

WHAT WE KNOW ABOUT REGIONAL WATER SUPPLY AND DEMAND TODAY.

WHAT ARE THE KEY ISSUES?

Derek Winstanley

MAC/RWSPC

Havana

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REMINDER

- 3-year pilot project.
- Produce best plan you can by the end of 3 years with the resources and data available to you.
- Hopefully transition into a permanent water supply planning process.

EAST-CENTRAL ILLINOIS

- WATER USE DATA
- CLIMATE AND SOIL MOISTURE DATA
- STREAMGAGE DATA
- OBSERVATION WELLS
- POTENTIOMETRIC HEAD DATA
- KEY QUESTIONS

DRAFT WATER USE DATA:15 COUNTIES (Illinois Water Inventory Program at ISWS)

Total Active Facilities = 322

Community Water Systems = 215

89% Returned 2004

87% Returned 2005

Industrial-Commercial = 70

80% Returned 2004

84% Returned 2005

“Other” (golf courses, farms, state parks, conservation) = 59

76% Returned 2004

80% Returned 2005

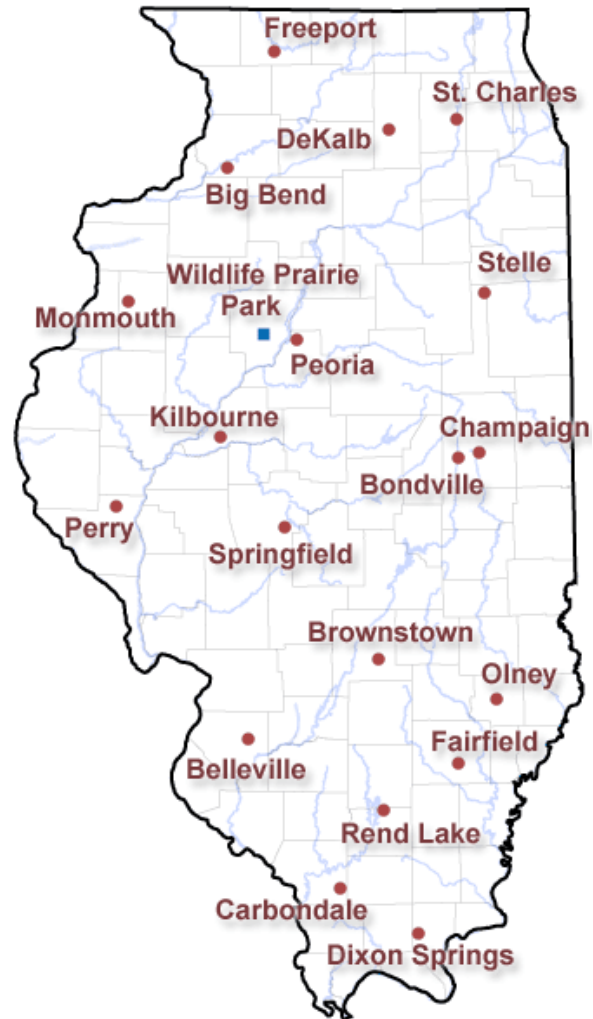
DRAFT WATER USE DATA

(Illinois Water Inventory Program at ISWS +)

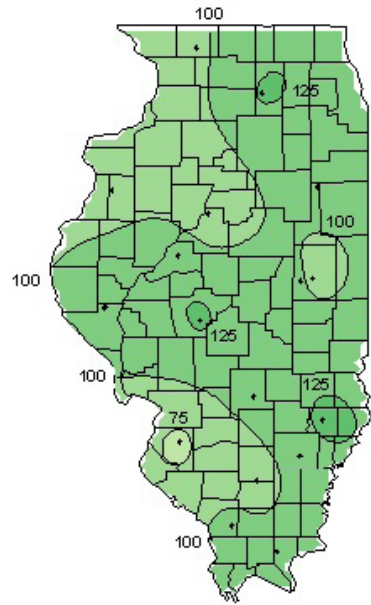
Total Reported Pumpage – All Facilities: ~1.7 BGD (2005)			
Reported Pumpage	Groundwater	Surface Water	Notes
Community Water Systems	61.86 MGD (2004) 66.32 MGD (2005)	61.69 MGD (2004) 71.01 MGD (2005)	
Industrial-Commerical	28.84 MGD (2004) 30.12 MGD (2005)	1196.96 MGD (2004) 1359.91MGD (2005)	SW use mainly once-through cooling
Other	6.48 MGD (2004) 6.98 MGD (2005)	7.50 MGD (2004) 9.50 MGD (2005)	

