

# **THE 2019 FLOOD**

**A Presentation Given to the Special Committee on Natural Resources**

**November 12, 2019**

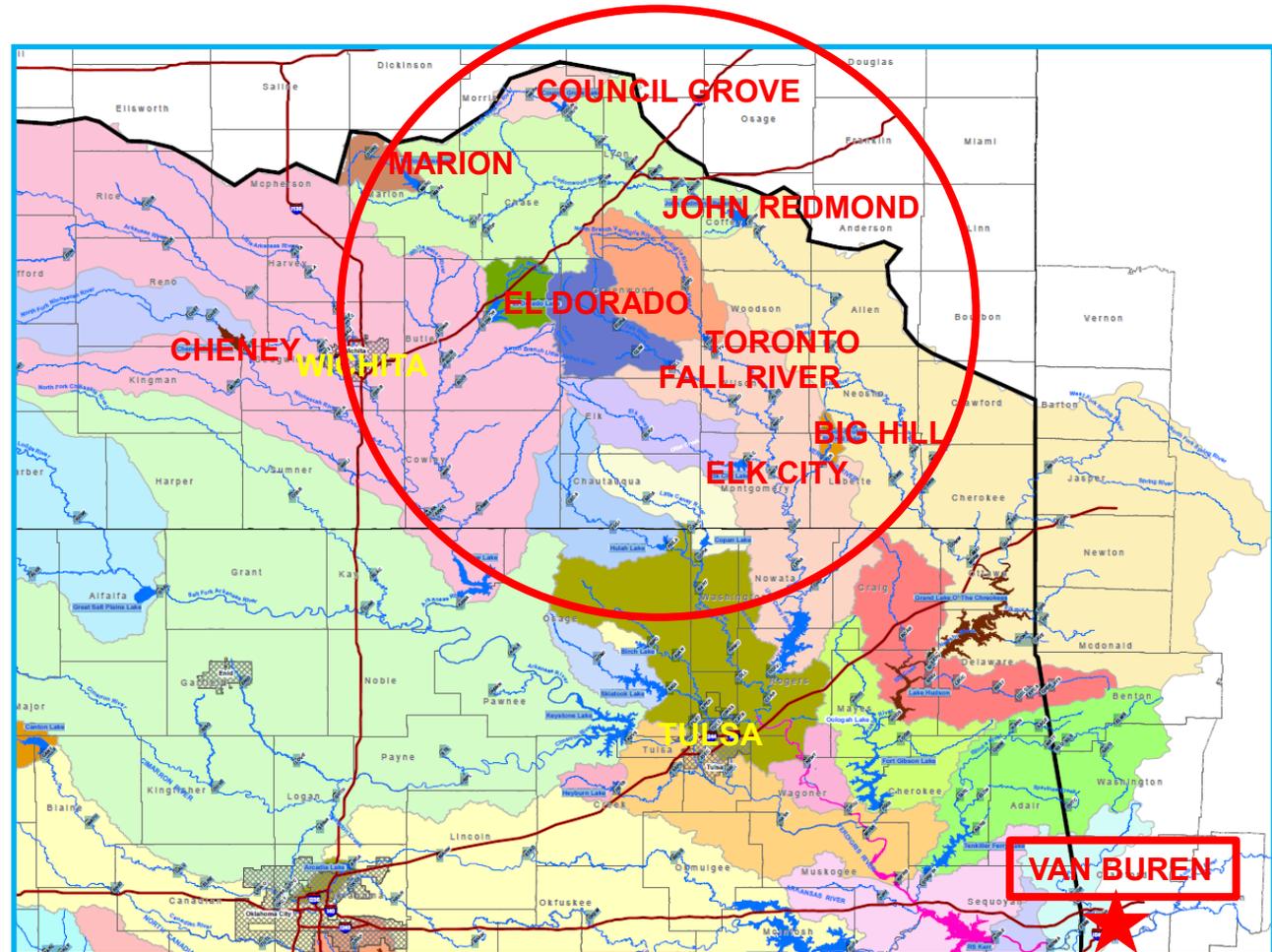
# A SYSTEM APPROACH...

THIRTY (30) TULSA DISTRICT FLOOD-CONTROL RESERVOIRS IN THE ARKANSAS RIVER WATERSHED IN OKLAHOMA AND KANSAS.

EIGHT (8) TULSA DISTRICT FLOOD-CONTROL RESERVOIRS IN KANSAS.

ONE (1) USBR FLOOD-CONTROL PROJECT.

THE RESERVOIRS ARE OPERATED AS A SYSTEM.

