KANSAS WATER VISION IMPLEMENTATION – A REGIONAL APPROACH

Association of Western States Engineers

June 2018

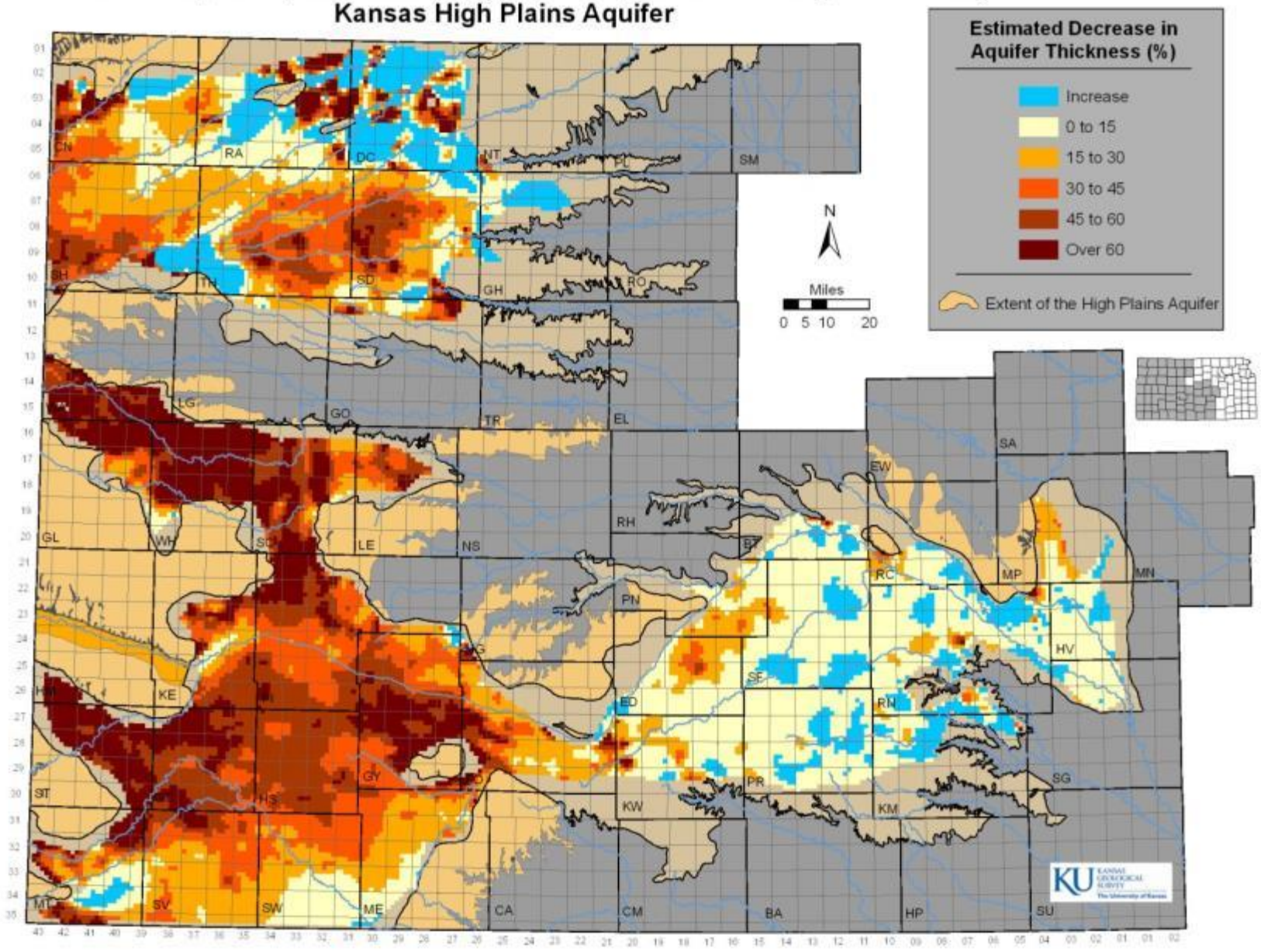
"Water and the Kansas economy are directly linked. Water is a finite resource and without further planning and action we will no longer be able to meet our state's current needs, let alone growth."

- Governor Sam Brownback

If We Take No Action in the Next 50 Years…

- The Ogallala will be 70% depleted
- Another 40% of the area irrigated by the Ogallala won't support a 400 gal per minute well

Percent Change in Aquifer Thickness, Predevelopment to Average 2015-2017, Kansas High Plains Aquifer

