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# ANNUAL REPORT 1980-1981

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PRAIRIE FARM REHABILITATION ADMINISTRATION

Canada



Government of Canada

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Regional Economic Expansion

Expansion Économique Régionale



PFRA

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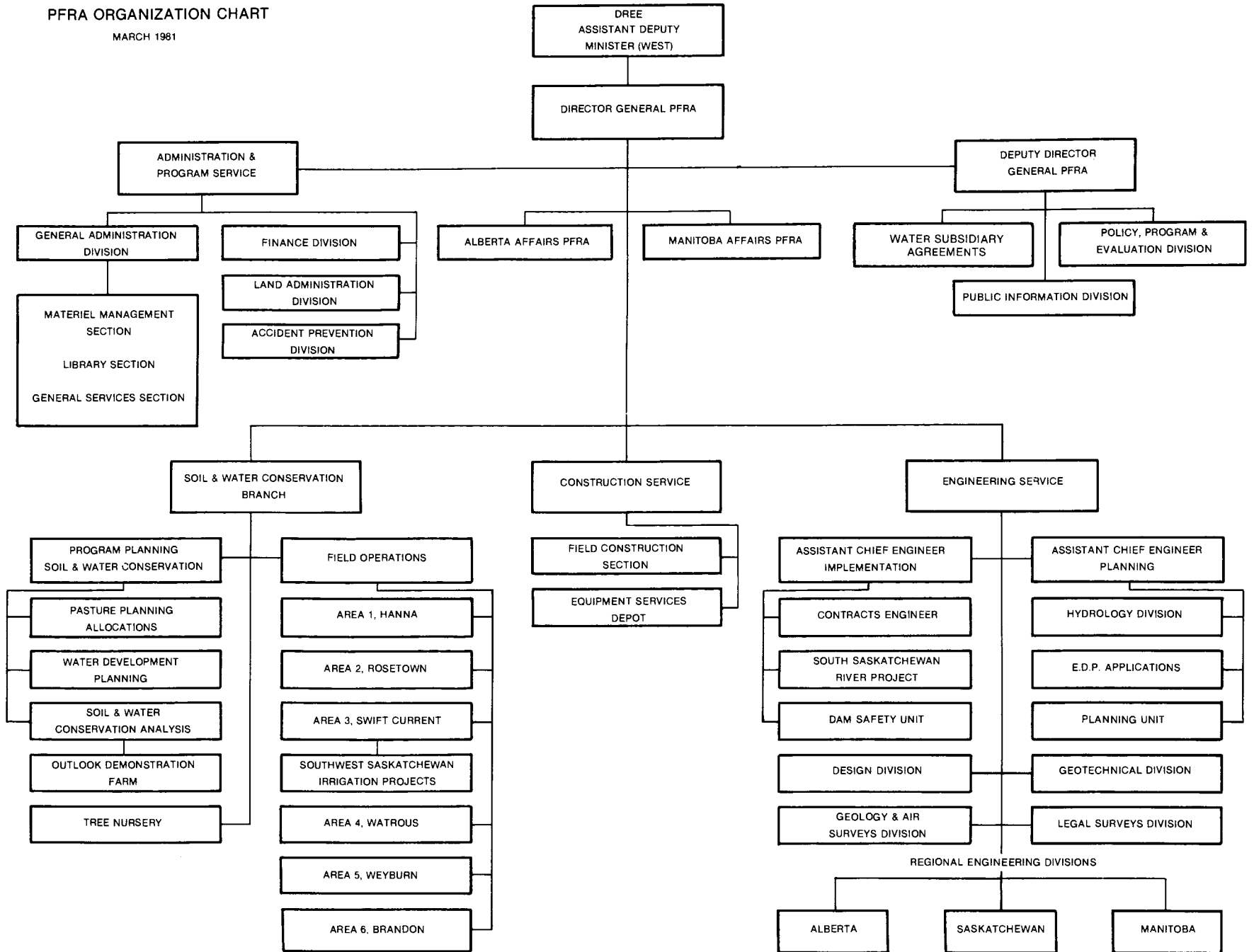
PFRA

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ANNUAL REPORT 1980-1981

**PFRA ORGANIZATION CHART**

MARCH 1981



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# INTRODUCTORY NOTES

The fiscal year 1980-81 was a challenging period for those involved in western agriculture. Producers, who had faced the consequences of drought in 1977, were again threatened by drought in the past year.

One consequence of the drought was a greater call for PFRA assistance. Additional programs, such as the Herd Maintenance Assistance Program, were instituted to assist hard-pressed livestock producers. The On-Farm and Small-Community Water Development Programs received additional funding because of diminishing water supplies. As well, Emergency Water Supply agreements were formulated with the provinces of Saskatchewan and Manitoba.

The magnitude of the drought relief programs undertaken resulted in a temporary diversion of resources from the ongoing process of evaluation within PFRA. A resumption of this important function is anticipated in the coming year.

An important outcome of past evaluation was the recent reorganization of the Land Use Service and Water Development Service into the Soil and Water Conservation Branch. This reorganization has resulted in the establishment of one new office and the placement of additional field personnel. The intent of this action is to insure that PFRA programs are directed at the emerging soil and water conservation problems and development opportunities on the prairies.

The challenge of conserving and developing prairie soil and water resources will be even greater in future years. In the coming year, we will be further analyzing actions required to meet this challenge.

Harry M. Hill  
Director General, PFRA

# HIGHLIGHTS OF THE YEAR

The 1980-81 year saw changes in organization and program delivery in PFRA. Highlights of the period included the following.

- The amalgamation of the Land Use Service and Water Development Service into a single unit — the Soil and Water Conservation Branch. This reorganization also made possible the creation of the independent Construction Service unit.
- The signing of the Canada-Manitoba Interim Subsidiary Agreement on Water Development for Regional Economic Expansion and Drought Proofing. This resembles the Canada-Saskatchewan agreement signed in 1979.
- Establishment of the Herd Maintenance Assistance Program (HMAP) to assist livestock producers affected by drought. At the peak of operations, PFRA employed nearly 100 field and office staff in the administration of this program.
- An increase of 40 per cent in the number of projects under the On-Farm Water Development Program. Higher incentives under the newly created Supplemental Well Assistance Program were largely responsible for this increased activity.
- Total annual expenditures of \$79 943 000. The significant increase in spending from the previous fiscal year was due largely to the \$43 945 000 expenditure on Herd Maintenance Assistance Program contributions and administration. During the same period, person-year utilization increased from 829 to 867. Program revenues grew by 10 per cent to reach \$9 586 000, reflecting higher fees for breeding and pasturage under the Community Pasture Program. (Expenditure and revenue details are provided in Appendix I.)

# PFRA PROGRAMS

## On-Farm and Small-Community Water Development Programs

Within the broad objective of soil and water conservation, PFRA administers programs directed at assisting farmers and small rural communities in the development of water source and irrigation projects. Due to the extremely dry conditions which persisted on the prairies in early 1980 and the light runoff during the spring of 1981, program activity was much above normal.

In response to an acute water supply problem, PFRA implemented a supplemental assistance program on wells, which increased the level of contribution, thereby encouraging farmers and ranchers to develop more reliable sources of water. The dry year, plus the increased level of contribution, produced a 40-per cent increase in the number of projects over that of the previous year. Total expenditures under the On-Farm Water Development Program was \$4.2 million.

In response to water supply problems in small communities and municipalities, PFRA constructed eight community water storage projects and investigated an additional 27.

In addition to the ongoing water development programs administered by PFRA, Canada entered into Emergency Water Supply agreements with the provinces of Manitoba and Saskatchewan. The agreements provided for equal cost-sharing with the provinces of emergency community water source developments and the transport and diversion of water. A total of \$312 000 was contributed under this program, which provided for emergency development, transport, and diversion of water in the two provinces.

### On-Farm Activities

Below-normal winter precipitation was recorded throughout most of the prairie region, particularly in the Peace River area and the southern portions of Alberta and Saskatchewan. This

condition, coupled with a dry spring, created critical water supply shortages for many individuals and rural communities across much of the prairie provinces. Precipitation in the form of rain served to provide needed moisture for field crops; however, water supply problems persisted throughout the summer, fall and winter of 1980-81.

Through the 21 area and district offices in the prairie provinces, PFRA administered a rural water development program. The service includes technical and financial assistance to farmers and ranchers for the development of water supplies for domestic, livestock and irrigation uses. Normally, maximum grants to individuals are \$550 for the development of dugouts, wells and stockwatering dams, and \$600 for irrigation schemes. Neighbour projects, where two or more producers pool their resources, are eligible for a maximum project contribution of \$1 000.

Due to critical conditions prevalent during the spring and early summer of 1980, PFRA initiated the Supplemental Well Assistance Program, which increased the maximum level of contribution on wells from \$550 to \$1 500. The contribution for other types of project developments (i.e. dugouts, stockwatering dams and irrigation projects) remained at previous levels.

