

UNITED STATES ARMY CORPS OF ENGINEERS KANSAS CITY DISTRICT OVERVIEW

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Chief, Planning Branch
23 February 2021

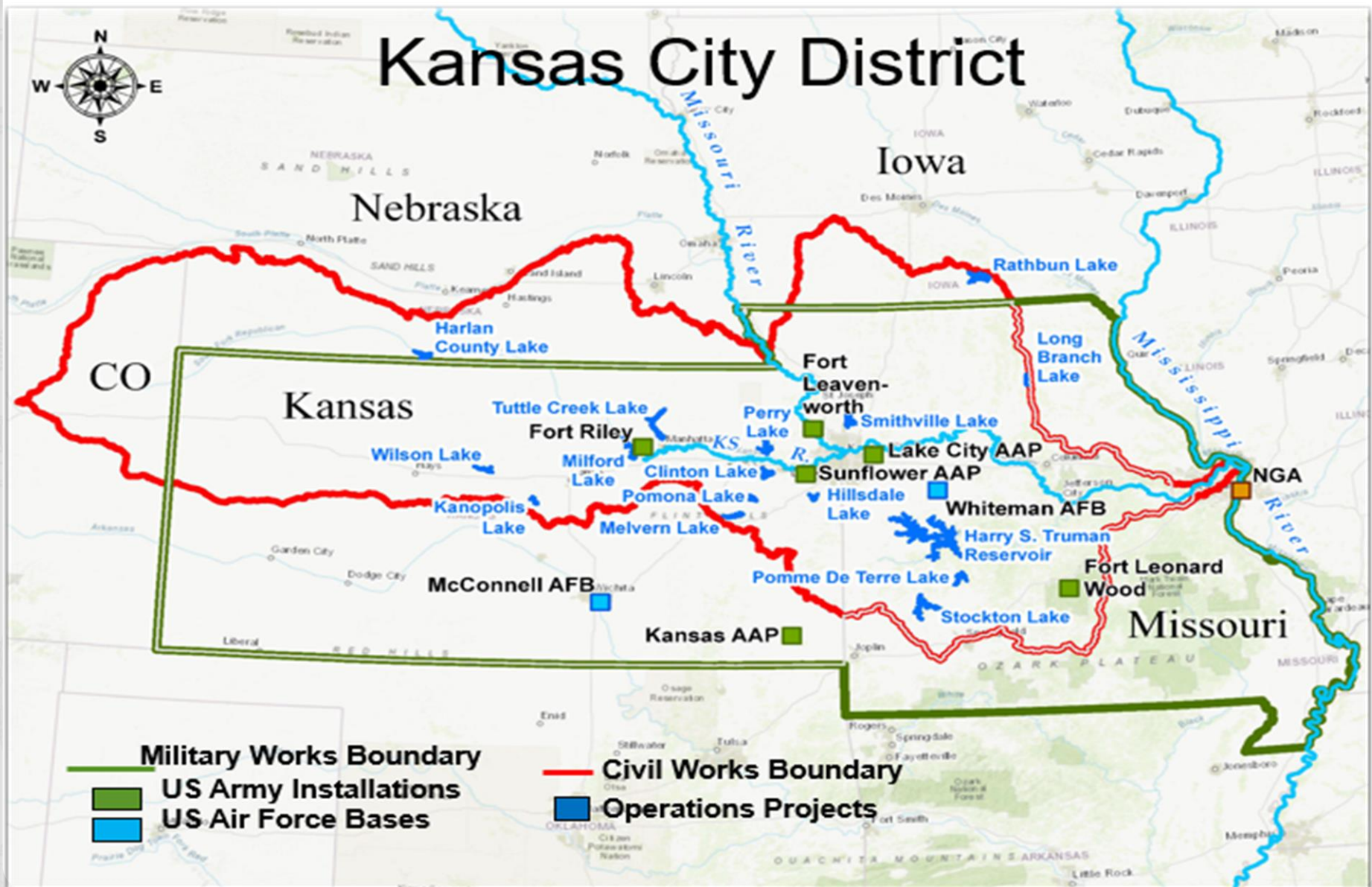
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KANSAS CITY DISTRICT AREA OF RESPONSIBILITY



MISSIONS OF THE CORPS OF ENGINEERS



**Military Program – Support
Army and Air Force
Installations, United States &
Abroad**

**Environmental Restoration -
Hazardous & Toxic Waste
Remediation (HTRW)**

**Civil Works – Water
Resources Programs**



**Emergency Response United
States & Abroad**

**Lead Regulatory Agency for
State of Kansas**

**Support Military Deployment
Operations**



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CIVIL WORKS AUTHORITIES

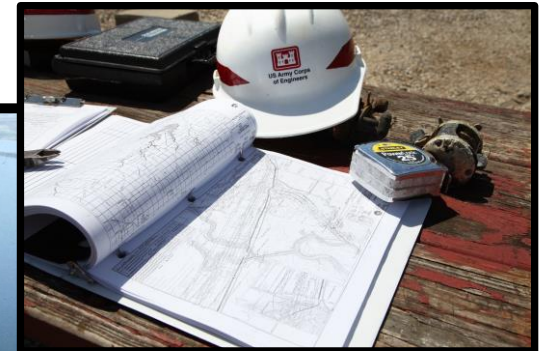
Navigation (1824)
Flood Risk Management (1936)
& Coastal Storm Damage
Reduction
Watershed Planning (1986)
Ecosystem Restoration (1996)

**HIGH
PRIORITY**

Water Supply
Hydropower
Recreation



Stockton Lake



LEGACY PROJECTS

Tuttle Creek - Construction



Kanopolis Reservoir



Missouri River Navigation



Tuttle Creek Dam
Manhattan Mercury



Missouri River Navigation



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THREE REQUIREMENTS FOR CIVIL WORKS PROJECTS

- **Local (non-federal) Sponsor** with a need and an ability to **cost-share** a project.
- **Authorization** from Congress through the **Water Resources Development Act (WRDA)** for projects and programs, or other source (i.e., Resolution of Committee for studies).
 - USACE accepts recommendation of new authorization from potential sponsors in July/August yearly.
 - Secretary of Army submits annual report to Congress that identifies potential new authorization (Section 7001 Report).
- **Appropriations** from Congress through **Energy & Water Development Bill**, annually for all projects & studies.

Project Lifecycle

Study >> Design >> Construction >> Operations and Maintenance

CURRENT PROJECTS



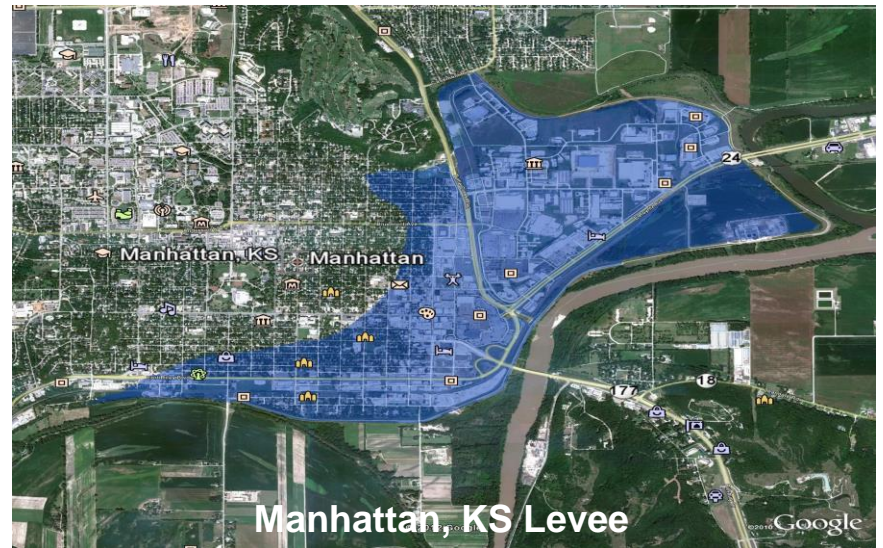
Levee Unit R471-460 & L455, Flood of 2011



Kansas City Levees, CID (l), Armourdale (r)



Topeka Levee System, Flood of 1993



Manhattan, KS Levee

CURRENT PARTNERSHIPS

Kansas River Basin Watershed Study

Primary Partners: The Kansas Water Office, Kansas Department of Wildlife and Tourism

Expected Completion: JAN 2024

Recommend comprehensive, long-term solutions to water issues and opportunities in the Kansas River Basin based on a Shared Vision for the basin.

Include recommendations for potential involvement by USACE, other federal agencies, or non-federal interests.

Inform decision-makers at all levels of government and provide a strategic roadmap to inform future investment decisions by multiple agencies.

Address sediment management, flood risk management, water supply availability and sustainment, ecosystem restoration, water quality, and recreation.



