



Northwest District Flooding & Recovery Update

**Chris Redline, Northwest District Engineer
Statewide Planning Partner Meeting
Missouri Department of Transportation
January 23, 2020**



Presentation Outline

- Setting the Stage
- The Flood
- Response
- Ongoing Recovery.....
- Economic Transportation Impact
- Later this year?

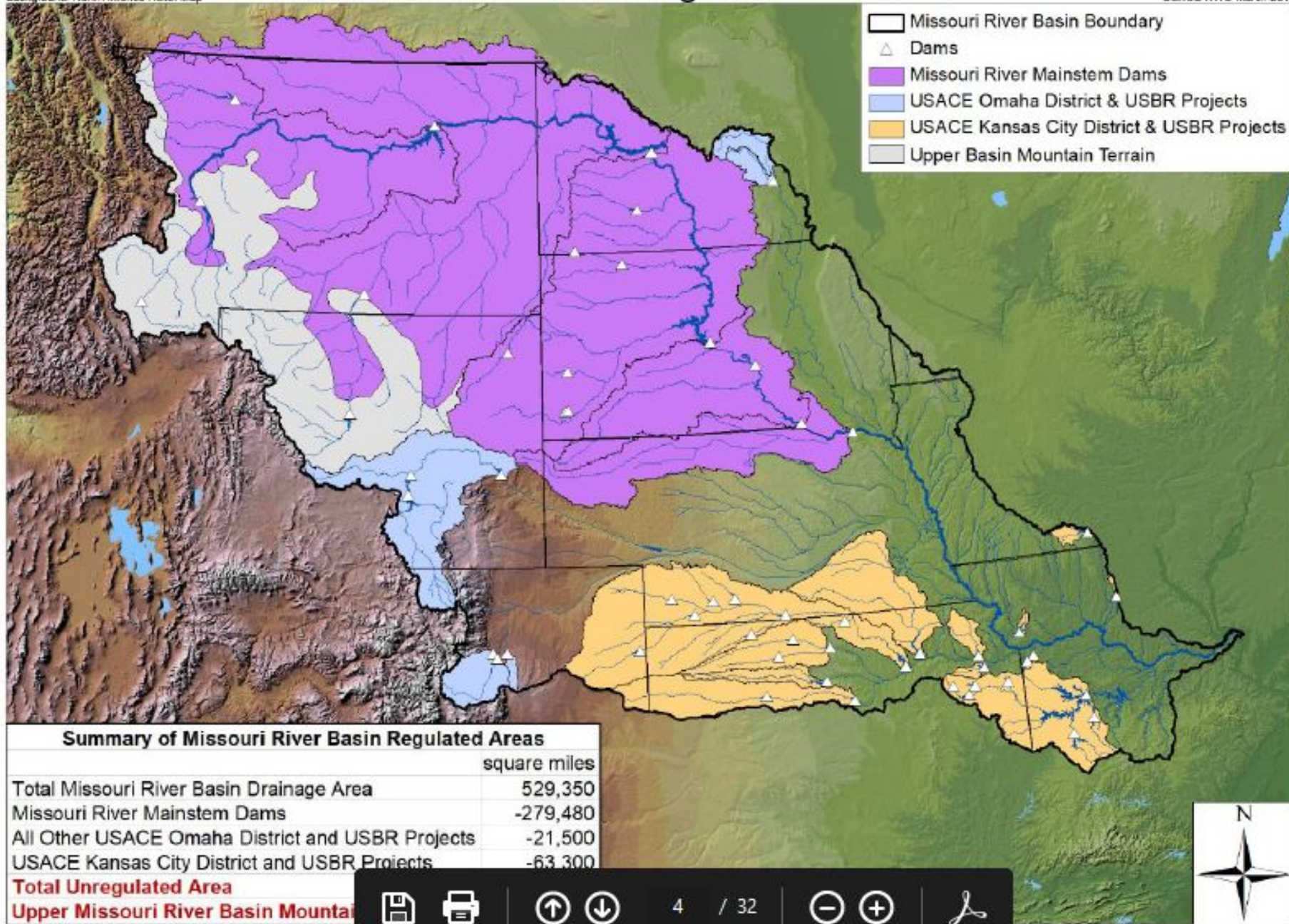


Setting the Stage

Missouri River Basin Regulated Watersheds

USACE NWO March 2016

Background: North America Relief Map



Summary of Missouri River Basin Regulated Areas

	square miles
Total Missouri River Basin Drainage Area	529,350
Missouri River Mainstem Dams	-279,480
All Other USACE Omaha District and USBR Projects	-21,500
USACE Kansas City District and USBR Projects	-63,300