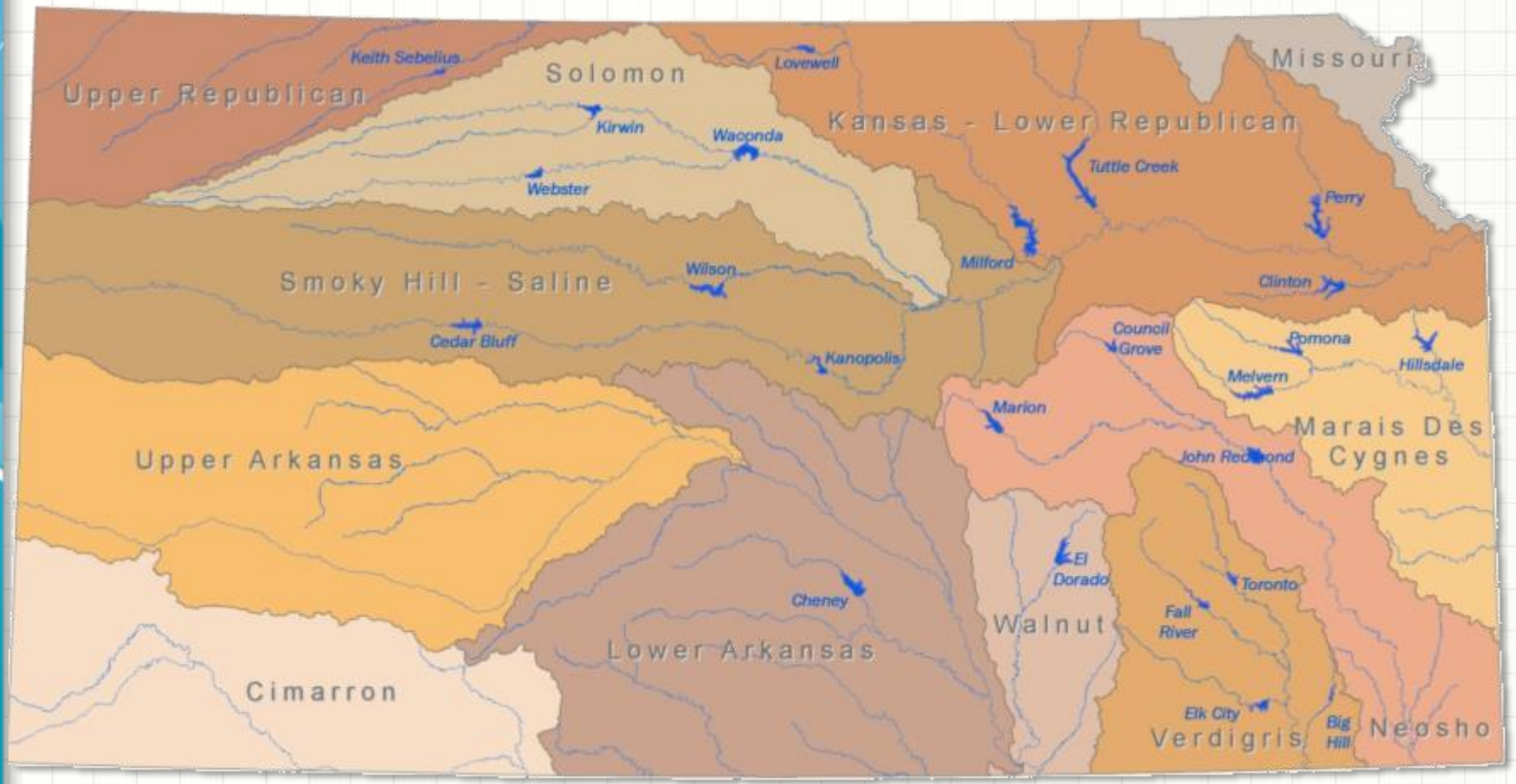


If We Take No Action in the Next 50 Years…

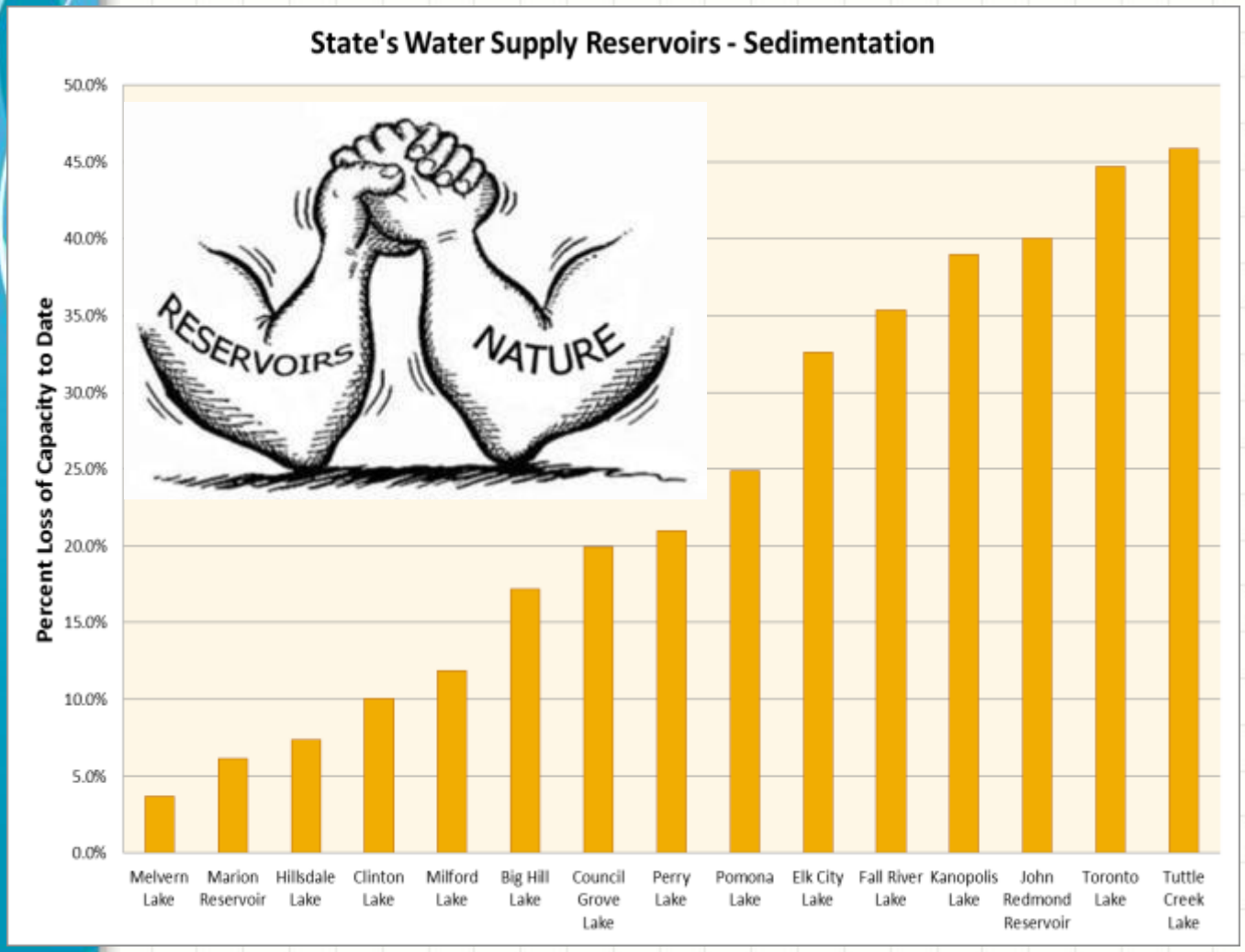
- Water supply reservoirs will be 40% filled with sediment

- Five of the seven major river basins that support municipal and industrial use won't meet demands during a drought