Irrigation	>137 MGD (2006; Imperial Valley +)
Self supplied domestic	17 MGD (2000; USGS)

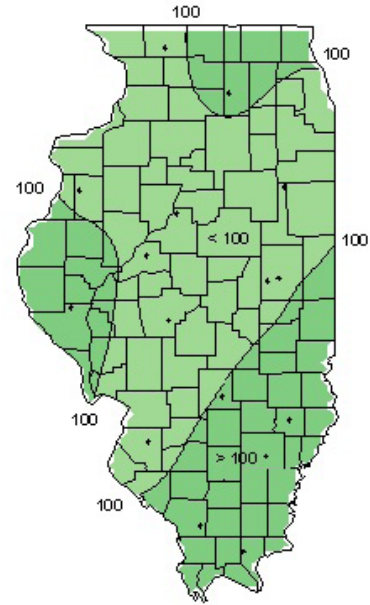
ISWS CLIMATE AND SOIL MOISTURE SITES



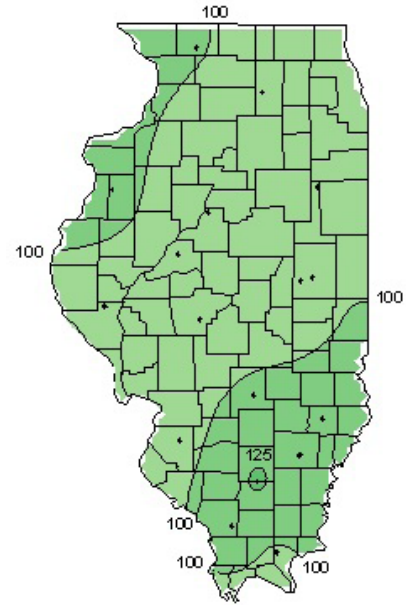
0 - 6 inch Soil Layer