Dry conditions, plus the increased level of assistance for wells, created a significant increase in program activity over that of the previous year; the overall increase in the number of financially assisted projects was about 40 per cent. The number of wells increased by 35 per cent and the number of dugouts by 50 per cent. Table 1 shows a comparison of the number of projects and the contributions paid out for the different types of projects for 1979-80 and 1980-81. Appendix II of this report shows activity by province.

As part of PFRA involvement in drought surveillance and reporting, water development district staff played an active role in monitoring on-farm water supplies, small-community water supplies, soil moisture and pasture conditions.



Table 1

## Comparison of On-Farm Activities: 1979-80 and 1980-81

	1979-80		1980-81	
	Number of projects	PFRA contribution	Number of projects	PFRA contribution
Dugouts	1 075	\$ 373 272	1 646	\$ 567 636
Stockwatering Dams	69	25 381	114	40 447
Irrigation	103	58 825	106	62 449
Wells	4 588	1 784 691	6 164	3 567 715
Total	5 835	\$2 242 169	8 030	\$4 238 247

### Community Projects

During 1980-81, a number of small rural communities applied to PFRA for technical and financial assistance for the development of water storage reservoirs. A total of 35 preliminary investigations were initiated to assess water supply problems for small rural communities during this period. Eight of these resulted in projects which were constructed by PFRA at a total cost of about \$100 000. In 1979, 25 investigations were completed, resulting in the construction of five projects. The policy applying to community project development during 1980-81 was somewhat restrictive in that funding was available for surface storage development (i.e. dugouts and dams) but not for other forms of source development, such as wells.

The community projects program administered by the Water Development Service has provided many small urban centres and rural municipalities with water supplies for domestic, livestock and irrigation use. Since the inception of the program, more than 1 400 such projects have been completed.

### Agricultural Service Centres Program

The Agricultural Service Centres (ASC) Program provides financial and technical assistance for the construction of municipal water and sewage facilities in 54 designated agricultural centres in the prairie provinces. This program was introduced in Saskatchewan and Manitoba in 1972 and is due to expire March 31, 1982; however a submission which was made to extend the expiry date for the Saskatchewan program by one year, has since been granted. The program was introduced in Alberta in 1973, but expired in that province on March 31, 1979. (See Figure 1 for locations of centres where work was undertaken in 1980-81.)

The design of many of the water supply source facilities is carried out directly by PFRA, while the remainder of the engineering works are designed by consulting engineering firms. In addition, PFRA makes substantial contributions in engineering and technical assistance by directly administering all contracts and inspecting construction for the projects.

The total financial commitment authorized by the federal government is \$54 million. Half of this sum is provided as grants and half as loans to the provinces. Approximately \$47.1 million had been spent to March 31, 1981.

**DESIGNATED AGRICULTURAL SERVICE CENTRES  
WHERE WORK WAS IN PROGRESS 1980-81**

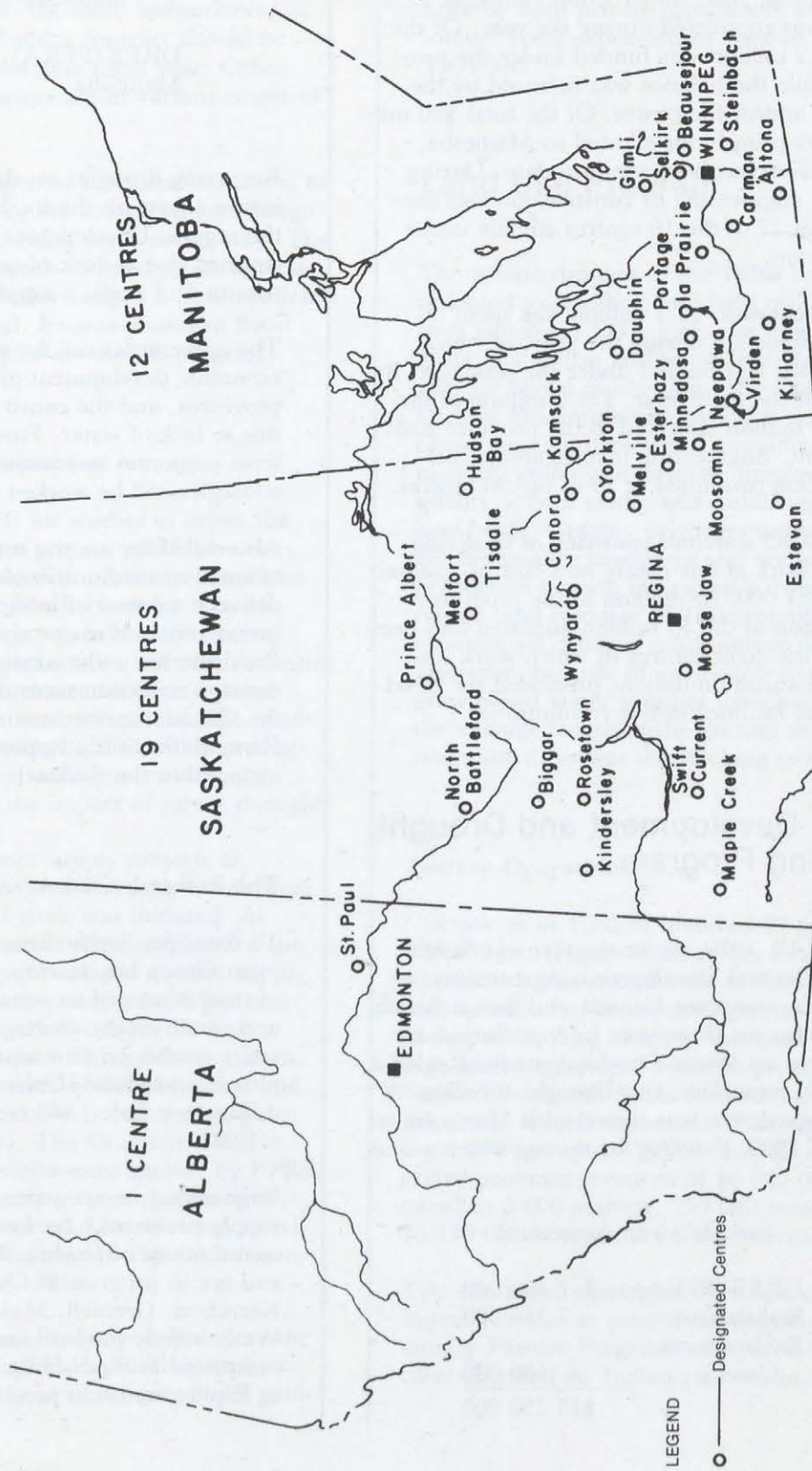


Figure 1

In Manitoba, ASC construction valued at \$2.5 million was completed during the year. Of the total, \$2.2 million was funded under the program, while the balance was financed by the province and/or the centre. Of the total \$20 million in program funds allotted to Manitoba, \$17.7 million has been spent to date. During the year, engineering or construction was carried out at 12 of the 16 centres eligible under the program.

In Saskatchewan, \$2.3 million was spent on ASC construction during the year, of which \$2.2 million was funded under the program. By the end of the fiscal year, \$23.6 million of the total \$28 million allocated to the province had been spent. Engineering investigations and construction continued at 19 of the 26 centres.

Alberta ASC activities consisted of finalizing contract work at one centre at a cost of approximately \$31 000. At the end of the program, \$5.8 million of the \$6 million allocated had been spent in the eight centres in which work was done. Financial limitations precluded the development of facilities in five communities.

## Water Development and Drought Proofing Program

On May 17, 1979, under the Canada-Saskatchewan General Development Agreement, PFRA, Environment Canada and Saskatchewan entered into the three-year Interim Subsidiary Agreement on Water Development for Regional Economic Expansion and Drought Proofing. A similar agreement was signed with Manitoba on May 30, 1980. Funding for the agreements is as follows:

### Saskatchewan Agreement

DREE (PFRA)	\$ 7 400 000
Saskatchewan	7 350 000
Environment	
Canada	500 000
	<hr/>
	\$15 250 000

### Manitoba Agreement

DREE (PFRA)	\$ 5 350 000
Manitoba	3 600 000
	<hr/>
	\$ 8 950 000

Recurring droughts on the prairies have had severe effects on the social and economic life of the region. Development has often been constrained due to lack of water and uneven distribution of surface supplies.

The agreements call for studies to assess the economic development opportunities in the provinces, and the constraints to development due to lack of water. From these studies, long-term economic and water resource development strategies will be worked out.

Also called for are the construction of a number of small to medium-sized water storage and delivery schemes of immediate concern, and the investigation of major groundwater aquifers. Provision for undertaking some of the flood damage reduction measures recommended in the Canada-Saskatchewan-Manitoba Souris River Basin Study Report of June 1978 is included in the Saskatchewan agreement.

### The Saskatchewan Agreement

To date, the Saskatchewan Agreement Management Group has developed a preliminary outline of studies needed to assess the effects of drought and water supply shortages. Phase I — groundwater studies on four aquifers — has been completed, and phase II investigations, involving drilling test holes, will commence in the spring of 1981.

