
To Saskatchewan	3,900,000 31.2%	6,000,000 31.9%	9,100,000 32.5%
To Manitoba	2,900,000 23.2%	5,000,000 26.6%	8,100,000 28.9%

^{*} For Alberta 2,100,000 Ac.Ft.
For Saskatchewan 1,000,000 Ac.Ft.

^{**} For Alberta 2,800,000 Ac.Ft.
For Saskatchewan 1,000,000 Ac.Ft.

TABLE 3

50-50 DIVISION

	<u>90% of time</u> Ac.Ft.		<u>50% of time</u> Ac.Ft.		<u>10% of time</u> Ac.Ft.
Natural Flow at Alberta- Saskatchewan Bdy.	9,200,000		13,600,000		20,000,000
Natural Flow at Saskatchewan- Manitoba Bdy.	12,500,000		18,800,000		28,000,000
(a) <u>NO LUMP-SUM RESERVATION FOR EXISTING RIGHTS</u>					
To Alberta	4,600,000	36.8%	6,800,000	36.2%	10,000,000 35.8%
To Saskatchewan	4,000,000	31.6%	6,000,000	31.9%	9,000,000 32.1%
To Manitoba	4,000,000	31.6%	6,000,000	31.9%	9,000,000 32.1%
(b) <u>LUMP-SUM RESERVATION OF 3,100,000 AC.FT. FOR EXISTING RIGHTS*</u>					
To Alberta	5,600,000	45.2%	7,900,000	41.8%	11,000,000 39.5%
To Saskatchewan	4,000,000	31.8%	6,000,000	31.8%	9,000,000 32.0%
To Manitoba	3,000,000	23.8%	5,000,000	26.4%	8,000,000 28.5%
(c) <u>LUMP-SUM RESERVATION OF 3,800,000 AC.FT. FOR EXISTING RIGHTS AND RESERVATIONS**</u>					
To Alberta	6,000,000	48.0%	8,200,000	43.6%	11,400,000 40.7%
To Saskatchewan	3,800,000	30.4%	5,800,000	30.9%	8,800,000 31.4%
To Manitoba	2,800,000	22.4%	4,800,000	25.5%	7,800,000 27.8%

* For Alberta 2,100,000 Ac.Ft.
For Saskatchewan 1,000,000 Ac.Ft.

** For Alberta 2,800,000 Ac.Ft.
For Saskatchewan 1,000,000 Ac.Ft.

TABLE 4

LUMP-SUM APPORTIONMENT

based on 1/3-1/3-1/3 split at 75° Frequency (15,300,000 Ac.Ft.)

	<u>90% of time</u> Ac.Ft.		<u>50% of time</u> Ac.Ft.		<u>10% of time</u> Ac.Ft.
Natural Flow at Saskatchewan- Manitoba Bdy.	12,500,000		18,800,000		28,000,000
<u>(a) NO PRIOR RESERVATION FOR EXISTING RIGHTS</u>					
To Alberta	4,200,000	33.3%	5,100,000	27.1%	5,100,000 18.2%
To Saskatchewan	4,200,000	33.3%	5,100,000	27.1%	5,100,000 18.2%
To Manitoba	<u>4,200,000</u>	33.3%	<u>5,100,000</u>	27.1%	<u>5,100,000</u> 18.2%
	12,600,000		15,300,000		15,300,000
SURPLUS	-2,700,000	-21.4%	3,500,000	18.7%	12,700,000 45.4%
<u>(b) PRIOR RESERVATION OF 3,100,000 AC.FT. FOR EXISTING RIGHTS*</u>					
To Alberta	5,300,000	41.8%	6,200,000	33.0%	6,200,000 22.1%
To Saskatchewan	4,150,000	33.0%	5,050,000	26.8%	5,050,000 18.0%
To Manitoba	<u>3,150,000</u>	25.0%	<u>4,050,000</u>	21.6%	<u>4,050,000</u> 14.5%
	12,600,000		15,300,000		15,300,000
SURPLUS	-2,700,000	-21.4%	3,500,000	18.7%	12,700,000 45.4%
<u>(c) PRIOR RESERVATION OF 3,800,000 AC.FT. FOR EXISTING RIGHTS AND RESERVATIONS**</u>					
To Alberta	5,700,000	45.6%	6,700,000	35.6%	6,700,000 23.9%
To Saskatchewan	3,950,000	31.2%	4,800,000	25.6%	4,800,000 17.7%
To Manitoba	<u>2,950,000</u>	23.2%	<u>3,800,000</u>	20.1%	<u>3,800,000</u> 13.6%
	12,600,000		15,300,000		15,300,000
SURPLUS	-2,700,000	-21.4%	3,500,000	18.7%	12,700,000 45.4%
* For Alberta	2,100,000 Ac.Ft.				
For Saskatchewan	1,000,000 Ac.Ft.				
** For Alberta	2,800,000 Ac.Ft.				
For Saskatchewan	1,000,000 Ac.Ft.				

