



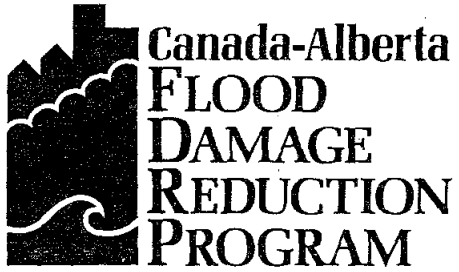
# CANADA-ALBERTA FLOOD DAMAGE REDUCTION PROGRAM

## ANNUAL REPORT 1995-96

ALEN  
no. 76  
1996

Environment Canada    Environnement Canada

**Alberta**  
ENVIRONMENTAL PROTECTION



The Honourable Christine Stewart  
Minister  
Environment Canada  
OTTAWA, ON

The Honourable Ty Lund  
Minister  
Alberta Environmental Protection  
EDMONTON, AB

Ministers:

I am pleased to submit the seventh Annual Report of the Canada-Alberta Flood Damage Reduction Program Steering Committee. The report outlines the work completed under the program during the fiscal year 1995/96.

Sincerely,

A handwritten signature in cursive script that reads "Doug Tupper".

Doug Tupper  
Chairman  
Steering Committee



Environment  
Canada

Environnement  
Canada

**Alberta**  
ENVIRONMENTAL PROTECTION

## **EXECUTIVE SUMMARY**

The Canada-Alberta Flood Damage Reduction Program Agreement was signed on April 3, 1989. This agreement initiated a program of flood risk mapping and floodplain designation in 52 urban communities across Alberta where a flood hazard has been identified. In April 1992 the Ministers agreed to add 14 communities to the program. The program has a total budget of \$5.5 million to be shared equally between Canada and Alberta.

An Amending Agreement was signed between the parties on June 28, 1995. This amendment extended the termination date of this agreement to March 31, 1999. The provisions regarding the cost sharing between the parties was extended to March 31, 1997.

During this seventh year of the program flood risk areas in Camrose and Red Deer were designated. Discussion to gain municipal acceptance were underway with the municipal administrations in Airdrie, Black Diamond/Turner Valley, Bragg Creek, Calgary, Fort McMurray, High River, Whitecourt, Hinton and Vegreville. Draft flood risk maps for Edmonton (Phase I) were sent over to the City for review. Flood risk mapping work was at different stages of completion in 18 other communities during 1995-96. Survey and mapping, hydrology and hydraulics were the main activities. The total program expenditure for 1995/96 was \$331,392.05.

As of March 31, 1996, twelve communities had been designated and flood risk maps were complete for 12 additional communities.

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## **1.0 INTRODUCTION**

Canada and Alberta signed "An Agreement Respecting Flood Damage Reduction and Flood Risk Mapping in Alberta" in April 1989. This Agreement initiated the Canada-Alberta Flood Damage Program (FDRP). The program is based on the premise that the best way to reduce the financial toll of flood damage disaster assistance payments is to discourage inappropriate new development in the floodplain. This is accomplished by identifying flood risk areas on a suitable map and, in cooperation with the affected communities, designating these areas.

The Flood Damage Reduction Agreement contains components on policy, flood risk mapping, and flood damage reduction measures to be carried out within the time frame and funding limits provided for in the Agreement. It provides for an extensive program of flood risk mapping and the designation of flood risk areas in those communities mapped. Policies discouraging future flood vulnerable development come into effect on designation, and will remain in effect following termination of the Agreement.

The Agreement terminates on March 31, 1999, but the majority of the funding for the mapping component is scheduled to be spent by March 31, 1997, followed by two years of reduced funding for a maintenance program. The total shareable cost of the Agreement is limited to \$5,500,000 of which each party's share is \$2,750,000 or 50% of the total, whichever is less.

This seventh annual report reviews the activities and progress of the Canada-Alberta Flood Damage Reduction Program during the period April 1, 1995 to March 31, 1996.

