Restoring Lake Delton
Project Location

Dell Creek Dam
The Event

Between 13 and 17 inches of rain fell in early June 2008. Within two hours, a total breach occurred. 700,000 cubic yards of sand material eroded into Wisconsin River, and Lake Delton drained.
The Event
The Event
After the Breach
Funding source

**Road Repair:**
- Ownership of County Highway A transfers to State
- As State Highway A (STH A), roadway qualifies for emergency funding

**Dam Repair:**
- Village of Lake Delton
Project Schedule

– Engineering design start date 6/9/08
– Complete PS&E by 8/15/08
– Bid project by 8/28/08
– Start construction by 9/7/08
– STH A reopen on 11/26/08
– Construction 90% complete by 12/1/08 Lake refilled to normal pool on 4/28/09
Action Plan

- STH A Embankment
- Seepage Berm
- Emergency Cofferdam
- Channel Diversion
- Dell Creek Dam Works
WisDOT

Mead & Hunt
Principal-in-Charge

Mead & Hunt
Channel Diversion
Emergency Cofferdam
STH A Embankment
Dell Creek Dam Works
Geotechnical
Seepage Berm

Freese & Nichols
Geotechnical
STH A Embankment
Slurry Cutoff Wall

Mead & Hunt
Project Management

MSA
Principal-in-Charge

MSA
Highway Design
CADD
Surveying
STH A Embankment
C.O./Testing
Channel Diversion

Initial Closure Dike

Initial Diversion Channel

Dell Creek Dam Sluiceways
Dell Creek Dam Works

Original Dam – Downstream View

(Capacity: ~ 3,000 cfs)
Dell Creek Dam Works

Original Dam – Upstream View
Dell Creek Dam Works

Sluice Gates
Dell Creek Dam Works

Primary Spillway
Dell Creek Dam Works

Emergency Spillway
Dell Creek Dam Works

Hydraulic Data:

• Capacity before modification: ~ 3,000 cfs
• Capacity after modification: 6,000 cfs
• Estimated 1000-year flood: 6,000 cfs
  (Determined by WDNR)
• June 2008 flood at Dell Creek Dam: > 3,000 cfs
  (Determined by HEC-RAS model)
Dell Creek Dam Works

Dell Creek Dam
Rating Curve for Sluice Gates, 60-ft Ogee Spillway, and 70-ft Side Channel Spillway

Discharge (cfs)

Elevation, NAVD 1988 (ft)

Q = 1,183 cfs
Q = 1,462 cfs
Q = 2,134 cfs
FDR = 2,000 cfs

11/13/2009
Dell Creek Dam Works

Embankment Improvements
Emergency Cofferdam
Conceptual layouts

Alternative 1—Construct road as dam

Alternative 2—Combine road and dam

Alternatives 3A and 3B—Construct separate road and dam embankments
Bedrock Profile

Late Cambrian System sandstone

Elevation

Station

Top of Rock
Bottom of Key
Top of Embankment
STH A Embankment

Bentonite Slurry Cutoff
STH A Dedication Day

December 5, 2008
Seepage Berm
A Full Reservoir Is a Beautiful Thing!
A Full Reservoir Is a Beautiful Thing!