



Extremely Wet Conditions Heading into the late Fall and Winter Sets the Stage for a Difficult Spring Flood Season

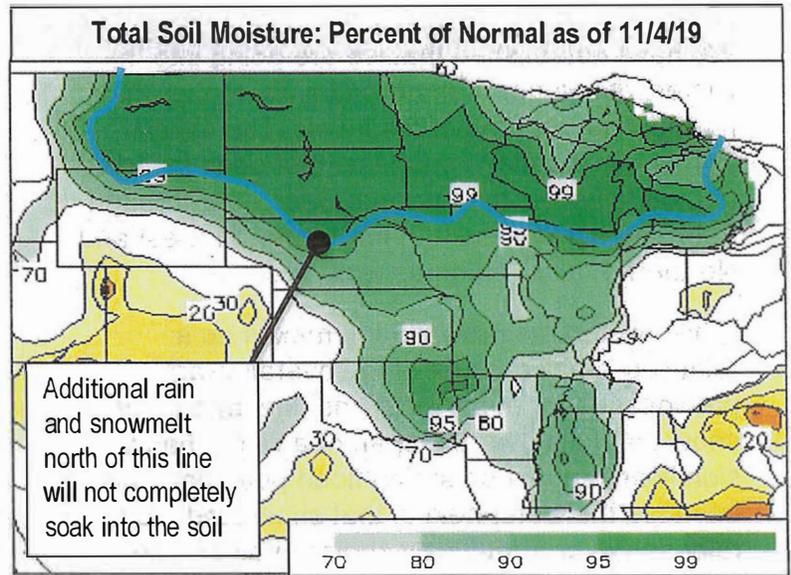
Setting the Stage:

Precipitation and Soil Moisture

Well above normal rain and snowfall throughout 2019 has led to unprecedented flooding, record high river levels, and abnormally wet ground **for the fall season** across the region.

Through the end of October, nearly every state in the Upper Midwest and Northern Plains was within its top five wettest years-to-date.

The precipitation since mid-October has been near normal across the Dakotas, Minnesota, and Iowa. Areas farther south and east in Illinois, Indiana, and Michigan have been approximately 1-2 inches above normal during this time.



ABOVE: Wet soils across most of the region can accept very little to no more water.

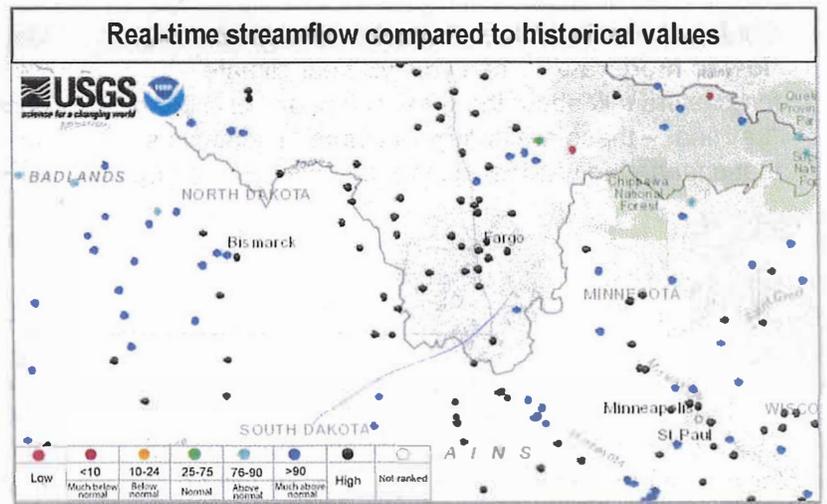
Setting the Stage:

River Conditions

Many regional rivers are seeing higher water levels than any on record **for the fall season**.

Floods of record along the mainstem Red River of the North typically occur in the months of March through August. **Current river levels are within a few feet of the top 5 record spring and summer flood crests in some locations.**

Record to near-record streamflow is occurring across much of the region, extending as far south as northern Illinois along the Mississippi River.



“Imagine putting a soaking wet sponge in the freezer, taking it out, and then trying to pour water on it. The water is going to immediately run off. This accurately describes our soils heading into winter and what we can expect in the spring.”

**- Laura Edwards
South Dakota State Climatologist**

Precipitation Outlook and Potential Impacts this Winter and Spring

Winter 2019:

Precipitation Outlook

We have established that we are going into the winter with wetter than normal soils, higher than normal river and reservoir levels. The Official Winter 2019 outlook suggests that odds favor a normal to wetter than normal December through February across much of the Upper Midwest and Northern Plains region as well.

While wintertime precipitation makes up a relatively small amount of the overall yearly precipitation for many locations, the amount of snow that falls over the span of a winter has a significant impact on spring flood potential. This is because the water held in that snow tends to be released over a relatively short period of time during the spring thaw.

Winter 2019: Outlook Confidence

Confidence in the Winter Outlook is considered to be **“low to moderate.”** Often you will hear climate forecasters talk about the presence of an “El Niño” or “La Niña” – these are names of common conditions that change the weather pattern one way or another.



Low to Moderate

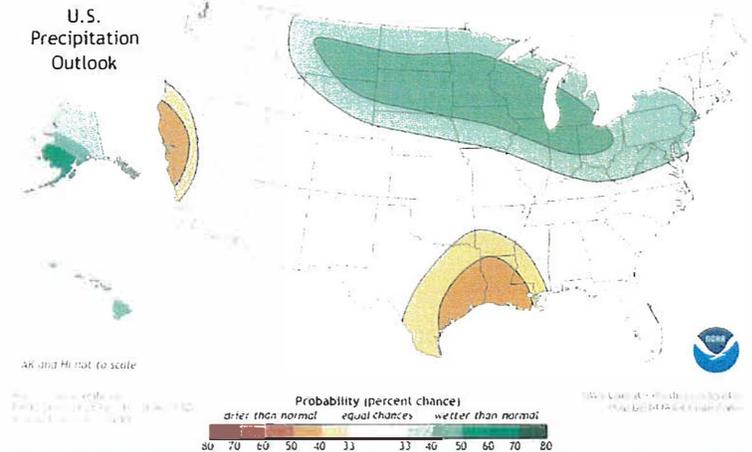
This year, those conditions do not exist and are not factors into the current outlooks. Thus, we will be subject to less predictable weather patterns this year, which will likely include large swings in temperature and precipitation.

For more information visit:

- [Local Forecast](http://weather.gov) – weather.gov
- [Long-Range Outlooks](http://cpc.ncep.noaa.gov) – cpc.ncep.noaa.gov
- [River Forecasts](http://water.weather.gov/ahps/forecasts.php) – water.weather.gov/ahps/forecasts.php
- [Weather & Climate Data](http://ncei.noaa.gov) – ncei.noaa.gov

Winter 2019

U.S.
Precipitation
Outlook



ABOVE: The Winter 2019 Outlook indicates odds favor wetter than normal precipitation from December through February across areas that already have wet soil and high river levels.
(Latest outlook: www.cpc.ncep.noaa.gov)

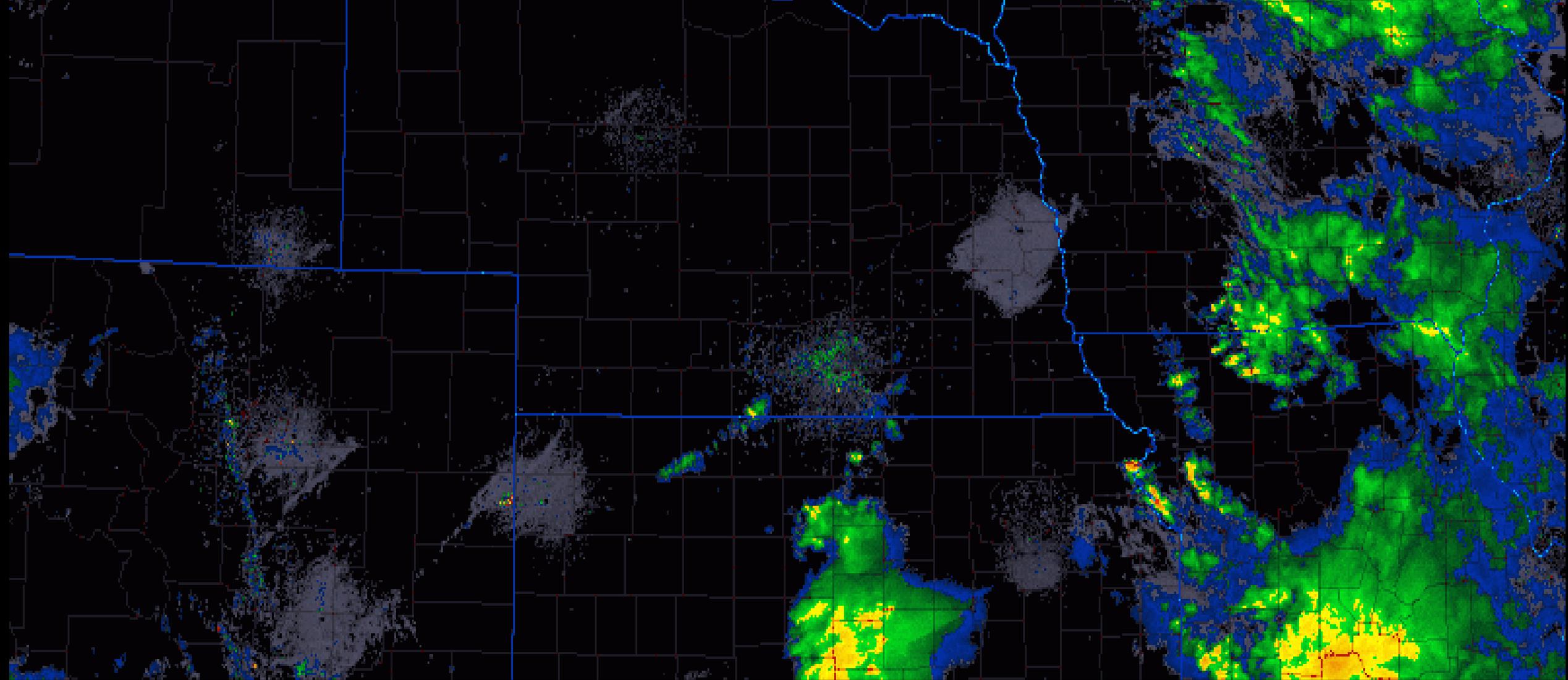
Potential Impacts This Winter and Spring

Unusually high streamflow, water levels, and abnormally wet soil suggest the **following potential impacts** for the upcoming winter and spring seasons:

- Rivers freezing above flood stage
- Freezing of overland flooding
- Long-term soil damage
- Widespread ice jams, including on some rivers that are not usually affected by ice jams
- Widespread record flooding again next spring
- Delay or prevention of crop planting



