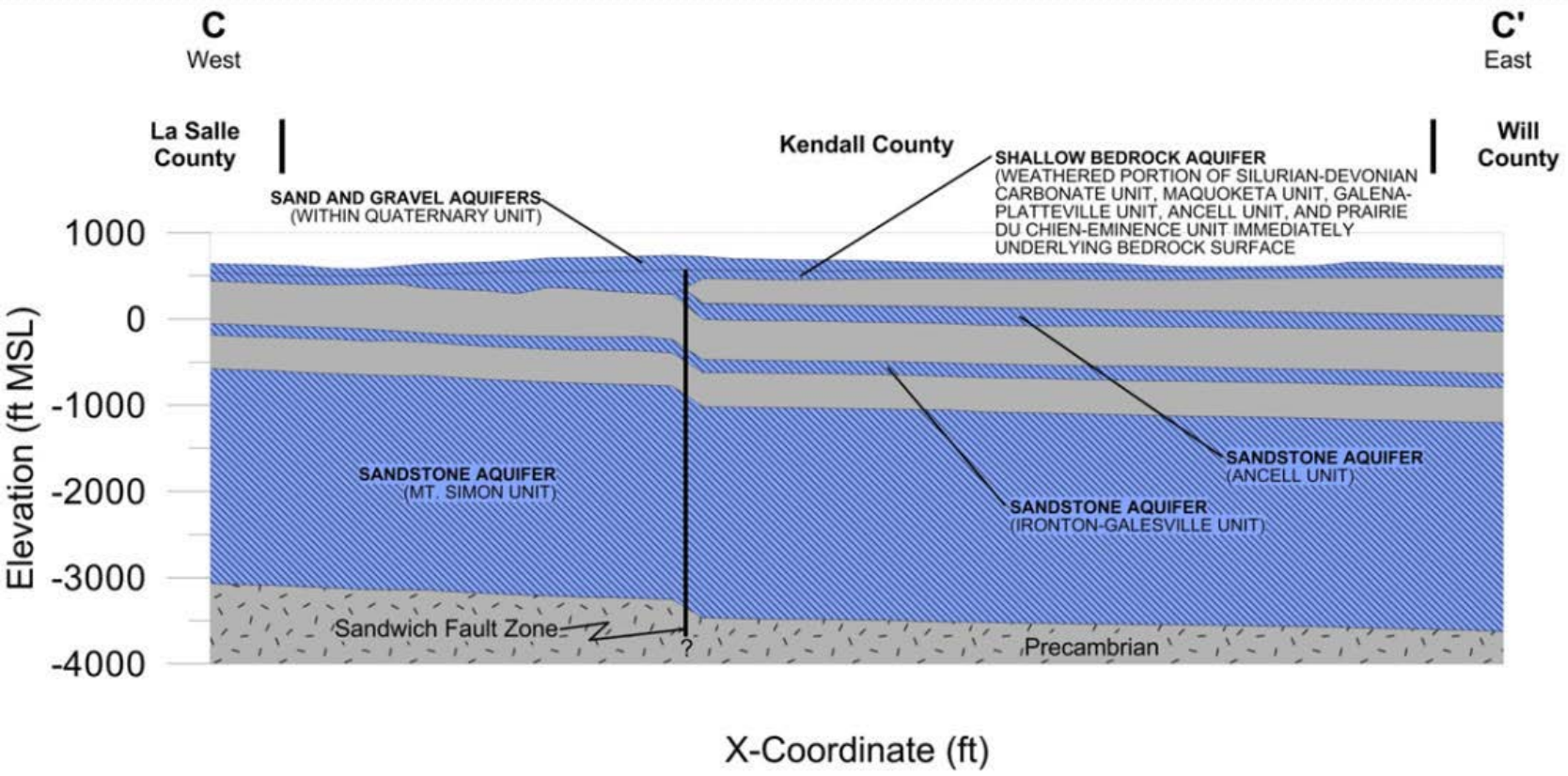
Groundwater Quality in Kendall County

Walt Kelly
Illinois State Water Survey
Prairie Research Institute
University of Illinois

Groundwater Quality Data Sources

- Groundwater quality database housed at the Water Survey
  - Public water supplies (IEPA)
  - Private wells (ISWS)
- 19 wells sampled in 2007
  - Confined to shallow wells (< 250 ft)
  - Northern half of the county

Aquifers in Kendall County



Shallow Aquifers (Sand & Gravel and shallow bedrock) most vulnerable to surface contamination

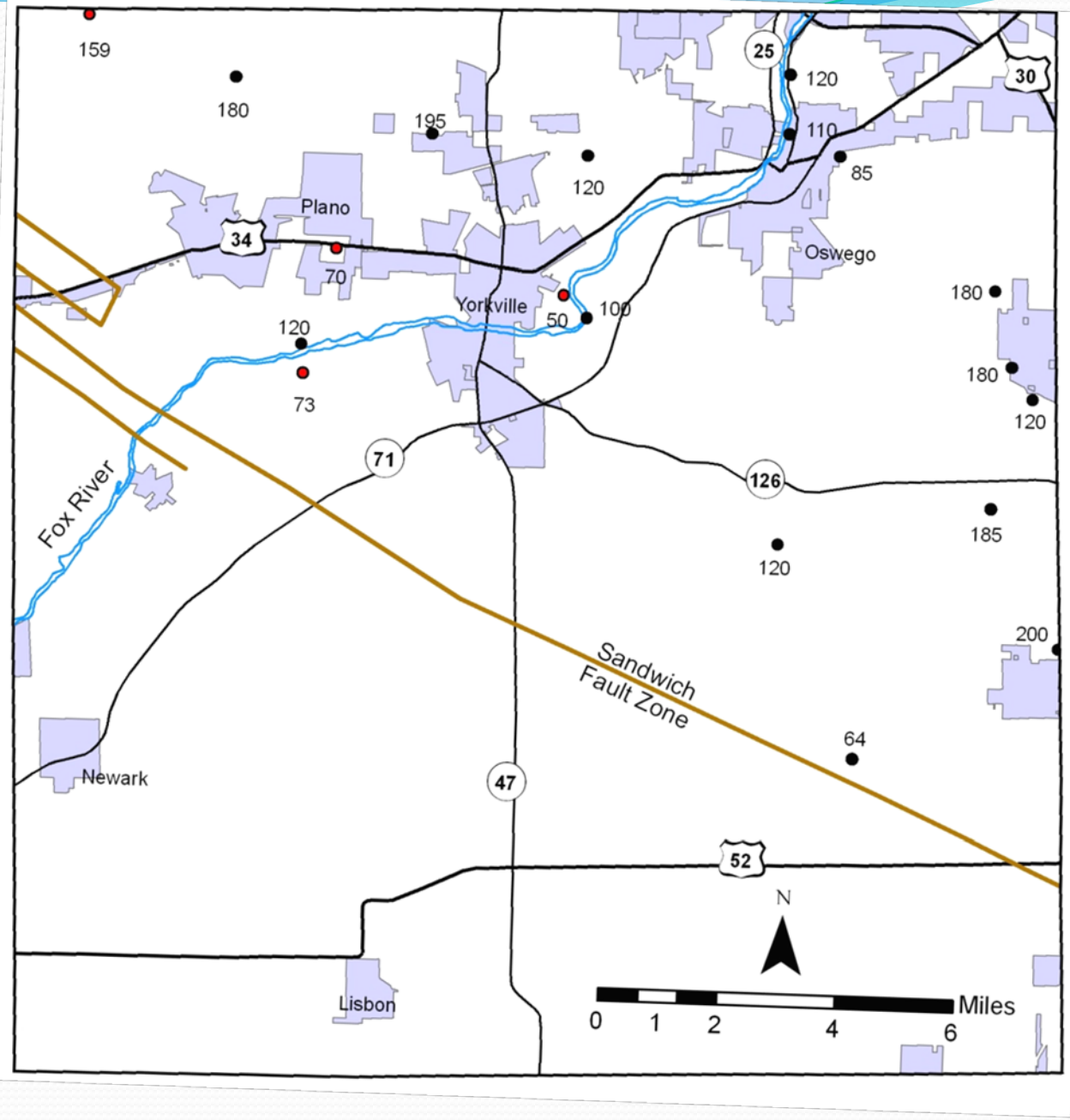
Overview of Groundwater Quality in Kendall County