Total Unregulated Area
Upper Missouri River Basin Mountain

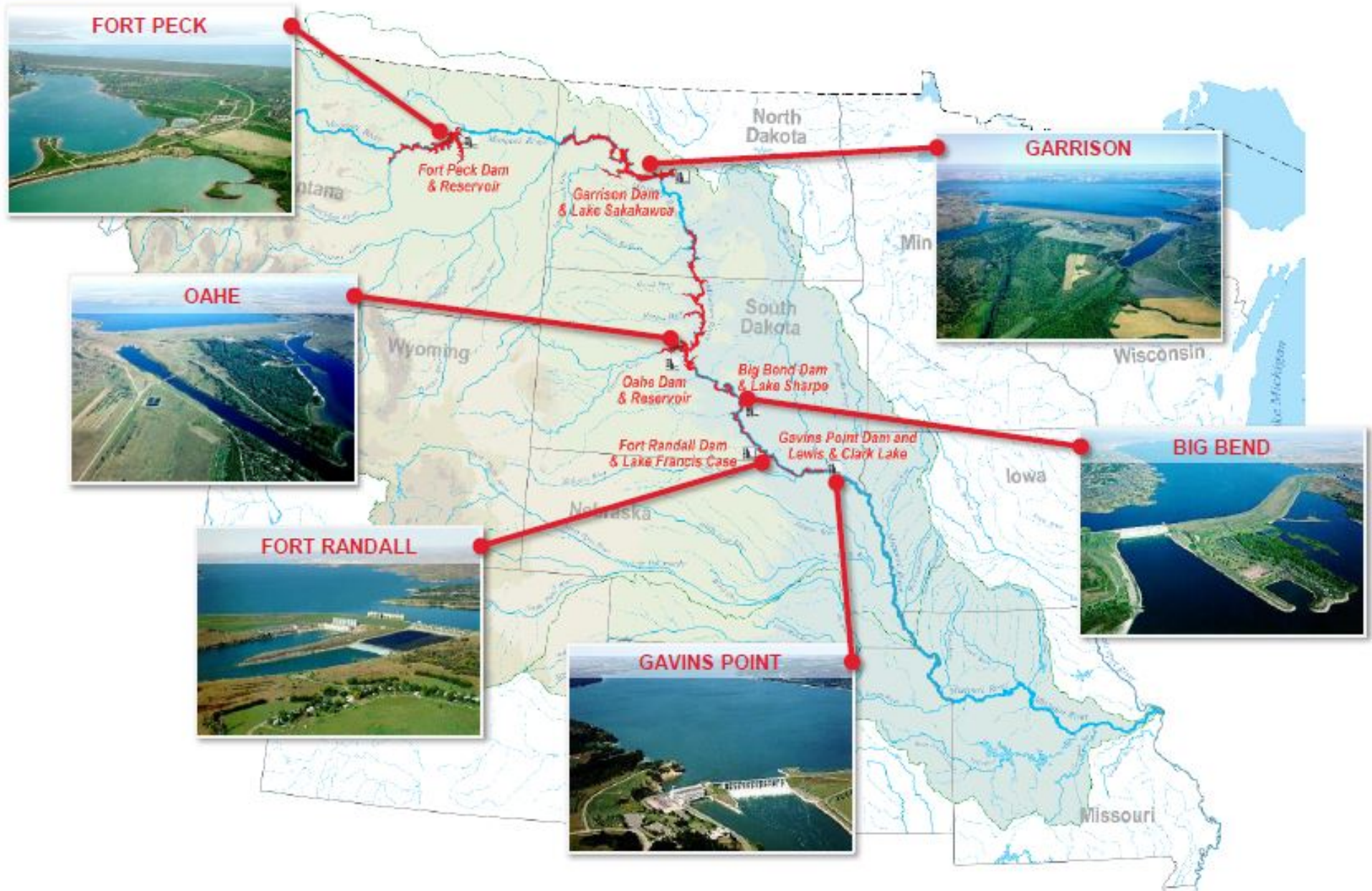
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MISSOURI RIVER MAINSTEM RESERVOIR SYSTEM





Lincoln's temperatures dip to lowest in 25 years because of polar vortex

Grace Gorenflo Feb. 1, 2019



www.dailynebraskan.com/multimedia/

Latest News

- REVIEW: 'Queen & S culturally relevant d
- Week Four Big Ten
- Student uses Capst statement on mino