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KANSAS CITY DISTRICT RESERVOIR OPERATIONS

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USACE – KANSAS CITY DISTRICT FLOOD CONTROL OPERATIONS

1. How USACE reservoirs are operated
2. 2019 Event
3. Where we are now



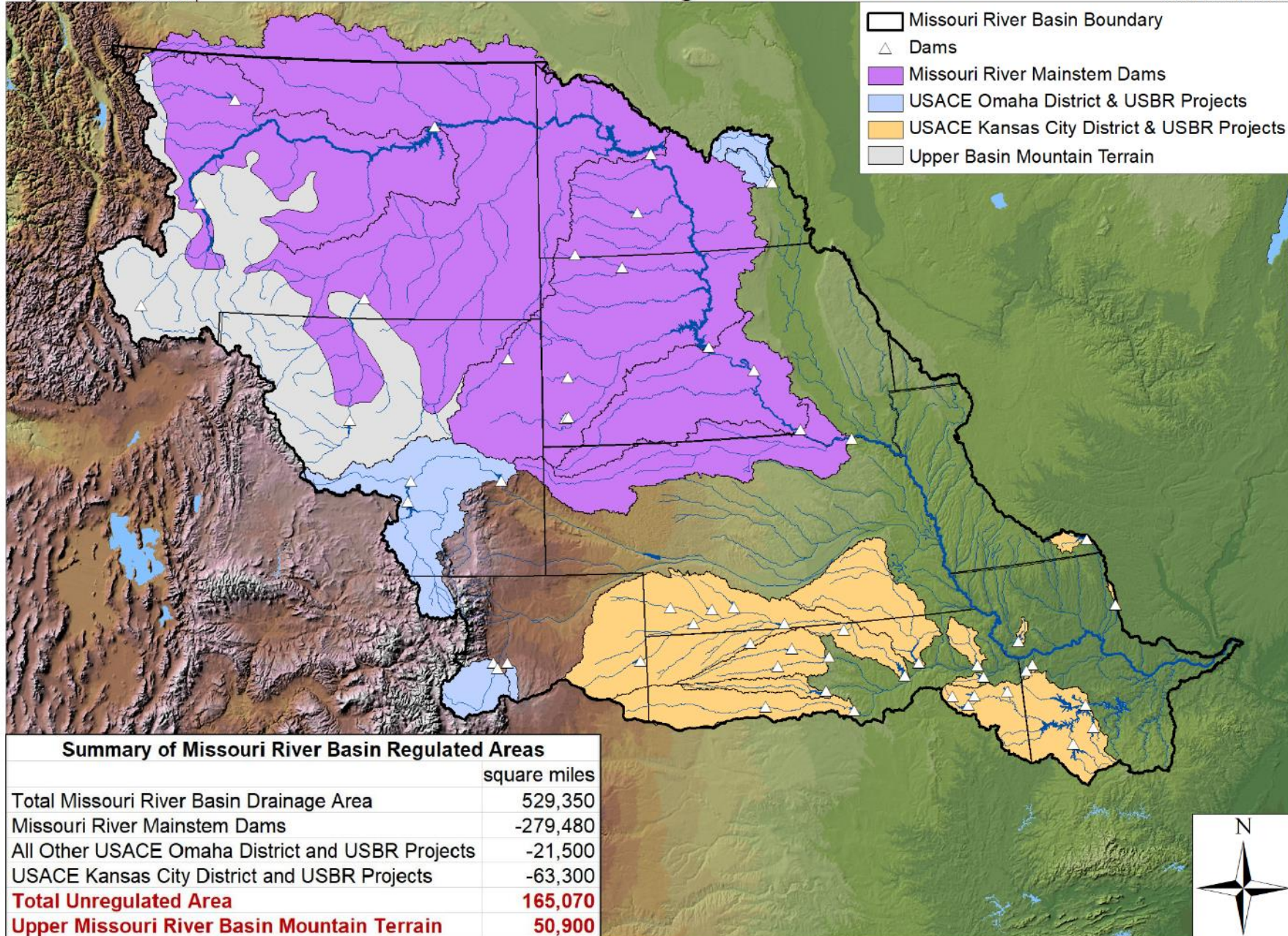
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Missouri River Basin Regulated Watersheds

Background: North America Relief Map

USACE NWO March 2016



RESERVOIR FLOOD STORAGE – KANSAS BASIN

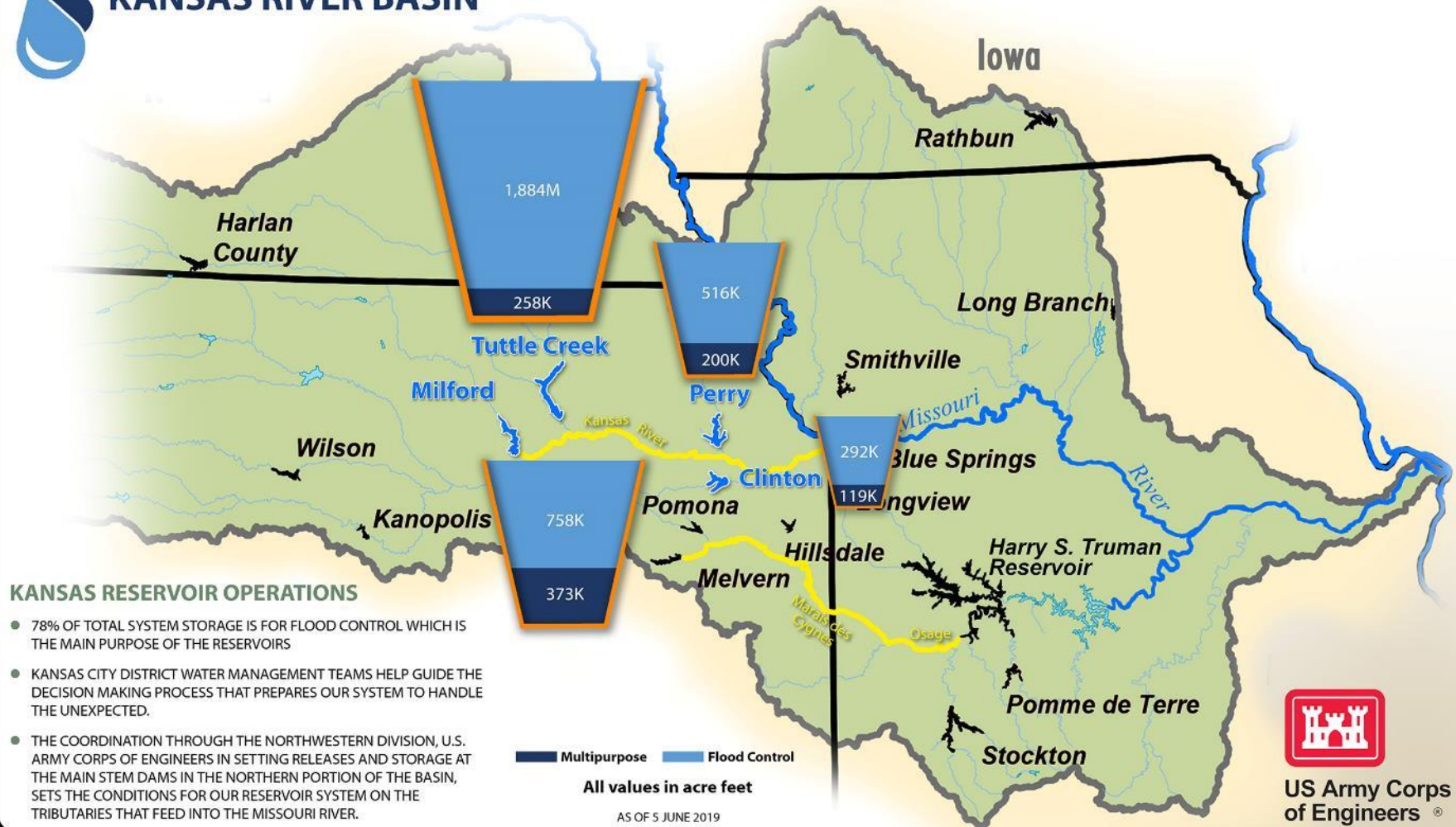
12

KANSAS CITY DISTRICT FLOOD FIGHT 2019

LEARN MORE AT:
WWW.NWK.USACE.ARMY.MIL



KANSAS RIVER BASIN



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RESERVOIR FLOOD STORAGE – OSAGE BASIN

