

# Rainfall-River Forecasting Summit

**Colonel Thatch Shepard**

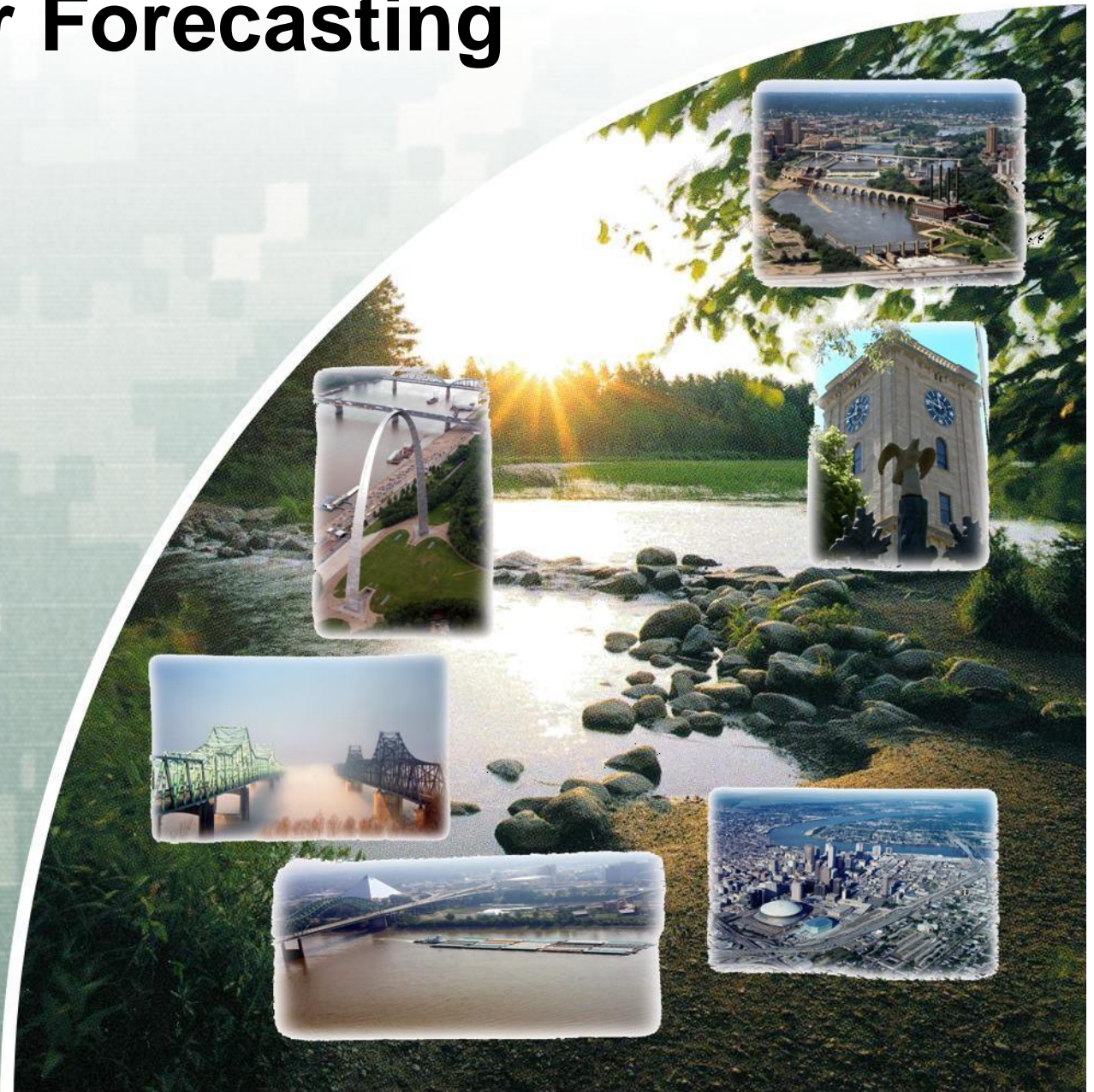
Deputy Commander

Mississippi Valley Division

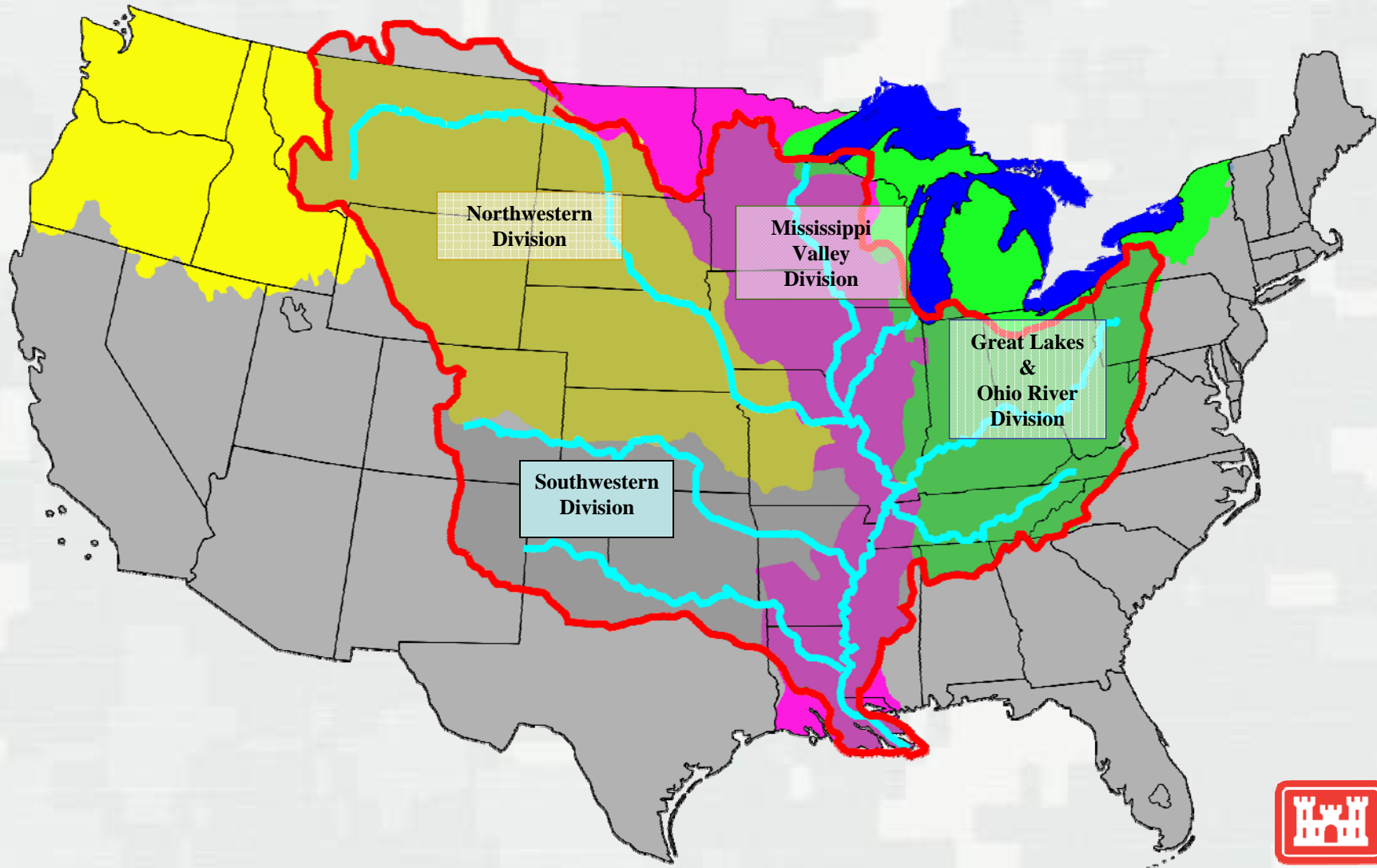
October 19, 2009



US Army Corps of Engineers  
**BUILDING STRONG®**



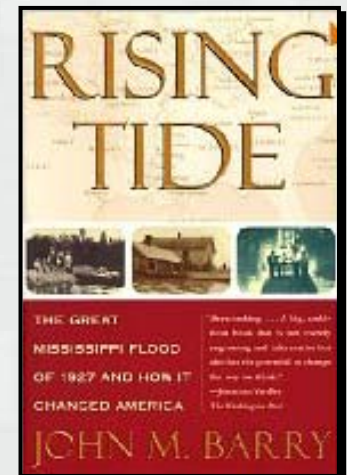
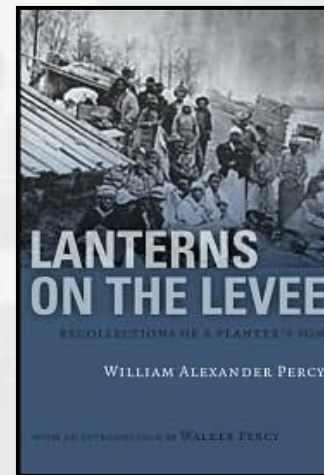
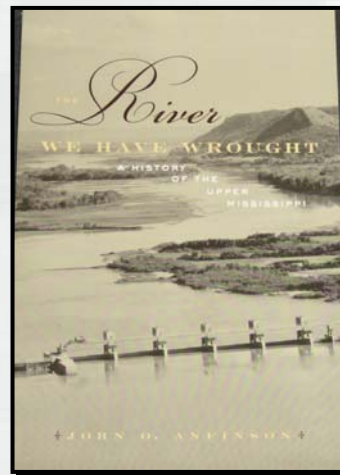
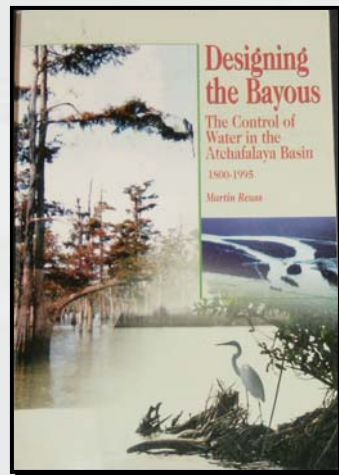
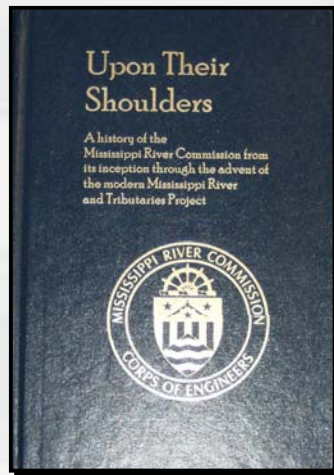
# Mississippi River Watershed



**BUILDING STRONG®**



# Our Future



- Build a vision for the future of the 3<sup>rd</sup> largest watershed in the world
- Gather insights and lessons from the past to build a better future



BUILDING STRONG®

# America's Watershed: A 200-year vision

## *An Intergenerational Commitment*

### Our people ...

- Enjoy a quality of life unmatched in the world.
- Lead secure lives along any river or tributary in the basin.
- Enjoy fresh air and the surrounding fauna, flora and forests while hunting, fishing and recreating along any river or tributary in the basin.
- Travel easily, safely, and affordably to various destinations in the watershed.
- Drink from and use the abundant waters of any river, stream or aquifer in the basin.
- Choose from an abundance of affordable basic goods and essential supplies that are grown, manufactured, and transported along the river to local and world markets.

*Leveraging engineering, science, technology and public policy*

# Mission Statement

Serve the Mississippi Valley Region by managing the watersheds and developing **collaborative engineering solutions** that will reduce risks through the reduction of flood damage potential, maintain and enhance navigation, and protect/ restore / enhance environmental ecosystems; while being prepared to respond to Regional and National emergencies.



