The High Plains Aquifer: A Kansas Perspective

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AGI Critical Issues Forum

Addressing Changes in Regional Groundwater Resources: Lessons from the High Plains Aquifer

Golden, CO

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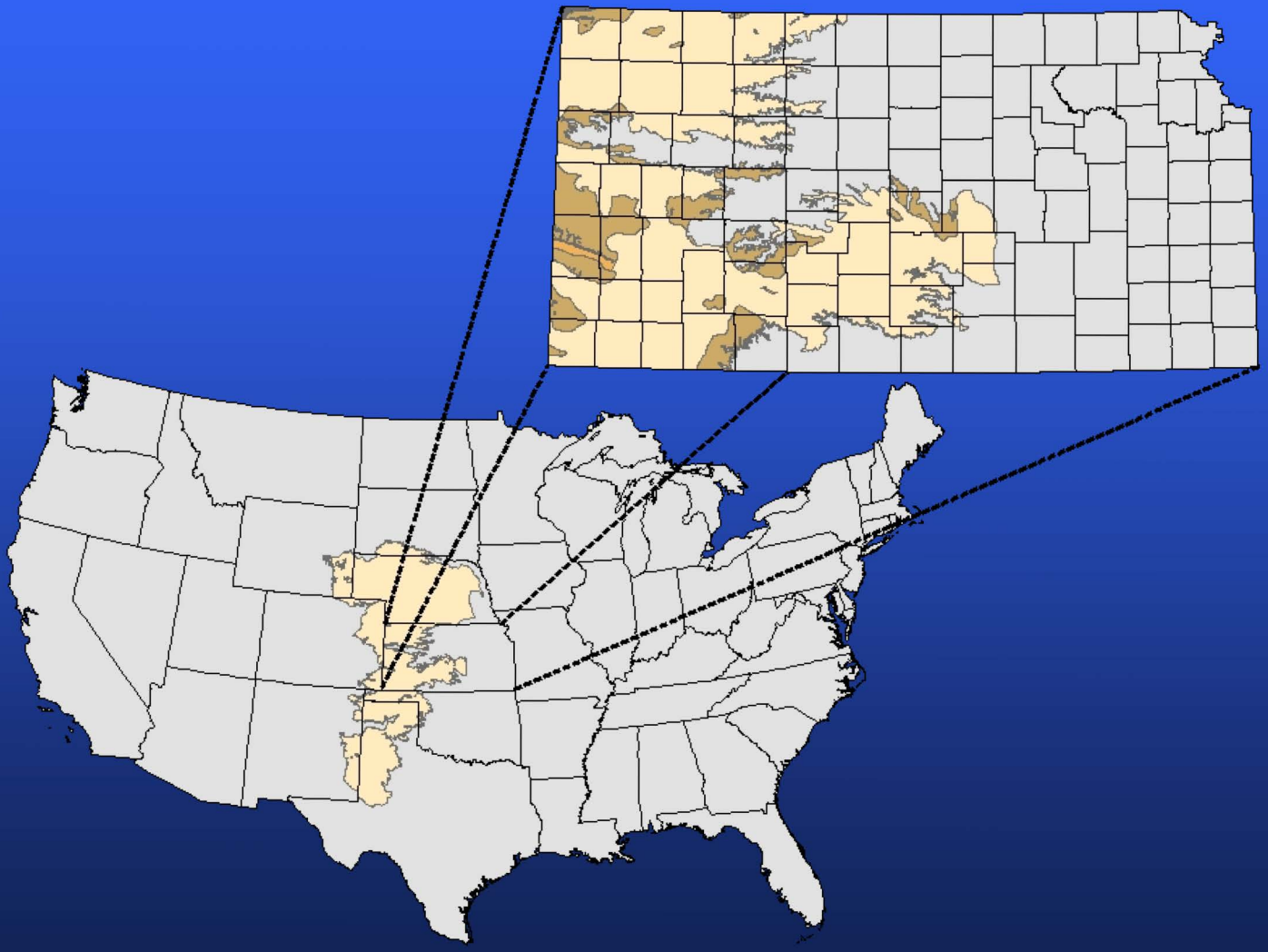
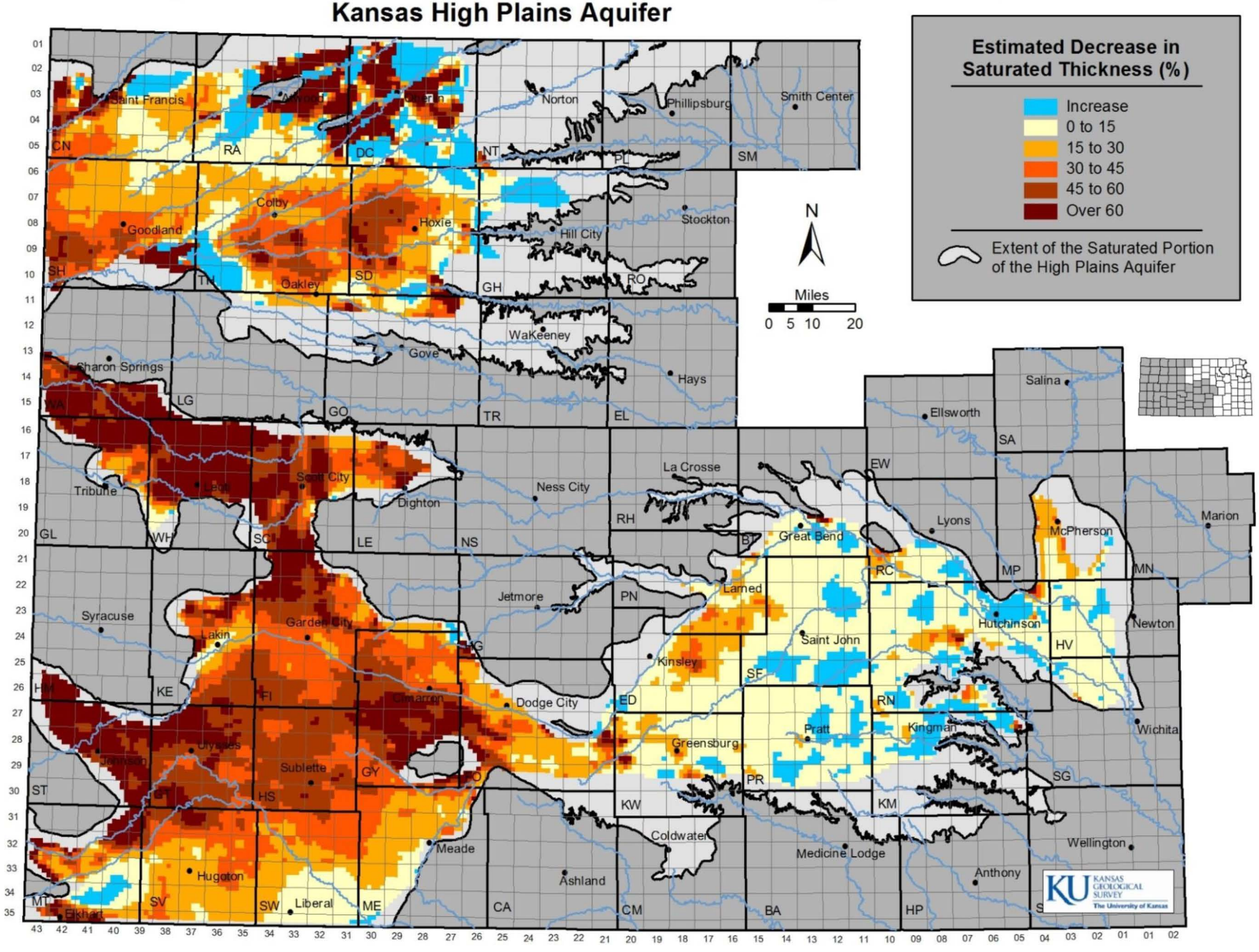
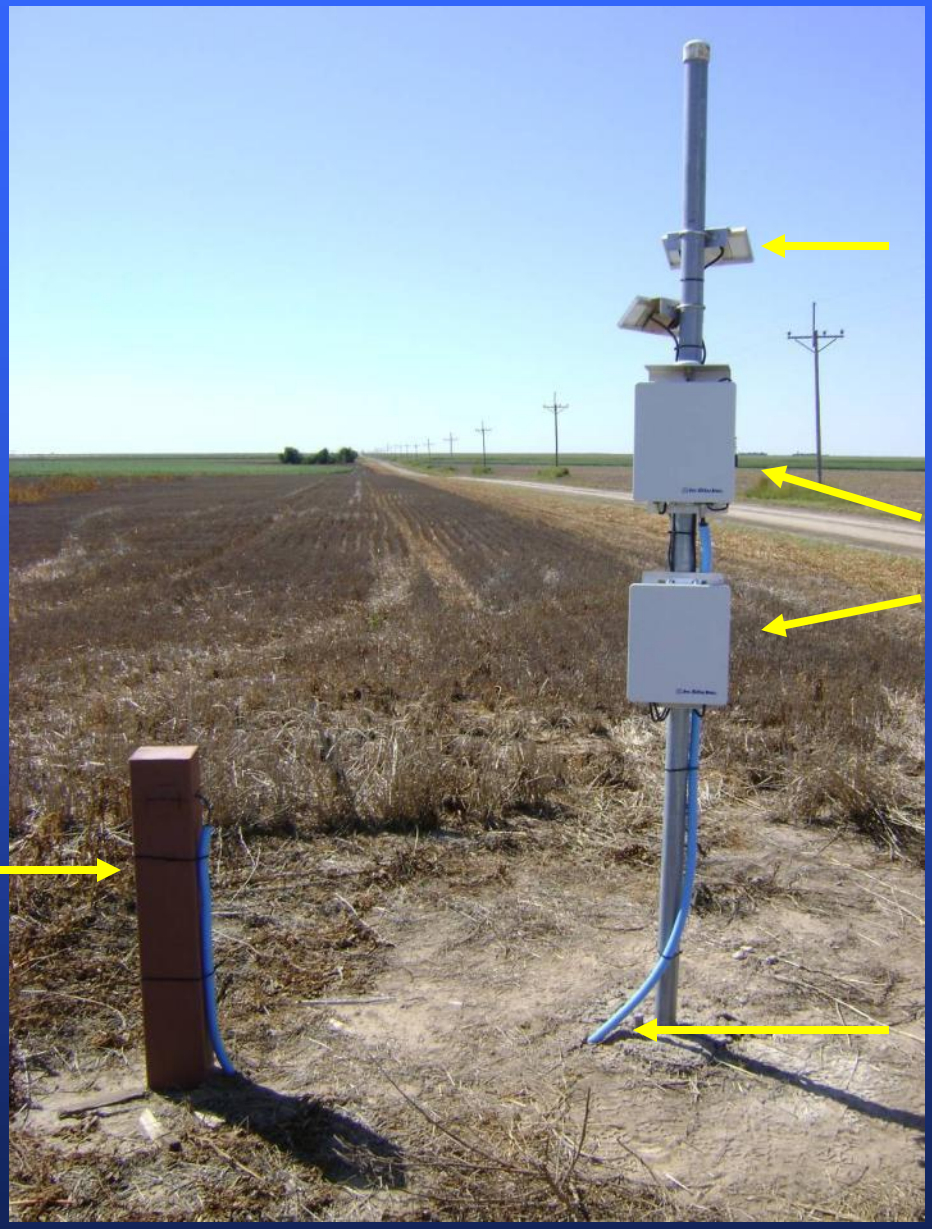
The High Plains Aquifer