IV.

METHODS OF DETERMINING NATURAL FLOW AND DEPLETIONS

Apportionment must be based on the natural river flow, which is the flow as it would have been if no works had been constructed for either consumptive or non-consumptive purposes. This presents the problem of reconstructing the natural flow from streamflow measurements and computations of the net depletions.

At the present time the natural flow is practically equal to the recorded flow in the North Saskatchewan River at the Alberta-Saskatchewan boundary and at the Forks. This is also true for the Battle River at the Alberta-Saskatchewan boundary. The recorded flow in the Red Deer River at this boundary was computed to be approximately 8% greater than the natural flow in the period 1960-1964 due to the return flow of Bow River water from the Eastern and Western Irrigation Districts. In the South Saskatchewan River at the Alberta-Saskatchewan boundary the natural flow was found to be 18% more than the recorded flow in that same period. Below Red Deer Forks this percentage drops to 16% and at The Pas it is only 8%. Increased irrigation developments will gradually increase the difference between the natural and the recorded flow.

Four methods of reconstructing the natural flow have been studied. These are:

1. The stream depletion method
2. The project depletion method
3. The inflow-outflow method
4. The consumptive use method

The methods will be described in the first four sections of this chapter. The fifth section contains a few general comments on the methods.

1. STREAM DEPLETION METHOD

The reconstruction of the natural flow by means of the stream depletion method is accomplished by:

- (a) measuring all main stem and tributary flow above a diversion;
- (b) measuring the river flow at a point downstream of the surface or sub-surface return flow;
- (c) estimating the natural runoff of that part of the drainage basin which is contributing to the flow measured under (b) but not to the flow measured under (a).

Subtracting the figures found under (a) and (c) from the measurement under (b) gives the net depletion for all projects in that particular reach of the river.

The principal difficulty with this method lies in the determination of the natural runoff under (c). It is believed that the best approach would be the establishment of a number of index stations in various areas of the drainage basin that are unaffected by irrigation. From such index stations figures for the annual runoff per unit area may be obtained.

A fairly good network is presently available for the data required under (a) and (b). Index stations for local runoff would have to be established. It may sometimes be difficult to find a suitable watershed that is not affected by irrigation use.

2. PROJECT DEPLETION METHOD

With the project depletion method the net depletion for each project is based on the difference between the gross diversion and the measured or estimated return flow to the river.

For each project, that is, each operational unit using or storing water, the gross diversion is measured at the intake. To this is added the natural runoff from the area. Accretions from or losses to groundwater, changes in storage and the evaporation from reservoirs are all taken into account. Subtraction of the surface and sub-surface return flow then results in the net depletion.

Principal difficulties with this method are the determination of the local natural runoff, the accretions or losses to groundwater, and the sub-surface return flow. The other required data are presently available or can be obtained without difficulty.

Index stations can probably be used to estimate the natural runoff and the sub-surface portion of the return flow within the accuracy required.

3. INFLOW-OUTFLOW METHOD

The inflow-outflow method is an indirect method of measuring the net depletions. All main stem tributaries are measured above points of diversion and a correlation is determined between the sum of these "rim" station flows and the natural flow in the river at the inter-provincial boundary. This correlation is then used to estimate the natural flow at the boundary from the natural flows at the rim stations. The net depletion in the watershed is the difference between the estimated natural flow at the boundary and the recorded flow.

This method is very simple and straightforward. It is as yet uncertain that acceptable accuracy can be obtained, particularly in years of below and above average precipitation in the lower reaches of the basin.

