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CASS COUNTY COMMISSION

FEB 11 2020

MEMORANDUM

**Highway
Department**

Jason Benson, P.E.
County Engineer

Thomas B. Soucy, P.E.
Deputy County Engineer

Blaine Laaveg
Superintendent

TO: Cass County Commission

FROM: Jason Benson, Cass County Engineer *JPB*

DATE: February 10, 2020

SUBJECT: Agenda Item for February 18, 2020 Commission Meeting:
2020 Spring Flood Update and Emergency Declaration

Cass County has experienced significant fall and winter precipitation. The National Weather Service probabilistic forecast predicts the 50% chance of flooding on the Red River and tributaries to be significant and the 5% chance of being near the flood of record. While there is a lot of winter still ahead of us, it is prudent that we prepare for major spring flooding.

Due to the lack of a County Commission meeting on March 2nd, I am requesting the Cass County Commission authorize the chairperson to sign the Emergency Declaration any time prior to the March 16th Commission Meeting. The chairperson will determine the need for the Emergency Declaration based on the National Weather Service flood forecast, staff recommendations, and interagency coordination. If the Emergency Declaration has not been approved prior to March 16th, it will be placed on the agenda and discussed at the March 16th Commission Meeting.

SUGGESTED MOTION: Authorize the chairperson to sign the Emergency Declaration prior to March 16th based on the National Weather Service flood forecast, staff recommendations, and interagency coordination.

1201 Main Avenue West
West Fargo, North Dakota
58078-1301

701-298-2370
Fax: 701-298-2395

EMERGENCY DECLARATION

WHEREAS, Cass County has a high soil moisture content from precipitation received during the fall of 2019; and

WHEREAS, above average snow fall has increased the potential for significant spring flooding due to spring thaw and anticipated precipitation; and

WHEREAS, the impact of this thaw, runoff, and precipitation threatens the health, well-being, and public safety of citizens in Cass County; and

WHEREAS, necessary mitigation measures, preparedness actions, and other responses must begin immediately to protect public health and safety; and

WHEREAS, the potential damage to public and private property in addition to roads are beyond normal anticipated and budgeted funds; and

NOW THEREFORE, BE IT RESOLVED that the Cass County Board of Commissioners declares an emergency and orders the activation and utilization of the Cass County Emergency Operations Plan, its procedures, attachments, and appendices to recover from the situation, develop a detailed damage assessment, reduce hardship, and initiate the appropriate relief actions and mitigation measures by departments and agencies of local government to limit the hardships and impact of this emergency upon the citizens of Cass County.

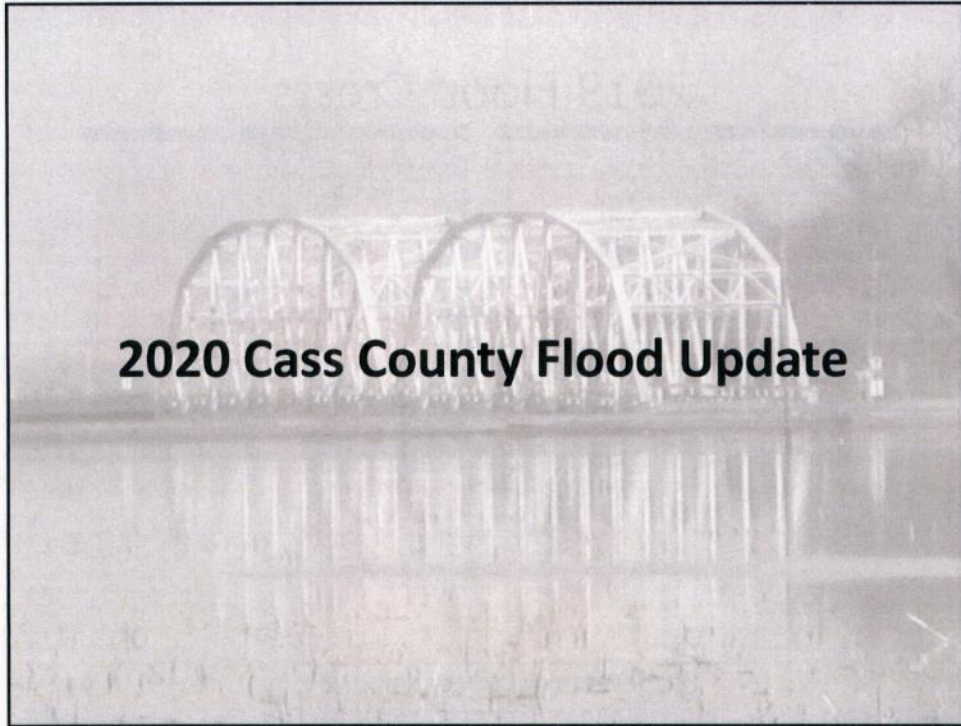
Dated at Fargo, North Dakota, this _____ day of _____, 2020.

