

PFFRA

ANNUAL REPORT



1971/72

PRAIRIE FARM
REHABILITATION
AND RELATED
ACTIVITIES

CANADA
DEPARTMENT
OF REGIONAL
ECONOMIC
EXPANSION

IC

S
135
• 445
1971/72

Canada. Prairie Farm Rehabilitation Administration.

HD
319
P7
C3x
1971/7.

ANNUAL REPORT

TABLE OF CONTENTS

ON THE PRAIRIE FARM REHABILITATION ADMINISTRATION

1971-1972

INTRODUCTION

LAND USE SERVICE

Business Operations

WATER DEVELOPMENT SERVICE

Water Development Division

Construction of Large Water Project Projects

Reclamation Projects

Construction, Equipment and Supplies Related

Tree Nursery

ENGINEERING SERVICE

Major Projects

Regional Offices

Technical Divisions

ADMINISTRATIVE DIVISION

Land Inventory to March 31, 1972

PERSONNEL DIVISION

DEPARTMENT OF REGIONAL ECONOMIC EXPANSION

1. Water Development Projects Completed and
Maintenance Paid, 1971-1972

2. Development and Operation of Community
Facilities Under PFA, 1971-1972

3. Major Projects - Irrigation, Reclamation and
Water Storage

4. PFA Expenditures by Activities, 1971-1972

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	1
LAND USE SERVICE	3
Pasture Operations	3
WATER DEVELOPMENT SERVICE	5
Water Development Division	5
Construction of Large Water Storage Projects	7
Irrigation Projects	7
Construction, Equipment and Services Division	9
Tree Nursery	9
ENGINEERING SERVICE	11
Major Projects	12
Regional Offices	13
Technical Divisions	15
ADMINISTRATION DIVISION	19
Land Inventory to March 31, 1972	21
PERSONNEL DIVISION	23
APPENDICES	
I Water Development Projects Completed and Assistance Paid, 1935-1972	
II Development and Operation of Community Pastures Under PFRA, 1938-1972	
III Major Projects - Irrigation, Reclamation and Water Storage	
IV PFRA Expenditures by Activities, 1935-1972	

INTRODUCTION

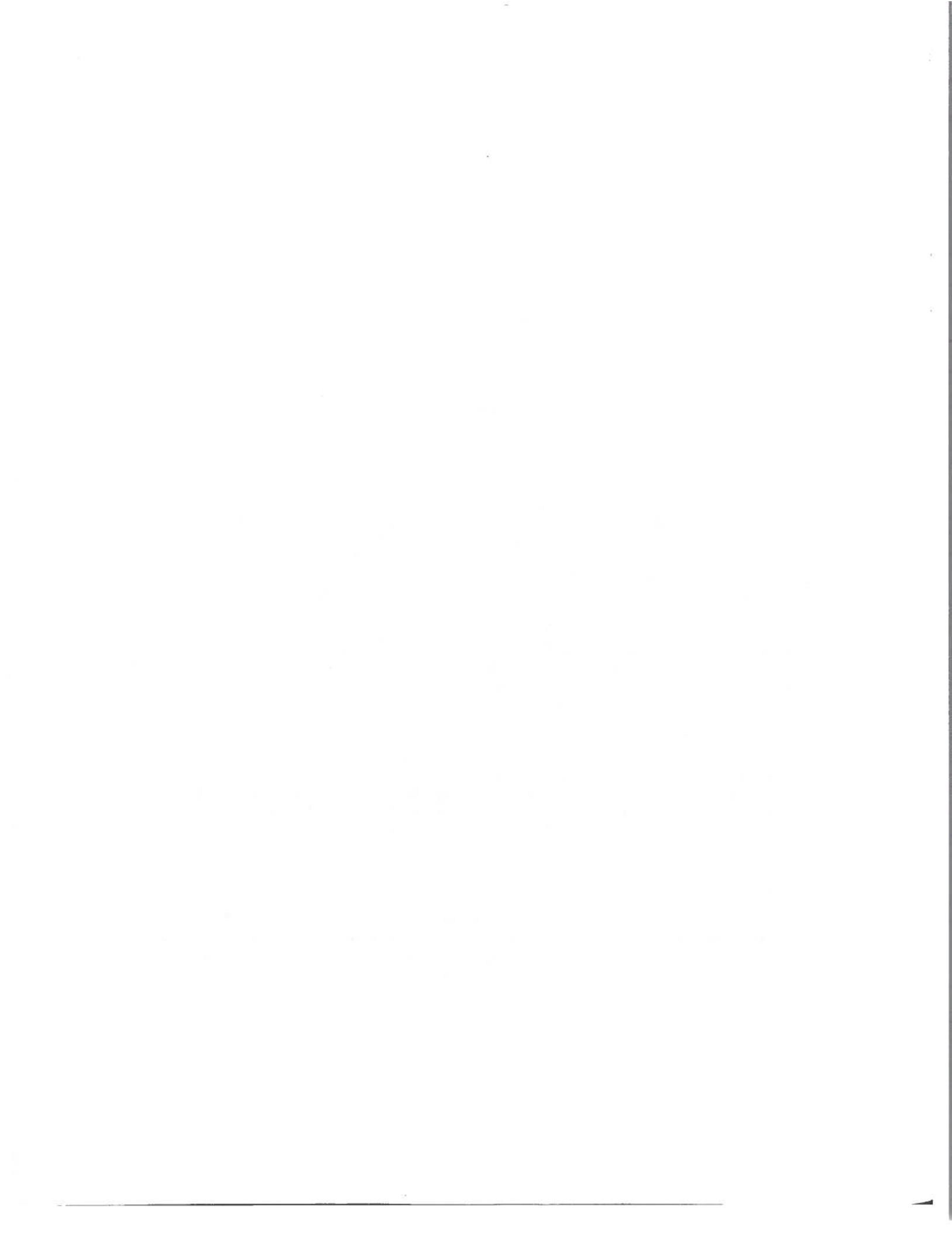
The Prairie Farm Rehabilitation Act was passed by Parliament in 1935 to assist in the reclamation of agricultural lands seriously affected by drought and soil drifting in Manitoba, Saskatchewan and Alberta. Subsequent amendments to the Act widened the scope of PFRA activities and extended indefinitely the life of the original legislation.

Water conservation and development, and land use adjustment, have long been major concerns of PFRA; its activities have included the development of large-scale irrigation, reclamation, and community pasture operations. These activities continued during 1971-72.

In addition to operating its long-standing programs, PFRA was engaged during the year in constructing extensive improvements to water supply and sewage works at Brandon, Manitoba. Besides supervising construction, PFRA is paying half of the \$2.4 million cost of these works, and financing the remainder through loans to the government of Manitoba.

The work at Brandon is the first project under a new, broader, program of assistance directed towards the upgrading of water and sewage works in Prairie communities recognized to be important service centres for the agricultural industry. Discussions held between the federal government and the governments of the Prairie Provinces during 1971-72 led to the signing of official agreements for the broader program during the following fiscal year.

The following is a summary of activities of the Prairie Farm Rehabilitation Administration for the year ending March 31, 1972.