Percent Change in Saturated Thickness, Predevelopment to Average 2014 - 2016, Kansas High Plains Aquifer



Typical Index Well Installation



Solar panels

Telemetry system and batteries

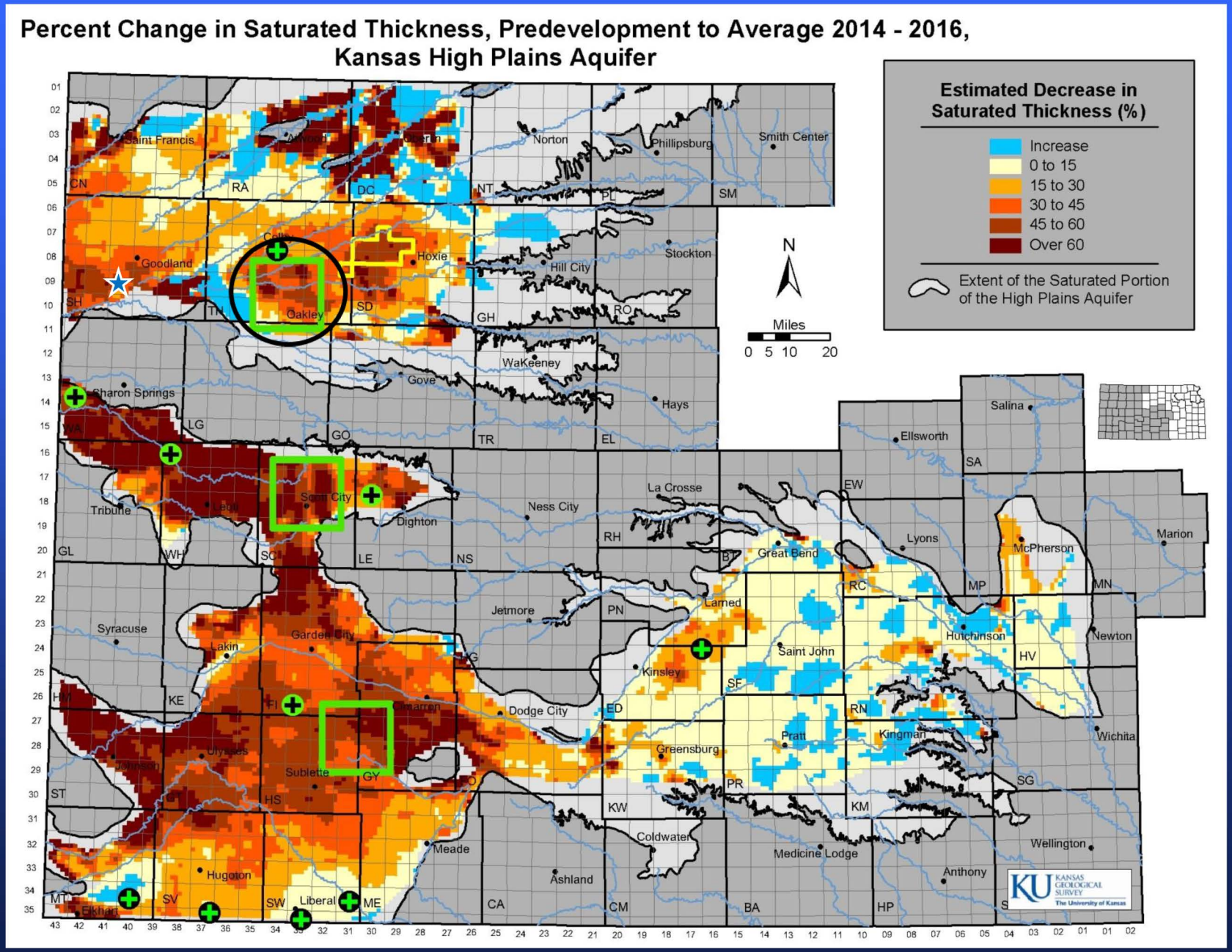
2.5” PVC well with steel wellhead protector