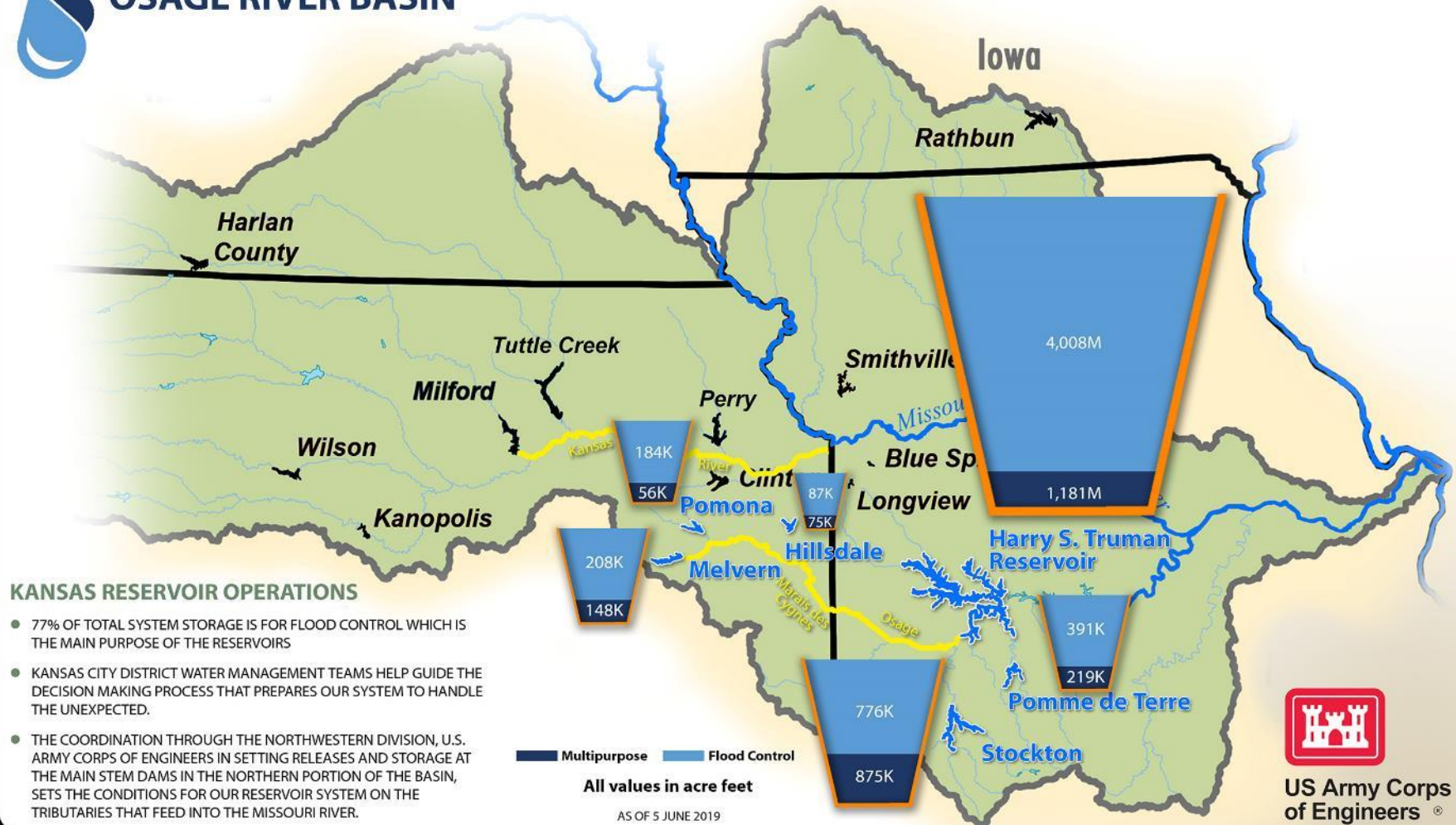
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KANSAS CITY DISTRICT FLOOD FIGHT 2019

