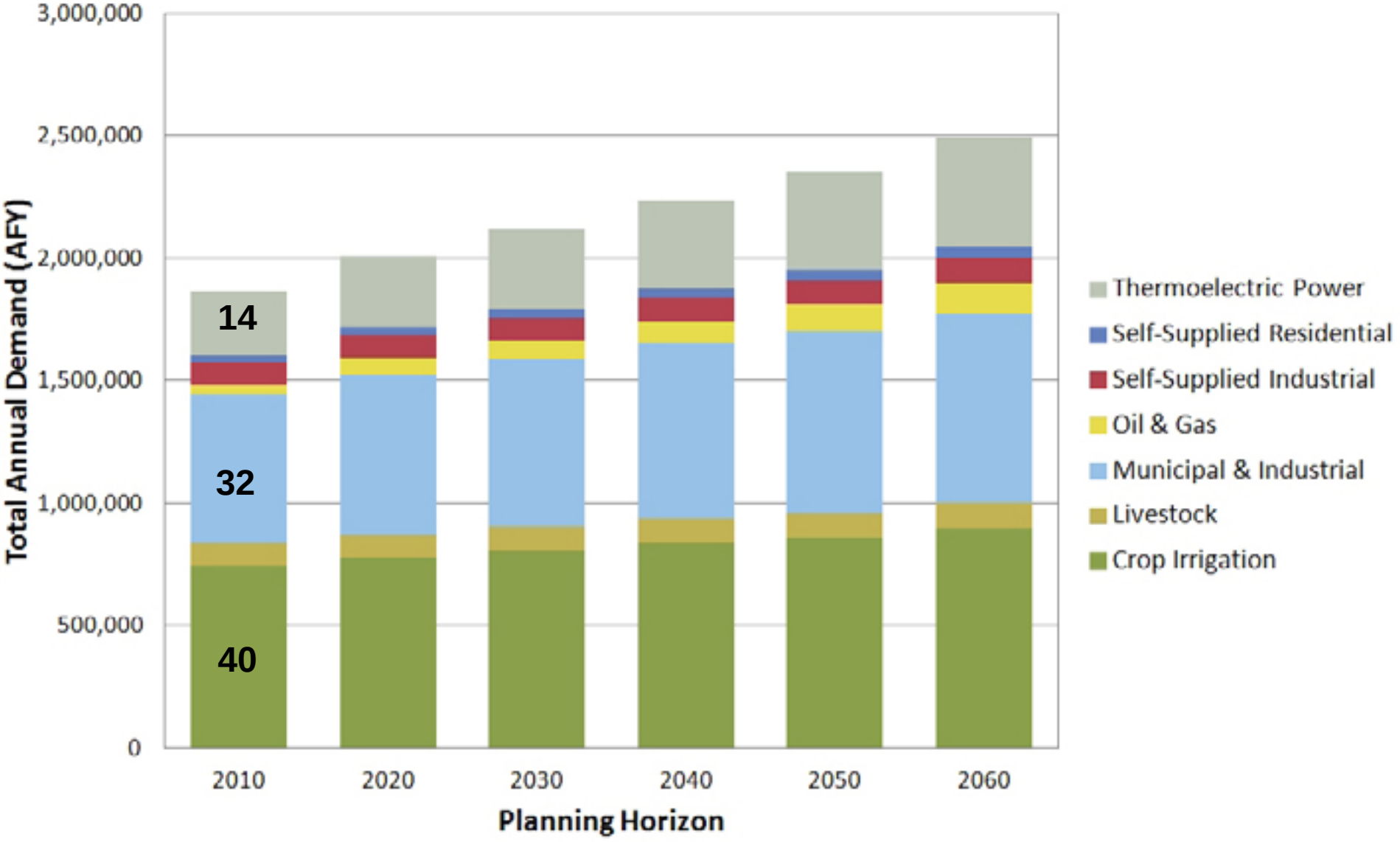
Homework assignment.

- http://soils.usda.gov/use/worldsoils/papers/pop-support-paper.html
- Read the conclusion and write 250 word abstract on what you think of it. Turn it in on Wed. Jan 19th.

Oklahoma Comprehensive Water Plan, 2011 Executive Report

- http://www.owrb.ok.gov/supply/ocwp/pdf_ocwp/WaterPlanUpdate/draftreports/OCWP%20Executive%20Rpt%20FINAL.pdf

