“When the well is dry we know the value of water”

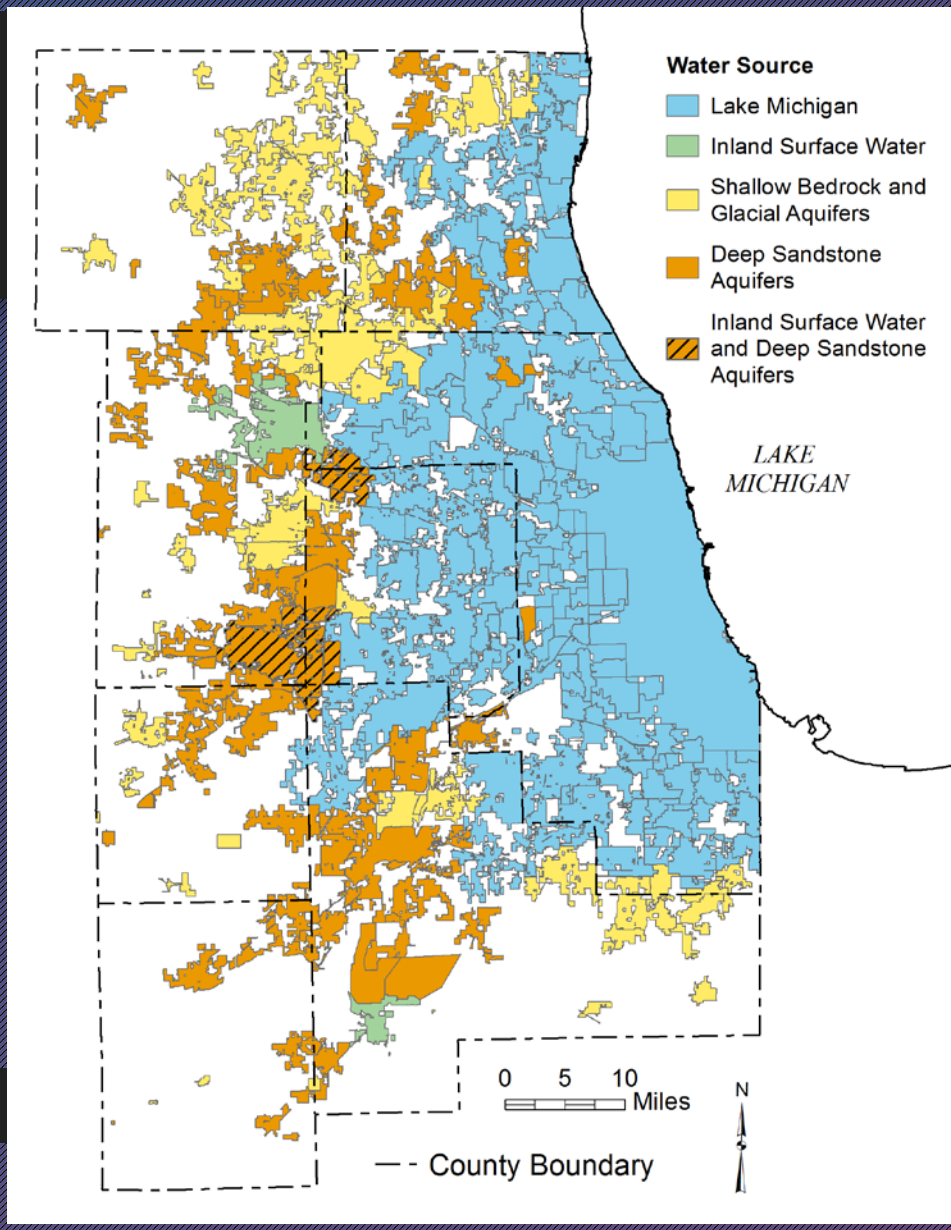
Benjamin Franklin

Bottom Line

1. Deep sandstone aquifers are being depleted unsustainably
2. Effects are already being felt; some public supply wells could go dry in as little as 5 years
3. Regional problem requiring regional solutions: Communities and industries must collaborate to avoid a water supply crisis