APPROVED:

Chad Peterson, Chairman
Cass County Commission

ATTEST:

Michael Montplaisir
Cass County Auditor

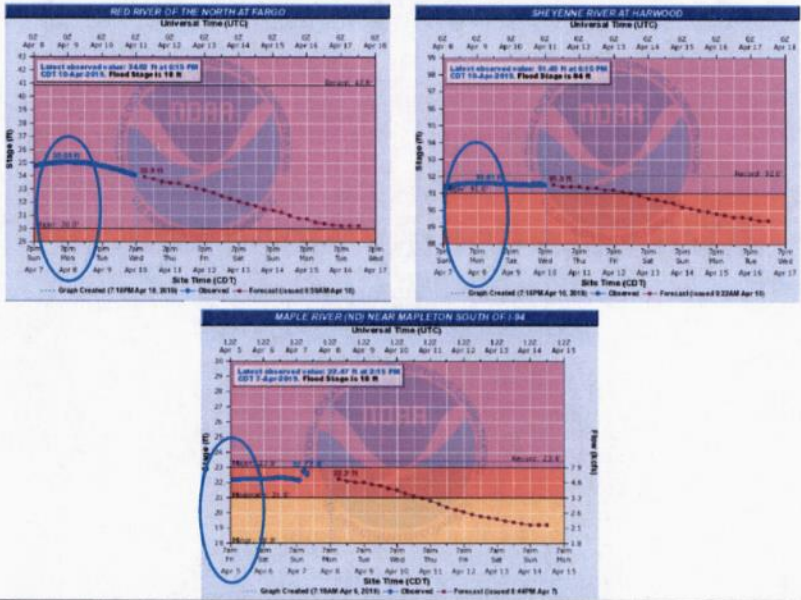


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2019 Flood Crests



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2019 Public Meetings



- Hickson: March 25th
- Bennett Elementary: March 26th
- Harwood: March 27th
- Kindred: April 2nd



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Cass County Emergency Measures:

Levees in Place along the Red River – 76th Ave & Cass 81 -
3000 ft of Levees – Started Construction on April 4th





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Cass County Emergency Measures: Sandbag Production and Volunteers

- Started production on March 27th and ended April 3rd
- Produced 100,000 filled bags
- 889 Volunteers
- 3,362 Volunteer hours
- Schools that volunteered
 - Central Cass – Casselton
 - Northern Cass
 - Kindred High School
 - West Fargo Cheney Middle School
- Other groups
 - City of West Fargo
 - Moore Engineering, Inc.
 - Houston Engineering, Inc.
 - Boy Scouts



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Cass County Emergency Measures: Sandbag Distribution



- Started deliveries on April 1st
- Delivered 37,000 empty bags with loads of sand
- Delivered 80,000 filled sandbags



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Cass County Contingency Plans: Flood Fighting Quick Response Efforts



- Conducted four nighttime emergency responses
- Delivered more than 15,000 sandbags during emergency response



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Cass County Contingency Plans: Flood Fighting Quick Response Efforts

NDARNG Support: April 6th – 12th

- 11 soldiers and five trucks with forklifts
- Supported 21 missions and delivered 127 pallets of sandbags



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Cass County Contingency Plans: Rescue and Response Capabilities

Airboat and Rescue Response Vehicles: April 5th – 13th

- 30 Patrols, 2 Airboats & 2 ATV's - Cass County Sheriff's Dept.
- 1 Airboat - Burleigh County Sheriff's Dept.
- 1 Airboat - Mercer County Sheriff's Dept.
- 1 Airboat & 1 SHERP - Williams County Sheriff's Dept.