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OSAGE RIVER BASIN

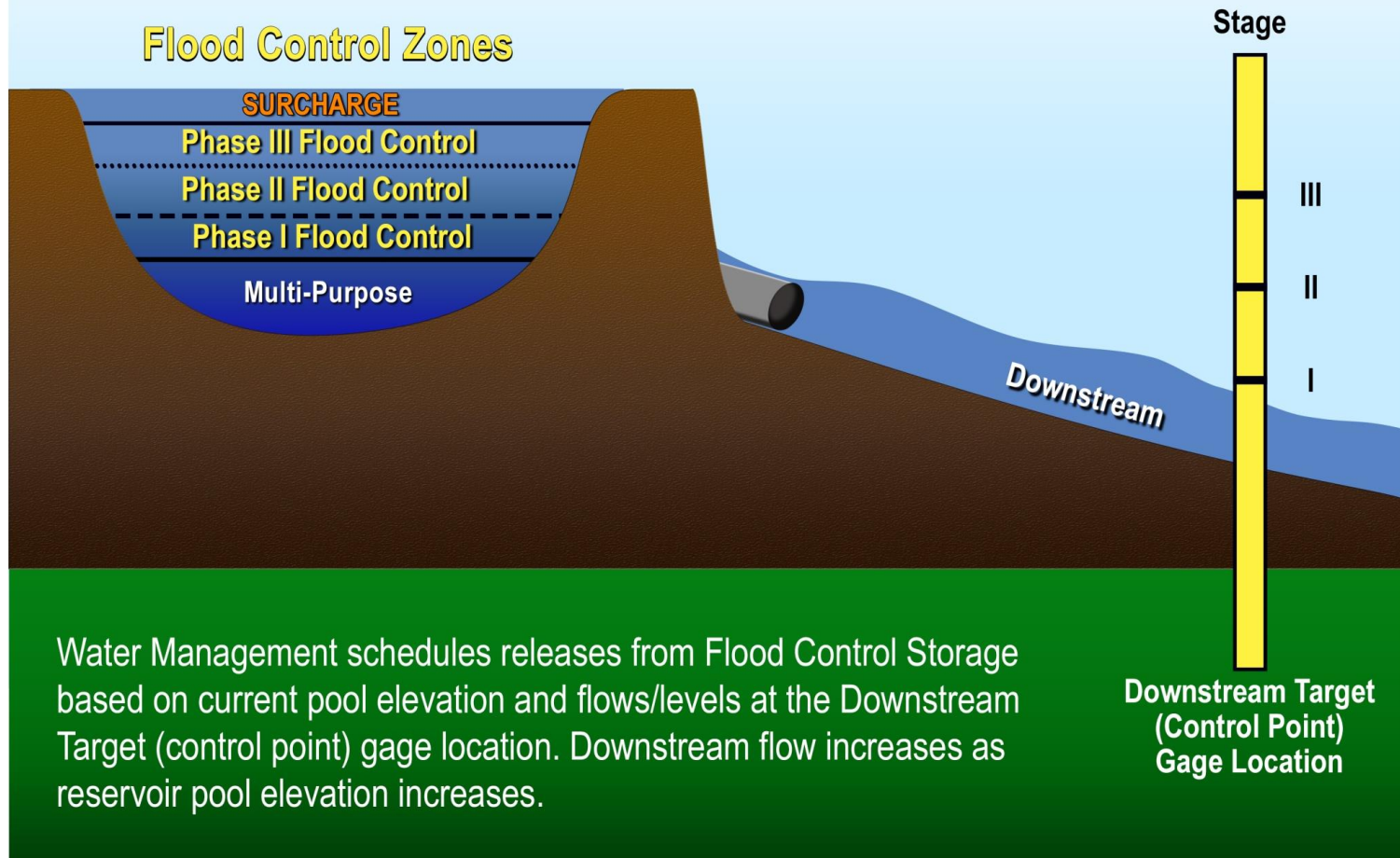


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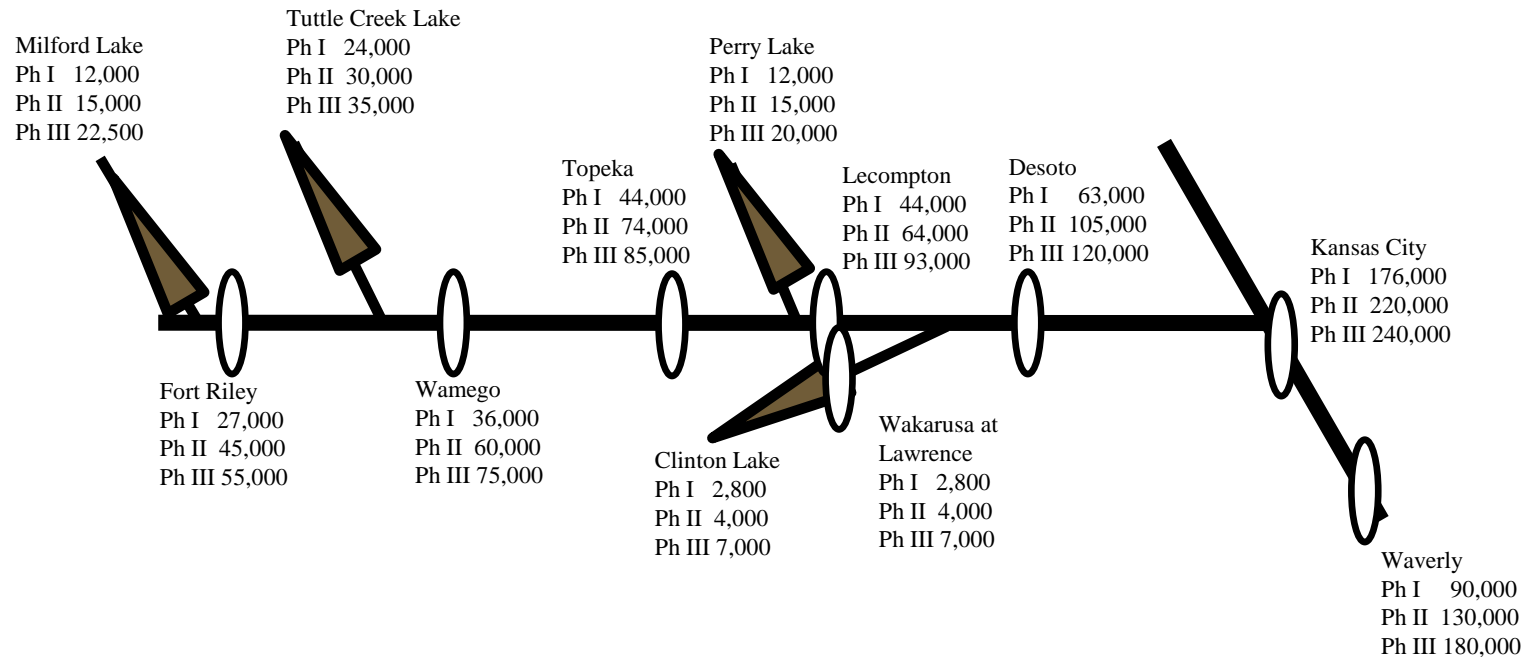
NWK RESERVOIR OPERATIONS

- Multiple authorized purposes
 - Flood Control, Fish and Wildlife, Navigation, Recreation, Water Supply, Water Quality
 - Life Safety is top priority
- Follow rules and limitations within each project's Water Control Manual
 - Releases only takes place when downstream conditions allow.
 - Releases are specifically sized, coordinated, and carefully timed.
 - Releases never exceed the maximum authorized limit associated with each "Phase".
- Storage in Lake; Phase I, Phase II, or Phase III (can vary seasonally)
- Release rate (cfs) limited by "space available" downstream
- Rules provide for balanced risk and management of flood waters.

Relationship between Control Points and Flood Control Zones



KANSAS RIVER CONTROL POINT GAGES



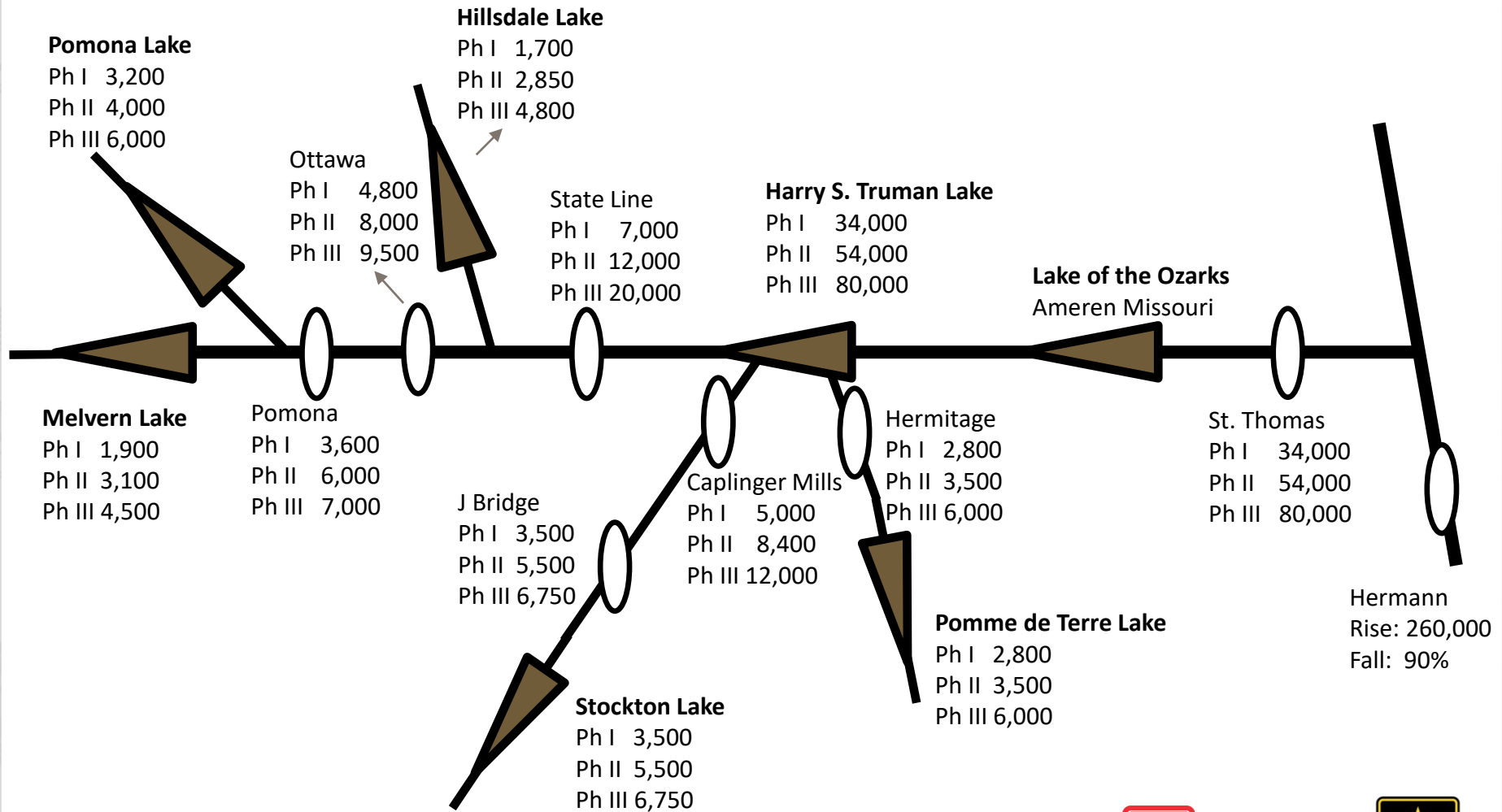
All flows are in cfs; schematic is not to scale.



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OSAGE RIVER BASIN CONTROL POINT GAGES



All flows are in cfs; schematic is not to scale.