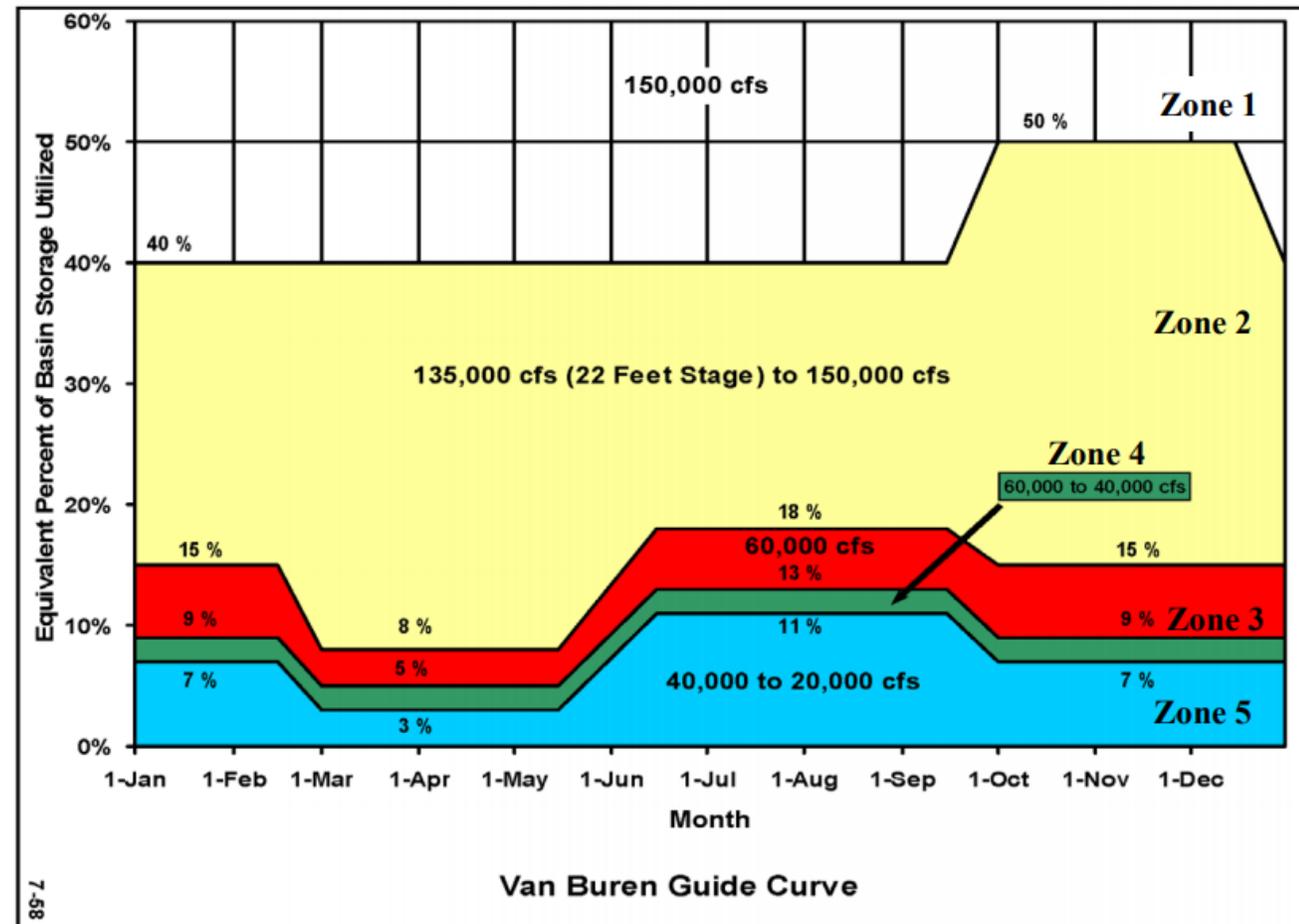


# DOWNSTREAM REGULATION

DOWNSTREAM REGULATION IS BASED ON THE PERCENTAGE OF STORAGE UTILIZED IN THE BASIN.

THE REGULATING STAGE AT VAN BUREN EQUATES TO 150,000 CFS.

WHEN RESERVOIRS EXCEED FLOOD-CONTROL CAPACITY, RELEASES ARE NOT BASED ON THE SYSTEM.



# PRE-RELEASE POLICY

USACE POLICY BASED ON  
OBSERVED RAINFALL.

FORECASTS CAN BE USED  
AS A FACTOR IN PLANNING  
FUTURE OPERATIONS.

HOWEVER, RELEASES ARE  
BASED ON OBSERVED  
CONDITIONS.

CECW-CE Engineer Regulation 1110-2-240	Department of the Army U.S. Army Corps of Engineers Washington, DC 20314-1000	ER 1110-2-240  30 May 2016
	Engineering and Design WATER CONTROL MANAGEMENT	
	<b>Distribution Restriction Statement</b> Approved for public release; distribution is unlimited.	

### 3-3. Evacuation of Impounded Water.

a. Consistent with the authorized purposes of a project and affected interests in the project area, any water impounded in the flood control space defined by the plan of regulation shall be evacuated as rapidly as can be accomplished without causing downstream flows to exceed the controlling rates and not releasing more than peak inflow or in accordance with reservoir regulation schedules. That is, releases from reservoirs shall be restricted insofar as practicable to quantities that, in conjunction with uncontrolled runoff downstream of the dam, will not cause water levels to exceed the controlling maximum non-damaging stages currently in effect. This implies making decisions based on the principle of water on the ground which is observed precipitation or observed snowpack. Forecasted conditions may be used for planning future operations, but releases should follow the water control operations plan based on observed conditions within the watershed to the extent practicable.

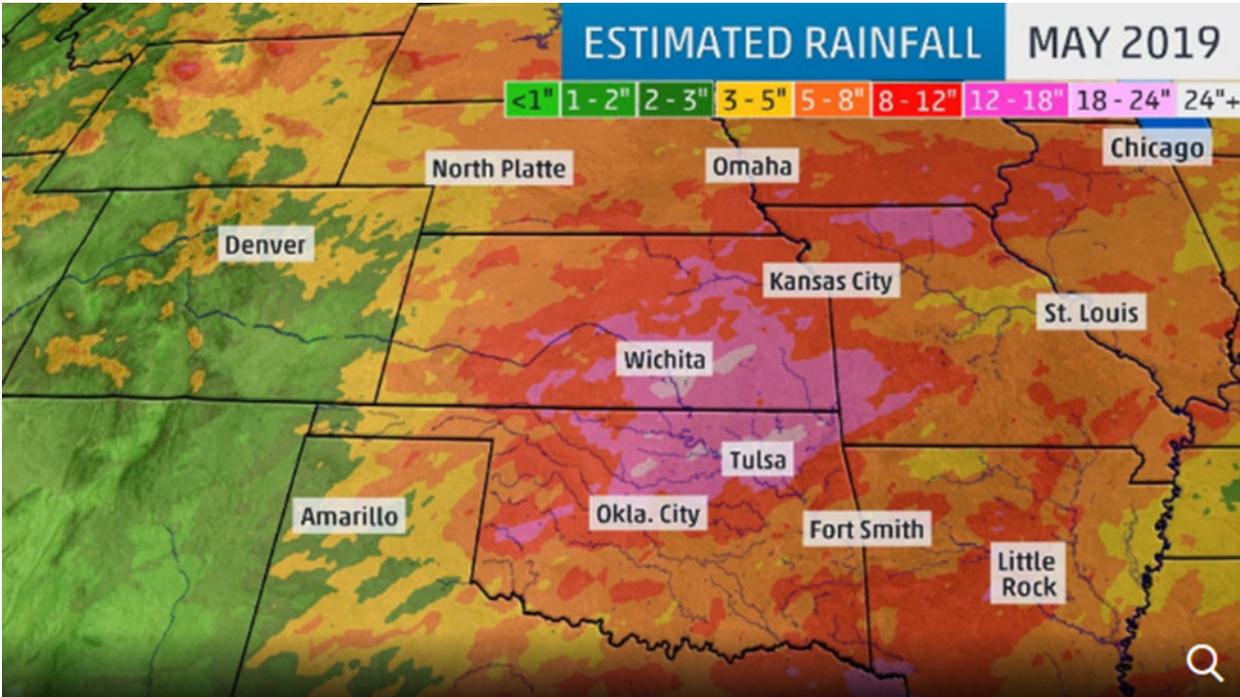
**SEE ER 1110-2-240.**

# WHY WAS THE 2019 FLOOD HISTORIC?

THE AVERAGE MONTHLY STATEWIDE RAINFALL OF 10.26 INCHES IN KANSAS WAS THE HIGHEST IN THE 125-YEAR RECORD.

