

**REPORT OF THE IRRIGATION
STUDY COMMITTEE**

TO THE

GOVERNMENT OF ALBERTA

SEPTEMBER 19, 1958.

THE "HANSON REPORT"

REPORT

OF THE IRRIGATION STUDY COMMITTEE
ON PROBLEMS OF IRRIGATION FARMING
AND ADMINISTRATION

Members of Committee

Chairman - W. R. Hanson, Chief Forester for Eastern Rockies
Forestry Conservation Board, Calgary.

Members - A. T. Johnson, Irrigation Farmer and Rancher, Brooks.

- William Mackenzie, Associate Professor,
Agricultural Economics, University of Alberta,
Edmonton.

- D. L. Paxman, Irrigation Farmer, Raymond.

- C. L. Sibbald, Western Manager, Catelli Food Products,
Lethbridge.

Secretary- L. B. Tanner, Calgary

Calgary, Alberta,
September 19, 1958.

The Honourable L. C. Halmrast,
Minister of Agriculture,
Edmonton, Alberta.

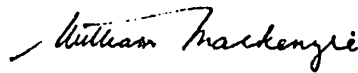
Sir:

The Irrigation Study Committee named by
Order-in-Council O. C. 666/58 and dated 6th May 1958,
to review all aspects of irrigation in the Province of
Alberta, has the honour to transmit its Report.


Respectfully submitted,


W. R. Hanson, Chairman,


A. T. Johnson,


Wm. Mackenzie,


D. L. Paxman,


C. L. Sibbald.

PREFACE

Irrigation has been practiced in Alberta on a fairly large scale for over half a century. Through the process of trial and error a somewhat varied pattern of irrigation administration had resulted. Had we learned well from the past this committee would have been unnecessary, but there is little doubt that a study of the situation was needed as was the work of former committees and commissions.

This committee has looked into the past and present to glean out of the store of knowledge those things which have an application in the raising of the status of irrigation farming and the administration of irrigation development. We have attempted to consider the welfare of the irrigation farmer, the people of the community, the Province and the Nation.

In order to get at the problems and their possible solution we held public hearings, interviewed officials of Government and irrigation districts, studied the reports of former Commissions both inside and outside of Alberta and made field tours accompanied by farmers and irrigation officials of most of the districts.

Public hearings were held in the following centres: Brooks, Lethbridge, Vauxhall, Bow Island, Cardston, Hanna and Calgary.

Field tours covered parts of the following districts: Eastern Irrigation, St. Mary and Milk River Development headworks, Raymond, Magrath, Coaldale, Lethbridge, Taber, St. Mary, and Milk River Development Eastern Division, Bow River Development West Block, Bow River Development Central Block, Lethbridge Northern and Macleod.

ACKNOWLEDGEMENT

Many of the suggested solutions to problems and recommendations made in the report were gathered from persons who appeared at public and private hearings. Many were most helpful in assisting us to understand the problems and in giving us the advantage of their experience. Names of individuals and organizations are too numerous to mention but we tender grateful acknowledgement to them, one and all.

Irrigation Study
Committee

LIST OF ABBREVIATIONS USED

A.R.&I.	ALBERTA RAILWAY AND IRRIGATION
B.R.D.	BOW RIVER DEVELOPMENT
C.P.R.	CANADIAN PACIFIC RAILWAY
E.I.D.	EASTERN IRRIGATION DISTRICT
L.N.I.D.	LETHBRIDGE NORTHERN IRRIGATION DISTRICT
P.F.R.A.	PRAIRIE FARM REHABILITATION ACT
U.I.D.	UNITED IRRIGATION DISTRICT
W.I.D.	WESTERN IRRIGATION DISTRICT
S.M.R.D.	ST. MARY & MILK RIVER DEVELOPMENT

Section 1

INTRODUCTION

It is not our intention to present an extensive history of the development of irrigation in Alberta; this is available elsewhere. Nevertheless, to see the present organization of irrigation projects in perspective and to understand the anomalies which now exist, it is necessary to trace briefly the methods by which there have been established some 990,000 irrigated acres in this province with proposals for a further estimated 900,000 irrigable acres.

Whereas the development of irrigation in this province has been a gradual and continual process since the beginning of this century, there seem to be three distinct phases in the development in each of which the motives and intentions of those establishing projects were quite different. The first of these might be called The Commercial Phase which lasted from 1900 to about 1920, in which there was corporate activity in establishing irrigation. The second period could be called The District Phase, in which farmer-owned and-operated districts were formed under the supervision and guidance of the Provincial Government. Government participation in projects in this period was passive except where it was gradually drawn into arrangements for operation as the guarantor of bonds. The last stage began about the end of the second world war and is still continuing. In this period both the Federal and the Provincial Governments have accepted responsibility for the establishment of schemes and for the maintenance of certain major structures. It is convenient to consider the irrigation schemes which now exist as they have developed in one or other of these three phases.

The Commercial Phase

Large land grants were made to the railways in western Canada to provide finances for railroad construction. The importance of these lands to the railroads was two-fold. In the early stages they were to provide capital through their sales, and later they were to provide operating revenue. Any investment which would increase the value of lands and at the same time attract a more intensive form of farming than would otherwise materialize would be a double benefit to the railroads.

The Alberta Railway and Coal Company arranged an exchange of land granted the railway company, with the Honourable Clifford Sifton, Minister of the Interior, for a block of potentially irrigable land. Through a land holding subsidiary this land was sold to prospective settlers. This took place in 1892. In 1904 the companies were amalgamated into The Alberta Railway and Irrigation Company. The assets of this company were acquired in 1912 by Canadian Pacific Railway who operated the irrigation side of the enterprise until 1946 when the ownership and operation was transferred to the Government of Alberta.

The Canadian Pacific Railway Company accepted a block of land in 1903 between Calgary and Medicine Hat as settlement

of its outstanding grants. In choosing this land the C.P.R. was influenced by the claims of the Federal Government engineers as to the economic feasibility of irrigating the area. In this region they established irrigation projects which were to become known as the C.P.R. Projects, East and West Blocks.

A third commercial venture in the establishment of irrigation was undertaken in Alberta by a company called the Canada Land and Irrigation Company. In this case there appears to have been no duality of motive; the anticipated return of the investment seems to have been the incentive to establish the company. The company was established through the amalgamation of several earlier companies, as the engineering and financial difficulties encountered proved too great for the initial undertaking. Engineering work started in 1909. It was not until 1920 that the first land was irrigated.

From 1919 to 1950, when the assets of the Canada Land and Irrigation Company were purchased by the Federal Government, the company had a struggle to stay in existence.

Thus before the passing of the Irrigation Districts Act in 1915 there were four main projects being developed in the province all supported by commercial interests and, aside from land grants, receiving no assistance from government sources. These were the A.R. and I. (owned by C.P.R. from 1912), the C.P.R. East Block, the C.P.R. West Block and the Canada Land and Irrigation Company. With the passing of the Irrigation Districts Act (Alberta) 1915 irrigation development entered the second phase.

The District

Phase An irrigation district, as formed under the Irrigation Districts Act, has a quasi-municipal status. It is formed when 75 per cent of the farmers in a district vote to establish and run a district to supply themselves with irrigation water. The first district established under the Act was the Taber Irrigation District formed in the same year. This district, like the Raymond and Magrath Irrigation districts, formed in 1925 and 1926 respectively, received water from the works originally constructed by the Alberta Railway and Irrigation Company (taken over by the C.P.R. in 1912 and extended and enlarged by the Federal Government in the postwar period to form the main works of the St. Mary and Milk River Development).

The financing of these districts was achieved through the acceptance of the bonds of each of the three districts by the C.P.R. through A. R. and I., which was a wholly owned subsidiary. Up until the third phase of irrigation development there existed four differently governed areas receiving water from the works constructed by the A.R. and I.

These were¹:

(a)	The A.R. and I. Project - Lethbridge area	-	84,000 acres
(b)	Taber Irrigation District	-	21,500 acres
(c)	Raymond Irrigation District	-	15,100 acres
(d)	Magrath Irrigation District	-	7,000 acres
			<u>127,600 acres</u>

¹ Report of the Saint Mary and Milk River Development Committee, Ottawa, 1942, page 37.

A district known as the Lethbridge Northern was formed in October, 1919. It was financed by a bond issue guaranteed by the Provincial Government. The money obtained from the sale of the bonds was used on the original construction and the repair of damage made necessary by a flood in 1923. A loan was obtained from the Provincial Government for operation and maintenance. As a result of several circumstances, some unfortunate and some the lack of foresight, this district had to be established through very substantial assistance from the Provincial Government in refinancing the bonds and wiping out about four fifths of the costs of constructing and establishing the project. This was the first acceptance of the Government of Alberta of the responsibility for any capital outlay in the establishment of irrigation on lands within the Province. It was drawn into this scheme by circumstances rather than by intention. The district operated under an official trustee and the action of the Government was more that of a responsible parent to a difficult child than that of active investor in the development of irrigation.

While these events were occurring, the C.P.R. was finding the East and West Blocks of its large project an increasing handicap in its operations. In 1935 the C.P.R. agreed to an arrangement suggested to them by the farmers in the Eastern Block to transfer the works to the landowners and to relinquish its claim to the cost of the irrigation works, which it had been unable to collect from the settlers who had colonized the land from 1914 to 1935.