- In general, groundwater quality is good in all aquifers
  - Common natural contaminants (arsenic, radium) generally not a problem
  - "Nuisance" contaminants elevated in some wells (hardness, iron, boron)
- Fluoride high in a few wells that have naturally soft water
- Nitrate elevated in a few wells, but always below drinking water standard (10 mg/L as N)
- Chloride elevated in a couple of wells, probably due to road salt runoff

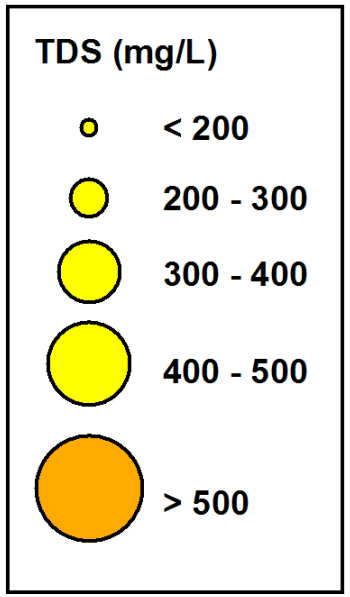
Shallow Wells Sampled in 2007

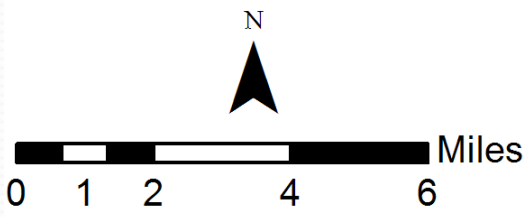