Major River Basins & Federal Reservoirs in Kansas



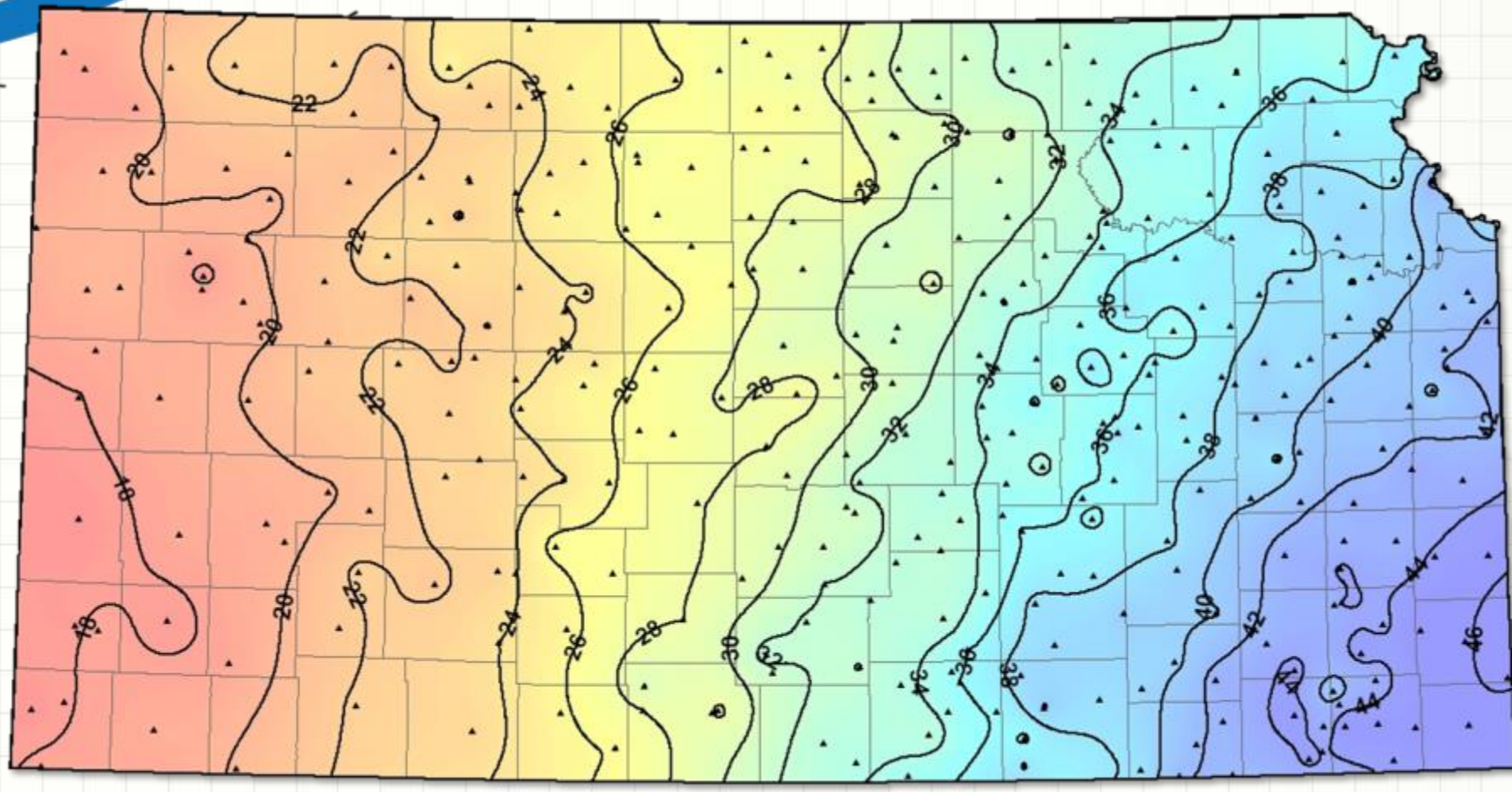
Kansas Reservoir Loss of Capacity



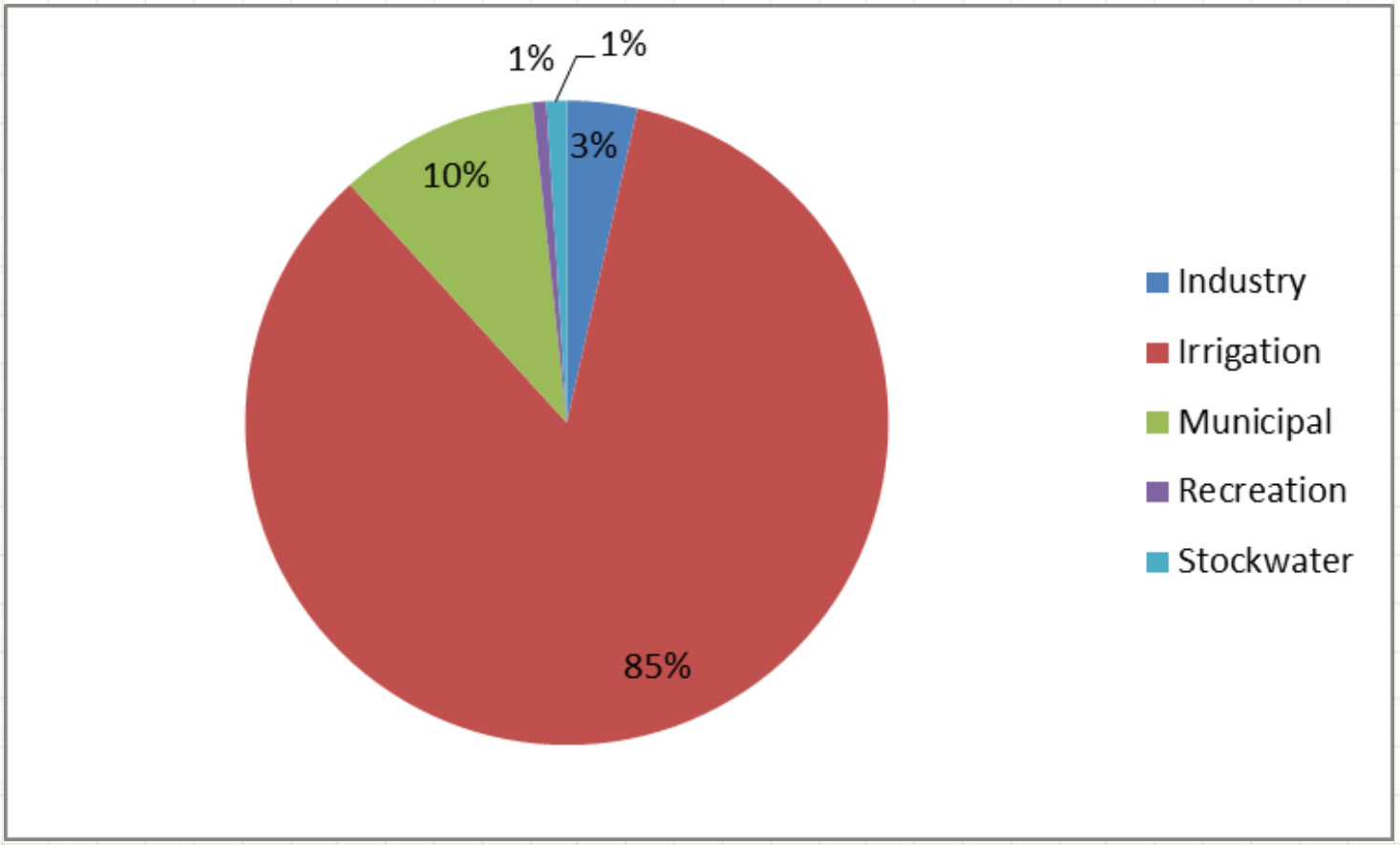
Sorted by %	
State's Water Supply Reservoirs	Percent Loss of Capacity to Date
Melvern Lake	3.7%
Marion Reservoir	6.1%
Hillsdale Lake	7.4%
Clinton Lake	10.1%
Milford Lake	11.9%
Big Hill Lake	17.2%
Council Grove Lake	19.9%
Perry Lake	21.0%
Pomona Lake	24.9%
Elk City Lake	32.6%
Fall River Lake	35.3%
Kanopolis Lake	38.9%
John Redmond Reservoir	40.0%
Toronto Lake	44.7%
Tuttle Creek Lake	45.9%

