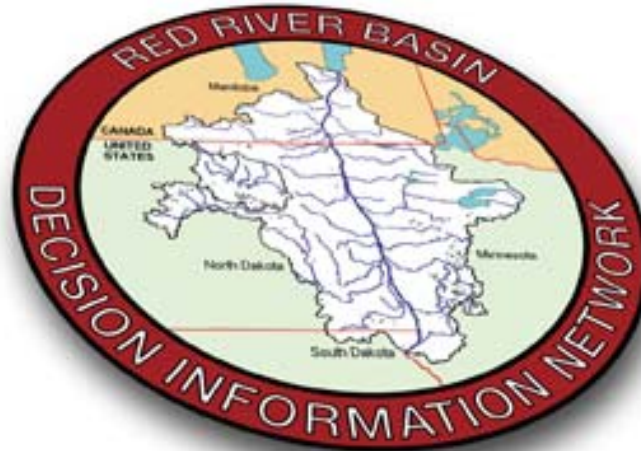# Red River Basin
Decision Information Network

Presented by:
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Presented to:
2003 MapServer Users Meeting
St. Paul, MN

Overview

- Background Information about Red River Basin Decision Information Network (RRBDIN)

- Overview of MapServer Application termed "BasinViewer"

- Technology used to Develop "BasinViewer"

- Live Demonstration of "BasinViewer"

- Conclusions and Questions

RED RIVER BASIN
DECISION INFORMATION NETWORK
"Shared Tools For Regional Problem Solving"

What's New
Download the Red River Canoe and Boating Route Master Plan and related maps and pictures from the File Bank. (02/30/03)

Two new tools are available, called BasinViewer and DataViewer. Go to the Tools Page and click on the appropriate link. (11/04/02)

Current Flood Conditions
For more information go to:
DataViewer
National Weather Service
Manitoba Flood Information
MN DEM
ND DEM

Visit RiverWatch for Flood Recovery Information.

The Red River Basin Decision Information Network (RRBDIN) is an internet-based decision support system for the Red River Basin. RRBDIN provides a one-stop portal to information about water management within the basin. This information includes databases, references, technical tools, communication tools and GIS data. **Click for project background.**

Basin News

2003-04-08
Final Devils Lake Environmental Impact Statement Released
The U.S. Army Corps of Engineers released its Devils Lake, N.D., final Integrated Planning Report and Environmental Impact Statement for public comment on April 8. **Full Story**

2003-04-03 -- $160 Million Announced for Floodway Expansion

2003-03-31 -- Final Payments Announced for 1995, 1996 Manitoba Floods

2003-03-28 -- Flood Potential in Western Manitoba Diminishes

2003-03-25 -- MN Governor Announces $7 Million+ in FEMA Grants

2003-03-24 -- Minnesota Spring Fire Restrictions to Begin April 1

2003-03-13 -- Meteorological Service of Canada to be Reorganized

2003-03-03 -- FEMA Establishes Interagency Geospatial Team

2003-02-28 -- Minor Spring Flooding Possible in Western Manitoba

2003-02-26 -- Corps Identifies Preferred Outlet for Devils Lake

2003-02-18 -- Province Announces Lake Winninpeg Action Plan

2003-02-17 -- Manitoba Freshwater Forum Takes Place February 18th

2003-02-10 -- USGS Releases New Software for Estimating Floods

News Archive

Featured Link
Manitoba Land Initiative

USDA Disaster Assistance Website

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Invite a Friend!

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Search

In Cooperation With

Manitoba

Background of the Red River Basin Decision Information Network

What is the RRBDIN?

- Web-Based Decision Support System for Water Management in the Red River Basin of the North
- Funded by the U. S. Army Corps of Engineers and International Joint Commission
- Consists of interactive databases, communication tools, **mapping and data access tools**, and other related information
- Evolving work in progress
  - Two funding phases with a third to begin this summer

RED RIVER BASIN

DECISION INFORMATION NETWORK

"Shared Tools For Regional Problem Solving"

Communication > Address Book

Address Book
Browse | Review | Help
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

	Name/Title	Organization/Address	Phone
☐	**Adrian, Ronald J.** Engineer	Middle River Snake River Watershed District P.O. Box 154, 453 North McKinley St. Warren, MN 56762 USA	218-745-4741 (W) 218-745-5300 (F)
☐	**Alberico, Teri** Biologist/GIS Specialist	**U.S. Army Corps of Engineers, St. Paul District Environmental and Economic Analysis Branch** 190 Fifth St. East St. Paul, MN 55103 USA	651-290-5269 (W) 651-290-5258 (F)
☐	**Albrant, Kelly** Water Resources	**Northland Employment Services, Inc.** Interchange Building, Ste. 450 400 South Highway 169 St. Louis Park, MN 55426 USA	952-345-7115 (W) 952-595-9878 (F)
☐	**Albright, Bruce E.** Administrator	Buffalo-Red River Watershed District 123 Front St. Barnesville, MN 56514 USA	218-354-7710 (W) 218-354-2503 (F)
☐	**Alexander, Donald** Chairman	**Pembina Valley Conservation District** Box 148 Miami, MB R0G 1H0 CAN	204-435-2484 (W) 204-435-2385 (F)
	Alleckson, Lorilynn	(n/a)	218-790-5793 (W)

[   ] [Last Name ▼] [Search]

Where is the Red River Basin Of the North?