LAND USE SERVICE

The Land Use Service came into being in 1937 by amendment of the Prairie Farm Rehabilitation Act to include removal of submarginal land from cereal crop production. This land was to be regrassed and otherwise developed for grazing.

PFRA is now operating 93 community pastures. Three of them went into operation in 1971: the Alexander Indian Reserve pasture, 13 miles west of Morinville, Alberta, which accommodated 675 head of cattle on 6,500 acres; the Bushe River Indian Reserve pasture, four miles east of High Level, Alberta, which pastured 230 head of cattle on 3,852 acres; and the Thunderchild Indian Reserve pasture, 18 miles northeast of Turtleford, Saskatchewan, which handled 1,335 head on 8,750 acres.

During the fiscal year 1971-72, there were 2,284,210 acres of pasture in use; the acreage in two non-operating pastures raised the total to 2,430,940 acres. One new Indian Reserve pasture (Alexis) was under construction and is scheduled to receive livestock in 1972.

PASTURE OPERATIONS

The established pastures carried 21,540 head more than in the previous year. Grass and water conditions were generally satisfactory. Some 5,755 patrons grazed 204,240 cattle on PFRA pastures during the year. Cows in breeding fields totalled 85,131. For breeding purposes, PFRA maintained bulls, and rented 447 from patrons.

Grazing Fees

No changes in grazing and service fees were made in 1971. Local governments continued to receive one cent per day for each adult animal grazed in lieu of taxes; where pastures were on Indian Reserves, one-third of grazing revenue was returned to Indian Band funds. The grazing fee schedule was:

Cattle - 6¢ per day (including 1¢ tax levy)
Calves - \$3 per season (sucking with dam, born before August 1)
Horses - 8¢ per day (including 1¢ tax levy)
Colts - \$5 per season (sucking with dam, born before August 1)
Sheep - 2¢ per day (lambs - no charge)
Breeding Service - \$5 per cow.

Minimum grazing fees per head per season: cattle \$5, horses \$7.

Haying

Hay harvested on pastures and irrigation projects associated with the pasture program amounted to 5,989 tons. This hay is used for feeding PFRA bulls maintained at the pastures over winter.

Pasture Construction

Approximately 113 miles of fence was constructed and 153 miles repaired. There are now 6,288 miles of fence surrounding and dividing PFRA pastures. Eighteen buildings and structures were built and 37 others repaired during the year.

Pasture Improvement

Water development activity consisted of construction or enlargement of 43 dugouts, the drilling of 32 wells, the erection of three new windmills, the development of one spring, and the installation of eight water control structures.

In land improvement, 3,406 acres were cleared, 4,875 acres cultivated and seeded, 7,128 acres cultivated only, and 36,680 acres sprayed for weed and brush control. The Pasture Improvement section continued to operate irrigation projects involving 10,000 acres, with the Souris River, Val Marie and Bitter Lake projects being extended.

WATER DEVELOPMENT SERVICE

The Water Development Service, which is made up of five divisions, provides technical, financial and material assistance in the development of land and water resources for agricultural purposes.

Technical and financial assistance is provided for individual and neighbour farm dugouts, stockwatering dams, and irrigation works. Broader services are provided for community water projects, frequently involving complete engineering and substantial financial assistance.

The PFRA Tree Nursery at Indian Head, Saskatchewan, produces and distributes tree seedlings and cuttings for farmstead and field shelterbelt plantings. In southwest Saskatchewan, PFRA has constructed water storage facilities with the capacity to irrigate 40,000 acres of forage crops used to supply winter feed for the large livestock population of the area. PFRA continues to maintain and operate the storage works as well as six of the irrigation projects containing 25,000 irrigated acres.

On the Bow River Project in southern Alberta, 125,000 acres of land are irrigated with water from PFRA structures.

WATER DEVELOPMENT DIVISION

Normal spring runoff occurred in most of the prairie areas in 1971. Most storage facilities were filled, and little significant flooding occurred except in the Wascana Creek drainage basin in east central Saskatchewan where flooding was severe.

Dugout construction increased by 25.5 per cent over last year, with the largest increase shown in Alberta. The number of stockwatering dams showed an eight per cent increase, while irrigation project development paralleled the previous year. Twenty-seven small community projects were authorized and constructed.

The following table indicates field services provided in 1971-72.

SERVICES PROVIDED BY WATER DEVELOPMENT DIVISION
Fiscal Year 1971-72 - March 31, 1972

Agency	Dugout		S.W.D.				Irrigation				Drainage				Community Projects							
	Technical Investigation	Final Inspection	Technical Investigation	Survey	Plan	Final Inspection	Technical Investigation	Survey	Plan	Final Inspection	Technical Investigation	Survey	Plan	Final Inspection	Technical Investigation	Survey	Plan	Report	Final Inspection	Meetings Attended	Other Services	Total to Date
PFRA Program	1194	1082	784	317	339	180	993	228	235	129	137	29	4		755	25	23	37	26		439	6956
Federal Request	6		2	2	3		26	8	7	2	7	4	2	3	101	6	9	1	1		48	238
Provincial Request	20	12	211	40	24		145	27	25	1	8	6	5		209	11	5	13			107	869
Municipal Rural-Urban	13		2				2		1		6	6	1		41	5	7				38	122
Other Individuals or Groups	4		3	2	3	1	9	3	4	1	55	12	6		16	2	2	1			60	184
TOTAL	1237	1094	1002	361	369	181	1175	266	272	133	213	57	18	3	1122	49	46	52	27	207	692	8369

Total Capital Expenditures on Individual Projects - \$229,105.88

Total Capital Expenditures on Small Community Projects - \$ 98,416.38

Dugout Pumping - This operation was continued and 431 farm dugouts were filled, with the farmers involved paying the cost. Water from two or more dugouts is consolidated in one dugout where the combined volumes provide sufficient for winter needs even with thick ice on the dugout. A total of 123,700,000 gallons of water was pumped.

CONSTRUCTION OF LARGE WATER STORAGE PROJECTS

No large community projects were constructed by the Water Development Division. The transfer of previously constructed projects continued, with 116 Alberta projects now transferred, and 16 others being negotiated. In Saskatchewan, nine projects were turned over to the sponsoring agencies. In Manitoba, all but a few have been transferred.

IRRIGATION PROJECTS (Developed, operated and maintained by PFRA)

Rehabilitation, Southwest Saskatchewan

PFRA has built, and operates, 27 reservoirs for the irrigation of 40,000 acres of land in southwest Saskatchewan. Of these, 25,000 acres are in six PFRA-managed projects; 15,000 acres are under provincial or private control. Production on the PFRA projects was satisfactory, although hay decreased by more than 6,000 tons to 50,935 tons. This was produced by 561 farmers, who report an inventory of 60,465 cattle - up 5,000 from 1970, and 2,860 sheep - a drop of more than 1,000.

Land levelling continued to be a major factor in increasing production. In the past year 1,322 acres were levelled or scraper planed. PFRA provided technical services for these operations.