## **2.0 ORGANIZATION**

Under the terms of the Agreement a Steering Committee, consisting of two members appointed by the Minister of the Environment for Canada and two members appointed by the Minister of the Environment for Alberta, provides direction for the program and reports to the ministers annually.

The Technical Committee established under the Agreement consists of one member representing Environment Canada and three members representing Alberta Environmental Protection. The Technical Committee supervises and conducts the technical components of the work plan and reports to the Steering Committee.

A Public Information Subcommittee coordinates the public information component of the program. This group is responsible for preparing public information materials and facilitates public meetings and open houses. It includes members from Alberta Environmental Protection and Environment Canada and reports directly to the Steering Committee.

### Steering Committee

Members of the Steering Committee in 1994/95 were:

#### **Canada**

Mr. Brian O'Donnell (Chairman)  
Director  
Environment Canada  
Room 200, Twin Atria No. 2  
Edmonton, Alberta

Mr. Eon Park  
Chief Engineer Water Program  
Conservation Branch  
Canadian Wildlife Service  
Environmental Conservation Services  
Environment Canada  
4th Floor, Place Vincent Massey  
351 St. Joseph Boulevard  
Hull, Quebec

#### **Alberta**

Mr. Doug Tupper  
Director  
Water Management Division  
Alberta Environmental Protection  
Edmonton, Alberta

Mr. Paul R. Valentine  
Director  
Technical Services & Monitoring Division  
Alberta Environmental Protection  
Edmonton, Alberta

In accordance with the guidelines established in the Flood Damage Reduction Agreement, Canada chaired the Committee and provided secretarial support during 1995/96.

Technical Committee

Members of the Technical Committee in 1995/96 were:

**Canada**

Mr. G. Felton (Chairman)  
Environmental Services Branch  
Environment Canada  
Regina, Saskatchewan

**Alberta**

Mr. M. Quazi  
River Engineering Branch  
Technical Services & Monitoring Division  
Alberta Environmental Protection  
Edmonton, Alberta

Mr. T. Ingraham  
Survey Branch  
Technical Services & Monitoring Division  
Alberta Environmental Protection  
Edmonton, Alberta

Mr. R. Bothe  
Surface Water Assessment Branch  
Technical Services & Monitoring Division  
Alberta Environmental Protection  
Edmonton, Alberta

Public Information Program Committee

Members of the Public Information Program Committee members in 1995/96 were:

**Canada**

Ms. G. Trimble  
Communications Division  
Environment Canada  
Edmonton, Alberta

**Alberta**

Ms. Lee Ann Palutke  
Communications Division  
Alberta Environmental Protection  
Edmonton, Alberta



### **3.0 METHODOLOGY**

The flood risk mapping program has several components. These are surveying and mapping, hydrologic analysis, hydraulic analysis and public information map preparation.

The surveying and mapping component consists of aerial photography, reconnaissance, horizontal and vertical control surveys, cross section surveys for the hydraulic analysis and the preparation of an orthophoto map, usually at a scale of 1:5,000 with a one metre contour. The base mapping contracts are conducted under the specifications established in Schedule C of the Agreement. Contract administration and inspection is provided by the Survey Branch, Alberta Environmental Protection for the Technical Committee.

Hydrology studies are undertaken to determine the magnitude of the 1:100 year flood. This is the design flood identified in the Agreement and is the standard used in Alberta for flood risk mapping of the majority of the communities. For some communities the design flood may also have to account for the effects of ice and/or debris. The hydrologic analyses are completed under the direction of the Technical Committee in accordance with specifications set out in Schedule B of the Agreement.

The hydraulic analysis consists of calculations for a water surface profile for the 1:100 flood using the HEC-2 computer model. The flood risk areas are plotted on detailed topographic maps and are divided into two zones: the floodway and the flood fringe. The floodway consists of the channel and the adjoining overbank area required to carry a majority of the floodwater. The flood fringe includes areas of the floodplain where the flood waters are shallower (less than 1 metre) and slower moving (less than 1 metre/second). The hydraulic analysis is completed under the direction of the Technical Committee in accordance with specifications set out in Schedule B of the Agreement.