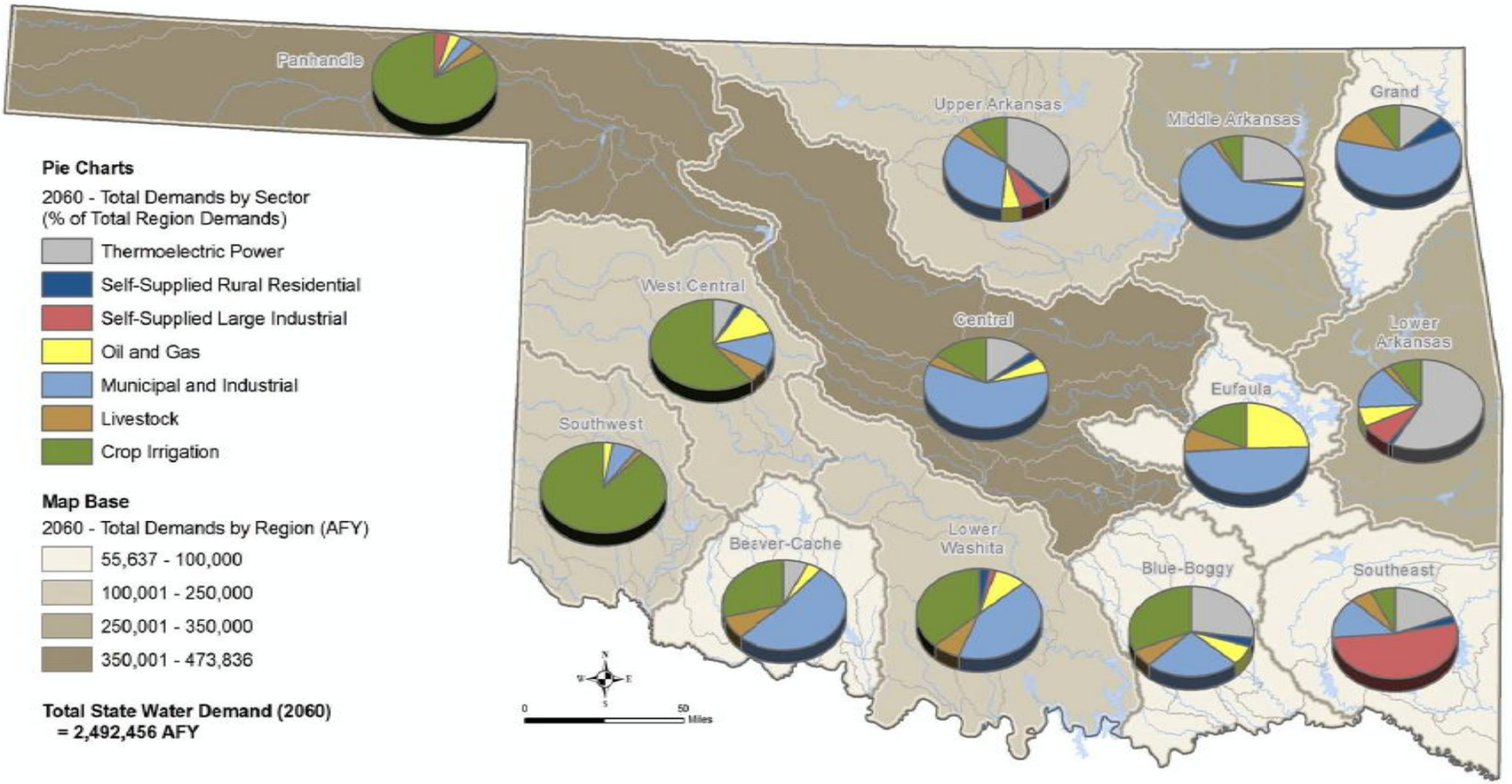
Total Water Demand in Oklahoma



Assumptions for future Ag. Demand

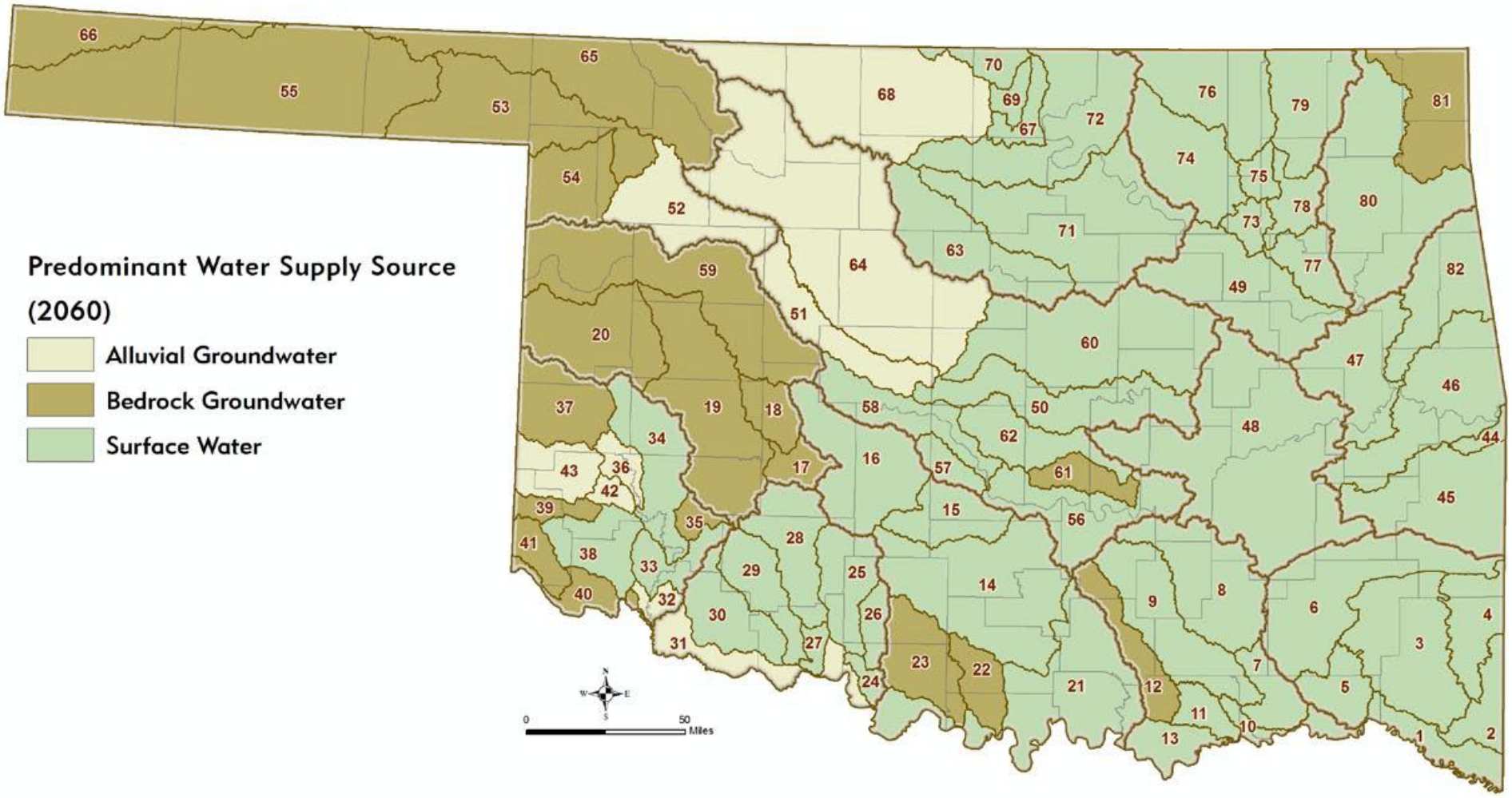
- Irrigated acreage will increase to historic highs.
- Efficiencies will not change
- Commodity value will drive use