Kansas average annual precipitation

18” in the west to 46” in the east

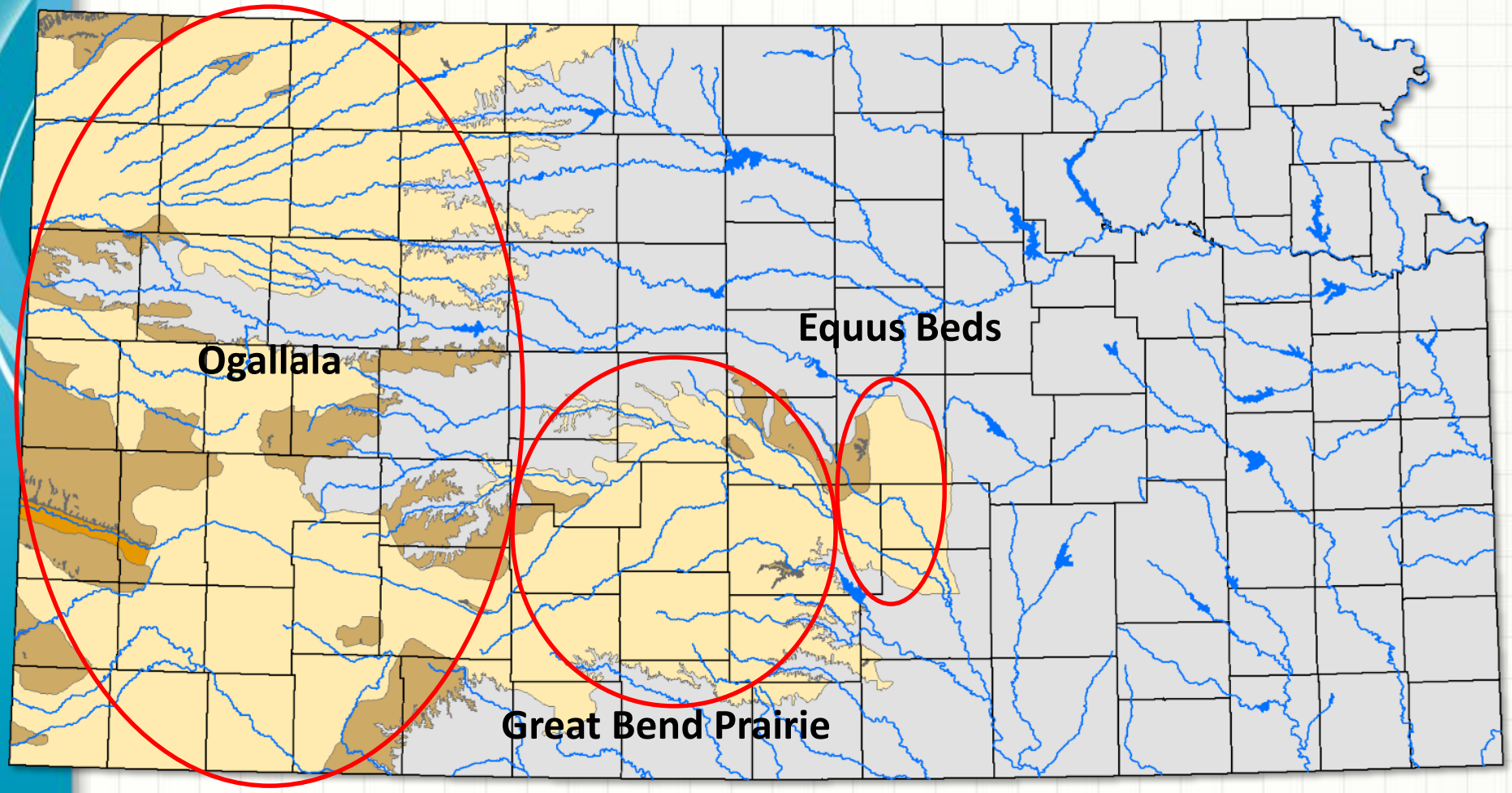


2015 Kansas Water Use – 4.3 million acre-feet

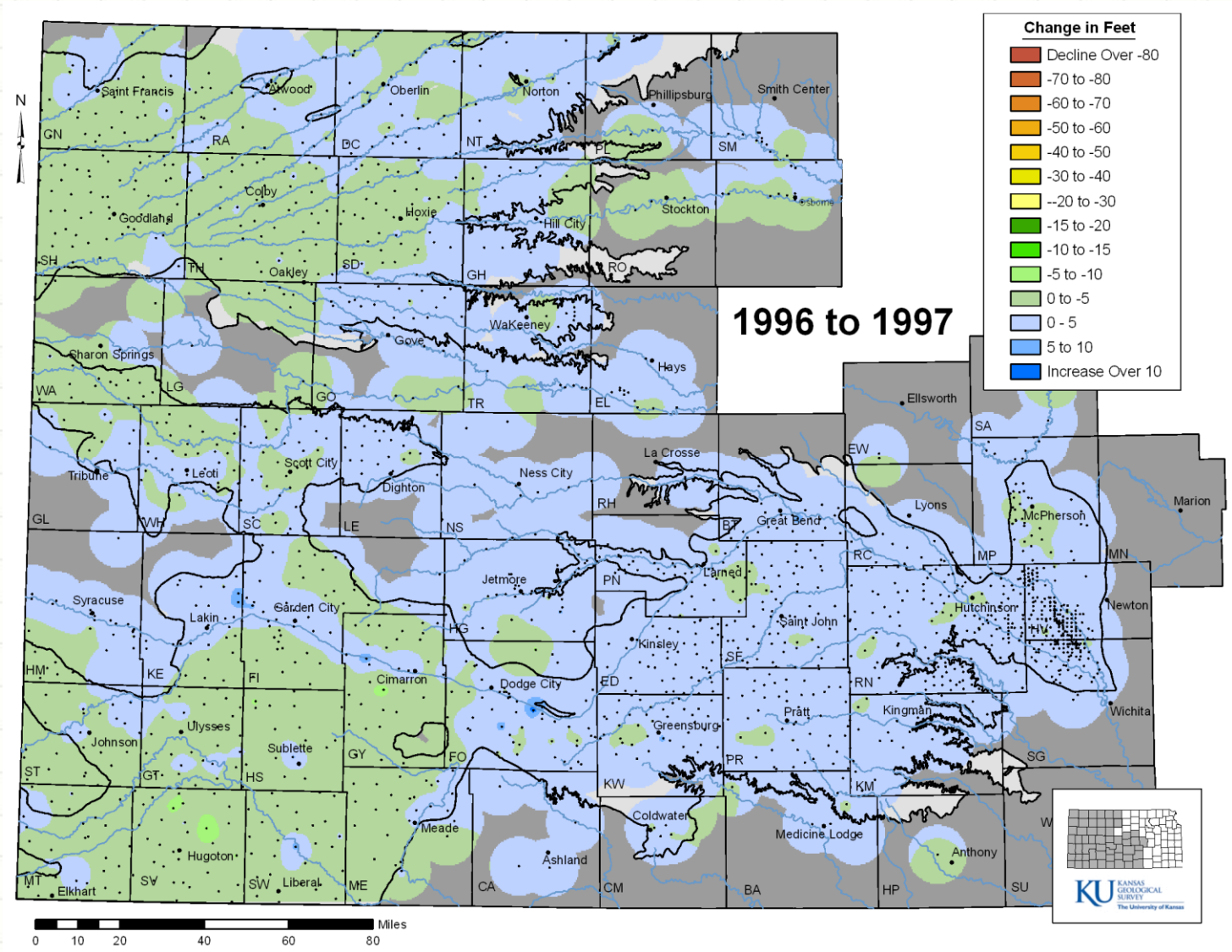


1 acre-foot = 325,851 gallons

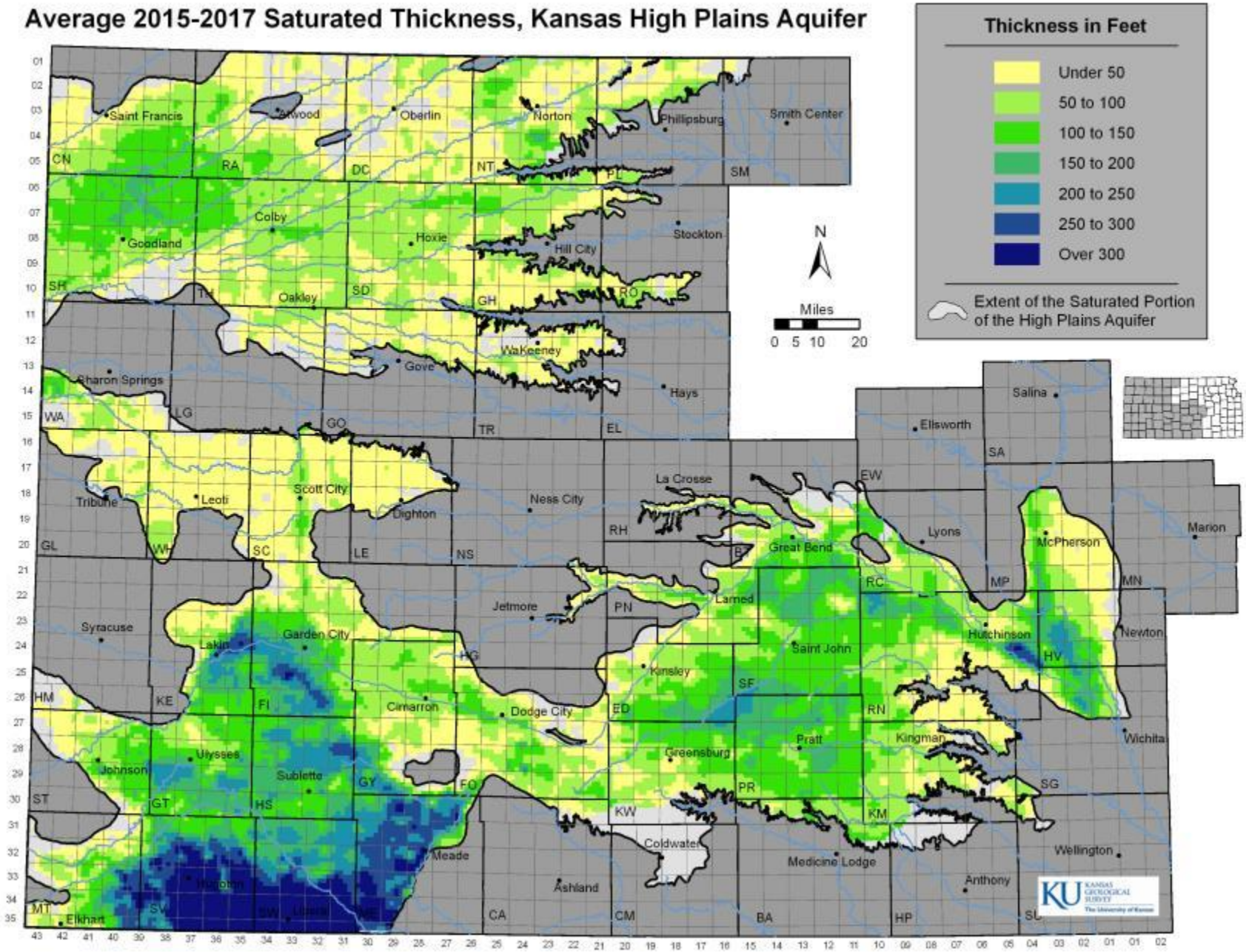
The Kansas High Plains Aquifer



Aquifer declines 1996 - 2017



Average 2015-2017 Saturated Thickness, Kansas High Plains Aquifer



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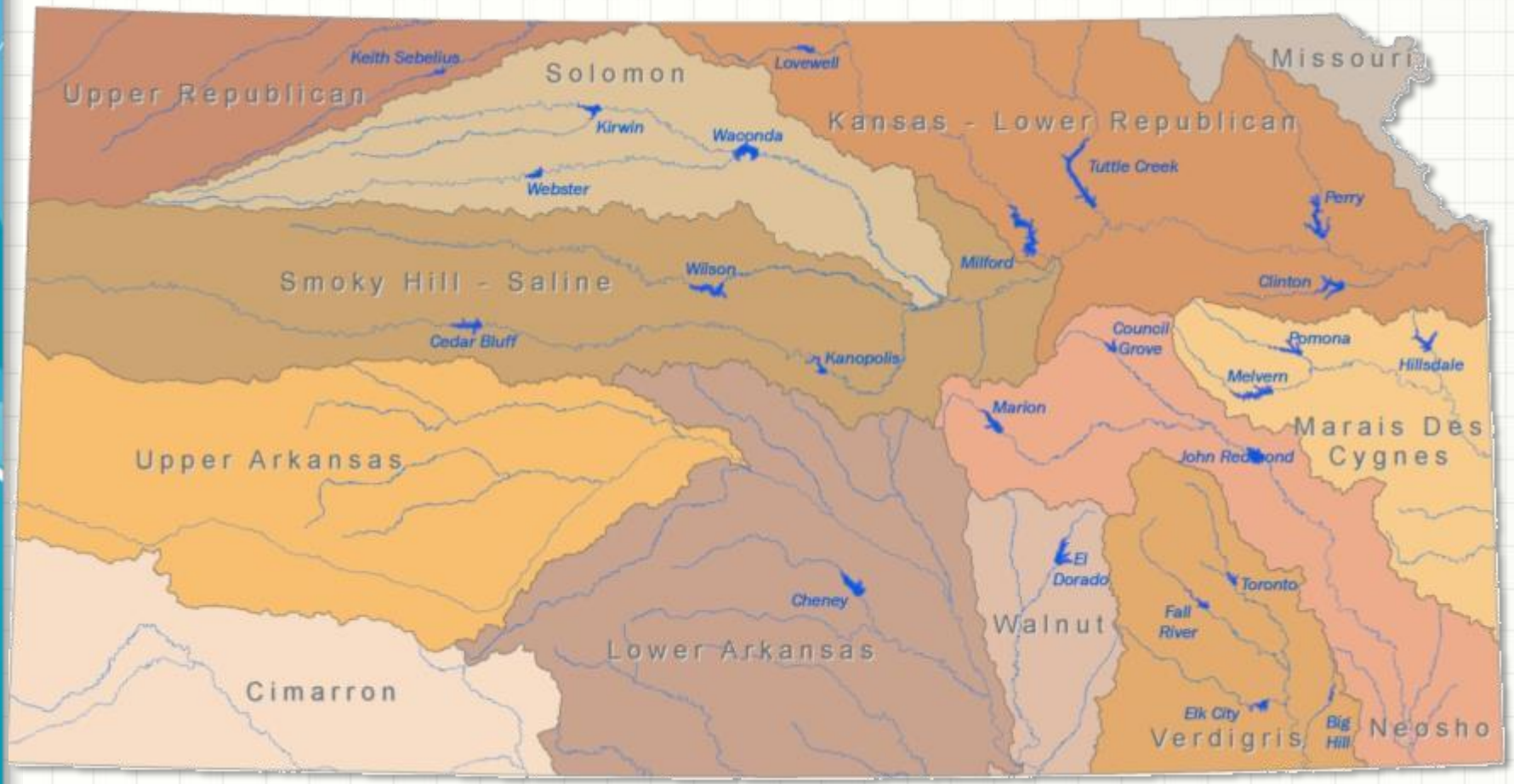