Cable from pressure transducer in well to telemetry system

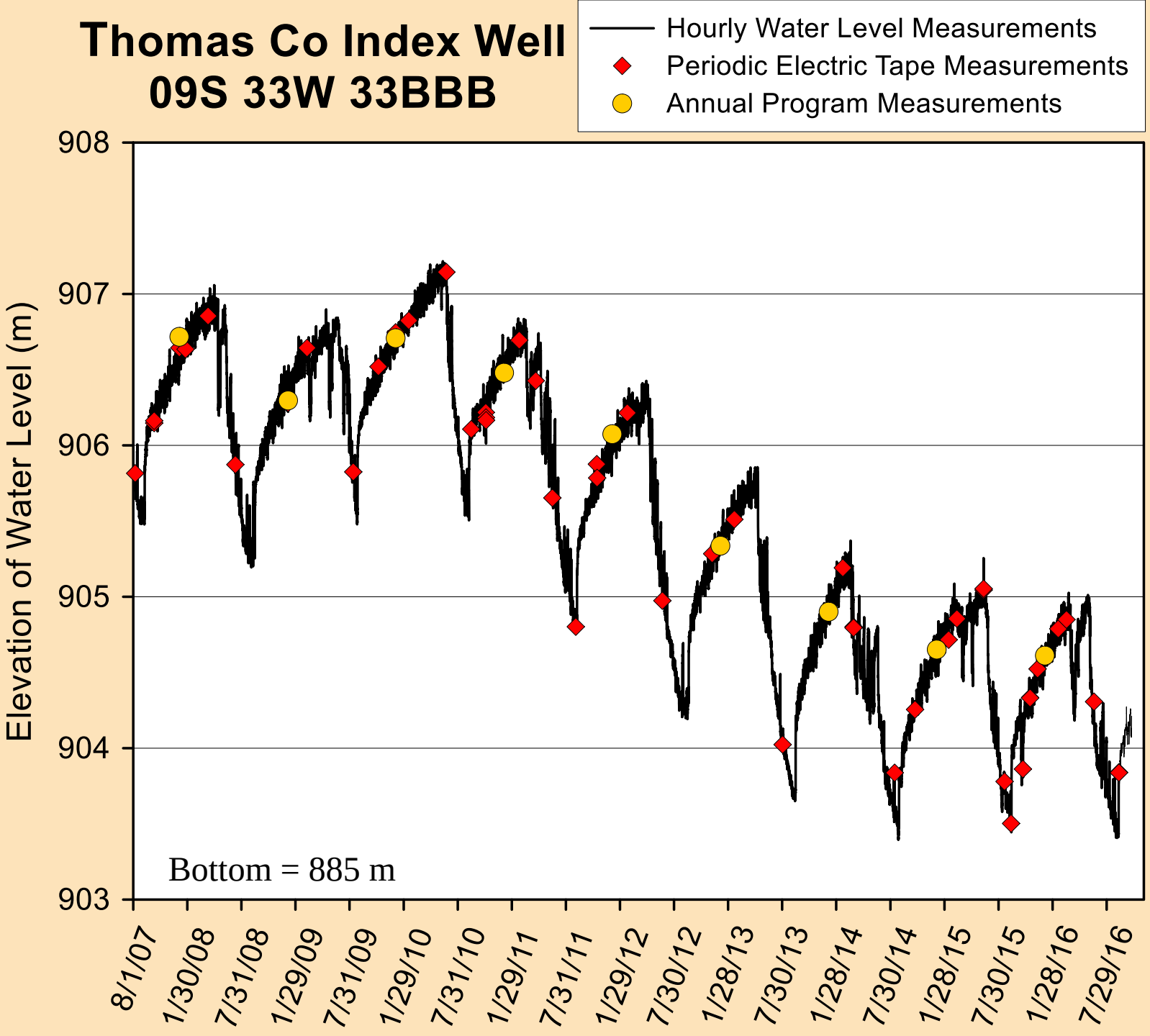
- 9+ years

-www.kgs.ku.edu/HighPlains/OHP/index_program/index.shtml

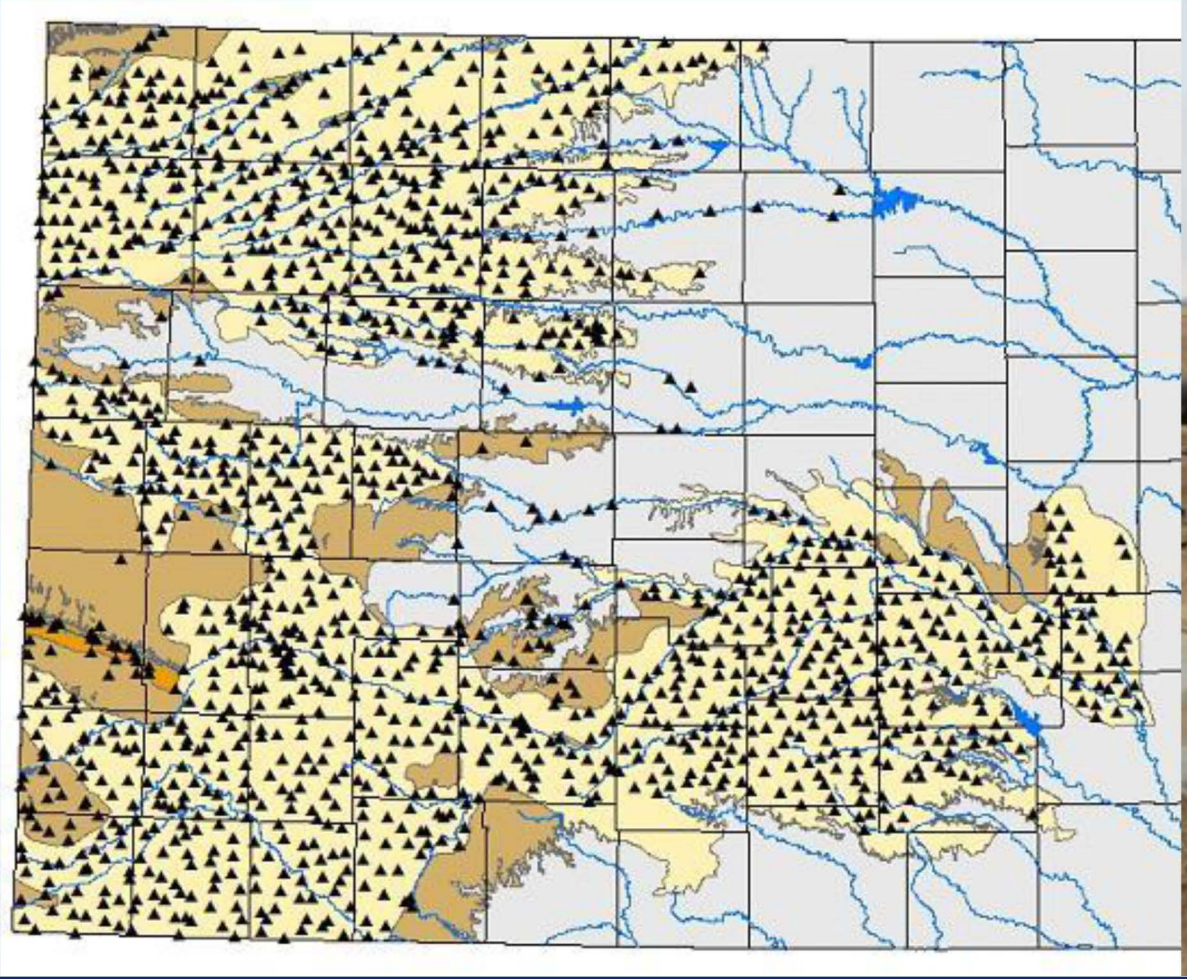
Index Well Program - over 20 wells with continuous recorders