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Cass County Contingency Plans: Tactical Operations Center



- Tactical Operations Center: Open 24 hours from April 5th - 13th
- Staffed by:
 - Highway Dept Engineering Staff,
 - Sheriff's Deputies,
 - Emergency Management
 - ND Highway Patrol Officer
 - NDARNG LNO
- Handled 243 Phone Calls
- Processed over 57 requests for sandbag deliveries



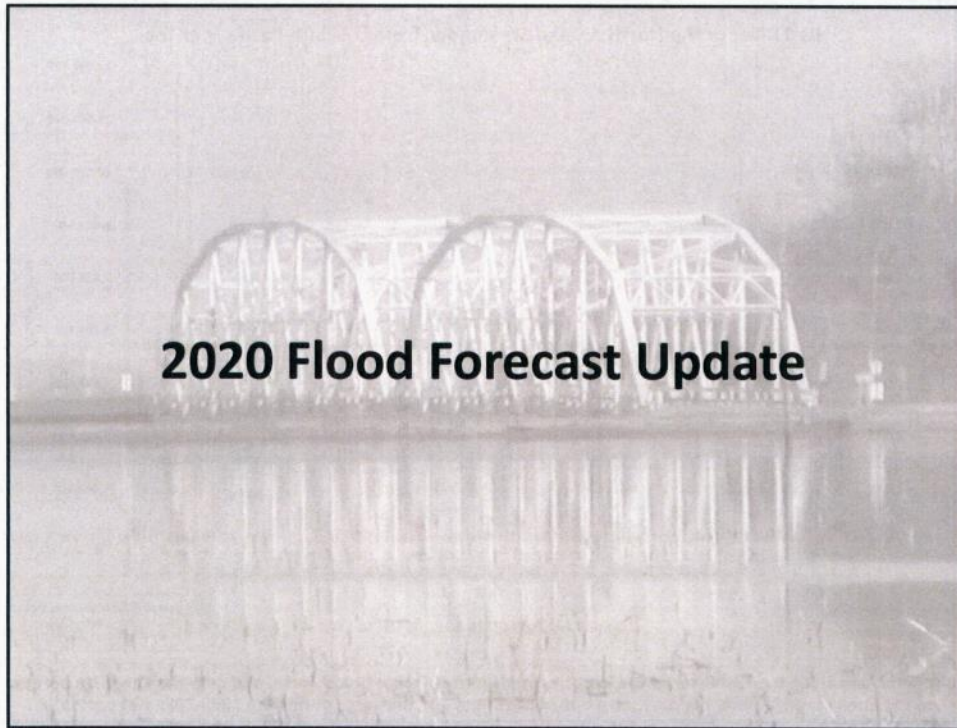
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Cass County Roads: Closures