THE HIGHEST TOTALS WERE IN SOUTHEASTERN KANSAS.

THIRTEEN RESERVOIRS IN THE TULSA DISTRICT REACHED NEW POOLS OF RECORD, INCLUDING CHENEY, ELDORADO, FALL RIVER, AND TORONTO.

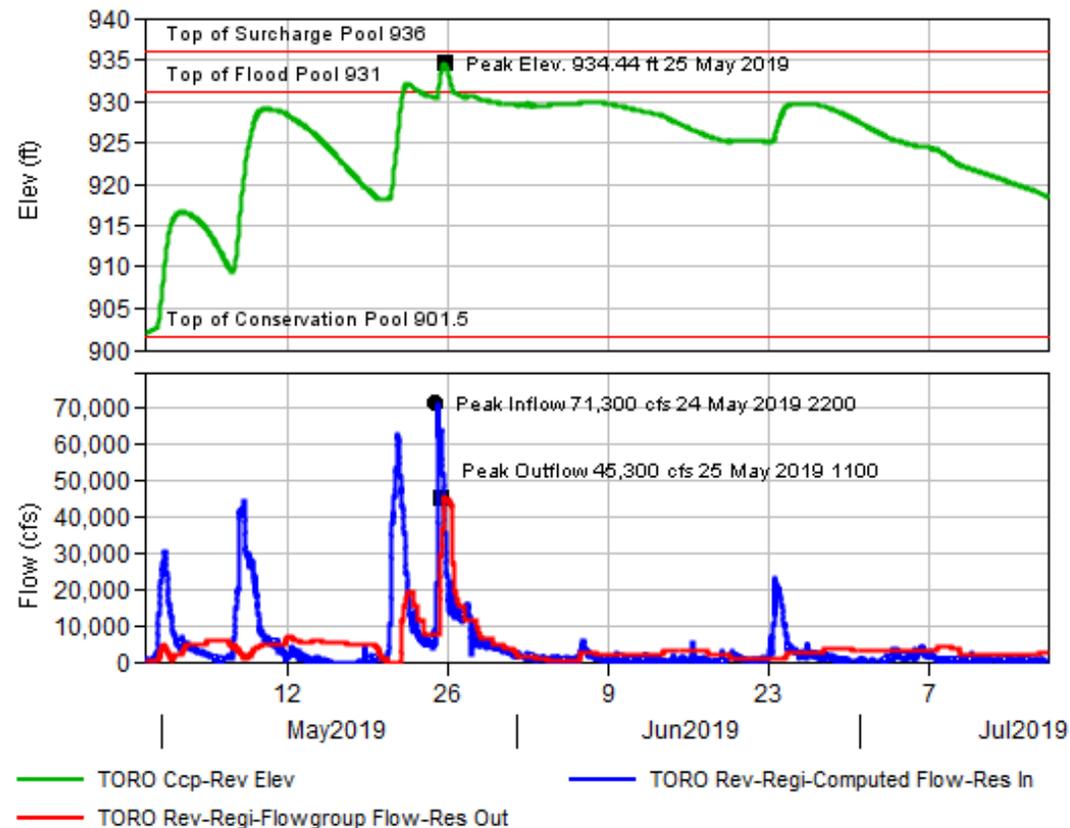