Engineering investigations for solutions to water supply problems have been completed for the communities of Ceylon, Melfort and Radville and are in progress at Canora, Humboldt, Kerrobert, Grenfell, Maidstone and Wynyard. Water supply project construction has been completed at Birch Hills, is nearing completion at Kipling and is in progress at Melfort. Tenders

have been called for the main embankment of the Weyburn dam and a contract should be awarded early in the next fiscal year. Other elements of this project are in various stages of design.

Field surveys for specific structural measures to reduce flood damage are complete, and design and screening of alternatives is under way. The purchase of two parcels of flood-prone agricultural land and the relocation of a farm residence have been approved. Improvements in flood forecasting techniques are also in progress.

### **The Manitoba Agreement**

The agreement calls for studies to assess the effects of drought on present and future economic development, with particular emphasis on the Assiniboine South-Hespeler area of Manitoba. In addition to investigating the effects of drought, the studies will also examine means of improving water supplies to meet existing and future water demands. The result of the drought proofing studies will be a long-term water resource management strategy aimed at reducing the impact of future drought.

Construction of water supply projects at Morden, Grandview and Edwards Creek were given approval and work was initiated. At Morden, construction of the first phase of the project, a lowering of the town's water supply intake in Lake Minnewasta, was 70 per cent completed at year end. Work on the second phase, a raising of the existing Morden Dam, consisted of preparation of designs, plans and specifications; the project is expected to go to tender in May 1981. The Grandview and Edwards Creek projects were studied by PFRA engineers and the preparation of plans and specifications was started. Construction activities for these two projects are expected to commence in the fall of 1981.

The groundwater studies were well under way during the year. Exploratory drilling and well testing were carried out under provincial guid-

ance by both private contractors and PFRA forces. Total expenditures were in excess of \$300 000.

## **Land Use Program**

The prairie drought of the 1930s brought unprecedented soil drifting and land utilization problems which, in 1937, gave rise to a PFRA program to stabilize and rehabilitate lands unsuitable for cereal production. The Community Pasture Program which evolved, now centres on conserving land resources, providing supplementary grazing to farmers, improving the quality of beef cattle, and stabilizing western beef herds. Grazing privileges are allocated to benefit smaller producers and are scaled in proportion to each individual's owned, leased or rented land resource. All community pastures experienced drought conditions in 1980-81. However, because of good carry-over of grass growth and water supplies from previous years, the average length of the grazing season was maintained, as was the stocking rate.

### **Pasture Operations**

Operations in 1980-81 involved 89 pastures on 929 669 ha. (Figure 2 shows the location of community pastures; details of the development and operation of community pastures are shown in Appendix III.) Much of this land was available under agreement with the provinces of Saskatchewan and Manitoba, with the remainder under federal ownership. Patrons numbering 4 800 pastured 253 000 animals and generated program revenues of \$6 900 000, compared to 5 000 patrons, 250 000 animals, and \$5 170 000 in revenue for the previous year.

Two community pastures were operated on Indian reserves as part of the ongoing Community Pasture Program, compared to six pastures operated on Indian reserves in 1979-80.



Fees for 1980 were substantially increased (with exception of the municipal tax levy) to assist in offsetting increased operating costs. Fees for 1980 were:

Cattle	\$0.16/head/day	(includes \$0.02 municipal levy)
Calves	\$6.50/head/season	
Horses	\$0.20/head/day	(includes \$0.02 municipal levy)
Colts	\$7.50/head/season	
Breeding fee	\$21.00/cow placed in breeding field	

There was no change during the year with respect to PFRA pastures which had been identified by Indian bands in Saskatchewan as a possible means of settling portions of outstanding treaty land entitlements. In total, all or parts of six PFRA community pastures in Saskatchewan have been identified through the selection process. Included are the Meeting Lake and Paynton pastures near North Battleford, Newcombe No. 1 near Kindersley, Ituna Bon Accord near Yorkton, and the Wellington and Cote San Clara pastures near Weyburn and Kamsack.

Although a number of meetings were held during the year among band members, pasture patrons, and representatives of affected municipalities and the Department of Indian Affairs and Northern Development, these were primarily for information purposes and did not involve serious transfer negotiations. PFRA continued to provide technical advice and information to all interested parties.

### Pasture Improvement and Development

The Pasture Improvement and Development Division of PFRA provides an ongoing program of improvement and development of facilities required for the operation of PFRA pastures. During the year, the major emphasis of the

program was on maintenance of existing facilities and the investigation, development and improvement of livestock water sources. The dry period experienced during 1980 created above-normal activity in terms of water supply development.

The reorganization of the PFRA Land Use Service and Water Development Service, and the amalgamation of the Pasture Improvement and Development Division with PFRA's Construction, Equipment and Service Division joined the two construction units and provided the manpower and equipment to conduct the 1980 construction program.

The following statistics compare pasture improvement and development activity for the years 1979-80 and 1980-81:

	1979-80	1980-81
Land clearing	270 ha	315 ha
Weed and brush control	8 084 ha	4 050 ha
New wells	13	35
New dugouts	29	38
Installation of steel troughs	40	30
Fence construction	70 km	82 km
Fence rebuilding	203 km	203 km
House renovations (managers and riders)	8	16

### Tree Distribution Program

The PFRA Tree Distribution Program is operated from the Tree Nursery at Indian Head, Saskatchewan. The main function of the nursery is to provide prairie farmers with seedlings for field, roadside and farmstead shelterbelts. Tree seedlings are also provided to government agencies for soil, water and wildlife conservation programs. More than 430 million seedlings have been distributed to planters since the nursery started in 1902.

The demand for seedling material continues to increase; 6.3 million seedlings were distributed to 9 735 applicants in 1980. Saskatchewan farmers received 68 per cent of the distribution, Manitoba 29 per cent, with the remainder going to Alberta and British Columbia.

The new cold storage building which opened in 1979 was invaluable in the spring of 1980. In the spring of 1979, which was hot and dry, nursery stock which had been stored heeled-in over winter started to break bud before packing operations were half completed. Stock which has broken bud cannot be shipped because its survival when planted is poor. It is estimated that two million seedlings were saved this year alone by storing stock indoors until shipment.

Special studies and programs in 1980-81 included the production of caragana at narrow spacings in beds, rather than fields, to increase production per unit area. A new, superior, poplar clone from the ongoing breeding program has been selected for future shelterbelt distribution. This new clone is disease-resistant and fast growing. Nursery staff continued to monitor for Dutch elm disease in Saskatchewan and to test pheromones (sex attractants) as alternatives to insecticides. Herbicide testing has revealed several new chemicals suitable for use on nursery crops.

Major emphasis has been placed on reducing soil salinity problems in the nursery by changing cropping practices and improving drainage.

## Demonstration Farm

The PFRA Demonstration Farm is an agricultural demonstration centre within the South Saskatchewan River Irrigation Project. The farm provides specialized information on irrigation systems, water management techniques, special crop production and developments in agricultural technology. Its role is largely that of an intermediate demonstration point between research and actual farm production.

Crops demonstrated during 1980-81 included: grain corn, confectionery sunflowers, green peas, triticale, barley, broad beans, soft wheat, green oats, cabbage, carrots and grass-legume forage. These crops were grown on fields from 0.8 to 9.0 ha in size.

Livestock feeding trials were resumed in 1980. Rate-of-gain studies were conducted on steers, using farm produced grain corn and triticale.

Meteorological data were collected and reported at the farm by the Atmospheric Environment Service. These data are used for such things as weather reporting and irrigation scheduling.

Detailed results of all the demonstration trials conducted on the farm during the year are contained in the 1980-81 *Demonstration Farm Annual Report*. This report is available to the public and may be obtained by contacting the PFRA Demonstration Farm at Outlook, Saskatchewan.

## Southwest Saskatchewan Irrigation Projects

PFRA continues to operate 23 water storage and six irrigation projects in southwest Saskatchewan. These permit the growing of forage crops which facilitate the raising of livestock in the local dryland farming area.

In addition, they provide wildlife conservation, recreation, river control, domestic and industrial water supply to one city and three towns, and the release of water to the United States under international treaty.

Although natural runoff was severely below normal during 1980, water requirements were fully met. The only exception was the Maple Creek project, which did not receive a second irrigation.

The flow of water across the international boundary was deficient for most of the irrigation season, but legal requirements were made up

by the end of the year. The allocation to the United States in 1980 of 24 400 cubic decametres (19 800 acre feet) was 110 000 cubic decametres less than that of the previous year.

Six federal projects encompassing 9 270 ha and seven provincial projects encompassing 4 199 ha were provided with water; as well, 3 888 ha were irrigated under private licences.

A program of reconstruction and improvement, based on the recommendations of a 1974 study, was 90 per cent complete at the end of the fiscal year. By year end, more than \$2.1 million had been spent on the program, which is expected to be completed in 1981-82.