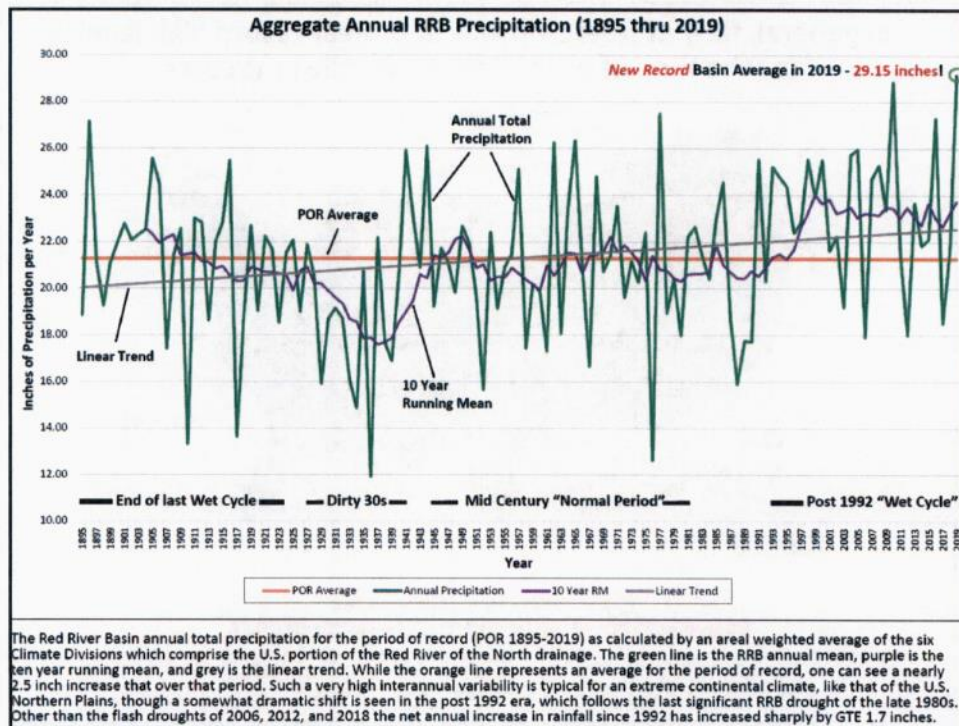


- 166 miles of Cass County roads impacted

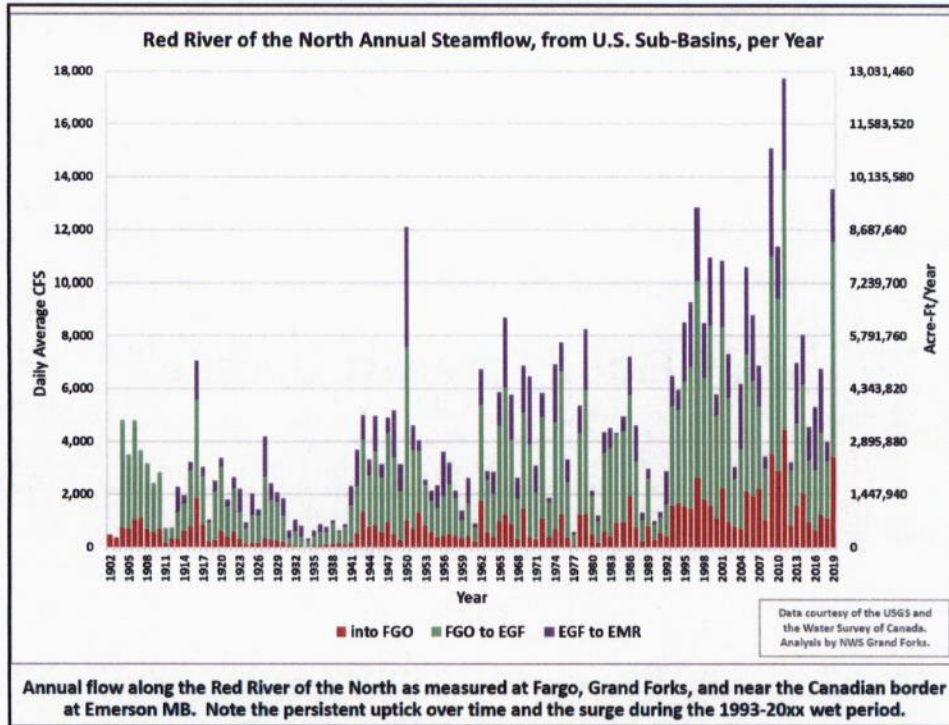
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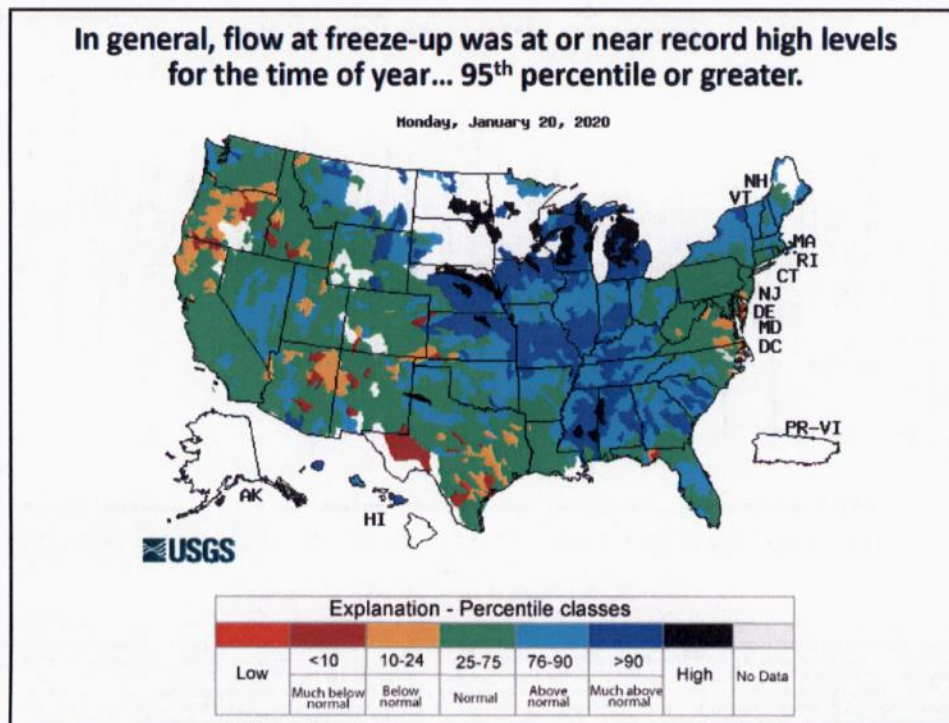
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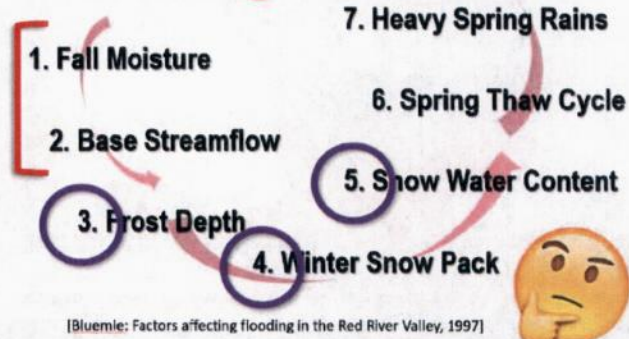
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So what is next?