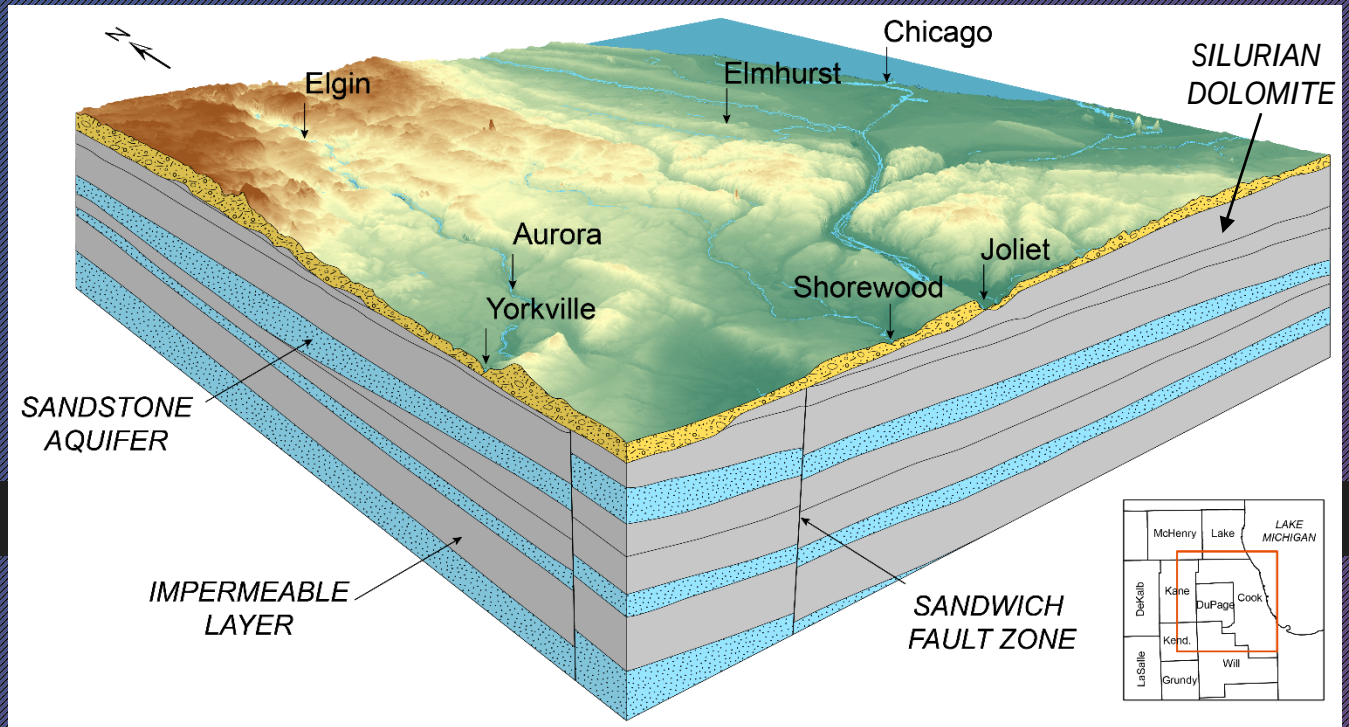
Sources of Water in Northeastern Illinois

- Most outer suburbs rely on groundwater
- About 90 million gallons per day being withdrawn from the deep sandstone aquifers
- Current withdrawals are at least twice the amount we estimate to be sustainable