By 1935 the C.P.R. had received from farmers in the E.I.D. the sum of \$550,000.00 for the sale of land out of a total estimated sale value of \$3,000,000.00. The Eastern Irrigation District was formed in 1935 and all the irrigation works, land contracts and unsold lands in the district, together with a capital reserve of \$300,000.00 for the replacement of large structures were given to the farmers themselves to be operated under a board of trustees as laid down in the Irrigation Districts (Alberta) Act. This district has operated successfully since without using the capital sum given to it by the C.P.R. In 1937 irrigation was extended into the Rolling Hills area by an arrangement with the Prairie Farm Rehabilitation Act, a Branch of the Federal Government.

The C.P.R. continued to operate the Western Block until 1946 when it was transferred to the farmers along with \$400,000.00 under a similar arrangement to that agreed upon in the formation of the Eastern Irrigation District.

Four other small Irrigation Districts were set up during the inter-war period - the United Irrigation District in 1921, and New West Irrigation District in 1921, the Mountain View Irrigation District in 1923 and the Leavitt Irrigation District authorized in 1936. The Actna Irrigation District, formed in 1945, is on the margin of the second phase of district formation and the third phase of government development.

The formation of the Mountain View District showed a departure from the methods of financing other districts. The members of the district agreed to provide labour and materials in the proportion of their irrigable acreage thereby avoiding an encumbrance on the title of the land. The district received a grant from the P.F.R.A. in 1937 of \$3,000.00 to widen their main canal. Apart from this they have constructed and maintained their own system. The Leavitt District was constructed in a similar fashion to the Mountain View District.

In both Mountain View and Loavitt water was used mainly for stock watering and production of feed.

The United Irrigation District attempted to be self financing, but in 1941 the Provincial Government, in accordance with the findings of the Ewing Commission², assumed all responsibility for the debentures and the farmers were only required to pay an average of seven dollars per acre for the water right.

As the second world war began it was becoming evident that any irrigation system which had to meet all its own capital costs as well as the costs of operation was almost certainly doomed to failure from the beginning. Small districts, well settled and favourable to speciality crops, along with easy access to water, had been successful without much help, but large schemes like those in the C.P.R. block or the Lethbridge Northern were ample testimony to the fact that, if new irrigation development was to continue, greater responsibility for capital development was required of the government, either Provincial or Federal.

The Ewing Commission set up in 1936 had come to this conclusion and the Meek Report³ published in 1942 set the stage for the new era in irrigation development.

The Third Phase

Considerable concern was expressed in the Meek Report of 1942 over the need for Canada to control and use the waters of the St. Mary and Milk Rivers before such time as the U.S.A. began to utilize them fully. The urgency for the development of what is known as the St. Mary and Milk River Development was the need to establish right to the Canadian share of international waters. The S.M.R.D. is really an extensive enlargement of the old A.R. and I. Company Project. It was found later that there was more land which could be irrigated than could be supplied with water from these two rivers, and diversions of water from the Belly and Waterton Rivers were included in the plans.

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²Report of Commission appointed in 1936 to Inquire Into Various Phases of Irrigation Development in Alberta. Edmonton, 1937

³Report of the St. Mary and Milk River Development Committee, Ottawa, 1942.

It was agreed that the Federal Government would construct and operate the St. Mary and Ridge reservoirs and the connecting main canal. It has since agreed to construct and operate a canal connecting the Waterton and Belly Rivers with the St. Mary reservoir. The Province was to construct the balance of the reservoirs and main canal and the distribution system; bear the deficit of the operation and maintenance during the development period, the cost of colonization and land settlement and agricultural services. It was believed that the costs would work out at about 55 per cent to the Federal Government and 45 per cent to the Provincial Government. Some fraction of the outlay of the Provincial Government is being recovered from the owners of the land and new settlers by charging the farmers a water right of \$10.00 an acre.

The C.P.R. which owned the A.R. and I. scheme, agreed to transfer the works along with \$100,000.00 in cash to the Provincial Government. Thus in 1946 with the transfer of the Western Irrigation District to the farmers and the A.R. and I. scheme to the Provincial Government the C.P.R. got out entirely of irrigation development and operation. The Provincial Government passed the St. Mary and Milk River Development Act creating a crown corporation to operate and maintain the contemplated distribution system. In 1948 construction was begun on the reservoir on the St. Mary River near Spring Coulee. It was not until two years after this that an agreement between the Government of Canada and the Government of Alberta was signed. This agreement is dated May 31, 1950. From the Committee's point of view the most important part of the agreement was that the Government of Alberta agreed that upon completion of the works, it would have formed and would be ready to carry out its program for the establishment of settlers on the irrigable lands in the project.

Progress in settlement has been slow. The main canal was not completed until 1954 and after that interruptions in the service occurred. In addition, much of the land needed levelling before it was suitable to irrigation. The expansion which has been achieved so far is an addition of 4,209.5 acres, referred to as the Eastern Division of S.M.R.D. and 10,170 acres in the Big Bend which have been incorporated in the Taber District.

The last remaining company operation in the Province was the Canada Land Project. The Federal Government, through P.R.R.A. arranged an outright purchase of this scheme in 1950 and proceeded to set about an expansion and enlargement which, in total, is now known as the Bow River Development. An agreement was reached on June 25, 1953, between the Government of Canada and the Government of Alberta. It was similar in most respects to the agreement reached in the S.M.R.D. but with this important difference, that the P.F.R.A. remained as the owner and operator of a substantial part of the development. P.F.R.A. continues to operate the original Canada Land Project within which it has replaced almost all of the original structures and, in addition, it has a settlement scheme of its own known as the Hays Project, which is an extension to the east of the Vauxhall tract.

The Government of Canada, through P.F.R.A., has widened and replaced the main canal and established an additional storage reservoir on the Little Bow River, besides replacing the old structures in the Canada Land Project itself and establishing the Hays Project. The Province of Alberta agreed to construct the works for a development on the west side of the Canada Land Project, known as the West Block of the Bow River Development. The Government of Alberta formed a crown corporation to operate the B.R.D. West Block, by passing an act of the legislature in 1955.

With these new developments in the post-war period the Government of Canada, through construction, and the Government of Alberta, through establishment and operation, have both become substantially involved in irrigation schemes. The previous picture of company projects first, and then irrigation districts operated and owned by the users, has undergone substantial change. Irrigation in this Province is now organized substantially as follows.

(a) Irrigation Districts independent of government in any way except as required by the supervisory powers of the Irrigation Districts Act. There remain in this group the E.I.D., the Western Irrigation District, the Lethbridge Northern and the four small districts of the U.I.D., Mountain View, Leavitt and Actna.

(b) The S.M.R.D., a crown corporation, now supplies water to Magrath, Taber and Raymond under contract. It also operates the Lethbridge-Coaldale area performing the function of distribution of water. Besides these activities it has undertaken to manage and operate such extensions of the district as may be developed under the original plans. Part of the new development is now being administered as part of the Taber district and the remainder from the S.M.R.D. office.

(c) The Bow River Development.

This consists of three parts, the West Block, the Central Block and the East Block. The Central Block contains a large part of the original Canada Land Project bought by P.F.R.A. The West Block is being developed at the moment by a crown corporation under the management of the Province of Alberta. Responsibility for the future development of the East Block lies with the Province of Alberta.

Section 2

THE ORGANIZATION OF IRRIGATION

The purpose of this chapter is to consider the way in which the organization of irrigation in the Province may have given rise to certain difficulties in the operation and administration of the various projects described in Section 1.

Federal-Provincial Relations

After the transfer of the natural resources to the western provinces in 1930, the Federal Government withdrew from active development of irrigation. The Reclamation Bureau ceased to function in searching out, surveying and supervising development of irrigation schemes. Not until the Prairie Farm Rehabilitation Administration expanded into the field of large irrigation projects, and the Federal Government assumed the responsibility to protect Canada's right to about 403,000 acre feet of irrigation water granted by the International Joint Commission, did the senior government return to active participation in irrigation in Alberta. The P.F.R.A. became the Federal agency active in irrigation development and a principle of co-operation with Alberta was established. Although it is difficult to find this principle in writing a retired official of the Alberta Department of Agriculture states that the Province was expected to initiate action by selecting the projects to be undertaken and to lay out the general plan. P.F.R.A. would then design the kind of project decided upon, supply the engineering staff and share in the capital costs. On such a basis of co-operation the Provincial Government who must eventually see the project in operation, should make the decisions as to the kind of project, when it should be initiated and how it should be built.

In 1942 the Meek Report⁴ recommended the construction on the St. Mary River of the main reservoirs and connecting canals necessary to store Canada's share of the international waters as well as the irrigation works to provide for its "beneficial use". The report suggested as a first step that an agreement be entered into between Canada and the Province of Alberta. This agreement was reached and on the basis of it the St. Mary Milk River Development Act was passed, to be followed by the Bow River Development Act.

In the post-war development of both S.M.R.D. and B.R.U. there are two general circumstances which we feel have contributed substantially to the problem existing in these regions. Both of these are the outcome of the agreements between the Province of Alberta and the Government of Canada. The first is that the Province agreed to use water as soon as the P.F.R.A. was in a position to deliver it. By doing this the Province has got launched on a rate of development which might possibly have been reconsidered if the agreement had not been signed. The second is that as a result of the division of responsibility between the Federal and Provincial Governments the construction of both the main structures and the

4. Report of St. Mary and Milk Rivers Water Development Committee. Ottawa, 1942.

subsidiary ones have been carried out by engineers who will not be responsible for their operation and maintenance. The reasons why these circumstances have created certain problems is best seen by considering projects in a more detailed fashion.