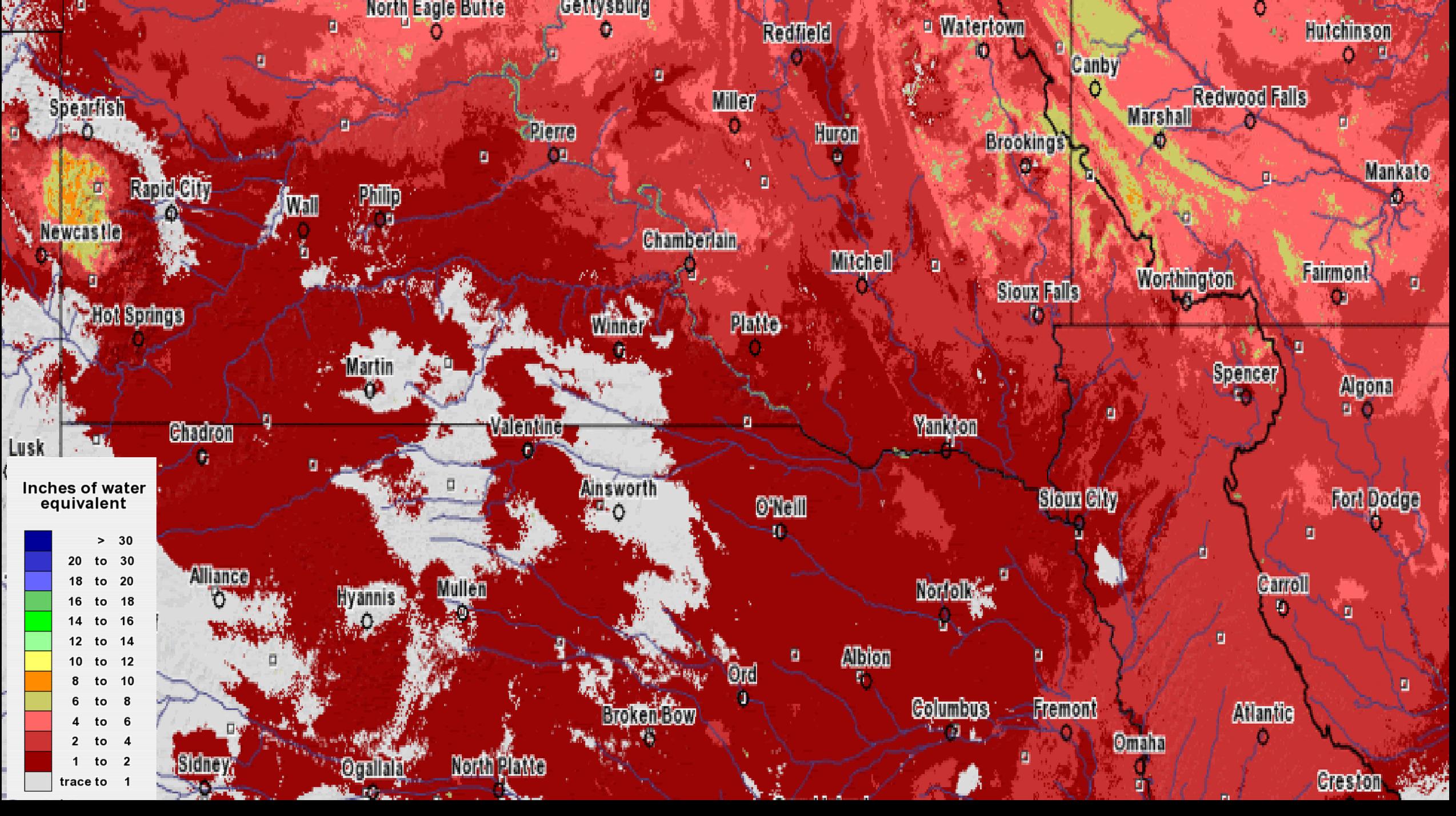
Kansas Flooding 2019



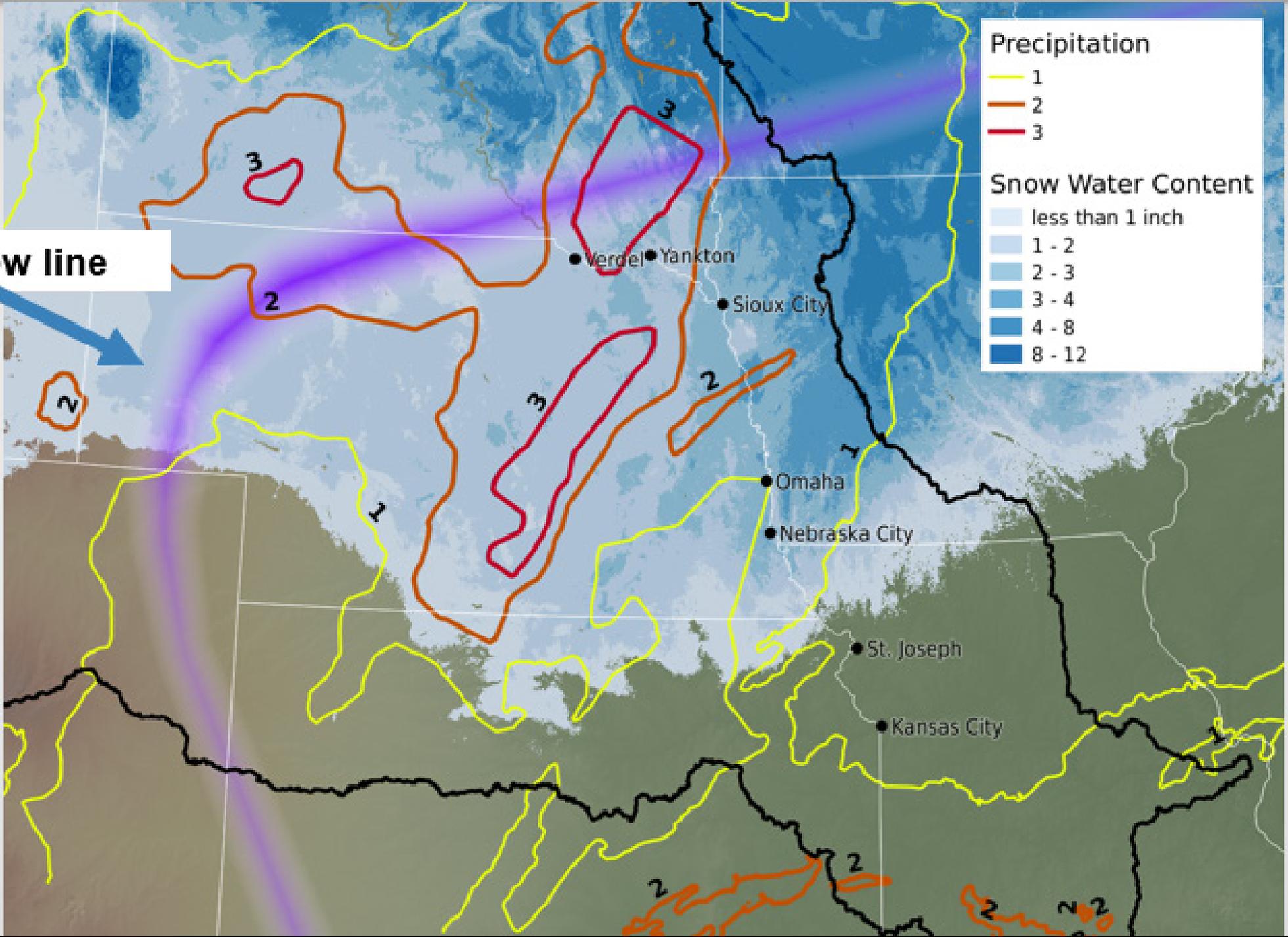
2019 Kansas Weather

Chad Omitt, National Weather Service – Topeka

Warning Coordination Meteorologist



Rain-Snow line

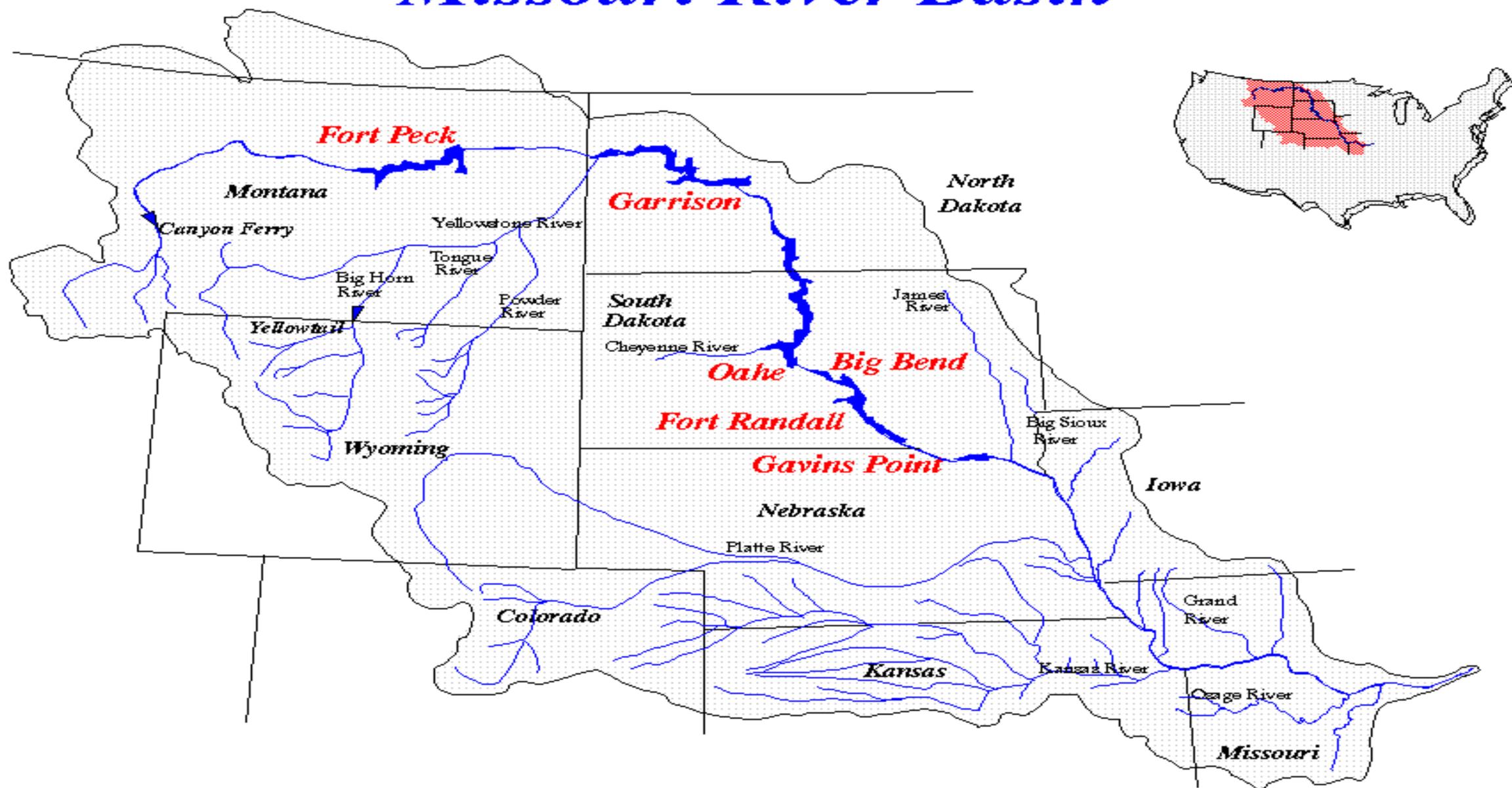


Bomb Cyclone March 12-14

- Bomb Cyclone produced a rapid snow melt along with Heavy rains of 1-3 inches on top of frozen ground in the Missouri River basin in March.
- Widespread rapid rises occurred on unregulated tributaries into the Missouri River and Big Blue.
- Lead to record crest at Missouri River near Elwood and high Flows into Tuttle Creek and Big Blue River at Blue Rapids upstream of Tuttle Creek above flood stage by March.