4. CONSUMPTIVE USE METHOD

This method of determining net depletions is based on the fact that the water consumed by plants, plus the evaporation from adjacent land and water surfaces, depends primarily on the type of crop and the climatic conditions. Empirical formulae can thus be prepared from which the total plant consumptive use for each type of crop is obtained for a given set of climatic data. To this is added the evaporation losses from conveyance channels and reservoirs to determine total irrigation use.

Once the consumptive use is known for all projects, the natural flow at the boundary can be determined as the sum of the recorded flow and the sum of the consumptive uses.

Considerably more information will be needed before a proper assessment of this method can be made.

5. COMMENTS ON THE METHODS

The project depletion method and the consumptive use method yield depletion figures for each project, whereas the stream depletion method and the inflow-outflow method give the total depletions within a river reach or a watershed. There is an administrative advantage in obtaining depletion figures for each project. The project depletion method has the additional advantage that data become available from which the efficiency of the various irrigation areas can be analyzed and compared.

From the viewpoint of simplicity and number of gauging stations required the inflow-outflow method ranks first. Only river flows at the rim stations would be required. The stream depletion method is

the next. The consumptive use method does not require an elaborate hydrometric network, but it does require the collection and processing of a mass of other data to estimate the plant consumptive use. The project depletion method requires a rather dense network of hydro-meteorological stations and reliable estimates of sub-surface return flows and other groundwater flows.

During 1965 a study has been in progress in the Eastern Irrigation District of Alberta using an intensified basic data collection network. All surface return flow has been measured, groundwater wells have been observed, and natural runoff gauging stations and precipitation gauges have been added to the network in operation. Other data such as temperature, evaporation and humidity observations are available along with wind speed data. The E.I.D. maintains a crop census so that at the end of the season both the project depletion method and the consumptive use concept can be used to estimate the sub-surface flow portion of the total return flow figure. This study should also provide some indication of the magnitude and the density of the hydrometric network required for the whole river system.

6. RECOMMENDATION

Additional field data, studies and investigation will be required before a recommendation can be made with respect to the most acceptable method of computing the natural flow of the Saskatchewan-Nelson River system. At the present time, without additional investigations, the only feasible method would seem to be the project depletion method with assumed percentages for return flow.

V.

ADMINISTRATIVE ARRANGEMENTS

This chapter deals with the administrative arrangements necessary to implement the apportionment. These arrangements will form part of the agreement and must cover four general areas.

Firstly, a supervisory board must be appointed to administer the agreement. Secondly, an agency must be made responsible for the collection of all required basic data. Thirdly, a body must be given the task of making the necessary streamflow-balance computations. Fourthly, administrative machinery must be provided to deal with disputes over the apportionment.

The following sections of this chapter will deal with these four points successively.

1. THE SUPERVISORY BOARD

The signing of an apportionment agreement is the first step in making an apportionment operational. This step must be followed by the implementation of the apportionment, which requires interpretation of the apportionment formula, compilation of flow figures and other basic data, computation of natural flows and streamflow balances, and reporting to the governments involved. While the work of collecting data and performing the actual computations could be organized in a number of different ways, as will be discussed in the following sections, a supervisory board will be needed in any case to administer the agreement. The first question arising in connection with this board is its authority.

Some interstate and international water compacts make specific provision for the establishment of a board whose function is not only to compile data, compute water balances and report to governments, but also to issue orders aimed at ensuring that waters are indeed apportioned in accordance with the agreement. The water laws of Saskatchewan and Manitoba permit the establishment of boards with "jurisdiction to regulate and control" interprovincial streams. Alberta law, however, permits only the establishment of a board to "advise on the control and use" of interprovincial streams (see Appendix 2). Thus, under existing legislation a board could only have advisory powers. It could report to the provinces on apportionment and recommend whatever action is required to carry out the division of flow. It would be up to each province to enforce the apportionment in its territory.

The Prairie Provinces Water Board Agreement provides that the Water Board advise the governments on matters concerning the use and the allocation of interprovincial waters. The Water Board thus has

the required authority to assume the responsibility for the operation of an apportionment agreement to the full extent allowed by existing provincial legislation. Assuming no change in provincial legislation, it would seem logical to assign the task of administering the agreement to the Prairie Provinces Water Board.

Under the Prairie Provinces Water Board Agreement each province has undertaken to operate its projects in accordance with the allocations in force. After the signing of an apportionment agreement, each province would presumably take whatever action is required to maintain the apportionment when advised to do so by the Board. The Board, in turn, would base its advice to the provinces on the data and computations available to it. This arrangement has the advantage that existing agreements and established institutions could be utilized.