# VERDIGRIS RIVER BASIN

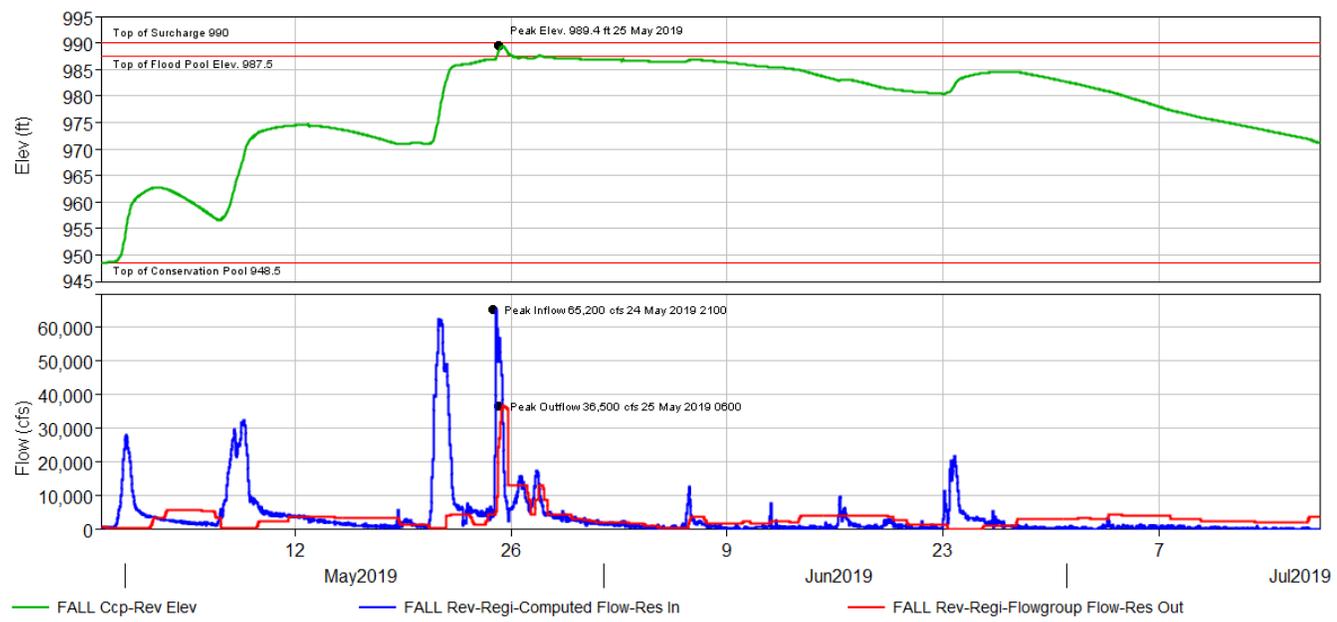
## NEW RECORD POOLS

FALL RIVER: EL. 989.40  
TORONTO: EL. 934.44

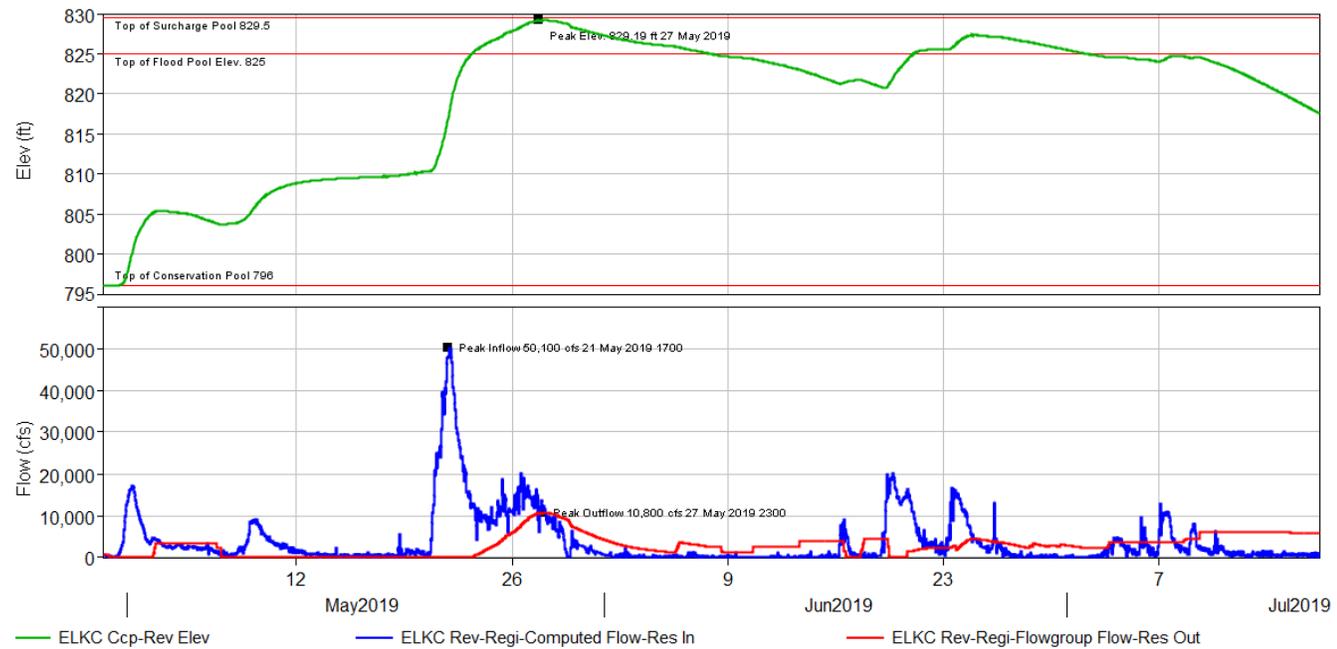
### TORONTO LAKE



### FALL RIVER LAKE

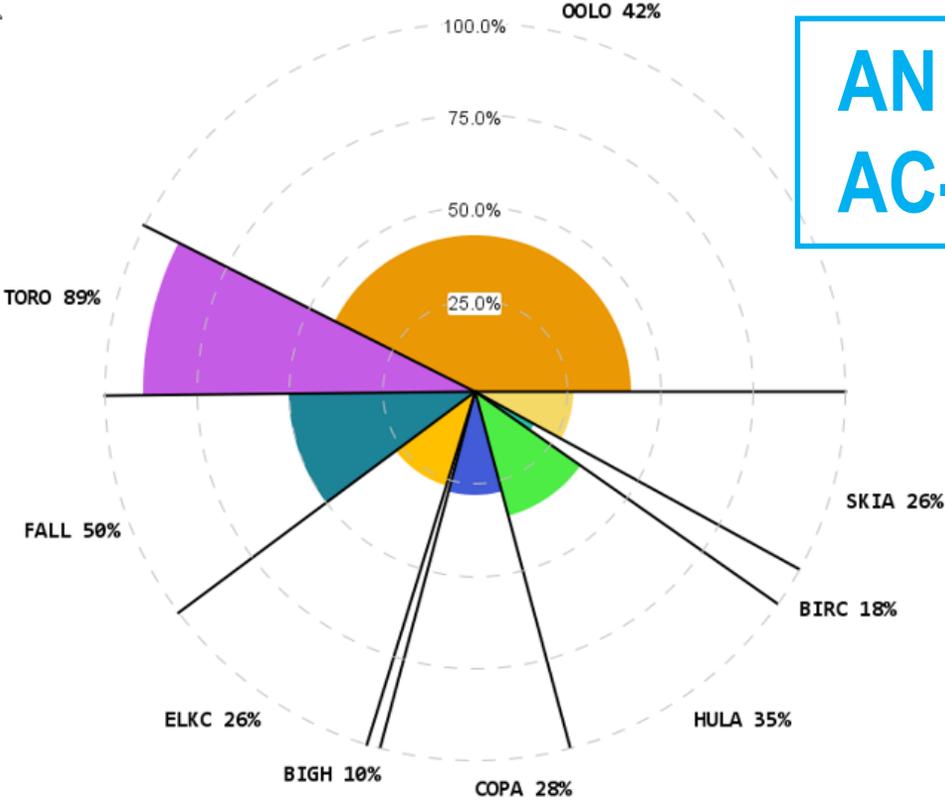