BOW RIVER IRRIGATION PROJECT

Canada purchased this project from the Canada Land and Irrigation Company in 1950. Since that time there has been extensive renovation of existing structures, and substantial new construction, to provide irrigation service to more than 125,000 acres. Nearly 95,000 acres constitute the PFRA project; 25,000 acres are in the Bow River Irrigation District; and over 5,000 acres are in the Blackfoot Indian Reserve and smaller projects along the canal. PFRA operates and maintains the diversion works at Carseland, four storage reservoirs, and the main canal system. On the Bow River Project the staff provides full project management including water distribution, land administration, and land development on the resettlement area in the Hays district.

During 1971 the renovation program continued, with a major contract being let for the replacement of the Carseland Weir. Work began on this in the fall of 1971 and continued through the winter. As a preliminary to this construction, higher quantities of water above normal were diverted to fill the storage reservoirs; this is done to supply sufficient irrigation water for the 1972 growing season, and until the new weir can be put into operation in 1973. Material was ordered for the reconstruction of one barrel of the

East Arrowwood Syphon; installation was planned for 1972, as was the rehabilitation of Wasteway No. 1, one of the original project structures. Project forces also continued the replacement program of old structures in the distribution system and undertook to improve the main drains on the project. A program of canal lining on problem sections of the distribution system is conducted after each irrigation season.

Water for irrigation is allocated on nearly 95,000 acres of land on the Bow River Project, but not all of this area is irrigated every year. In 1971 about 71,000 acres were irrigated; cereal crops occupied about 70 per cent of this land, with alfalfa the next largest crop. Potatoes, sugar beets and peas each occupy an appreciable acreage and, with small acreages of canning crops, over 12,000 acres were in specialty crops in 1971. There are two major potato processing plants, a potato starch plant and a large alfalfa dehydrating unit at Vauxhall; sugar beets and other vegetables are marketed in the Taber area.

Livestock continues to be the major factor in stabilizing agriculture on the project and contributes considerable diversification and cash income. The cattle population on the project is limited by the amount of grazing available, although this includes more than 3,000 acres of irrigated pastures operated by the project and leased to the local grazing associations at a daily rate. Two commercial cattle feedlots are operating; hog operations are mostly farm raised and not on a scale which insures continued production when market prices are less favourable.

DEMONSTRATION FARM

With the development of irrigated farms on the South Saskatchewan River Project, the Demonstration Farm undertakes to demonstrate specific enterprises associated with irrigation farming. Facilities of the farm are now being utilized by the people involved in farming in the community, as well as those engaged in research, education and industry associated with irrigated agriculture.

The enterprises on the 155-acre Demonstration Farm are intended to illustrate and evaluate cropping alternatives available to the farmers, and alternative uses for field crop production in livestock enterprises.

A drylot cow-calf project, which was initiated in 1969, is producing some useful information, although with 35 breeding cows it is only on a pilot scale. This, like other pilot operations, serves to indicate some of the problems that farmers may face, if they decide to undertake similar enterprises on a reasonably large scale.

A 10-acre vegetable demonstration project is being conducted on the farm by the Saskatchewan Department of Agriculture and the Horticultural Department of the University of Saskatchewan. It is providing much useful information on suitable varieties and obtainable yields of horticultural crops, but should be expanded to provide more information to farmers before they become involved in such operations at the farm level.

CONSTRUCTION, EQUIPMENT AND SERVICES DIVISION

This Division provides personnel and equipment for the construction and repair of PFRA projects. In the fiscal year, the Field Construction Section completed 174 jobs with a value of \$549,872. Major jobs included the construction of the Pleasant Valley Dam and a water control structure near Grandview, Manitoba; a diversion structure at Lacombe Lake, Alberta; the reconstruction of supply canals and head ditches at Val Marie, reconstruction of canals and structures at Eastend, and improvement of a drainage canal at Rush Lake, all in Saskatchewan. In addition, Community Pasture and other headquarters buildings were painted at 26 projects.

The Moose Jaw Service Depot carried out 2,675 assignments with a value of \$554,000. Repairs to vehicles and equipment accounted for 1,119 jobs; 894 requests for trucking services were filled.

The safety training and fire prevention programs were continued.

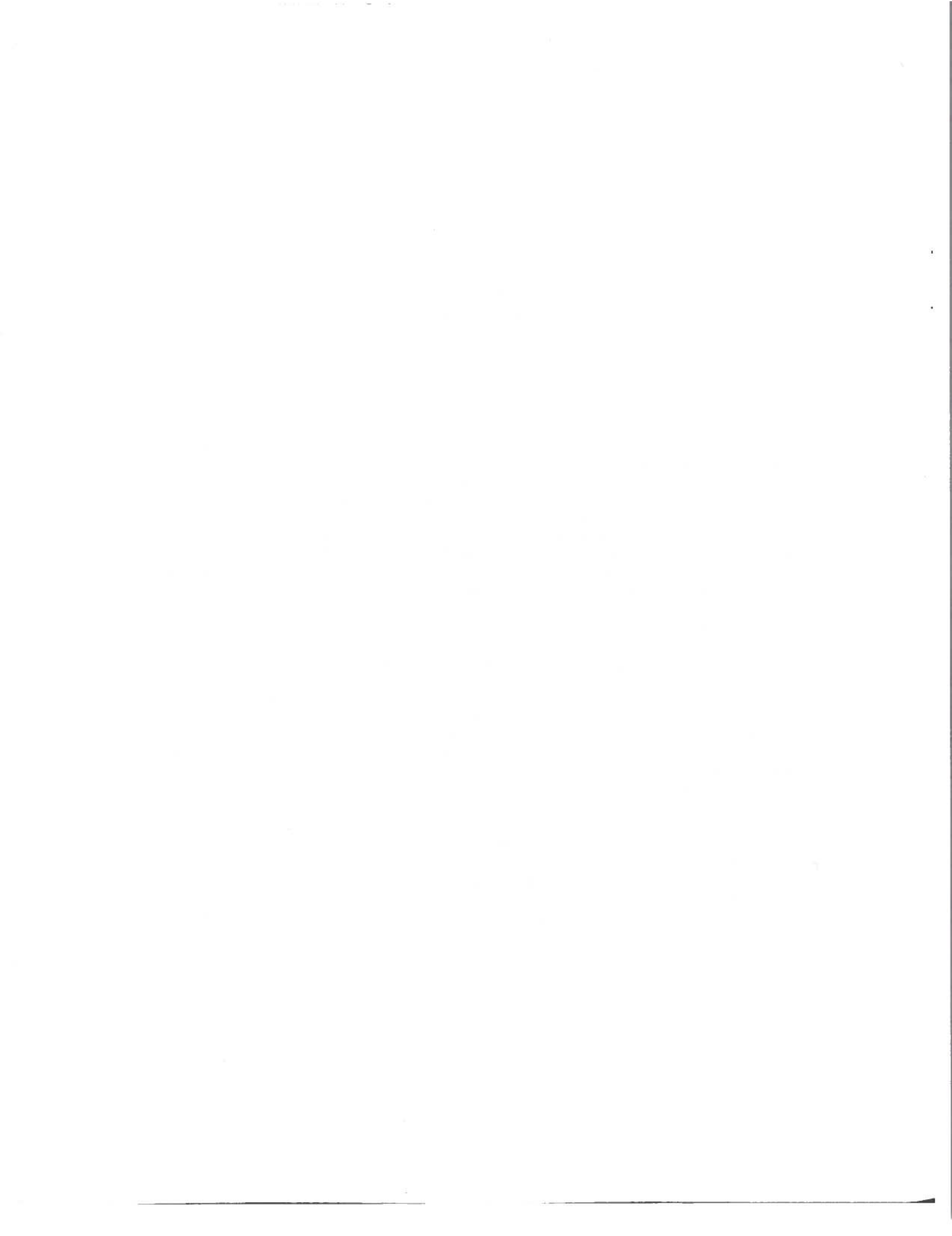
TREE NURSERY

Since its establishment in 1903 by the Forestry Branch, Department of the Interior, the Indian Head Tree Nursery has supplied 368 million trees for planting in the three prairie provinces, largely for farm homesteads and field shelterbelts, but some for buildings as well. Tree material is provided without charge, but transportation costs from the nursery are paid by the applicant.