- Sand & Gravel
- Shallow Bedrock

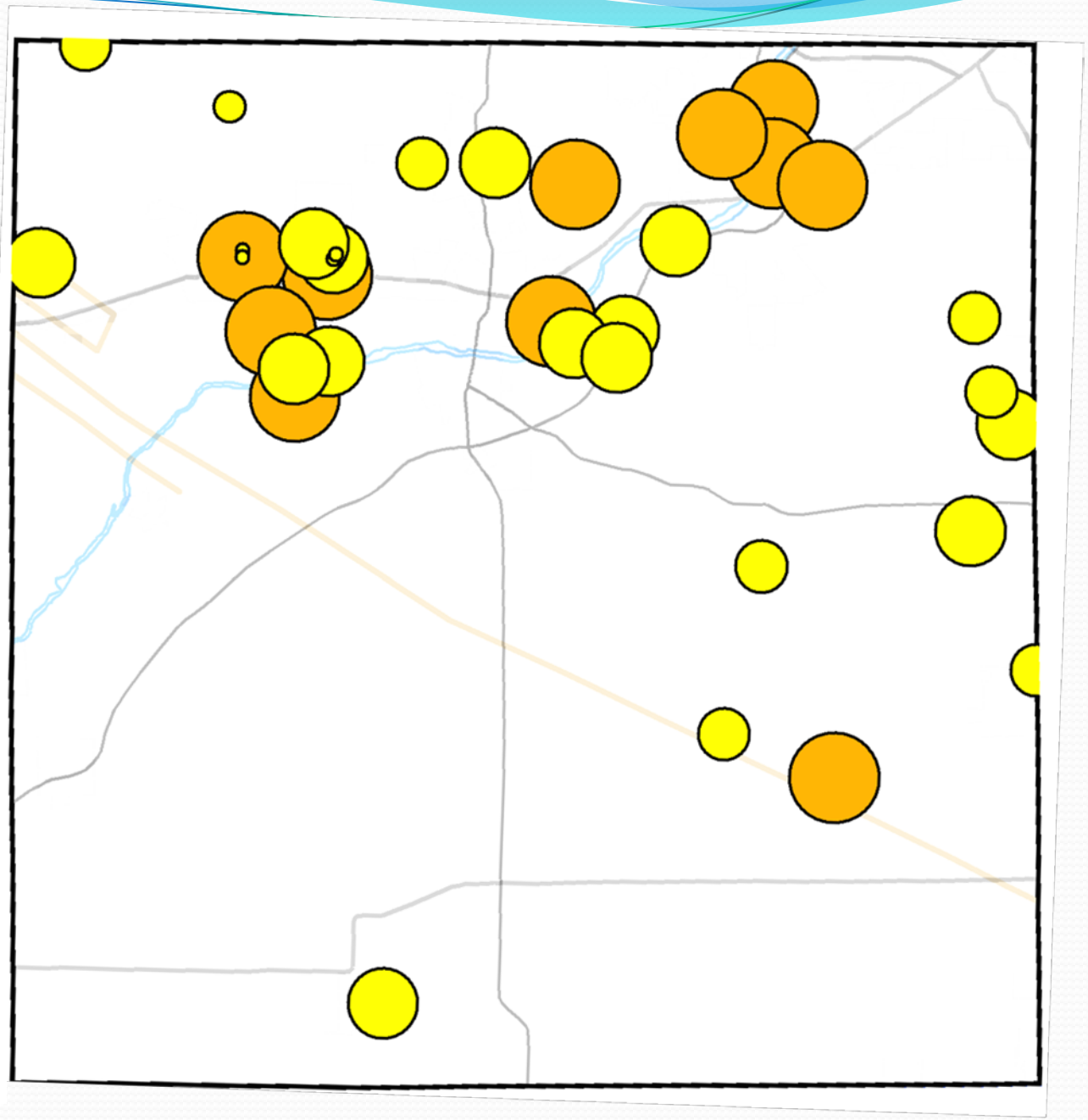
Depth in feet



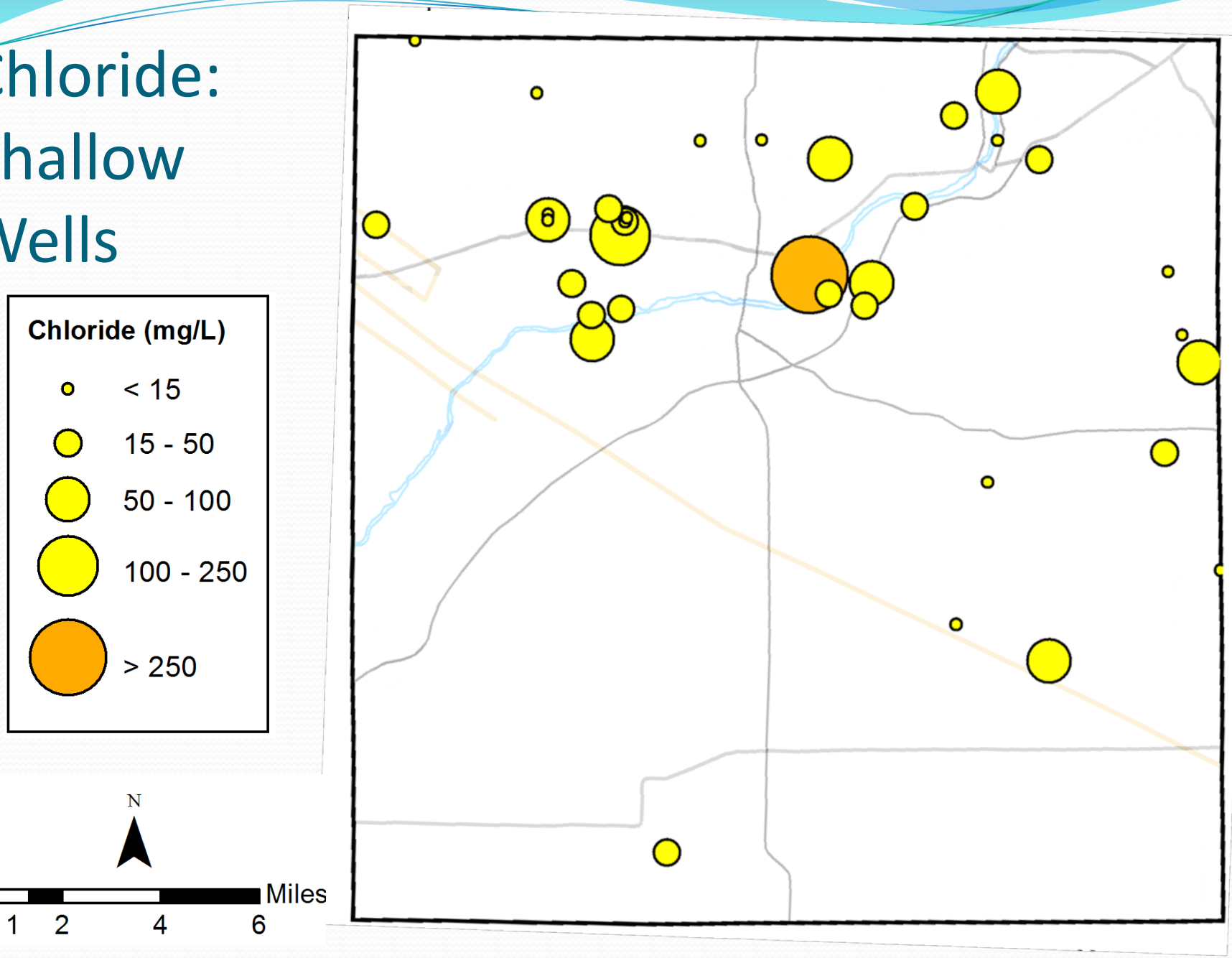
TDS: Shallow Wells



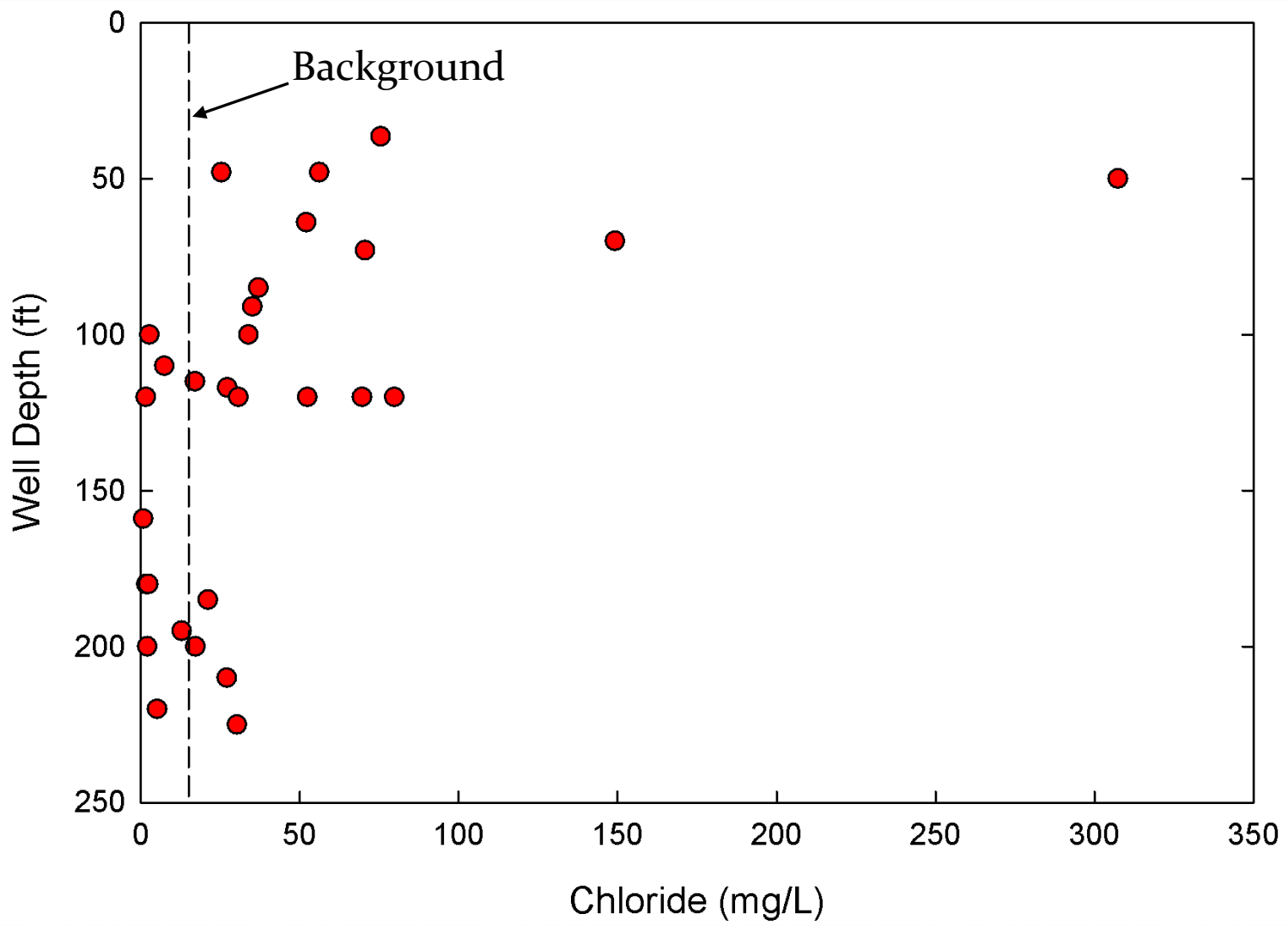




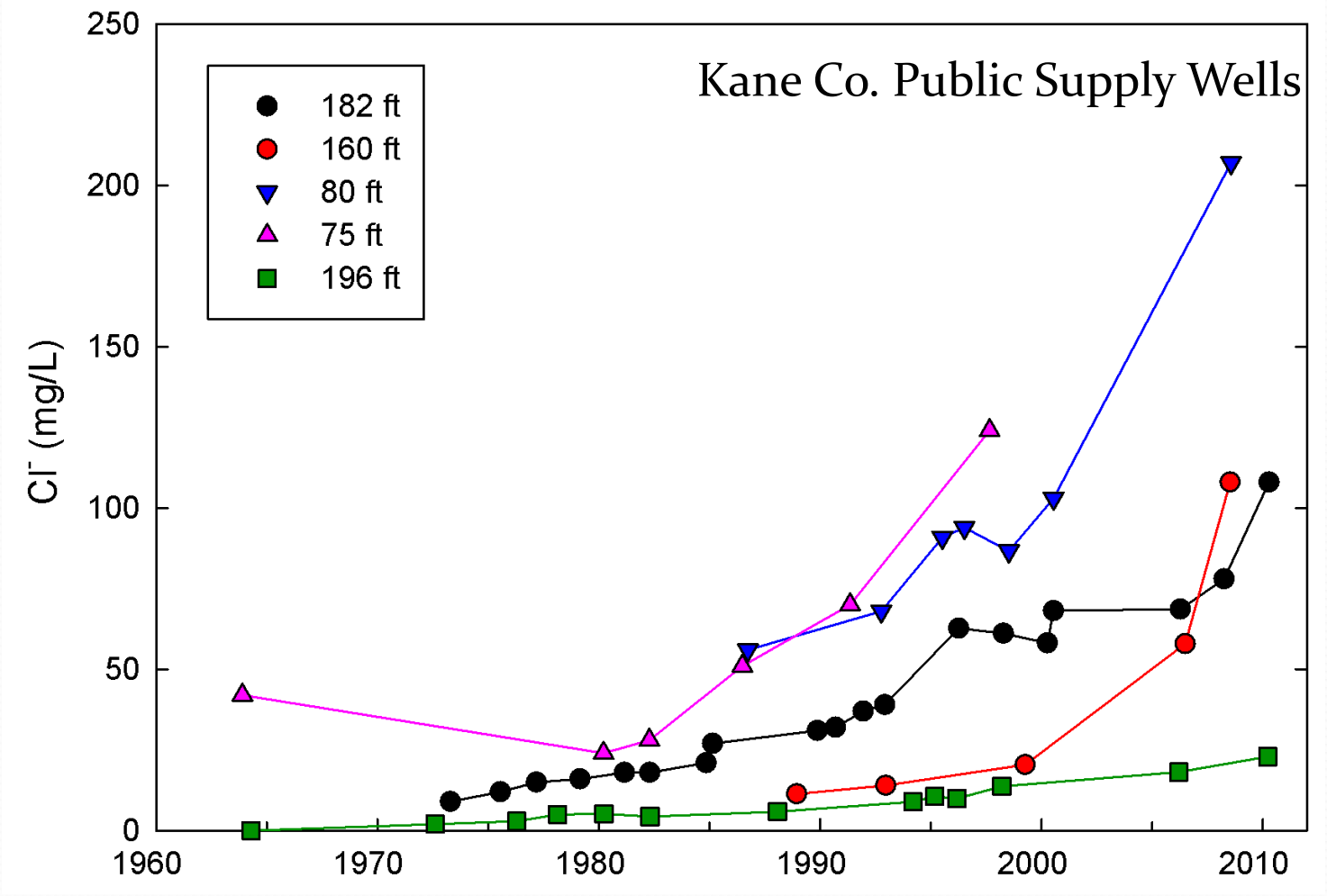
Chloride: Shallow Wells