Missouri River Basin

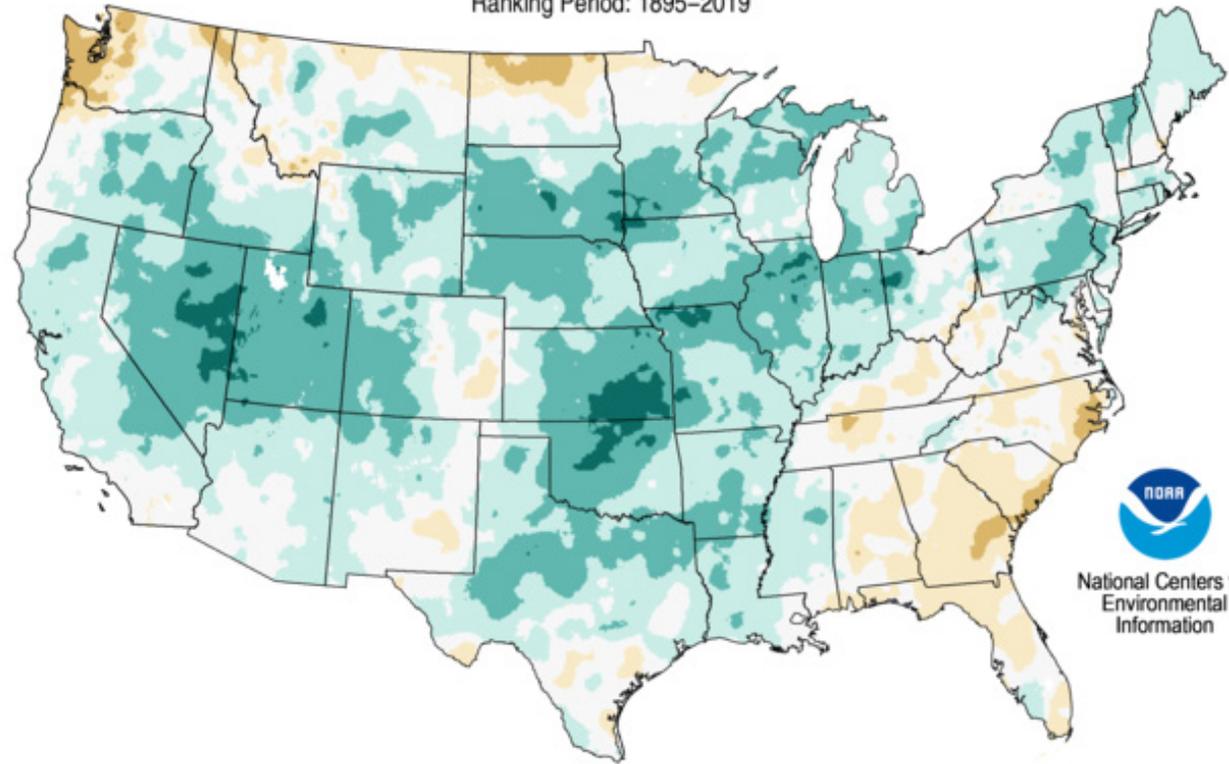


Record
Wettest
March-May

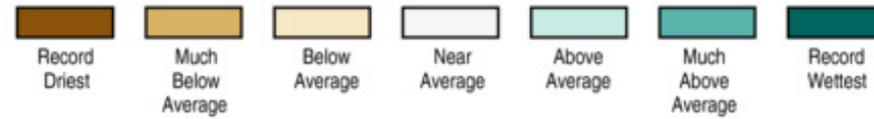
Total Precipitation Percentiles

March-May 2019

Ranking Period: 1895-2019



National Centers for
Environmental
Information



Created: Tue Jun 04 2019

Data Source: 5km Gridded Dataset (nClimGri)