Almost 4½ million tree seedlings were produced in 1970 and shipped to 6,433 applicants in 1971. More than 92 per cent of the material was utilized for farm and field shelterbelt plantings.

Bulk shipment of tree orders by commercial trucks was initiated in 1971. This required the co-operation of provincial Agricultural Representatives, in the operation of regional distribution centres. This procedure has provided early delivery for individual orders and has overcome many of the shortcomings of rail deliveries for this perishable material.

Applied research, to resolve the problems of nursery production and of shelterbelt maintenance, has provided herbicidal weed controls for the production of six tree species and for new shelterbelt plantings. Procedures have been perfected for the refrigerated storage of seedbed conifers and hardwood cuttings. As a result of regional field tests, additional species have been identified for prairie plantings. Nutritional and irrigation guidelines have been developed for nursery production.



ENGINEERING SERVICE

The PFRA Engineering Service is engaged in the investigation, planning, design and construction of various works pertaining to water development, irrigation, and infrastructure programs in Manitoba, Saskatchewan and Alberta. It provides technical assistance to other PFRA offices responsible for the operation and maintenance of projects in which the federal government retains an interest, and to several outside agencies engaged in planning and implementating major works in large river basin developments of interprovincial or international scope. These agencies include the International Joint Commission, the Canadian International Development Agency, the Prairie Provinces Water Board, the Greater Winnipeg Floodway Advisory Board, and the Saskatchewan-Nelson Basin Board.

Specialized engineering units are maintained to provide basic services in the fields of hydrology, design, geology and air surveys, soil mechanics and materials, construction and planning, and investigation.

Project offices are located at Lethbridge and Cutbank, to operate and maintain the St. Mary Irrigation Project and the South Saskatchewan River Project respectively. Three regional offices are established at Winnipeg, Regina and Calgary, and a regional sub-office at Swift Current. The Soil Mechanics and Materials Division is located on the University of Saskatchewan Campus at Saskatoon.

While the project offices supervise construction, maintenance and operation of the works of large projects, the regional offices direct field investigations and overall planning, and supervise construction of projects ranging in size from community water storage works to larger works involving provincial participation. The technical divisions do the detailed planning, designing and other engineering work necessary for implementing projects.

MAJOR PROJECTS

South Saskatchewan River Project

The two main structures on this project are the Gardiner and Qu'Appelle River Dams. Gardiner Dam is the largest earthfill dam in Canada, and is situated midway between the towns of Outlook and Elbow. The two dams create an 8,000,000 acre-foot capacity reservoir that provides water for irrigation, power production, and for industrial, domestic and recreational uses.

Under a 1958 federal-provincial agreement, Canada was responsible for the planning, design and construction of the works necessary to create the reservoir, and continues to be responsible for the maintenance and operation of the structures. The cost of construction was approximately \$120,000,000, of which Canada paid \$95,000,000 and Saskatchewan \$25,000,000. Making the most efficient use of the water, through development of the appropriate works, is a provincial responsibility.

In operating the two main dams in 1971-72, PFRA carried out a continuous program of performance testing, servicing, and maintenance.

A recent arrangement between Canada and the Province of Saskatchewan was also concluded whereby PFRA provides the Engineering Services for a portion of the South Saskatchewan River Irrigation Project, at cost to Saskatchewan. This arrangement covers the west side pumping plant and some services in connection with the Consort Reservoir.

St. Mary Irrigation Project

The St. Mary Irrigation Project involves the planning and construction of works to irrigate nearly 500,000 acres in the Lethbridge area of Southern Alberta.

Construction of headwater storage works began in 1946; the construction of all of these works and inter-connecting canals has been completed. Distribution works, to serve 304,000 acres, have been constructed.

The total capital expenditures by the governments involved in the project from 1946 to date are approximately:

Government of Canada (PFRA)	\$23,343,500
Province of Alberta	\$22,467,000

During the 1971-72 fiscal year, topographic surveys involving 36,000 acres of potentially irrigable land were conducted, together with an investigation of alternative supply canals. Plans were prepared for the renovation of three timber main canal wasteways, and tenders were received for the supply of necessary material.

REGIONAL OFFICES

The Regional Offices of the Engineering Service situated at Winnipeg, Regina, and Calgary, and the sub-office located at Swift Current, carried out a diversity of engineering functions including field surveys and investigations, office design and cost studies, construction supervision and writing of preliminary or construction reports for a variety of projects during the year.

In addition the Regional Offices provided planning and supervision for repairs or renovations to existing projects. Engineering assistance was rendered to other Divisions of PFRA, to the Department of Regional Economic Expansion, Prairie Provinces Water Board, and the Department of Transport. Investigations and assignments undertaken for the Saskatchewan-Nelson Basin Board were completed during the year. Pertinent activities are summarized below.

Manitoba

No flooding occurred on the Assiniboine River this year; repairs were limited to the replacement or installation of several small floodgates. The erosion control program continued with the planting of willows and the spraying of 57 miles of dykes to check the growth of weeds.

New construction for the year included the Pleasant Valley Dam, which was built by PFRA forces; the costs were shared equally by Canada and Manitoba. The dam has a maximum height of only 18 feet but because it floods a large marsh, the storage of 12,500 acre-feet at FSL is greater than that of many larger dams.

Minor surveys and office studies were conducted on Whitewater Lake, Morden Dam, Edwards Creek, Whitemud, Roseau and Souris Rivers, and the hydrology of streams on the Manitoba Escarpment. The study of alternative sources of water for the town of Dauphin, which began in 1969, was continued and enlarged. Two interim reports were submitted comparing eight alternative sources of water. A third report was submitted summarizing the findings of all the work to date, comparing all the alternatives, and making specific recommendations.

Involvement in the ARDA research project on the Wilson Creek Watershed was concluded and the services of the PFRA-employed resident technician were withdrawn.

The Manitoba Regional Office supplied engineering services for two special Departmental projects during the year. The first of these involves the provision of water and sewage systems at Brandon. PFRA is financing this \$2.4 million project, half through grants and half through loans to Manitoba. The Manitoba office supplied contract and construction supervision on the basis of plans and specifications prepared by the City of Brandon. The three-year project is scheduled for completion in the 1973-74 fiscal year.