The Steering and Technical Committees consult with local government officials to ensure local awareness of the intent and implications of the program. The location of the flood

lines is reviewed with local officials to seek their support in implementing the policies of the program.

Once the flood risk areas are established they are reviewed by local governments and, upon agreement by the community, Ministers of the Environment are asked for their approval of the designation. Public Information maps and brochures are then prepared.

#### **4.0 PUBLIC INFORMATION PROGRAM**

Section (3c) of the Canada-Alberta Flood Damage Reduction Agreement specifies that Canada and Alberta "will ensure the provision of adequate information on the extent of flood risk areas within Alberta through ... the dissemination of such information to interested agencies and individuals". A public information program was initiated to achieve these goals. Its primary objectives are:

1. To explain the intent of the Flood Damage Reduction Program and recommended floodplain designations to all audiences.
2. To promote stakeholder involvement in response to the designations.
3. To promote the use of flood risk mapping information for improved decision making in community and regional planning.

The goal of the public information program is to inform floodplain residents about designation and its implications. The information program is directed at all residents and property owners in the flood risk area and to local governments who are responsible for implementing and enforcing land use regulations within the flood risk areas. This program also provides information to provincial and federal elected representatives and government departments responsible for implementing the policies required by the designation of the flood risk areas.

All affected property owners are notified in advance of the designation and open houses are held to explain the program and related policies. Materials available for the open houses and general distribution are the program brochure, displays, program video, flood information maps, and community specific brochures or fact sheets.

## **5.0 1995/1996 WORK PROGRAM**

The 1995/96 fiscal year was the seventh year of the Agreement and work program. Figure 1 shows the communities active under the program in 1995/96. A status report on each community is provided on pages 9, 10 and 11. This report details the component (i.e., surveys, mapping, hydrology, hydraulic, PR map, and designation) completed or outstanding for each community on the list. The following is a summary of these features of the 1995/96 program:

### **1. Designations:**

The communities designated during the year were:

|          |                  |
|----------|------------------|
| Camrose  | June 28, 1995    |
| Red Deer | October 11, 1995 |

Public open house on the designation day was held in Camrose. In Red Deer, a public open house was held before the municipal acceptance of the flood risk maps.

This was done at the request of the City of Red Deer. Designation day aerial photographs were flown in both designated communities.

Designation of the flood risk areas in Calgary and Black Diamond-Turner Valley has been approved by the ministers.

The total program expenditure for 1995/96 was \$331,392.05. Table 1 on page 8 provides details of expenditure on different communities for the fiscal year 1995/96.

**TABLE 1**  
**1995/96 Program Expenditures**

| COMMUNITY          | CONTRACTS  | SURVEYING<br>& MAPPING | HYDROLOGY | HYDRAULICS | TOTAL      |
|--------------------|------------|------------------------|-----------|------------|------------|
| Calgary            | 19,250.00  |                        |           |            | 19,250.00  |
| Camrose            |            | 2,696.00               |           |            | 2,696.00   |
| Edmonton           | 1,852.15   | 6,946.43               |           |            | 8,798.58   |
| Elbow River        | 42,874.02  |                        |           |            | 42,874.02  |
| Exshaw             | 152.53     |                        |           |            | 152.53     |
| Fort McMurray      |            | 4,162.00               |           |            | 4,162.00   |
| High River         | 3,313.45   |                        |           |            | 3,313.45   |
| Lacombe            | 1,263.82   |                        |           |            | 1,263.82   |
| Lamont             | 29,514.00  |                        |           |            | 29,514.00  |
| Lethbridge         |            |                        |           | 3,836.94   | 3,836.94   |
| M.D. of Bighorn    | 37,011.07  |                        |           |            | 37,011.07  |
| Nose Creek         | 8,623.40   |                        |           | 1,244.05   | 9,867.45   |
| Okotoks            | 4,979.02   |                        |           |            | 4,979.02   |
| Pembina            |            |                        |           | 4,514.47   | 4,514.47   |
| Red Deer           |            | 7,058.00               |           |            | 7,058.00   |
| Redwood Meadows    |            | 20,818.00              |           |            | 20,818.00  |
| Sangudo            | 4,510.53   |                        |           | 1,335.91   | 5,846.44   |
| South Floods       | 4,020.26   | 19,032.00              |           |            | 23,052.26  |
| Sundre             |            |                        |           | 2,361.48   | 2,361.48   |
| Watino             | 27,574.50  |                        |           |            | 27,574.50  |
| Miscellaneous      | 2,677.44   |                        |           |            | 1,677.33   |
| Coordinators       |            |                        |           | 26,808.60  | 26,808.60  |
| Courier            | 522.68     |                        |           |            | 522.68     |
| Misc. Supplies     | 2,827.12   |                        |           |            | 2,827.12   |
| Public Information | 577.15     |                        |           |            | 577.15     |
| Technical Support  | 19,035.03  |                        |           |            | 19,035.03  |
| Total              | 210,578.17 | 60,712.43              |           | 40,101.45  | 311,392.05 |