Trending Stories

Bomb Cyclone



13 Mar 2019 22:42 UTC GOESEast/ABI CONUS GEOCOLOR



RAINFALL

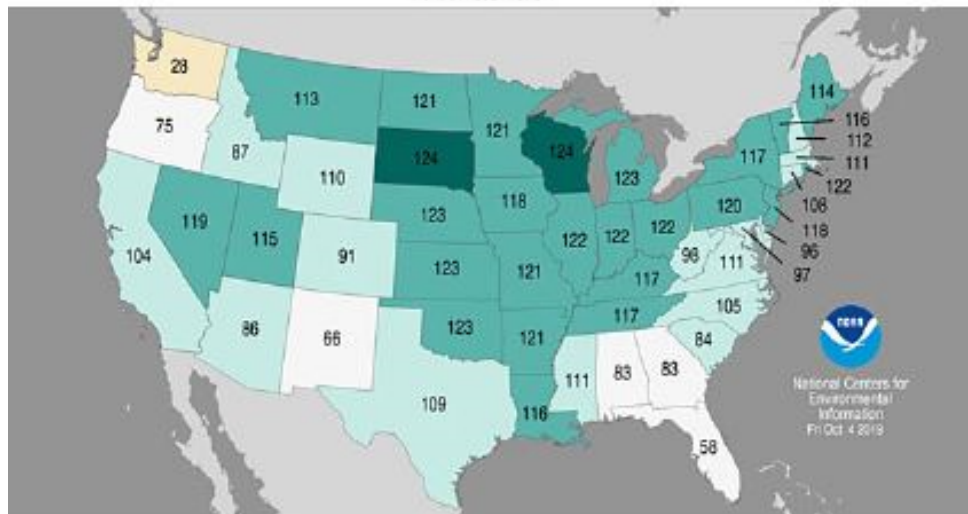


Last 12 months

Statewide Precipitation Ranks

October 2018–September 2019

Period: 1895–2019

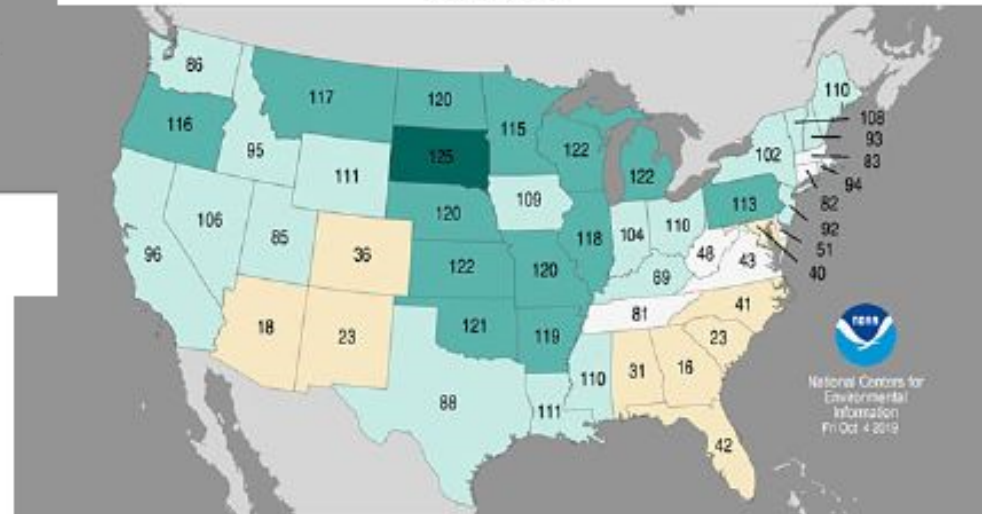


Last 6 months

Statewide Precipitation Ranks

April–September 2019

Period: 1895–2019



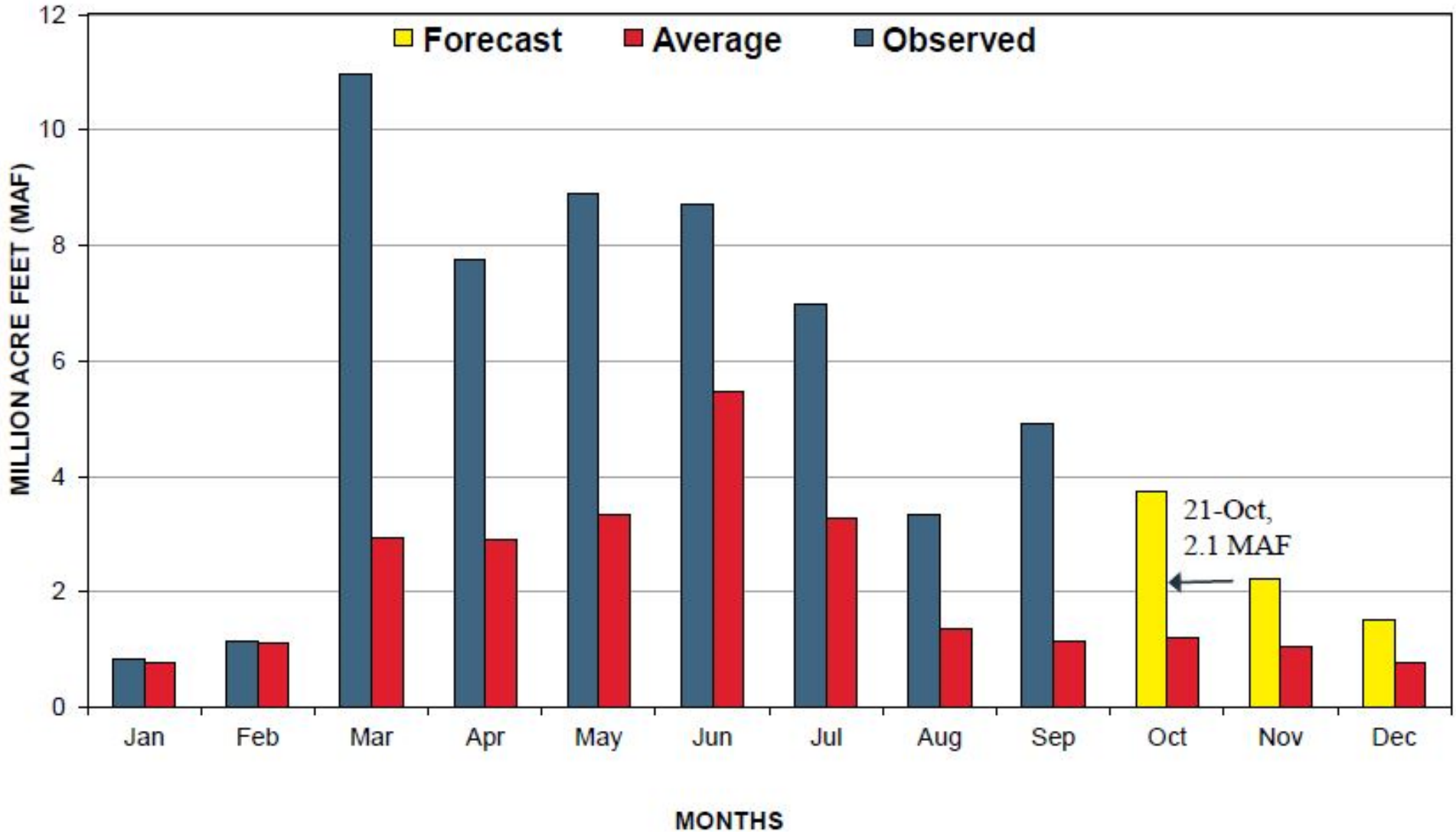
Source: NOAA National Centers for Environmental Information



MONTHLY RUNOFF ABOVE SIOUX CITY, IA



2019 CALENDAR YEAR FORECAST – 61.0 MAF





RUNOFF COMPONENTS

PLAINS SNOWPACK

MOUNTAIN SNOWPACK

RAINFALL



2019 FORECAST* = 61.0 MILLION ACRE FEET (MAF)**

*OCTOBER 1 FORECAST – AVERAGE ANNUAL RUNOFF IS 25.3 MAF

**IF REALIZED, THE 2019 RUNOFF WOULD BE THE HIGHEST IN 121 YEARS OF RECORD-KEEPING, TYING THE RECORD RUNOFF OBSERVED IN 2011