St. Mary and Milk River Development

A careful reading of the Meek report shows that the urgency for getting started with the S.M.R.D. was the need to control and use Canada's share of the international waters. This desire created an understandable urgency. In our opinion it also led to certain problems being overlooked and others not being looked into fully.

Timing First of all it would seem that the time to develop the project was dictated solely by the need to make fuller use of the rivers. If this was not the case, it is difficult to understand why a more careful classification of irrigable acreage was not obtained before construction was undertaken. No consideration seems to have been given to the potential markets which would be available for new settlers on crown lands, or for dry land farmers who would change their system of farming. Much thought went into the overall design of the project, and into the planning of the construction from an engineering standpoint. We are alarmed however, at the absence of a proper agricultural survey or a detailed economic examination of the possibilities of suitable markets in the foreseeable future.

Preliminary Study Lacking Second, because the construction was planned without a detailed agricultural as well as engineering survey of the land to be irrigated before the project was started, the acreage which actually can be irrigated is proving to be considerably less than was first expected. When construction and operation are divorced, as they were in this project, it is easy to be led into overbuilding and to introduce measures of safety which may increase operating costs unduly. If the user is doing the designing and construction the relationship of capacity to the eventual use will be more carefully considered.

Poor Liaison The farmers of the areas to be irrigated, the people most affected and most vitally concerned, were poorly informed and were not consulted on matters which directly concern them. This is a natural outgrowth of organization established at top level of both governments and without the prospective irrigation farmers having a part in it. The officers of old established irrigation districts in which the system of water delivery and the cost of water was to be affected were often unable to find a local official of one of the senior governments who would discuss the project with them. They felt their life-long experience in irrigation and their knowledge of local conditions could have been used to avoid certain mistakes had they been consulted. The farmers whose land was to become part of the new irrigation districts had no part in the plans and in many cases felt they were forced into a project which was not of their choosing. The cost of water to them was increased without their consent.

A point of common concern among water users and district officers at the hearings in and around Lethbridge was the levy of 25¢ per acre foot by the Federal Government for operation of the storage and connecting canals. It is the opinion of this committee that such a levy to cover the cost of operation and maintenance of the works is fair and just and we think that the water users could have been willing to accept the levy on the basis of added storage and a more reliable supply had they had a part in the negotiations which finally lead to it, and had they been well enough informed concerning policy of sharing of costs of the system.

Crown Corporation At the present time S.M.R.D. is a crown corporation which wholesales water to three districts and actually delivers it to farmers in the Lethbridge-Coaldale area and in the Bow Island-Burdett region. We believe that this situation creates friction which makes the administration of the crown corporation more difficult than it need be. This is particularly true because contracts exist between S.M.R.D. and the water users in organized and unorganized districts which differ in the degree to which the water users meet their full responsibilities.

In the Lethbridge-Coaldale area each user has a contract for delivery of water with the S.M.R.D. Crown Corporation. Water is not delivered to each quarter section and each user is responsible for keeping his delivery ditch in repair. In some cases groups have combined and hired a ditch rider. This system of operation and the contract with the current water rate were handed down from the days of the A.R. & I.

Over the years the irrigation works have got into poor repair as evidenced by the recommendation in the brief of the Manager of S.M.R.D. that the system be rebuilt. The users, although paying the water rate established by the A.R. & I. early in the century, look to the Crown Corporation to rebuild or repair the works delivering water to them. It is obvious that S.M.R.D. cannot do the necessary rebuilding and repairs as well as the servicing of the district on the water rate which was established five decades ago. Since the Crown Corporation is self-supporting the rebuilding of the delivery system to the Lethbridge-Coaldale area would have to be subsidized by the Government or assisted by the water users in the other districts.

There are two things which seem wrong in this situation. The Crown Corporation is performing a function that it is not well suited to perform and the Lethbridge-Coaldale district is not organized to handle its own internal service and problems. This committee believes (supported almost unanimously by testimony given in hearings) that a farmer owned and operated district is the best organization for handling the delivery of water. If this is true, the Crown Corporation should not be delivering water to farmers and this function should be taken over by the water users organized under the Irrigation Districts Act. They could then take their position along with Taber, Raymond and Magrath (and eventually others) paying the bare cost of water delivered to their district boundaries by the Crown Corporation. Steps should have been taken

with the formation of S.M.R.D. to annul the old A.R. & I. contract and replace it with one in keeping with the times.

Eastern Division The operation of the newly established development east of the Taber Irrigation District by the Crown Corporation is another anomaly. Administration of the district and colonization of the project are both functions of the Crown Corporation. The study made by the Committee makes us question the wisdom of the S.M.R.D. performing these functions. The major function of this organization is made complicated and difficult by these added duties. The organized districts which are buying wholesale water from the corporation think that they are paying part of the cost of retail delivery to the old Coaldale area and the new development east of Taber.

In our hearings at Bow Island several questions were raised about the system of land classification. Although, at present, the reclassification which is being carried out is not done by the Manager of S.M.R.D., he has the full right of decision as to whether or not a reclassification is acceptable. This is the right of the manager of any district at the moment. It is our opinion that a manager will be prejudiced by the necessity to keep the assessed acreage up so as to finance the district. We feel, therefore, that he should not be the one to make a final decision on land classification. This is a general point on which we shall make a recommendation later in this chapter.

The Bow River Development

West Block Although the idea of a full scale development of the Bow River for irrigation is an old one, the only use made of the river within the overall design of this project up until 1953 was that originally known as the Canada Land Project. Considering the fact that it was only in 1950 that agreement was reached on the S.M.R.D. for a joint development between the Provinces of Alberta and the Government of Canada, we find it difficult to see why another development, namely the B.R.D. West Block, should have been started so soon afterwards. It would have been wiser perhaps, to have waited until some experience was gained in the S.M.R.D. in estimating capital costs, in construction and above all, concerning changes in land classification and colonization.

During our interview with the personnel of the Alberta Water Resources Branch they laid great stress upon a series of petitions as justification of urgency, some of which date back prior to World War I. The latest evidence was from questionnaires distributed at a meeting in 1947. When irrigation was considered for the area from Retlaw to Lomond during the early period it was considered by both farmers and government as a corrective to an existing problem of that day. The district, one of scant to moderate rainfall with drought periods, and only relatively fair soil and topography for farming, had been settled on a homestead basis. Most half sections were occupied by a settler, units were too small and efficient methods of dry-land farming had not been developed. Gradually farmers starved off these small farms; the more efficient operators built up

large units, efficient machinery and methods were adopted, and crown grazing land became available to supplement the farm programs with livestock.

In the early investigation of irrigation possibilities the Reclamation Service considered a scheme of supplemental irrigation with about 40 acres per quarter to supply stock water and gardens. Many farmers in asking for irrigation are still thinking in terms of irrigation as insurance against total drought and to make livestock production more economical. The decision to discard the 40 acre per farm and build a full scale project was based on 1914 conditions, and appears to have received no further examination on the basis of the changed conditions of the 1950's.

Many of the complaints put before us about this project could be attributed, in our opinion, to the haste with which the plan was put under way rather than to the opinion common among the officials concerned with the project that farmers in the area are not co-operating in the extension of irrigation because rainfall has been so satisfactory in recent years.

We have searched for a reason why the West Block should have been started so quickly after an agreement had been reached on a sharing of responsibility between the province and the Federal Government. The same urgency as there was in S.M.R.D. to make use of international waters was not present. The answer seems to be elsewhere. Three years before the agreement was signed P.F.R.A. had purchased the Canada Land Project and had started to widen the main canal, build the Travers Dam and replace many structures. The justification for this was presumably the wider use of the waters by the Province at some later date. The first serious mistake, in our opinion, was that an agreement having been reached in June 1953 to proceed with the project, construction was begun in October of the same year. There is no evidence that we could find, to suggest that anything but the original plans were considered. We have found that the construction of this project, which is reputed to cost 13 million dollars, was based upon the original survey made by the Reclamation Service of the Federal Government, modified very slightly through a few spot checks and with the consideration of a rough soil classification of the area.

In the whole of prior experience of irrigation it is clear that the estimate of land classed as irrigable under the methods used by the Reclamation Service has been found to be over optimistic. We have been told that this estimate was all those responsible for construction had to go on. This immediately gives rise to the question of why the project was allowed to go ahead on such slender estimates of the size of project required. To this question we can find no answer, except that the Province had agreed by signing the agreement with the Federal Government that it would use the water as soon after it became available as it was possible to do so.

In an inspection of this project we came to the opinion that the original estimate of irrigable land on which the project

was built was much too high. It is also our opinion that if a careful reclassification had been undertaken before construction had started the project would have been redesigned and perhaps even rejected.

When it is recalled that 60 per cent of the land within this project is crown land and only 40 per cent is in the hands of farmers, the questions raised about a project which must require extensive colonization become even more numerous. Thoughts of an overall scheme which would carry water through the West, Central and East Blocks originated at the very beginning of this century and plans of how it could be done were gradually put together. While this was being done the drought and the depression put 60 per cent of the land in the West Block into the hands of the Department of Lands & Forests, and the rest was consolidated into sizable units to adjust to dry land farming conditions. There is a question in everyone's mind as to how well these new farm units could withstand another drought. Questions also need to be answered, however, on the solution which is being produced, because in our opinion it was a solution to the problems of the settlement conditions of twenty-five years ago and may not be the solution for today. If when this project was begun, Canada was in need of more food for home or export markets, or would find such a need within a period of the next twenty-five years, we could see some purpose to a settlement project which would colonize an estimated 36,000 irrigable acres of crown land (60 per cent of 60,000 irrigable acres). This would mean perhaps close to 60,000 acres in new farms. It does not seem to have been ascertained in even a tentative fashion that this was the case.