New legislation would be required if it were desired to grant the supervisory board authority to issue direct orders aimed at ensuring compliance with the apportionment agreement. Specifically this would require an amendment of Section 77 of the Alberta Water Resources Act mentioned above. The wording would have to be changed to conform with the Saskatchewan and Manitoba Acts.

One would expect a natural reluctance on the part of the provinces to grant powers to a supervisory board that would detract from their individual control over water resources, even though each province would be represented on the board.

In addition, it is unlikely that the additional authority given to the supervisory board by new legislation would make the administration of the agreement more effective, since the board would still depend on provincial authorities for the execution of any instructions regarding the apportionment. The implementation of the apportionment agreement would to the same degree be contingent upon the voluntary co-operation received from the provinces concerned. A procedure could perhaps be found whereby disputes concerning the orders issued by the board would be resolved. However, it is rather doubtful that the board itself would reach agreement to issue such orders if it were faced with strong opposition from one of the participating provinces.

2. HYDROMETRIC DATA

Hydrometric measurements of streamflows and diversions form the basis of all apportionment computations. Such data are now compiled by the Water Resources Branch of the Department of Northern Affairs and National Resources.

The committee recommends that the Water Resources Branch be the agency responsible for collecting and publishing all hydrometric data required for the implementation of apportionment.

3. ARRANGEMENTS FOR COMPUTATIONS

All decisions and advice of the supervisory board regarding apportionment must be based on computations of natural flows and diversions, which in turn are based on the hydrometric data to be supplied by the Water Resources Branch.

Such computations must be made in accordance with procedures described in the agreement. The procedures should be specific so as to avoid differences of opinion when water balances are computed. It is possible that in the future the prescribed method of computing natural flows would require revision because of improved techniques and advances in technology. Any change in method, however, should require the consent of the three provinces.

The performance of the actual computations may be arranged in a number of ways. Three possibilities have been considered here. The first arrangement requires a separate computations committee in which each of the parties to the agreement is represented. The second delegates the task of making the computations to the Water Resources Branch of the Department of Northern Affairs and National Resources. With the third arrangement the secretariat of the supervisory board performs the computations.

With each of the three arrangements, the natural flows, the diversions, and the depletions are to be computed in accordance with the apportionment agreement. On specified dates, or whenever necessary, the supervisory board would be presented with a summary of the computations and possibly a recommendation as to how streamflow balance should be maintained or achieved. The board then would take appropriate action within its authority and terms of reference.

The best arrangement depends to some extent on the amount of work and the nature of the work involved. The performance of strictly routine computations, which could possibly be done by data-processing equipment, would probably not warrant a fulltime organization. Either the secretariat of the supervisory board or the Water Resources Branch could be made responsible for such computations. If, on the other hand, the regular work should prove to be very extensive, then a separate committee or an adequately enlarged secretariat might be more suitable. In the event that the Prairie Provinces Water Board would be the supervisory body, it might then be desirable to have a jointly-financed secretariat responsible only to the supervisory board. This arrangement would require amendments to the 1948 Prairie Provinces Water Board Agreement.

The same arrangements for making the necessary computations could be followed if new legislation would be enacted, creating a body having the authority to control and regulate flows of interprovincial streams.

4. REVIEW OF THE AGREEMENT AND SETTLEMENT OF DISPUTES

The apportionment agreement may, or may not, include a clause permitting or specifying periodic review and revision where necessary. The agency responsible for making the review and the procedures to be observed should then be specified. The agreement could assign these review responsibilities to the Prairie Provinces Water Board without change in the 1948 Agreement or in existing provincial legislation.

The apportionment agreement should include a clause on revision or termination of the agreement, specifying concurrence of the signatory provinces and continuation of established rights.

Administrative arrangements must also be made for resolving disputes which do not involve a change in the apportionment agreement. Such disputes could pertain to a difference in the interpretation of the agreement, to the actual water balance maintained, or to the administration of the apportionment.

Presumably such disputes would first be dealt with in the supervisory board. If no agreement could be reached within a specified period, for instance three months, the matter could be referred to a court. The Exchequer Court of Canada would logically deal with such problems.