The first 2 of 7 key flood ingredients are *well* met. [both @ record!]

Our recent 2009, 2010, and 2011 "historic" Spring Flood years *also* had our previous "historic" Autumn season flood crests ... in the falls of '08, '09, and '10.

Spring Flooding ??



[Bluemle: Factors affecting flooding in the Red River Valley, 1997]

- 3. Frost Depths are running Below Normal... less deep than last year, still at 8 to 30 inches.
- 4. Winter Snowpack is Above Normal... except for the far northern RRB.
- 5. Snow Water Equivalent (SWE) is High... near typical "winter season" values already.

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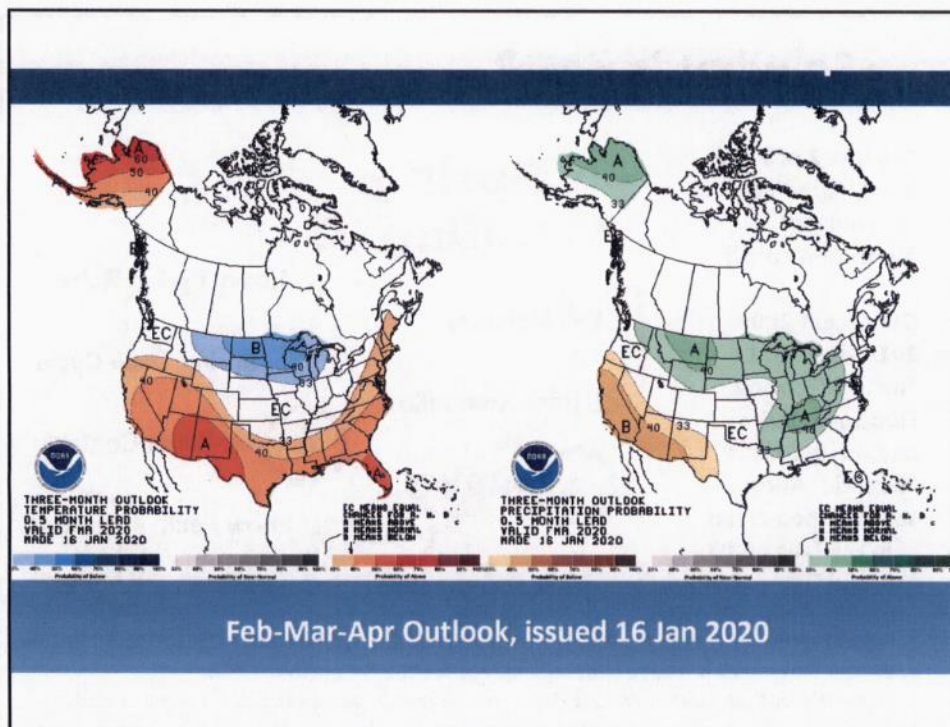
So what is next?