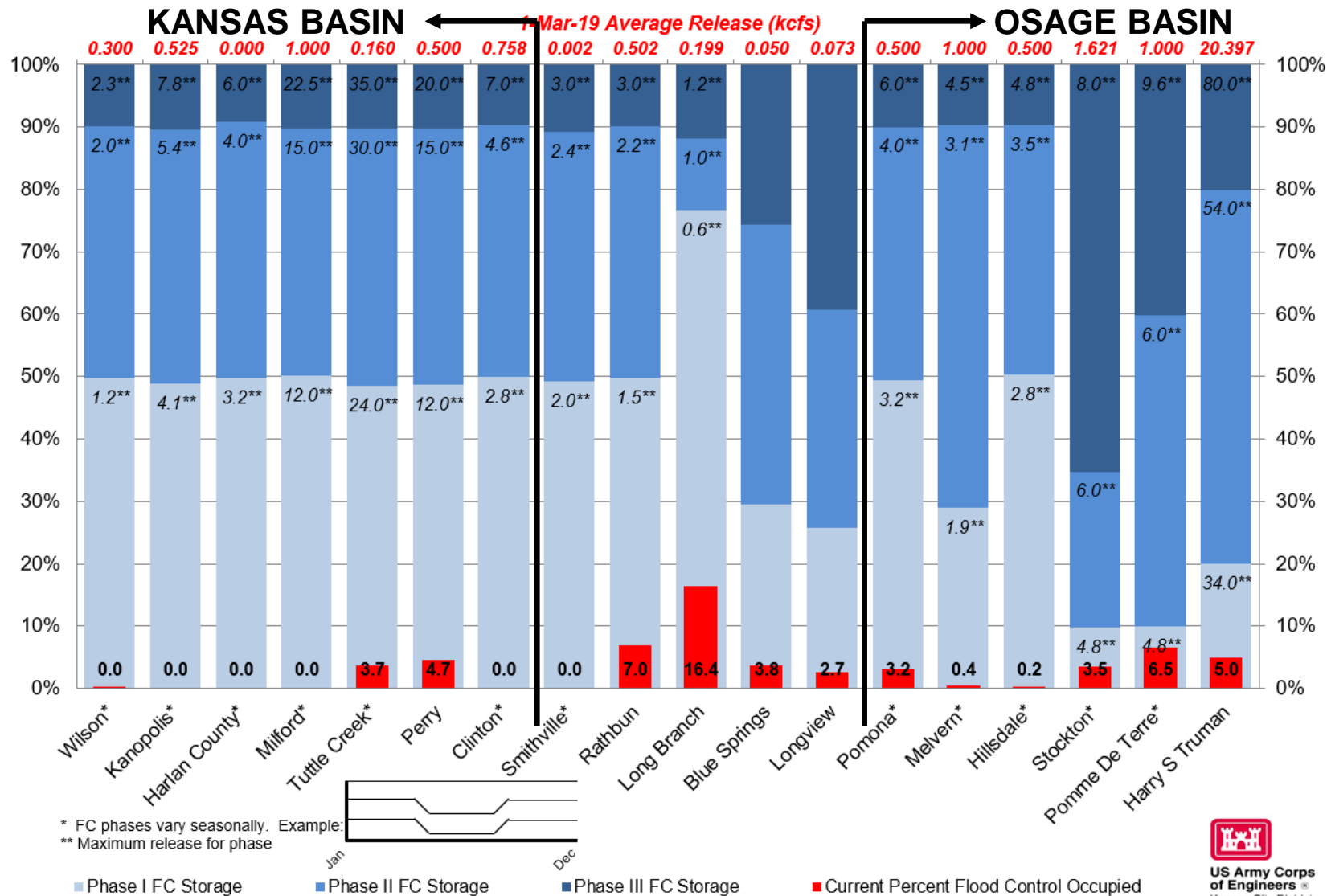


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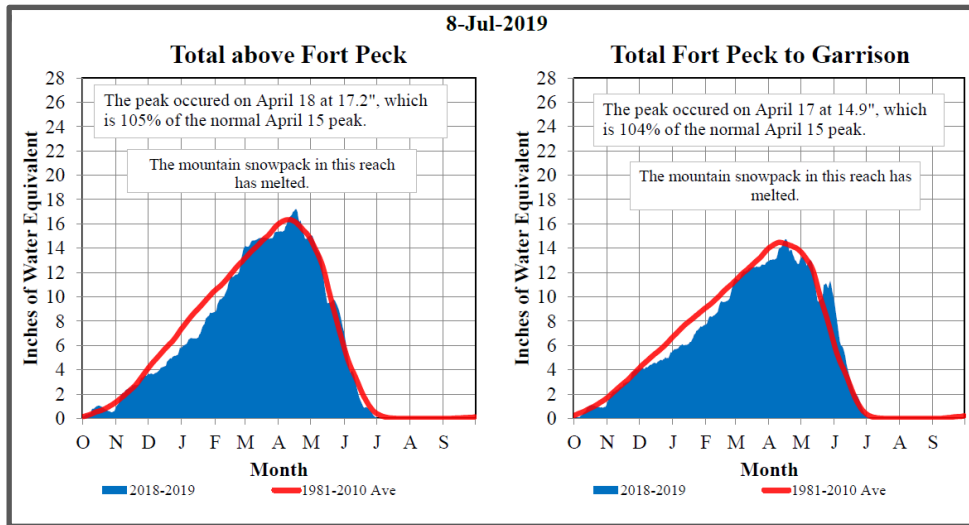
MARCH FLOOD EVENT – KS RESERVOIRS

Percent of Flood Control Pool Occupied: 1 Mar 2019



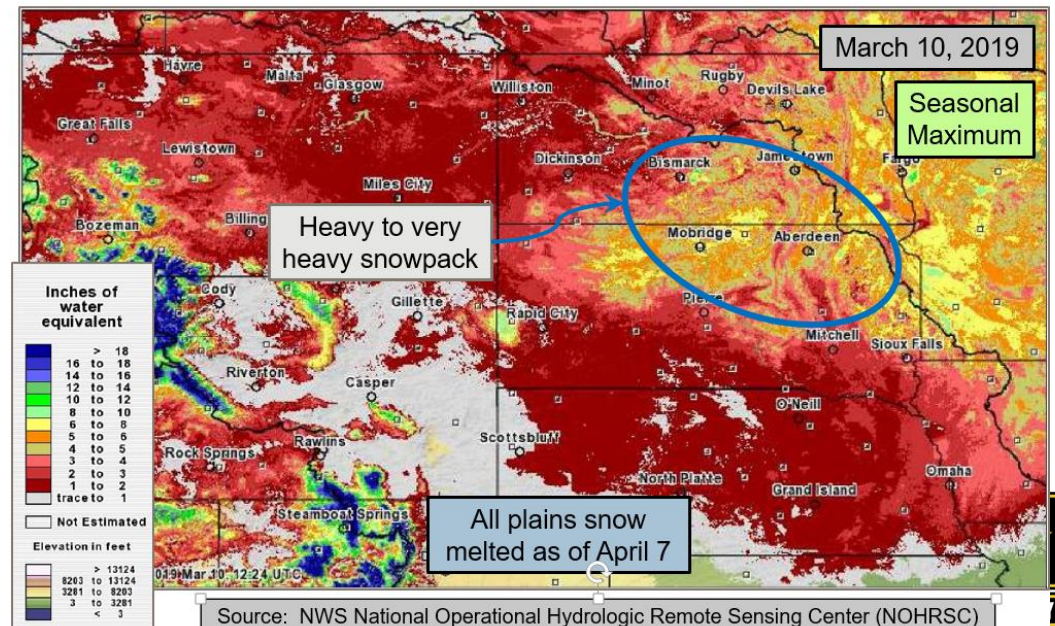
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MARCH FLOOD EVENT - SNOWPACK



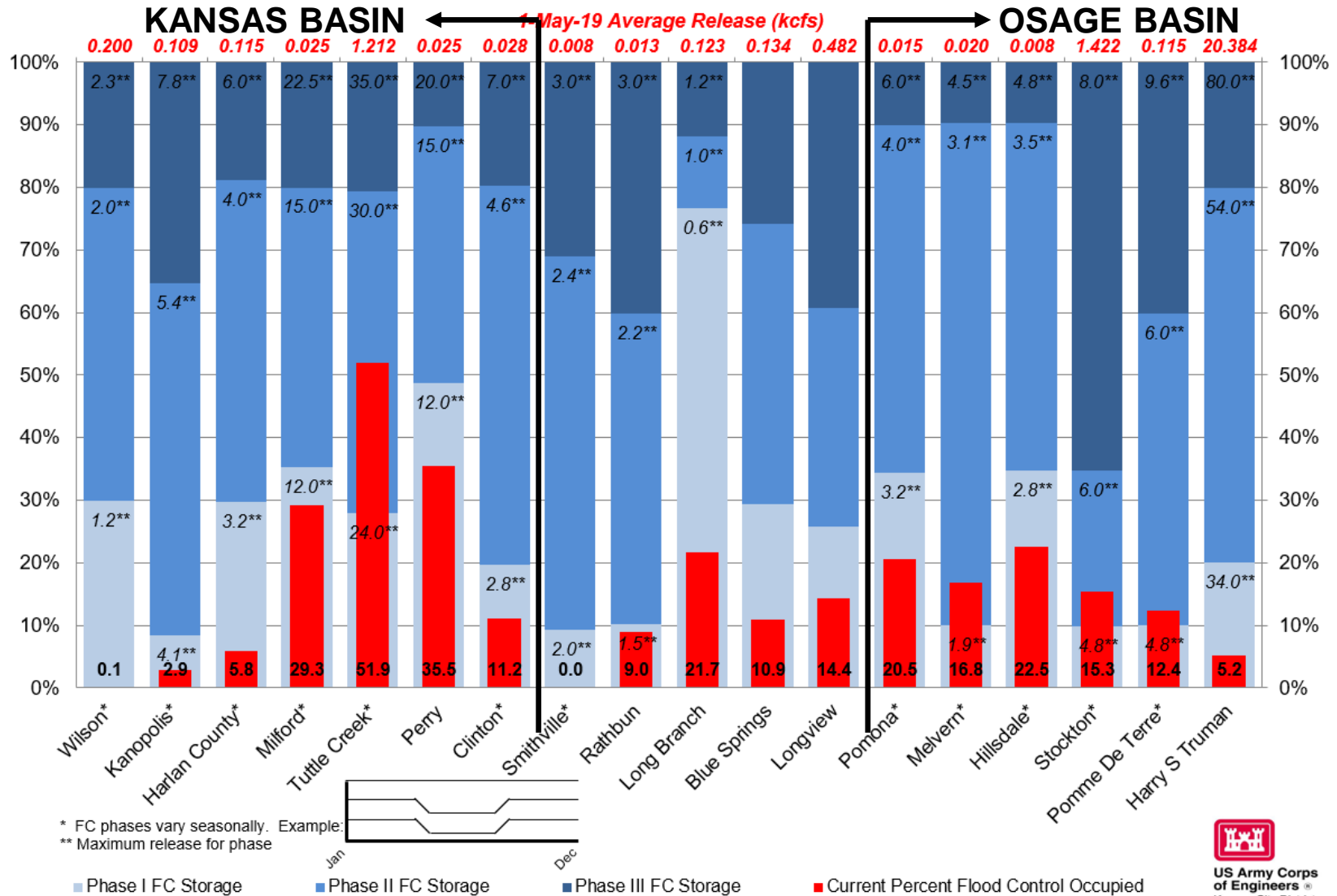
- Mountain snowpack was about average in 2019
- One difference between 2019 and 2011 ... mountain snowpack was MUCH ABOVE average in 2011.