Alternatively, provision could be made for the settlement of disputes without recourse to court action by the appointment of an independent "Board of Arbitration," acceptable to all parties involved. If this Board of Arbitration would be unable to reach a decision acceptable to the provinces within the specified time limit, the matter would have to be referred to a court of competent jurisdiction. However, the intermediate step of referring the dispute to a Board of Arbitration might prove a desirable means of finding a common meeting ground between provinces who would doubtless be reluctant to let their difference become a public legal battle in the courts.

APPENDIX 1

SASKATCHEWAN-NELSON RIVER SYSTEM

APPORTIONMENT AGREEMENT

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SASKATCHEWAN-NELSON RIVER SYSTEM

APPORTIONMENT AGREEMENT

THIS AGREEMENT made the _____ day of _____,
1965.

BETWEEN:

THE GOVERNMENT OF CANADA,

and

THE GOVERNMENT OF ALBERTA,

and

THE GOVERNMENT OF SASKATCHEWAN,

and

THE GOVERNMENT OF MANITOBA.

ARTICLE ONE -- PURPOSE OF THE AGREEMENT

The purpose of this agreement is to provide for the equitable division and apportionment of the use of the waters of the Saskatchewan-Nelson River system amongst the provinces of Alberta, Saskatchewan and Manitoba.

ARTICLE TWO -- DEFINITION OF TERMS

The definition of terms as used in this agreement are as follows:

- (a) Saskatchewan-Nelson River system - all that portion of the Saskatchewan-Nelson River system which is within the boundaries of the Provinces of Alberta, Saskatchewan and Manitoba.
- (b) Saskatchewan-Nelson basin - all the drainage area of the Saskatchewan-Nelson River system which is in or tributary to the Provinces of Alberta, Saskatchewan and Manitoba.
- (c) Natural flow means the flow of any stream as it would have been if no works had been constructed for either consumptive or non-consumptive purposes.

(NOTE: Additional definitions may be required depending on the wording of the articles that follow.)

ARTICLE THREE -- SUPERVISION OF APPORTIONMENT

(NOTE: This article cannot be written at the present time since the decision as to the body charged with this responsibility of supervising the apportionment will be made during the course of negotiations preceding the signing of this agreement. However, the article should cover the following points.

- (a) Details as to the supervisory body and its staff including cost-sharing arrangements between the signatories.
- (b) Purpose, function, duties and responsibilities of the supervisory body.
- (c) Details as to the agency responsible for the collection of the required hydrometric data.

- (d) The method of computing the natural flow at the various points.
- (e) The method of calculating the apportioned flows by means of the apportionment formula agreed upon.
- (f) The method by which shortages or surpluses will be made known to the provinces.
- (g) The action to be taken if a province fails to comply with the terms of this agreement.)

ARTICLE FOUR -- APPORTIONMENT FORMULA

(NOTE: This article cannot be written until agreement has been reached on a formula for apportioning the water.)

ARTICLE FIVE -- RECOGNITION OF EXISTING WATER RIGHTS AND TREATIES

(NOTE: This article cannot be written until agreement has been reached on the matter of recognition of existing rights. However, the article should deal with existing water rights and licenses issued and in good standing, and shall also state that the agreement shall not affect the obligations of Canada with respect to the International Treaty of 1909 for the use of water.)

ARTICLE SIX -- THE RIGHT OF A PROVINCE TO USE ITS APPORTIONED WATER IN THE MANNER IT DEEMS BEST

The provisions of this agreement shall in no way affect the rights of each province to develop, improve, utilize, regulate and control the waters within its boundaries apportioned to it under this agreement.

The failure of any province to use all or any part of the water apportioned to it under the terms of this agreement shall not constitute forfeiture or abandonment of the right to such use.

No water from the Saskatchewan-Nelson River system shall be diverted outside the boundaries of the provinces signatory to this agreement.

No signatory province may give, grant or dispose of, to another one of the signatory provinces or to any holder of authorization therefrom, any water apportioned under the provisions of this agreement, except by Act of the Legislature in that province and then only with the consent of the two other signatory provinces; but nothing herein contained shall be construed as preventing or prohibiting the joint exercise by or under authority of any two signatory provinces of the rights conferred by this agreement.