Chloride highest in shallow wells

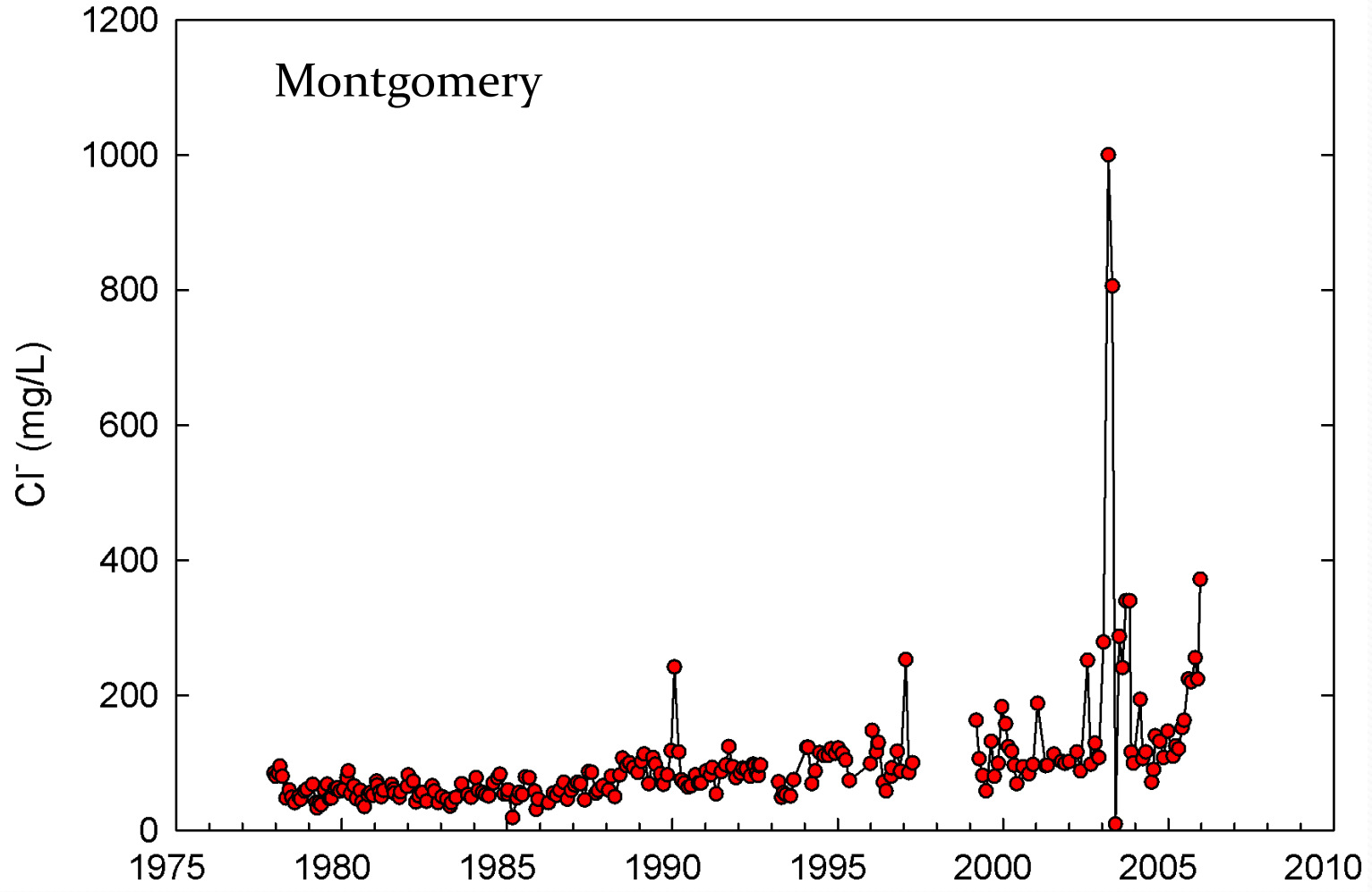


Chloride Trends in Shallow Groundwater

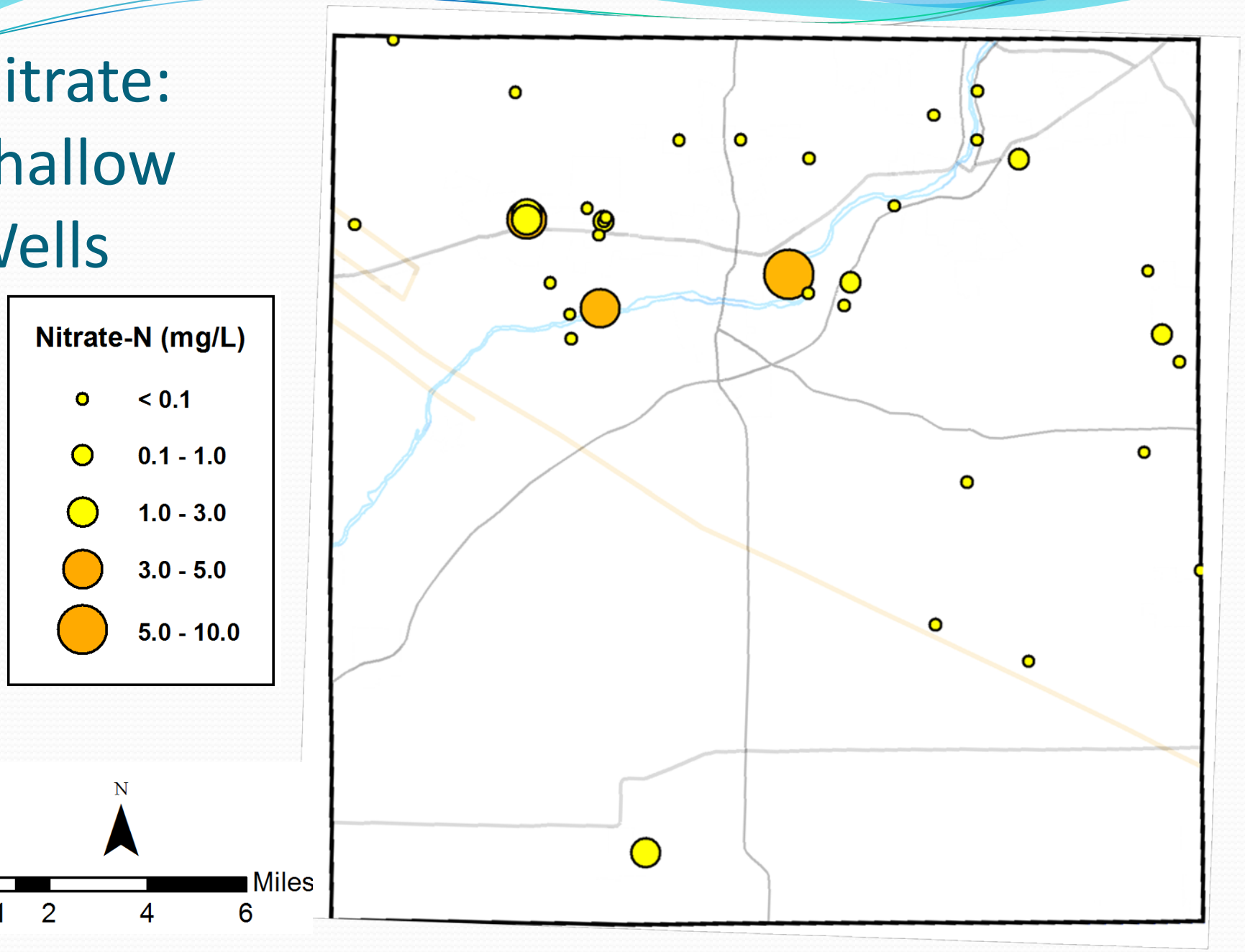


Majority of shallow public supply wells (< 250 ft) in Chicago region have positive trends in chloride