- Plains snowpack was present in the entire upper basin, Nebraska and Iowa
- Heavy to very heavy plains snowpack in portions of the central and eastern Dakotas
- Deeply frozen soils resulted in little to no infiltration during March snowmelt/rainfall events

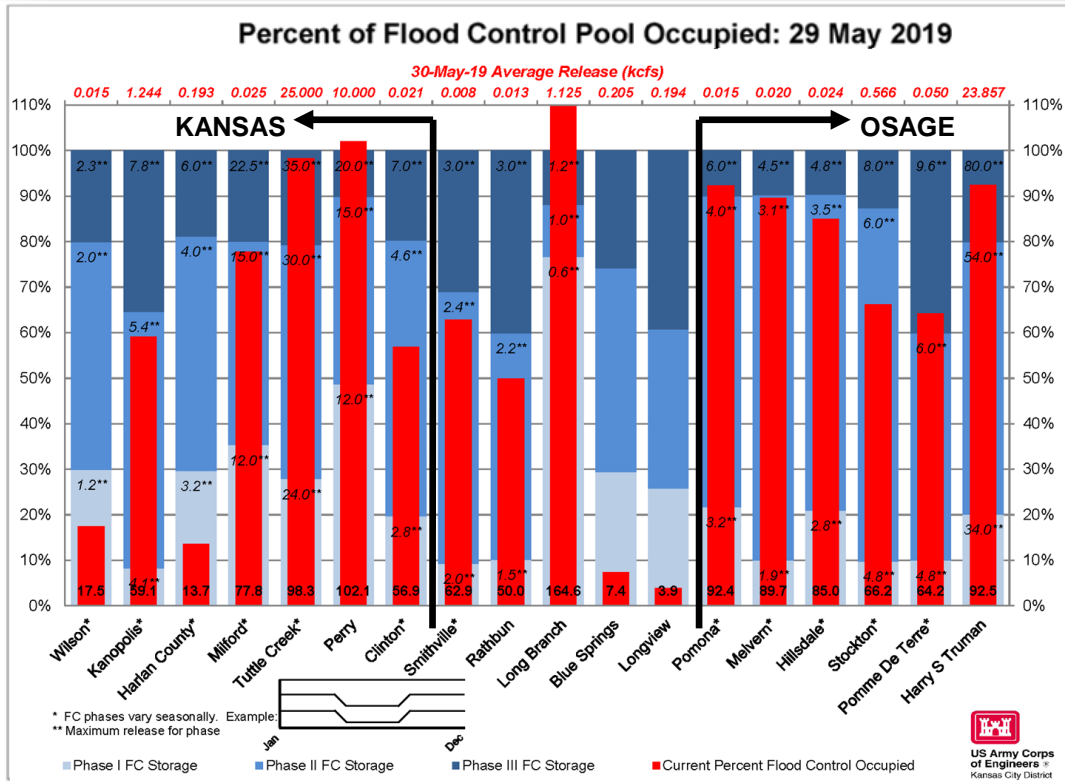


MAY FLOOD EVENT – KS RESERVOIRS

Percent of Flood Control Pool Occupied: 1 May 2019

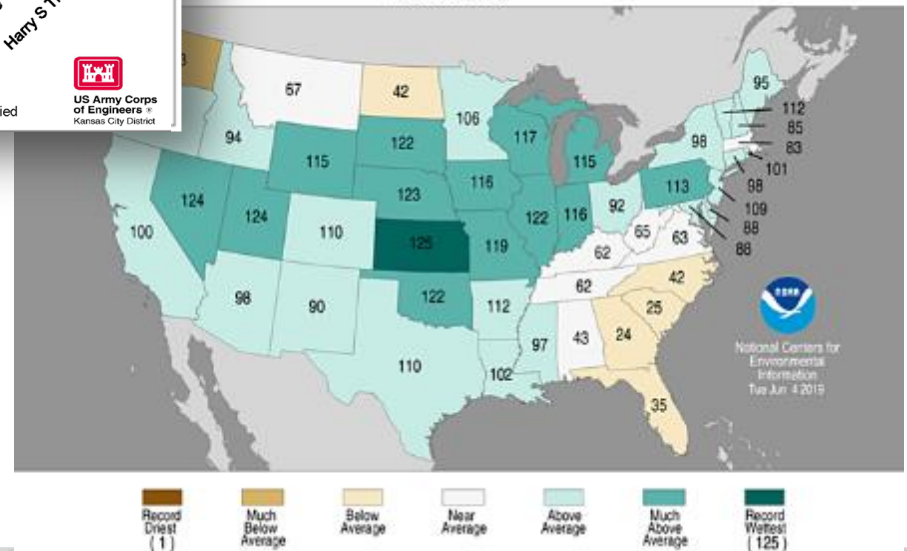


MAY - JUNE FLOODING



- May rainfall in KS averaged 10.4"; largest monthly rainfall, (exceeded July 1993).