## Alberta Irrigation Rehabilitation Program

The Alberta Irrigation Rehabilitation Agreement of 1973 provided for transfer to Alberta of Canada's interest in the St. Mary and Bow River irrigation projects. A federal financial commitment of \$36 million was made, of which about \$32 million was designated for the repair or replacement of irrigation works and structures. Four major structures were included, on which an estimated \$26.3 million will be spent: Carseland Dam, completed at a cost of \$4.2 million; Western Irrigation District headworks, completed at a cost of \$3.6 million; Brooks Aqueduct replacement, completed this year at a cost of \$7.7 million; and the Bassano Dam rehabilitation, which is awaiting clarification of a land control question and is estimated to cost more than \$10 million. Figure 3 shows the distribution of rehabilitation funds. The completion date for the work under the current agreement is March 29, 1982.

The Bassano Dam was built between 1910 and 1914 to store and divert water from the Bow River for domestic and irrigation needs in the Brooks region of southern Alberta. At present, approximately 93 000 ha of land are irrigated with water from the project. Complete rehabili-

tation of the Bassano Dam was planned to commence in early 1979; however, the question of land ownership in the bed of the Bow River at the damsite has not been resolved. Indications have been that the land may be part of the adjacent Blackfoot Indian Reserve, and consequently, original reconstruction plans have been delayed until the matter is resolved. Because of the critical state of deterioration of the structure and the fact that failure could result in serious economic instability in the region, interim repairs were deemed necessary to ensure continued safe operation of the structure. The repairs consisted of refurbishing the spillway gates and patching badly deteriorated concrete in various locations. By year end, the repairs were nearing completion at a cost of approximately \$700 000.

## South Saskatchewan River Project

Under the 1958 Canada-Saskatchewan agreement which provided for the construction of the Gardiner and Qu'Appelle River Dams, Canada assumed responsibility for maintaining the works for a ten-year period ending March 31, 1979. This date was subsequently amended to March 31, 1981 to provide additional time for a full evaluation of the operating characteristics of the Gardiner Dam.

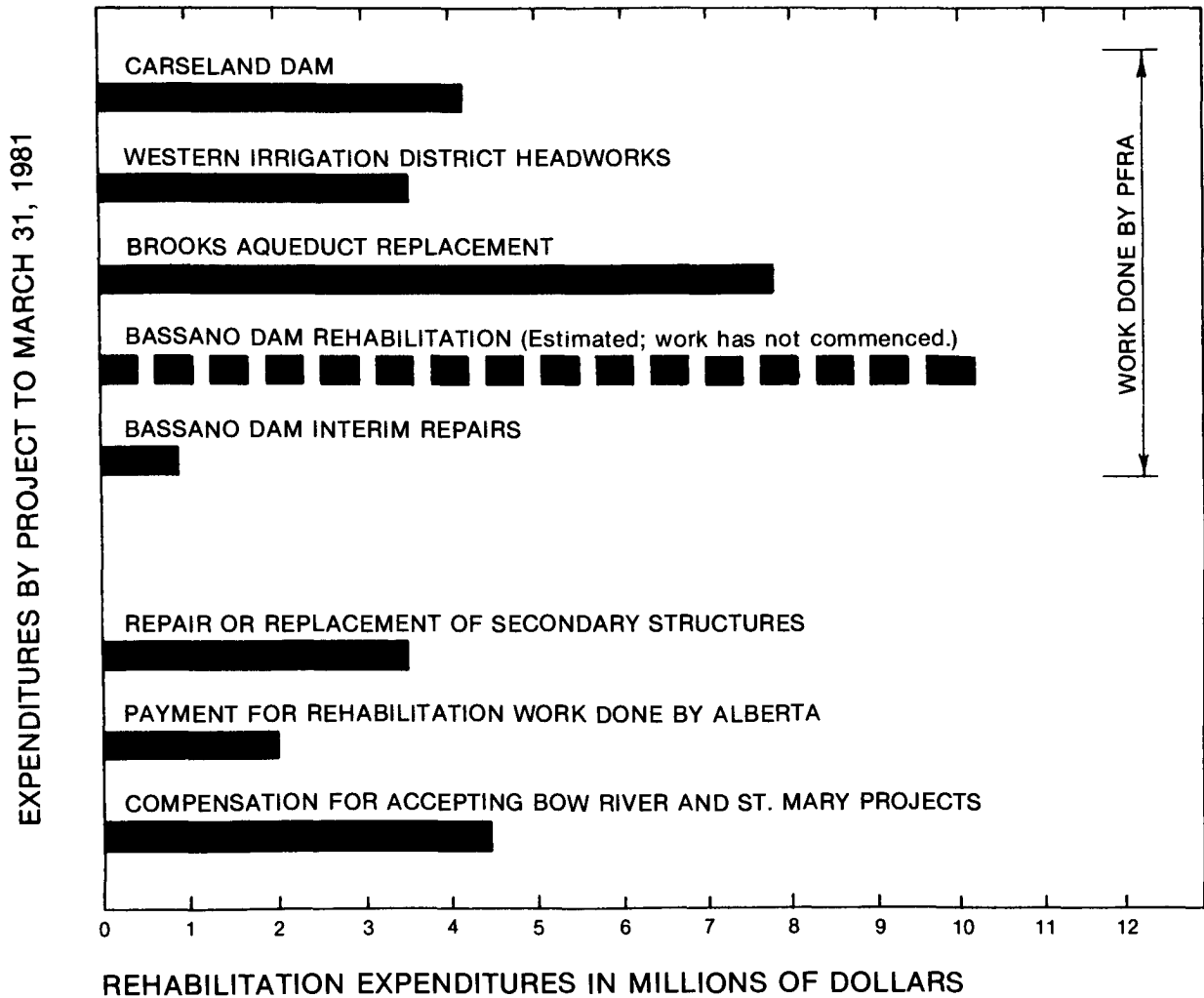
In addition, Canada and Saskatchewan have put in place an agreement whereby PFRA staff will operate and maintain the works, at the province's cost, for a further five-year period from April 1, 1981 to March 31, 1986. Further negotiations were under way at year end regarding possible participation by Canada in certain aspects of the long-term maintenance of the project. PFRA has begun a review of minor problems at the Gardiner Dam as part of the negotiation process.

The reservoir level was lower than normal in the spring of 1980, but rose quite rapidly during June. Dry weather and lower rates of inflow occurred during the remainder of the summer



Figure 3

### ALBERTA IRRIGATION REHABILITATION PROGRAM DISTRIBUTION OF FUNDS



and the reservoir did not fill to full-supply level. In addition to the hydro power releases through Gardiner Dam, water was released through the Qu'Appelle River Dam for the benefit of downstream users, including the cities of Moose Jaw and Regina. Significant amounts of water were also pumped from the reservoir for irrigation and industrial purposes.

Staff are maintained at the project to perform the operation and maintenance, geotechnical and administrative support functions. Scheduled servicing and maintenance were undertaken during the year on equipment and structures associated with both dams. Two contracts were awarded for more significant maintenance and improvements at the Gardiner Dam; the work

involves extending the riprap on the spillway outlet channel and stabilizing a small surface slump in one of the abutments, at a total cost of \$105 000.

Normal instrumentation monitoring was carried out and additional monitoring equipment was installed, in order to continue the assessment of the performance of the foundations, embankments and corrosion-prevention systems.

## Community Water Projects Program

In March 1973, PFRA initiated a program for the financing and construction of community water storage projects in the prairie provinces. Such projects, which are built under individual agreements, are designed to meet municipal, domestic, agricultural and other water needs in rural areas. Manitoba and Saskatchewan have participated in this program.

Construction costs are shared equally between the province and the federal government, with PFRA contributing engineering services for design and construction and the province providing the required lands. On completion, the province accepts full responsibility for operation and maintenance.

Activities under the Community Water Projects Program have been largely replaced by the similar provisions of the interim subsidiary agreements on water development with Manitoba and Saskatchewan. Several water supply projects, for which studies were previously carried out under the Community Water Projects Program, are now being considered or implemented under these agreements. Additional projects are also under way. All community projects included in either program are shown in Figure 4.

Under the original program with Manitoba, PFRA had made agreements for the construction of five projects, three of which required cleanup of minor contract work during the year.

The new \$2.2-million Vermilion Dam, with pumphouse and supply pipeline to Edwards Creek, was officially opened in July. The project will greatly improve the water supply to the town of Dauphin and regulate flows in the Vermilion River for downstream users.

McEachern Dam, a \$120 000 rockfill weir on the Boyne River constructed in 1977-78, provides a reservoir to service an agricultural area east of Carman. Construction of a scheme to drain a low area adjacent to the reservoir remains to be completed next year.

The Gilbert Plains Dam, a reinforced concrete-timber stop log structure on the Valley River, was constructed in 1979 at a cost of \$372 500 to stabilize the water supply for the village of Gilbert Plains. Minor modifications to finalize the project will be carried out next year.

Agreements were signed with Saskatchewan in 1978 to provide water supplies for the towns of Midale and Cabri. At Cabri, contracts for an 11.6-km pipeline and pumping facility from the South Saskatchewan River were awarded at a cost of \$323 000. All work has been essentially completed.