PFRA continued its construction and supervisory role in the installation of a sewer and water system, and construction of roads and drains on The Pas Indian Reserve. These projects were virtually completed by the end of the year.

Under the provisions of the Department's Special ARDA program, a survey was made on the Buffalo Point Indian Reserve in connection with a proposed resort development.

With the study of the Saskatchewan-Nelson Basin entering the final stage, the work of the Region here was confined to completing work already under way.

A report on a diversion from Lake Winnipegosis to the Upper Assiniboine River was submitted; the mapping associated with storage on the Shell River was completed.

Saskatchewan

New construction during the year included excavation of an emergency spillway and installation of cathodic protection to eliminate conduit corrosion at the Hugonard Dam.

Maintenance, modifications, or repairs, were carried out at nine existing dams.

Surveys on 13 existing reservoirs were conducted to obtain up-to-date information on flooded area and capacity. Other field and office investigations, comprising feasibility studies and reports, were conducted for new projects or for the enlargement of existing projects.

Special investigations were carried out in connection with a flood control study of the Beaver River, and an outline study of water demand for the Prairie Provinces Water Board. Engineering and cost studies for roof-truss repairs and for water supply for fire protection at the Moose Jaw Service Depot were also conducted. Further special investigations associated with the Department of Regional Economic Expansion were carried out in regard to infrastructure projects in the Meadow Lake Special Area and on the Last Oak Park Development in the Qu'Appelle Valley.

Engineering supervision for operation, maintenance, and repair work continued on PFRA operated irrigation projects in southwest Saskatchewan, and included survey, design and construction supervision for land-levelling on these projects. Some 500 acres of land was levelled, 50 miles of field ditch was surveyed, 128 small irrigation structures and 1,900 feet of culvert was installed, and several miles of main canal and laterals were rebuilt.

Work on the five remaining components of the Saskatchewan-Nelson Basin Study was completed. Final engineering reports were prepared and submitted for the following components: Cree Lake Diversion and the Churchill River, Clearwater Diversion to the Churchill River, Codette Dam site, St. Louis Dam site, and Weldon Ferry Dam site.

Alberta

New construction was undertaken on the Lacombe Lake Project. The project involved building structures to divert water from Whelp Creek under the CPR tracks into the lake, and to release the water from storage back into the creek when required. Renovations to the Severn Creek Project were completed and plans and reports were submitted for both projects.

Studies and investigations were conducted for the proposed Torrington reservoir, Black Eagle Storage Project, McKenzie Storage Project, and the Town of Pincher Creek. The existing Grainger Project, Huber Project and Smoke Creek Storage were transferred from PFRA to private ownership.

Special studies and surveys, undertaken to support the activities of the Department in the Slave Lake Special Area, included the evaluation of three alternative water supplies for the Town of High Prairie and infrastructure evaluations for the Towns of High Prairie and Slave Lake. A field survey was also carried out to assist the Department of Transport in determining the feasibility of extending the present aircraft runway at Slave Lake.

Inspections were conducted to investigate flooding at Berry Creek Reservoir and Pakkwaw Backflood Project and to monitor progress of construction at the Sawbridge Creek Flood Control Project (part of the Department's Special Area project at Slave Lake). Inspections by engineers were also carried out to establish the adequacy of appropriate design and construction standards at 25 dams over 20 feet in height for these dams to be licensed with the Alberta Water Resources Division.

Work for the Saskatchewan-Nelson Basin Board was also completed and engineering reports were submitted for the Bow River Diversion to Oldman River and the North Saskatchewan to Battle to Red Deer River Diversion components.

TECHNICAL DIVISIONS

Design

Tender drawings and specifications for the replacement of the Carseland Dam were completed for the main reconstruction contract and a gate contract. These two contracts were tendered during the year, and the main contract was awarded in the fall of 1971.

Final designs were completed for the renovations to the East Arrowwood Siphon. Detailed specifications were prepared for the supply contract which was tendered and awarded. The major part of the work associated with the plans and specifications for the erection contract was also completed.

Under the terms of an arrangement with the Province of Saskatchewan, in which PFRA undertook to perform certain engineering work relating to the West Side Pumping Plant and the Conquest Reservoir of the South Saskatchewan River Project, the following design work was performed: (a) West Side

Pumping Plant - a contract for the cofferdam was awarded, detailed plans and specifications were prepared for the substructure and a contract was subsequently tendered and awarded; (b) Conquest Reservoir - contract plans and specifications for the North Dam were co-ordinated, reviewed and a contract awarded. Final designs and specifications suitable for tendering purposes were prepared for the East Arm works.

The Division prepared tender documents based on plans and specifications developed by others for additions and improvements to the City of Brandon's water, sewer and storm drainage system, in accordance with an agreement between Canada and the Province of Manitoba. Three contracts were tendered and awarded during the year. A contract for landfill for The Pas Indian Reserve Subdivision was also tendered.

Office feasibility studies were also conducted and work completed on the preparation of preliminary designs and cost estimates for the work associated with eight individual Saskatchewan-Nelson Basin Board proposals for large water storage and water diversion schemes.

Geology and Air Surveys

Geological studies and photogrammetric mapping were completed to end the Division's commitment to the Saskatchewan-Nelson Basin Board's program of studies. Geological studies were completed on a site for a major dam on the Churchill River and on four sites for dams or weirs along the diversion route following the Sturgeon-Weir River through to Pelican Lake. Lake Winnipegosis foreshore photogrammetric mapping was brought to an end with completion of the low-lying areas within the Pine Creek Indian Reserve north of Camperville.

Air photo interpretation studies and a geological reconnaissance were undertaken on the Sand River and on five tributary lakes in Alberta to determine feasible storage opportunities in the headwaters of the Beaver River system.

In Saskatchewan, detailed photogrammetric mapping was undertaken on the Weyburn Reservoir to evaluate effects of shoreline erosion, and at the Indian Head Tree Nursery to assist in project planning and development.

In Manitoba, geological studies were completed for dam sites on the Vermilion River and Edwards Creek. Hydrogeology studies were completed in connection with water supply and storage investigations in the vicinity of Dauphin. Detailed geological studies were completed on 11 sites for small dams in the headwaters of Tobacco Creek as part of an overall assessment of the effects of headwater storage on the watershed. Brief geological studies were carried out at the Buffalo Point Indian Reserve on Lake of the Woods to outline the physical environment of shoreline erosion and the availability of construction materials.

Soil Mechanics and Materials

A total of 99 engineering studies were made, related to soil and other construction materials used in the construction of water development projects.

Fifty-five project studies were conducted, as follows: one in British Columbia, 17 in Alberta, 12 in Saskatchewan, 17 in Manitoba and eight for the Saskatchewan-Nelson Basin Board.

Forty-four special studies were conducted; these included laboratory and field testing, and research programs to improve methods of investigation and design for earth dams and appurtenant structures.

A special assignment was carried out for the Canadian International Development Agency (CIDA) by the head of the Embankment Evaluation and Research Section. This involved a six-week trip to Tanzania, in Africa, to take part in a reconnaissance survey to determine the requirements for a water resources study of the region. Two preliminary reports were submitted.