Statewide Precipitation Ranks
 March-May 2019
 Period: 1895-2019



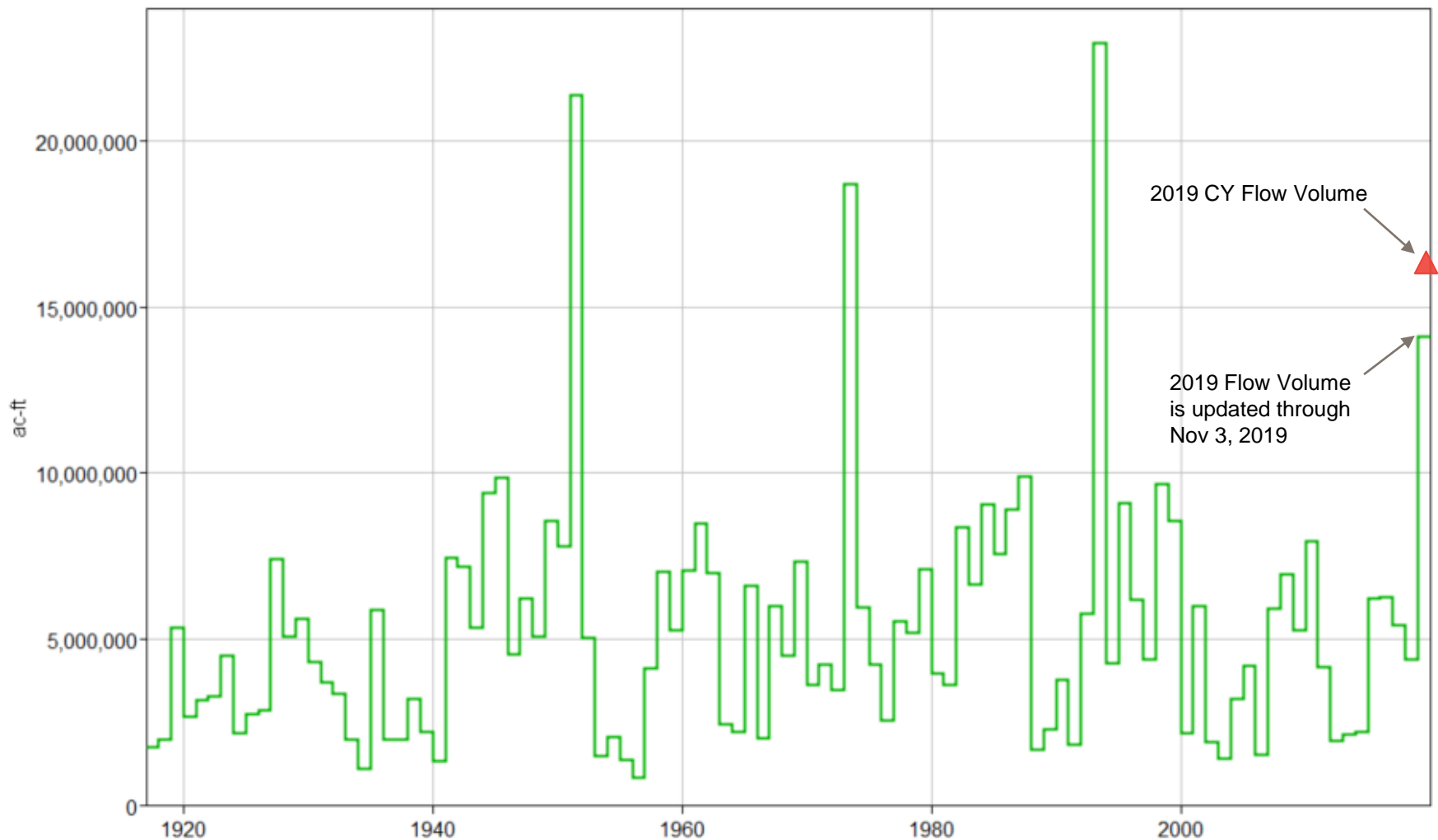
MAY - JUNE FLOOD EVENT



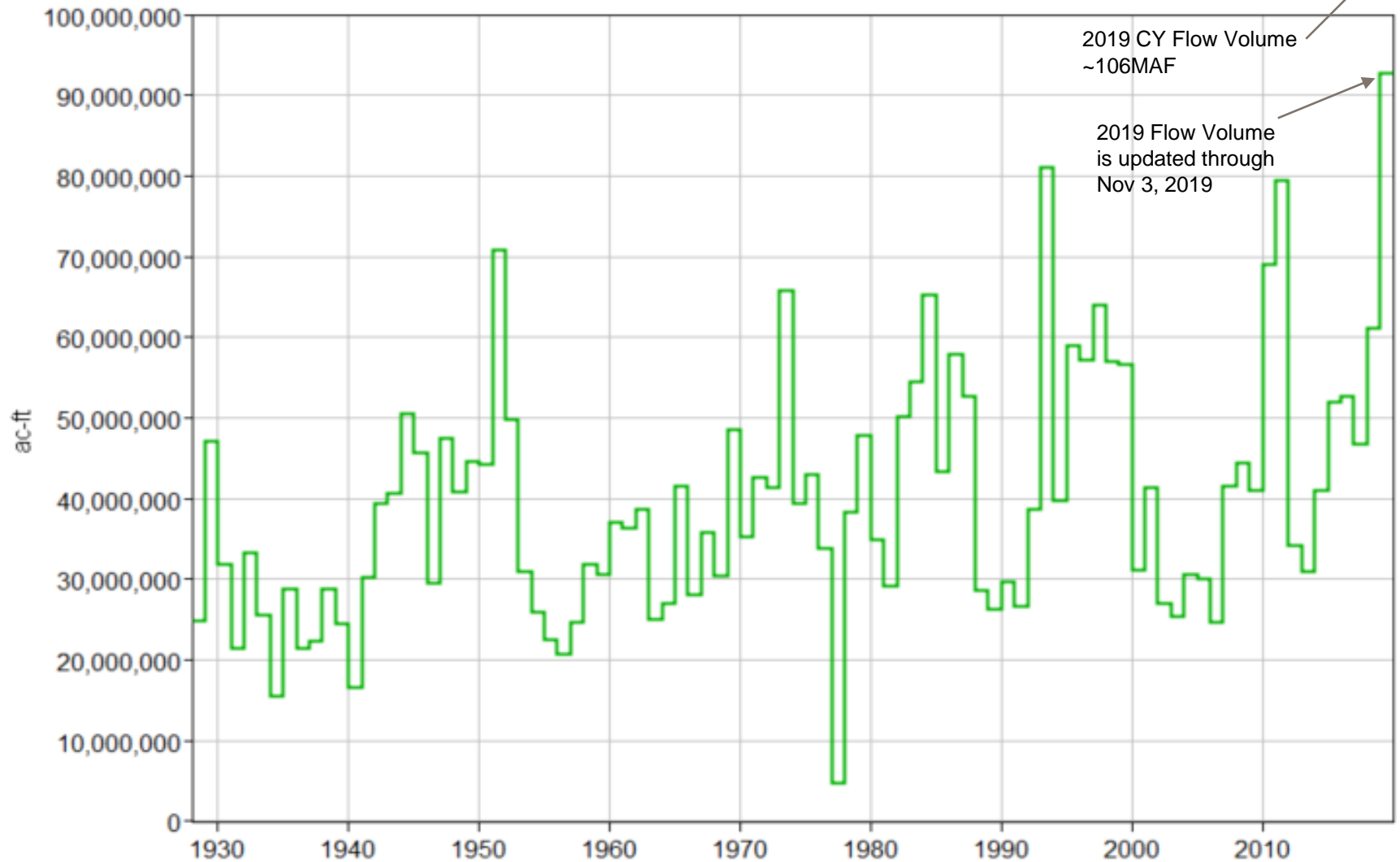
TUTTLE CREEK LAKE

Imagery: NASA Worldview

KANSAS RIVER AT DESOTO FLOW VOLUME



MISSOURI RIVER AT WAVERLY FLOW VOLUME



2019 IMPACTS TO RESERVOIRS

Kansas City District

- ❑ On peak day, 9 MAF of 11 MAF of flood control storage was occupied
- ❑ Surcharge operations at Harry S Truman, Tuttle Creek, Perry and Long Branch
- ❑ Record pools at 9 reservoirs
- ❑ All dams operated safely – monitored 24/7



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KANSAS DAMAGES PREVENTED BY PROJECT

Project	Cumulative
Clinton	\$1,736,911,200
Hillsdale	\$46,577,700
Kanopolis	\$2,430,383,800
Melvern	\$258,478,500
Milford	\$2,268,677,500
Perry	\$7,066,479,400
Pomona	\$248,655,100
Tuttle Creek	\$8,507,560,700
Wilson	\$1,848,393,200
Total	\$24,412,117,100

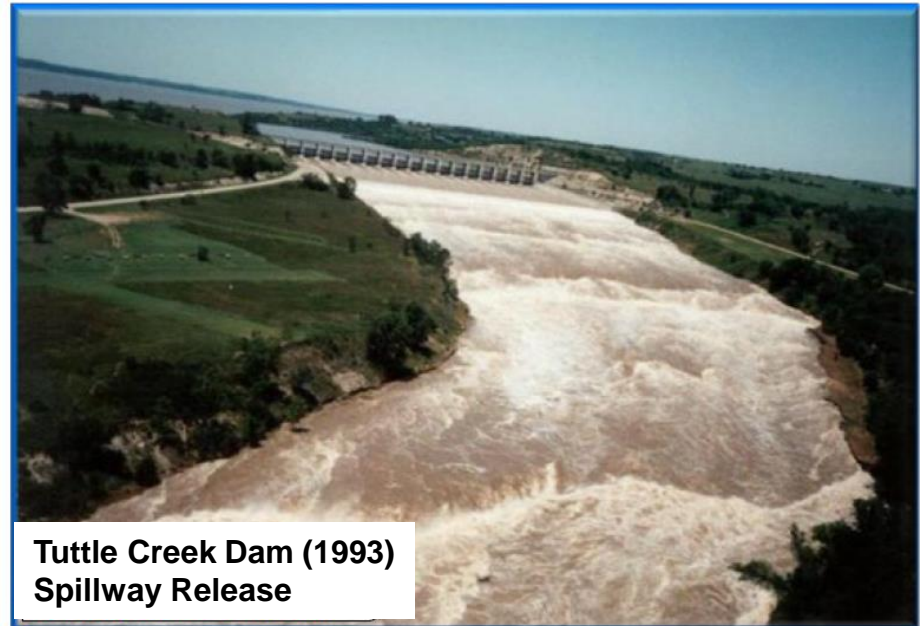
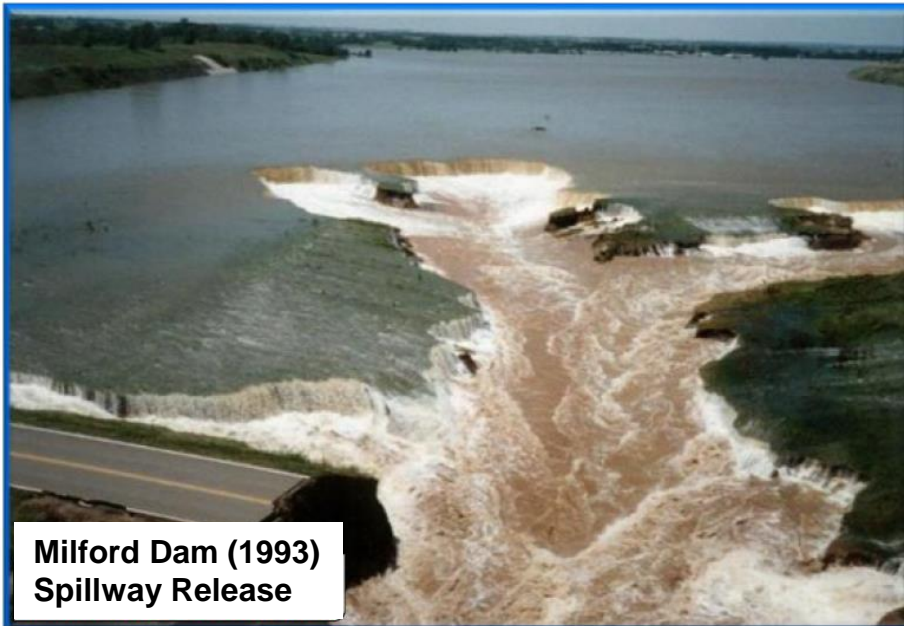