Contracts totalling \$382 000 were awarded for the Midale facilities. The works, involving the construction of a pumping station at Dead Lake Reservoir on the Souris River and an 8.3-km pipeline, are also essentially complete.

## Assiniboine River Diking Program

A system of approximately 160 km of dikes controls flooding along the Assiniboine River between Portage la Prairie and Winnipeg. The operation and maintenance of these dikes has been the responsibility of PFRA since 1950. Ongoing negotiations concerning the transfer to the Province of Manitoba of ownership and responsibility for operation and maintenance of the diking system, have not yet resulted in an agreement.

Figure 4

## MAJOR WATER-RESOURCE ENGINEERING PROJECTS 1980-81

**ALBERTA**

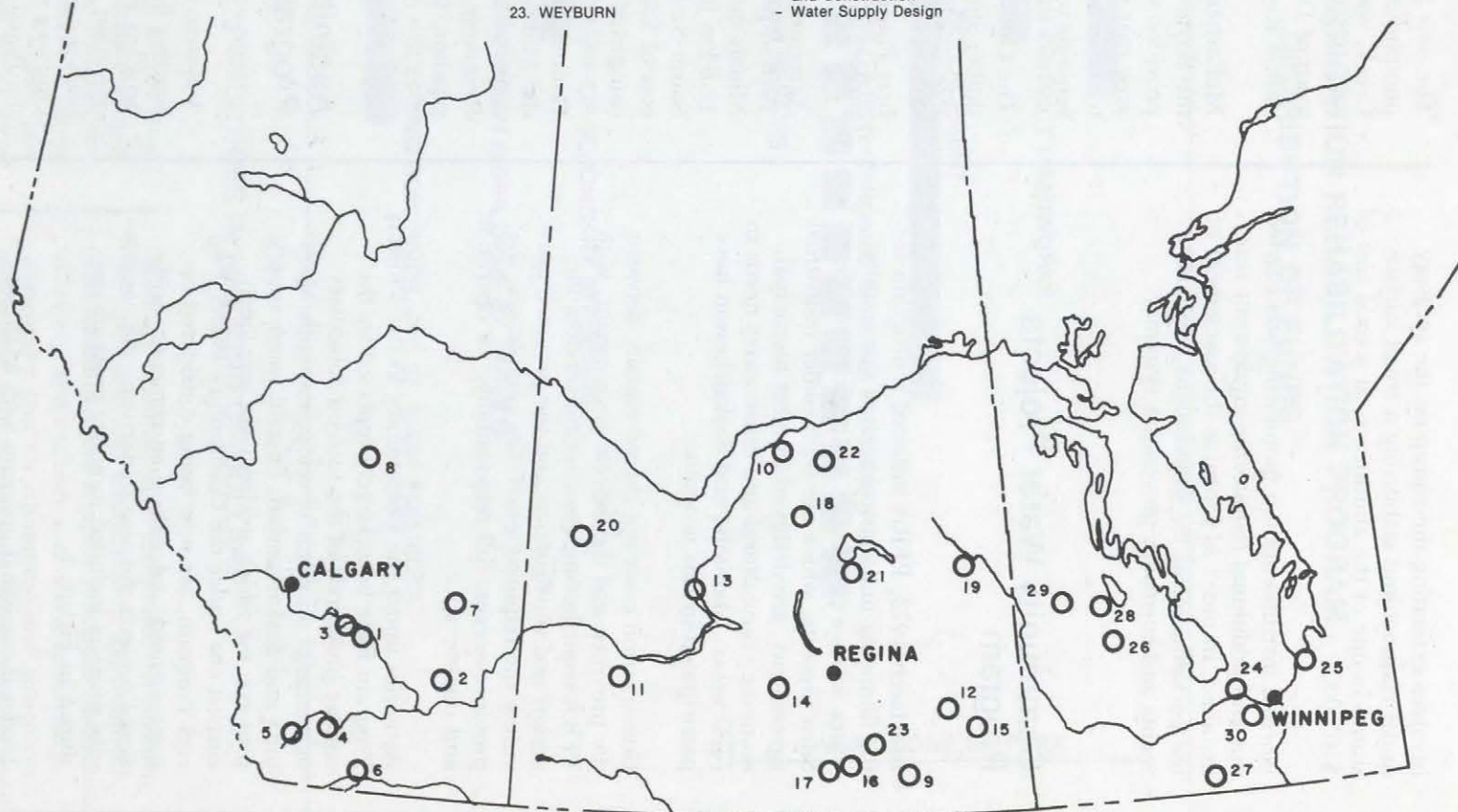
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|---|---|
| <ol style="list-style-type: none"> <li>1. BASSANO DAM</li> <li>2. BROOKS</li> <li>3. BLACKFOOT INDIAN RESERVE</li> <li>4. BLOOD INDIAN RESERVE</li> <li>5. PEIGAN INDIAN RESERVE</li> <li>6. MILK RIVER</li> <li>7. BERRY CREEK, SOUNDING CREEK</li> <li>8. PARLBY CREEK</li> </ol> | <ul style="list-style-type: none"> <li>- Construction</li> <li>- Aqueduct Replacement</li> <li>- Water Use Study and Flood Study</li> <li>- Irrigation Feasibility Study</li> <li>- Brocket Damsite Investigations</li> <li>- Potential Storage Reservoirs Study</li> <li>- Basin Studies</li> <li>- Flood Control Study</li> </ul> |
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**SASKATCHEWAN**

- |   |  |
|---|--|
| <ol style="list-style-type: none"> <li>9. MIDALE</li> <li>10. BIRCH HILLS</li> <li>11. CABRI</li> <li>12. KIPLING</li> <li>13. SOUTH SASKATCHEWAN RIVER PROJECT</li> <li>14. REGINA-MOOSE JAW</li> <li>15. MANOR</li> <li>16. RADVILLE</li> <li>17. CEYLON</li> <li>18. HUMBOLDT</li> <li>19. CANORA</li> <li>20. KERROBERT</li> <li>21. WYNYARD</li> <li>22. MELFORT</li> <li>23. WEYBURN</li> </ol> | <ul style="list-style-type: none"> <li>- Operation and Maintenance</li> <li>- Water Supply Studies</li> <li>- Water Supply Design and Construction</li> <li>- Water Supply Design</li> </ul> |
|---|--|

**MANITOBA**

- |  |   |
|--|---|
| <ol style="list-style-type: none"> <li>24. ASSINIBOINE RIVER SYSTEM</li> <li>25. BROKENHEAD INDIAN RESERVE</li> <li>26. VERMILION DAM AND PUMPHOUSE</li> <li>27. MORDEN</li> <li>28. DAUPHIN</li> <li>29. GRANDVIEW</li> <li>30. ASSINIBOIA TO LA SALLE DIVERSION</li> </ol> | <ul style="list-style-type: none"> <li>- Partial Rehabilitation and Maintenance Studies</li> <li>- Drainage Study</li> <li>- Construction</li> <li>- Water Supply Construction and Design</li> <li>- Water Supply Investigations</li> </ul> |
|--|---|



A 1978 report provided recommendations for reconstruction and raising of the dikes to revised design flood levels. During the year under review, three dike areas were reconstructed at a total cost, excluding that of land, of \$191 000. Two of the 11 areas currently identified, remain to be repaired.

A further study to identify potential problem areas in the diking system, investigated the past movement of the Assiniboine River channel using aerial photography techniques. The report of the study will be useful in reviewing PFRA's approach to maintaining the diking system.

## Herd Maintenance Assistance Program

In June 1980, the administration of the Herd Maintenance Assistance Program (HMAP) was assigned to PFRA. The program was established to provide help to drought-stricken livestock producers in Alberta, Saskatchewan, Manitoba and northwestern Ontario. It was planned to assist producers in maintaining their basic breeding herds through the winter of 1980-81, while responding to requests for a program that would ease cash flow problems associated with the purchase of high-cost fodder supplies.

Eligibility for the program, as originally announced on July 3, was based on cereal crop yield; to remain eligible, breeders were required to maintain at least 70 per cent of their basic breeding herd until May 1, 1981.

Beef producers would qualify for \$35 a head if their crop yield fell to below 70 per cent of the Crop Insurance Corporation's guarantee of production, and a further \$35 if yield went below 50 per cent of the guarantee. Dairy producers would qualify for double these rates.

In late July, after a return of late summer rains, it became evident that yields would be substantially higher than had been anticipated. Follow-

ing further representations by producers, the eligibility criteria for crop yields were changed to 80 per cent of normal crop, with a new factor added: 60 per cent of normal precipitation between November 1, 1980 and May 31, 1981. The second payment was dropped.

These criteria were announced on August 8 and provided an opportunity for assistance at rates of \$70, \$35 and \$8 on qualifying dairy cattle, beef cattle and sheep, respectively.

The precipitation criterion resulted in the definition of an eligible area that included all of northwestern Ontario, virtually all of Manitoba, about half of the livestock-producing area in Saskatchewan, and a substantial area in northern Alberta. Producers who met the crop yield criterion in these areas were eligible for assistance. Provision was also made for a review board to address producers' appeals concerning administration decisions.