Nutrients and Harmful Blue-Green Algae

Milford, Marion Reservoirs & others…..

Governor's 50 Year Water Plan aka…Kansas Water Vision

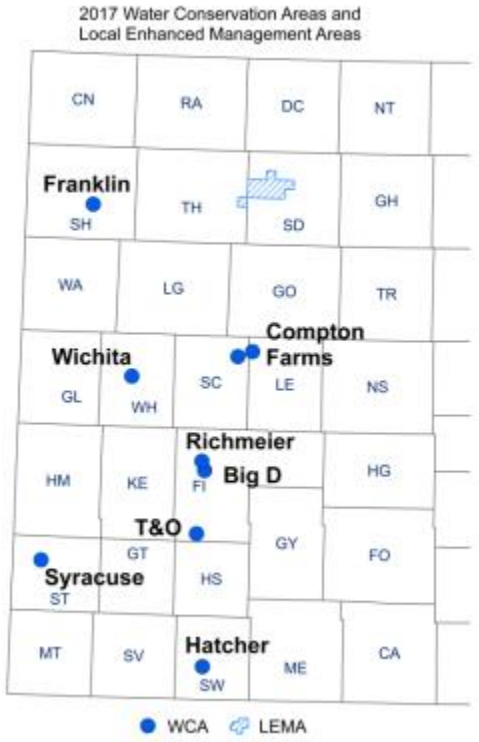
Regional advisory committees participate, validate, advocate

Water Conservation Areas

- WCAs allow for voluntary measures to conserve water through management plans through increased flexibility over multiple years
- 16 active WCAs
  - Still less than 1%