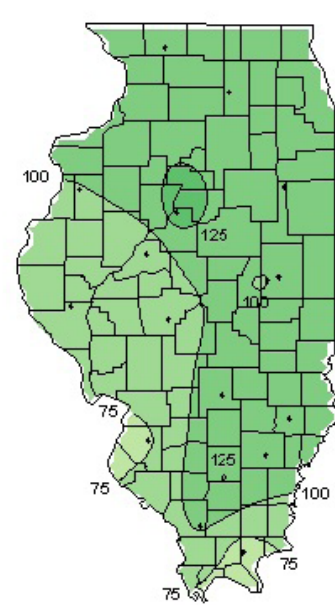
6 - 20 inch Soil Layer



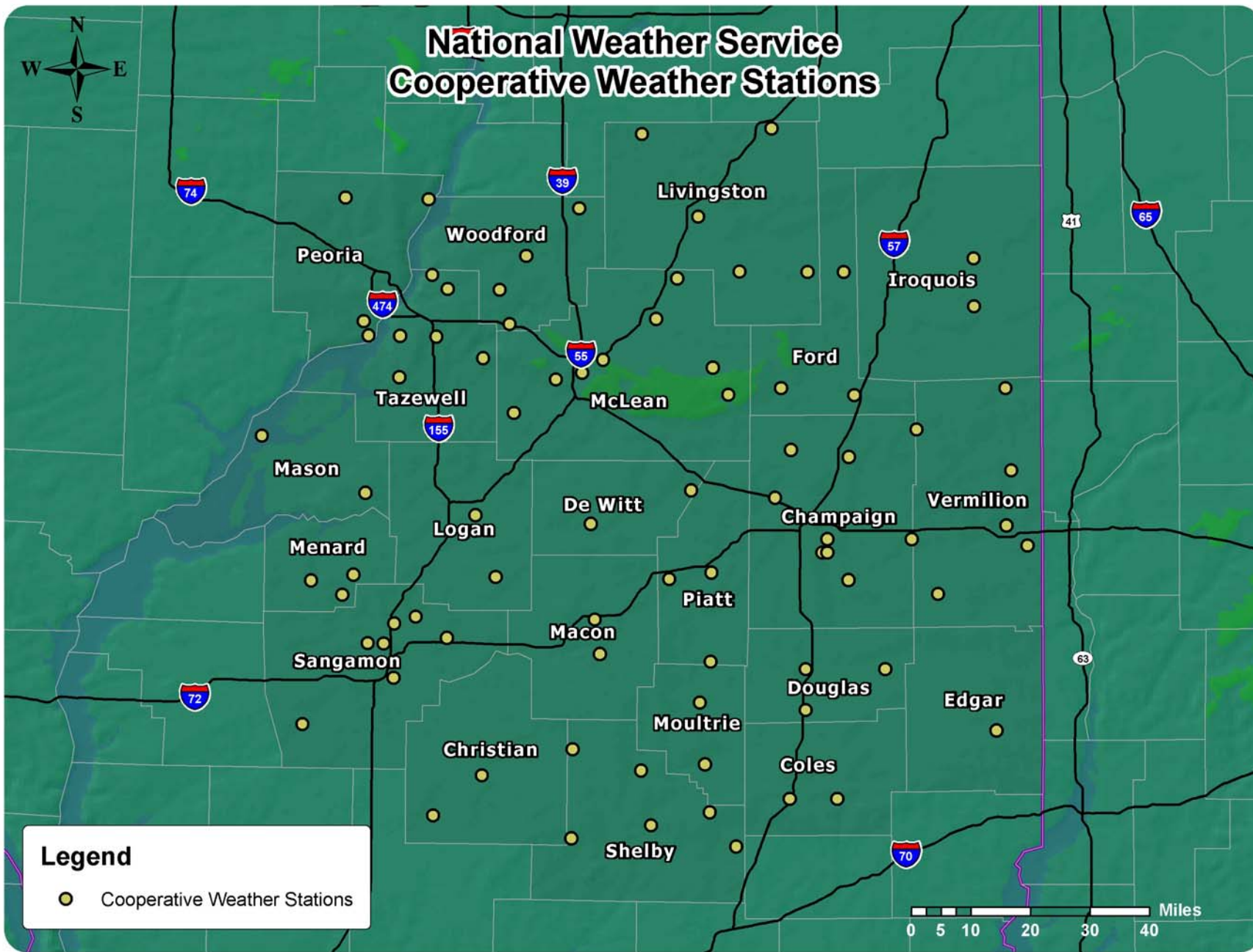
20 - 40 inch Soil Layer



40 - 72 inch Soil Layer

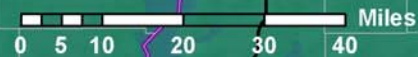


National Weather Service Cooperative Weather Stations