Modeled Snow Water Equivalent (Shallow-snow Legend) forecasted for 2020 January 24, 0:00 UTC



- 3. Frost Depths are running Below Normal... less deep than last year, still at 8 to 30 inches.
- 4. Winter Snowpack is Above Normal... except for the northern RRB.
- 5. Snow Water Equivalent (SWE) is High... near typical "winter season" values already.

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Flood Forecast

Color code: Below Minor Moderate Major Flood of Record

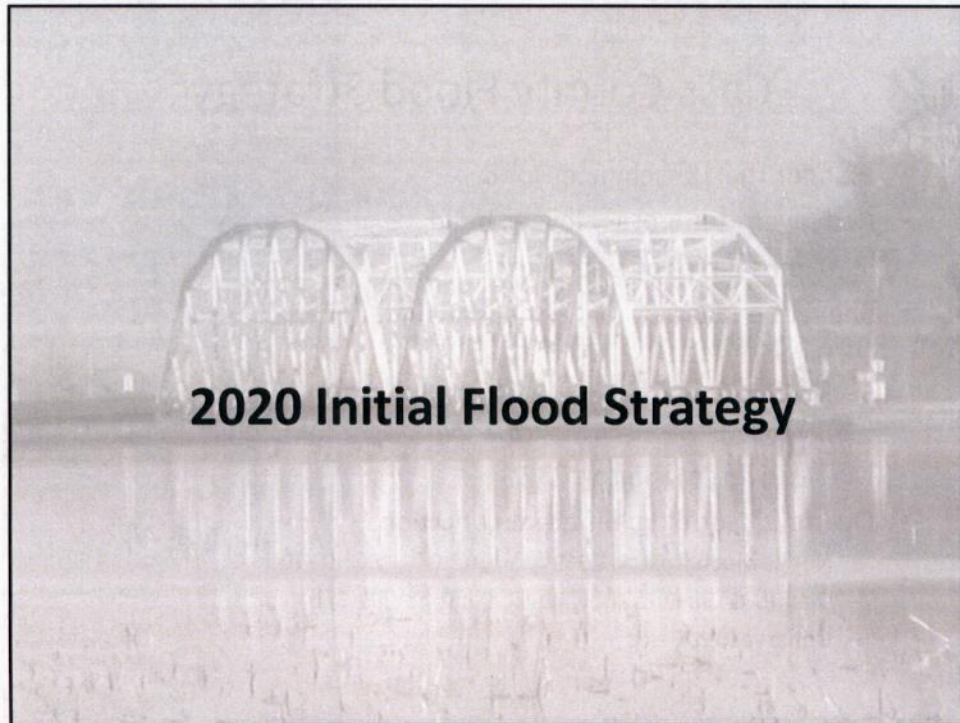
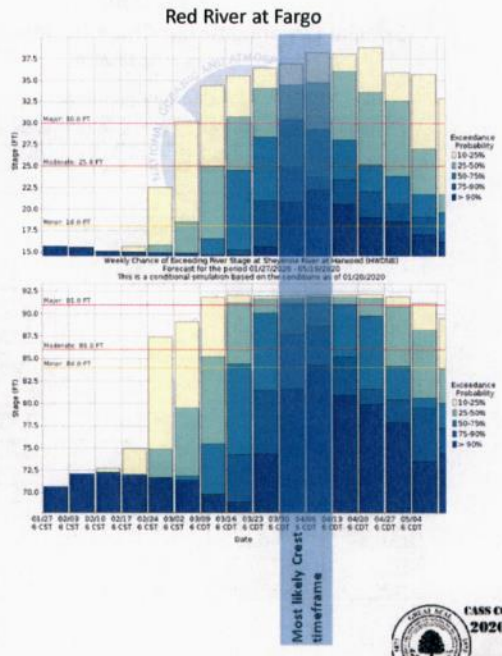
RED RIVER AND TRIBUTARIES... Long-Range Probabilistic Outlook
Valid February 17, 2020 - May 17, 2020