Subsequently, pregnant-mares-urine (PMU) producers and goat dairy operators were deemed eligible for the program at rates of \$35 and \$8 per head, respectively.

In the winter of 1980, when program activity was at its peak, PFRA employed approximately 30 office staff and 70 field staff in administering the program. Due to jurisdictional requirements, Agriculture Canada handled field operations and payments in Ontario.

PFRA administered field operations and checks on eligibility for the Livestock Fodder Procurement Program, a concurrent Agriculture Canada program based on the same eligibility criteria.

By March 31, 1981, virtually all applications had been processed and about 10 per cent of producer-initiated appeals had been reviewed and reprocessed, with the following results:

Total applicants registered (approximate):  
36 000

Applications returned:

Alberta	2 806
Saskatchewan	18 674
Manitoba	9 428
Northwestern	
Ontario	355
Total	31 263

Assistance provided:

Alberta	\$ 1 453 000 to	757 applicants
Saskatchewan	19 470 000	12 383
Manitoba	14 560 000	8 208
Northwestern		
Ontario	687 000	339
Total	\$36 170 000 to	21 687 applicants

Rejections under program criteria (includes producer-initiated appeals not processed to date):

Alberta	519
Saskatchewan	2 866
Manitoba	910
Northwestern	
Ontario	16
Total	4 311

Applications under review or in process:

Alberta	1 530
Saskatchewan	3 425
Manitoba	310
Northwestern	
Ontario	0
Total	5 265

## Emergency Water Supply Program

As a result of the very light runoff and persistent dry conditions during the summer of 1980, PFRA was given authority to enter into joint programs with the provinces for the emergency development, transport and diversion of water. Funds for this program were approved in the amount of \$1.1 million for projects applied for and approved between April 1, 1980 and March 31, 1981. Applicants under the program had until March 31, 1982 to complete projects.

Approximately \$300 000 was provided in the form of contributions in Manitoba and Saskatchewan for emergency water source development, emergency pumping and emergency diversion of water. It is expected that \$550 000 will be provided in the 1981-82 fiscal year to complete the program. Alberta did not participate in the Emergency Water Supply Program.

Table 2 shows the type of projects and amount of financial contribution provided in the two participating provinces.

Table 2

### Emergency Water Supply Measures Program

	Water source development	Emergency transport and diversion	Federal share to March 31, 1981
Manitoba	9	467	\$190 860
Saskatchewan	44	13	120 882
Total	53	480	\$311 742

# ADMINISTRATION ACTIVITIES

## The Soil and Water Conservation Branch

During 1980, PFRA received authority for a major reorganization of its program delivery sectors. Traditionally, PFRA's main functions have been carried out, and are still carried out, through programs dealing with on-farm water development, land use, irrigation projects, and the tree nursery. In the past, these projects have operated under two services: the Water Development Service and the Land Use Service.

Effective April 1, 1981, the programs offered by these services will come under the direction of the new Soil and Water Conservation Branch.

During the transition year of 1980-81, six areas were delineated, area managers appointed, and offices established. The offices are located in Hanna, Alberta; Rosetown, Swift Current, Watrous and Weyburn, Saskatchewan; and Brandon, Manitoba. Area managers will be responsible for all soil and water related programs within their specified boundaries.

Implicit in the reorganization is the revitalization of PFRA's historic soil conservation role. The new branch has a planning unit, responsible for long-range program planning in all aspects of soil and water conservation. Involvement in soil conservation is a role that PFRA has been committed to, but not directly involved in, for many years.

## Construction Services

Both the former Water Development Service and the Land Use Service operated construction and maintenance units. This duplication was eliminated by the amalgamation of the two divisions. The new Construction Services unit

operates independently of all other sections of PFRA, providing goods and services under a full charge-back system. By utilizing common housing, equipment and manpower, it will achieve a more economical and viable construction unit to serve the needs of all PFRA.

Over the year, a service depot, equipment storage facility and marshalling yards located in Moose Jaw delivered general construction, tradeshop and equipment repair services valued at \$2 573 694. In addition, related technical and administrative activities involving the establishment of equipment rental rates, equipment availability research, preparation of purchase specifications, appraisal of new and used equipment, and estimating of construction costs were provided.

Activities included repairs and modifications to construction equipment, plumbing, heating and electric installations, and general trucking assignments.

A breakdown of services provided by the Construction Services unit is found in Appendix IV.

## Other Administration Activities

The direct program delivery nature of many PFRA activities, with staff situated at more than 100 locations throughout Manitoba, Saskatchewan and Alberta, results in a high level of demand for internal services. These services cover such functions as financial planning and control, materiel management, computer services, office accommodation, accident prevention, and land management for 955 074 ha of land owned or held under lease by PFRA.

Increasing emphasis on financial planning, management control, and the provision of finan-

cial information prompted a review which resulted in improvements in delivery of the financial management function.

In January 1981, a formal study of PFRA computer service requirements was completed. The study found that an increased dedication of resources to electronic data processing was warranted in order to take full advantage of the benefits available through contemporary technology and approaches. It recommended the addition of specialist staff for computer systems development and coordination, as well as a significant upgrading of the computer equipment located at PFRA headquarters in Regina.

Land administration activities during 1980-81 included negotiations with the Province of Saskatchewan for transfer to Saskatchewan of lands associated with the Weyburn Dam, the review and updating of procedures and authorizations relating to the issue of land use licences and permits, and the finalizing of sales transactions for lands held under agreement for sale by irrigation farmers in the southwest Saskatchewan irrigation projects. A summary of the PFRA Land Inventory as of March 31, 1981 is shown in Appendix V.

# ENGINEERING ACTIVITIES

PFRA investigates, plans, designs and is responsible for construction and maintenance of various works relating to water development, irrigation and community infrastructure.

Figure 4 shows the location of projects undertaken during 1980-81.

Engineering assistance is also supplied to outside agencies, such as the International Joint Commission and the Prairie Provinces Water Board, which are engaged in studies of major river basins of international or interprovincial scope. Specialized engineering activities include investigation, planning, hydrology, design, geology, air photo interpretation, geotechnical evaluation, construction, legal surveys and dam safety evaluation.

Regional offices of the Engineering Service are located in Winnipeg, Regina and Calgary. A special project office is located at Cutbank, Saskatchewan, to operate and maintain the South Saskatchewan River Project.

PFRA's major irrigation, reclamation, water storage and municipal works projects are summarized in Appendix VI.

## Dam Safety Program

Acting on the recommendation of an in-house dam safety committee, PFRA established the Dam Safety Program this year. The program is administered by the newly created Safety Division and consists of the following main components: maintenance of an inventory of PFRA-owned projects and an assessment of the hazard potential of each project; inspection and evaluation of existing dams; and review and preparation of detailed operation and maintenance procedures.

Safety evaluations have commenced on 10 projects, nine of which are located in Saskatchewan. Work is also under way on other components of the program.

## Technical Activities

The engineering technical divisions were also involved in a number of specialized investigations not directly related to any of PFRA's formal programs but essential in the discharge of the responsibilities of the program-delivery units. Research was carried out and standard specifications and plans were prepared covering corrosion of metal components and methods of cathodic protection for water resource projects. As well, further research was conducted into the properties of clay-shale soils and the durability of concrete; studies continued on hydraulic fracturing, soil liquifaction and soil erodibility; and investigations continued on the performance of spillway structures founded on shale.

Ongoing hydrology research programs included: observations of the development of ice thickness on storage dugouts; monitoring spring runoff in a number of small basins; and investigating the use of snow survey data in estimating runoff volumes and peak flows for small drainage areas. A study was initiated to regionalize the magnitude and frequency of floods, using all available data. As well, the division further updated its electronic data-processing capability.

During the year, a computerized engineering project costing system was introduced, making data on operational costs, in particular, more readily and accurately available for management and chargeback purposes.

## PFRA Technical Support to Others

In addition to providing technical support to PFRA-administered programs described elsewhere in this report, PFRA staff conducted numerous field and office studies at the request of federal and provincial agencies, and for in-house research and development.



## **Manitoba**

In Manitoba, PFRA studied the drainage requirements for the development of new agricultural areas on the Brokenhead Indian Reserve. This work was done for the Department of Indian Affairs and Northern Development. A draft report was prepared as a result of the studies. Canada-Manitoba activities continued on the Wilson Creek Experimental Watershed, with PFRA conducting surveys for sedimentation basins constructed later in the year by the province. Studies are also continuing to assess the effect of the Shellmouth Reservoir operation on the floor of the Assiniboine River valley, upstream from the project.

## **Saskatchewan**

At the request of Environment Saskatchewan, PFRA undertook further engineering work, including photogrammetric mapping and hydrologic studies, in support of the Canada-Saskatchewan Flood Damage Reduction Program; the work was done for six centres in the province. PFRA also became a participant on a steering committee for engineering studies aimed at the development of a long-term water supply plan for the cities of Regina and Moose Jaw; PFRA acted as the study coordinator for the first phase of investigations.