Manitoba

CANADA

UNITED STATES

North Dakota

Minnesota

South Dakota
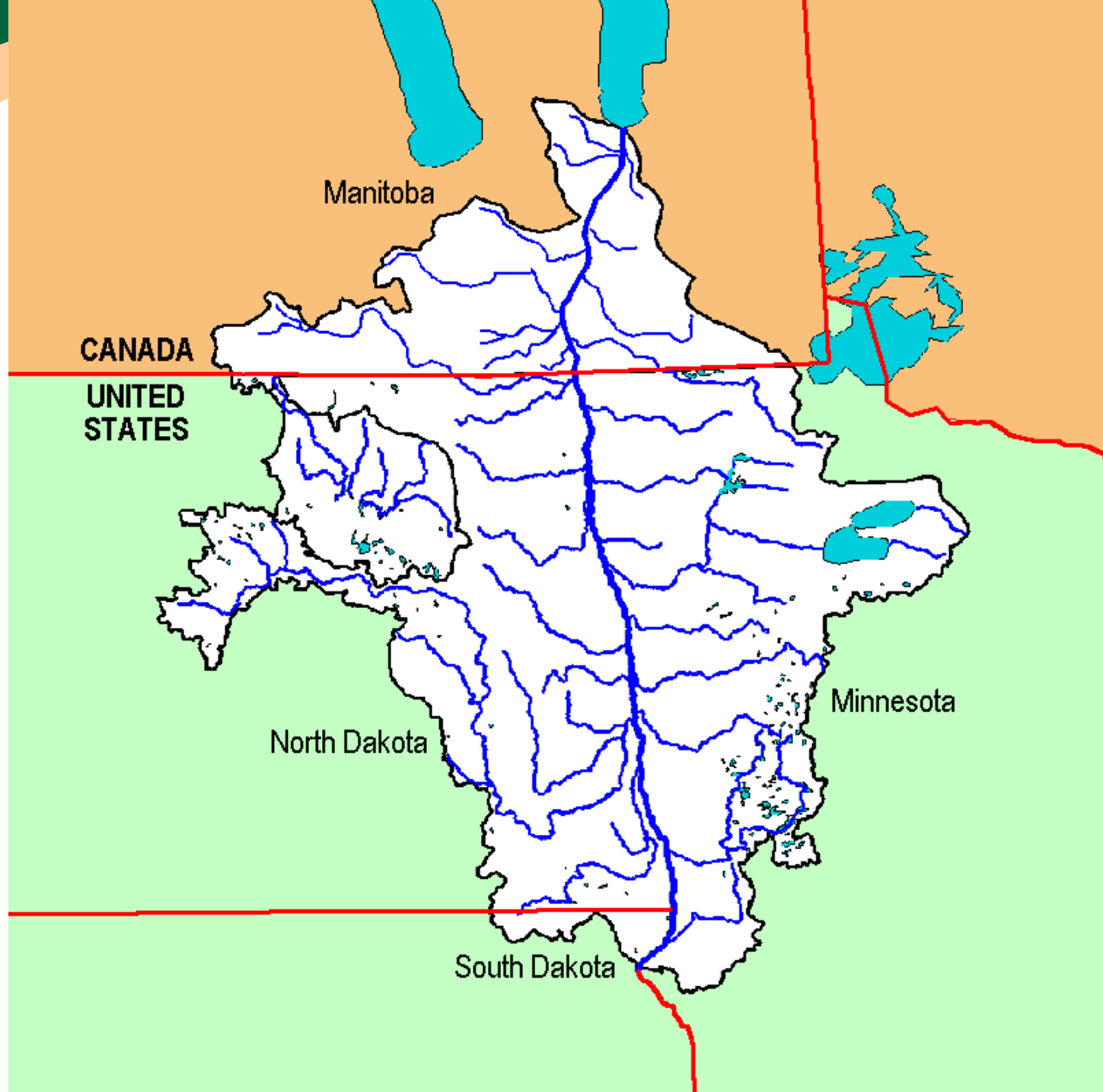
Flood of 1997
Red River of the North