Water Demand in 2060

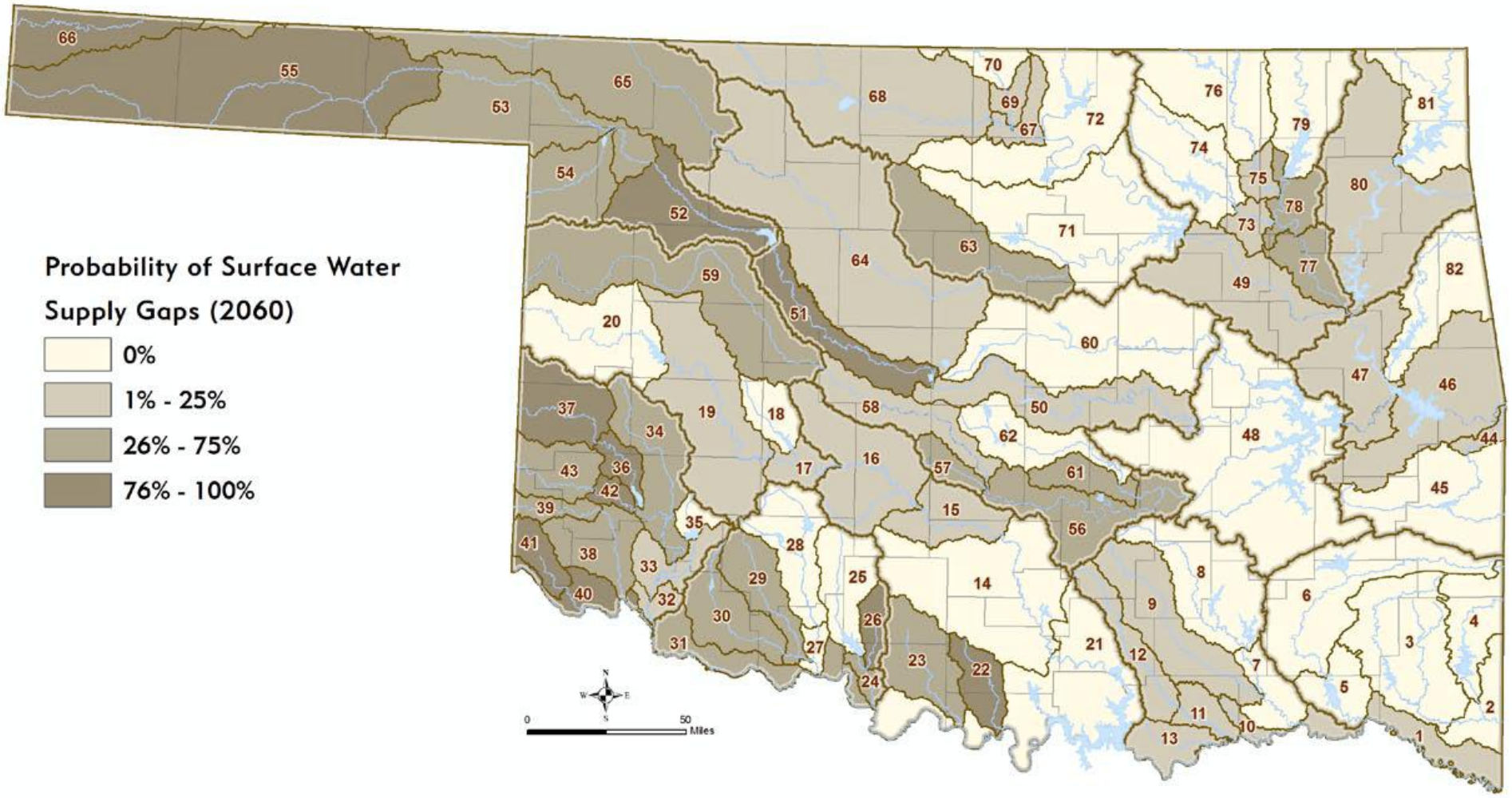


Distribution among sectors is very similar throughout time.