ARTICLE SEVEN -- CONCERNING SPECIAL AGREEMENTS

- (a) The governments concerned shall conclude such special agreements as may be necessary to control, apportion and manage any groundwater resources of the Saskatchewan-Nelson Basin which may be of an inter-provincial nature.
- (b) Inasmuch as each province requires clean pure water, each province agrees to take such steps as are necessary to preserve the quality of the water and prevent it reaching the downstream provinces in a polluted state. In this regard the provinces concerned shall conclude such special agreements as may be necessary to insure that the waters of the Saskatchewan-Nelson River system continue to flow in a sufficiently pure state.
- (c) The governments concerned may enter into special agreements for surveys, planning, cost sharing, financing, construction and operation of such

inter-basin diversions of benefit to more than one province. Any water imported into the natural basin of the Saskatchewan-Nelson River system shall be considered as additional water to which this agreement does not apply.

ARTICLE EIGHT -- CLAIMS OR CONTROVERSIES

In the event of a claim or controversy arising between two or more of the signatory provinces which cannot be settled by the body supervising the apportionment agreement, the claim shall be resolved in a court of competent jurisdiction.

In the event that part of this agreement is ruled to be contrary to the rights of one province the remainder of the agreement shall still be in effect.

**ARTICLE NINE -- CONTINUATION OF RIGHTS SHOULD THE AGREEMENT
BE TERMINATED**

This agreement may be terminated at any time by concurrent legislative action of all the signatory provinces. In the event of the termination of this agreement, all rights and obligations which may have become established or vested under its provisions shall remain and continue unimpaired. Such termination shall be subject to such terms and conditions as may be agreed to by the signatory provinces.

ARTICLE TEN -- INSTITUTION OF PROCEEDINGS

Nothing in this agreement shall be construed to limit or prevent any province from instituting or maintaining any action or

proceeding, legal or equitable, for the protection of any right under this agreement or the enforcement of its provisions.

ARTICLE ELEVEN -- RECONSIDERATION AND RENEGOTIATION

This agreement is subject to renegotiation at the request of any two signatory provinces.

Any changes proposed to the agreement must receive unanimous agreement from all the signatory parties before such change will become effective.

ARTICLE TWELVE -- DATE AGREEMENT BECOMES EFFECTIVE

This agreement shall become binding and obligatory when it shall have been approved by the Legislatures of each of the signatory provinces and the Government of Canada.

IN WITNESS THEREOF, the Governments have signed this agreement in a single original, which shall be deposited in the Archives of the Government of Canada, and, of which a duly certified copy shall be forwarded to the Premier of each of the signatory provinces, this _____ day of _____, in the year of our Lord, one thousand nine hundred and _____.

Canada

Alberta

Saskatchewan

Manitoba

APPENDIX 2

EXCERPTS

FROM

PROVINCIAL ACTS

APPENDIX 2
EXCERPTS FROM PROVINCIAL ACTS

ALBERTA

WATER RESOURCES ACT

Section 77 Boards for Control of Interprovincial Boundary Waters

(1) The Lieutenant Governor in Council may enter into arrangements or agreements with any province or provinces or with the Government of Canada and any province or provinces for the establishment and constitution of a board which, when established and constituted, shall examine, study, report upon and advise on the control and use

- (a) of inter-provincial boundary waters,
- (b) of boundary waters between the Province and the Northwest Territories, and
- (c) water in any stream
 - (i) that flows through more than one of the provinces, or
 - (ii) through one or more than one of the provinces and the Northwest Territories.

(2) After the establishment and constitution of such board the Minister may, out of moneys appropriated by the Legislature for that purpose, defray the share of the Province of the expenses incurred or to be incurred by the board.

(3) The Lieutenant Governor in Council may appoint a representative or representatives of the Province on the board.

(4) The board has such power and authority as is vested in it by the provisions of the agreement establishing and constituting the Board.

[R.S.A. 1955, c. 362, s. 77]

Section 80 Agreements with the Federal Government for Measurements

The Minister may enter into co-operative agreements with the proper authorities of the Government of Canada for the making of stream measurements, and for the carrying on of investigations, and the collection and publication of data, respecting water and power resources, and the best methods of utilizing them. [R.S.A. 1955, c.362, s. 80]

ALBERTA (Cont'd)

Section 81 Agreements with the Government of Canada

(1) The Minister may enter into an agreement or agreements with the Government of Canada providing for the investigation, construction and operation in the Province by the Government of Canada of water development and conservation projects.