6 It is correct to state that in the project an overall 75 per cent of the patented land was voluntarily signed into the project. Some question was raised about the methods used in getting farmers signatures. We are left with the impression that considerable persuasion was used, because the field man believed that it was his job to obtain a 75 per cent sign up. It had been agreed that the project should go ahead in any case, and therefore, he considered it his duty to get at least 75 per cent of the land signed into the project. We believe that there is something wrong with this procedure. We shall have recommendations to make later which would help to rectify some of the mistakes which have been made.

As a result of the lack of prior planning and reconsideration of the needs of the area we believe that the project now being constructed will be much too elaborate and too costly to operate as a single unit. We expect that time will demonstrate the need to modify the former magnitude of the project by such means as shutting off certain laterals and closing down certain other parts of the project. This will lead to difficulties in operation and finance. These may possibly be solved by recommendations which we have to offer in a more general way at a later point in this report.

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5. This assumes average irrigated acreage per farm is 60% of the total farms.
 6. Due to an error the water contract which farmers were asked to sign stated that 90% of farmers had signed voluntarily.

Generally speaking, the farmers of this area want irrigation. However, they do not want to change their economy over to one of all-out irrigation producing specialized crops. The desire of the farmers, and it also appears the hope of the Government, is to stabilize the agricultural community by avoiding the havoc of severe drought. Considering the natural features of soil, topography and climate and present market opportunities, the economy of this area must remain one based mainly upon livestock and cereal crops. Stabilization of such an agricultural community does not of necessity require full scale irrigation.

The Central Block of the Bow River Development

We did not study the operations of the Central Block in great detail. It is something unique in irrigation administration in Alberta. The Federal Government is the owner of much of the land by purchase of the Canada Land and Irrigation Company's holdings. The P.F.R.A. has rebuilt the entire system and despite the large administrative unit, charges a water rate far below that which any self-supporting district must. Because this district is operated under P.F.R.A. at the moment, we are of the opinion that the problems of internal operation are outside our terms of reference. We do believe nevertheless, that the existence of a district within the Province, being operated under conditions which differ from those applicable to other districts in the Province, is making uniform conditions for water users difficult to obtain. We are certain that in the future it will make it very difficult to enforce conditions on water users in the West Block of the B.R.D., which are a greater burden than those which apply in the Central Block. In our hearings water users in neighboring districts pointed with envy to a subsidized operation.

Other services such as schools which are operated and financed on a municipal basis encounter difficulties where part of the land is owned by the Federal Government and not subject to taxation by the municipality. In the case of the Hays School District about 85% of the land is in the name of the Federal Government and the school has to be operated by a special grant from the Province.

In the interest of uniformity we believe it would be desirable for the Province to acquire the distribution works of the Central Block, and for the Federal Government to transfer the main works on the same conditions as they have agreed to on the S.M.R.I.D. When the West Block has undergone a period of settlement and adjustment to irrigation, we can foresee the possible necessity to create one farmer-owned and operated district out of the whole of the Bow River Development. This will not be possible unless the Central Block can be turned into a district under the Irrigation Districts Act.

Problems Peculiar to the Older Districts

Bridges and Culverts It has been considered up to the present that irrigation districts formed under the Irrigation Districts Act had the sole responsibility for the maintenance and replacement of bridges and culverts necessary as a result of the irrigation system. Without exception, wherever we held hearing, it was pointed out to us that

this is becoming an increasing burden on the water user. No one attempted to deny the initial requirement of constructing a bridge or culvert as part of the project costs. The heavier type of traffic and the increased load going over such bridges and culverts, as well as the greater frequency with which all roads are being used, has led to a maintenance and replacement problem far in excess of the original cost of construction. It seems only just that the districts themselves should be required to replace a right-of-way that they have interrupted. Once the right-of-way has been restored with a structure approved by the agency responsible for the road, then maintenance and repair should fall to that agency. We therefore, recommend that the maintenance and replacement of bridges and culverts within irrigation districts be made the responsibility of the government responsible for the highway on which they are situated.

Drainage, Seepage and Alkali Damage The problem of damage to land due to water logging and accumulation of salts from seepage was encountered in all established districts. In the older districts most of the drains were originally built as surface drains to carry away waste water. Deep drains to lower the water table and to intercept lateral seepage were lacking or insufficient in all districts.

The tenet that "drainage is as much an essential part of an irrigation system as the canals" seems to have been accepted among irrigationists. In the new development, particularly the West Block of the B.R.D., this principle has been applied by building a main drainage system throughout the district. The older districts, especially Raymond, are badly in need of drainage as indicated by investigation now being carried out by the Alberta Department of Agriculture and P.F.R.A.

It seems to be an accepted principle that governments must stand most of the capital cost of establishing irrigation systems and in fact governments have done so in Alberta. Therefore, if all districts are placed on the same footing, government assistance should be given to establish an adequate drainage system in the older districts. Some districts have already built some drains and if a policy of Government assistance for drainage construction is established, such districts should be given consideration for work done.

The need for study of the problems of drainage so as to avoid damage to more land and to rehabilitate land already damaged is great. This committee commends the work being carried out by the Alberta Department of Agriculture and the research and experimental work being conducted cooperatively by the P.F.R.A. and Canada Experimental Farms Service. This work could well be expanded and every effort possible should be put forth to make sure that the information obtained is applied immediately.

Major Structures The older districts have some major structures which may go out and their replacement may overtax the financial structure of the district. Examples are the flume of

the L.N.I.D. canal across the Oldman River, the diversion dam of the E.I.D. at Bassano and the Antelope siphon on the E.I.D.

It is the opinion of this committee that all districts should strike a water rate sufficiently high to operate and maintain the district works. In the interest of good methods this would require building up a fund for emergencies. However, it is quite possible that emergencies may occur when no such fund has been provided.

In the districts which we visited the trustees seemed to be willing to meet the cost of maintenance of the works of the district. In cases where districts asked for government assistance for replacement of structures we were convinced that such requests were not a result of a loss of confidence in the ability of the districts to handle their own operation or a disbelief that districts should remain independent as far as operation is concerned, but because they felt that some other districts were receiving financial assistance which they were not. To quote the brief of the E.I.D., they felt that they were "victims of their own good management". The cases often pointed to were the Federal Government replacing all structures in the Vauxhall area, the old diversion dam and canal of the A.R. & I. being replaced by the St. Mary dam and associated works and drops built for the Coaldale area by S.M.R.D.

This Committee believes that districts should maintain their own works but we agree with the opinion expressed in various hearings that a uniform policy should apply in all cases. The statement of costs of operation of the works of the St. Mary - Ridge Reservoir presented by P.F.R.A. to the Province which forms the basis for the water charge, does not include depreciation of structures or a fund to take care of an emergency replacement. A district like the E.I.D. must do this to remain self operating and is therefore, in a less desirable position in this regard than a district in the S.M.R.D. or B.R.D.

General Problems

Most Desirable Form Of District The question of the best means of administering irrigation was presented at all hearings and the unanimous response was to the effect that a farmer owned and operated district under the Irrigation District Act was preferred. Pride of ownership and accomplishment was expressed in briefs from districts with their own Boards of Trustees. Every district has a little different situation to cope with and in most cases the local people have found a way adequate for their situation and needs. There is, as a result of varying situations, a lack of uniformity in water rates, degree of service given by the district or left to the water user, employment or not of a manager, and other details of operation and administration but these differences are actually necessary and desirable.

We firmly believe that as soon as possible all irrigation projects should be organized as self-operating districts. To work towards this end several things must be done. First, the S.M.R.D.

should be relieved of all duties except the supplying of water to the various districts within the development. It should also be relieved of the colonizing duties in extensions to the old system. The Lethbridge-Coaldale area should be formed into a district under the Irrigation Districts Act in line with the first suggestion. We would recommend that the old contract by which these water users claim the right to receive water at \$1.00 per acre be legally annulled and that the water rate be determined within the district as it is in other districts. We understand that the main canal in this district is in need of extensive repair. In line with our recommendations for other districts, we suggest that the Province lend the newly formed Lethbridge-Coaldale District the money to carry out such repairs and replacements as are necessary to allow them to operate in an efficient manner. The capital involved should be paid back over a period of time along with interest, and this would have to be met out of the water rate in the district.

Irrigation Development District When irrigation water first reaches a new area the operation of a full fledged district is difficult or impossible. Only part of the land which will eventually make up an adequate assessment roll for financing the district has come under irrigation. The present settlers have not had an opportunity to readjust their practices, level their lands, build their structures, convert to new crops, and recapitalize so as to use water on their land. New settlers have not become established so as to bring the population up to the necessary level for an irrigation district. A period of growth is necessary between the turning of water into the canals and the formation of a district under the Act.

We recommend the establishment of a new kind of district which we shall call for our present purpose an "irrigation development district". Certain conditions should be set up for the operation of all new areas, so that in each of them the settled farmers have some say in the operations. The Government of Alberta should retain managerial control however, for the period of time that the recoverable water rates are insufficient to operate the district. The Act under which an irrigation development district is formed should require a statement to be made of the length of the Colonization period. During that time a farmer would pay some minimum rate for all acres assessed, and a full water rate for the acres he is actually using. He would therefore, be given some choice in the speed at which he would develop the use of water within the development period stated in the formation of the district. We shall enlarge on this suggestion in the next chapter.

