THE RED RIVER FLOODWAY EXPANSION PROJECT

4th International Symposium on Flood Defence

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OUTLINE

- History
- Floods
  - Flood Protection in Winnipeg
- Floodway Expansion
- Environmental Assessment Process
- Innovation
- Construction Status and Future
HISTORY
History

In last 200 years:

#1: 1826 – 6 370 m³/s
#2: 1852 – 4 670 m³/s
#3: 1997 – 4 615 m³/s
#4: 1861 – 3 480 m³/s
#5: 1950 – 3 060 m³/s

Mean annual – 220 m³/s

Source: Manitoba Water Resources Branch
Manitoba Floodway Authority

History

Disaster in 1950
Original Red River Floodway

- Diverts flood water around Winnipeg
- Opened in 1968
- To date, used more than twenty times
- Avoided flood damages in excess of $8 Billion
Inlet Control Structure

Looking North at Winnipeg

34.3 m
Floodway Channel

- Length: 48 kilometres
- Top width: 200 - 300 metres
- Base width: 110 - 160 metres
- Design depth: ~ 8 m
1997 Flood in Winnipeg

- Largest flood in 20th century
- 5 km of primary dyke raised
- 800 homes required 8 million sandbags
1997 Flood in Winnipeg

- Flood protection works taxed to the limit
- Floodway design flow exceeded
- “Wake-up call”
Post 1997 Studies

- International Red River Task Force (of the IJC) in 2000 recommended consideration of Floodway Expansion

- In 2001, Province commissioned a detailed study of flood protection for Winnipeg
Post Flood Studies

- Outcome of studies was the Province’s selection of the Floodway Expansion:
  - Protection against 1 in 700 year flood, 7,500 m³/s
  - Reduce Winnipeg’s Flood risk by 80%
  - Net benefits = $900 million
  - No increase in artificial flooding upstream
Without an expanded floodway, 450,000 residents would be flooded in a 1 in 700 year flood event.
FLOODWAY EXPANSION DESIGN
Design Milestones

- Pre-design data collection started Spring 2003
- Pre-design started December 2003
- Pre-design completed July 2004
- Detailed design started Fall 2004
Main Components of Expansion

1. Floodway Channel Expansion: Widening channel to handle larger floods than 1997 Flood.
3. Outlet Structure: Expansion and design improvements, erosion control.

5 Main Components of Floodway Expansion Proposal
Channel Enlargement

- Increase flow capacity from 1,700 to 4,000 cms
- Widening – No deepening
- 21,000,000 m³ of excavation
- No land beyond property limits was required
Environmental Review Process

- Joint cooperative environmental review by Canada and Manitoba was agreed
- Commenced in 2003
Environmental Review Process

- Public Consultation
- MFA has listened to Manitobans
- 4 Rounds of consultation
- More than 300 hours of stakeholder meetings
- 20 community meetings
- Distribution of 100,000 newsletters
- Over 100,000 hits to MFA website
Public has Affected the Project

Many notable changes in design and in the environmental assessment process.
Milestones in Review Process

-Commenced early work Feb 2003

-Submitted EIS in August 2004

-Submitted EIS Supplementary Filing in November 2004

-Submitted response to Information Requests in December 2004

-Manitoba Clean Environment Commission hearings mid-February to mid-March 2005

-Submitted additional information to Federal agencies in April 2005

-July 8, 2005, MFA received
  -Federal sign-off
  -Provincial license
Innovations

- Optimization of channel widening
- Widening only – minimizes impact on groundwater
- Aboriginal “set aside” work for West Dyke
- Elimination of some bridge work to maintain budget, with replacement by channel excavation
CONSTRUCTION PROGRESS
Construction Progress

- Construction was officially initiated on September 23, 2005
Channel Enlargement

- Currently 31 of 48 km Floodway channel are complete
Improvements to the Inlet Structure

- About 1/3 complete to date
Enlarged Outlet Structure

- Widen structure and channel
- Energy dissipation measures
- Erosion protection
Enlarged Outlet Structure

- Construction started August 2007
- \(~25\%\) complete to date
Upgrade of Highway Bridges

• 2 Highway Bridges replaced

• 99% complete

Manitoba Floodway Authority

Trans Canada Hwy # 1

PTH # 59 South
Upgrade of Railway Bridges

- Modifying three existing railway bridges and replacing one railway bridge
- 50% complete
Relocation of the
City of Winnipeg Aqueducts - Complete
Expansion of the West Dyke

- Raising and extending 45 km

- 50% complete
Projected Completions:

- Scheduled completion of channel, hydraulic structures by March 2009
- Scheduled completion of bridges and West Dyke in Oct 2009
- Restoration by Sept 30, 2010
Construction Progress

• 43 Contracts awarded to date worth $450 million

• ~20 Contracts valued at ~ $100 million yet to be tendered