Hydrology

Major hydrologic investigations were conducted, and a report prepared for the Prairie Provinces Water Board, on flow forecasting. A draft report was also completed on the water demands of the agricultural sector on the prairies. Reports for PFRA utilization, possible flow increases of Oldman River at Lethbridge and a proposed reservoir on Arm River near Davidson were finalized.

Other studies conducted during the year were in connection with the construction of Carseland Weir; a flood study on Beaver River; and water supply studies on Lodge Creek Basin and the Town of Assiniboia.

On behalf of the Saskatchewan-Nelson Basin Board, the Division undertook nine floodrouting studies, which were necessary for the sizing of spillway structures at the proposed St. Louis Dam, Weldon Site, Codette Dam, Kelsey Dam site and Moose Portage Reservoir.

Throughout the year the Division continued to co-operate with various other agencies, such as the Saskatchewan Water Resources Commission, the Saskatchewan Research Council, the Swift Current Experimental Station, the University of Saskatchewan, and with the Manitoba Department of Mines, Resources and Environmental Management.

Legal Surveys

All field surveys, excepting one contract for the Carseland Project, were made by PFRA personnel. Two main surveys undertaken and completed were: a resubdivision of all lots, canals, parcels and roadways for the west, centre north and centre south blocks of the Rush Lake Irrigation Project; and right of way and road diversion surveys in connection with Altawan Reservoir.

Various other surveys were made on Duncairn, Val Marie south block, West Val Marie, Abernethy, Opuntia, Wellington, Cowessess-Sakimay, Eastend, Maple Creek south block, Lac Pelletier and Shellmouth Projects.

ADMINISTRATION DIVISION

The Administration Division, through its seven sections, co-ordinates the administrative activities of PFRA, provides Headquarters' administrative services, and gives support as required to the Departmental programs in Western Canada.

The General Services Section provides transcribing, records management, and office services to Headquarters' offices and has such centralized administrative responsibilities as accommodation, communications, data processing, Crown Assets Disposal, and related activities.

The Finance Section provides overall financial management including pre-audit, expenditure and revenue accounting reports and statements for all PFRA programs, and special services to other Departmental activities in Western Canada. It is also responsible for the preparation of the Program Forecast and the Financial Estimates of PFRA. Particular emphasis in the past year has been given to the introduction of improved systems for the recording and analysis of revenue and to work measurement techniques within the Section.

The Management Services Section provides an advisory service for management at all levels. Its primary function is to study management and operational problems and to make recommendations for improvement. The main work areas are organization analysis, systems and procedures studies, feasibility studies for data processing applications, forms design and control and appraisal of requests for office equipment.

The Library Section provides complete library facilities and services to all PFRA activities and gives support as required to other Departmental programs in the West. Excellent progress was made during the past year in cataloging the backlog of books and in bringing the large Serials Collection under bibliographical control.

The Information Section provides a full range of information and technical support services including a Photographic Unit.

The Material Section provides a central service for requisitioning, supply depot operations and equipment inventory. The requisitioning program involved over 2,500 orders with a value in excess of \$1,800,000. The current equipment inventory consists of 11,900 items valued at approximately \$7,640,000.

The Land Section is responsible for the acquisition and administrative management of lands required for the PFRA program. This includes appraising and negotiating the purchase of land, issuing permits and leases, acquiring easements, arranging land exchanges, and maintaining a land and real property inventory. Over the year studies have been made to improve the procedures for leasing of lands and particular attention has been given to the disposal of surplus lands and the updating of the inventory of land under PFRA jurisdiction. The PFRA land inventory as of March 31, 1972, is as follows:

SUMMARY OF LAND INVENTORY TO MARCH 31, 1972

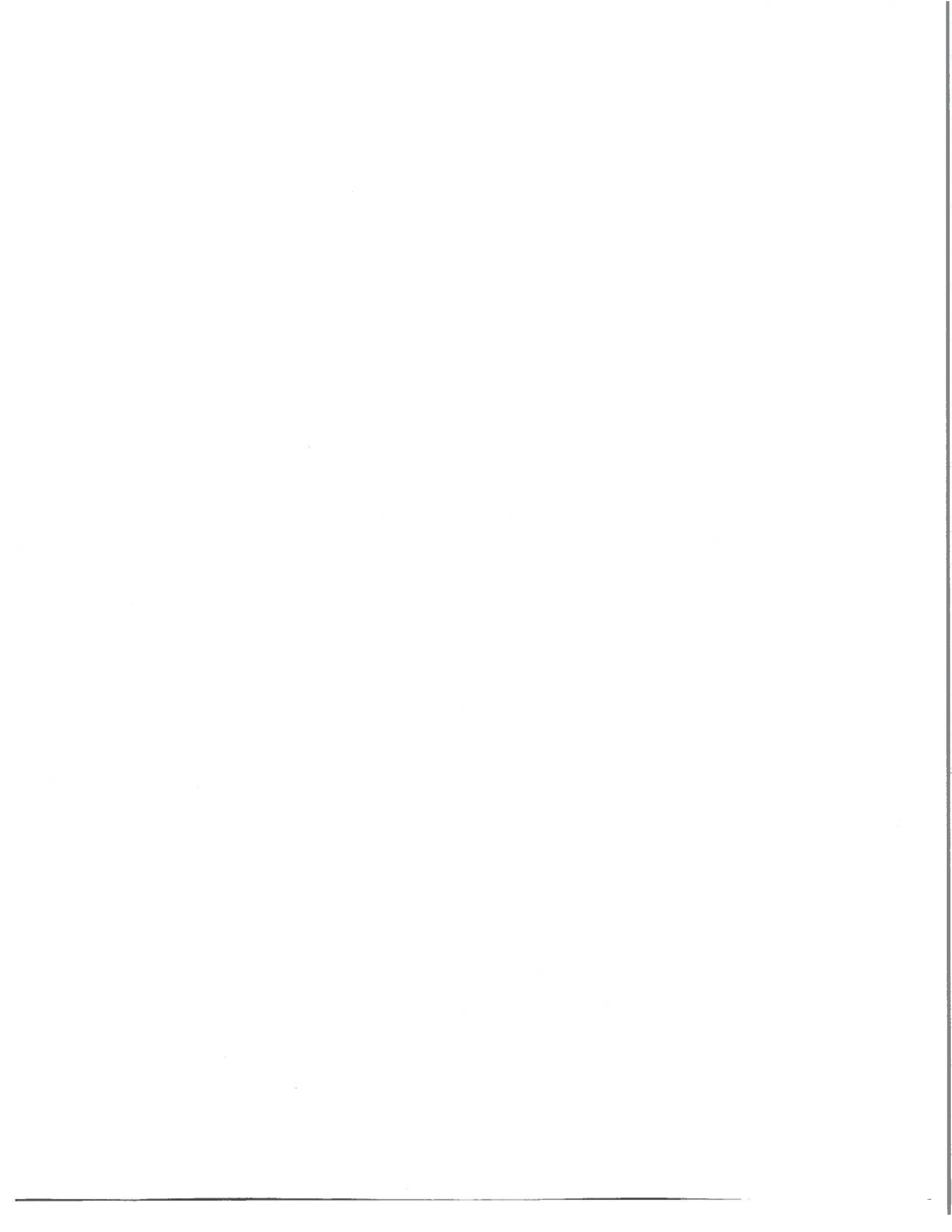
	<i>Title</i>	<i>Reservation Order in Council Lease, Easement</i>	<i>Total (acres)</i>
I	<u>Water Development Service</u>		
	A. <u>Water Conservation</u>		
	Manitoba	323.0	-
	Saskatchewan	11,070.2	965.6
	Alberta	107.6	198.6
		<hr/>	<hr/>
		11,500.8	1,164.2
			12,665.0
	B. <u>Irrigation Projects</u>		
	Southwest Saskatchewan		
	Consul	5,216.4	-
	Eastend	5,679.8	0.1
	Maple Creek	9,406.3	245.9
	Nashlyn	534.8	22.5
	Swift Current	14,518.5	90.9
	Val Marie	6,924.3	-
	West Val Marie	5,284.4	-
		<hr/>	<hr/>
		47,564.5	359.4
			47,923.9
	Alberta		
	Bow River	88,775.4	21,038.0
			109,813.4
	C. <u>Tree Nursery</u>	160.0	480.0
	D. <u>Demonstration Farm</u>	170.0	-
		<hr/>	<hr/>
		148,170.7	23,041.6
			171,212.3
II	<u>Land Use Service</u>		
	A. <u>Community Pastures</u>		
	Manitoba	4,744.4	406,072.3
	Saskatchewan	1,195,586.3	610,533.3
	Alberta	-	15,403.0
		<hr/>	<hr/>
		1,200,330.7	1,032,008.6
			2,232,339.3