Water Rates The terms of reference ask us to decide whether the present water rates and water rights are equitable. We believe that the general principle should be established that the water rate, in all districts operating in an independent sense, should cover the cost of service and of maintenance and replacement. This, and this alone, should be the criterion for the size of water rate. In colonization districts the charge should be the cost of supply in a similar self-operating district, until the district is settled

enough to operate itself and determine its own charges. We also believe that the right to receive water should be purchased as it is at present. We suggest the retention of a water right of \$10.00 per acre.

Land Classification Wherever we have gone, with the exception of some of the well established districts, the question of how land is classified for assessment has been raised. We find ourselves in considerable sympathy with those who were first assessed under the original estimates of either P.F.R.A. or the Reclamation Service. Even although these estimates are now being reclassified for a changed assessment, we are not convinced that all that needs to be done to obtain uniformity in the Province is being done. We suggest that the service now being provided by the Extension Irrigationist be expanded, and that it be made a requirement of all districts to use this service whenever reclassification is required. This service would be used to establish the initial classification on new projects, and to reclassify the land in projects now being developed. We are agreed that the final decision on whether or not land remains on the assessment role should not lie with the manager of a district. We suggest that a committee composed of the head of the land classifying service, the project manager and an independent individual not employed by the Government be asked to consider any reclassification done by the land classifying service. We believe that this would prevent dissatisfaction expressed to us. The decision of this committee would be binding on all parties. Above all, we would stress that it is important to achieve uniformity in the method of classifying land. We believe that the method of achieving this is to set up a Provincial Service for this job alone. All decisions made by this service would be subject to approval by the committee we suggest.

Dissolution We have been asked to recommend methods by which dissolution of a district, or a part thereof, could be achieved. We suggest that if our proposals on land classification are accepted, and in some areas land is classified out to an extent that it is no longer profitable to carry water to the remaining farmer or farmers on a lateral, the lateral should be closed. Any remaining farmer or farmers wishing to irrigate should receive compensation or should be resettled elsewhere in the project. If this was done, and our proposals about the gradual establishment of new districts as Colonization Districts were accepted, we believe that all instances in which the problem of dissolution would arise, would be taken care of.

If land classification is properly carried out, we feel that land levelling should be an investment by the individual farmer. We recognise the fact that under some conditions the farmer might find it hard to obtain credit for this purpose. We recommend that the Province make available long term loans payable to the farmer and repayable by him through the district as an addition to his water rate.

Relations Between Levels of Government

By the acceptance in principle of the Meek Report in the establishment of the S.M.R.D. the Federal and Provincial Governments have committed themselves to active participation in and to bearing the burden of the capital cost of irrigation.

With both Governments involved the Committee believes it is important that the responsibilities and fields of activity be clearly defined. Generally this has been done with one notable exception. Although the principle seems to have been established that the Province is responsible for selecting any project and determining the time of development this has not been put into practice as evidenced in the Bow River Development.

The decision to proceed with a project should be made by the Province after close consultation with the people concerned. It should be made necessary by a statute that economic feasibility be established before a project is approved. During the study period by the Province the P.F.R.A. should lend assistance with its trained personnel.

Once the project has been chosen by the Province and approved by the Federal Government then designing and construction should proceed. P.F.R.A. designed the main works in S.M.R.D. and F.R.D. and this seems like a good arrangement but no construction should begin whether it be done by P.F.R.A. or the Province until it has been checked to make sure that it is in keeping with the operational plans of the project.

A clear definition of responsibility and fields of activity might be based upon the following lists.

Federal Government

1. Administer inter-provincial waters.
2. Supply technical assistance by way of survey and designing.
3. Share with the Province the capital and development costs of irrigation.
4. Undertake upstream storage.
5. Continue stock watering and small irrigation development.
6. Carry on and enlarge the experimental and research work now being done by the Experimental Farms Service and P.F.R.A.

Provincial Government

1. Administer the water resources and irrigation acts.
2. Study possible irrigation development within its boundaries and select those to be developed.
3. Share with Federal Government the cost of establishing irrigation.
4. Supervise the establishment of new districts.
5. Make long term loans available to districts for replacement of major structure and to individuals for land levelling.
6. Supply agricultural extension service.

Municipal Government

Municipal and irrigation districts have existed independently

in the same area and in some cases conflicts have arisen. It is the opinion of the Committee, unanimously supported by evidence given in public hearing, that the combining of municipal and irrigation district government is not practicable.

However, the Committee considers that those services having to do with travel and communication within the municipality or county are its responsibility. Repair and maintenance of bridges and culverts, once the structures are established and approved, should be undertaken by the municipality or county.

Alberta Water Resources Branch The Water Resources Branch is at present performing two distinct functions. One deals with water as a resource and the other with the development of irrigational use of water. The latter function seems to have been attached to the Branch without adequate organization or personnel to handle it. One weakness which the Committee observed was that the staff was limited to engineers and decisions which needed agricultural and economic background were being made by engineers without it.

Water as a resource could much better be dealt with along with other similar resources in the Department of Lands and Forests. The Branch would deal with the granting of water rights, water power, river pollution and industrial use.

The development of irrigation should be divorced from that branch and established as a branch of the Department of Agriculture under a director with a broad agricultural background. The staff could include engineers to supply technical information and for designing projects but policy and decisions to establish projects should be based on something more than engineering feasibility.

Section 3

SOME ASPECTS OF PRESENT AND FUTURE DEVELOPMENT

Our terms of reference asked us to consider the economics of irrigation and to comment on the future planning and development which we deemed desirable. It is the opinion of the Committee that the economic climate should be the primary influence in consideration of irrigation projects and, for this reason, we shall discuss first, the economic benefits of irrigation and examine the possibilities of present and future markets before we consider the problems of planning and development.

Economic Conditions

Benefits of

Irrigation In many of our hearings, particularly those in Brooks and Lethbridge, it was pointed out to us that the density of population in irrigation districts is several times greater than in similar dry-land farming areas. We were also made aware of the considerable increase in volume of production of higher value which can be produced from irrigated land. We were told that these conditions generate a higher tax base for the municipalities concerned and that the greater volume of business means more income tax for the Federal Government. A comparison was drawn for us of the difference between a dry-land ranching area in need of lines of communication, distant from schools and isolated in other ways from the social amenities of a well populated district, and the City of Lethbridge, along with the surrounding district, where there is a thriving business community soundly based on an irrigation economy.

We believe that under certain conditions these benefits are undeniable and should be considered as part of the returns from any irrigation project. It is unfortunately our conclusion however, that these benefits are so widespread throughout our whole economy, and so intermingled with the rest of economic activity, both at any particular time and also over a period of time, that measurement of them in any financial sense is not possible.

Nevertheless, it is worthwhile to list and discuss the nature of the benefits which have been obtained or can be obtained from an irrigation project. Benefits fall within three general groups: primary, secondary and social benefits.

First there are the primary or direct benefits, such as the net land rents created by irrigation. These are easily identified and measured.

Second, there may be indirect economic benefits. These cannot be recovered in any sense that would make it possible to write them off against the cost of the initial capital investment. These benefits fall into three categories. There are the benefits of increased income within agriculture through increased volume of production, greater diversity, better conservation and land-use practice, greater security and stability of income and extended

opportunities for new settlement and resettlement. Then there are benefits outside of agriculture such as the national benefit of having added resources in the form of more productive land and the social benefits of rehabilitation of existing settlement. In the third category there are the benefits which come to governments in the form of saving of public assistance, and in the possibility through the investment in irrigation of injecting spending power to increase employment at a desirable time in the economy.

The last group of benefits are even less tangible. They consist of such things as the provision for a closer community life which is, by dint of economic forces, gradually becoming more difficult to maintain in our agricultural communities. The greater amenities for individuals and groups which can be provided in the more densely populated community can be enjoyed by those in business as well as those in farming in the area.

It is our opinion that many of these benefits are extremely long run benefits and, indeed, that in total their value may tend to be over-estimated except in regions where specialty crops can be introduced. When they are being considered in relation to existing irrigation projects it must be remembered that at the last census over half the land being irrigated was still being used for grain growing. In the projects developed so far, outside of areas which have specialty crops, the major benefit achieved has been the stabilization of communities in which moisture conditions would otherwise lead to serious problems of resettlement, public assistance and social welfare.

The stabilizing effects, in themselves, can appear greater than they are in fact. In areas now being developed for irrigation, and certainly in the areas now planned for future development, there has been a considerable re-organization of farms and farm boundaries since the drought period in the 1930's. In our opinion the planning of projects now under way or scheduled for development has been carried out on the assumption that there is no question that it will be to the benefit of Canada as a whole and to the area concerned in particular, to put water on every quarter section where it is physically possible. In many cases, instead of stabilizing the area this practice will break up the large scale units now established, and force farmers into a form of farming for which insufficient evidence is available to show that markets are available. It seems to us that this is likely to be true of the development of the West Block of the B.R.D. When the Committee sat in Hanna we questioned the East Central Water Users Association very closely on the kind of irrigation system they desired. It was quite evident that they wanted a form of stock watering project which would allow them to retain the use of large blocks of crown lands leased from the Province, but, at the same time, provide them with irrigated fodder and pasture to stabilize their farming system. We find this kind of project highly attractive, provided that it can be introduced at a cost which is within reason in relation to the problem involved. It seems that,

7 A more detailed discussion of benefits can be found in Chapter 8 of the Report of the Royal Commission on the South Saskatchewan River Project, Ottawa, 1952.

in this case however, water might have to be carried nearly 100 miles before it could be turned down the coulees to be used in the fashion desired. If the alternative were a full scale irrigation project which would carry water to each quarter section irrigable, the crown lands for grazing would be broken up and the very system of farming would have to become more intensive to meet the costs of water service. Thus it would not stabilize what exists, but require the development of something new which would be considerably more intensive. The success of this form of scheme depends entirely on the presence of markets. It is our opinion that the regional problem of stabilization should be tackled from some other direction than the provision of water through irrigation, if, by doing so it will break up the consolidated farms which have been created through the economic situation and replace them with more intensive units which may have to struggle indefinitely in the absence of the kind of market necessary for their existence.