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2019 FLOOD WAS DIFFERENT FROM 1993





- Every flood event is unique
- 1993 - More flow originating in Kansas Basin
- 1993 - Major spillway releases



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USACE DISASTER RESPONSE AUTHORITY: *PL84-99 PROGRAM*

-  PL 84-99: USACE's principal authority for disaster preparedness and response
 - All hazards planning (disaster preparedness)
 - Emergency Operations
 - Flood Fighting
 - Technical and Direct Assistance
 - Loan of pumps and sandbagging machines
 - Provision for providing sandbags
 - Post flood response
-  Advance Measures (prior to an imminent flood event)
-  Rehabilitation of Flood Control Works
-  Supply of Emergency Drinking Water (drought and contaminated water source)

***USACE Assistance is “Supplemental” to
State and Local Efforts***



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PUBLIC LAW 84-99



1,049 Miles of Levee
59 Federal Levee Systems
84 Non-Federal Levee Systems
5 Federal By Other Agency
8 Channel Projects



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FLOOD FIGHT SUPPLIES



4,054,042 Sandbags



205 Super Sacks



25 Pumps with 7,500 feet of hose



6 Sandbag Machines
- 3 manual
- 3 automatic



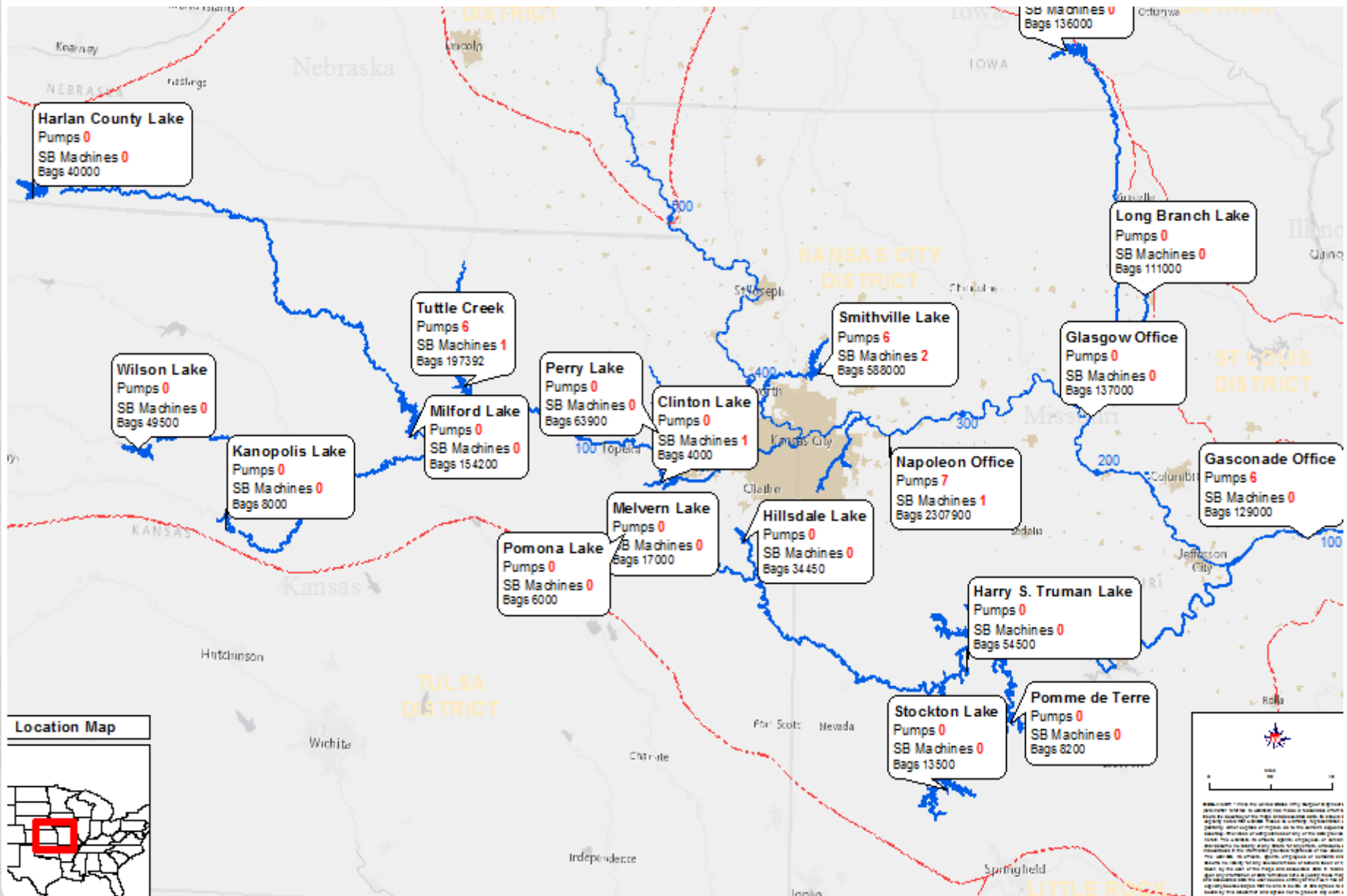
2500 Linear feet of HESCO bastion



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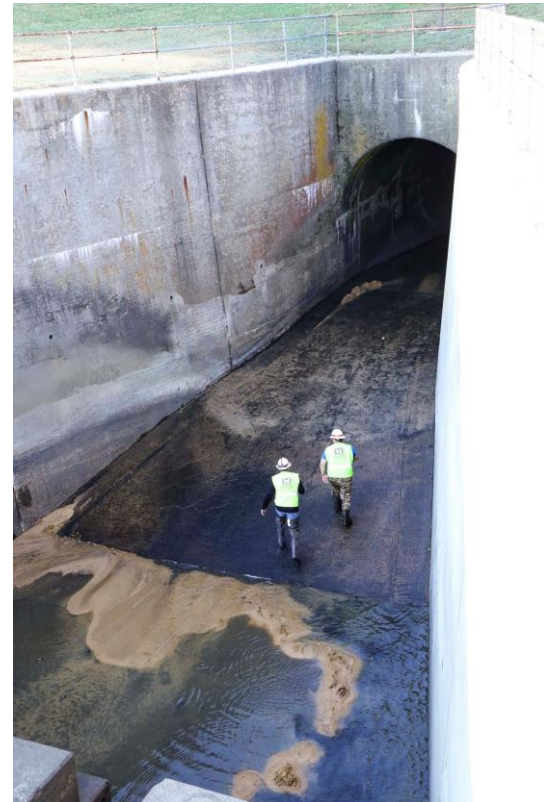


FLOOD FIGHT SUPPLIES/LOCATIONS



FLOOD RISK MANAGEMENT ROUTINE O&M ACTIVITIES

- Daily/weekly visual inspections
- Quarterly flood control gate exercises
- Semi-annual dam instrumentation readings
- Annual Dam Safety Inspections
- Engineering Periodic Inspections
- Relief Well Rejuvenation
- Service Bridge Inspections
- Water Management/Control
- Mowing Dam Embankment
- Boundary Surveys/Inspections



*Kanopolis Lake Inspection
October 2020*

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PREPARATION FOR 2021

- All reservoirs are prepared for spring runoff
- Ongoing construction:
 - Tuttle Creek Stilling Basin
 - Kanopolis Service Gate Replacements
 - Wilson Dam Relief Well Replacements
 - Clinton Emergency and Service Gates Painting
 - Pomona Control Tower Service Bridge Painting
 - Hillsdale Stilling Basin Grouted Rip Rap Repair

This list is not complete, but a sample of larger ongoing or recently completed projects in Kansas.



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DISCUSSION