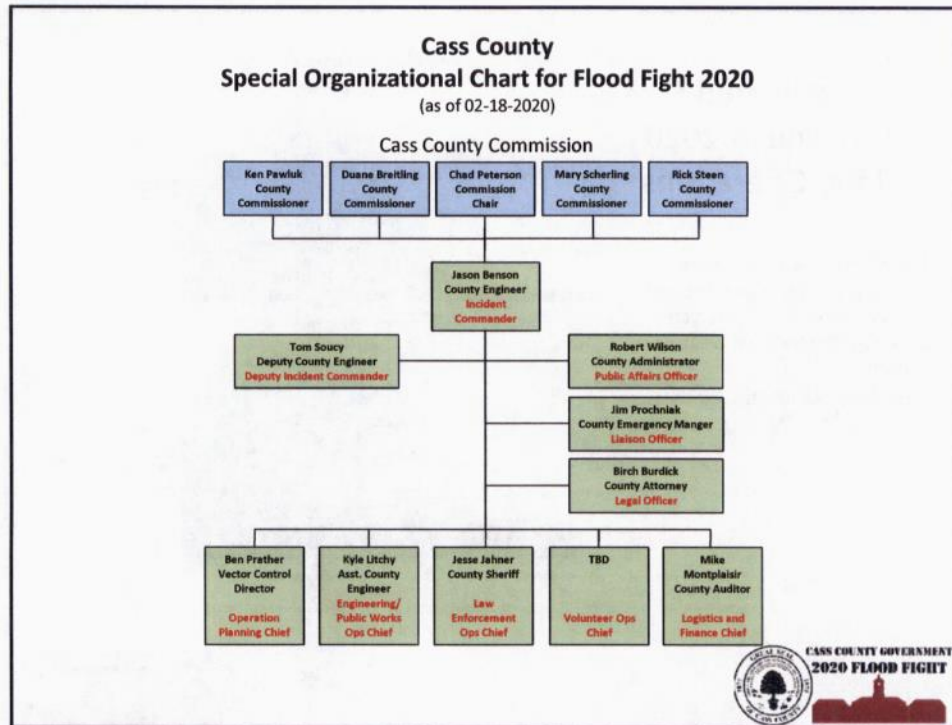
| LOCATION | 95% | 90% | 75% | 50% | 25% | 10% | 05% |
|----------------------|------|------|------|------|------|------|------|
| WAHPETON | 12.2 | 12.5 | 13.0 | 14.6 | 15.7 | 17.1 | 17.4 |
| HICKSON | 27.9 | 29.3 | 31.1 | 33.4 | 34.5 | 36.0 | 36.8 |
| FARGO | 31.8 | 32.4 | 34.2 | 35.6 | 37.6 | 39.0 | 39.9 |
| Wild Rice River..... | | | | | | | |
| ABERCROMBIE | 19.4 | 20.1 | 22.2 | 23.8 | 25.7 | 27.3 | 27.9 |
| Sheyenne River..... | | | | | | | |
| VALLEY CITY | 13.7 | 14.8 | 17.2 | 19.8 | 21.7 | 23.9 | 27.2 |
| LISBON | 15.4 | 15.9 | 17.6 | 19.8 | 22.7 | 26.1 | 30.2 |
| KINDRED | 20.1 | 20.4 | 20.8 | 21.3 | 21.2 | 21.2 | 21.2 |
| WEST FARGO DVRSN | 20.1 | 21.2 | 21.3 | 21.3 | 21.3 | 21.3 | 21.3 |
| HARWOOD | 91.2 | 91.4 | 91.7 | 91.9 | 92.1 | 92.2 | 92.3 |
| Maple River..... | | | | | | | |
| ENDERLIN | 11.8 | 12.2 | 12.5 | 13.0 | 13.6 | 14.3 | 14.8 |
| MAPLETON | 22.0 | 22.1 | 22.4 | 22.7 | 23.2 | 23.5 | 24.0 |