Markets for Products From Irrigated Land

In both Lethbridge and Brooks the report of Mr. T. Kilduff on the marketing of vegetables was brought to our attention. It was suggested that with help in surveying the market and establishing processing facilities Alberta vegetable producers could secure a greater part of the local market than they now have. We have considered this matter and we are of the opinion that there is some truth to this contention. It would seem logical also, that if government money is to be used in establishing projects, it would be a useful expenditure of funds if more were spent in making sure that wherever competitive advantage can be established, the growers should be encouraged with technical assistance in growing the product, and with advice on how to reach the market in the quickest and most economical fashion.

When it is considered that more could perhaps be done to obtain a larger share of the market in Alberta for certain vegetable products, and, that as population growth continues, the market potential in Alberta and other nearby provinces will increase, it seems clear that gradually a greater acreage of specialty crops can be profitably maintained. In the most optimistic estimate over something like the next twenty years, it is unlikely that the acreage of such crops can be much more than doubled. It has to be remembered that much room is available to increase yield in existing areas, and that this may meet the needs of the expanding market as well as the addition of new land.

The use for the major part of the irrigated acres does not therefore, lie in the growing of high value crops. It is clear from the forecasts published recently in Progress and Prospects of Canadian Agriculture⁸, that the contribution which irrigated land has to make is in the production of fodder for livestock. The forecasts of markets produced in the study mentioned make it abundantly clear that the market for meat products will remain strong enough and attractive enough to put profit in the hands of all those who can raise and feed more livestock. It would appear, that the future

⁸ Wm. Drummond and W. Mackenzie, Progress and Prospectives of Canadian Agriculture, Report to Royal Commission on Canada's Economic Prospects, Ottawa 1957.

of the major part of our irrigated land has to be assessed on its potential contribution to the market for meat. It has been demonstrated clearly that grain is not a profitable crop on irrigated land. The future, therefore, lies in the production of better hay crops and irrigated pasture. Much of the land now under irrigation, and some of the land being developed, have a considerable potential in this direction.

A rather important point must not be lost sight of. The problem of raising stocker and feeder cattle economically may turn out to be more critical than the provision of feed to finish them. Although the provision of fodder is important, so also is the maintenance of extensive grazing lands within easy access of feeding facilities. Our drier lands have gradually been turned into community pastures. Large areas of crown land are being used for grazing and dry land farmers have integrated these with an extensive system of farming to raise cattle. In our opinion it would appear that this suggests a highly profitable future for small irrigation projects which can provide enough irrigated land to give insurance to the large dry land farmer that he will have enough fodder to carry cattle even in the driest of periods. This form of irrigation where it has been introduced has been universally accepted. It was suggested to us that it was such a project that the farmers in the West Block of the B.R.D. had in mind. The E.I.D. is a reasonable success because it has been possible to integrate cheap grazing land with the irrigated land. It is certainly a project of this nature which the East Central Water Users desire.

New development in Alberta, however, has been conceived in terms of the maximum irrigation possible. It means a change of farming for farmers who battled through the depression and the drought to consolidate their land and to integrate with it crown lands which were given up by settlers forced off the land. The present development in irrigation may produce a livestock economy, but for some time to come it does not seem to us that the market for agricultural products will be large enough to warrant putting settlers on crown land and taking away valuable grazing lands from units which have proved themselves profitable.

Many of the officials who appeared before us suggested that the lack of eagerness for irrigation on the part of many farmers in the newer developments stemmed from the high rainfalls of recent years. Undoubtedly this has influenced them. We are inclined, however, to give some considerable weight to the fact that farms have adjusted to the dry conditions by consolidation. Farmers would be grateful for anything which would increase their stability and in this respect a stock watering project would be ideal. This, however, is not the spirit of present intentions in the development of projects.

The market opportunities thus suggest that for something like a minimum of twenty-five years the need for irrigation is to stabilize without greatly intensifying agriculture. Our terms of reference require us to offer an opinion on the size of irrigated

farm which is desirable. This is not easy to do, without reference to type of farm. The specialty crop farm can be well under one quarter section and still be successful. Changes in size going on at the present time would suggest that all types of farms are becoming larger. Evidence is available to suggest also, that without a highly specialized operation the farmer who has less than a half section of land will run into difficulty in competing with others. In relation to future markets therefore, we would conclude that size of farm will move towards more than a half section as a typical size, with the exception of course, of the specialty crop farms.

Future Development

In the report to the Gordon Commission, Progress and Prospects of Canadian Agriculture, the authors offer as their opinion that the market for agricultural products will not expand beyond the present capacity of Canadian agriculture until 1965. They also state "It is difficult to foresee conditions which would require such a high level of output that all of this irrigated land (i.e. land now available in irrigated regions) would be farmed as intensively as the cost of irrigating it would warrant. It is even more unlikely that the demand for food will rise to a level which would justify much further irrigation."¹⁰

This is a statement with which we would agree. It seems to us, considering the problems involved in settlement and resettlement on projects underway, and remembering that the older projects too, have dry land which can be irrigated, that no new projects should be contemplated for some time to come. The additions which are planned to existing developments should be postponed until the problems of both the older and newer areas have been reduced and solutions are in sight. If the market for products is the ultimate end of production, then it is unlikely that our generation need do more than fill in the existing projects until they have reached their full potential. Certainly in the short run there are enough problems to be solved in existing projects without extending developments into new areas.

There is one notable exception to what we have just said. Stock watering projects or small scale projects which can provide a farmer in a dry or semi-dry area with the protection of a limited acreage of irrigated land at reasonable cost will be a good investment for the farmer and the country. We would go further and suggest that such possibilities should be sought out now and studied carefully. They would help us to meet the market needs of the economy and offer farmers the chance to produce a highly profitable product.

In the next twenty years or so we are doubtful of the wisdom of doing much more than this in expanding irrigation. If we should need more land under the ditch there are still suitable

⁹ Chapter 10. Progress and Prospects of Canadian Agriculture, Ottawa, 1957

¹⁰ Progress and Prospects of Canadian Agriculture, Ottawa, 1957, P.267.

possibilities in the older districts, such as the E.I.D., which could be undertaken at a smaller cost than new projects. The E.I.D. has already developed about 1,00,000 acres at a total cost of \$ 1,000,000 or \$ 10 per acre.

It would seem to us also that, if we want to ensure that in the driest of years our present irrigated area will continue to be effectively used, it would be wise to give careful study to the possibilities of building up-river storage at some points and creating internal storage in some projects. (Suggestions for future development appear at the end of this chapter.)

The Development of an Orderly Policy of Improvement and Expansion

As one reviews the stages of the development of irrigation in Alberta the most impressive point which comes to light is the over optimism of the original schemes. In the beginning the C.P.R. and allied groups did not seriously consider the agricultural potential of the land, or where the market was coming from. Their incentive was a higher price for land, and later, a greater volume of rail traffic. Some of the small schemes were successful because the producers on the land saw what was needed and went about providing it themselves. This is true of Mountain View, for example. It seems in retrospect unfortunate that with the proven over-optimism of the C.P.R. and the Lethbridge Northern, so little revision of plans was carried out before the S.N.R.D., or more particularly, the B.R.D. was set in motion.

Each stage in development has shown that the original estimate of irrigable acreage by the Reclamation Service has always been considerably in excess of what can be used even after some expense in levelling land is incurred. It would appear that with the drought of the 1930's still haunting their minds, those responsible for S.N.R.D. and B.R.D. went quickly ahead once the financial means were available, without considering the fact that almost twenty years had elapsed and the very needs of farming had altered. This point aside, it would still have seemed desirable to have carefully reconsidered the estimates of irrigable land and the potential changes in land use involved, before the first canal was dug or the first yard of concrete poured.

There is behind the post-war development of irrigation in this province an urgency which we find difficult to understand. The criterion for a start to be made seems from all we have been able to learn, to have been engineering feasibility. Both Mr. Foss, the P.F.R.A. chief engineer in charge of construction, and Mr. Dean, the engineer in charge of construction on the B.R.D. suggested to us that from an engineering point of view over capacity of structures was a better fault than under capacity. We would not deny the validity of this point of view when something near the size of project planned can be shown to be needed in the foreseeable future. It would seem almost certain however, that the

Reclamation Service estimates of irrigable land were far too near to first approximations to be acted upon. Besides this, there is the fact which does not appear to have been reckoned with, that what might be needed to solve today's problems after farm readjustments would be different from the schemes which began to appear on drawing boards soon after P.F.R.A. was established.