### ELK CITY LAKE



# VERDIGRIS RIVER BASIN

THE FULL PIE IS 905,447.0 ac-ft OR 41%

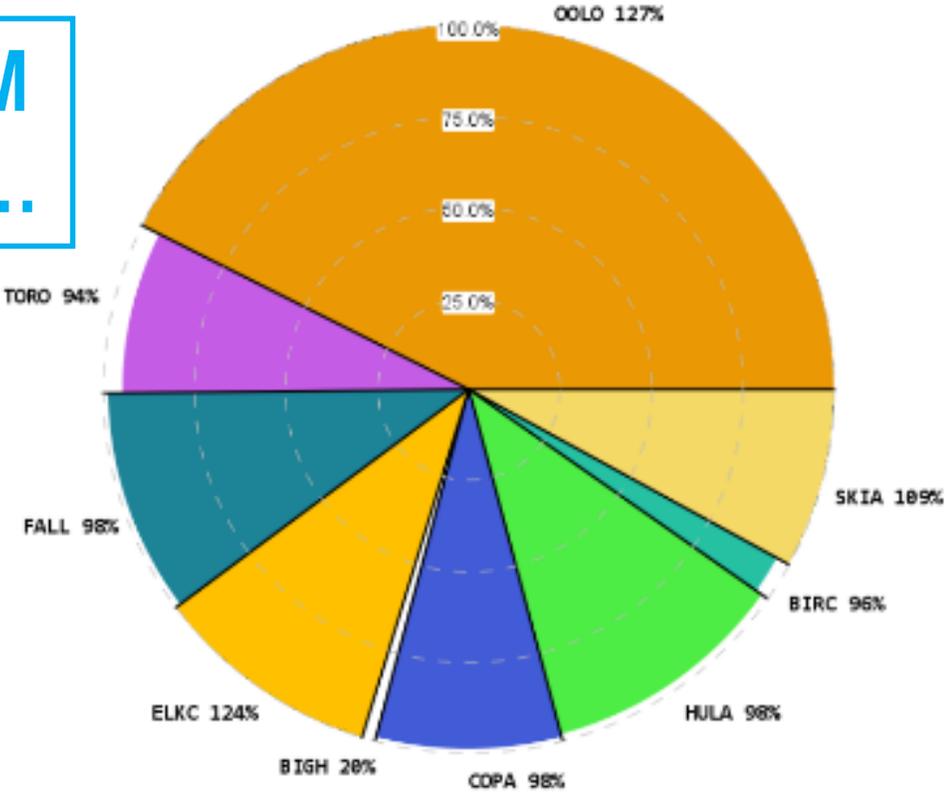


MAY 9

AN ADDITIONAL 1.3M AC-FT IN STORAGE...



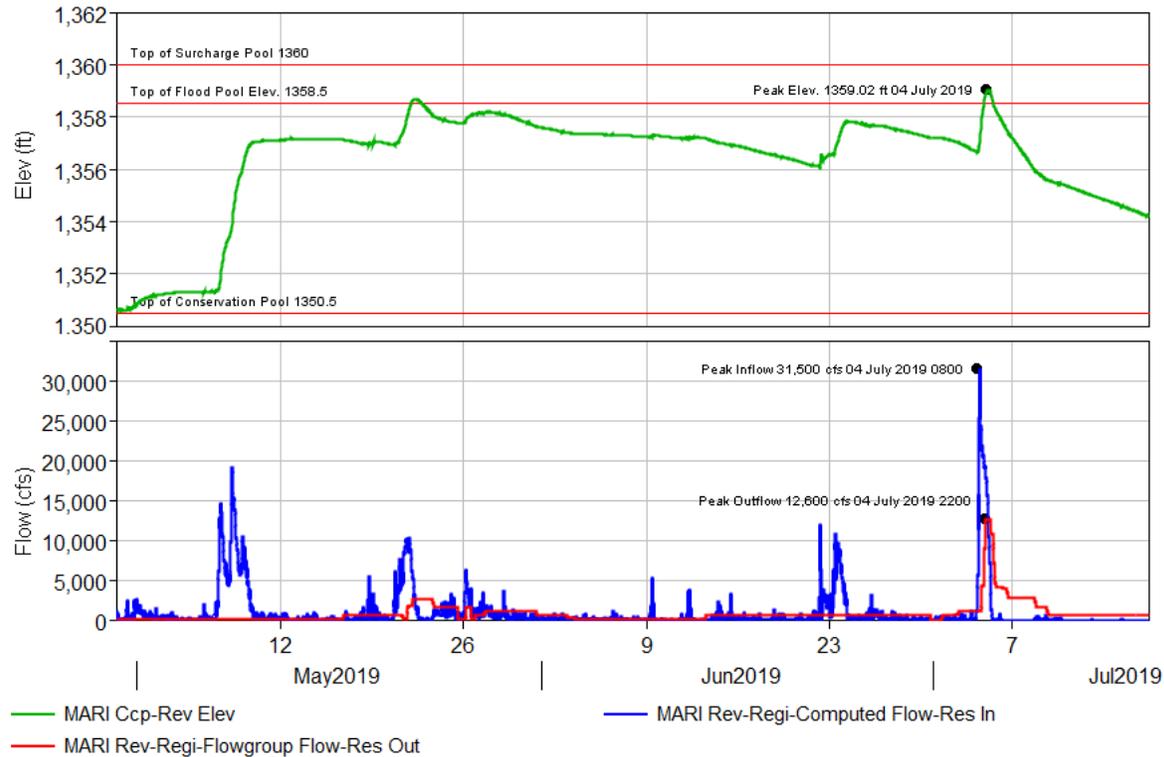
THE FULL PIE IS 2,191,436.1 ac-ft OR 98%