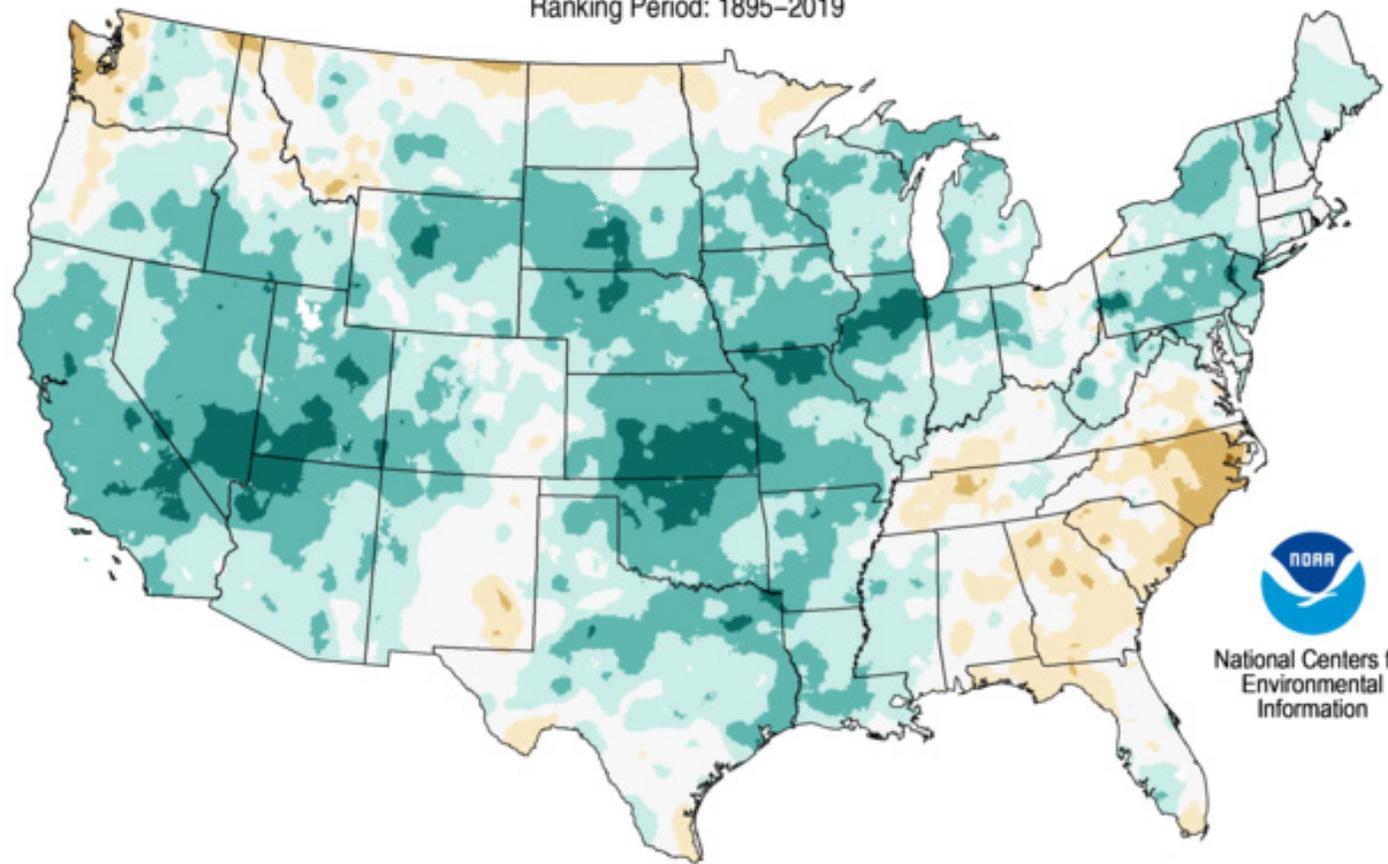
Record Wettest May



Total Precipitation Percentiles

May 2019

Ranking Period: 1895–2019

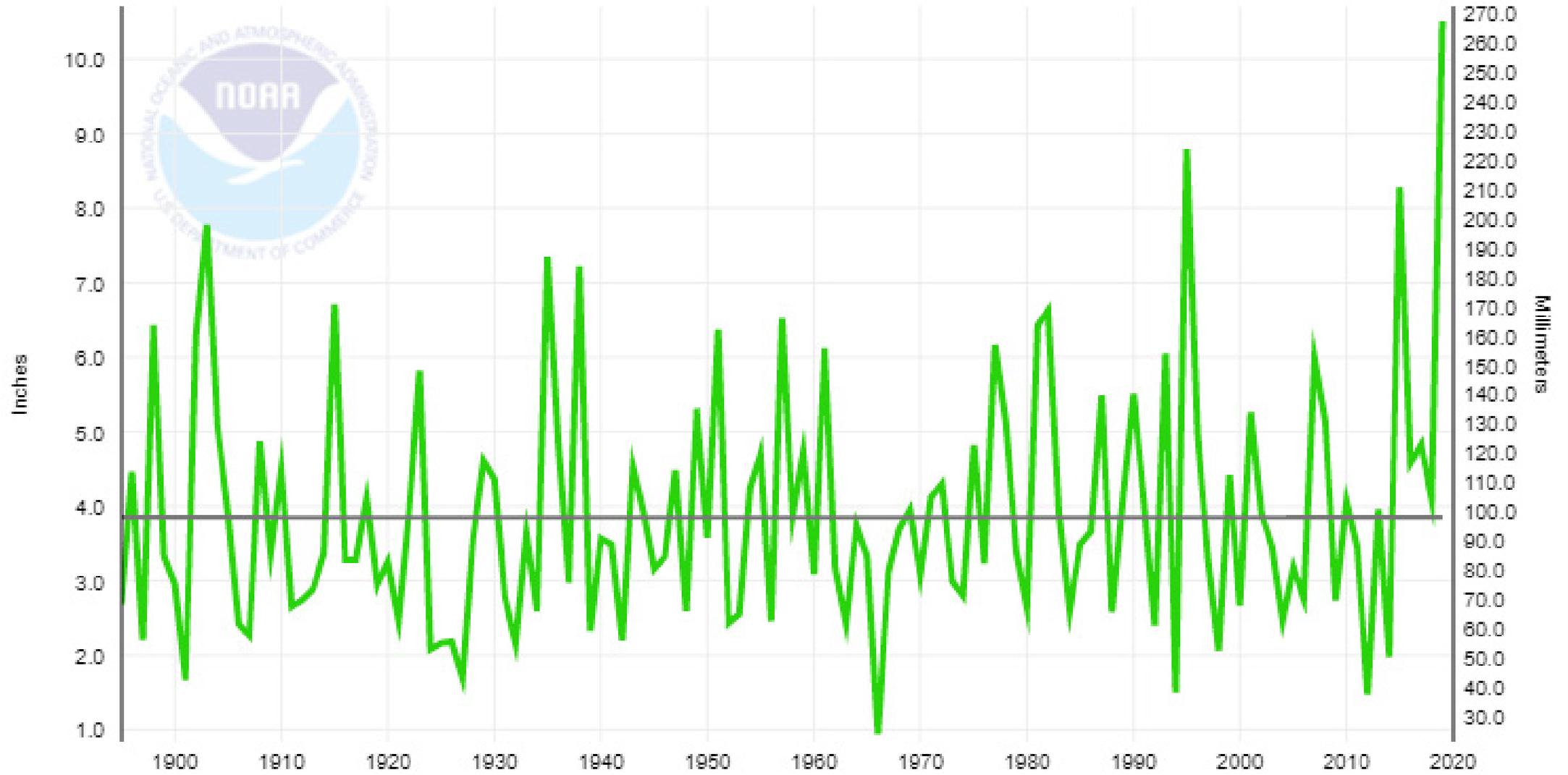
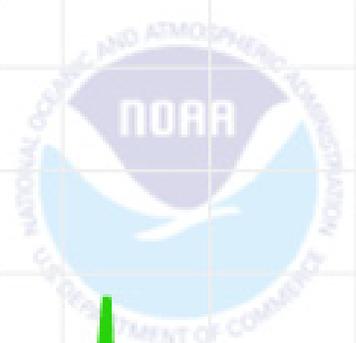


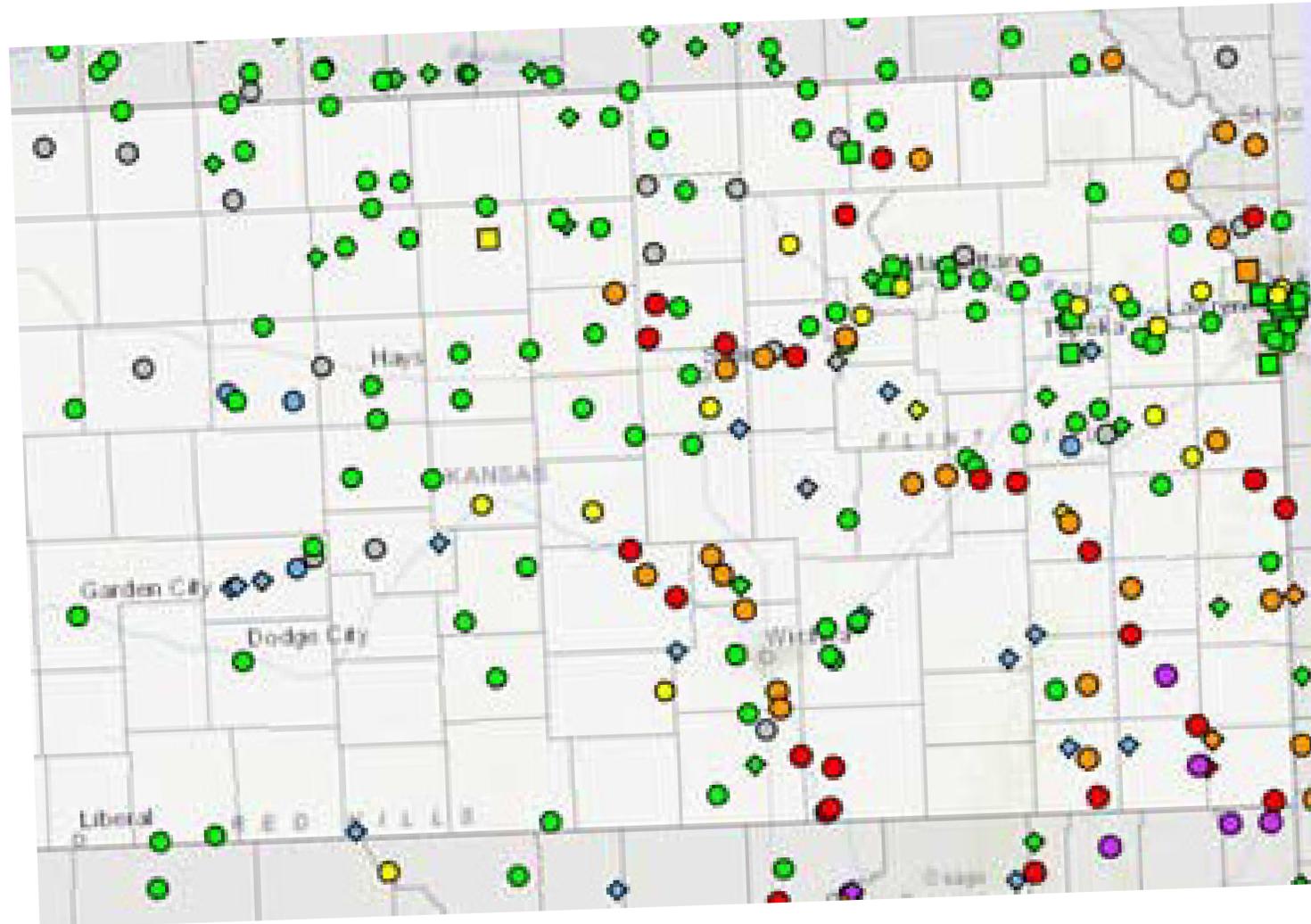
National Centers for Environmental Information



Created: Tue Jun 04 2019

Data Source: 5km Gridded Dataset (nClimGrid)





NWS Weather Forecast Offices

NWS River Forecast Centers

Water Resources Regions

- Probability and forecasts available
- ◇ Observations only available
- Forecasts available

392 total gauges

[Show all locations in flood \(79\)](#)

- 15 Gauges: Major Flooding
- 28 Gauges: Moderate Flooding
- 36 Gauges: Minor Flooding
- 21 Gauges: Near Flood Stage
- 233 Gauges: No Flooding
- 28 Flood Category Not Defined
- 0 At or Below Low Water Threshold
- 30 Gauges: Observations Are Not Current
- 1 Gauges: Out of Service

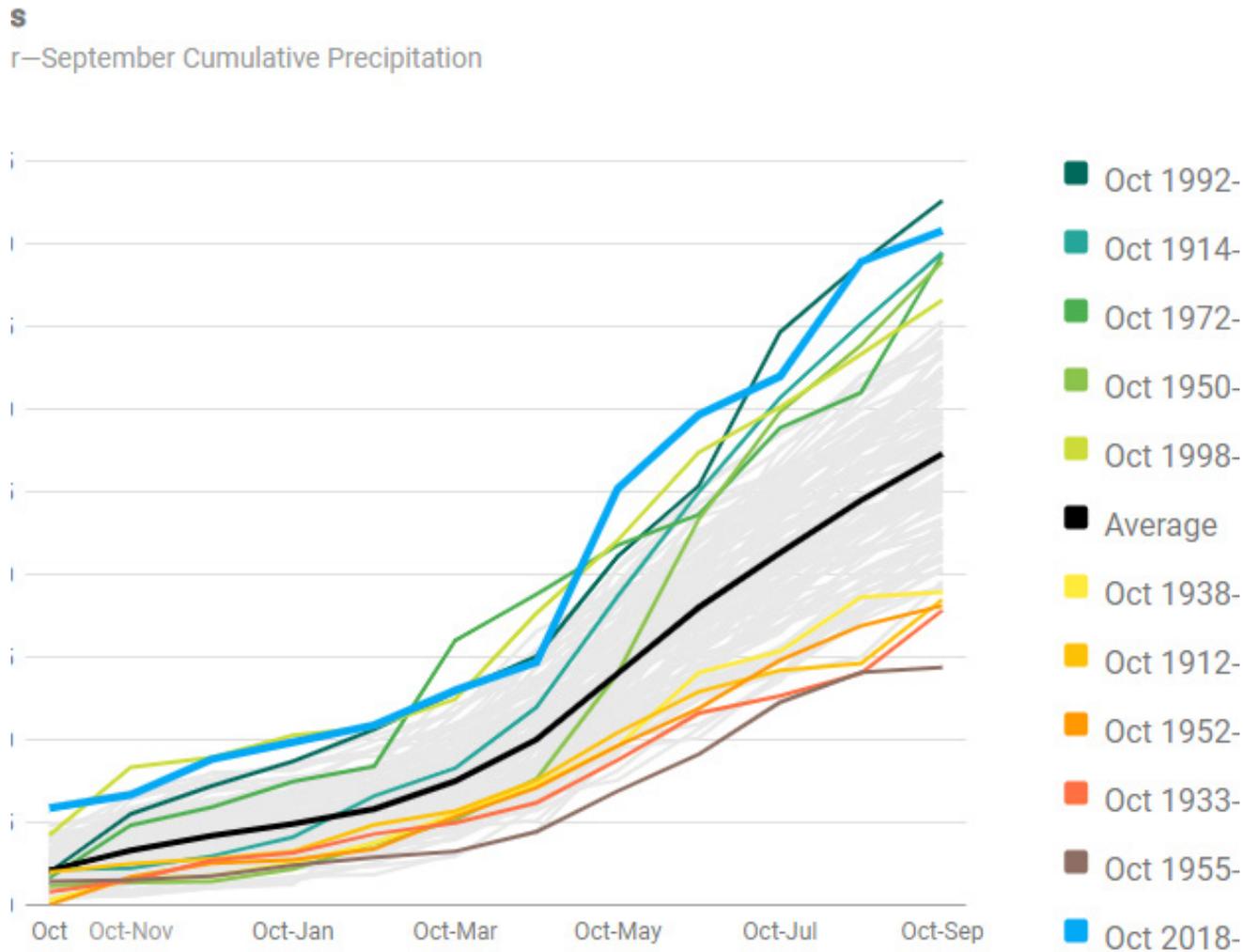
[Show all locations](#)

Last map update:
 05/23/2019 at 10:12:09 pm EDT
 05/24/2019 at 02:12:09 UTC

[What is UTC time?](#)

May 2019 Rainfall	Normal May Rainfall	Location	County
26.14"	5.14"	Rock 3 SW	Cowley
21.93"	5.54"	Yates Center	Woodson
21.80"	4.74"	Wellington	Sumner
21.79"	5.13"	Belle Plaine 4 W	Sumner
21.75"	4.81"	Potwin	Butler
19.86"	4.84"	Peck 2 S	Sumner
19.75"	5.83"	Winfield 3 NE	Cowley
19.67"	6.04"	Chanute 4 E	Neosho
19.38"	5.89"	Erie	Neosho
19.25"	5.93"	Parsons 2 NW	Labette

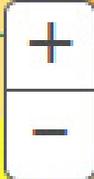
Kansas Precipitation



What is UTC time?