Deep Sandstone Aquifers

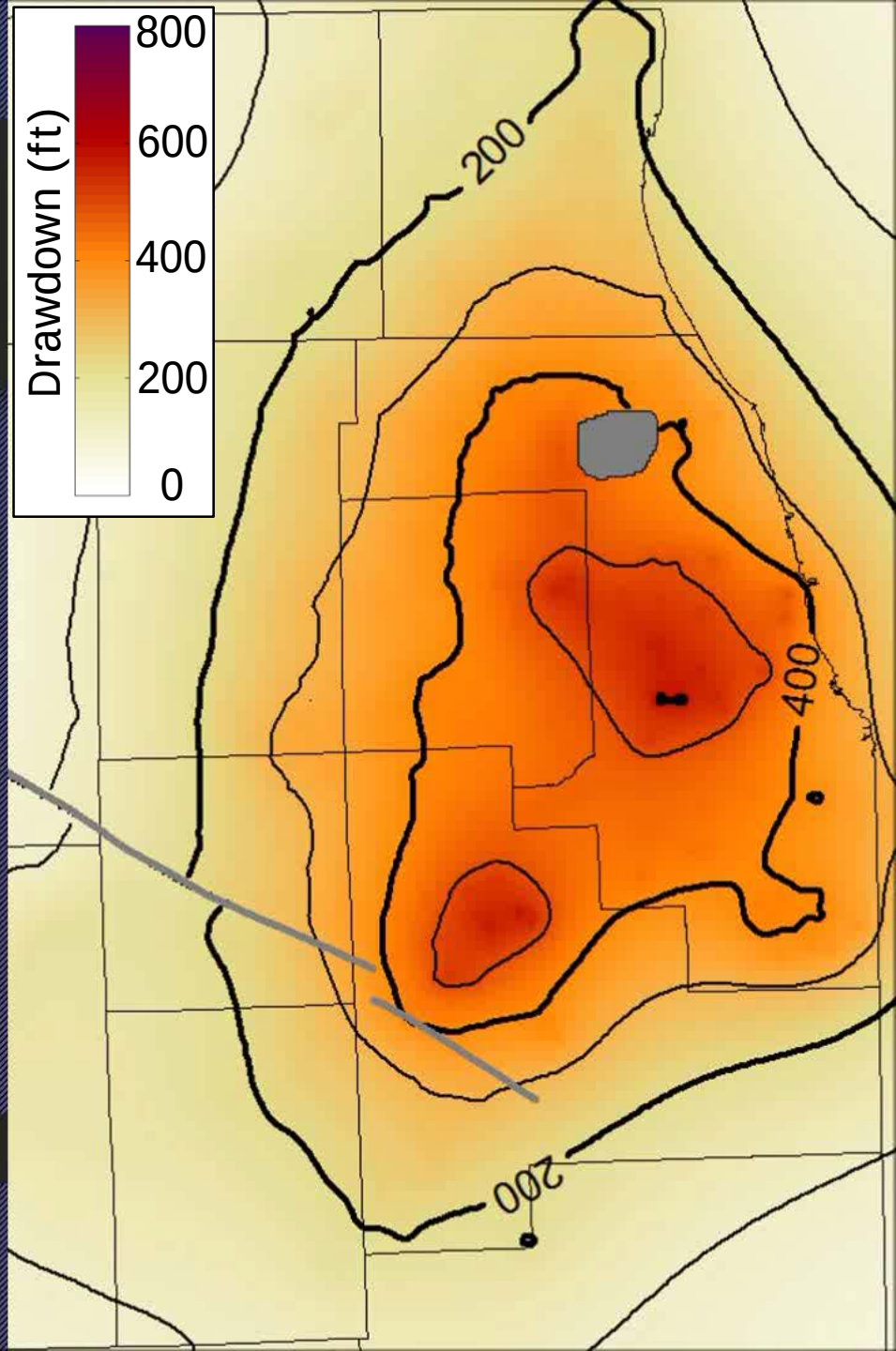
- 600 or more feet below land surface in this region
- Covered by thick impermeable layers; aquifers under pressure
- Recharge water coming from the west, 50 or more miles away
- Much of the water removed can never naturally be replenished