An update of previous studies of the existing structures and water supply potential associated with the Kingsway and Five Mile Dams on the Moose Jaw River near Moose Jaw was undertaken at the request of Saskatchewan Government Services.

A project design for the control of the Cumberland Lake water levels, previously prepared for the Saskatchewan government, was updated this year. PFRA also inspected and reported on the condition of the Boundary Dam and associated works, and provided engineering advice for the Saskatchewan Power Corporation in connection with the proposed Rapid River Hydro Project.

At the request of the Department of Indian Affairs and Northern Development, PFRA investigated flooding problems on the Witchehan Lake and Big River Reserves.

## **Alberta**

In Alberta, PFRA was involved in substantial water resource studies on the Blackfoot, Blood and Peigan Indian Reserves. These studies include the investigation of sizable irrigation projects, major water storage works and flood control requirements.

A detailed report on possible alternative storage facilities on the Milk River was completed and submitted to Alberta Environment. Other work for Alberta Environment involved preparation of a report on the Berry Creek drainage basin, studies on the Sounding Creek basin, surveys of the Elbow River for the Bragg Creek Floodplain Study, completion of the Parlyby Creek Flood Control Study and Buffalo Lake Water Levels Report, continued investigations on the spillway of the St. Mary Dam, completion of the Loveland Dam Seepage Study, and preparation of dam safety and evaluation reports for several dams under provincial control.

## **Other Activities**

Traditional participation in the work of the Prairie Provinces Water Board continued during the year. A natural-flow study was completed on the Assiniboine River as well as a study on the determination and standardization of river distances. Additional natural-flow studies have been initiated on two creeks at the Saskatchewan-Manitoba boundary and on one creek at the Alberta-Saskatchewan boundary. PFRA maintained its membership on the board's committees on hydrology, water quality, water demand and groundwater.

At the request of the Canadian International Development Agency, PFRA participated in an inspection of the Muhuri Irrigation Project

under construction in Bangladesh. The mission made recommendations related to design, construction and work progress.

As requested by Agriculture Canada, detailed designs and tender documents were prepared for improvements to the water and sewage systems at the Kamloops Range Research Station.

Various other services were provided to the Provincial Water Rights Branch of the Department of Indian Affairs and Northern Development, provincial departments of agriculture, and various other municipal, provincial and federal agencies.



**APPENDIX I**  
**EXPENDITURES BY SERVICE**  
Includes Operation, Maintenance, Capital Funds and Contributions  
1935 - March 31, 1981

	1980-81	1935-81
<b>ADMINISTRATION</b>		
Headquarters Administration and related activities	\$ 2 366 850	\$ 24 886 993
Herd Maintenance Assistance Program Administration	1 057 860	1 057 860
<b>LAND USE SERVICE</b>		
Cultural Work — Soil Drifting, etc. (Experimental Farm Service)	—	4 966 394
Community Pastures — Construction, Operation and Maintenance	9 318 940	116 603 206
Movement of Settlers	—	227 841
Herd Maintenance Assistance Program Contributions	42 887 046	42 887 046
<b>WATER DEVELOPMENT SERVICE</b>		
Supervision, Individual Dugouts, Wells, Community Large Water Storage, and Irrigation Projects	7 095 744	115 566 194
Equipment — Purchase and Repairs, Service Depot	2 245 446	33 241 898
Tree Nursery	1 736 278	16 191 199
Bow River Irrigation	322 042	47 675 840
Drought Pumping	311 743	311 743
<b>ENGINEERING SERVICE</b>		
Surveys, Design, Geotechnics, Draining Studies, Legal Surveys, Supervision of Construction	7 106 936	87 602 266
St. Mary Irrigation Project	—	33 928 864
South Saskatchewan River Project	397 903	139 657 029
Assiniboine River Diking	237 611	2 211 433
Shellmouth Dam and Portage Diversion	—	14 796 868
B.C. Reclamation and Development, including Lillooet Project	—	3 310 182
Land Protection and Reclamation, Manitoba and Eastern Canada	—	4 136 021
Alberta Irrigation Rehabilitation	717 239	25 889 616
Agricultural Service Centres	2 359 976	23 891 508
Vermilion Dam and Reservoir	2 970	1 118 255
Miscellaneous Projects — Construction	726 854	6 831 341
Saskatchewan Interim Subsidiary Agreement	882 284	882 284
Manitoba Interim Subsidiary Agreement	169 400	169 400
	<u>\$79 943 122</u>	<u>\$748 041 281</u>
<b>REVENUES BY ACTIVITIES</b>		
Community Pastures Operations	\$ 5 967 088	\$ 58 768 448
Irrigation Project Operation and General Revenue	3 619 225	34 956 124
	<u>\$ 9 586 313</u>	<u>\$ 93 724 572</u>

**APPENDIX II**  
**WATER DEVELOPMENT DIVISION**  
 Number of Projects and Financial Assistance Paid  
 April 1, 1980 - March 31, 1981

<i>Province &amp; classification</i>	<i>Dugouts</i>		<i>Stockwatering Dams</i>		<i>Irrigation Schemes</i>		<i>Wells</i>		<i>Total</i>	
	<i>No. of projects paid</i>	<i>Financial assistance paid \$</i>	<i>No. of projects paid</i>	<i>Financial assistance paid \$</i>	<i>No. of projects paid</i>	<i>Financial assistance paid \$</i>	<i>No. of projects paid</i>	<i>Financial assistance paid \$</i>	<i>No. of projects paid</i>	<i>Financial assistance paid \$</i>
<b>MANITOBA</b>										
Individual	315	106 830.30			24	14 400.00	1 123	469 302.34	1 462	590 532.64
Neighbour										
Small Community	1	14 945.80							1	14 945.80
<b>TOTAL</b>	<b>316</b>	<b>121 776.10</b>			<b>24</b>	<b>14 400.00</b>	<b>1 123</b>	<b>469 302.34</b>	<b>1 463</b>	<b>605 478.44</b>
<b>SASKATCHEWAN</b>										
Individual	688	246 389.93	42	14 176.57	59	33 770.47	2 354	1 348 308.23	3 143	1 642 645.20
Neighbour			1	1 000.00	3	2 363.84			4	3 363.84
Small Community	7	84 913.45							7	84 913.45
<b>TOTAL</b>	<b>695</b>	<b>331 303.38</b>	<b>43</b>	<b>15 176.57</b>	<b>62</b>	<b>36 134.31</b>	<b>2 354</b>	<b>1 348 308.23</b>	<b>3 154</b>	<b>1 730 922.49</b>
<b>ALBERTA</b>										
Individual	643	214 415.40	71	25 270.93	20	11 914.46	2 687	1 750 104.99	3 421	2 001 705.78
Neighbour										
Small Community										
<b>TOTAL</b>	<b>643</b>	<b>214 415.40</b>	<b>71</b>	<b>25 270.93</b>	<b>20</b>	<b>11 914.46</b>	<b>2 687</b>	<b>1 750 104.99</b>	<b>3 421</b>	<b>2 001 705.78</b>
<b>GRAND TOTAL</b>	<b>1 654</b>	<b>667 494.88</b>	<b>114</b>	<b>40 447.50</b>	<b>106</b>	<b>62 448.77</b>	<b>6 164</b>	<b>3 567 715.56</b>	<b>8 038</b>	<b>4 338 106.71</b>

APPENDIX III  
DEVELOPMENT AND OPERATION OF COMMUNITY PASTURES  
1938-81

<i>Fiscal year</i>	<i>Operating pastures</i>	<i>Area in pastures (hectares)</i>	<i>Construction costs \$</i>	<i>Livestock units pastured</i>	<i>Hectares per livestock unit</i>	<i>Revenue \$</i>	<i>Operating costs* \$</i>	<i>Stock unit operating cost \$</i>	<i>Unit cost to patron \$</i>	<i>Municipal levy paid** \$</i>
1938-39	14	76 808	165 995	3 231	23.8	6 340	10 186	3.15	1.96	—
1948-49	54	581 343	277 358	71 393	8.1	204 012	175 666	2.46	2.86	—
1958-59	62	734 637	390 641	117 032	6.3	542 607	686 449	5.87	4.64	—
1968-69	88	964 179	696 754	172 629	5.6	1 570 652	1 554 688	9.01	9.10	170 000
1969-70	88	965 937	921 610	172 624	5.6	1 652 165	1 666 223	9.65	9.57	160 959
1970-71	90	984 142	1 004 514	182 689	5.4	1 754 194	1 900 158	10.40	9.60	162 974
1971-72	93	983 801	757 659	205 611	4.8	1 954 604	2 002 379	9.74	9.51	176 435
1972-73	94	983 995	650 889	216 708	4.5	1 912 347	2 368 818	10.93	8.82	182 373
1973-74	95	979 009	920 504	234 488	4.2	3 217 128	3 014 999	12.86	13.72	182 680
1974-75	95	975 011	3 311 642	242 176	4.0	3 116 880	3 549 388	14.66	12.87	188 854
1975-76	96	973 462	2 438 966	250 532	3.9	3 712 383	4 238 348	16.92	14.82	191 755
1976-77	96	906 708	2 259 723	241 135	3.8	3 584 175	4 337 671	17.99	14.86	200 662
1977-78	97	973 457	1 859 358	251 338	3.9	4 714 641	4 600 536	18.30	18.76	193 488
1978-79	96	952 060	1 400 741	242 443	3.9	4 931 381	5 294 673	21.83	20.34	197 384
1979-80	93	939 509	946 516	249 521	3.8	5 166 334	5 673 279	22.74	20.70	390 445
1980-81	89	929 669	790 670	253 268	3.7	6 900 029	6 889 797	27.20	27.24	407 208
<b>Totals 1938-81</b>			<b>28 806 228</b>			<b>59 701 389</b>	<b>61 447 439</b>			

\* Includes direct operating costs only. Does not include supervision, capital and overhead.