---

BUILDING STRONG®



# Regional Flood Risk Management Team

- Team members:
  - ▶ U.S. Army Corps of Engineers
  - ▶ Federal Emergency Management Agency
  - ▶ U.S. Geological Survey
  - ▶ National Weather Service
  - ▶ States of Illinois, Iowa & Missouri



# Rainfall-River Forecasting Summit



- **Fusion Cell:**  
**National Weather Service, U.S. Geological Survey, and U.S. Army Corps of Engineers**



**BUILDING STRONG®**

# Red River of the North Characteristics

- Flows North into Canada – Hudson Bay
  - ▶ Increased Ice Jams
  - ▶ Synchronization of discharges and spring thaw effects
- Shallow gradient throughout the RRN Valley
  - ▶ 7 cm/km in the southern Valley (Fargo-Halstad)
  - ▶ 2 cm/km in the northern Valley (Drayton-Pembina)
  - ▶ Waffle Affect
- Great clay soils for levee construction (+)
- Bad foundation soils for stability (-)

07:00:00  
TOT: 234  
Location: Oslo, ND  
Latitude: N 48° 11.63' / Longitude: W 097° 07.00'  
Object: Oslo



# Setting the Stage

- **Fall Precipitation (Sept – Nov)**
  - ▶ Historical averages exceeded by 4+ inches
  - ▶ Fargo and Grand Forks set new records
- **Frigid temperatures prior to snow-pack**
  - ▶ Deeply frozen & saturated soils
  - ▶ “Concrete Frost” (impervious)
- **Heavy Winter Snowfall**
  - ▶ Record-setting snowfall in December & March
  - ▶ One of the snowiest seasons ever



# Are We Ready?

- **Water Control**

- ▶ Interagency planning meetings started in January
- ▶ Funded USGS to increase gauging and reconnaissance capability

- **Emergency Management**

- ▶ Flood Engineer Training Workshop
- ▶ Sandbag/Pump/Poly Inventory

- **Flood Preparedness Workshops**

- ▶ 9 workshops conducted throughout Minnesota & North Dakota
- ▶ Focus on flood fight techniques, issues and planning



**BUILDING STRONG®**



# Red River of the North Record Flooding

- **Emergency efforts included:**
  - ▶ 125 personnel on the ground
  - ▶ 11.3 million sandbags distributed
  - ▶ 50 contracts awarded for \$32 million
  - ▶ 70 miles of emergency levee built
- **Prevented \$3 billion in damages**
- **Cleanup efforts continue**



**BUILDING STRONG®**

# **Why Are We Here?**

- **What went right with our forecasting?**
- **What went wrong with our forecasting?**
- **What improvements can be made in our forecasting?**
- **We're here to listen to your ideas and try to develop an answer to these questions!**

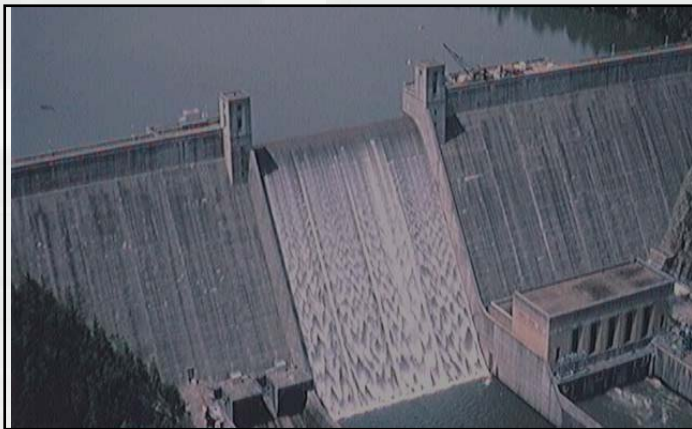


---

**BUILDING STRONG®**



# Building Strong



**BUILDING STRONG®**