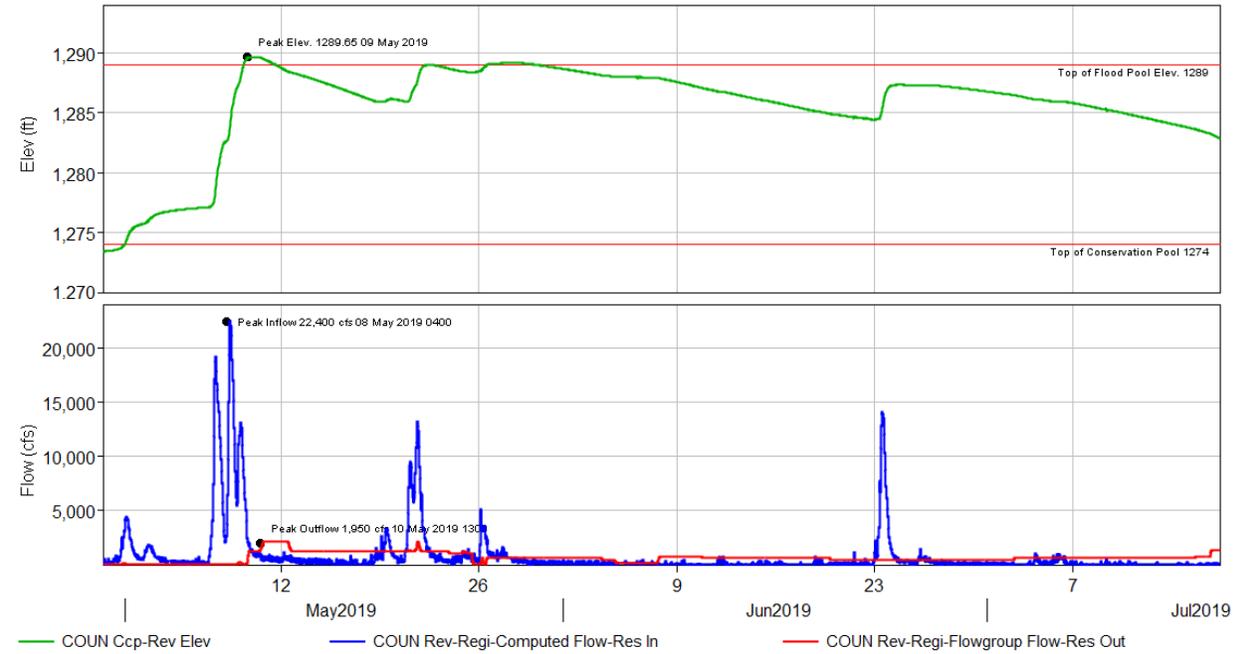
MAY 29

# NEOSHO RIVER BASIN

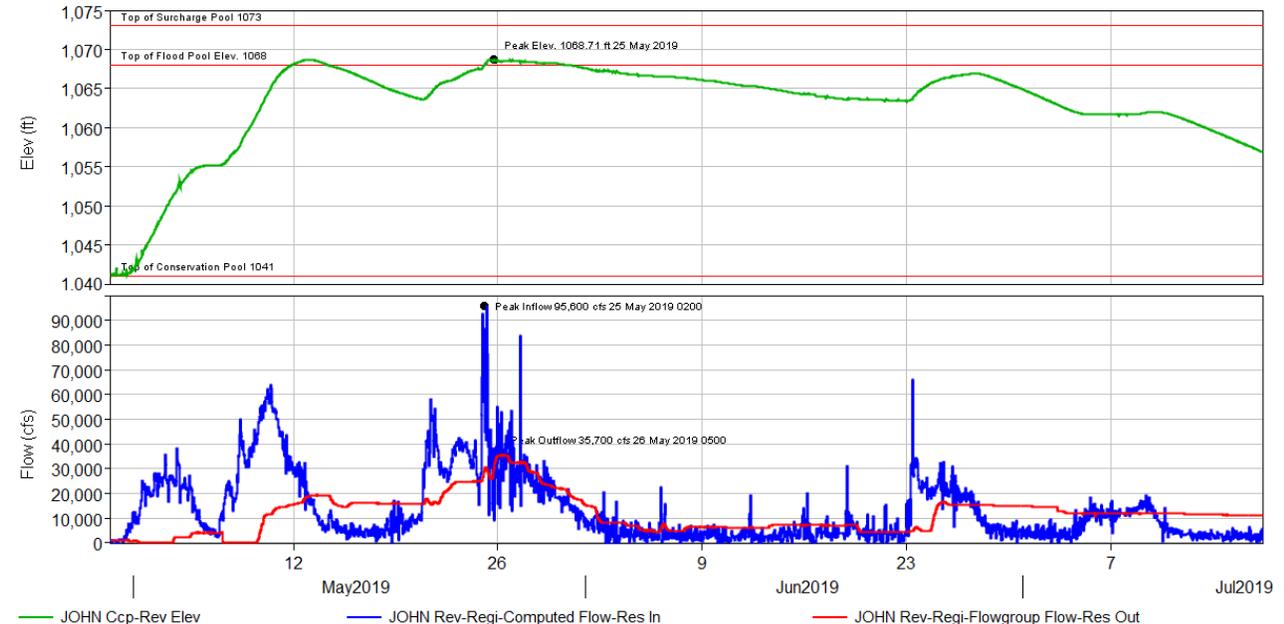
## MARION LAKE



## COUNCIL GROVE LAKE



## JOHN REDMOND LAKE

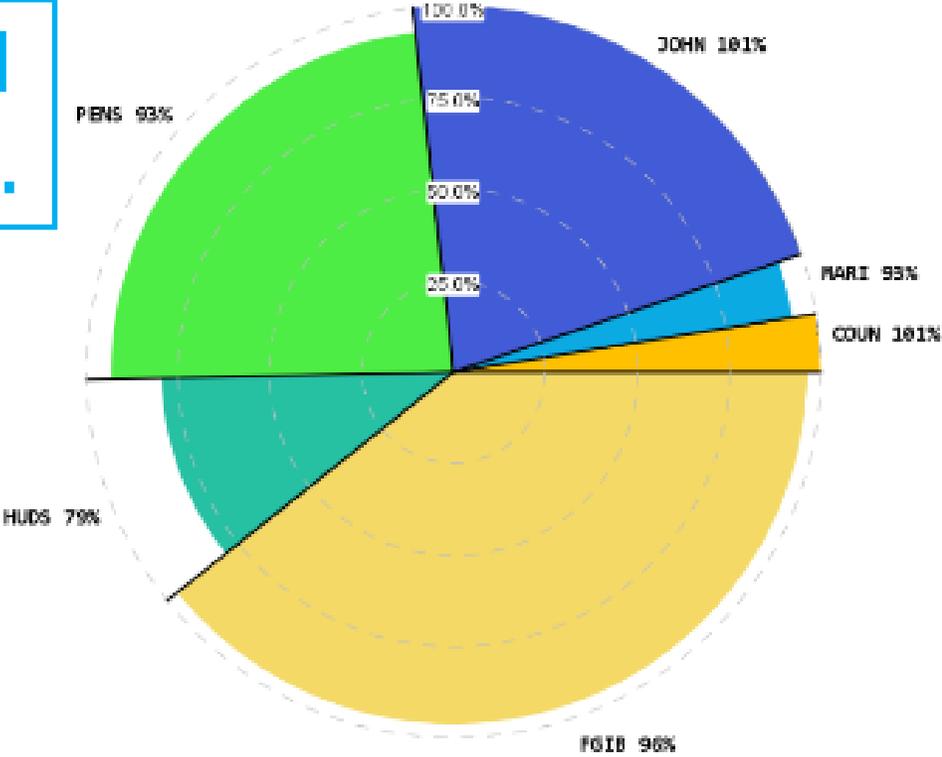
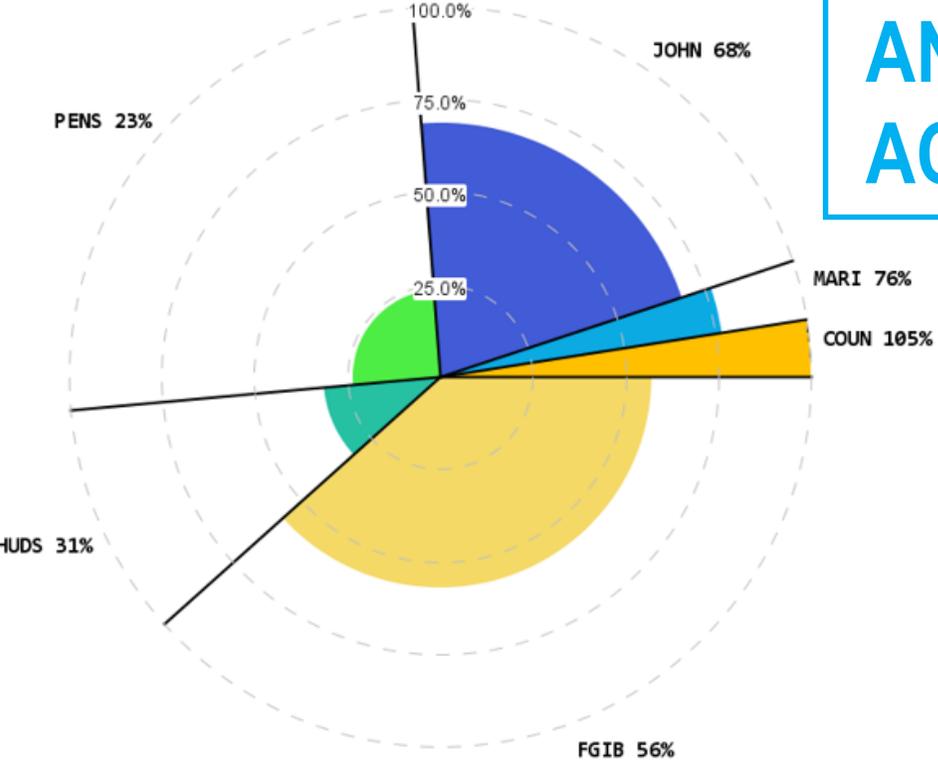