Thomas Co Index Well
09S 33W 33BBB



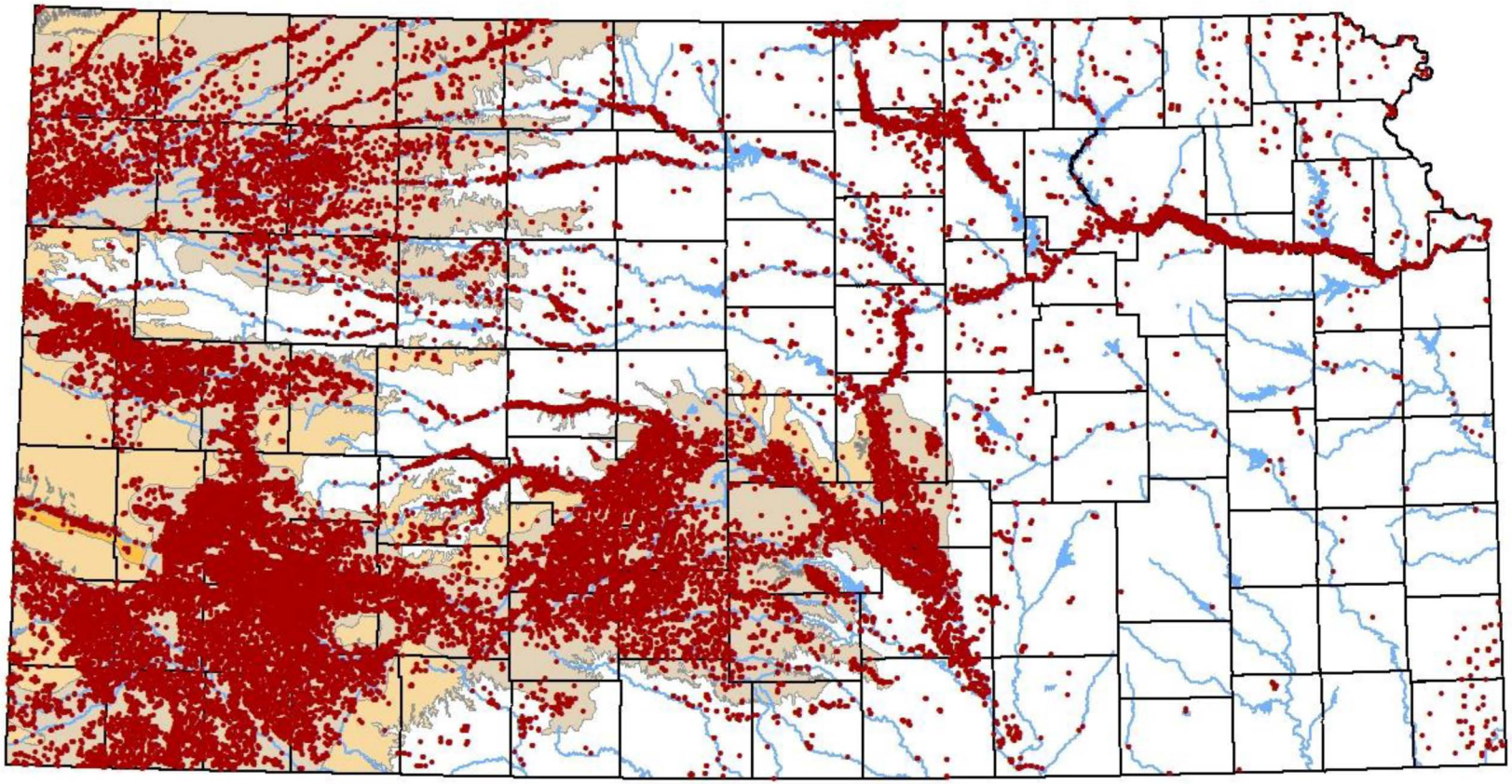
Annual Water Level Measurement Program



≈1400 wells measured in High Plains aquifer in 2016

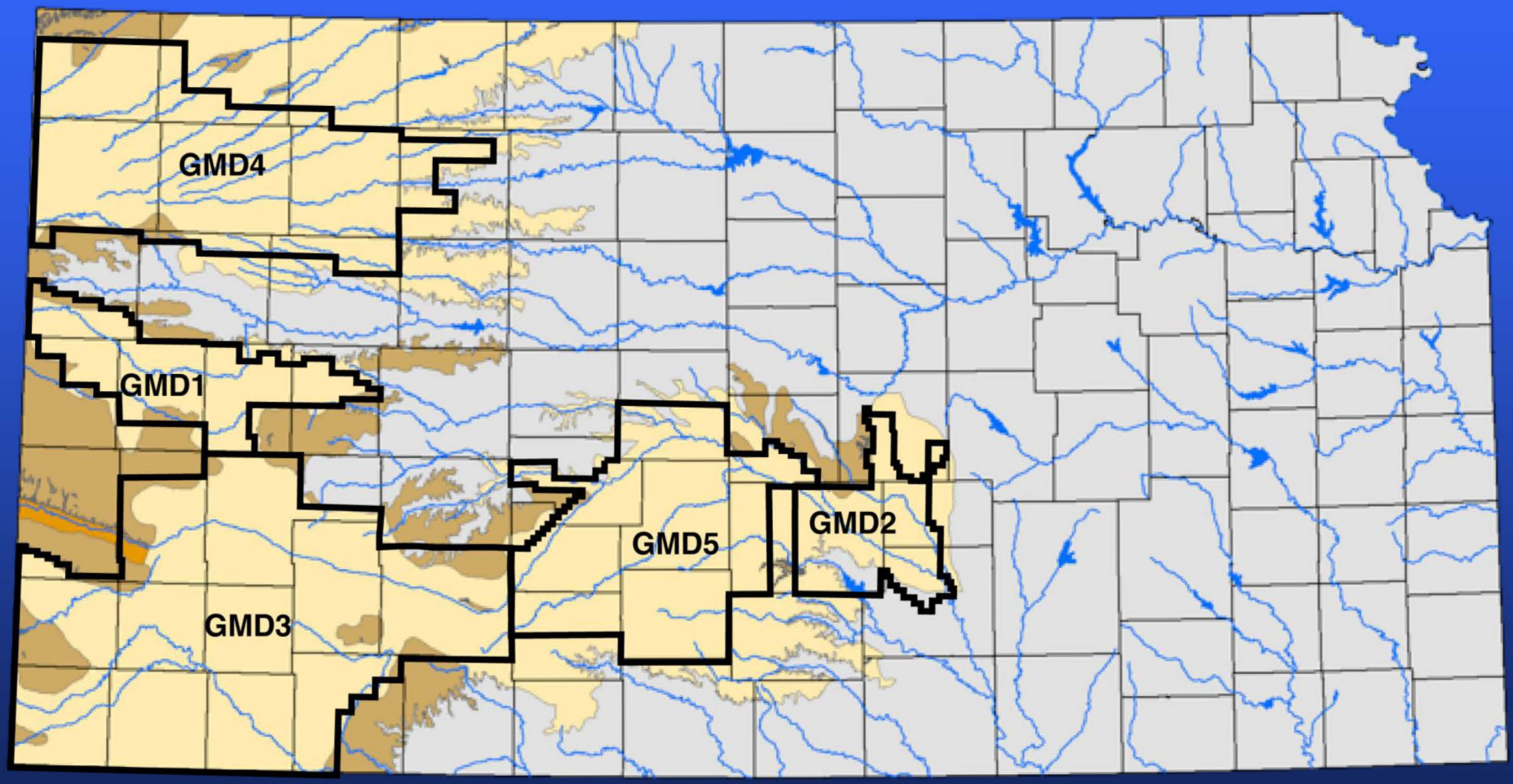
- http://www.kgs.ku.edu/HighPlains/HPA_Atlas/index.html