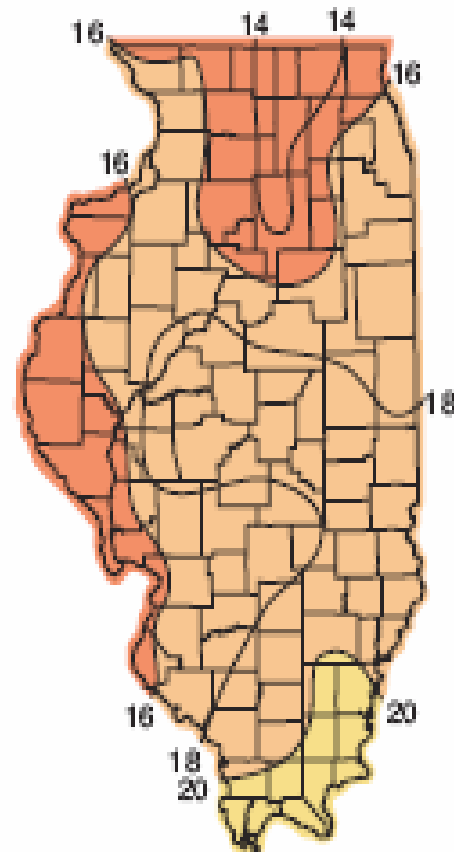
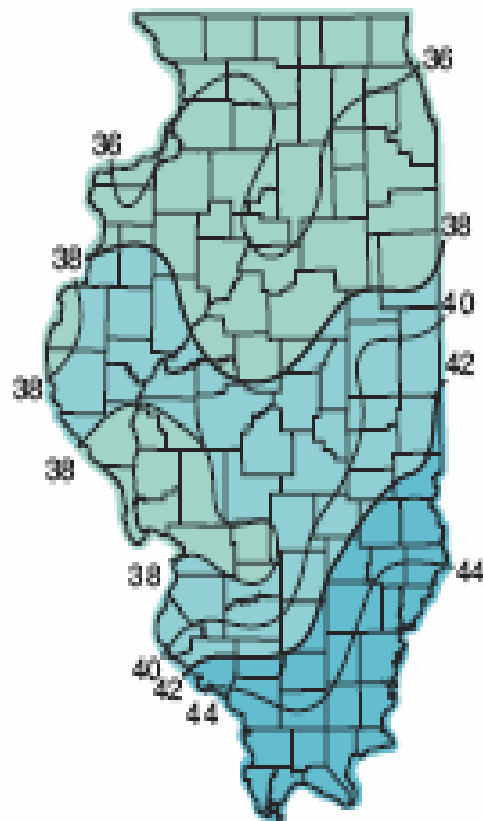
Legend

● Cooperative Weather Stations



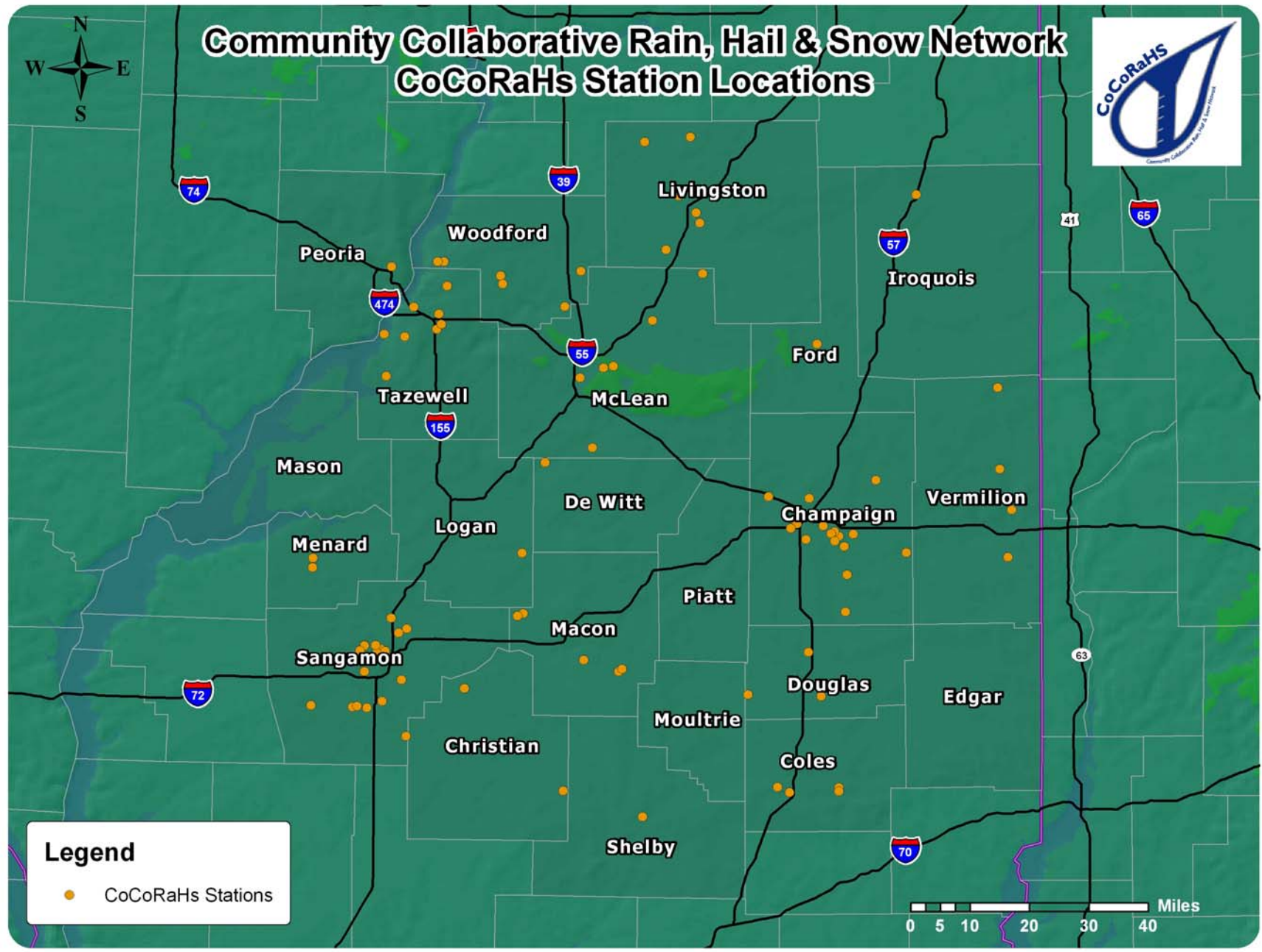
- a) Mean annual precipitation 1971-2000
b) 1 in 200 year drought