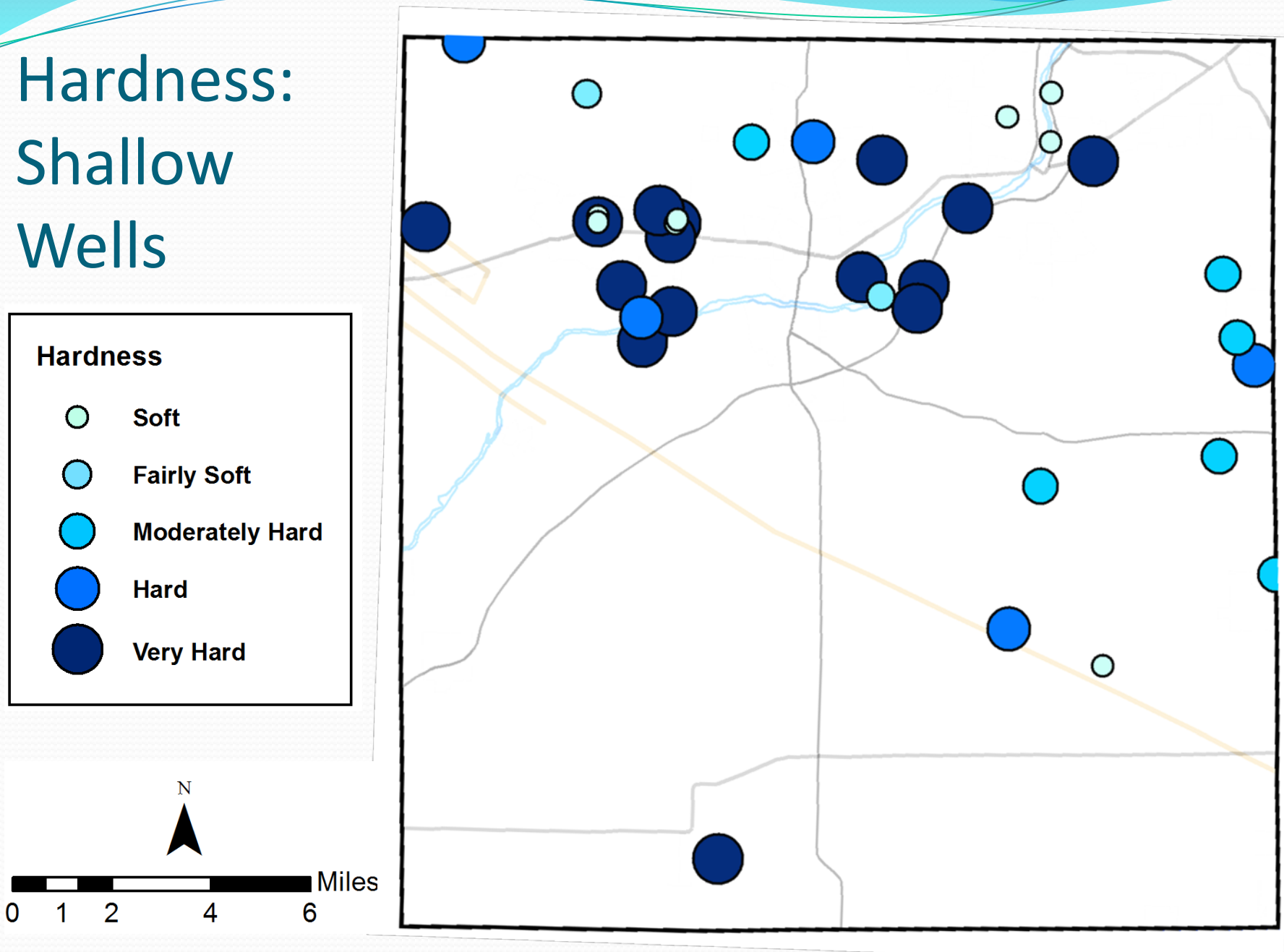
Increasing Chloride Levels in Fox R.