Active Water-Right Wells in Kansas



As of May 2016 – there are 32,764 active water-right wells in Kansas, 26,290 of these wells are in areas that overlie the High Plains aquifer. As of 2013, over 89% of irrigation wells in Kansas had totalizing flowmeters.

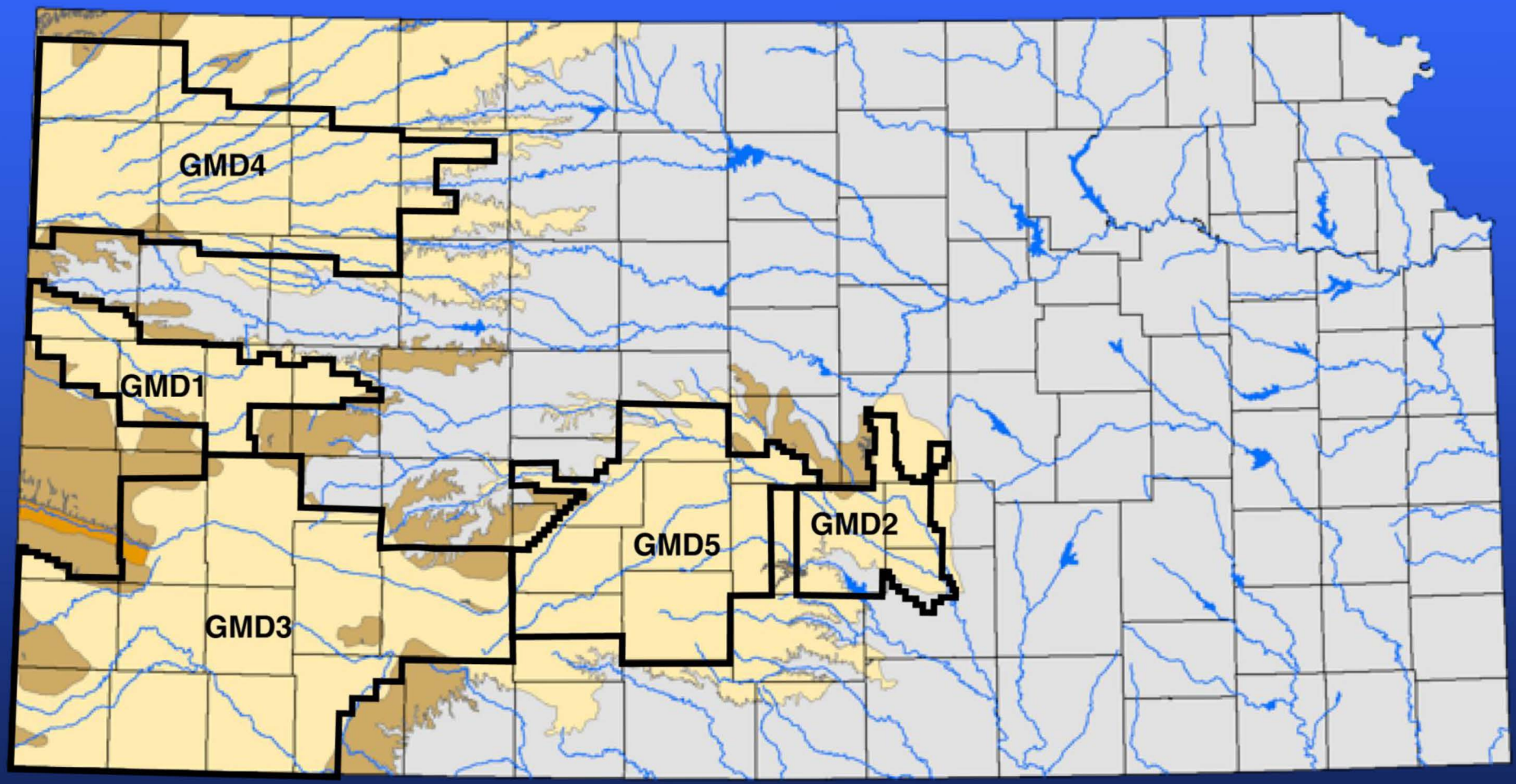
The High Plains Aquifer in Kansas
- Groundwater Management Districts (GMDs)



- assist state water agency in groundwater management
- elected board from district
- taxing authority