Map Help

Find address or location

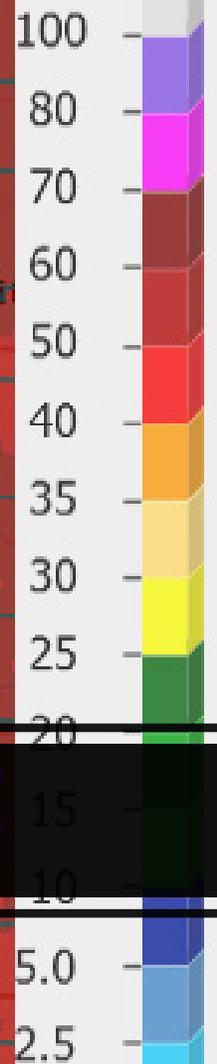


► Switch Basemap

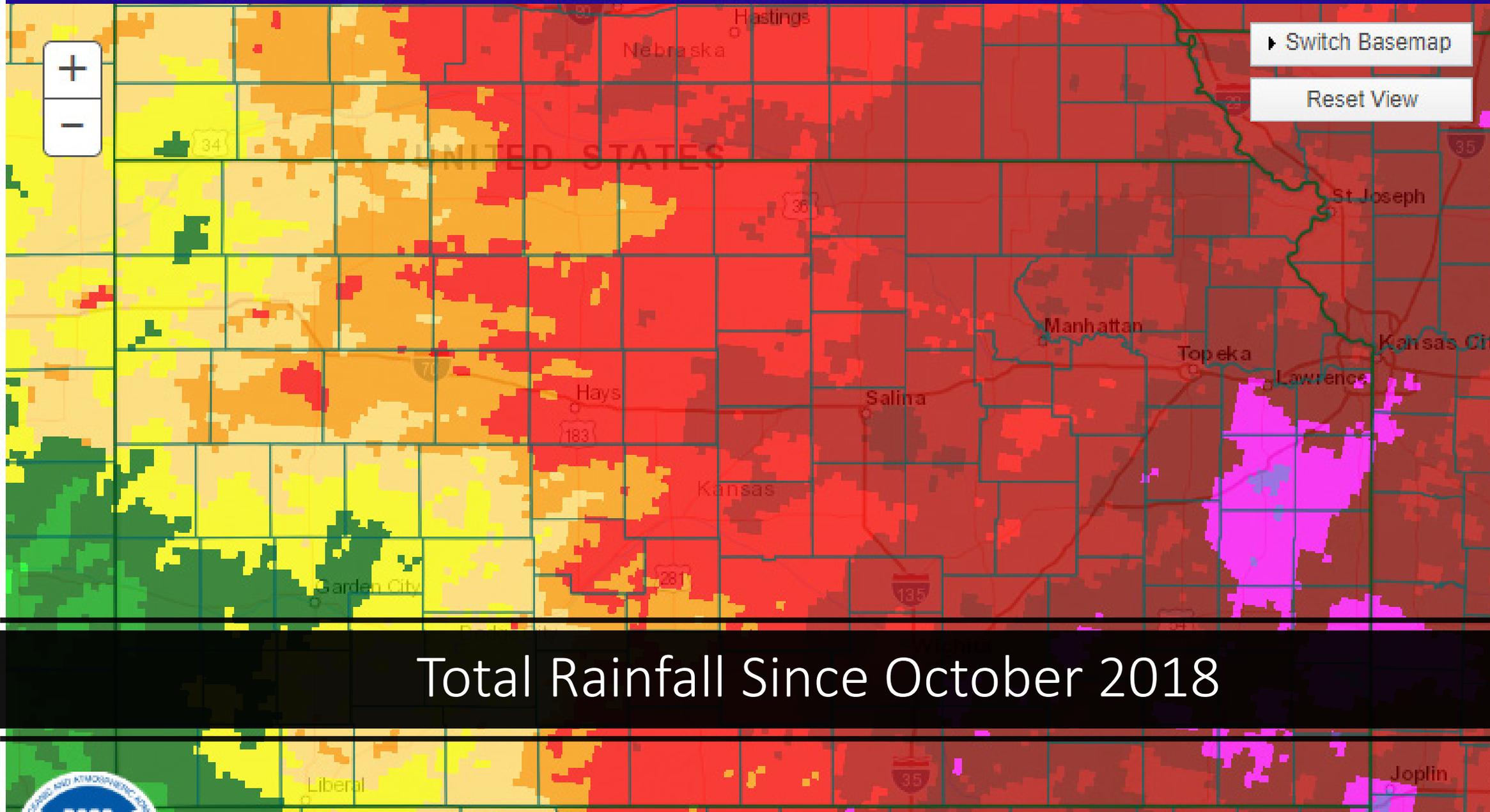
Reset View



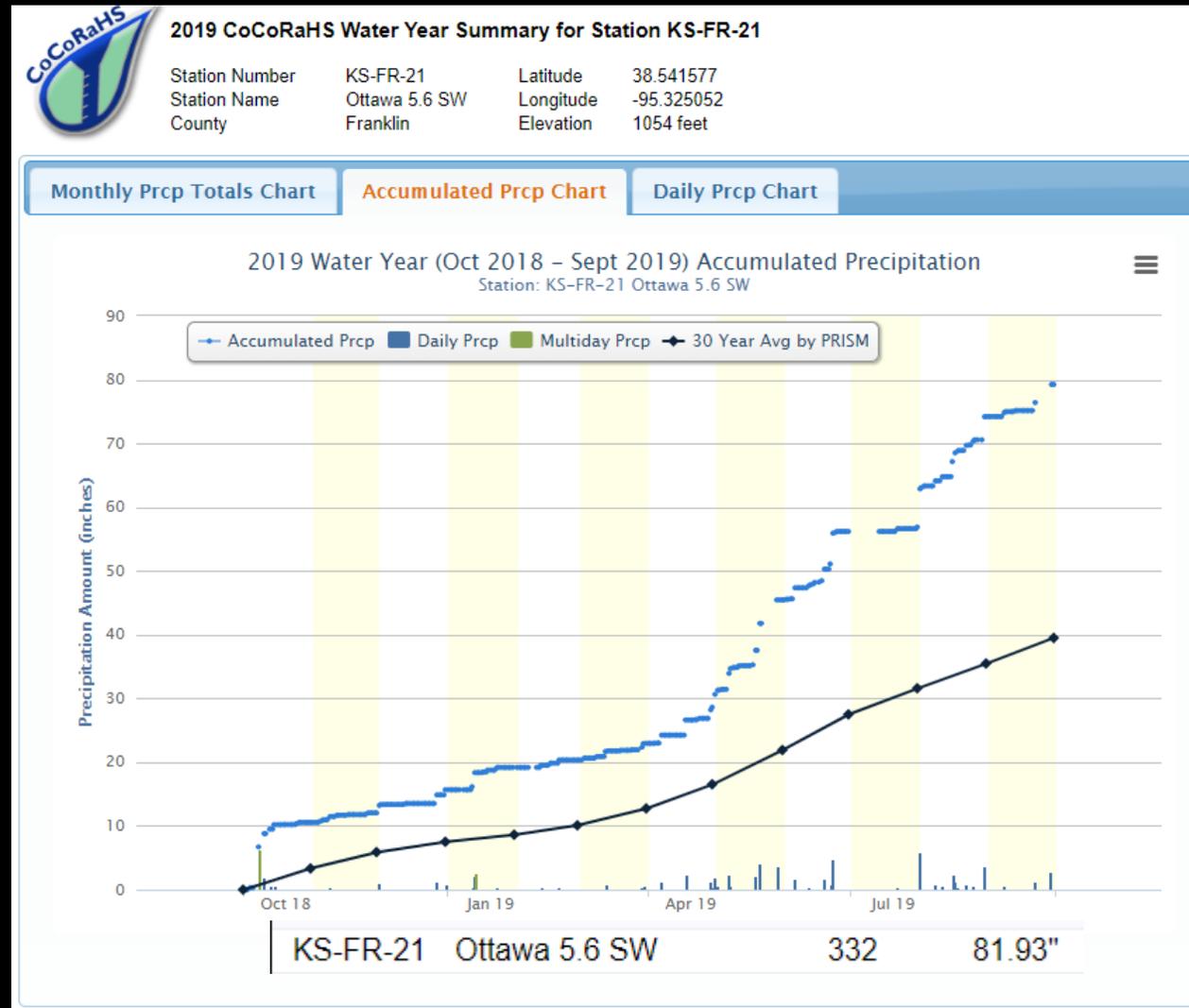
Inches



Total Rainfall Since October 2018



Total Rainfall Since October 2018



2019 Kansas Flooding



Wettest May on record for Kansas



During May over 90% of monitored rivers were above flood stage at some point in Kansas.



Big Blue River at Blue Rapids above flood stage since late March



These high flows/levels created substantial disruptions to travel and recreation activities with costly damages.



Some locations have received extra 30-40 inches of rain in the past year



Caused by persistent weather pattern set up in March and did not break down until late June.