(2) In any such agreement the Minister may agree

- (a) to control, operate and maintain or cause to be operated and maintained any approved water project that is transferred under the agreement by the Government of Canada to the Province, and
- (b) to acquire either by purchase or expropriation any right of way required for any works constructed or to be constructed by the Government of Canada.

(3) For the purpose of acquiring such right of way the Minister has, when necessary, the power of expropriation of any lands required for the right of way, and may proceed with the expropriation in the manner provided in section 84.

[R.S.A. 1955, c. 362, s. 81]

SASKATCHEWAN(A) WATER RIGHTS ACTSection 13 Boards for Control of Interprovincial Boundary Waters

Subject to the approval of the Lieutenant Governor in Council, the minister may enter into agreements with the Governments of other provinces and with the Government of Canada for the establishment of a board or commission for the purpose of regulating and controlling the use of waters which flow through the province and another province or through the province and the North-West Territories or of boundary waters between the province and the North-West Territories, and the minister may do or carry out or cause to be done or carried out all such acts, transactions, matters and things as are deemed expedient for the proper performance of any agreement so entered into.

[R.S.S. 1940, c. 41, s. 13]

(B) WATER POWER ACTSection 15 (4) Agreements with Federal Government for Measurements

The minister may enter into co-operative agreements with the proper authorities of the Dominion of Canada for the making of stream measurements, the carrying on of investigations, and the collection and publication of data respecting water and power resources, and the best methods of utilizing the same.

[R.S.S. 1940, c. 42, s. 15]

Section 17 Boards for Control of Interprovincial Boundary Waters

(1) The Lieutenant Governor in Council may enter into arrangements or agreements with any province or provinces and with the Dominion of Canada for the establishment and constitution of a board which, when established and constituted, shall have jurisdiction to regulate and control the use of interprovincial boundary waters or boundary waters between the province and the North-West Territories and waters in any stream or streams which flow through more than one of the provinces or through one or more than one of the provinces and the North-West Territories, and to provide penalties for breach of or failure to obey any order of the board.

(2) After the establishment and constitution of the board the minister may, out of moneys appropriated by the Legislature for that purpose, defray the share of the province of the expenses incurred or to be incurred by the board.

(3) The Lieutenant Governor in Council may appoint a representative or representatives of the province on any such board.

(4) The board shall have such power and authority as is vested in it by the provisions of the agreement establishing and constituting it.

[R.S.S. 1940, c. 42, s. 17.]

MANITOBA

(A) WATER RIGHTS ACT - Nothing particularly pertinent to Allocation Study

(B) WATER POWER ACT

Section 12 (4) Agreements with Federal Government for Measurements

The Minister may enter into co-operative agreements with the proper authorities of the Dominion of Canada for the making of stream measurements, the carrying on of investigations, and the collection and publication of data respecting water and power resources, and the best methods of utilizing the same. [SM. 1930, c. 46, s. 12.]

Section 15 Board for Control of Interprovincial Boundary Waters

(1) The Lieutenant-Governor-in-Council may enter into arrangements or agreements with any province or provinces and with the Government of Canada for the establishment and constitution of a board which, when established and constituted shall have jurisdiction to regulate and control the use of inter-provincial boundary waters or boundary waters between the province and the Northwest Territories and waters in any stream or streams which flow through more than one of the provinces or through one or more than one of the provinces and the Northwest Territories and to provide penalties for the breach or failure to obey any order of the Board.

(2) After the establishment and constitution of the Board the Minister may, out of moneys appropriated by the Legislature for that purpose, defray the share of the province of the expenses incurred or to be incurred by the Board.

(3) The Lieutenant-Governor-in-Council may appoint a representative or representatives of the province on the Board.

(4) The Board shall have such power and authority as is vested in it by the provisions of the agreement establishing and constituting the Board. [SM 1930, c. 46, s.15; am.]