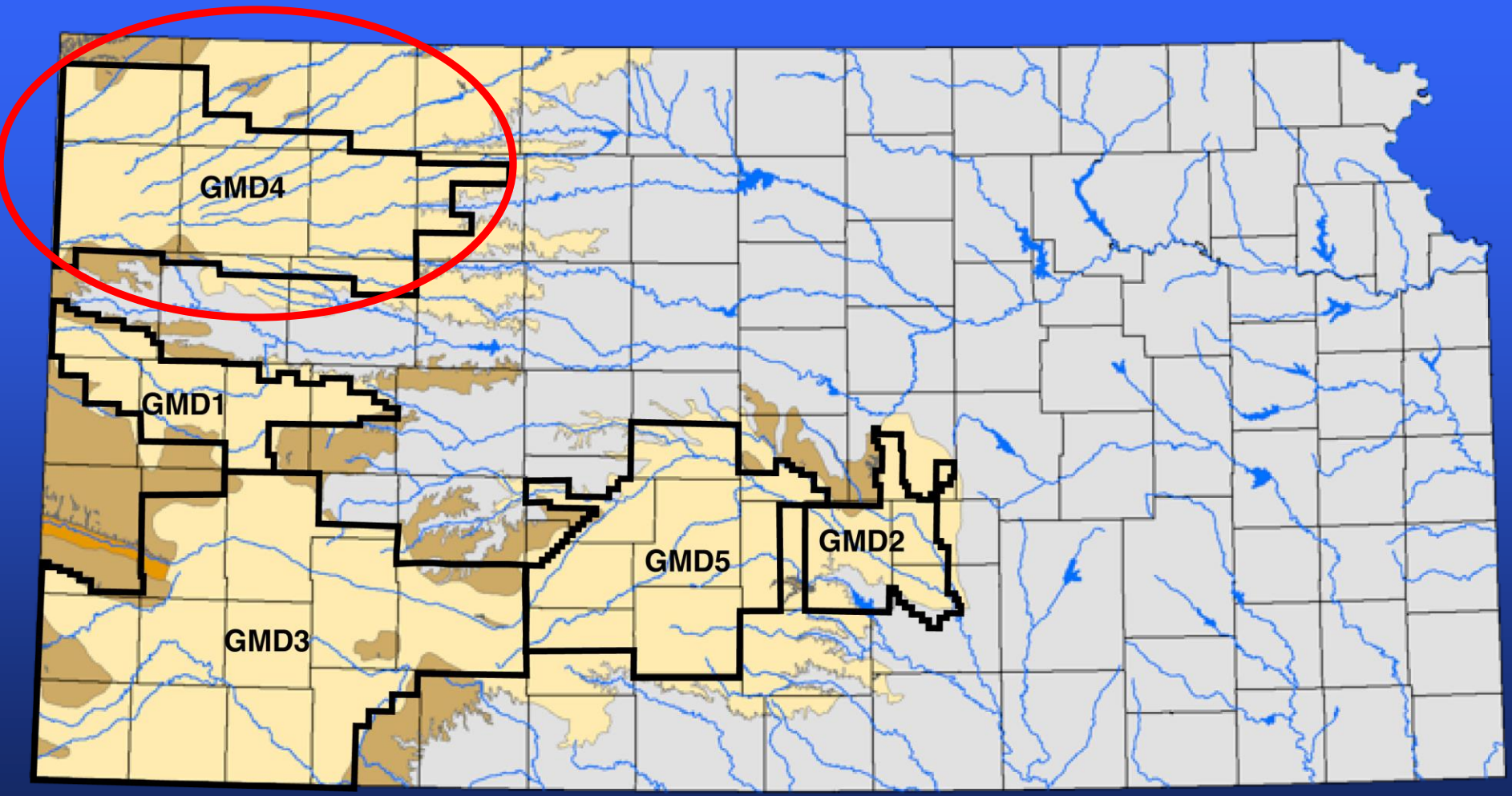
Sustainability Assessment

Water Volume Change = Inflow – Outflow



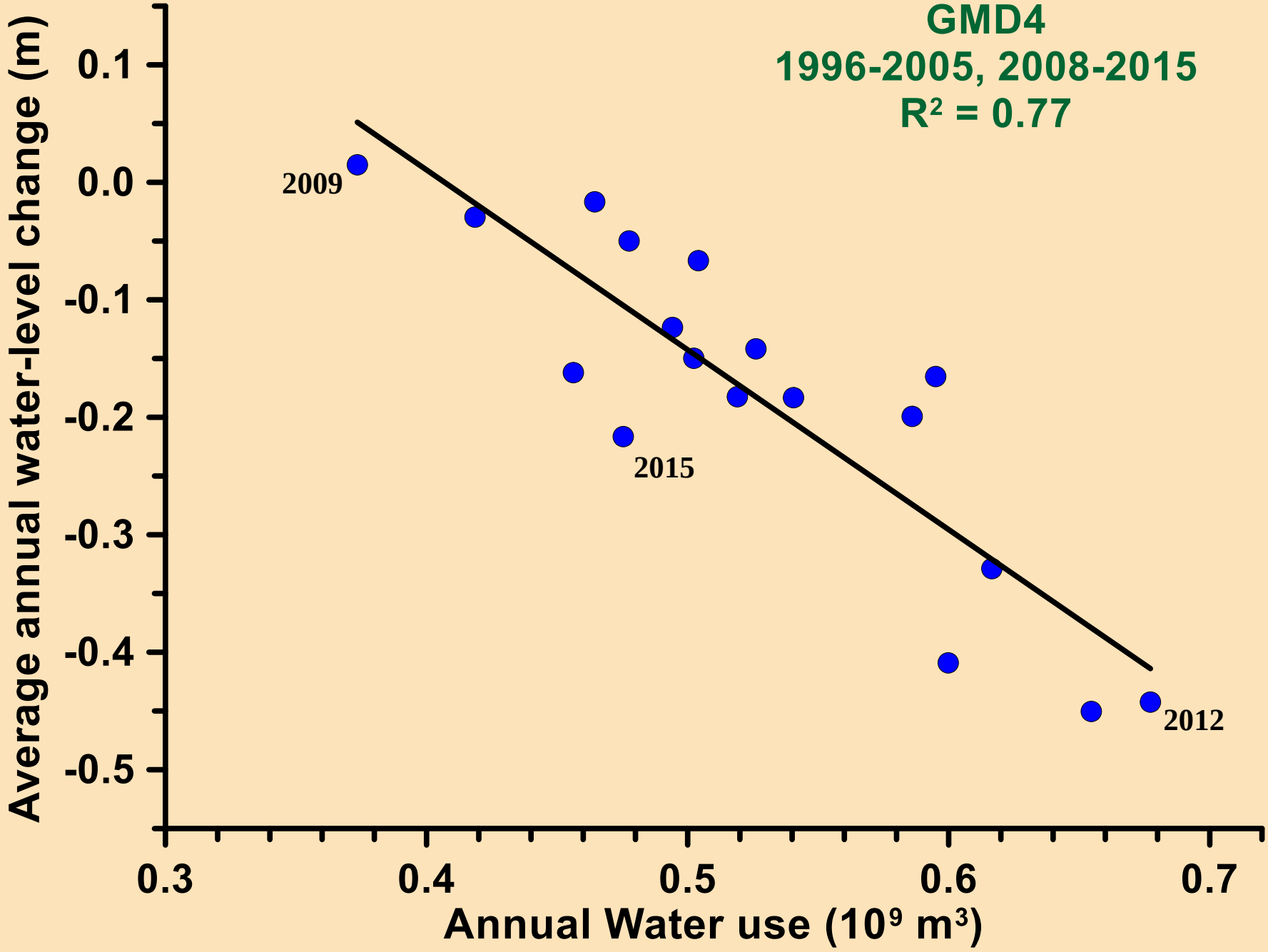
Sustainability Assessment

Water Volume Change = Net Inflow - Pumping

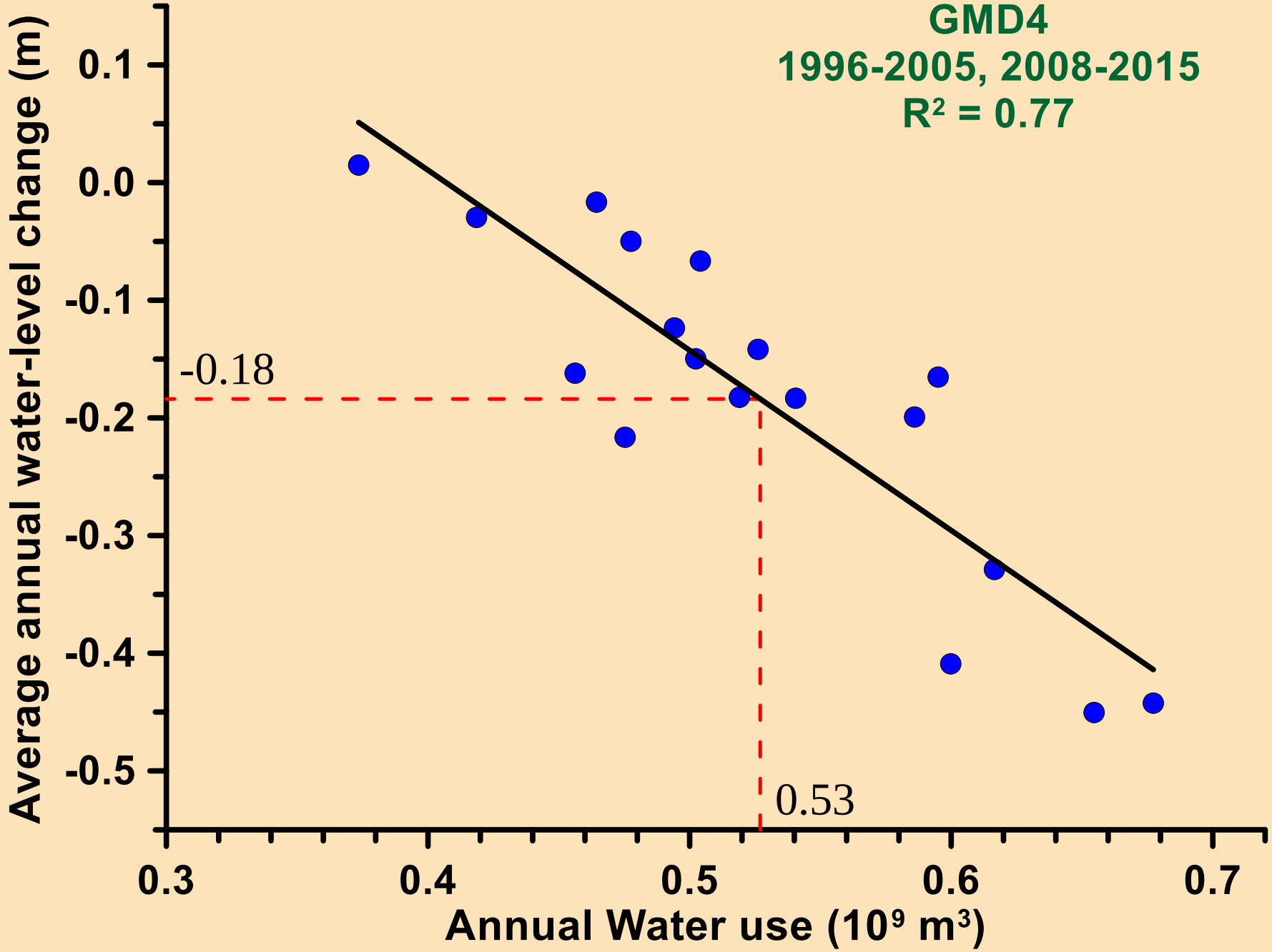