ARE WE PREPARED...



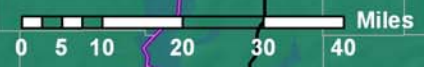
...FOR SEVERE DROUGHT?

Community Collaborative Rain, Hail & Snow Network CoCoRaHS Station Locations

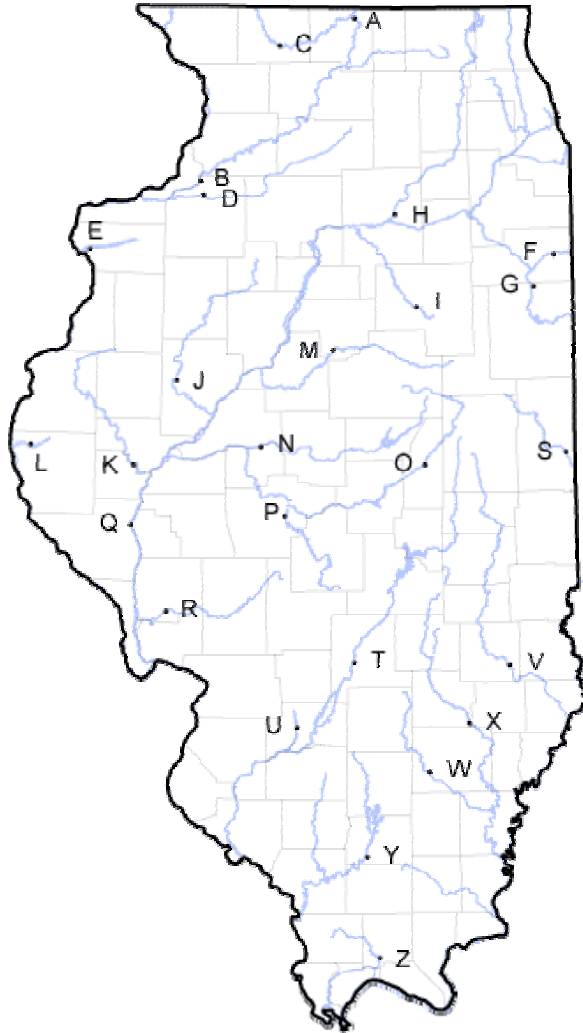


Legend

- CoCoRaHS Stations

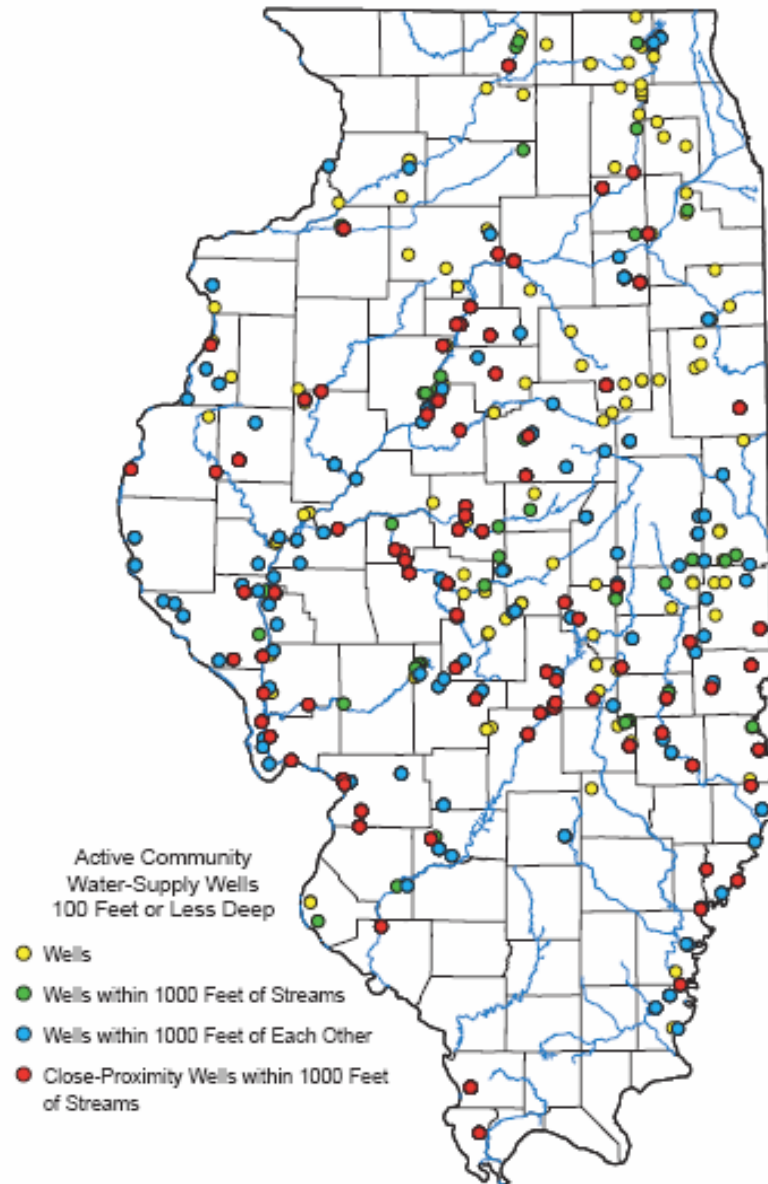