\*\* 1963-64 was the first year tax was levied.

N.B. Detailed annual figures for years 1938 through 1968 are in the 1975-76 PFRA Annual Report.

APPENDIX IV  
CONSTRUCTION ACTIVITIES\*  
April 1, 1980 to March 31, 1981

**Field Service Activities Provided**

<i>Service or Division</i>	<i>Number of assignments</i>	<i>Value of services provided</i>
Community Pasture	26	\$ 80 118.82
Water Development	14	125 287.58
Tree Nursery	8	254 327.66
Southwestern Saskatchewan Irrigation Projects	21	340 614.69
Construction and Equipment Services	2	88 061.58
Engineering	6	154 001.58
Camp	1	10 204.95
Miscellaneous	17	99 875.06
<b>TOTAL</b>	<b>95</b>	<b>\$1 152 491.92</b>

**Service Depot Service Activities Provided**

<i>Service or Division</i>	<i>Number of assignments</i>	<i>Value of services provided</i>
Construction Crews	326	\$ 280 167.63
Engineering	16	45 049.96
Southwest Saskatchewan Irrigation Projects	78	91 956.85
Moose Jaw Service Depot	349	367 875.15
Pastures	83	307 555.83
Pasture Improvement	156	138 007.42
Water Development	20	3 804.94
Indian Head	7	36 739.91
South Saskatchewan River Project	1	304.27
Motherwell Building	1	2 442.36
Stock	12	13 785.57
Working Capital Advance Stores	6	4 803.21
Demonstration Farm	8	24 282.67
Shop Work Orders	180	104 425.89
<b>TOTAL</b>	<b>1 243</b>	<b>\$1 421 201.66</b>

**Number and Value of Work Assignments Performed in 1979 and 1980 by Construction, Equipment and Services Division**

	<i>1979</i>	<i>1980</i>
Service Depot Work Assignments	1 239	1 243
Value of Assignments	\$982 129.00	\$1 421 201.66
Field Service Work Assignments	83	95
Value of Assignments	\$647 957.00	\$1 152 491.92

\* During the amalgamation of Pasture Improvement and Field Construction personnel (July 1980 to March 1981), 31 additional projects were completed at a cost of \$441 076.

APPENDIX V  
SUMMARY OF LAND INVENTORY TO MARCH 31, 1981  
(in hectares)

	<i>Title</i>	<i>Reservation Order-in-Council, Lease, Easement</i>	<i>Total</i>
<b>I. WATER DEVELOPMENT SERVICE</b>			
A. <i>Water Conservation</i>			
Saskatchewan	4 507.23	342.04	4 849.27
Alberta	43.54	228.00	271.54
B. <i>Irrigation Projects</i>			
Southwest Saskatchewan	16 099.93	175.15	16 275.08
C. <i>Tree Nursery</i>	63.98	194.25	258.23
D. <i>Demonstration Farm</i>	68.64	—	68.64
	<u>20 783.32</u>	<u>939.44</u>	<u>21 722.76</u>
<b>II. LAND USE SERVICE</b>			
A. <i>Community Pastures</i>			
Manitoba	1 919.99	165 984.47	167 904.46
Saskatchewan	498 928.23	211 477.69	710 405.92
Alberta		38 507.01	38 507.01
	<u>500 848.22</u>	<u>415 969.17</u>	<u>916 817.39</u>
<b>III. ENGINEERING SERVICE</b>			
A. <i>Assiniboine River Diking</i>	460.45	22.34	482.79
B. <i>South Saskatchewan River Project</i>	50.06	—	50.06
	<u>510.51</u>	<u>22.34</u>	<u>532.85</u>
<b>IV. MISCELLANEOUS</b>			
A. <i>Hydrometric Site</i>	4.05	—	4.05
B. <i>Service Depots</i>	9.51	.20	9.71
C. <i>Bow River Exchange Lands</i>	292.59	—	292.59
	<u>306.15</u>	<u>.20</u>	<u>306.35</u>
<b>SUMMARY</b>			
I. Water Development Service	20 783.32	939.44	21 722.76
II. Land Use Service	500 848.22	415 969.17	916 817.39
III. Engineering Service	510.51	22.34	532.85
IV. Miscellaneous	306.15	.20	306.35



APPENDIX VI  
 MAJOR PROJECTS — IRRIGATION, RECLAMATION, WATER STORAGE AND MUNICIPAL WORKS <sup>1</sup>  
 1935 to March 31, 1981

<i>Name of project</i>	<i>Location</i>	<i>Type of project</i>	<i>Date completed</i>	<i>Irrigated acres</i>	<i>Storage capacity acre-feet</i>	<i>Costs <sup>2</sup> \$</i>
<b>MANITOBA</b>						
Assiniboine River Diking and Cut-offs	Brandon and Portage la Prairie to Baie St. Paul	flood control	not yet complete	—	—	2 211 423
Northwest Escarpment Reclamation Project — Riding Mt. Area	Dauphin Area	flood control	1966	—	—	1 313 103
Fairford River Project	Lake Manitoba	flood control	1960	—	—	287 751
Saskatchewan River Reclamation — Pasquia Area	The Pas	reclamation	1960	—	—	2 256 388
Shellmouth Dam and Portage Diversion	Shellmouth and Portage la Prairie	river control	1970	—	390 000	14 796 868 <sup>3</sup>
Agricultural Service Centres	16 communities	water and sewer	not yet complete	—	—	8 848 210 <sup>4</sup>
The Pas Indian Reserve	The Pas	water, sewer and roads	1975	—	—	1 099 744
Vermilion Dam and Reservoir	Dauphin	water supply	not yet complete	—	—	1 118 256 <sup>3</sup>
<b>SASKATCHEWAN</b>						
South Saskatchewan River Project	Outlook	multipurpose	1969	350 000 (potential)	7 600 000	120 461 217 <sup>5</sup>
Buffalo Pound Project	Qu'Appelle Valley	water supply	1960	—	42 000	2 293 145
Eyebrow Lake Diversion	Eyebrow	water supply	1960	—	—	98 376
Agricultural Service Centres	26 communities	water and sewer	not yet complete	—	—	11 783 081 <sup>4</sup>

<i>Name of project</i>	<i>Location</i>	<i>Type of project</i>	<i>Date completed</i>	<i>Irrigated acres</i>	<i>Storage capacity acre-feet</i>	<i>Costs<sup>2</sup> \$</i>
<b>ALBERTA</b>						
Bow River	Vauxhall	irrigation	—	235 000	408 862	—
(a) Purchase of Canada Land & Irrigation Co.	—	—	—	—	—	2 353 517
(b) Development and Construction	—	—	1974	—	—	24 941 316
St. Mary	Lethbridge	irrigation	—	300 000	460 000	25 160 993
Sawridge Creek	Slave Lake	flood control	1973	—	—	248 377
Alberta Irrigation Rehabilitation	3 projects	irrigation	not yet complete	—	—	25 907 756 <sup>6</sup>
Agricultural Service Centres	13 communities	water	not yet complete	—	—	2 909 061 <sup>4</sup>
<b>BRITISH COLUMBIA</b>						
Cawston Benches	Keremeos	irrigation	1951	629	2 000	185 491
Chase & Johnston — Western Canada Ranching	Kamloops	irrigation	1951	755	—	98 243
Lillooet — Pemberton	Pemberton	river control	1953	—	—	1 056 539
Westbank Project	Kelowna	irrigation	1950	1 200	2 500	537 450
Penticton West Bench	Penticton	irrigation	1953	800	—	66 362
B.C. Fruitlands	Kamloops	irrigation	1966	2 000	—	200 000

<sup>1</sup> Funds for certain of these projects were provided by special votes of Parliament.

<sup>2</sup> Figures do not include operation and maintenance expenditures.

<sup>3</sup> Canada's share only.

<sup>4</sup> Grants only — does not include loans of equal amounts.

<sup>5</sup> Includes \$25 000 000 contributed by Province of Saskatchewan.

<sup>6</sup> Includes grants to Province of Alberta of \$3 500 000 for secondary works and \$6 200 000 associated with the turnover of Canada's interest in the Bow and St. Mary Rivers.