GMD4 area = 12,623 km^2

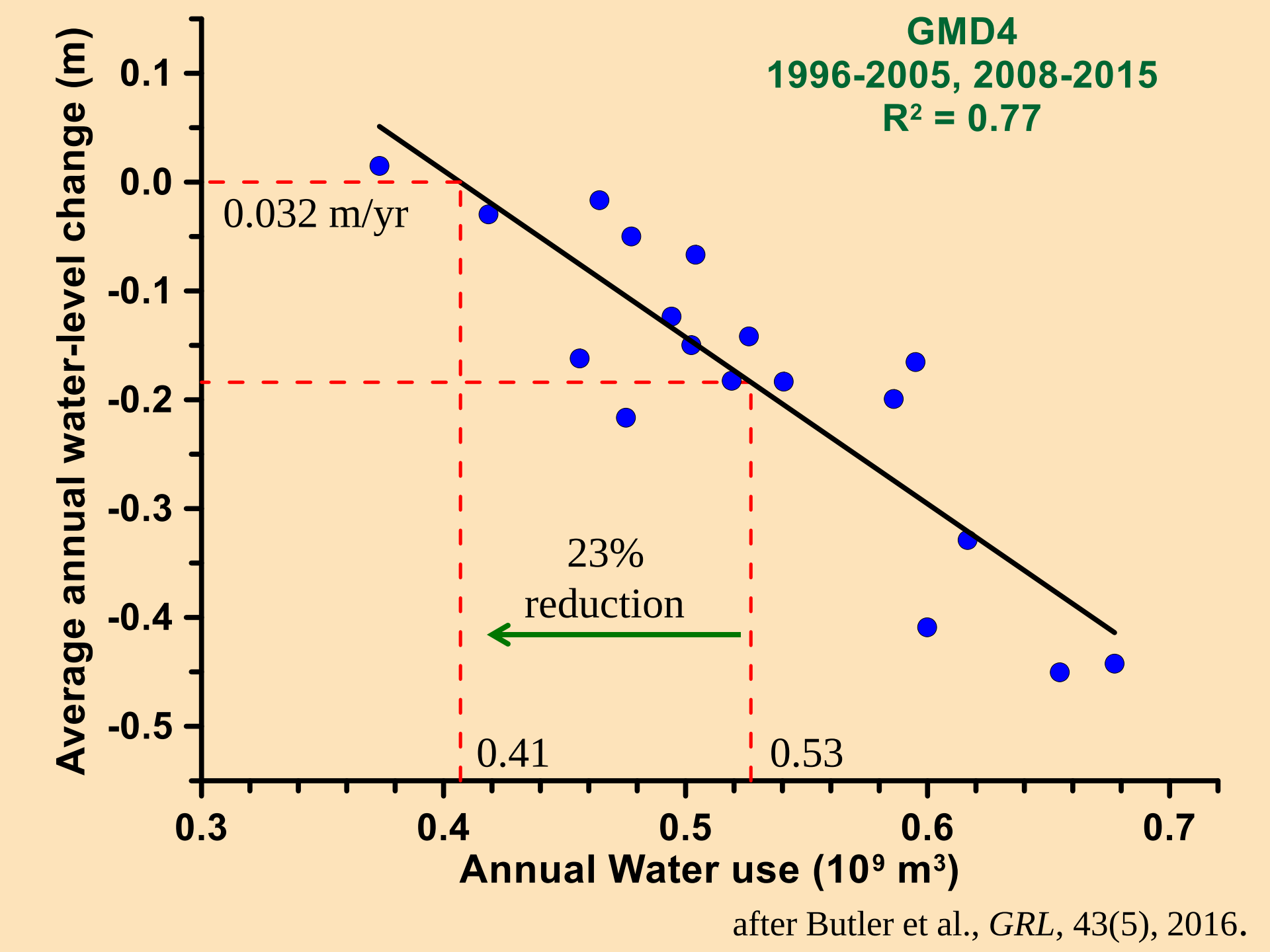
- 188 wells measured every year from 1996-2015
- 4,185 pumping wells with flowmeters



after Butler et al., *GRL*, 43(5), 2016



Butler et al., *GRL*, 43(5), 2016.