Problem Developing for a Long Time

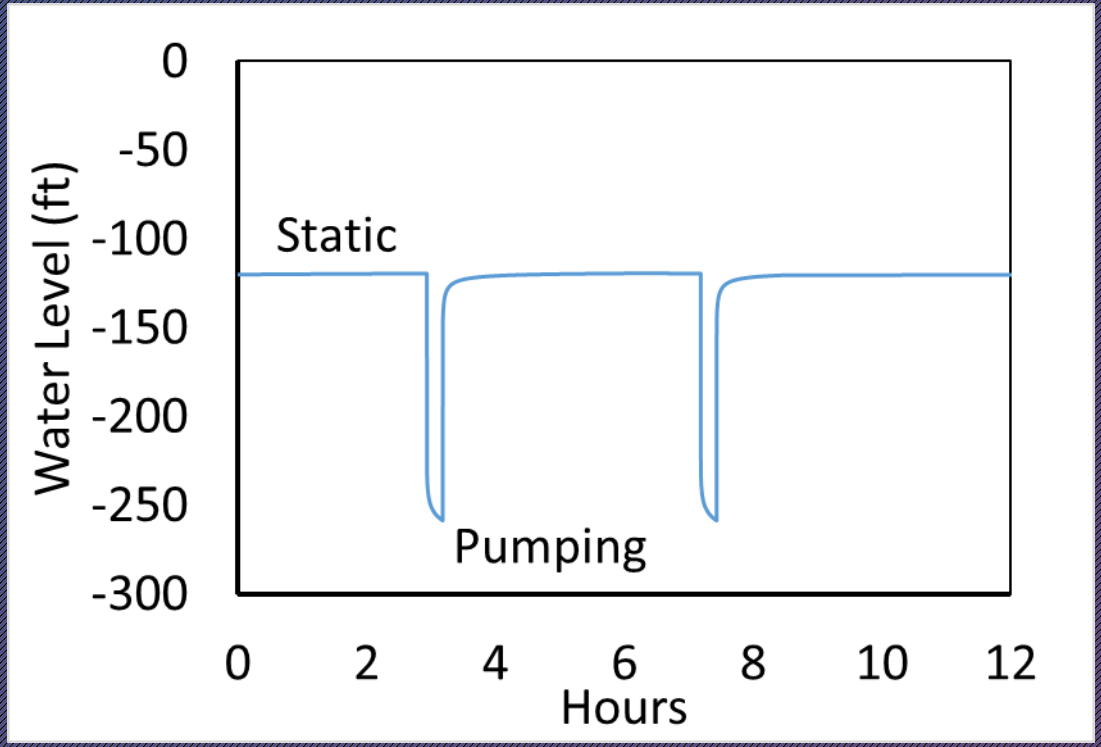
- **Major cone of depression centered around Elmhurst and Joliet by 1950s**
- Cook and DuPage municipalities convert to Lake Michigan in 1980s and 1990s
- Partial recovery of sandstone aquifers into early 2000s
- Continued pumping in southern/ western suburbs causing expansion of cone of depression