# STATUS CANADA - ALBERTA FLOOD DAMAGE REDUCTION PROGRAM

Agreement Respecting Flood Hazard Mapping

| Community | Surveys | Topo Map | Hydrology | Hydraulic | P.R. Map | Designation |
|-----------|---------|----------|-----------|-----------|----------|-------------|
|-----------|---------|----------|-----------|-----------|----------|-------------|

## SCHEDULE A1

|              |  |  |  |  |  |  |
|--------------|--|--|--|--|--|--|
| Calgary      |  |  |  |  |  |  |
| Cochrane     |  |  |  |  |  |  |
| Drumheller   |  |  |  |  |  |  |
| Fort McMurry |  |  |  |  |  |  |
| Medicine Hat |  |  |  |  |  |  |
| Okotoks      |  |  |  |  |  |  |
| St. Albert   |  |  |  |  |  |  |

## SCHEDULE A2

|                        |  |  |  |  |  |  |
|------------------------|--|--|--|--|--|--|
| Airdrie                |  |  |  |  |  |  |
| Bk. Diamond/Tur. Vally |  |  |  |  |  |  |
| Bragg Creek            |  |  |  |  |  |  |
| Edmonton               |  |  |  |  |  |  |
| Fort MacLeod           |  |  |  |  |  |  |
| High River             |  |  |  |  |  |  |
| Lethbridge             |  |  |  |  |  |  |
| Pincher Cr./Kettle Cr. |  |  |  |  |  |  |
| Ponoka                 |  |  |  |  |  |  |
| Red Deer - Waskasoo    |  |  |  |  |  |  |
| Vegreville             |  |  |  |  |  |  |
| Whitecourt             |  |  |  |  |  |  |



Complete  
Draft / Incomplete  
Not Started

- Survey
- Topo Map
- Hydrology
- P.R. Map

ground survey information and field work  
large-scale air photographs of floodplain  
large-scale topographic mapping  
report on flood flow and hydrographs  
flood level and flood hazard area delineation  
public information map of floodplain areas

PROGRAM STATUS TO MARCH 31, 1996

STATUS  
**CANADA - ALBERTA FLOOD DAMAGE REDUCTION PROGRAM**  
 Agreement Respecting Flood Hazard Mapping

| Community | Surveys | Topo Map | Hydrology | Hydraulic | P.R. Map | Designation |
|-----------|---------|----------|-----------|-----------|----------|-------------|
|-----------|---------|----------|-----------|-----------|----------|-------------|