Prior Investigation and Planning Board. We are of the opinion that prior investigation which produces evidence of a much more impressive kind than the surveys of the old Reclamation Service and the original soil surveys of the area, should be carried out before a scheme is on the drawing boards at all. To ensure that such planning is carried out in the most detailed way possible we believe that a planning board should have to examine the evidence and pass a decision before a new project is started. We envisage this board as being set up to act between the Department of Agriculture and the Cabinet. It would be required to examine the investigations made under the Department's auspices. Should its decision be that the scheme was not feasible, this decision, properly supported by evidence, would be final. If it decided that the scheme was desirable the matter would be passed to the Cabinet for approval and action. This board would be composed of the director of the land classifying service, a soil scientist, an engineer, an economist, a representative of the Department of Agriculture and such other technical representatives as were necessary to examine the project. It would have to be satisfied from an agricultural, engineering and economic standpoint that the scheme as planned was realistic in the light of foreseeable circumstances. The board should have the powers to require that any investigations which it considers essential are carried out in order to establish or disestablish the economic feasibility of the project. We are of the opinion that this is important enough to be made a requirement by law so that no scheme could be started without the board first passing it as sound.

This board should have to be satisfied that the timing of such extensions to the existing projects as the High Line Canal and the B.R.D. East Block met with the conditions established for new projects. It is our opinion that the kind of information on these extensions which would be needed for such a board to pass judgement is not available now, and would take several years to gather.

With respect to existing projects being developed we believe that the rate of expansion need not be as fast as that being attempted at present. The planning board might also decide the length of time involved in developing a project. This we envisage to be minimum of ten years.

Irrigation Development District

The period under a development district as mentioned earlier should allow the gradual adjustment from dry land to irrigation. To allow for a readjustment and settlement the following procedures are suggested: All farmers living in the area when the development district is formed should be given two years to prepare to take water. Until such time as he uses water, up until the end of two years, no water rate should be charged.

Water could be supplied for stock watering and gardens during this time at a rate established by the manager. At the end of two years he must pay the water rate on a minimum of 40 acres. The water rate would be assessed on land over and above the 40 acres as soon as water is applied. At the end of the period established as the adjustment period (at least ten years) all irrigable land would be charged a water rate and subject to enforcement of payment thereafter. The water rate set by the Official Trustee and the Provisional Board and approved by the Director of the Irrigation Branch should be one estimated to finance the district when it is self operating. Any deficit in operation during this period would be borne by the Government.

During this period a program of agricultural extension will be carried on to assist farmers to adjust. Production and marketing of special crops and livestock will be given special assistance. There should be ample time for reclassifying all land and any that is questionable should be left off the assessment roll until it is actually irrigated. Settlement of crown land could be carried out under direction of the Provisional Board and Official Trustee.

Under such a scheme and with a system of land classification as recommended elsewhere the best land would be developed just as fast as there is a market for irrigable crops. Any desirable land which has not been irrigated will be in high enough demand that the owner can sell at a favorable price rather than as at present where some farms with a high irrigable acreage have dropped in value. Those who do not want to irrigate will then have a chance to sell out and move and their land can be developed by farmers who want irrigation.

Capital Expenditure

Justified The terms of reference instruct the Committee to consider what capital expenditure can be justified in development of irrigation. The amount of research, investigation and time required to give a specific answer to this query were considered to be beyond the scope of the Committee. However, it is obvious that there is a limit to the expenditure which can be justified. It has been well established that the farmer cannot pay large sums and certainly there are better uses to which Governments may spend money when capital cost reaches \$100 per acre and more. A careful look at alternatives should be taken in planning irrigation development.

Major Storage The danger of severe drought causing insufficient water in the rivers for the demand of irrigation is always with us. This danger can be alleviated by creating storage reservoirs either in the district or up stream. A district like the E.I.D. offers good opportunity for internal storage but the Lethbridge Northern lacks opportunity for further development and now has internal storage for only about five days supply. The Lethbridge Northern officials believe that storage is needed now to ensure them a supply and a good site exists on the Oldman River at the Gap. The low cost internal storage should be given priority but investigations should be made to determine the need for up-stream storage for existing projects as well as for future development.

Although mountain storage is usually more expensive to develop it has the advantage of a much lower loss by evaporation than the shallow prairie storage. When water supply becomes short, which it will eventually, this may make it desirable to use mountain storage.

The engineering aspects of building dams strikes the public imagination but other aspects of the water supply are often overlooked. Ground storage on the watershed, snow pack and the orderly release of the water are conditioned by the state of health of the watershed which determines the amount, quality and timing of the flow. Watershed condition is vital to the supply of water and for the life of the reservoir.

The committee believes that it is a responsibility of the senior governments to investigate the need for future water supplies for irrigation and to take steps necessary to ensure the required supply. Steps which may be taken are:

- 1) Ensure good watershed management
- 2) Investigate the future needs for water
- 3) Build storage required including minor drainage and pot holes.

Small Projects There is water available from minor water sheds that might well be used to stabilize and supplement the present agricultural production of some localities. A good example of this type of project is that of Ross Creek Irrigation District. A minor drainage from the Cypress Hills which previously supplied spring runoff for diking and flooding was impounded so that much fuller and more efficient use could be made of the water. In our concern for the major streams we should not lose sight of these. In most cases the water is used near the source and the cost is low. Since irrigation is mainly for feed production, gardens and home improvement there is not the disruption of dry farm community which there would be in changing over to full scale irrigation districts. Although this committee recommends caution and no haste in irrigation development generally in the province we recommended full steam ahead in building reservoirs and making use of minor drainage where they are in ranching and mixed farming areas and where they will reduce the hazard of drought and make country life more enjoyable. Such enterprises should receive public assistance in line with that given to major projects.

Section 4

RECOMMENDATIONS

In the foregoing sections we have pointed out anomalies and inequalities among irrigation districts, a swing toward bureaucracy in irrigation development, unwarranted zeal for the general benefits of irrigation and insufficient regard for economics. On the other hand we encountered good forms of organization and administration and prosperous irrigation communities. They are the natural result of the half century of trial and error development through which irrigation in Alberta has passed. The Committee believes that a time has been reached when logical pattern for irrigation development and administration is emerging. In our opinion the suggestions made in this report contain the basis for such a pattern. We wish to present these in brief form as our recommendations.

We recommend that:

1. A Planning Board be established to decide upon the initiation of new projects and the timing of extensions to projects already started. The composition and duties of the Board are suggested in Section 3.
2. No new projects or extensions to those already initiated be undertaken until the Board mentioned above is formed and recommends such projects except as suggested elsewhere.
3. The Principle of farmer-owned and-operated districts be recognized as essential to the organization of irrigation in Alberta.
4. For areas where irrigation is being established a new act or an ammendment to the Irrigation Districts Act be passed to allow for the formation of an "Irrigation Development District" as discussed in this report.
5. The Saint Mary Milk River Development Crown Corporation be reduced in function to the distributing of water on a wholesale basis to irrigation districts.
6. The Lethbridge-Coaldale area be established as a district under the irrigation Act and that eastern sections of S.M.R.D. currently being managed by the Crown Corporation to be formed into an Irrigation Development District as described elsewhere.
7. The Bow River Development Crown Corporation cease to function unless more than one district is established in the area served and then only to distribute water to the districts.
8. A careful look be taken at the West Block of P.R.D. to consider rate of development and possible changes in the ultimate plans for the district.

9. Uniformity be established in the form of organization and in policy of government assistance.
10. The senior Governments accept responsibility for financing the building of adequate drainage in all districts, old and new.
11. The Province establish a loan fund available to districts for the replacement of major structures for which no adequate replacement fund has been built up.
12. The maintenance of bridges and culverts be accepted as the responsibility of the authority responsible for the road on which they are situated.
13. The water rates in each district should cover all operating and maintenance charges once the district is in operation.
14. A uniform water right of \$10.00 per acre be retained until circumstances warrant a change.
15. The work currently being done by the Extension Irrigationist be expanded into a Land Classification Service available to all districts.
16. The right of appeal to land classification be to a Board as outlined in Section 2.
17. The relationships between the Provincial and Federal Governments be clarified and brought in line with constitutional autonomy and responsibility of the Province.
18. The water Resources Branch be transferred to the Department of Lands and Forest and an Irrigation Branch be established in the Department of Agriculture.
19. A study be made of the future water needs for irrigation, domestic use and industry, and the Federal Government be encouraged to develop upstream storage similar to that of the Saint Mary - Belly - Waterton Rivers on other interprovincial waters.
20. The Department of Agriculture expand the work of the Extension Service in irrigated areas to work out problems of marketing special crops and of growing livestock under irrigation.

APPENDIX

IRRIGATION STUDY COMMITTEE -#- TERMS OF REFERENCE

1. Consider the organization and administrative set-up of present districts and projects to determine if a standard form of irrigation district might be desirable, and what, if any, amalgamations or divisions of existing units are indicated to obtain better results for the water user.

What form of district has the best chance of success:

Farmer owned and operated,
Crown corporations or other forms,
What should the functions of a County or Municipality be with respect to irrigation in their areas.

2. Study the financial structure of Irrigations Districts and Projects to determine the basis upon which, and for what period of time, a district requires financial assistance, and in what manner might it be provided. This study should give special attention to:

- (a) The construction of works,
- (b) The maintenance of operation of the district,
- (c) The colonization and land preparation,
- (d) The replacement of structures,
- (e) Drainage and the rehabilitation of damaged lands,
- (f) The installation and maintenance of bridges and culverts.