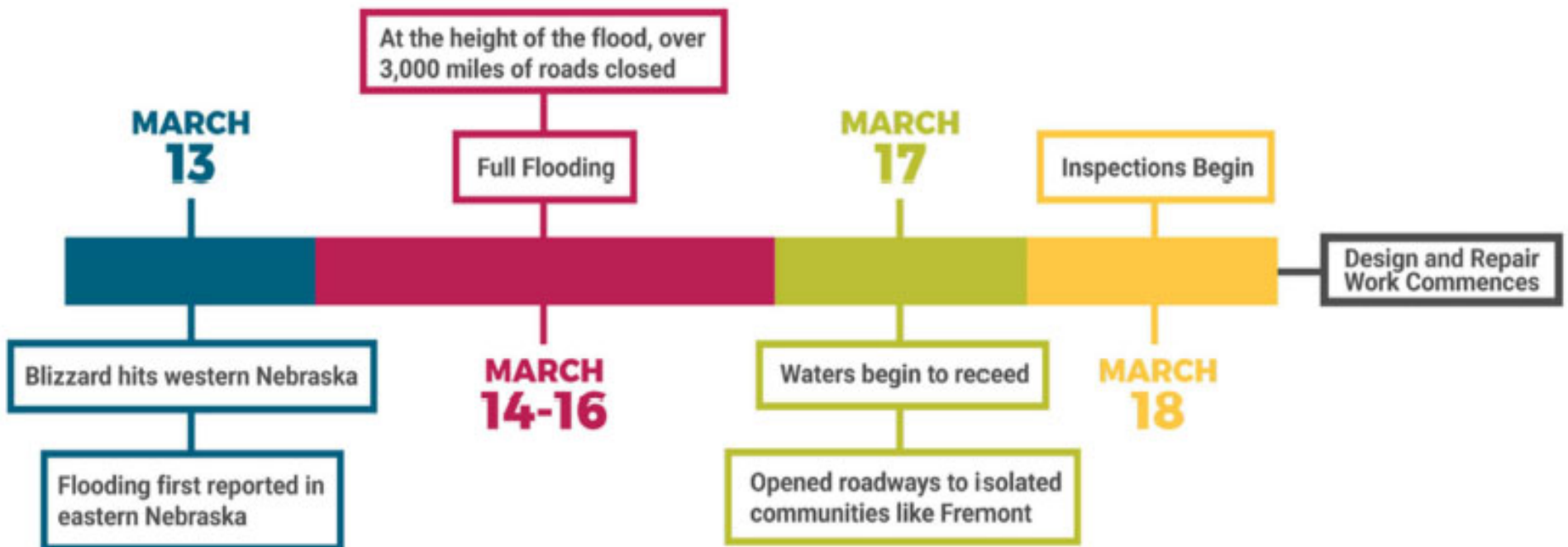


The Flood





Timeline of Events





Missouri Major Highway Closures

- I-29 75 Days
- US136 (Brownville) 217 Days
- US159 (Rulo) 224 Days
- US59 (Atchison) 115 Days
- US65 (Waverly) 170 Days
- MO41 (Miami) 50 Days