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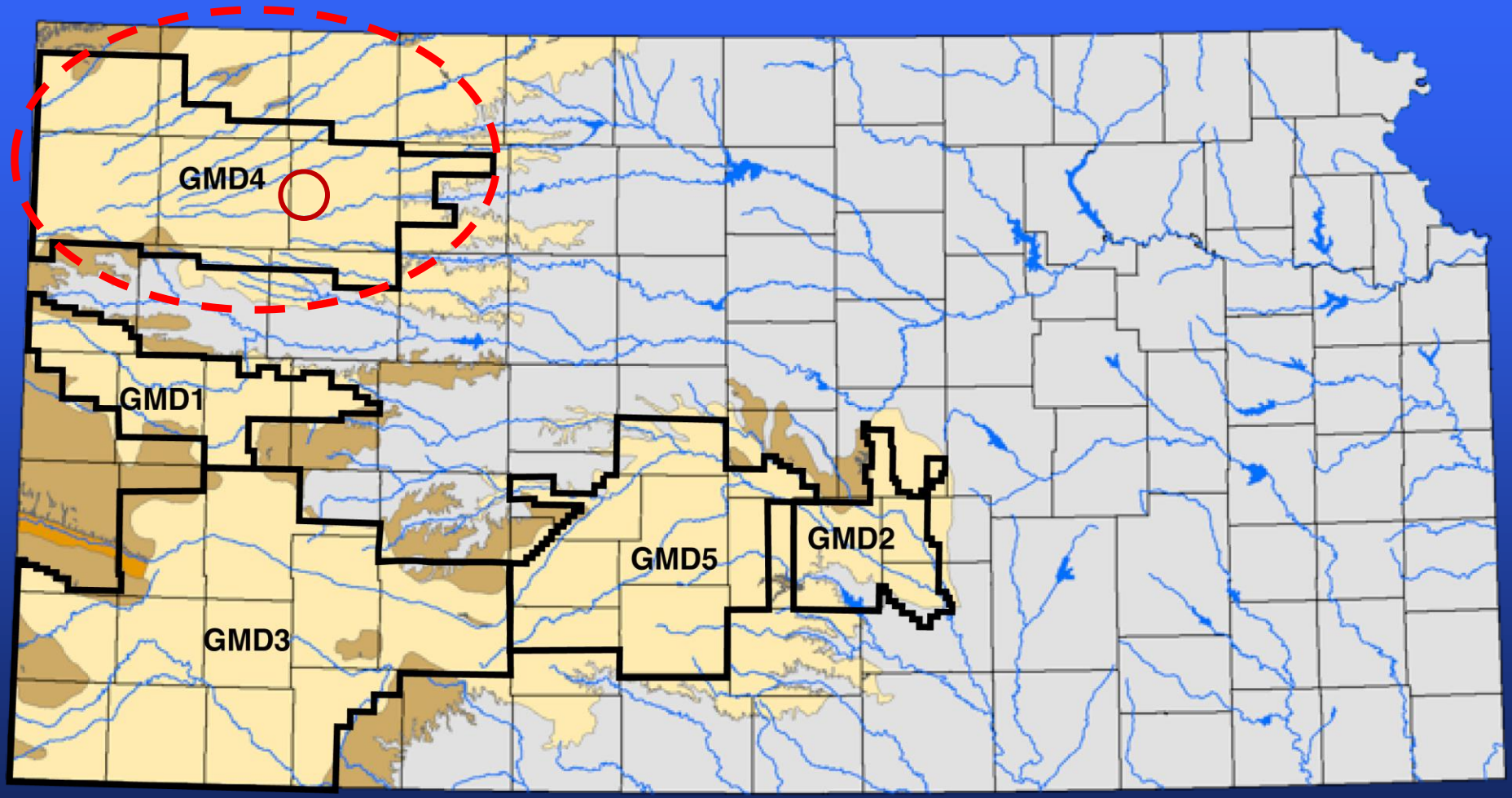
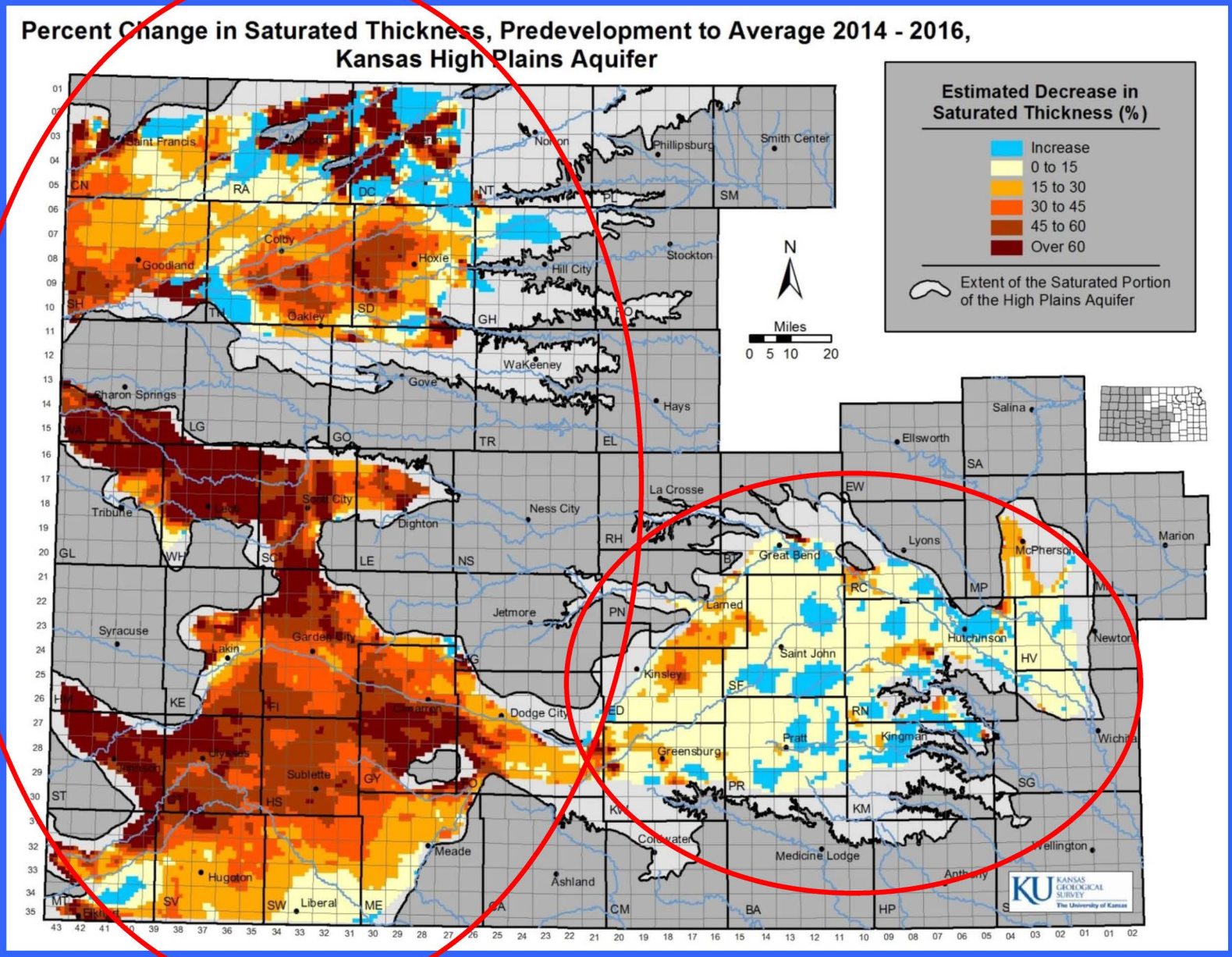
The High Plains Aquifer in Kansas
- New Management Options



- Local Enhanced Management Areas (LEMAs)
- Water Conservation Areas (WCAs)

Future Prospects?



Kansas High Plains Aquifer Atlas

This atlas has been created to serve as the primary gateway to the most recent graphical data available for the High Plains aquifer in Kansas. As newer/updated data become available, this atlas will be updated.

Introduction and Navigation

Click here to view instructions for navigating this atlas.

3 images

Aquifer Basics

Basic information about the geology and hydrology of the High Plains aquifer.

18 images

Water Levels

View water levels from predevelopment to current.

9 images

Water Rights and Water Use

12 images

Climate and Climate Trends

18 images

Land Cover and Irrigation

5 images

Index Well Program

The Kansas Geological Survey has installed index wells, one in each of the three western Kansas Groundwater Management Districts, to continuously monitor water levels in the Ogallala-High Plains aquifer.

4 images

Interactive Atlas

Use our interactive atlas to view water levels, saturated thickness, and more.

www.kgs.ku.edu/HighPlains/HPA_Atlas/index.html

ACKNOWLEDGMENTS

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