# NEOSHO RIVER BASIN

THE FULL PIE IS 1,186,278.9 ac-ft OR 49%

THE FULL PIE IS 2,211,294.6 ac-ft OR 94%

AN ADDITIONAL 1.0M AC-FT IN STORAGE...



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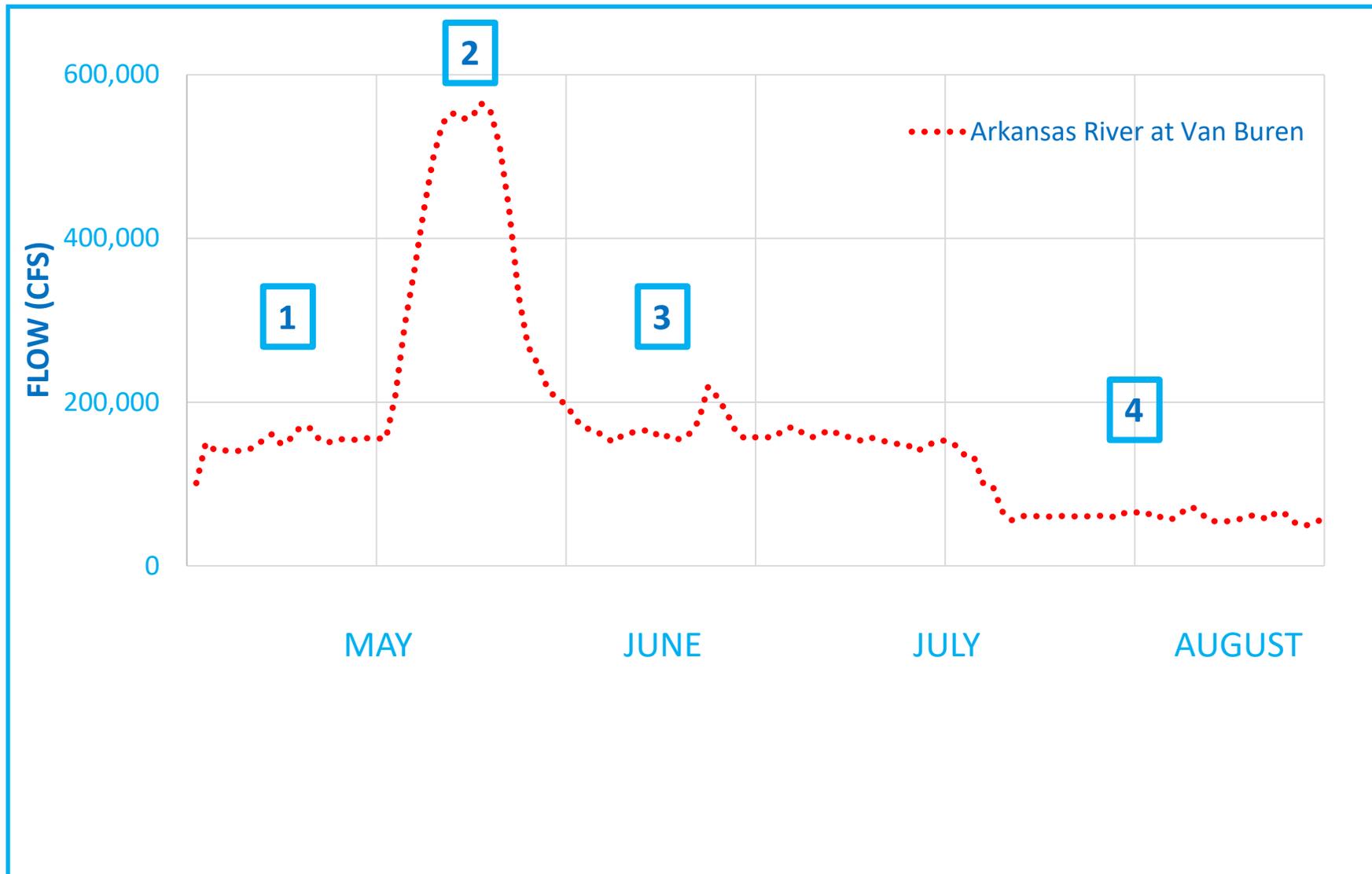
# SYSTEM IMPACTS...