APPENDIX 3

SUMMARY OF EXISTING ALLOCATIONS AND RESERVATIONS

IN THE SASKATCHEWAN RIVER BASIN

APPENDIX 3

SUMMARY OF FINAL ALLOCATIONS
IN THE SASKATCHEWAN RIVER BASIN

PROJECT	PROV- INCE	Irrig- able Acreage	Alloca- tion	Recom- mended by Water Board	Recommen- dation approved by O.I.C. from all Govern- ments
		Acres	Ac.Ft.		
St.Mary-Milk River Project..	Alberta	465,000	796,000	6-5-49	4-7-51
Western Irrig. District.....	"	50,000	85,700	"	"
Eastern Irrig. District.....	"	281,000	562,000	"	"
Bow River Irrig. District...	"	240,000	478,534	"	"
United Irrig. District.....	"	34,000	51,000	"	"
Leth. Northern Irr. District	"	96,135	150,000	"	"
Mountain View Irr. District.	"	3,600	6,000	"	"
Leavitt Irrig. District.....	"	4,400	7,000	"	"
Aetna Irrig. District.....	"	7,300	13,000	"	"
MacLeod Irrig. District.....	"	5,000	8,000	"	"
Private Projects.....	"	70,000	80,000	"	"
Saskatoon - Municipal.....	Sask.		11,426	18-12-50	8-8-51
- Steam Plant.....	"		31,260	"	"
Caron - Moose Jaw Div.....	"		12,600	"	"
Swift Current Irr. Project..	"	21,000	55,000	"	" "
<u>Small Projects</u>					
- Main Stem.....			1,500	"	"
- Swift Current Basin..			5,600	"	"
- Other Tributaries...			4,500	"	"

SUMMARY OF TENTATIVE ALLOCATIONSIN THE SASKATCHEWAN RIVER BASIN

Regina-Moose Jaw Div.....	Sask.		29,000	18-12-50	8-8-51
French Flats-Valley Park...	"	6,502	11,140	"	"
South Sask. River Project..	"	470,000	960,000	15-5-53	-53

APPENDIX 3 (Cont'd)SUMMARY OF RESERVATIONS IN GOOD STANDINGIN THE SASKATCHEWAN RIVER BASIN

PROJECT	Province	Irrig- able Acreage Acres	Alloca- tion Ac.Ft.	Recom- mended by Water Board	Recommend- ation approved by O.I.C. from all Govern- ments	
Red Deer (Wm. Pearce) ..	Alberta	250,000	700,000	18-12-58	(original Reservation)	EXPIRED Dec.1960
				1-12-60	(Renewed)	EXPIRED Dec.1962
				16-1-63	(Renewed)	EXPIRED Dec.1964
				10-11-64	(Renewed)	EXPIRES Dec. 1966
Small Projects..	Alberta & Sask.	1,000,000		2-12-59	(Original reservation)	EXPIRED Dec. 1960
				1-12-60	(Renewed)	EXPIRED Dec. 1961
				6-12-61	(Renewed)	EXPIRED Dec. 1962
				16-1-63	(Renewed)	EXPIRED Dec. 1963
				6-11-63	(Renewed)	EXPIRED Dec. 1964
				21-9-65	(Renewed)	EXPIRES Sep. 1967

BATTLE CREEK BASIN

PROJECT	Province	Irrigable acres	Allocation Ac.Ft.	Recommended by Water Board	Recommendation approved
<u>FINAL ALLOCATIONS</u>					
Small Projects	Sask.	-	10,946	18-12-50	8-8-51
Richardson-MacKinnon Project	Sask.	-	3,054	18-12-50	8-8-51
<u>TENTATIVE ALLOCATIONS</u>					
Small Projects	Sask.	-	2,000	18-12-50	8-8-51
Vidora Project	Sask.	2,136	3,360	18-12-50	8-8-51
Consul Project	Sask.	1,500	2,400	18-12-50	8-8-51

MIDDLE CREEK BASIN

PROJECT	Province	Irrigable acres	Allocation Ac.Ft.	Recommended by Water Board	Recommendation approved
<u>FINAL ALLOCATIONS</u>					
Small Projects	Sask.	-	1,027	18-12-50	8-8-51
Middle Cr. Reservoir Losses	Sask.	-	2,335	18-12-50	8-8-51

LODGE CREEK BASIN

PROJECT	Province	Irrigable acres	Allocation Ac.Ft.	Recommended by Water Board	Recommendation approved
<u>FINAL ALLOCATIONS</u>					
Small Projects	Sask.	-	600	18-12-50	8-8-51
Spangler Project	Sask.	1,322	2,970	18-12-50	8-8-51

QU'APPELLE RIVER BASIN

PROJECT	Province	Irrigable acres	Allocation Ac.Ft.	Recommended by Water Board	Recommendation approved
<u>FINAL ALLOCATIONS</u>					
Small Projects	Sask.	-	20,000	18-12-50	8-8-51