1959



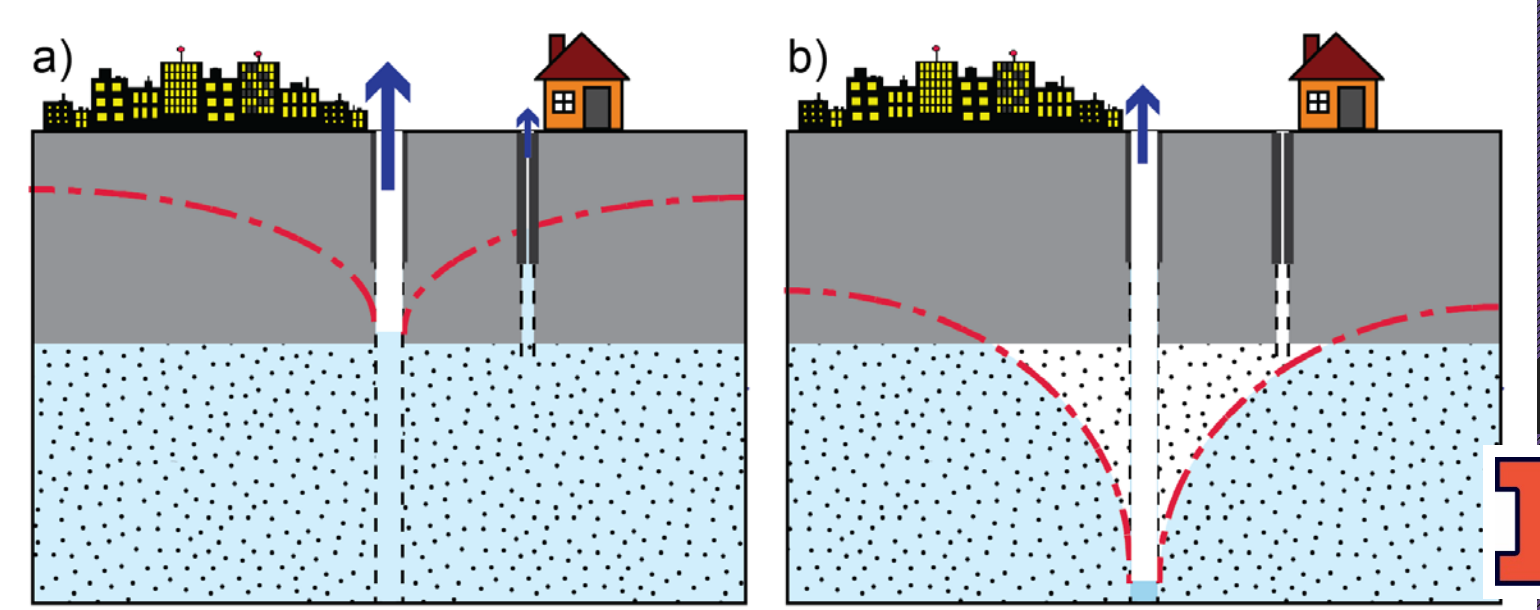
Production Well Drawdown

- We typically only measure static water levels at production wells
- Pumping levels are typically 50 – 400 ft lower for high capacity wells
- This additional drawdown has to be accounted for when assessing risk