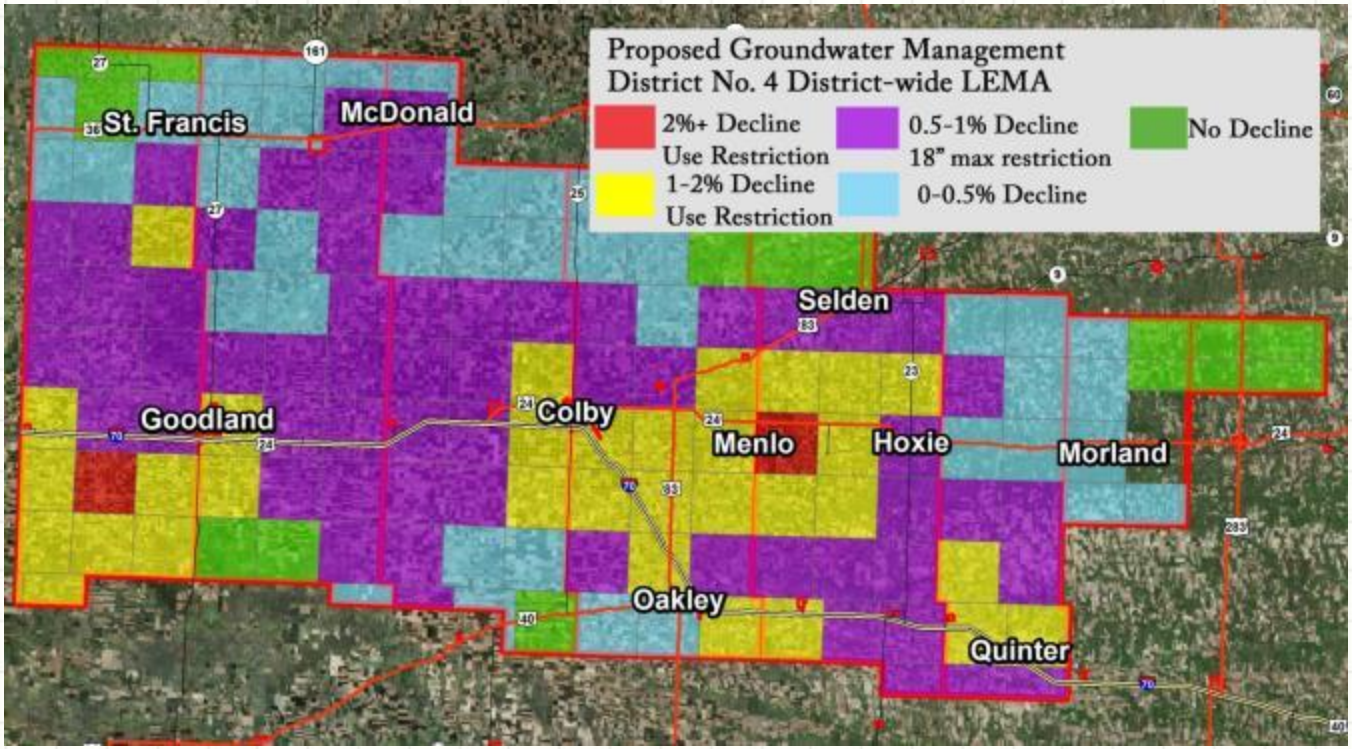
  of statewide eligible

  acres

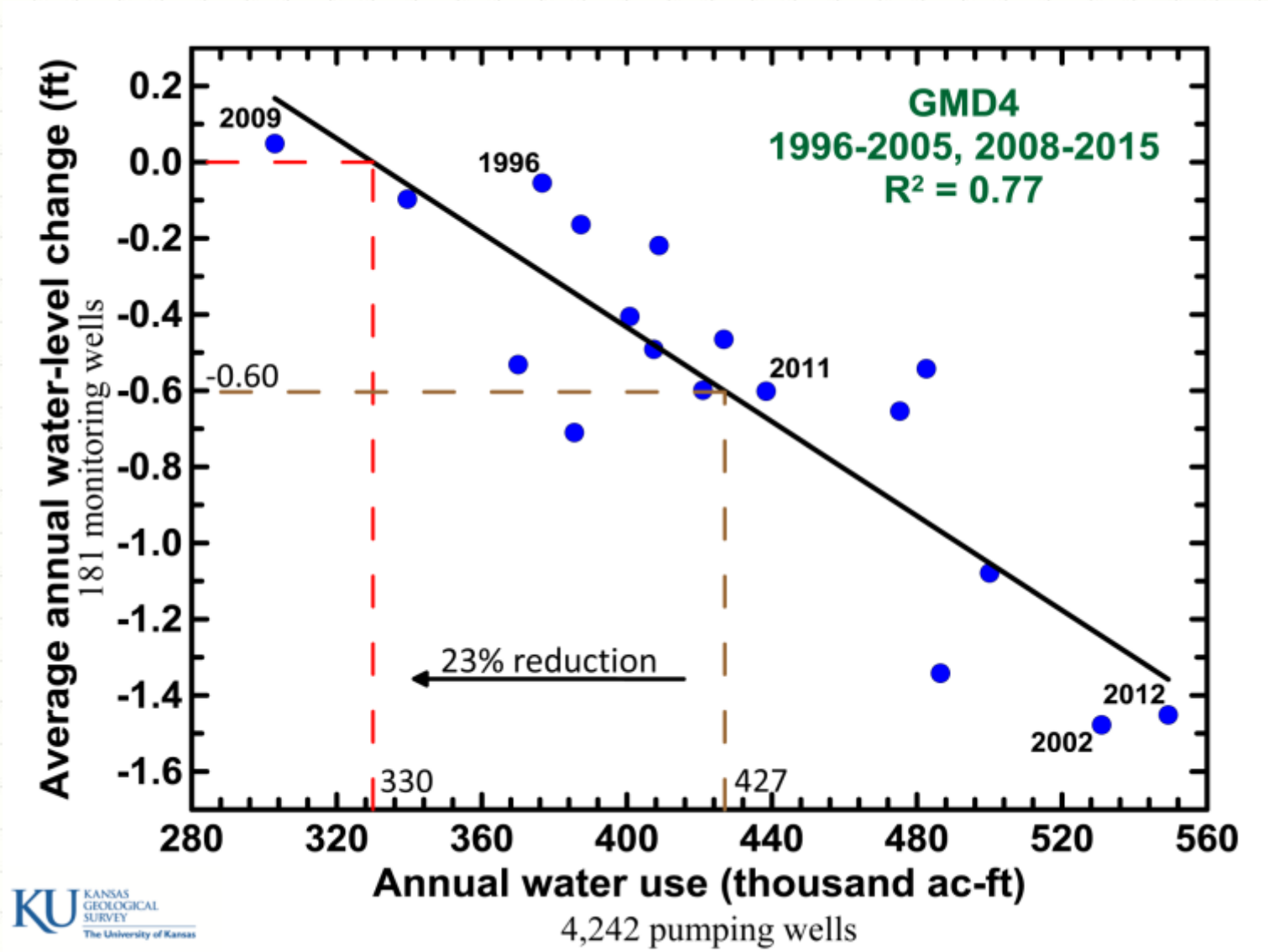


Local Enhanced Management Areas

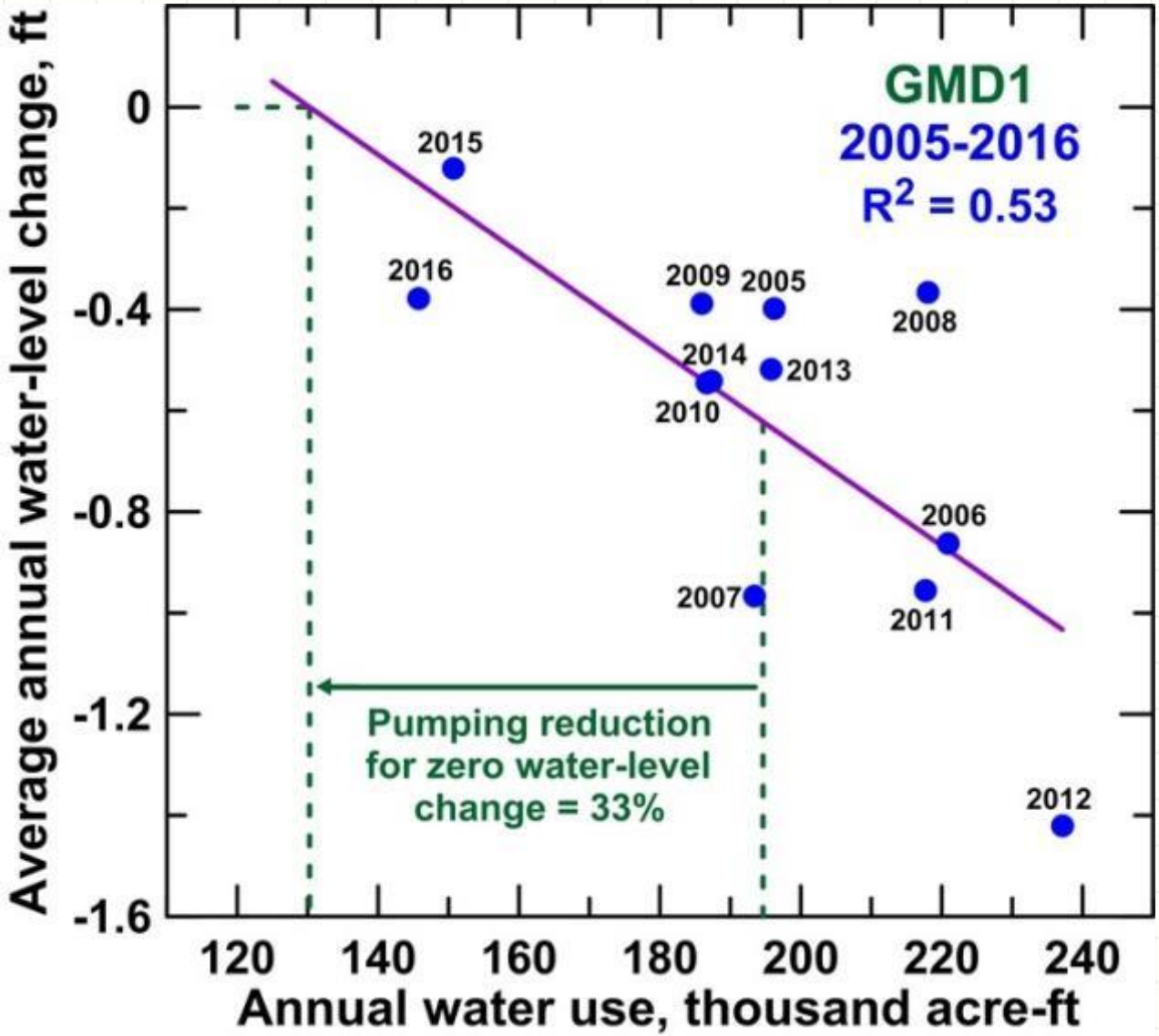
- Approved GMD #4 District-Wide LEMA



Governor's Press Conference, GMD4 Handout



GMD1 Q-Stable Reduction = 33%



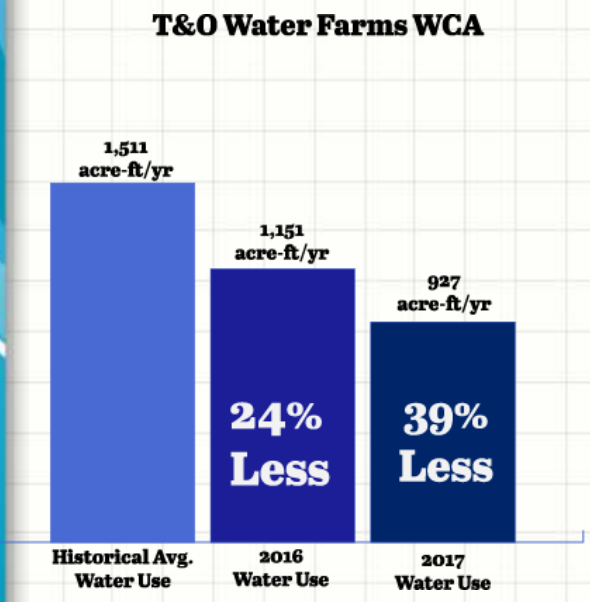
Water Technology Farms

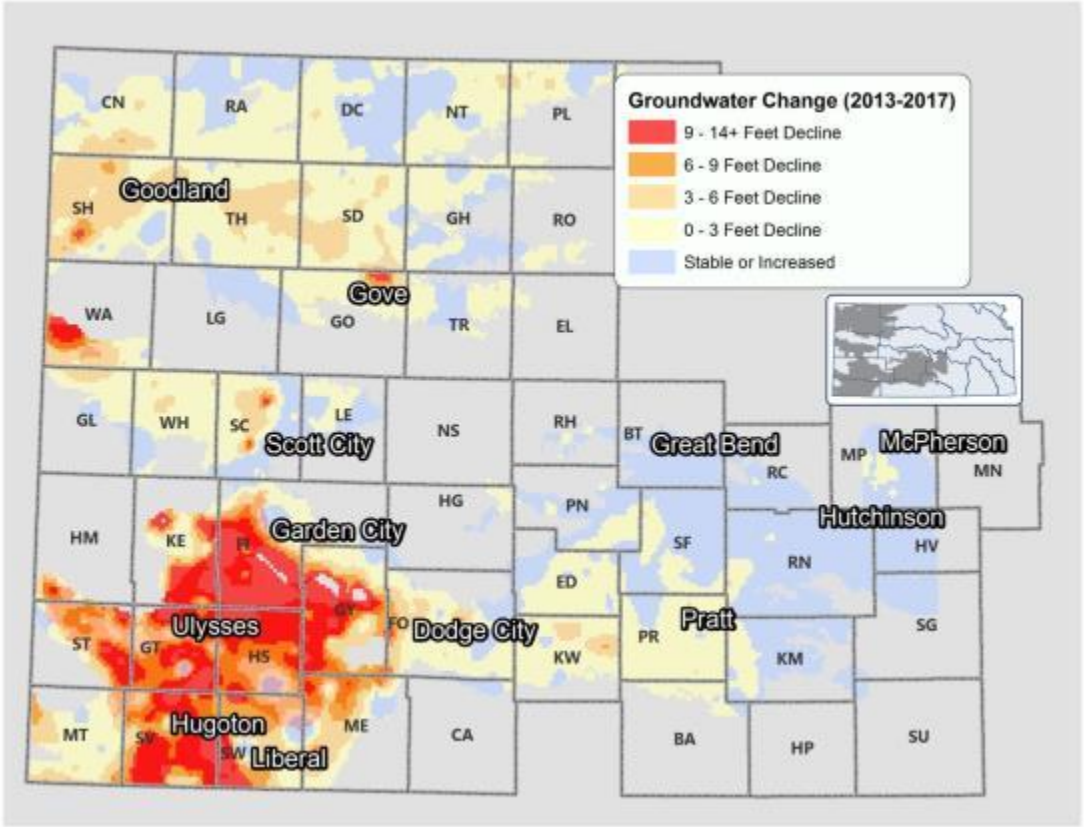
- 12 farms participating
- KSU, Northwest Tech and private consultants provide water mgmt advice
- Public/private partnerships securing the $

Showcase on a field scale, the latest technologies in irrigation infrastructure, irrigation water management, soil moisture management, conservation tillage, automation telemetry and other agronomic practices aimed at reducing water use.