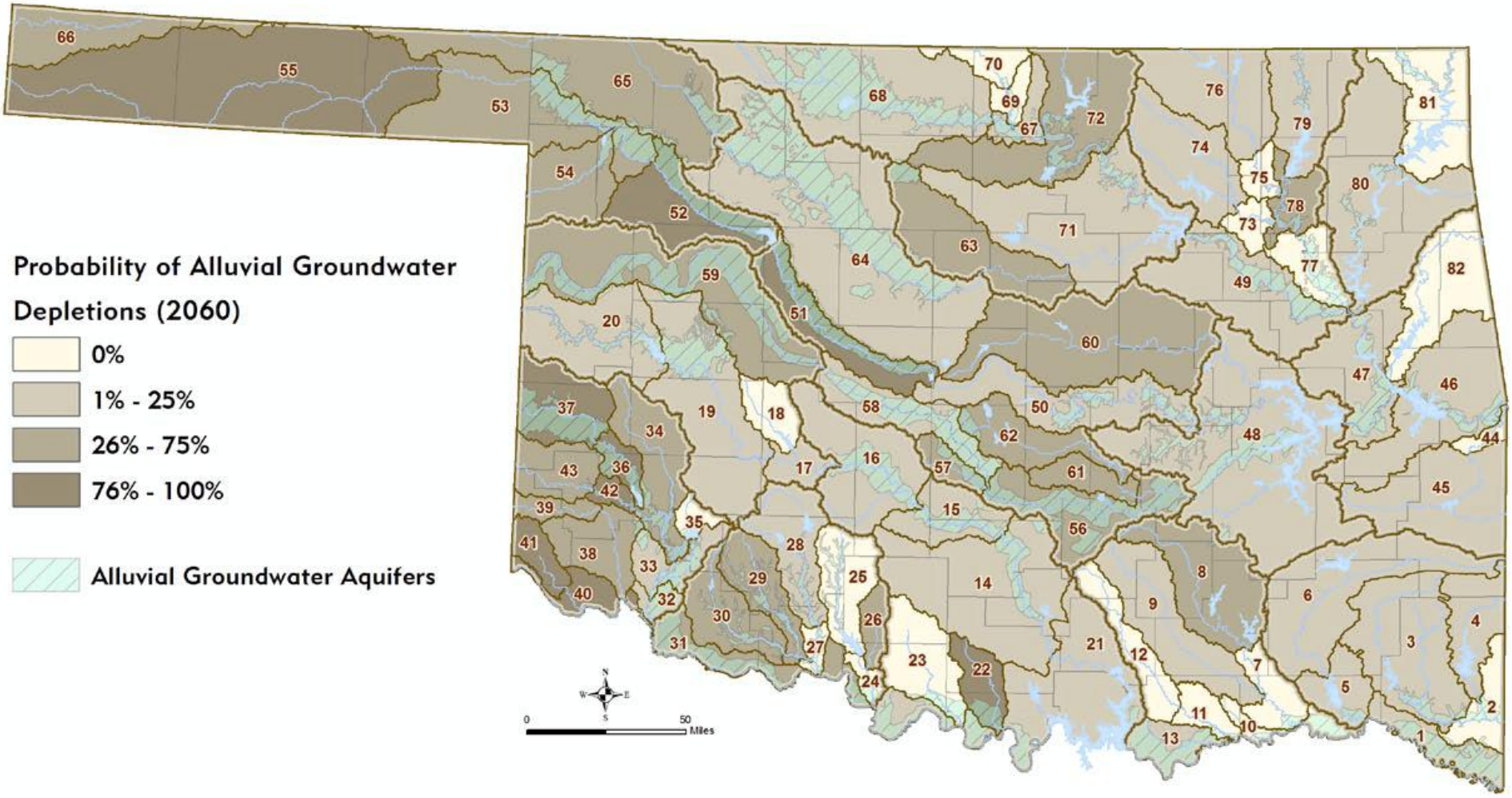
Predominate Water Supply Source



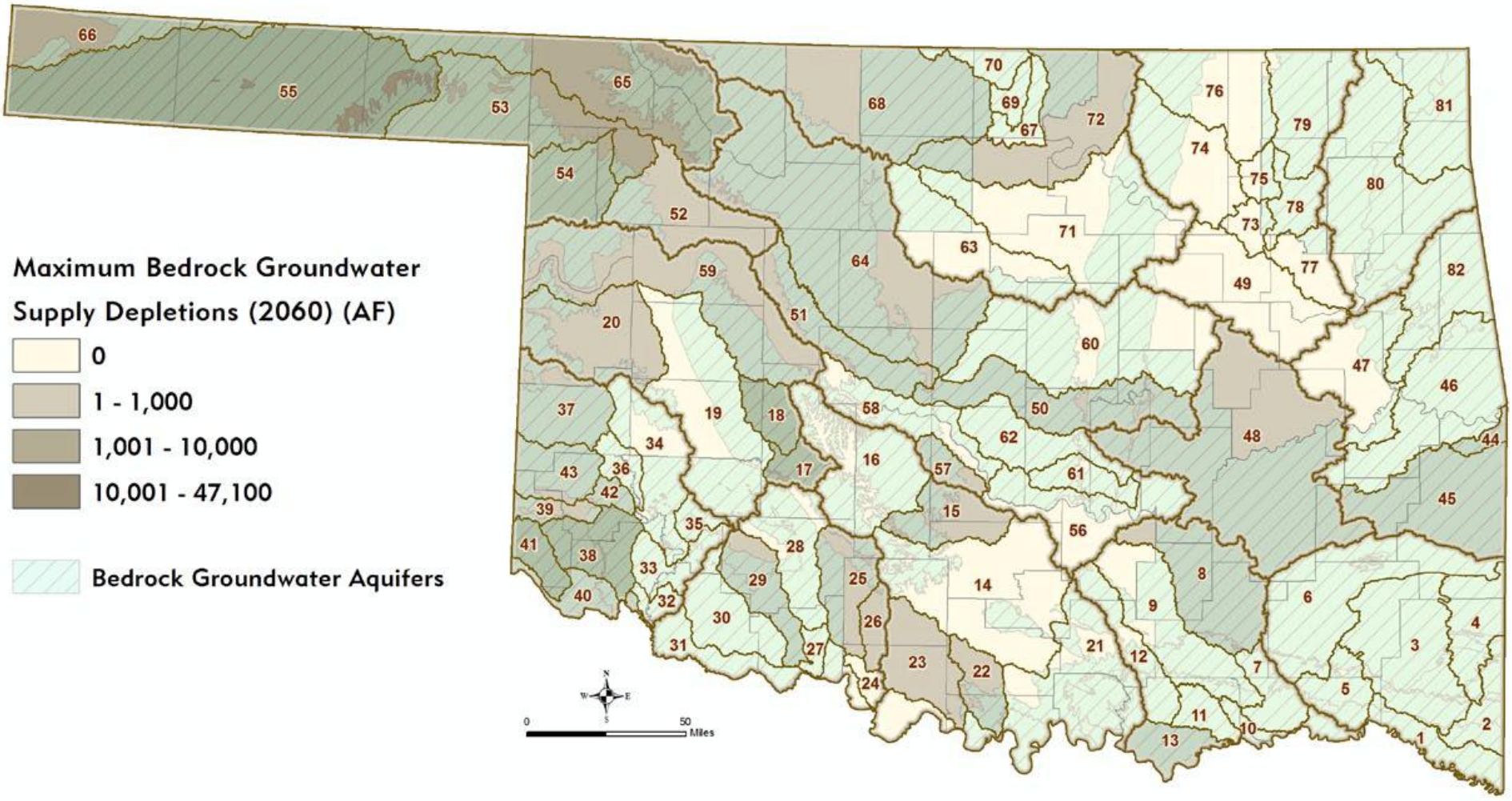
Probability of Surface Water Supply Gaps