| <b>SCHEDULE A3</b>  |   |   |   |   |   |   |
|---------------------|---|---|---|---|---|---|
| Athabasca           | █ | █ | █ | █ | █ | █ |
| Barrhead            | █ |   |   |   |   |   |
| Camrose             | █ | █ | █ | █ | █ | █ |
| Canmore             | █ | █ | █ | █ | █ | █ |
| Carbon              |   |   |   |   |   |   |
| Cardston            | █ | █ | █ | █ | █ | █ |
| Crowsnest           |   | █ | █ |   |   |   |
| Didsbury            |   |   |   |   |   |   |
| Drayton Valley      |   |   |   |   |   |   |
| Exshaw              | █ | █ | █ | █ |   |   |
| Fort Vermillion     | █ | █ |   |   |   |   |
| Hinton              | █ | █ | █ | █ |   |   |
| Lacombe             | █ | █ | █ | ▨ |   |   |
| Lamont              | █ | █ | █ | █ |   |   |
| Manning             | █ | █ | █ | ▨ |   |   |
| Milk River          |   |   |   |   |   |   |
| Millet              | █ |   | █ |   |   |   |
| Paddle Prairie      |   |   |   |   |   |   |
| Penhold             | ▨ |   |   |   |   |   |
| Radway              |   |   |   |   |   |   |
| Red Deer - Red Deer | █ | █ | █ | █ | █ | █ |
| Rochester           | █ | █ | █ |   |   |   |
| Rocky Mtn. House    | ▨ |   | █ |   |   |   |
| Rosebud             |   |   |   |   |   |   |
| Rycroft             |   |   |   |   |   |   |
| Sangudo             | █ | █ | █ | ▨ |   |   |
| Slave Lake          | █ | █ | █ | █ | █ | █ |
| Stettler            | ▨ |   | █ |   |   |   |
| Sundre              | █ | █ | █ | ▨ |   |   |
| Two Hills           |   |   | █ |   |   |   |
| Watino              | █ | █ | █ | █ |   |   |
| Writing - St. - Pk. |   |   |   |   |   |   |

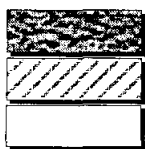
PROGRAM STATUS TO MARCH 31, 1996

STATUS  
**CANADA - ALBERTA FLOOD DAMAGE REDUCTION PROGRAM**  
 Agreement Respecting Flood Hazard Mapping

| Community | Surveys | Topo Map | Hydrology | Hydraulic | P.R. Map | Designation |
|-----------|---------|----------|-----------|-----------|----------|-------------|
|-----------|---------|----------|-----------|-----------|----------|-------------|

**SCHEDULE A3 New Communities**

|                 |                    |          |                    |                    |          |          |
|-----------------|--------------------|----------|--------------------|--------------------|----------|----------|
| Alix            |                    |          |                    |                    |          |          |
| Bighorn #8      | Complete           | Complete | Complete           | Complete           |          |          |
| Birchwood       | Draft / Incomplete |          | Complete           |                    |          |          |
| Calgary-Nose    | Complete           | Complete | Complete           | Draft / Incomplete |          |          |
| Calgary-Elbow   | Complete           | Complete | Complete           | Complete           |          |          |
| Cougar Creek    | Complete           | Complete | Complete           | Complete           | Complete | Complete |
| Eckville        |                    |          |                    |                    |          |          |
| Grand Prairie   |                    |          |                    |                    |          |          |
| High Prairie    |                    |          |                    |                    |          |          |
| Kinuso          | Draft / Incomplete |          |                    |                    |          |          |
| Markeville      |                    |          |                    |                    |          |          |
| Peace River     | Complete           | Complete | Draft / Incomplete |                    |          |          |
| Red Earth       |                    |          |                    |                    |          |          |
| Rockyview-Elbow | Complete           | Complete | Complete           | Complete           |          |          |
| Thorsby         |                    |          | Complete           |                    |          |          |



Complete

Draft / Incomplete

Not Started

○ Survey

○ Topo Map

○ Hydrology

○ Hydraulic

○ P.R. Map

ground survey information and field work  
 large-scale air photographs of floodplain  
 large-scale topographic mapping  
 report on flood flow and hydrographs  
 flood level and flood hazard area delineation  
 public information map of floodplain areas

PROGRAM STATUS TO MARCH 31, 1996