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Estimated Timeline of 2020 Flood Operations

This chart depicts the probable time of peak flooding on the Red and Sheyenne Rivers based on data from the National Weather Service:
<https://water.weather.gov/ahps2/index.php?wfo=fgf>





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Cass County Flood Strategy

- Plan for the 10% chance Flood
- Red River - temporary levees build to 39.0' plus 2 feet of freeboard
- Sheyenne River:
 - Harwood - 92.1'
 - Kindred - 21.2'
 - Davenport – based on ND46 overtop
- Maple River: Mapleton 23.9'
- Overland Flooding: different conditions
 - Not as much frost as 2019
 - Ditches & Culverts snow packed, but not like last year
 - Unharvested Fields

The St. SF. / County Road 1
02-28-2019

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Current Flood Supplies On Hand

- Sandbags – Empty: 425,000
- Sandbags – Filled: 13,000
- Trapbags
 - 3 ft: 6,400 ft
 - 4 ft: 8,000 ft



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Cass County Sandbag Deployment

- Sandbags will be delivered to rural areas starting south of Fargo then moving north and along the Sheyenne/Maple
- Empty Sandbags:
 - Sold in bundles of 1,000 for \$100 at the Cass County Highway Department
 - Cass County deliver a load of sand for every bundle of sandbags
- Filled Sandbags: Prioritize delivering filled sandbags
 - Homes impacted by our levee construction will get 2000-3000
 - Residents in rural areas that volunteered at Sandbag Cass we will deliver 1000 bags per home (based on sandbag availability)
 - Available for emergency delivery



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Sandbag Operations

Combined Operations with the City of Fargo Sandbag Central:

- Minimum Goal 100k sandbags
- 150k-200k sandbags if Red River crest is greater than 39'
- 250k-300k sandbags if Red River crest is greater than 40'



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Cass County South Levees:
25th St, 88th Ave, and Cass 81



Cass County North Levees:
Along Cass Hwy 31



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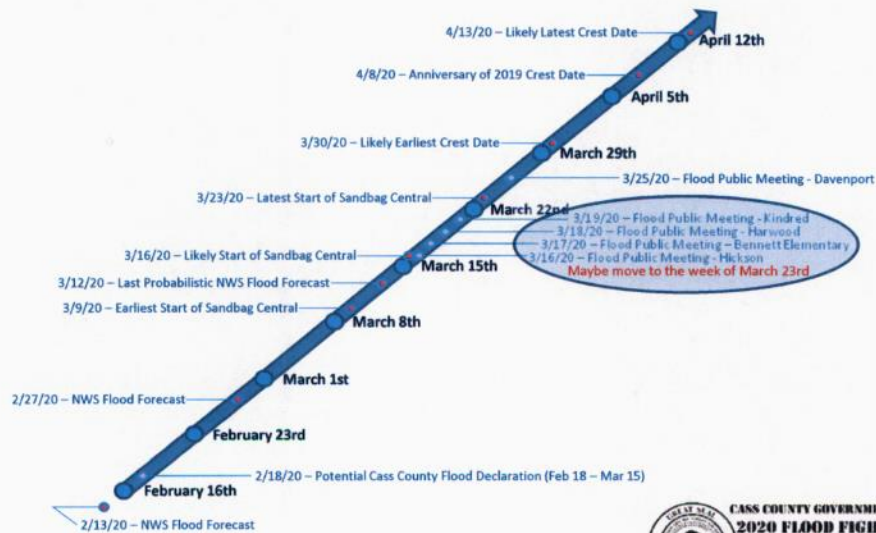
Public Meetings

- Expect to start the week of March 16th or 23rd
 - Hickson
 - Bennett Elementary
 - Harwood
 - Kindred
 - Davenport



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Estimated Timeline of 2020 Flood Events



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