USGS GAGING STATIONS: MONTHLY FLOW DATA



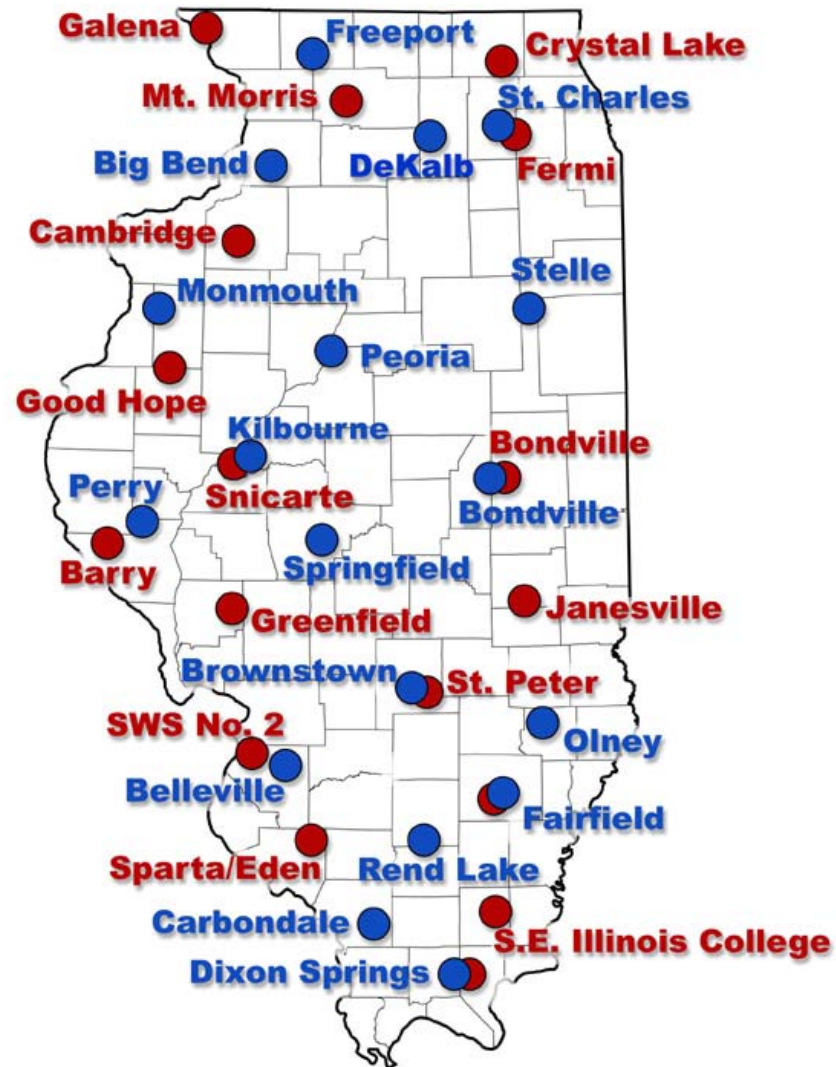
- M** Mackinaw River near Congerville
- N** Salt Creek near Greenview
- O** Sangamon River at Monticello
- P** South Fork Sangamon River near Rochester
- S** Vermilion River near Danville