Actions and Impacts

MG Lee Tafanelli

The Adjutant General

Director of Emergency Management & Homeland Security



COOPER NUCLEAR POWER PLANT –
UNUSUAL EVENT



ROAD, HIGHWAYS AND INTERSTATE
CLOSURES – BLIZZARD AND FLOODING



US COAST GUARD CLOSED MISSOURI
RIVER FOR ALL VESSEL TRAFFIC

State Impacts – March 15-28, 2019



Levee protecting Elwood-Doniphan County

Doniphan
County
Impacts

HISTORIC CREST: March 22, 2019: 32.12 feet

Levee overtopped north of White Cloud (MRLS500)

Shelter management

Pet Shelter management (2)

Voluntary evacuation

Road & highway closures

Agriculture damage

Sandbagged 800 foot area

Classes moved from Elwood to Wathena

Wathena lagoons compromised



Rural Atchison County

Atchison County Impacts

HISTORIC CREST – March 22, 2019: 31.20 feet

Numerous roads & highways closed

Agriculture damage

City wastewater on bypass

Boil water advisory

Grape-Bollin-Schwartz levee overtopped



Leavenworth County levee breach

Leavenworth
County
Impacts

HISTORIC CREST 3/23/2019: 31.30 feet

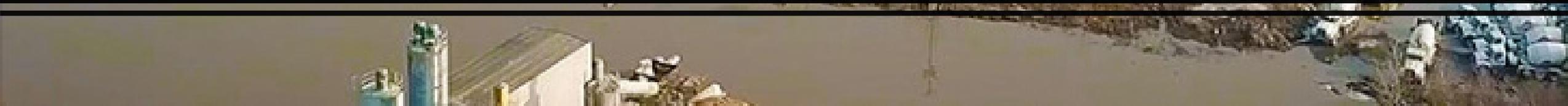
SANDBAGGING

KANSAS DEPARTMENT OF CORRECTIONS
PROVIDED PRISON LABOR TO SANDBAG
AROUND THE CORRECTIONAL FACILITY

LANDING & RIVER FRONT PARKS CLOSED



Lakeside Race Track and Wyandotte County Police Department Range



Wyandotte
Unified
Government

Wolcott #1, #2, and #3
overtopped

Roads closed

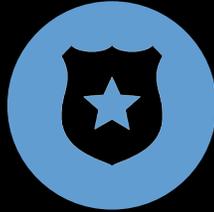
Lakeside race track closed and KC
Police Firing Range flooded

HISTORIC CREST 35.01 feet
03/23/2019

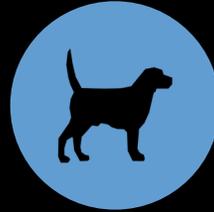
SEOC Mission Assignments



TRANSPORTATION
SUPPORT



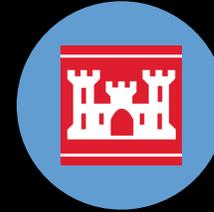
LAW ENFORCEMENT
SUPPORT



PET SHELTER SUPPORT



WATER RESCUE
OPERATIONS



USACE FLOOD FIGHT
SUPPORT



LOCAL INCIDENT
MANAGEMENT
SUPPORT



KANSAS NATIONAL
GUARD OPERATIONS



SEOC ACTIVATION

April 28-July 12, 2019

Multi-Hazard Event



April 28

Heavy thunderstorms and torrential rains

High saturated soil

High groundwater tables

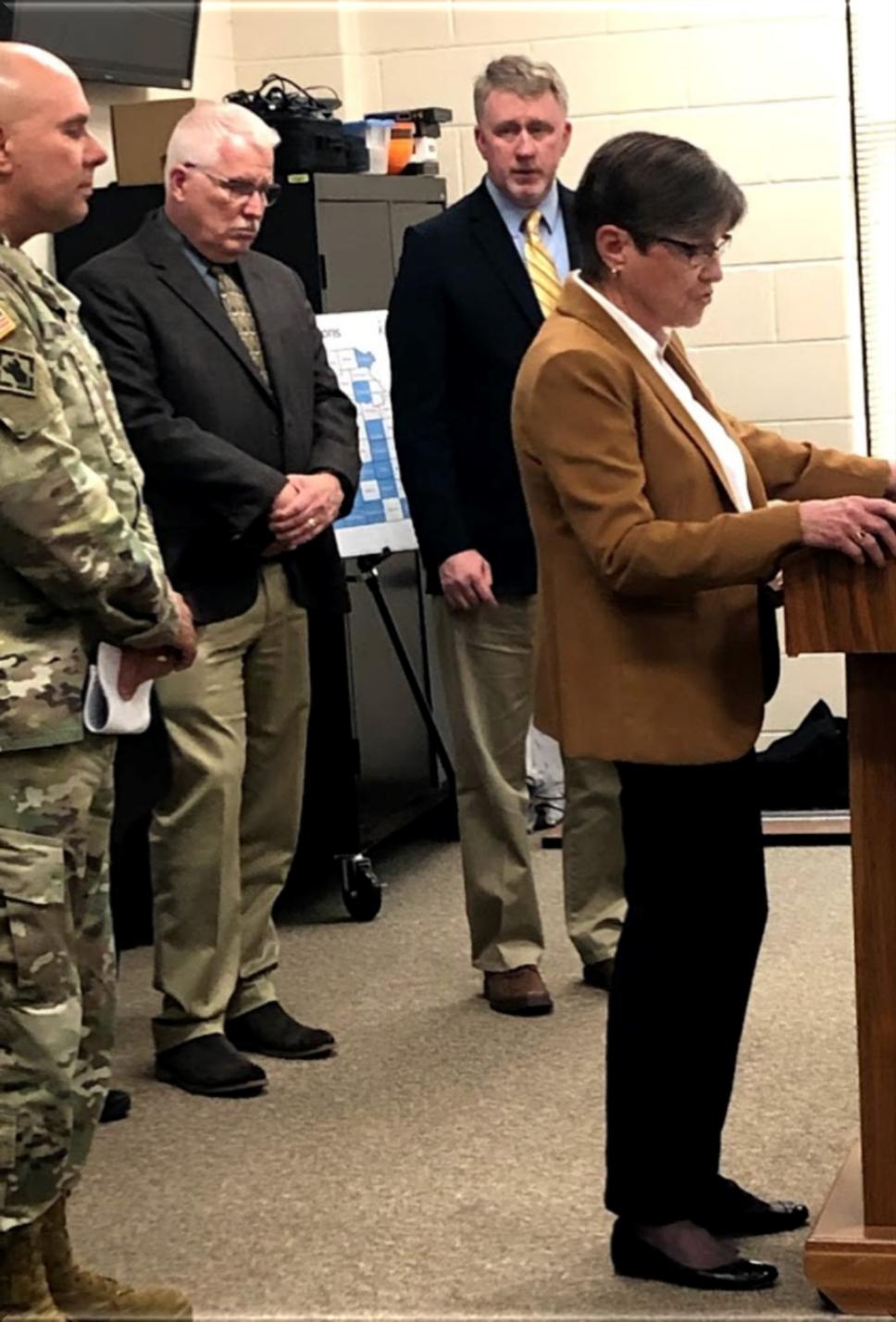
High stream and river levels

High reservoir levels

*6 reservoirs were in 24 hour
Surveillance level*

110 USGS gauges flooded

Record peaks on 3



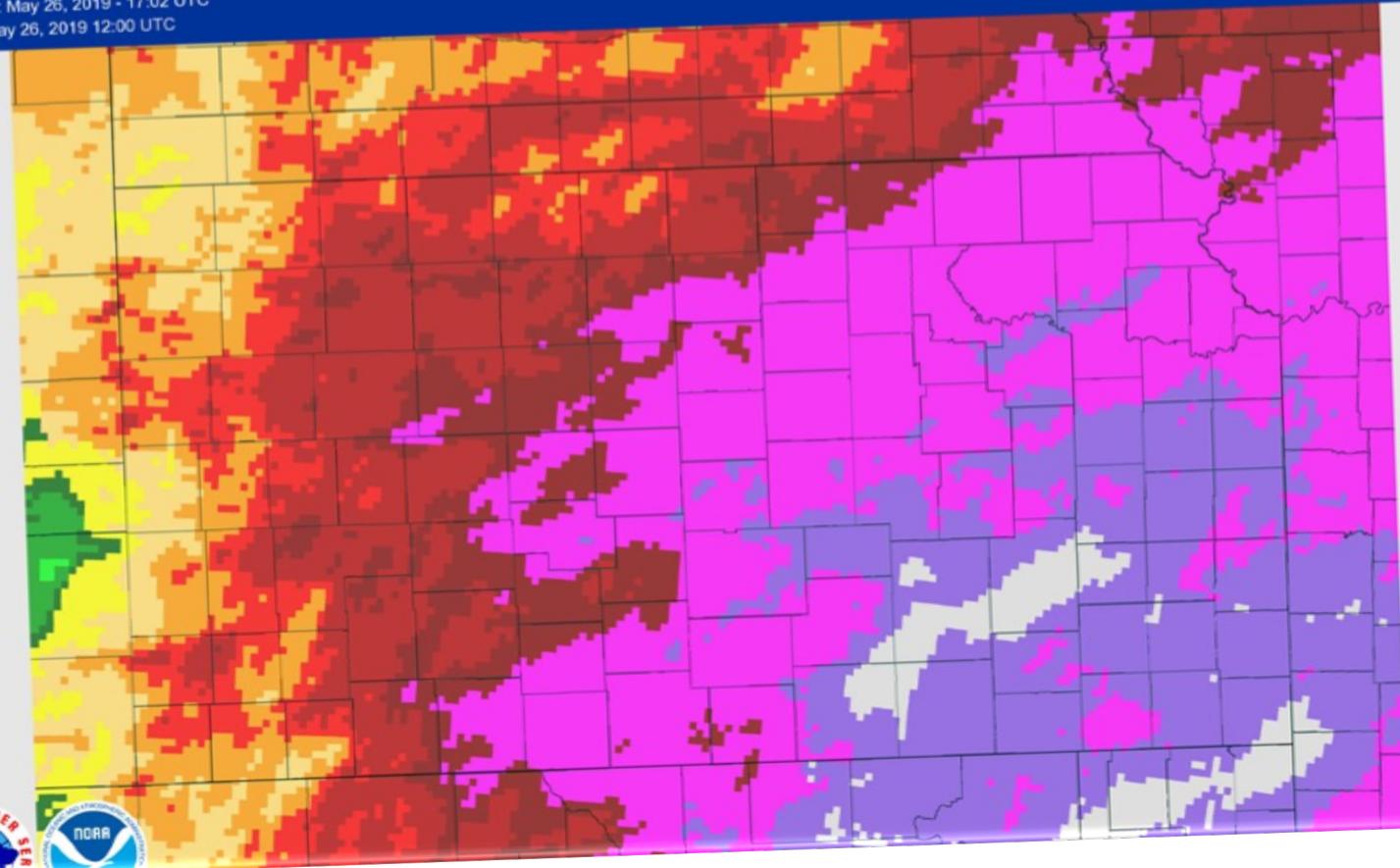
April 28

- Governor directs execution of the Kansas Response Plan and issues State Disaster Declaration