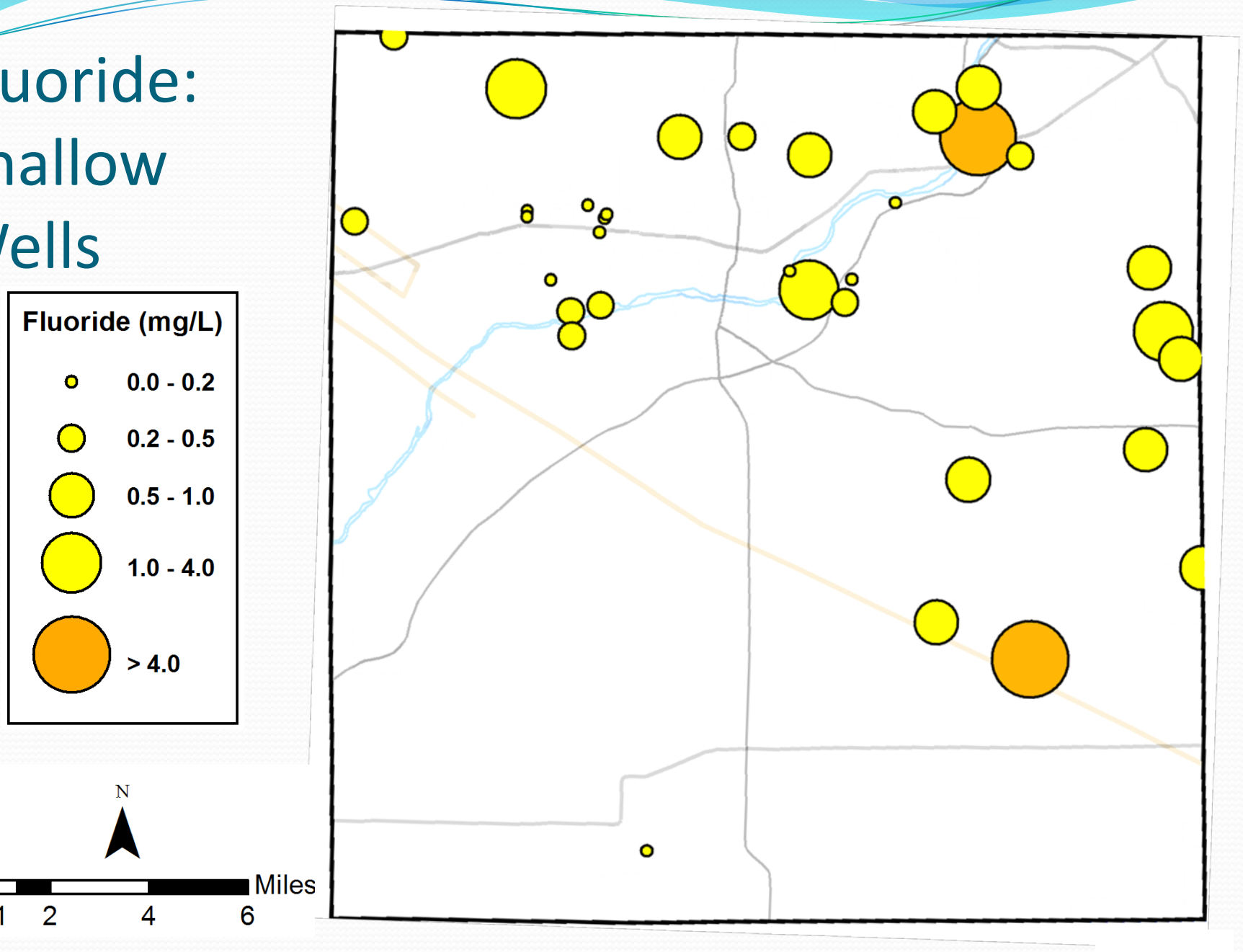
Nitrate: Shallow Wells



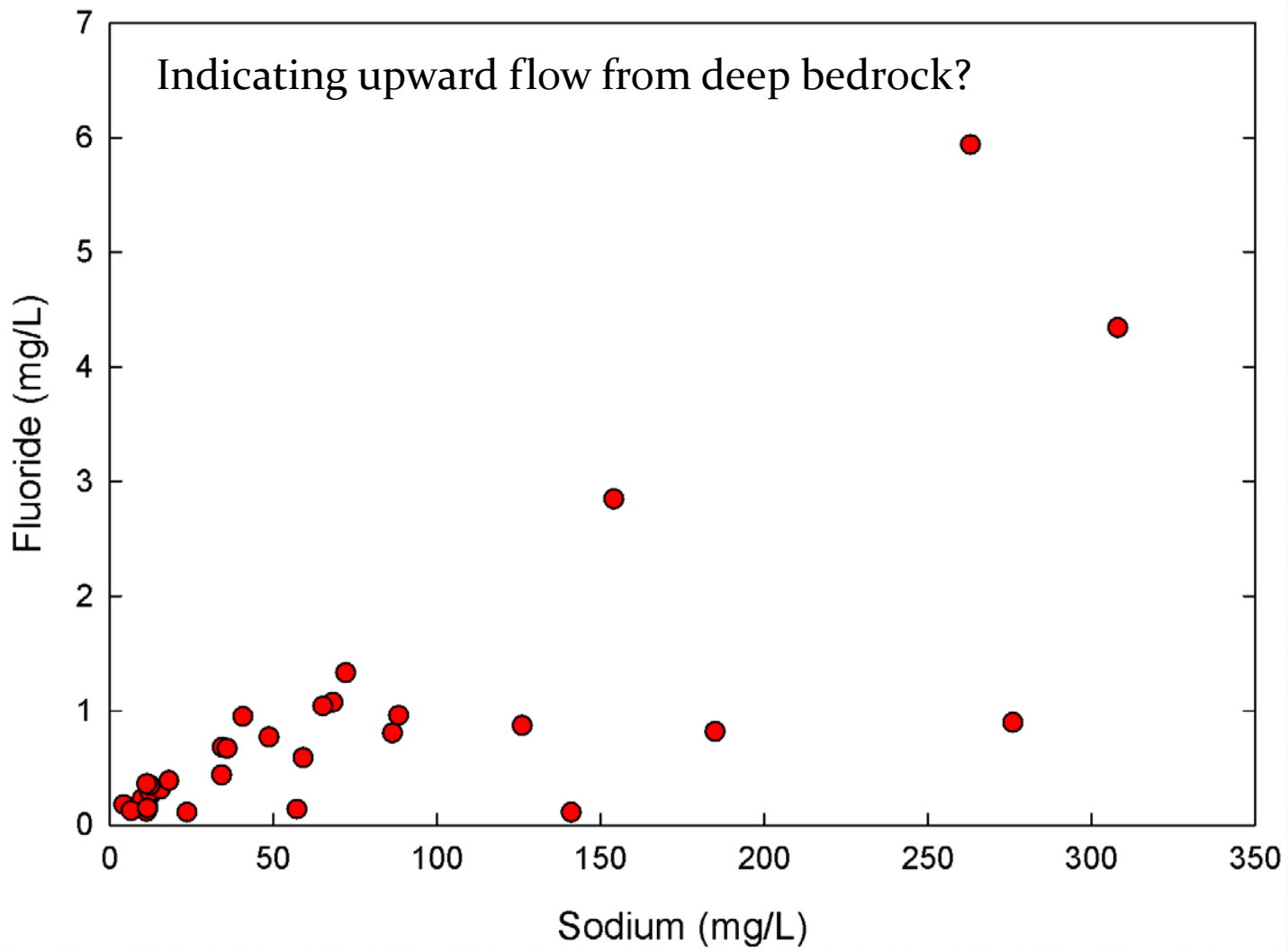
Hardness: Shallow Wells



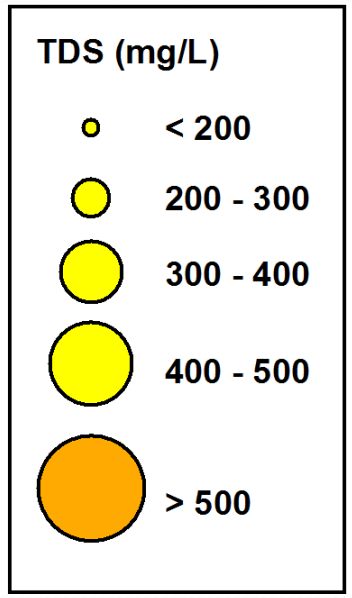
Fluoride: Shallow Wells

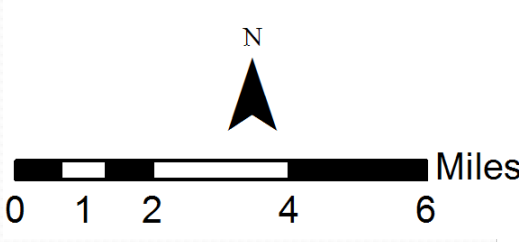


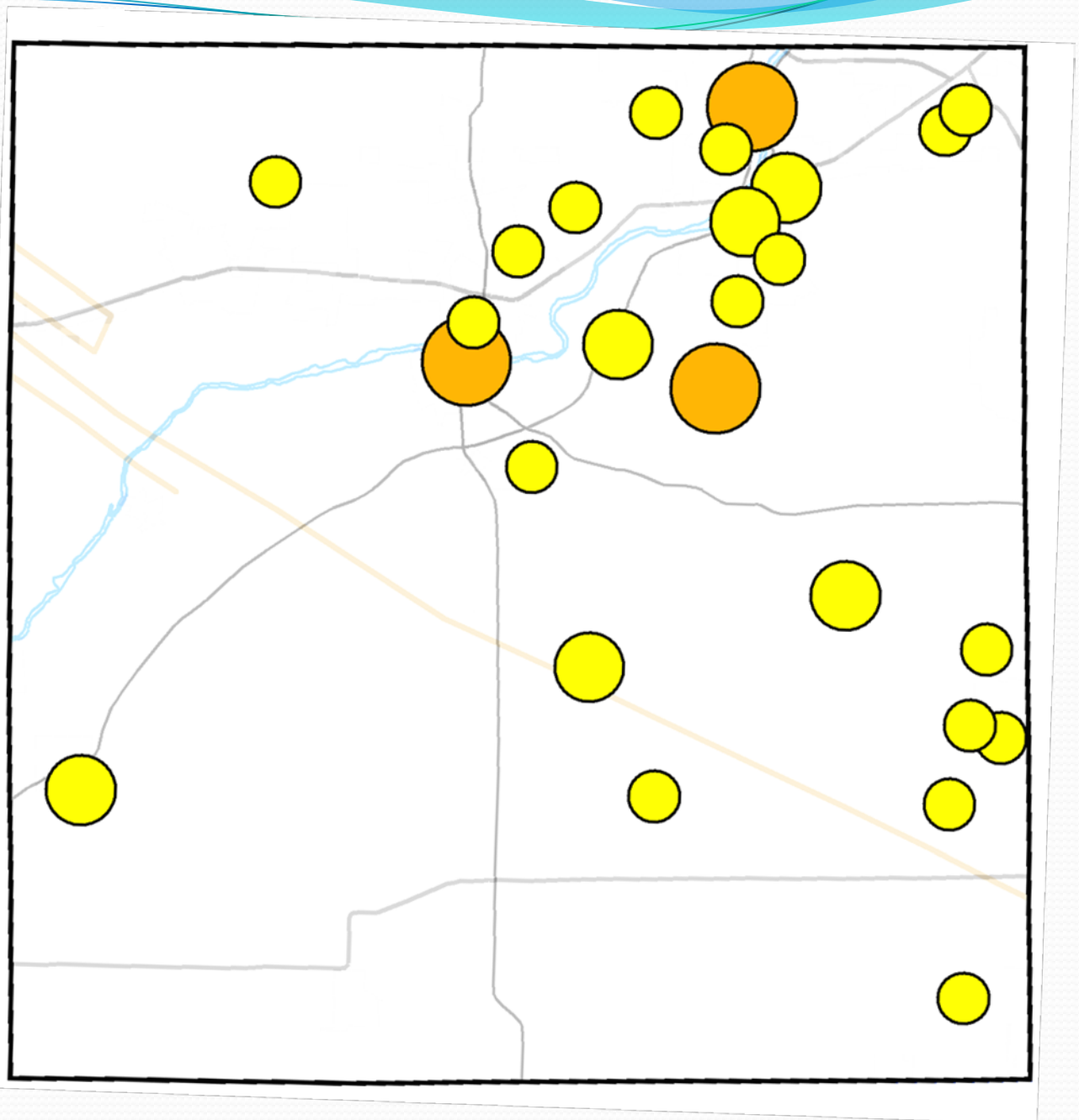
Fluoride and Sodium



TDS: Deep Wells