Route 136, Atchison County



Not the 'Normal' Flood

Route 136, Atchison County



I-29

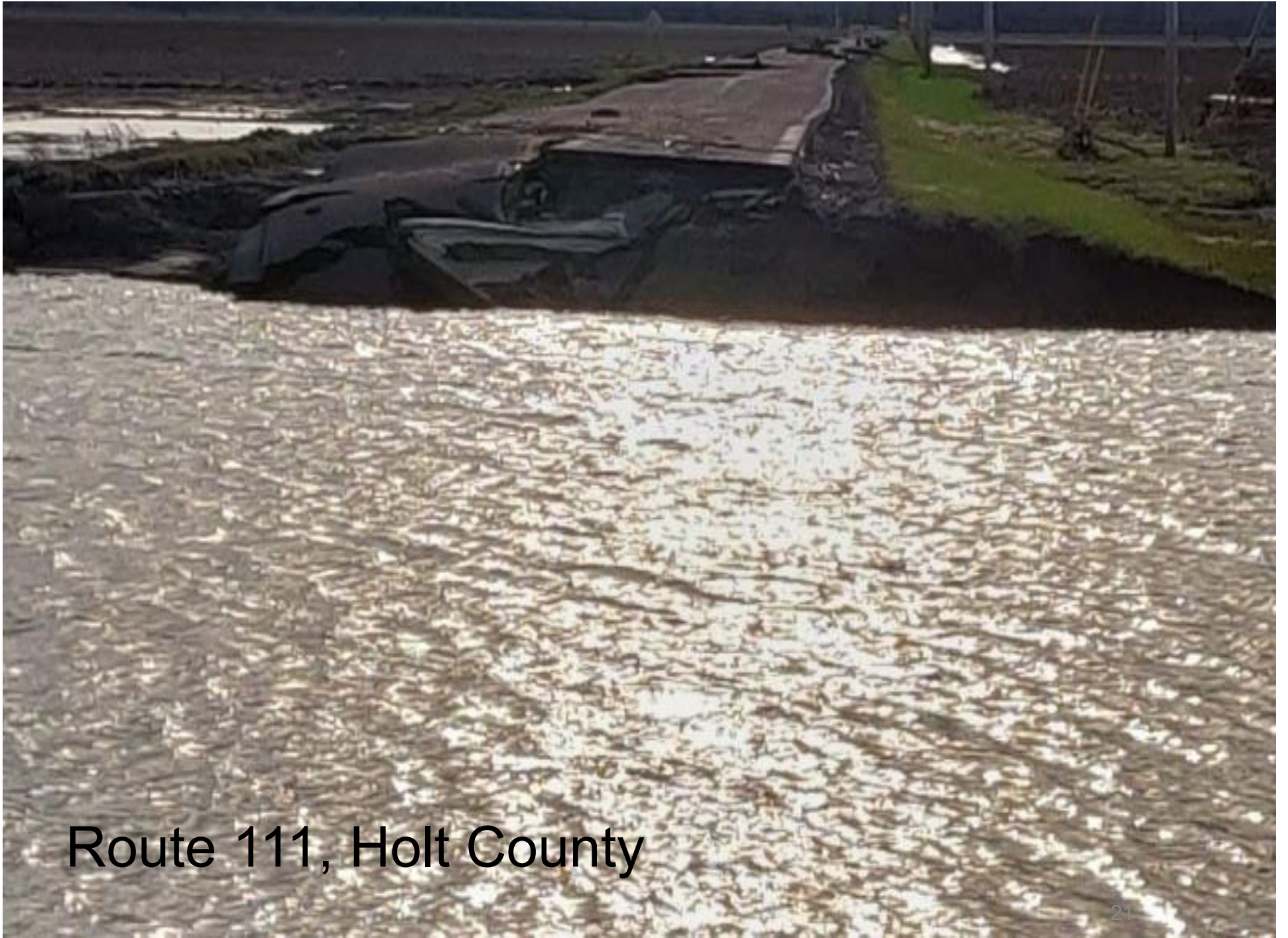


Route U, Atchison County



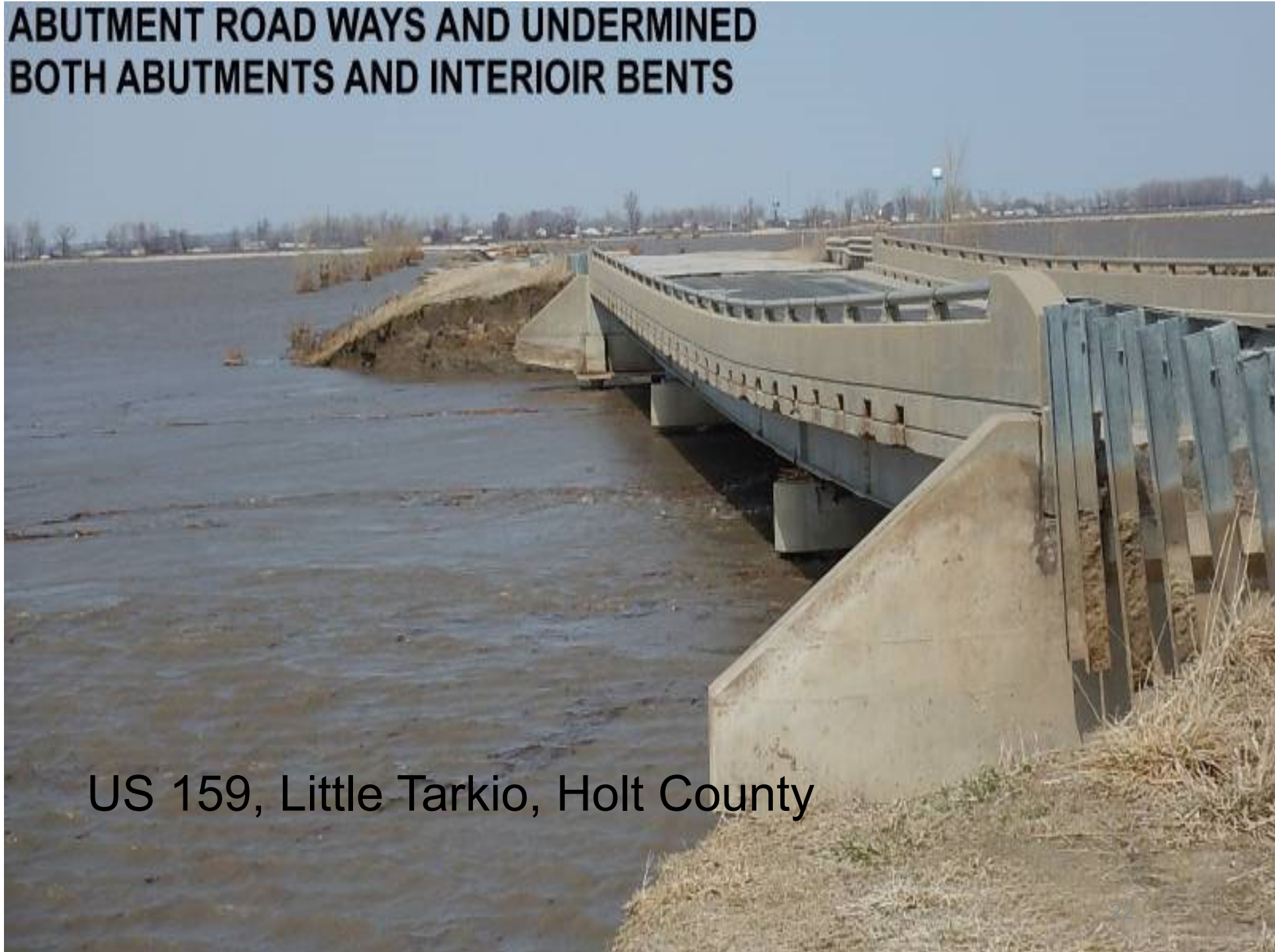
Route B, Atchison County





Route 111, Holt County

ABUTMENT ROADWAYS AND UNDERMINED BOTH ABUTMENTS AND INTERIOR BENTS

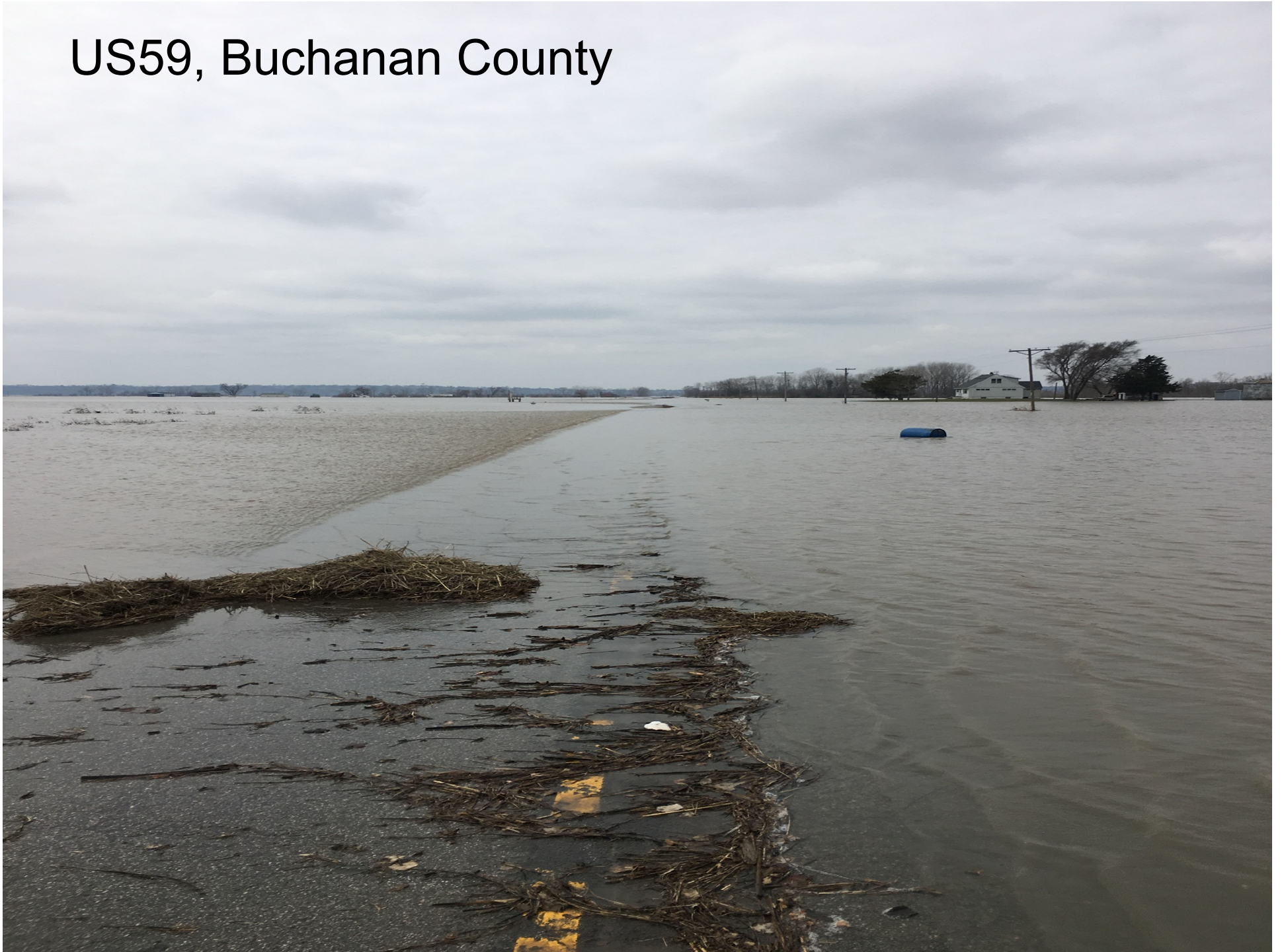


US 159, Little Tarkio, Holt County



US 159, Holt County

US59, Buchanan County





Routes 65 & 10, Carroll County

Route 41, Carroll County



US 65, Carroll County





Response



Maintenance: First Line of Defense





I-29 Decision Making Process

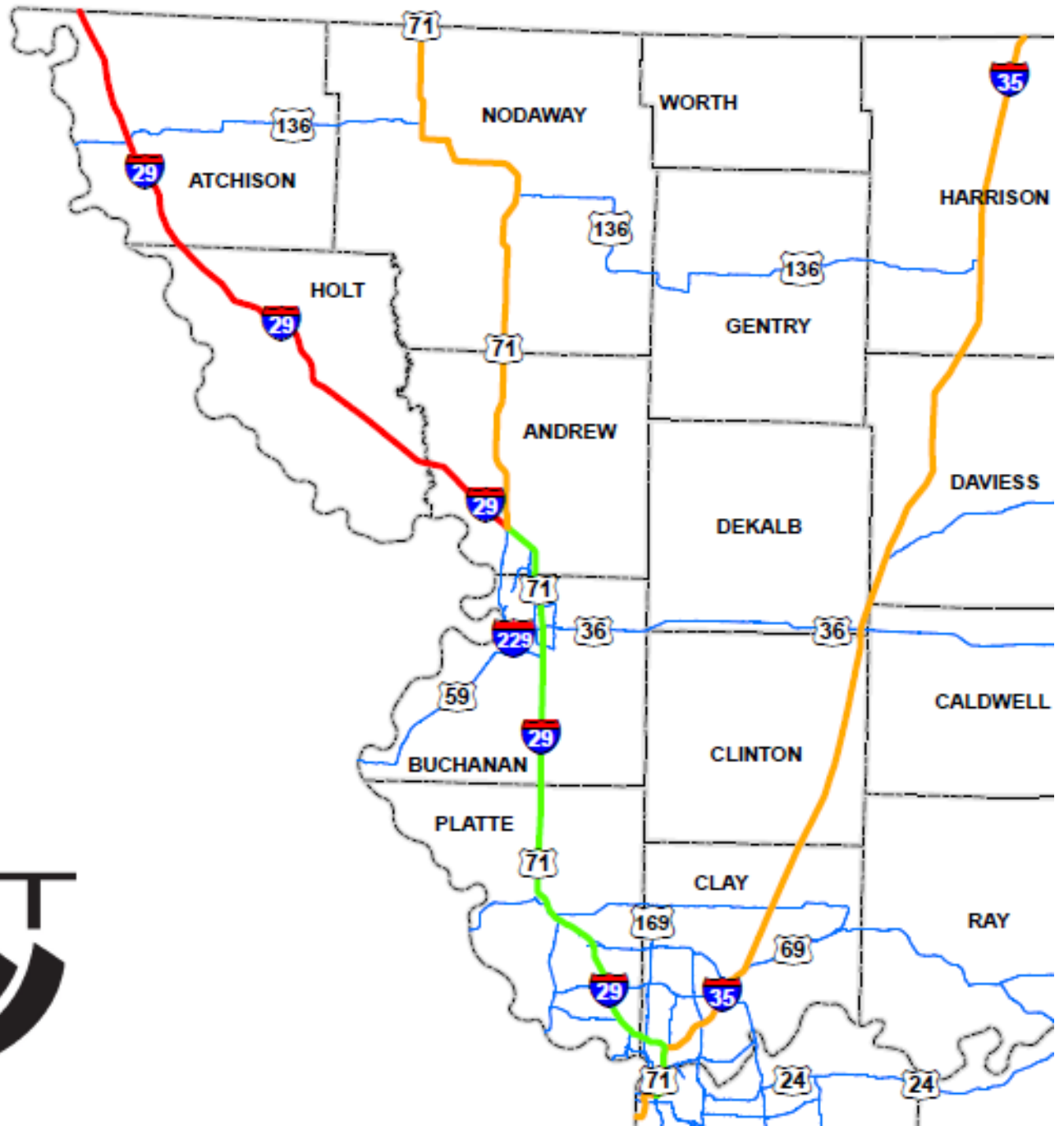
- 2011 Experience
- Consulted with MSHP and Local Law Enforcement