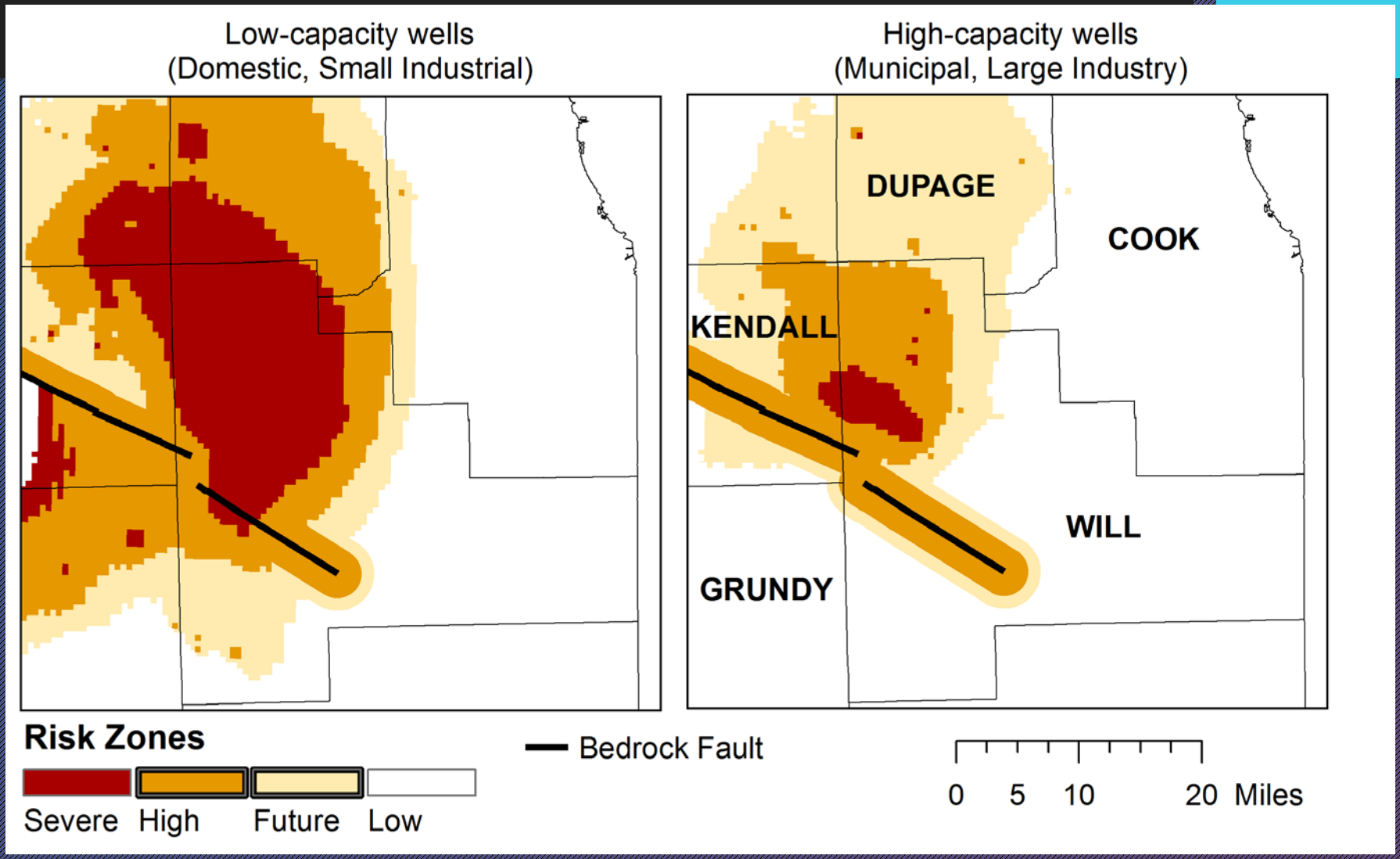


Looming Groundwater Issue

- If current practices continue, some community and industrial wells may begin going dry within 5-15 years
- Some shallower private wells are already going dry