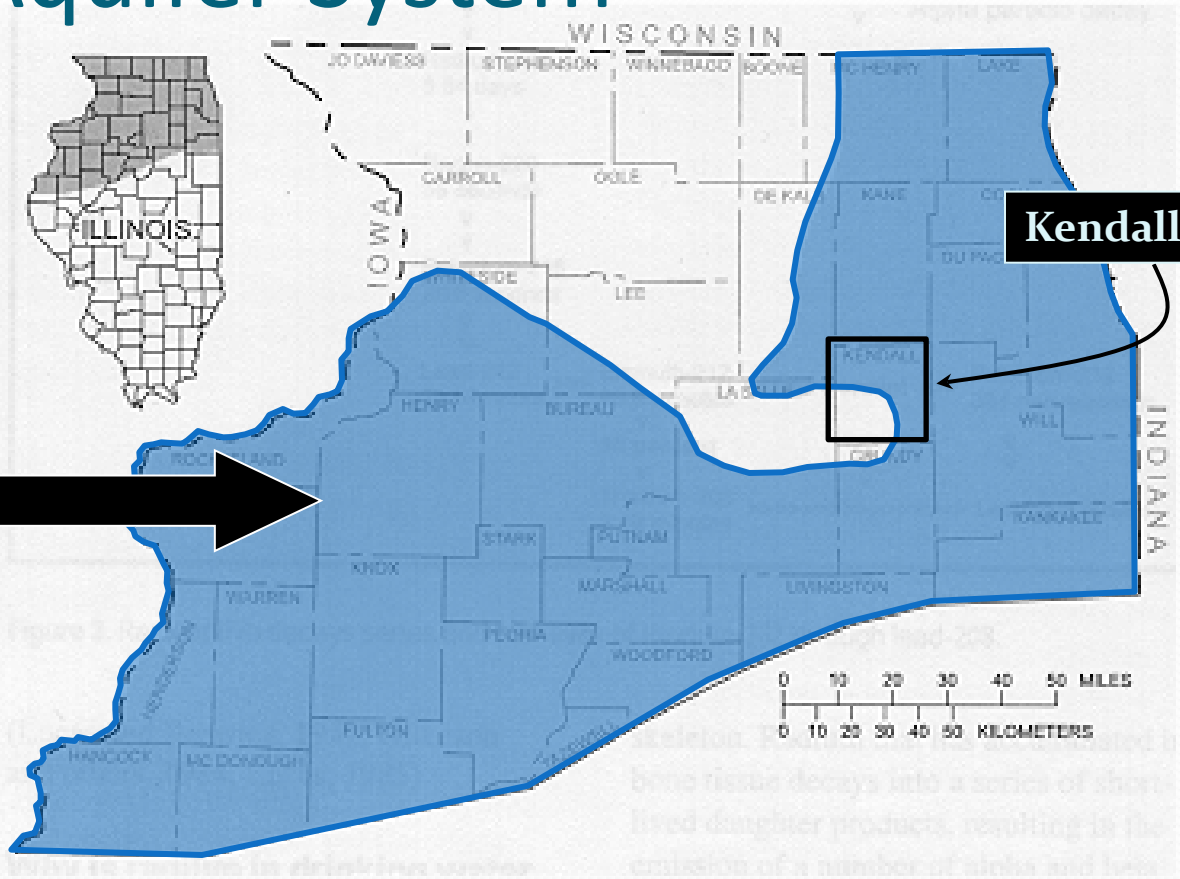






Radium (Ra) in Water from the Deep Bedrock Aquifer System

Area Where Combined Ra^{226} and Ra^{228} Concentration Exceeding 5 pCi/L has been Detected in Deep Bedrock System



Map Modified from Kay (1999)

The USEPA drinking water standard for combined Ra is 5 pCi/L

Radium: Deep Wells

Drinking water standard = 5 pCi/L