30 day rainfall through May 26, 2019

May 26, 2019 30-Day Observed Precipitation

Created on: May 26, 2019 - 17:02 UTC
Valid on: May 26, 2019 12:00 UTC

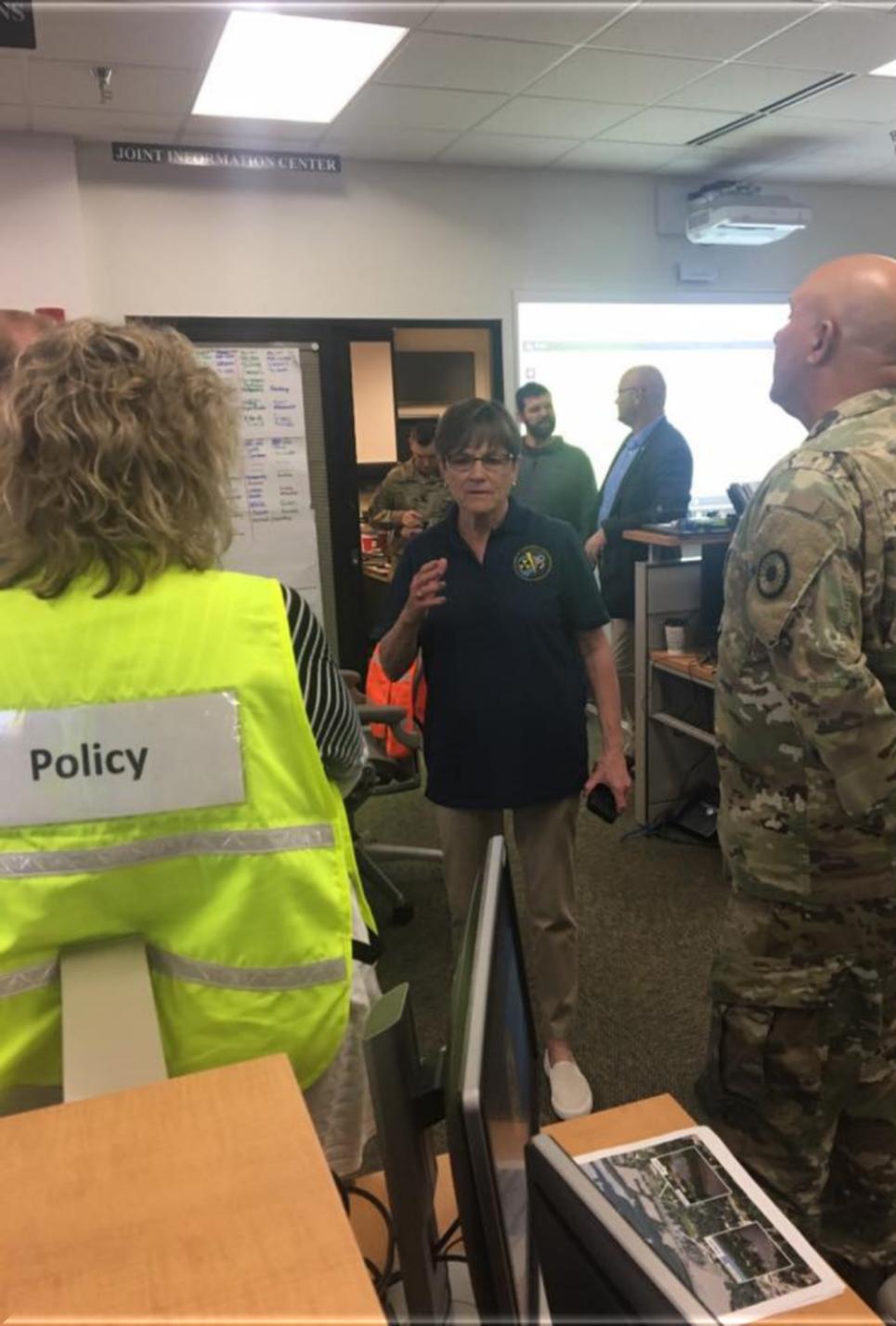




May 26

Governor request Emergency Declaration for 46 counties for severe thunderstorms, tornadoes, hail, high winds, torrential rains, flooding and flash flooding

Allen, Anderson, Barber, Barton, Butler, Chase, Chautauqua, Cherokee, Clark, Clay, Cloud, Coffey, Comanche, Cowley, Crawford, Dickinson, Doniphan, Elk, Franklin, Geary, Greenwood, Harvey Jefferson, Kingman, Lincoln, Lyon, Marion, McPherson, Meade, Montgomery, Morris, Neosho, Osage, Ottawa, Pawnee, Pottawatomie, Pratt, Reno, Rice, Riley, Rush, Saline, Sumner, Wabaunsee, Wilson and Woodson



June 10

Governor Kelly requests a major presidential declaration for 63 counties for the Public Assistance Program and 105 counties for the Hazard Mitigation Program.

A total of 71 counties were requested for the Public Assistance Program

- 70 counties were approved by the President
- One county (Norton) withdrew because of insufficient damage

Mission Taskings

- Civil Air Patrol
- Communications support
- Emergency Management Assistance Compact (EMAC)
- ESRI Disaster Response
- Federal assistance for EM-3412
- Hazardous Materials support
- Kansas National Guard activation
- Law enforcement support
- Local incident management team support
- Mutual aid facilitation
- Pet sheltering support
- Public health support
- Search & Rescue operations
- Transportation support
- USACE flood fighting support
- Water rescue operations

Agencies Activated

Adjutant General's Department
Department for Aging & Disability
American Red Cross
Civil Air Patrol
Governor's Office
Department for Children & Families
Department of Transportation
Division of Emergency Management
Environmental Protection Agency
Federal Emergency Management Agency
Health & Environment

Highway Patrol
National Guard
National Weather Service Office
Office of the State Fire Marshal
River Forecasting Centers
State Animal Response Team
Task Force 1 - State Search & Rescue Team
Salvation Army
United States Army Corps of Engineers
Water Office
Wildlife, Parks & Tourism

The background features a central black horizontal band. Above it, a light gray trapezoidal shape is partially cut off by a diagonal black line. Below the black band, a dark gray trapezoidal shape is also partially cut off by a diagonal black line, which then transitions into a light blue area on the right side of the page.

Impacts

Homes & Businesses*

- 548 homes damaged
- 1 business damaged
- 355+ persons evacuated

*reported



Leavenworth County Tornado

Evacuations

- Burlington (Coffey)
- Cherokee County
- Coffeyville (Montgomery)
- Durham (Marion)
- Erie (Neosho)
- Elmdale (Chase)
- Eureka (Greenwood)
- LaCrosse (Rush)
- Gypsum (Saline)
- Larned State Hospital (Pawnee)
- Hutchinson (Reno)
- Nickerson (Reno)
- New Cambria (Saline)
- Melvern Reservoir (Osage)
- Montgomery County
- Peabody (Marion)
- Salina (Saline)
- Tescott (Ottawa)
- Tuttle Creek Reservoir (Riley)

Water Rescues/Search & Rescue*

- Butler
- Greenwood
- Cowley
- Douglas
- Leavenworth
- Lyon
- Marion

* Reported



Lyon County

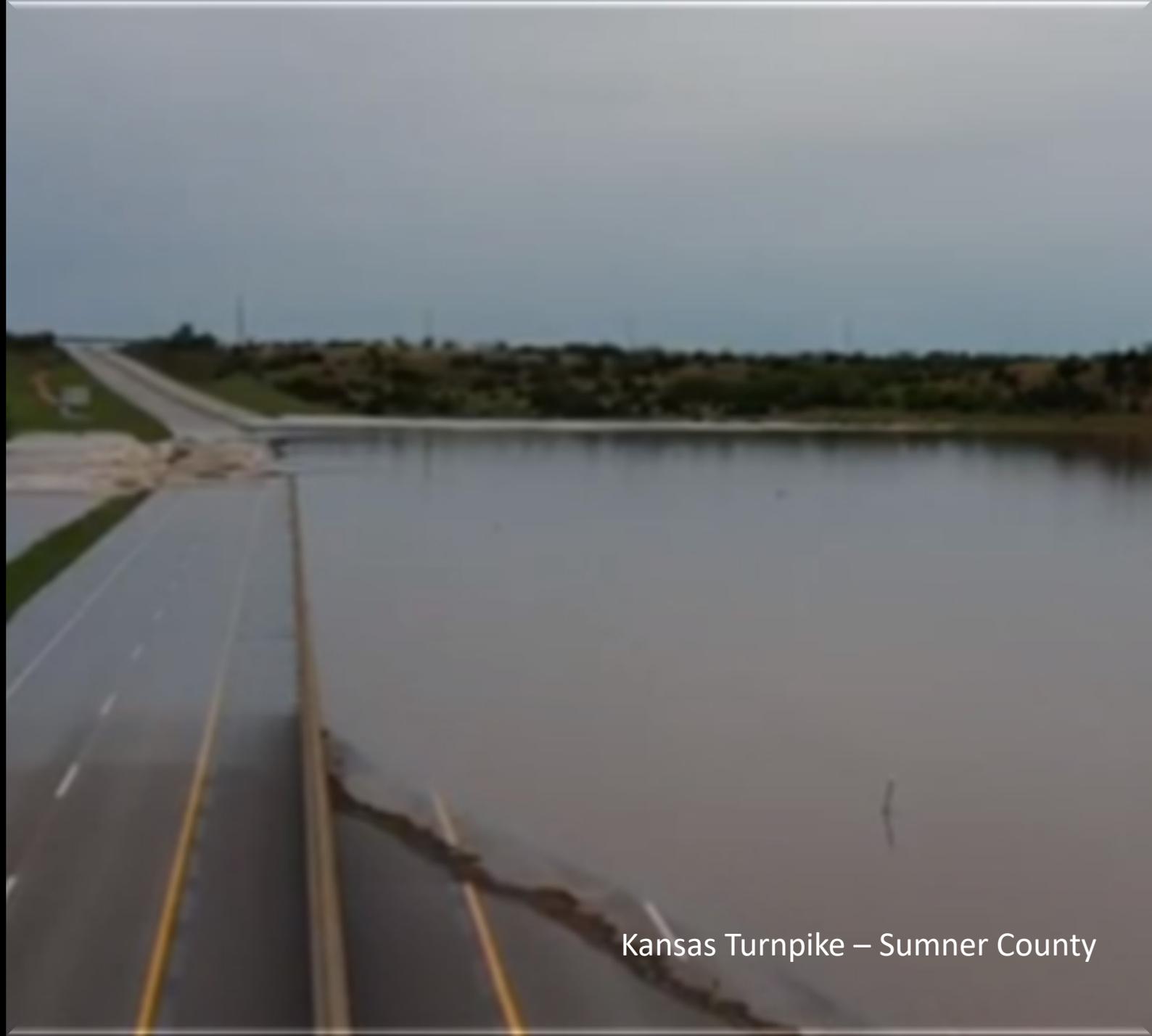
Mass Care, Sheltering, and Pets

- Shelters (20+)
- Pet Shelters
- Volunteer management
- Donations Management



Transportation

- highways closed
- I-70 closed
- township, county, city roads closed
- shortage of traffic barriers - local level
- bridge damage
- Kansas Turnpike closed (Sumner)