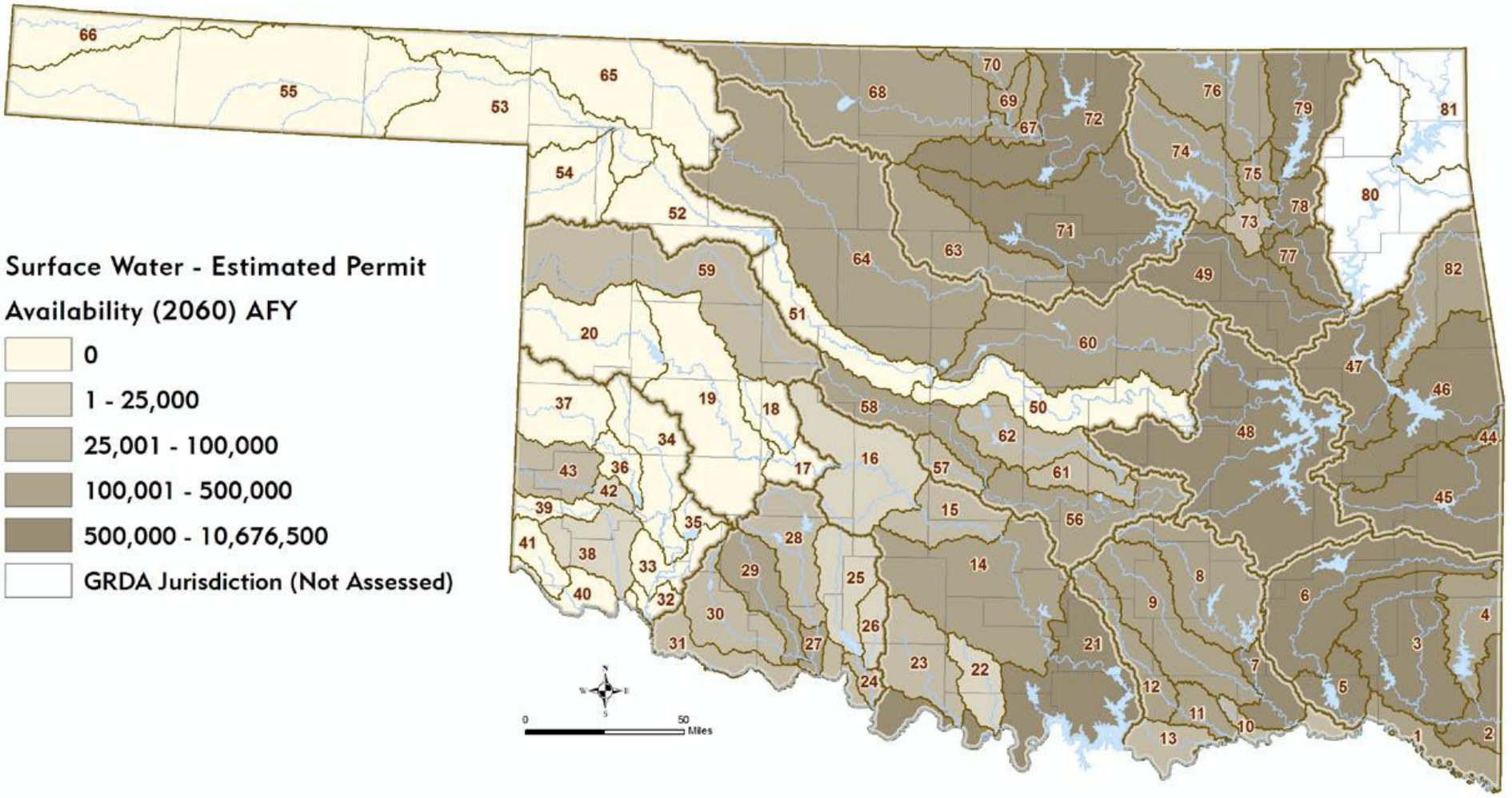
Probability of Alluvial Groundwater Depletions