T&O Farms
Water Technology Farm

Measuring Success: Groundwater





Building Water Resource Workforce

NT

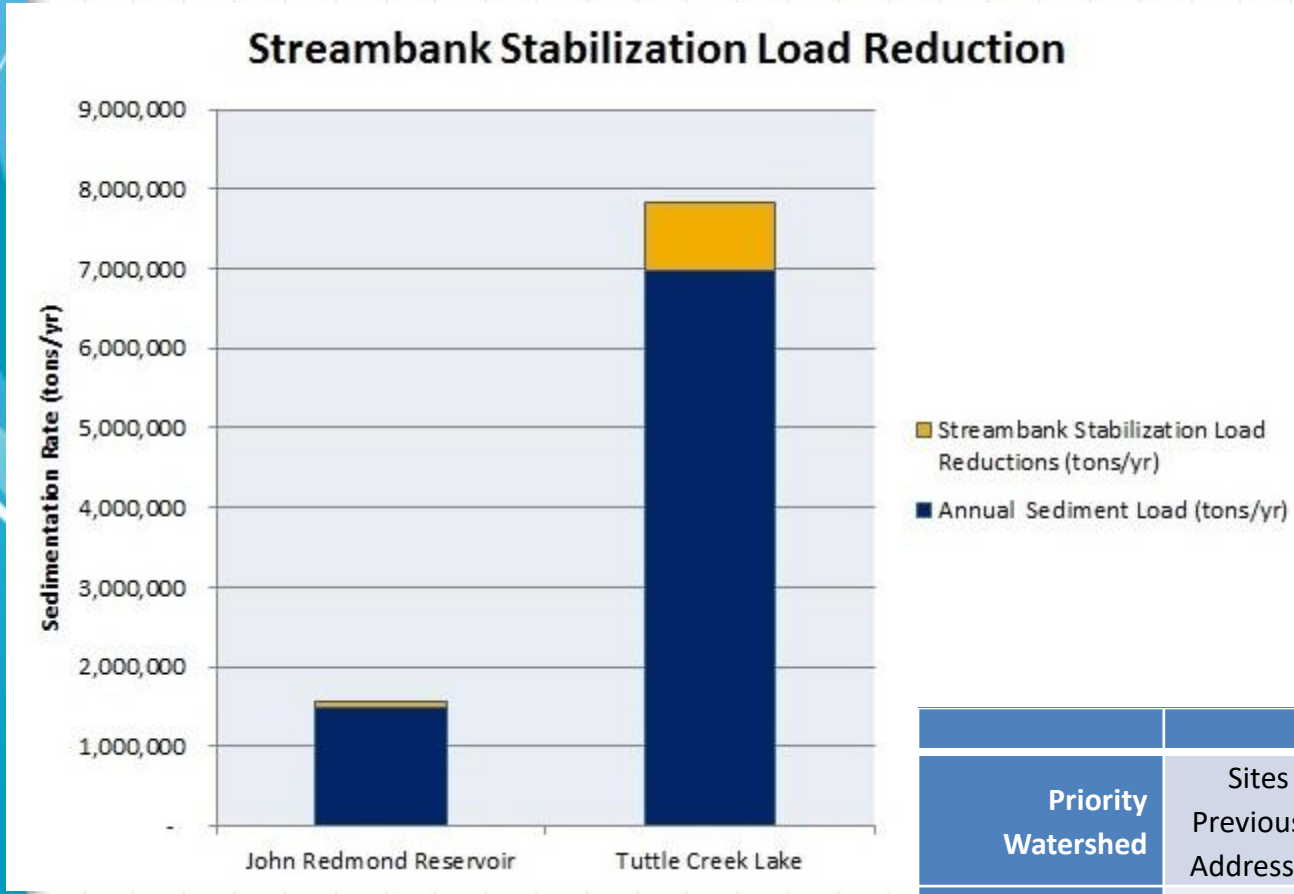
PRECISION AGRICULTURE

- NW Tech & Local Irrigation Companies partnering with neighboring landowners, GMD 4 and KWO to develop water technology farms within the Precision Ag Dept at NT
- Students working on campus & in the field to develop irrigation water management skills
- Irrigation Technology (soil probes, Variable Rate Irrigation) and Scheduling to demonstrate water savings and profitability
- Six farms participating this year

Encourage the development of community college, technical programs and university programs to prepare future workforce to work in irrigation efficiency technologies and with necessary expertise in less water intensive crops and crop varieties.

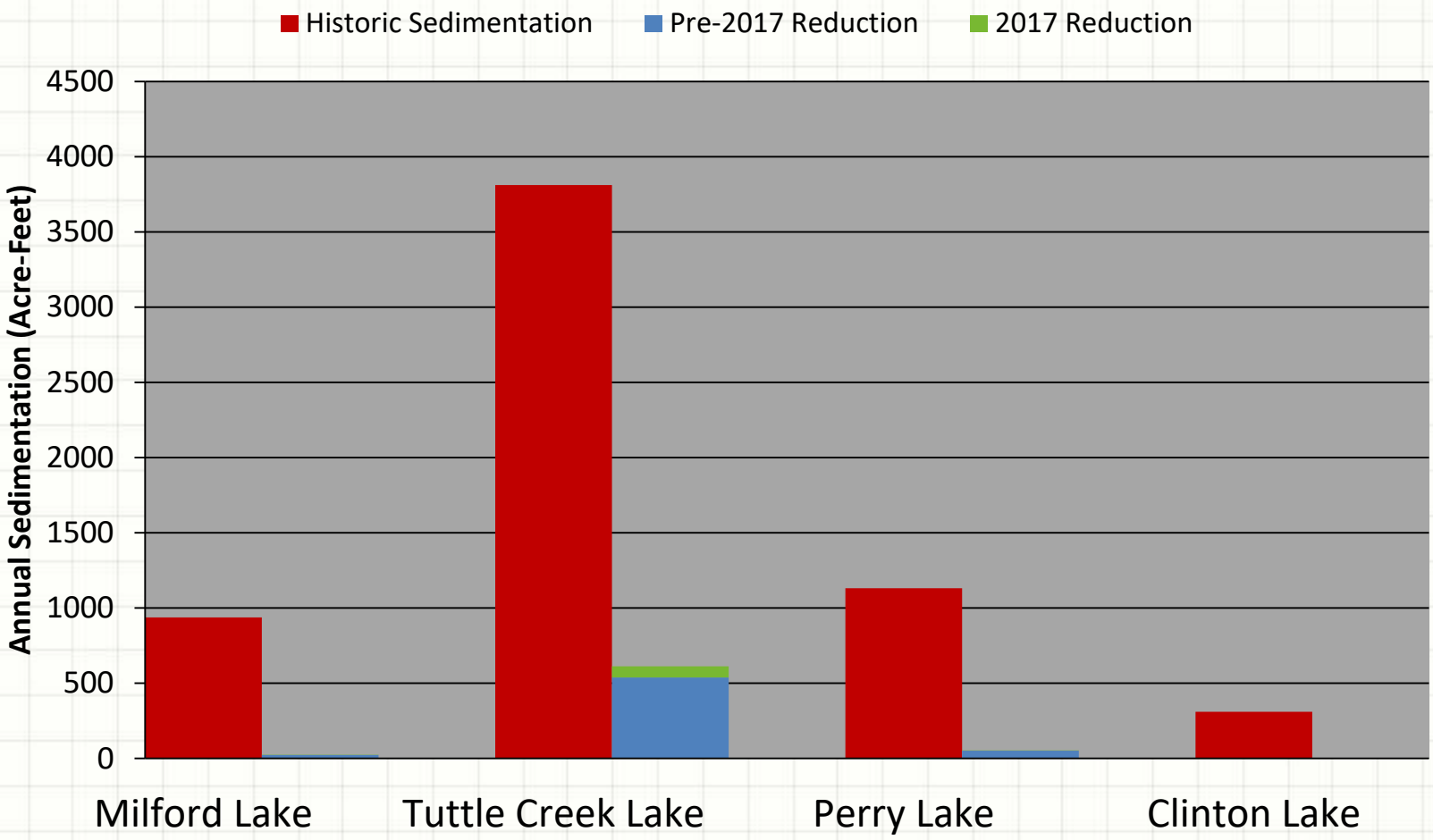
Watershed protection….cheapest alternative to addressing sediment and nutrients in our reservoirs

Measuring Success: Surface Water



		Sites Remaining	
Priority Watershed	Sites Previously Addressed	Number	Est. of sediment reduction—tons/yr
John Redmond	33	332	450,891
Tuttle Creek	96	215	514,871
Perry	35	46	70,025
Total	164	628	1,035,787

Reservoir Sediment Reduction



https://youtu.be/hLPjHCrtPV

John Redmond Reservoir Dredging

More than 1,800 acre-feet of storage restored

3,000,000 million cubic yards of deposited sediment removed

Restore and dispose up to three million cubic yards of sediment from John Redmond Reservoir.

Water reuse gaining momentum

- Many Kansas cities already use treated wastewater for irrigation
- Spirit AeroSystems significantly reduced its' fresh water demand by reusing city of Wichita wastewater effluent
- Garden City is reusing DFA's wastewater from the newly opened milk drying facility
- Economical treatment and use of other low quality water is on the horizon

Evaluation of various funding sources

- Increase existing State Water Plan Fund fees
- Water right fee/Irrigation fee
- Bottled drinking water fee
- Residential electric fee
- Statewide retail sales tax

Evaluation of various funding sources

- **Maintain existing State Water Plan Fund fees**
- Water right fee/Irrigation fee
- Bottled drinking water fee
- Residential electric fee
- **Statewide retail sales tax**

KWA FY2018-FY2019 Funding Recommendation

SGF/EDIF Budget Enhancement Request FY2018 & FY2019		
Water Conservation	**FY2018**	**FY2019**
Vision Strategic Education Plan		**$500,000**
Watershed Conservation Practice Implementation – BMP Team		**$1,800,000**
Milford Lake Watershed RCPP Project	**$200,000**	**$200,000**
Streambank Stabilization		**$1,000,000**
Water Management		**FY2019**
Harmful Algae Bloom Pilot	**$400,000**	**$500,000**
Contamination Remediation		**$400,000**
Interstate Water Compact Compliance		**$100,000**
Water Structures Inspections		**$200,000**
Technology and Crop Varieties		**FY2019**
Irrigation Technology		**$1,000,000**
Water Technology Farms		**$250,000**
Vision Implementation Research – Research Coordination Group		**$500,000**
Telemetry		**$850,000**
Additional Sources of Supply		**FY2019**
Waters Leaving the State Evaluation		**$200,000**
Equus Beds Chloride Plume Project		**$500,000**
FY2018 & FY2019 Enhancement Request Total	**$600,000**	**$8,000,000**

Current budget status

- House has restored $4 million
- Senate has restored $3 million
- Funding included for:
  - BMP Implementation
  - Streambank Stabilization
  - Research
  - Education
  - Irrigation Technology