Kansas Turnpike – Sumner County

Public Works & Engineering

- Water intake wells, lift stations and water treatment facilities compromised
 - 1 B+ gallons on bypass
- City lagoons overtopped
- Sewer backup
- Debris Removal



Meade County

Emergency Management

- SEOC was activated for 65 days between April 28 and July 1
- EOC Support Teams
- Kansas Incident Management Team (IMT) (Riley)
- Facilitate and track mutual aid





Hazardous Materials

EPA SUPPORT FOR
POTENTIAL LEVEE OVERTOP
IN COFFEYVILLE AFFECTING
COFFEYVILLE RESOURCES

Agriculture

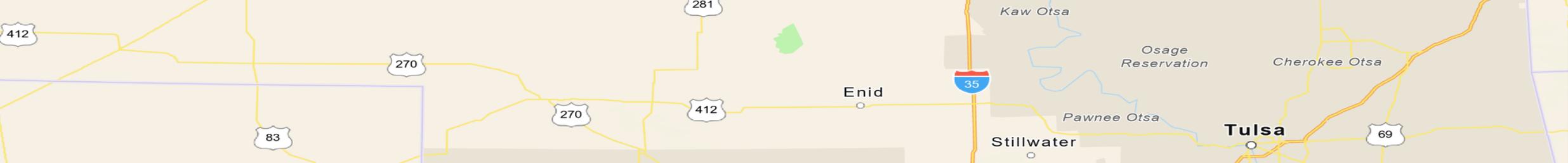
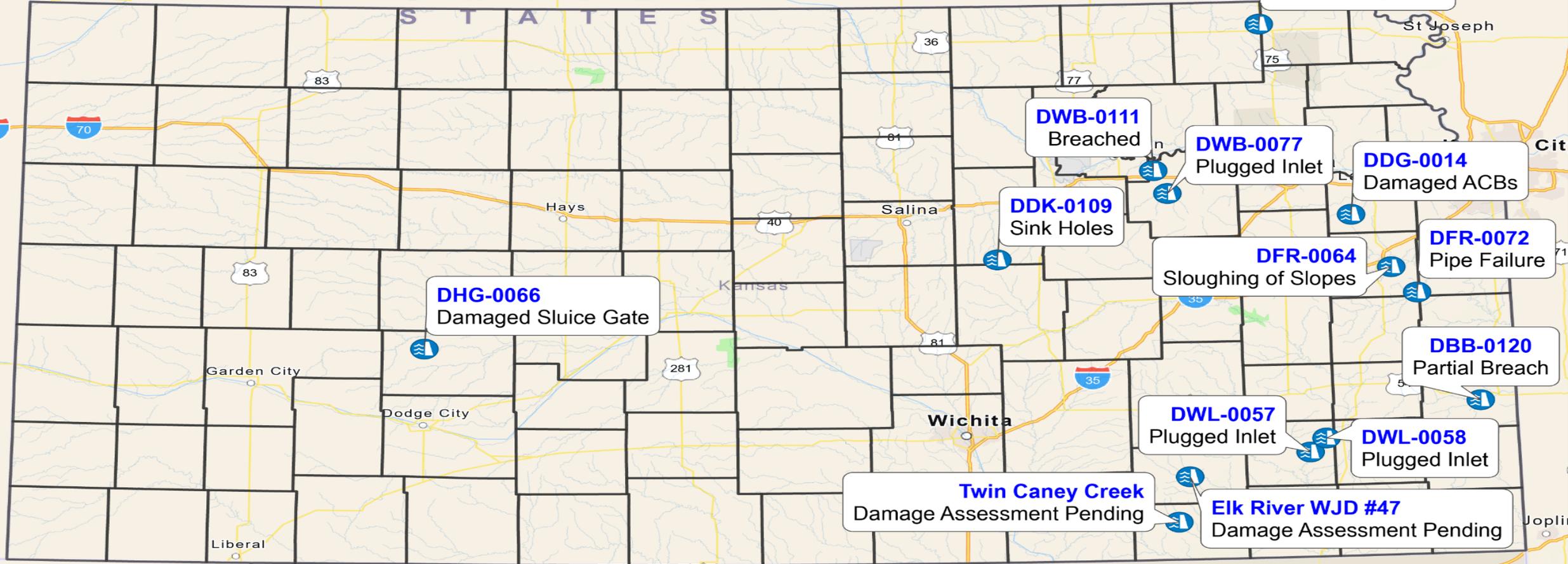
- 11 dams compromised*
- Range from breach to plugged inlets due to debris

*reported



Sabetha

2019 Spring-Summer Dam Incidents



Recovery Programs

FEMA Public Assistance Program

Administered by the Kansas Division of Emergency Management

Public Assistance Program – DR-4449



Provides funds for the repair, restoration, reconstruction, or replacement of a public facility or infrastructure that is damaged or destroyed because of the disaster and meets eligible criteria.



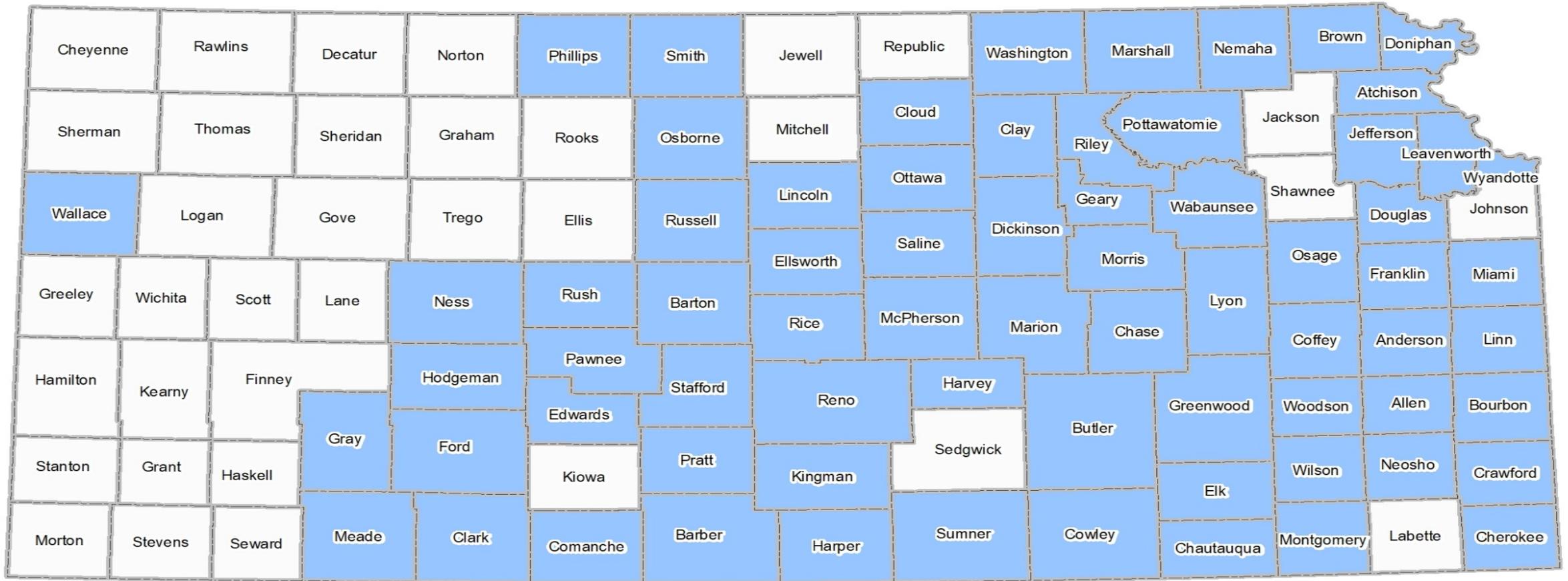
Eligible recipients include state governments, locals, counties, townships, and other political subdivisions of the state, Indian tribes and certain private non-profit organizations that provide essential services of a government nature to the public.



Federal government pays 75% of eligible approved project costs; state pays 10% and applicant pays 15%.

DR-4449-KS

Incident Period: April 28th, 2019 - July 12th, 2019
Declaration Date: June 20th, 2019



Designated Counties
Public Assistance
none

Damage Assessment Estimates – Public Assistance Program



Total Counties – 70



Total Preliminary Damage
Assessment - \$15,209,132.00

Expected to increase significantly because
only county threshold was captured and
much of the damage was underwater



Total eligible applicants - 560

Small Business Administration Disaster Loans

Low-interest disaster loans to businesses, private non-profit organizations, homeowners, and renters.

Small Business Administration (SBA) disaster loans can be used to repair or replace the following items damaged or destroyed in a declared disaster: real estate, personal property, machinery and equipment, and inventory and business assets.



Small Business Administration

Douglas – June 10th

Marion – July 24th



The background features a central horizontal black band. Above and below this band are geometric shapes: a light gray trapezoid on the top left and a dark gray trapezoid on the bottom left, both separated from the rest of the background by a diagonal black line. The right side of the background is a solid light blue color.

Lessons Learned

Sustain - Planning



Use of mapping products in the SEOC



Advanced planning activities



SEOC briefings



Rolling Common Operating Picture (COP)



Technical support in SEOC (National Weather Service, USACE, Kansas Water Office, etc.)



USACE & NWS liaisons/daily operational calls

Sustain - Logistics



Pre-position of standby resources



Resource inventory and accountability through statewide Comprehensive Resource Management & Credentialing System (CRMCS)

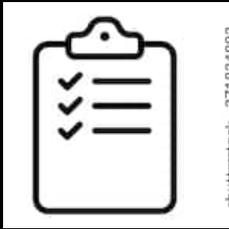


Logistics Staging Areas and Points of Distribution (POD) process and partnerships



Use of Emergency Management Assistance Compact (EMAC)

Sustain - Preparedness



TRAINING & EXERCISES



EMERGENCY SUPPORT FUNCTION
(ESF) COORDINATION MEETINGS



TOOL KITS, JOB AIDS, STANDARD
OPERATING GUIDELINES (SOGS),
CONTACT LISTS, ETC.

Improvements/Enhancements

SEOC Enhancement

- Greater complexity of events, hazards, risks and vulnerabilities
- Technology upgrades
- Lack of private breakout rooms for planning, conference calls, or policy-level discussions with the governor and key decision makers
- Inadequate work space for Joint Information Center
- Current facility does not support multiple-operational periods

Improvements/Enhancements

Flood modeling, and indentation mapping software for GIS

Collaboration between Kansas Water Office, Kansas University and Kansas Division of Emergency Management currently underway

Planning team dedicated to flood data collection

QPF

Real time data

Forecast

Modeling

Improvements/Enhancements

Automated River Gauges

State Hazard Mitigation Team reviewing possibilities

Relocation of some river gauges

Addition of river gauges