SUMMARY OF LAND INVENTORY TO MARCH 31, 1972 (cont'd)

	<i>Title</i>	<i>Reservation Order in Council Lease, Easement</i>	<i>Total (acres)</i>
III	<u>Engineering Service</u>		
	A. <u>Assiniboine River Dyking</u>	1,077.9	27.9
			1,105.8
	B. <u>Shellmouth Reservoir</u>	544.6	-
			544.6
	C. <u>St. Mary River</u>	13,168.1	8,159.8
		<u>14,790.6</u>	<u>8,187.7</u>
			<u>22,978.3</u>
IV	<u>Miscellaneous</u>		
	A. <u>Hydrometric site</u>	10.0	-
			10.0
	B. <u>Service Depots</u>	18.7	-
			18.7
	C. <u>Bow River Exchange Lands</u>	7,592.4	-
		<u>7,621.1</u>	<u>-</u>
			<u>7,621.1</u>
 <u>Summary</u>			
	I Water Development Service	148,170.7	23,041.6
	II Land Use Service	1,200,330.7	1,032,008.6
	III Engineering Service	14,790.6	8,187.7
	IV Miscellaneous	7,621.1	-
		<u>1,370,913.1</u>	<u>1,063,237.9</u>
	TOTAL		<u>2,434,151.0</u>

PERSONNEL DIVISION

The Personnel Division provides full personnel services to PFRA and to offices of the Department's Western Region. The organization served is composed of 28 occupational groups representing all six categories of employment, with a full-time staff of approximately 900 employees and an additional 300 man-years of casual and seasonal employment. The Division is organized under three sections which include staff services and staff relations, classification, and staffing.



APPENDIX I

WATER DEVELOPMENT PROJECTS COMPLETED AND ASSISTANCE PAID, 1935 - MARCH 31, 1972

Types of Project	DUGOUTS		DAMS		IRRIGATION PROJECTS		TOTALS	
	Completed	Assistance	Completed	Assistance	Completed	Assistance	Completed	Assistance
		\$		\$		\$		\$
MANITOBA								
Individual	17,950	2,548,677	352	32,271	332	137,578	18,634	2,718,526
Neighbour	77	21,852	17	5,445	22	14,141	116	41,438
Small Community	30	85,050	25	134,402	2	30,583	57	250,035
Large Water	-	-	38	2,887,540	6	617,217	44	3,504,757
TOTAL	18,057	2,655,579	432	3,059,658	362	799,519	18,851	6,514,756
SASKATCHEWAN								
Individual	53,528	8,330,345	5,953	680,105	3,450	995,602	62,931	10,006,052
Neighbour	433	137,580	63	14,249	181	108,837	677	260,666
Small Community	544	842,980	223	1,160,176	72	689,395	839	2,692,551
Large Water	-	-	63	5,676,271	38	4,329,265	101	10,005,536
TOTAL	54,505	9,310,905	6,302	7,530,801	3,741	6,123,099	64,548	22,964,805
ALBERTA								
Individual	17,427	3,111,026	3,999	536,235	1,625	485,748	23,051	4,133,009
Neighbour	68	26,956	18	7,108	31	17,662	117	51,726
Small Community	198	499,605	130	820,439	68	751,085	396	2,071,129
Large Water	-	-	8	871,567	20	760,784	28	1,632,351
TOTAL	17,693	3,637,587	4,155	2,235,349	1,744	2,015,279	23,592	7,888,215
GRAND TOTAL	90,255	15,604,071	10,889	12,825,808	5,847	8,937,897	106,991	37,367,776