3. Study the policy which should be adopted in Alberta for the development of present and future projects. Among specific topics are:

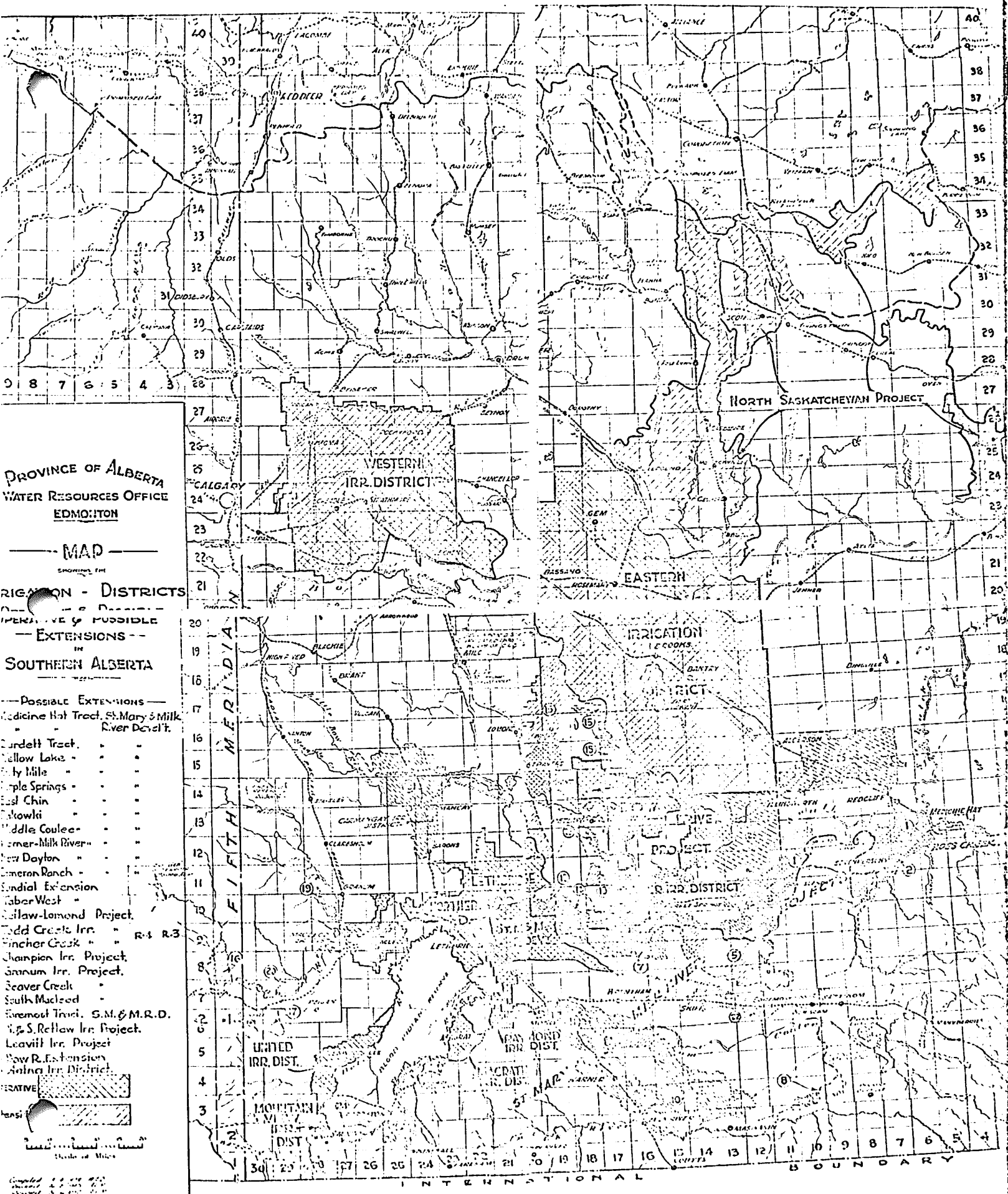
- (a) The future needs for irrigation in Alberta,
- (b) The development of an orderly policy of improvement and expansion,
- (c) The desirability of providing a method whereby an irrigated unit or a portion thereof may be dissolved,
- (d) The future needs for water storage and reservoirs,
- (e) The efficiency of soil surveys and land classification.

4. To make an assessment of the economics of irrigation with particular reference to the following:

- (a) The economic benefits, if any, that have accrued in irrigated areas,
- (b) What capital expenditures to develop irrigation can be justified,
- (c) What are the economic prospects for irrigated farming in Alberta and what size of unit and type of production are indicated,
- (d) Are present methods of taxation and assessment of irrigated lands equitable? Are the present water rates and water rights equitable?

5. Having regard to the role of the Government of Canada (P.F.R.A.) in the development of irrigation in Alberta to date, and having regard to Federal participation in its development in the future, what form of Federal-Provincial action would be most suitable for existing projects and for new developments.

6. Is the present organization for the administration of water resources in Alberta satisfactory, having regard to the relationship which exists among water resources, power facilities, irrigation, flooding and river pollution?



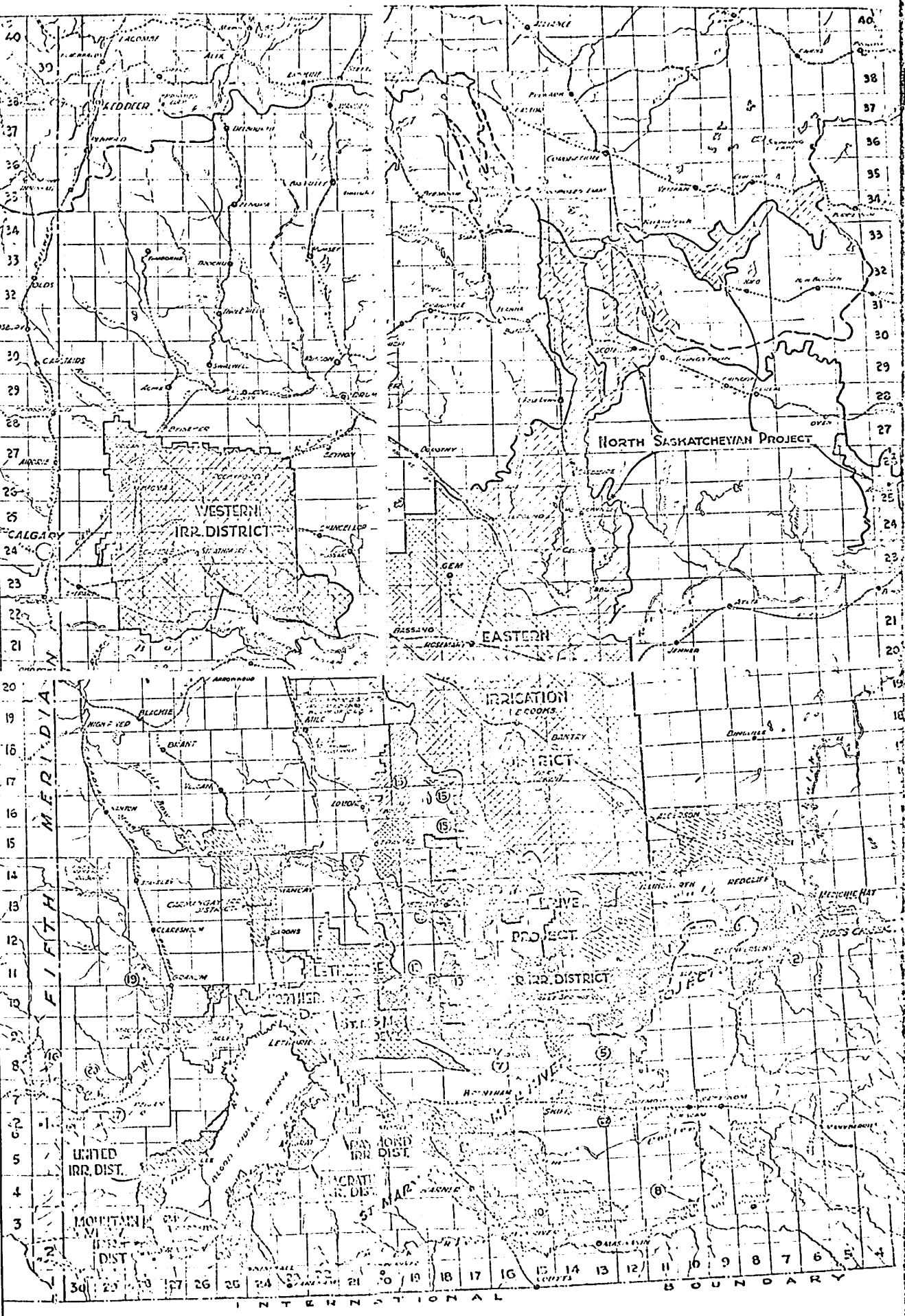
PROVINCE OF ALBERTA
 WATER RESOURCES OFFICE
 EDMONTON

MAP
 SHOWING THE
 IRRIGATION - DISTRICTS
 OPERATIVE & POSSIBLE
 EXTENSIONS
 IN
 SOUTHERN ALBERTA

- Possible Extensions —
 Medicine Hat Tract, St. Mary & Milk
 River Dev't.
- Curdlett Tract
 - Yellow Lake
 - High Mile
 - Apple Springs
 - East Chin
 - Stowli
 - Middle Coulee
 - Emer-Milk River
 - New Dayton
 - Emeron Ranch
 - Sundial Extension
 - Taber West
 - Willow-Lamond Project
 - Red Creek Irr.
 - Fincher Creek
 - Champion Irr. Project
 - Stinson Irr. Project
 - Beaver Creek
 - South Macleod
 - Emerout Tract, S.M. & M.R.D.
 - St. S. Redlaw Irr. Project
 - Leavitt Irr. Project
 - Raw R. Extension
 - Antonia Irr. District

LEGEND
 OPERATIVE
 POSSIBLE
 Scale of Miles

Compiled 1-1-57
 Revised 4-1-57
 Revised 1-1-58
 Revised 1-1-59



INTERNATIONAL BOUNDARY