**1** SYSTEM OPERATION DURING INITIAL FLOOD – 150,000 CFS @ VAN BUREN

**2** SURCHARGE (NO LONGER A SYSTEM OPERATION)

**3** BACK TO A SYSTEM OPERATION (< 40% STORAGE) – 150,000 CFS @ VAN BUREN

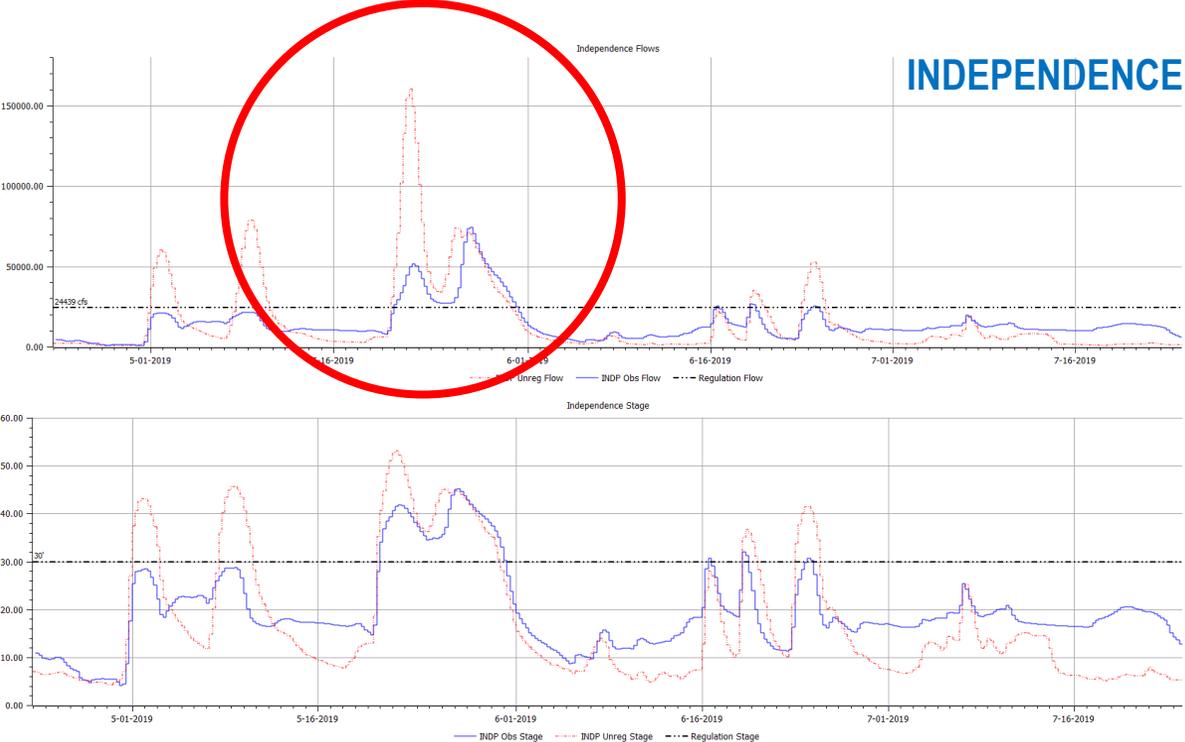
**4** SYSTEM OPERATION (< 20% STORAGE) – 60,000 CFS @ VAN BUREN



# FLOOD BENEFITS

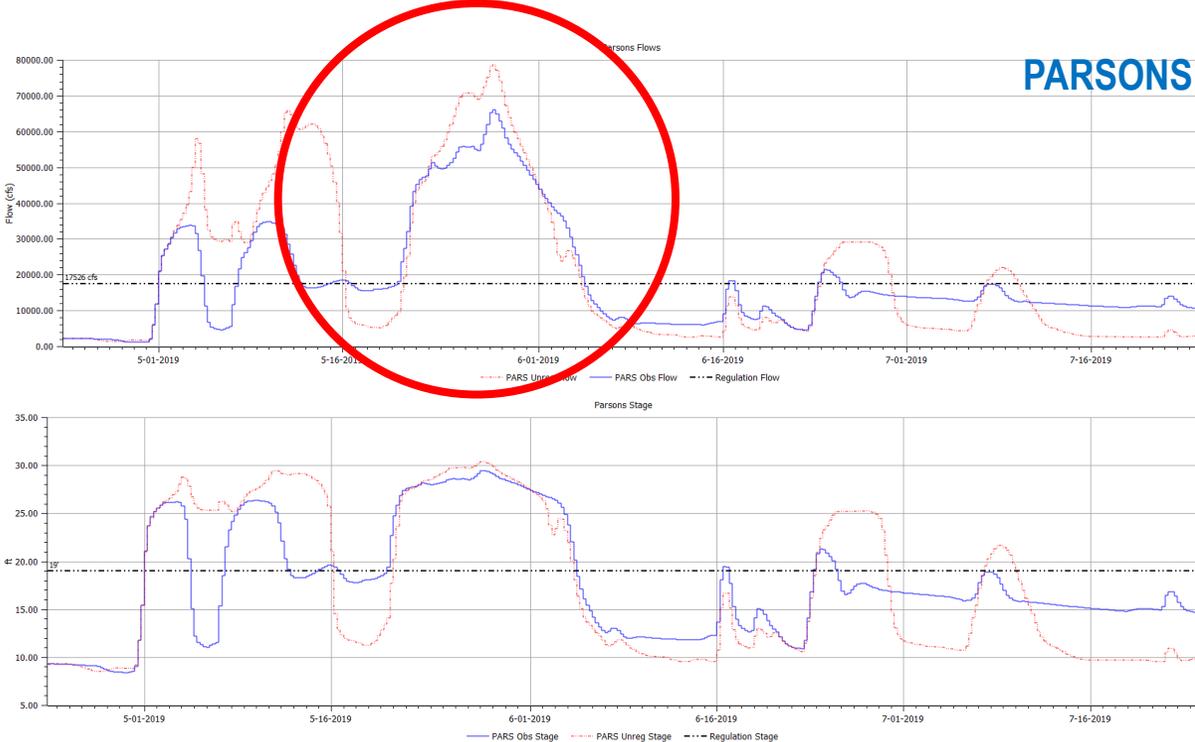
## VERDIGRIS RIVER

- 50,000 CFS REGULATED / 160,000 CFS UNREGULATED
- STAGE REDUCTION EXCEEDED 10 FT



## NEOSHO RIVER

- 65,000 CFS REGULATED / 80,000 CFS UNREGULATED
- STAGE REDUCTION OF 2 FT



## QUESTIONS?



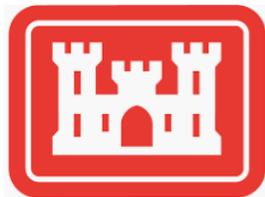
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