APPENDIX II

DEVELOPMENT AND OPERATION OF COMMUNITY PASTURES
UNDER PFRA, 1938 - 1972

Fiscal Year	No. of Pasture Units in Operation	Area of Land in Pastures (acres)	Total Cost of Construction of Pastures \$	Livestock Units Carried on Pastures	Acres per Unit of Livestock	Cost of Operation		Net Operating Cost per Unit of Livestock \$	Average Charge per Unit Livestock to Farmers \$	Municipal Tax Levy Collected
						Revenue \$	Operating Costs \$			
1938-1939	14	189,800	165,995	3,231	58.7	6,340	10,186	3.15	1.96	
1939-1940	26	612,300	663,471	11,522	53.1	21,633	20,946	1.82	1.82	
1940-1941	35	884,500	1,004,306	23,245	38.1	43,452	35,291	1.52	1.87	
1941-1942	38	936,548	1,187,361	33,230	28.2	65,435	50,607	1.52	1.97	
1942-1943	45	1,261,100	1,298,488	51,127	24.7	98,292	79,907	1.56	1.92	
1943-1944	46	1,268,140	1,558,055	54,472	23.3	111,114	107,535	1.97	2.04	
1944-1945	49	1,337,320	1,699,012	59,997	22.3	151,461	117,065	1.95	2.52	
1945-1946	50	1,361,440	1,857,020	67,778	20.1	167,045	136,567	2.01	2.46	
1946-1947	53	1,412,860	2,072,274	68,493	20.6	198,115	145,293	2.12	2.89	
1947-1948	53	1,417,320	2,208,919	66,347	21.4	203,888	161,471	2.43	3.07	
1948-1949	54	1,436,480	2,486,277	71,393	20.1	204,012	175,666	2.46	2.86	
1949-1950	54	1,439,680	2,809,196	70,308	20.5	211,624	172,255	2.45	3.01	
1950-1951	56	1,521,080	3,237,331	68,858	22.1	221,129	217,867	3.16	3.21	
1951-1952	57	1,574,642	3,426,586	77,240	20.4	335,327	237,742	3.08	4.34	
1952-1953	59	1,652,020	3,754,098	94,137	17.5	438,514	373,737	3.97	4.66	
1953-1954	60	1,678,736	3,963,573	109,583	15.3	507,179	490,808	4.48	4.55	
1954-1955	60	1,696,900	4,273,917	106,322	15.9	496,806	466,154	4.38	4.66	
1955-1956	60	1,728,700	4,509,669	108,499	15.8	499,045	501,541	4.67	4.60	
1956-1957	61	1,759,570	4,832,863	177,441	14.9	548,601	508,003	4.33	4.67	
1957-1958	61	1,796,275	5,119,317	119,398	15.0	552,938	607,129	5.08	4.63	
1958-1959	62	1,815,265	5,509,958	117,032	15.5	542,607	686,449	5.87	4.64	
1959-1960	64	1,818,464	5,800,342	124,812	14.6	705,785	742,915	5.95	5.65	
1960-1961	65	1,896,173	6,254,224	122,813	15.4	656,709	716,467	5.83	5.35	
1961-1962	68	2,088,704	6,845,656	146,672	14.2	860,808	952,359	6.49	5.87	
1962-1963	71	2,114,412	7,283,658	139,643	15.1	871,955	847,753	6.07	6.24	
1963-1964	75	2,149,292	7,677,379	141,723	15.2	1,168,641	981,506	6.93	8.25	145,631
1964-1965	83	2,318,477	8,826,041	156,978	14.8	1,460,279	1,156,912	7.37	9.30	157,768
1965-1966	84	2,325,564	9,274,172	158,434	14.7	1,431,952	1,099,382	6.94	9.04	167,493
1966-1967	85	2,337,113	9,965,500	154,742	15.1	1,353,112	1,215,711	7.86	8.74	147,475
1967-1968	86	2,362,671	10,846,862	162,482	14.5	1,380,678	1,341,258	7.64	8.50	144,258
1968-1969	88	2,382,456	11,543,616	172,629	13.8	1,570,652	1,554,688	9.01	9.10	170,000
1969-1970	88	2,386,799	12,465,226	172,624	13.8	1,652,165	1,666,223	9.65	9.57	160,959
1970-1971	90	2,431,784	13,469,740	182,689	13.3	1,754,194	1,900,158	10.40	9.60	162,974
1971-1972	93	2,430,940	14,227,399	205,611	11.8	1,954,604	2,002,379	9.74	9.51	176,435
						<u>22,446,091</u>	<u>21,479,930</u>			<u>1,432,993</u>

A livestock unit indicates one head of cattle, one horse, or five sheep.

A pasture unit may include one or more pastures, but it is operated under one management. Tax levy not included in revenue.

APPENDIX III

MAJOR PROJECTS - IRRIGATION, RECLAMATION AND WATER STORAGE*
TO MARCH 31, 1972

Name of Project	Location	Type of Project	Date Completed	Storage Capacity		Costs \$
				Irrigated Acres	Acres Feet	
MANITOBA						
Assiniboine River Dyking and Cut Off	Brandon	River Control	Not yet complete	-	-	1,692,984
Northwest Escarpment Reclamation Project - Riding Mt. Area	Dauphin	Watershed Control	1966	-	-	1,313,103
Fairford River Project	Lake Manitoba	Flood Control	1960	-	-	287,751
Saskatchewan River Reclamation - Pasquia Area	The Pas	Reclamation	1960	135,000	-	2,256,388
Shellmouth Dam and Portage Diversion	Russell	River Control	1970	-	430,000	19,153,103
Agricultural Service Centres	Brandon	Water and Sewer	Not yet complete	-	-	238,349
The Pas West	The Pas	Water and Sewer	Not yet complete	-	-	438,704
ALBERTA						
Bow River	Medicine Hat	Irrigation	Not yet complete	235,000	408,862	54,398
a) Purchase of Canada Land and Irrigation Company						2,353,182
b) Development and Construction						25,420,094
St. Mary	Lethbridge	Irrigation	Not yet complete	510,000	320,000	22,396,811
Belly River Diversion	Lethbridge	Irrigation	1950	-	-	53,901
Sawridge Creek	Slave Lake	Flood Control	Not yet complete	-	-	227,796
BRITISH COLUMBIA						
Cawston Benches	Keremeos	Irrigation (pump)	1951	629	2,000	185,491
Chase & Johnston - Western Canada Ranching	Kamloops	Irrigation	1951	755	-	98,243
Western Canada Ranching (No. 2)	Kamloops	Irrigation (pump)	1950	54	-	58,069
Lillooet - Pemberton	Pemberton	River Control	1953	-	-	1,056,539
South Thompson - Niskonlith Gravity Project	Kamloops	Irrigation	1951	1,030	1,200	12,282
Westbank Project	Kelowna	Irrigation	1950	1,200	2,500	537,450
Bankhead Irrigation Project	Kelowna	Irrigation	1951	92	-	32,229
Penticton West Bench	Penticton	Irrigation (pump)	1953	800	-	66,362
B.C. Fruitlands	Kamloops	Irrigation	1966	2,000	-	200,000
SASKATCHEWAN						
South Saskatchewan River Project	Outlook	Multi-purpose	1969	312,650	7,591,000	120,090,374
				(Including 24,000 in Qu'Appelle extension)		
Buffalo Pound Project	Qu'Appelle Valley	Urban Water Supply	1960	-	42,000	2,293,145
- Eyebrow Lake Diversion	Eyebrow	Water Supply	1960	-	-	98,376

(Above includes ONLY Construction Costs)

*Funds for certain of these projects were provided by special votes of parliament.

APPENDIX IV

PFRA EXPENDITURES BY ACTIVITIES, 1935 - 1972

ADMINISTRATION

Regina Administration

\$ 9,501,761

LAND USE SERVICE

Cultural Work - Soil Drifting, etc. (Exp. Farm Service)

4,966,394

Community Pastures - Construction, Operation and Maintenance

49,411,433

Movement of Settlers

227,841

WATER DEVELOPMENT SERVICE

Supervision, Individual Dugouts, Wells, Community Large Water Storage and
Irrigation Projects

70,214,820

Equipment - Purchase and Repairs, Service Depot

18,610,868

Tree Nursery Stations

5,292,353

Bow River Irrigation Project

45,029,400

ENGINEERING SERVICE

Surveys, Design, Soil Mechanics, Drainage Studies, Legal Surveys, Supervision
of Construction

43,585,393

St. Mary Irrigation Project

33,028,458

South Saskatchewan River Project

136,955,052

Assiniboine River Dyking

1,692,984

Shellmouth Dam and Portage Diversion

19,153,103

B.C. Reclamation and Development, including Lillooet Project

3,310,182

Land Protection and Reclamation, Manitoba and Eastern Canada

4,136,021

Miscellaneous Projects - Construction

4,976,157

\$450,092,220

REVENUE:

Community Pasture Operations

22,446,091

Irrigation Project Operation and General Revenue

17,877,183

\$ 40,323,274