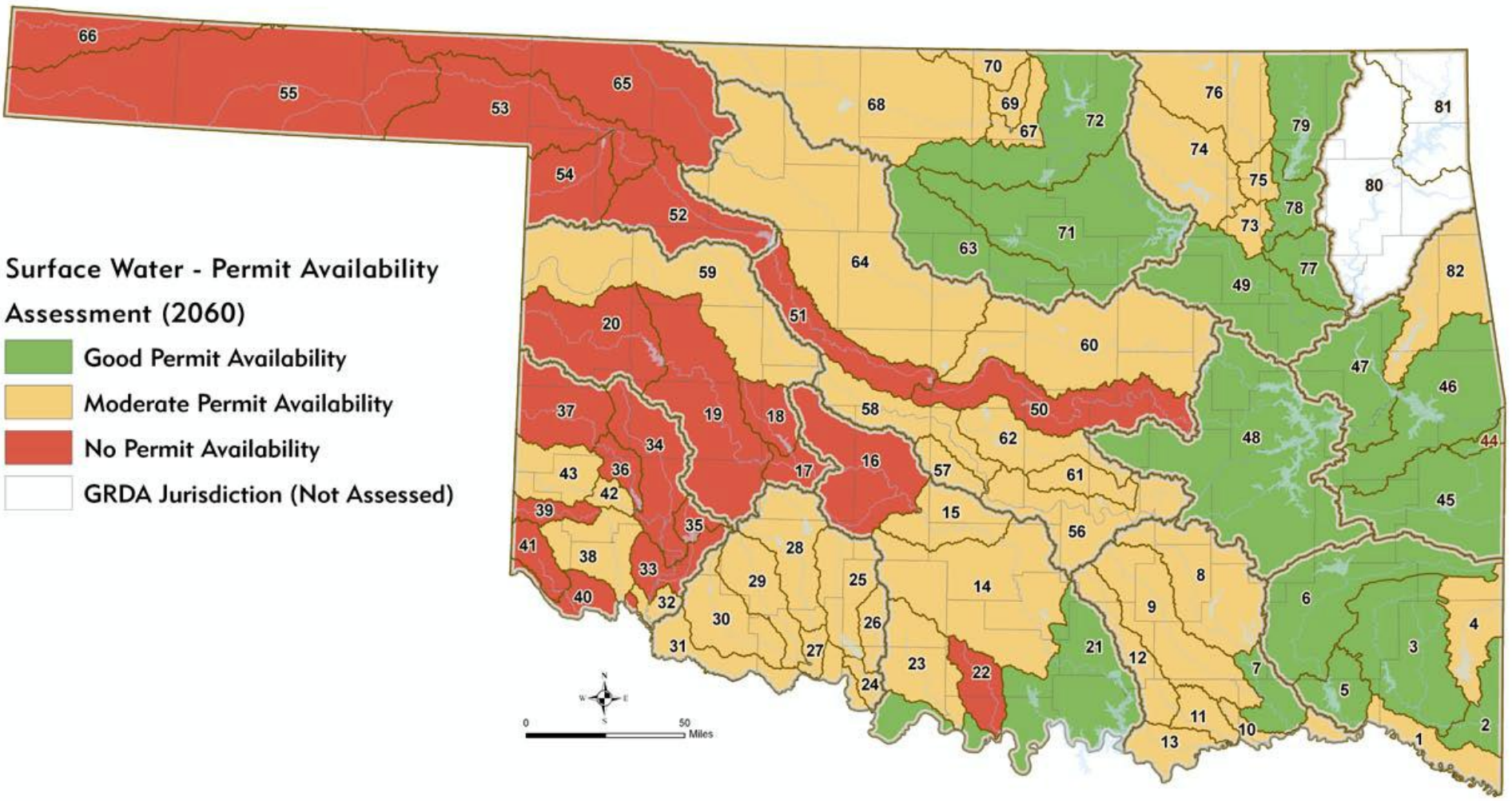
Bedrock Groundwater Supply Depletions



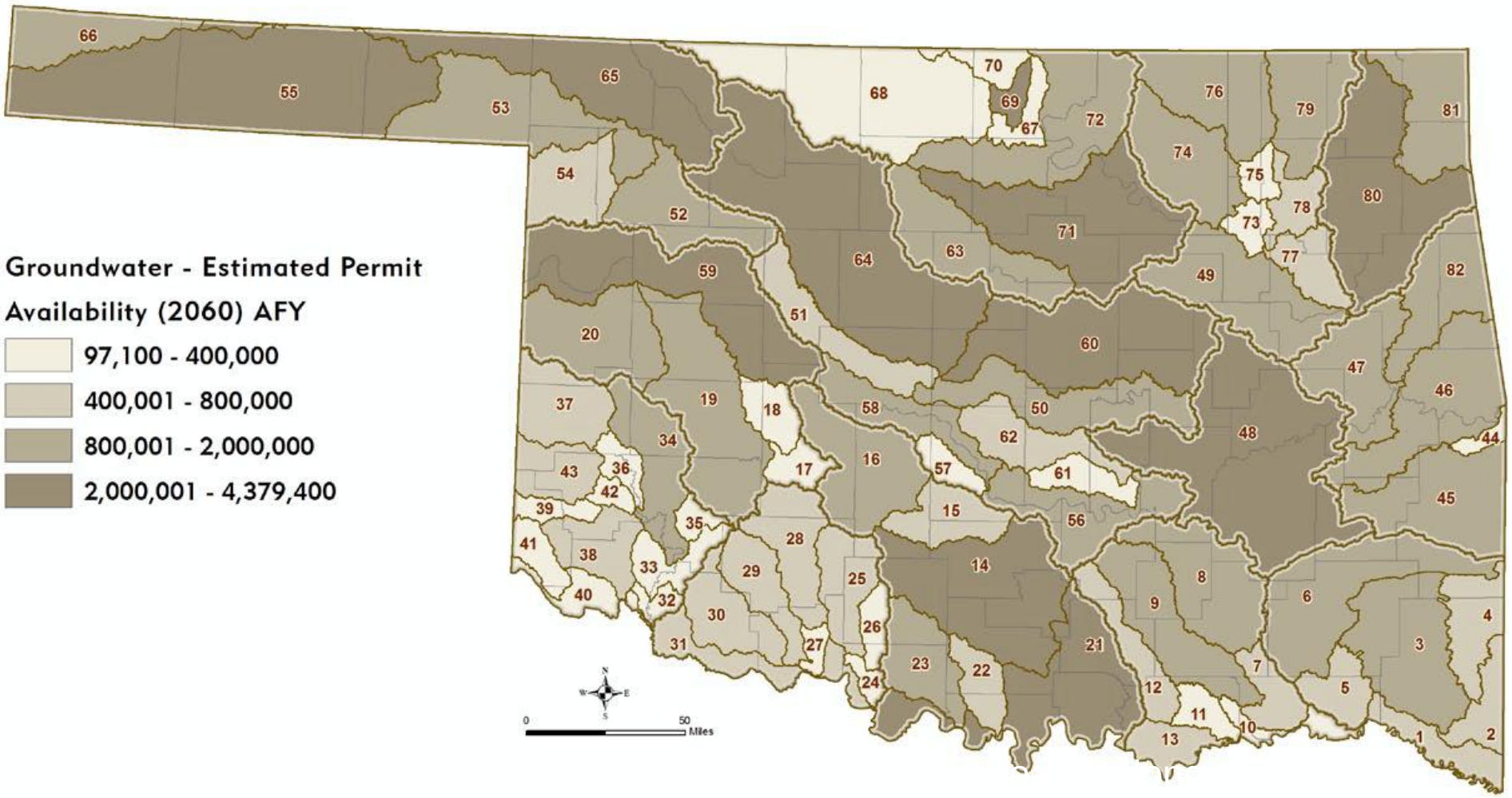
Surface Water Estimated Permit Availability



Surface Water Permit Availability

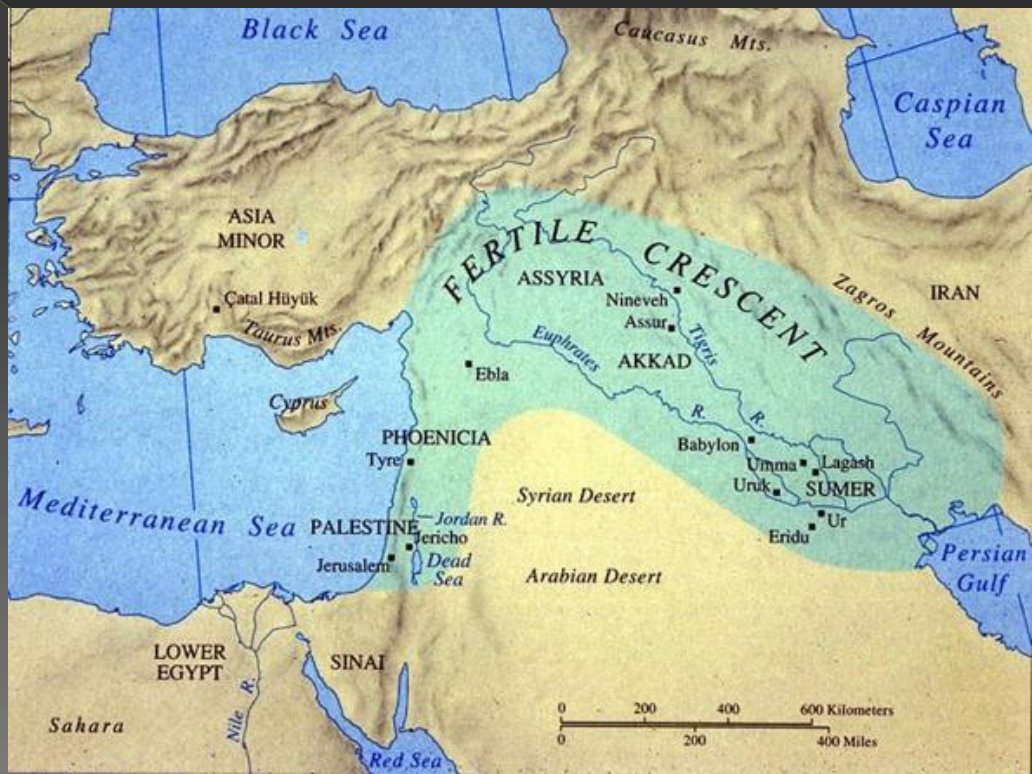


Groundwater estimated Permit Availability



Historic perspective on the consequences of soil degradation

- Improper management of soil and water resources has cause the downfall of many civilizations.
- Dr. Lowdermilk, toured the world to evaluate land degradation (1938-1939) (URL)



http://www.squidoo.com/the-early-people-of-mesopotamia?utm_source=google&utm_medium=imgres&utm_campaign=framebuster

Cradle of Civilization (Mesopotamia, present day Iraq)