Emerson

West Lynn

Red River

U.S. Customs

Canada Customs

PTH 75

Emerson - International Border

Original RRBDIN Purposes

- Provide access to multi-source information in support of floodplain management goals
- **Establish a geospatial data framework for the Red River Basin**
- Make data freely available to solve local problems
- Serve as a test-bed environment to benefit other emergency management interests
- Foster international cooperation
- Strengthen inter-organizational ties

BasinViewer

Need for a Web Mapping Application

- Hard to access and lack of data during the 1997 flood

- IJC's workshops and task force confirmed the need

- Many different organizations producing data in the Basin

- A geospatial data framework for the Red River Basin has been established

- Many non-savvy GIS people in the Basin

First Try

- First version of a web mapping tool was ArcView IMS

- Developed during first phase of the RRBDIN

- Expensive to maintain after ESRI dropped support for it

- Left with a decision to make during the second phase of development

Second Try, Do or Die

- Wanted a **seamless** web mapping tool to view GIS data in the Red River Basin
- Wanted it to satisfy many different GIS viewing needs
- Needed to be inexpensive and easy to maintain
- Wanted to use as many WMS and/or WFS as possible (Distributed Database concept)
- We choose to use MapServer

Challenges

- Data had to appear seamless

  - 2 Countries, 3 States and many local governments

- Easy to use interface

- What functionality do users need?

- How do we organize all of the data?

- How do we develop the application so it is easy to maintain?

BasinViewer Data Sources

- BasinViewer uses a collaboration of data sources.

  - FEMA – flood plains
  - USGS – imagery, land use, NHD
  - USACE – historic flood extents
  - EPA – Emergency response data
  - MnDNR – basemap data
  - Manitoba Conservation – basemap data
  - Environment Canada – basemap data
  - Many others – water quality, bridges

Technology, So Much to Choose From!

BasinViewer Technology

- Developed with MapServer 3.6

- Windows 2000 Server with IIS 5.0

- Interface developed using DHTML and JavaScript
  - Credit goes to Steve Lime's Dbox code

- Uses a combination of shapefiles and WMS layers

- No Server-side scripting was needed

Interface Decisions

- Java vs. DHTML vs. HTML

- Functionality (much is standard or code is available)

  - Zoom to menus, change map size, custom map, display mouse coordinates

- How to organize all of the content?

  - Adapted from MnDNR LandView Application

- Can be a time consuming process, mainly because of the freedom with MapServer

BasinViewer Interface Version 1

BasinViewer Interface Version 2

Web Mapping Services

- No data maintenance
- Without it we would be able to serve the USGS topo quads and aerial photos
- Only using it for raster layers
- BasinViewer uses two sources: USGS and MnDNR
- Hopefully we can add more in the future

Live Demonstration

MapServer Usage

Monthly Report

This report lists the activity in each month.

Each unit (▬) represents 400 requests for pages or part thereof.

```
   month:   reqs:  pages: bytes:
--------: -----: -----: -----:
Nov 2001:    553:    549:    0: ▬▬
Dec 2001:    993:    989:    0: ▬▬

Jan 2002:   5984:   5043:    0: ▬▬▬▬▬▬▬▬▬▬▬▬
Feb 2002:   4955:   3955:    0: ▬▬▬▬▬▬▬▬▬
Mar 2002:   5313:   3614:    0: ▬▬▬▬▬▬▬▬▬
Apr 2002:   4877:   4022:    0: ▬▬▬▬▬▬▬▬▬
May 2002:  10671:   8918:    0: ▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬
Jun 2002:   9304:   7736:    0: ▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬
Jul 2002:  12335:  10049:    0: ▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬
Aug 2002:   8543:   7082:    0: ▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬
Sep 2002:   8921:   7759:    0: ▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬
Oct 2002:  10583:   8611:    0: ▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬
Nov 2002:  23272:  12333:    0: ▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬
Dec 2002:  13727:   9909:    0: ▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬

Jan 2003:  13732:   9041:    0: ▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬
Feb 2003:  17010:   9823:    0: ▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬
Mar 2003:  18069:  11160:    0: ▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬▬
Apr 2003:   3761:   2429:    0: ▬▬▬▬▬▬
```

Busiest month: Nov 2002 (12,333 requests for pages).

MapServer's has generated approximately 30,000 map components for the RRBDIN website in a period of one year.

Wants and Wishes

- We would like to make a few enhancements to the interface
  - Notice to user when MapServer is processing a request
- Add additional support for printing custom maps
  - Ability to change map sizes
  - Print to .pdf
- Add additional GIS data
  - Specifically migrate to more WMS and WFS

Thank You MapServer Developers!

Without MapServer, us average end users would be stuck using an expensive commercial software package.

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Homepage: http://www.rrbdin.org/