Upper Mississippi Flood Control

HOW TO MOVE FORWARD

September 19, 2019
National Waterways Conference
Hunt-Lime – inadequate levee heights & foreshore concerns, May 1993
Hunt Lima Levee Overtop July 9, 1993
South Indian Grave July 12, 1993
Sny Island Local Gauge

July 16
West Quincy (Fabius River DD) Sabotage
July 16, 1993

Image source: The Weather Channel
Sny Island Local Gauge
Sny Island levee breaks July 25, 1993
Stage values at 6 hour intervals
Oakville levee break, June 14, 2008
June 17, 2008 Henderson County, IL across from Burlington, Iowa
Hunt Lima June 18, 2008 break at Lock & Dam 20
Gregory DD break May 30, 2019
Gregory DD aftermath, spring 2019
Hunt Lima DD, May 30 – June 2, 2019
Greatest Flood of Record

1) 32.13 ft. on 7/13/1993
2) 31.16 ft. on 06/01/2019
3) 30.80 ft. on 06/18/2008
4) 28.90 ft. on 04/25/1973
5) 27.75 ft. on 04/21/2013
6) 27.31 ft. on 05/16/2001
7) 26.75 ft. on 07/08/2014
8) 25.30 ft. on 10/04/1986
9) 25.16 ft. on 06/01/2013
10) 24.18 ft. on 05/29/1996
The 1954 Flood Control Act was based on the 1947 Flood of Record

<table>
<thead>
<tr>
<th>Year</th>
<th>Water Level</th>
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<tbody>
<tr>
<td>1993</td>
<td>32.13</td>
</tr>
<tr>
<td>2019</td>
<td>31.16</td>
</tr>
<tr>
<td>2008</td>
<td>30.80</td>
</tr>
<tr>
<td>1947</td>
<td>23.90</td>
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7.5’ difference

(Quincy gauge shown)
What is Really Happening in the Upper Mississippi?
Rainfall Change

Illinois Annual Precipitation

Precipitation (inches)

1820 1840 1860 1880 1900 1920 1940 1960 1980 2000 2020

Illinois State Water Survey, 2013

1981-2010 Average • Annual • 11-Yr Moving Average

60 year trend
2016 Fragmented patterns of flood change across the USA

Key: Significant negative trend  |  Significant increasing trend

U.S.G.S. & Vienna University of Technology, Austria
The Water Ecosystem Out of Balance

- Used to have decades of dry fall periods with periodic high fall flows – indicated by braces right hand side of chart.
- Last 40 years have seen the paradigm flip with more wet falls than dry falls – as indicated in boxed area upper right.

- Impacts
  - Ecosystem Health
  - Recreation
  - Economy
2019 Cumulative River Flow at St Louis
Many Studies – No Action

• 1994 USACE Post-flood report
• 1994 White House “Blueprint for Change” S.A.S.T.
• 1994 Galloway Report, Management Review Committee
• 1995 Floodplain Management Assessment, USACE
• 1997 A Balanced Management – Delft Hydraulics
• 2008 USACE UMR Comprehensive Plan
• 2011 USACE Working Plan
• 2016 America’s Watershed Initiative “D” rating
• 2019 UMRBA Watershed Study initiatives
Develop a Systemic Plan based on prior studies – a plan that can be refined over time

2.6 million acres in floodplain

10% limited agricultural or in conservation districts

5% required for storage for MR&T benefit (MRC recommendation)

28% could improve to 500 year protection

57% Federal & some unprotected private as open waterway (no-change)
Note: An additional 130,000 acres would need to be flooded at 500-yr level to reduce MR&T impact to zero feet.

Legend:
- Blue: Exists at or above 500-yr + freeboard
- Yellow: Can improve to 500-yr, possible Federal interest
- Yellow-green: Can improve to 500-yr, unlikely Federal interest
- Orange: Can improve to 100-yr + freeboard (3' US, 2' DS)
- Purple: Can improve by future induced head to the 100-yr
- Red: Remains at existing condition

2011 Working Plan
Draft Legislation
New Authorization based on WRDA 99 Section 459

1) Develop a Plan in the interest of systemic flood damage reduction

2) Specifically address recommendations to authorize construction of a systemic flood control plan for the Upper Mississippi

3) Consult with appropriate Federal & State Agencies AND....
Draft Legislation
New Authorization based on WRDA 99 Section 459 cont’d

3) ...the Governors of the States, representatives of the levee districts, agricultural stakeholders, and other interested parties

4) Evaluate project implementation under the USACE Water Infrastructure Program as authorized by the Water Infrastructure Finance & Innovation Act (WIFIA), and

5) Evaluate as a public private partnership, with Federal participation on non-structural / easement tasks and local / state participation on structural improvements to meet NED (cost benefit).
In Summary

1) Goal is to avoid catastrophic events and convey a major flood

2) Immediate need is to fine tune past work (the 2011 working plan) as a Public-Private plan ($3M requested)

3) Concentrate immediate work on main stem and complete plan in 2021

4) Request MRC oversight & leadership on implementation
In Closing...

...in the Lower Mississippi, the worst flood in history (2011) passed with no loss of life and relatively little damage, even though it threatened to destroy 1.5 million homes, $230 billion in crops and infrastructure, and many lives
...in the Upper Mississippi, the worst flood in history (1993) passed with 47 deaths and assessments of economic damages ranged from $15 to 20 billion; with social disruption beyond measure, with more than 70,000 homes damaged or destroyed, and approximately 74,000 persons evacuated.
“It’s time to implement the Comprehensive Plan and make us one River.”
Thank you!

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