- Deforestation, cultivation and over grazing of steep slopes cause massive erosion
- The population grew to 25 million
- Increased demand for food and decreased productivity caused steeper slopes to be cultivated
- Erosion filled the irrigation canals
- Salts in irrigation water accumulated in soils
- In the 1930 the population had fallen to 4 million

North Africa (Carthage, present day Tunisia)

- Carthage was very productive region in Roman era
- Erosion during the winter fallow periods caused extensive erosion
- Desert dwellers attacked Carthage and agriculture declined
- Neglect and over grazing caused further decline in productivity

North Africa (Tunisia)

- Lowdermilk found scattered areas of productive soils.
- Suggesting that climate change was not responsible for the decreased productivity of the region but that soil degradation is to blame

A long-lived success under Recent Stress (Nile Floodplain)

- Agriculture in the Nile River floodplain because it provide irrigation with no canals and little soil eroded
- Fine textured and fertile sediments from erosion in Ethiopia were deposited in the Egyptian floodplain
- The Aswan High Dam built in 1970 has
  - Removed fertile sediments
  - Increased erosion
  - Increased fertilizer use and water quality degradation

The American Dust Bowl

- Settlement of the high plains was encourage after the civil war
- A wet period encouraged this settlement and cultivation of the area.
- Another wet period occurred in the 1920
- This corresponded to a dramatic increase in wheat prices and mechanization of farming

The Plow that Broke the Plains

- http://www.youtube.com/watch?v=fQCwhjWNcH8
- Very good about black Friday and Hugh Bennett
  - http://www.youtube.com/watch?v=psVsc74DLIE

Black Sunday Article

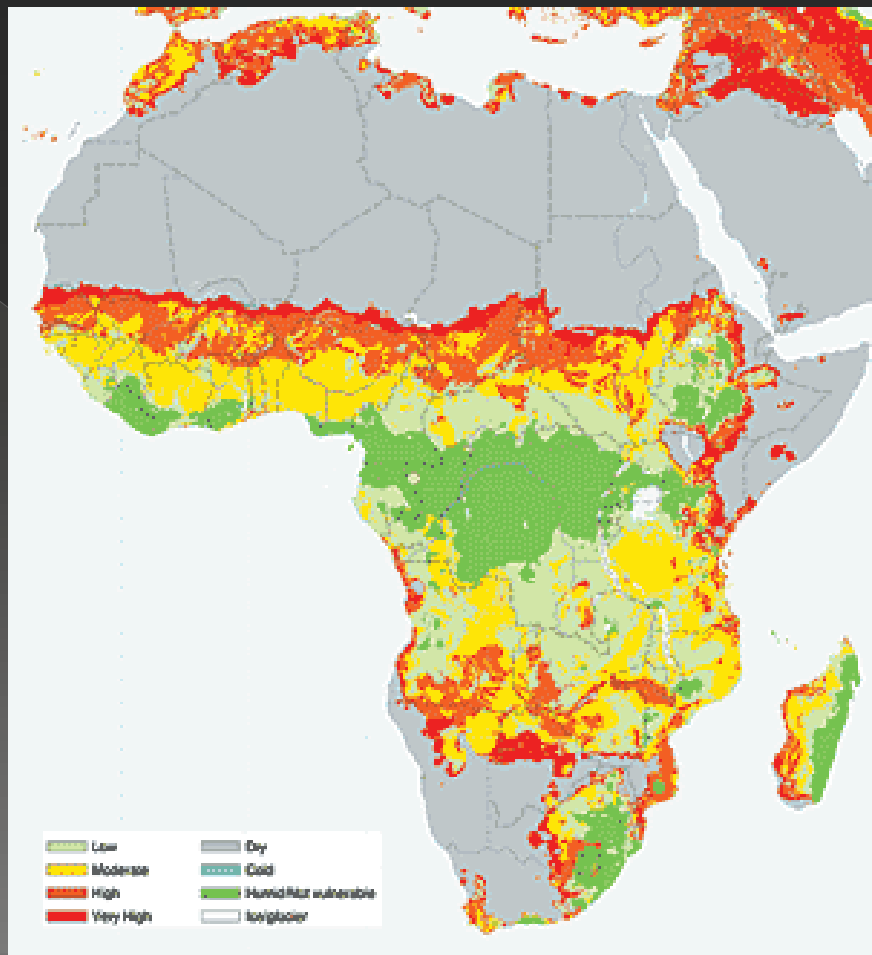
- A dust storm occurred which carried soil from the high plains to Washington DC.
- It arrived during a congressional hearing where Hugh Bennett was requesting for the formation of the Soil Conservation Service.
- The SCS was created before the end of the year.
- http://www.srh.noaa.gov/oun/?n=blacksunday

Graham-Hoeme

- http://www.asabe.org/awards-landmarks/asabe-historic-landmarks/graham-hoeme-chisel-plow-38.aspx

There are Numerous examples of Current Soil Degradation

- Turkmenistan
- Gobi desert in China
- Sub-Saharan Africa



Desertification, Gobi Desert in China

- Dust Cloud
- Estimates predict that around 950 square miles of land become desertified on a yearly basis (Reference)

Desert Expansion in Gobi

http://www.defence.pk/forums/world-affairs/90706-india-most-over-regulated-country-wo

West Texas Dust Storm 10/17/11

- http://www.youtube.com/watch?v=fDgsrbri-8k&feature=related
- http://www.youtube.com/watch?v=CZ8XZ3L2Fe8&feature=fvsr
- http://www.youtube.com/watch?v=fDgsrbri-8k&feature=related