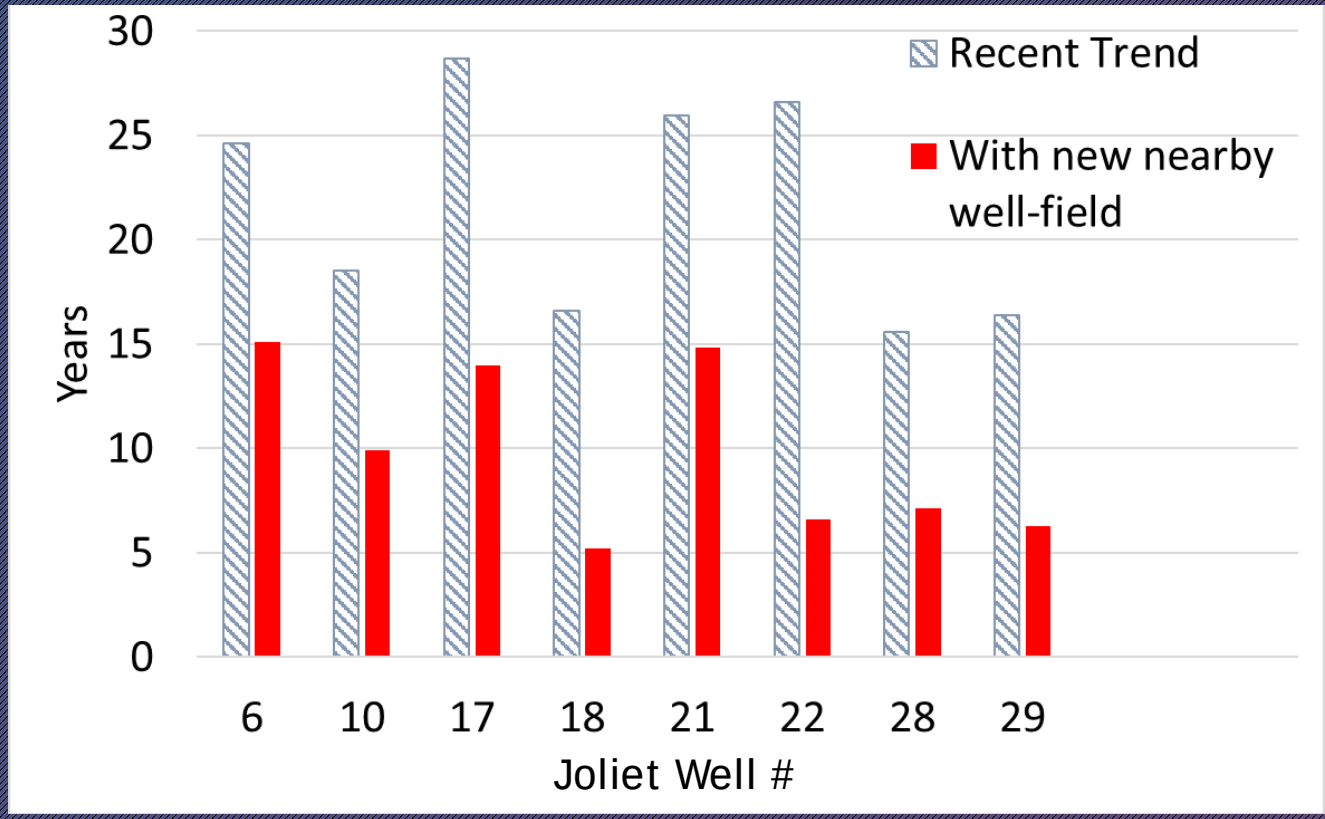


Risk to Well Users (2014)



Remaining Life Span of Existing Wells

- Head decline continues ranging 10-24 24 feet per year for Joliet wells
- This decline is about 0.5 inches per day



Impact of New Well Fields

- A single municipality or industry can have impacts far beyond its borders
  - Even a single well in Joliet, Rockdale, Channahon, or Shorewood could have impacts that propagate outside of municipal boundaries
  - Multiple new wells in Romeoville, Elwood, Minooka, Oswego, Yorkville, Montgomery, and Aurora could have similar, far-reaching impacts
- Joliet and Aurora provide monthly water level data to the Water Survey on a monthly basis to help us evaluate the situation
- Working with other groundwater communities in this region to provide similar sets of data in order to assist with accurately assessing the supply situations

Water Supply Planning

- **Short-term planning needs**:
  - Data reporting: monthly community water usage and pumping data for acute monitoring of groundwater in this region
  - Implement demand management strategies and public awareness campaigns (e.g., reduce outdoor watering) within communities
  - Prioritize and expedite the development of alternative water sources and accompanying infrastructure systems
  - Strategize collaboratively (including municipal and industrial users) to deal with probable water shortages in the next 5-15 years

Water Supply Planning

- It is imperative that municipalities and industries are involved in these discussions, and that decisions are based on a sound understanding of the groundwater system.

The Prairie Research Institute is Here to Help You

- Involved in water supply research and assistance for decades
- Detailed computer models which can be used to test numerous demand scenarios
- We have cost-shared water supply planning studies with other counties
  - Staff time
  - Vehicles
  - Sampling equipment
  - Analytical lab
  - Databases

The Prairie Research Institute

- Scientific work that needs to be done
  - Monitoring of water levels in the Sandstone and Silurian aquifers
  - Monitoring flow and water quality in Kankakee River
  - Use models to assess potential backup supplies
  - Develop Silurian model to assess supply issues in eastern part of the county
  - Monitoring water quality in Silurian aquifer

Bottom Line Encore

1. Deep sandstone aquifers are being depleted unsustainably
2. Effects are already being felt; some high-capacity wells could go dry in as little as 5 years
3. Regional problem requiring regional solutions: Communities and industries must collaborate to avoid a water supply crisis