- Collaboration with Iowa DOT

I-29 DETOURS



MAJOR ROUTES STATUS

- DETOUR
- LOCAL TRAFFIC ONLY
- OPEN





Ongoing Recovery.....



Northwest Missouri Recovery

- MoDOT Maintenance Repairs
- Contracted Repairs



NW Estimated Repair Costs

- Awarded Projects - \$14,682,000
- Upcoming Projects – \$19,110,000
- Operations Cost - \$2,400,000
- **Grand Total - \$36,192,000**

US 159, Holt County - Before



US 159, Holt County - After



Miles of shoulder damage along 136 & 159





Unknowns

- Matching Funds
- Economic Development Administration Grants
- FEMA
- FHWA resiliency
- Levee Setbacks

Building Resiliency





Economic Transportation Impact



I-29 Closure Costs – 75 Days

- Detour and Delay costs = \$656,000 per day
- Total impact = \$49,200,000 to drivers





US136 Closure Costs – 217 Days

- With Iowa 2 closed = \$427,000 per day
- With Iowa 2 open = \$137,000 per day



Other Modes Impacted

- Rail - \$40,500,000
- Air - \$16,500,000
- Ports - \$180,000,000





Later This Year?



- Above average releases this winter to evacuate stored flood waters.
- All designate flood storage will be available to start the 2020 runoff season
- Corps of Engineers is estimating 2020 to have been the 9th highest spring runoff in history.
- **Snowpack melt will likely be on very wet soils**
- **Many levees have not been repaired**



Don't Drive Around Barricades!





Thank You!