SUSCEPTIBLE TO DROUGHT?

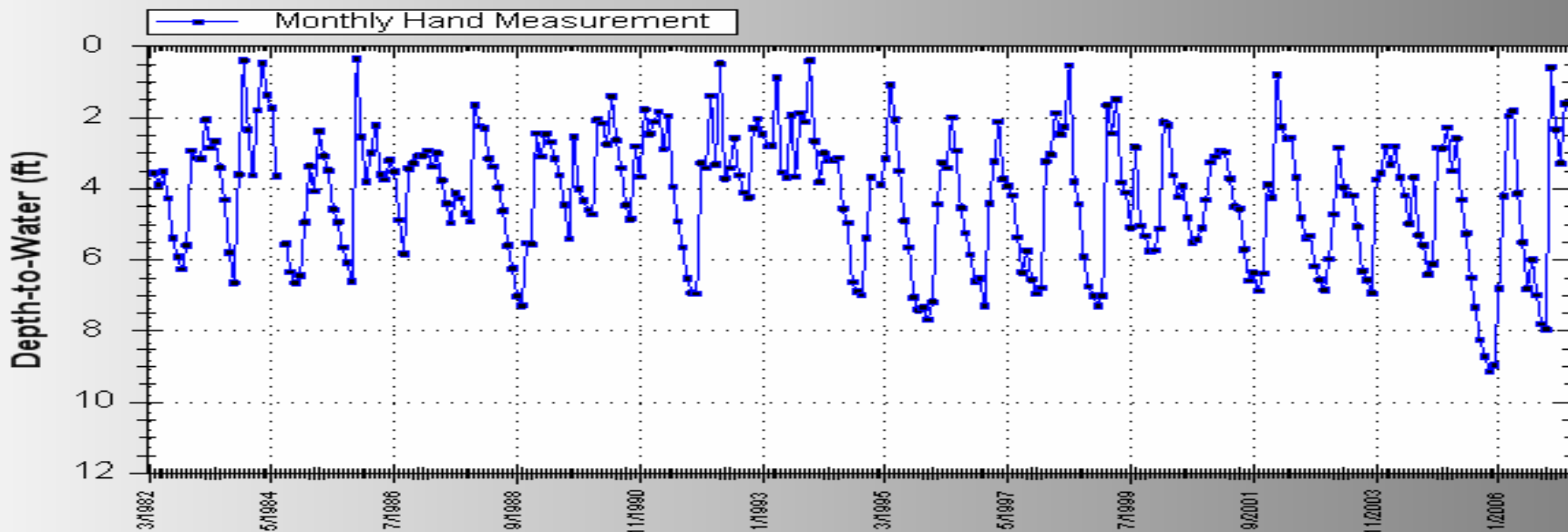


SHALLOW OBSERVATION WELLS

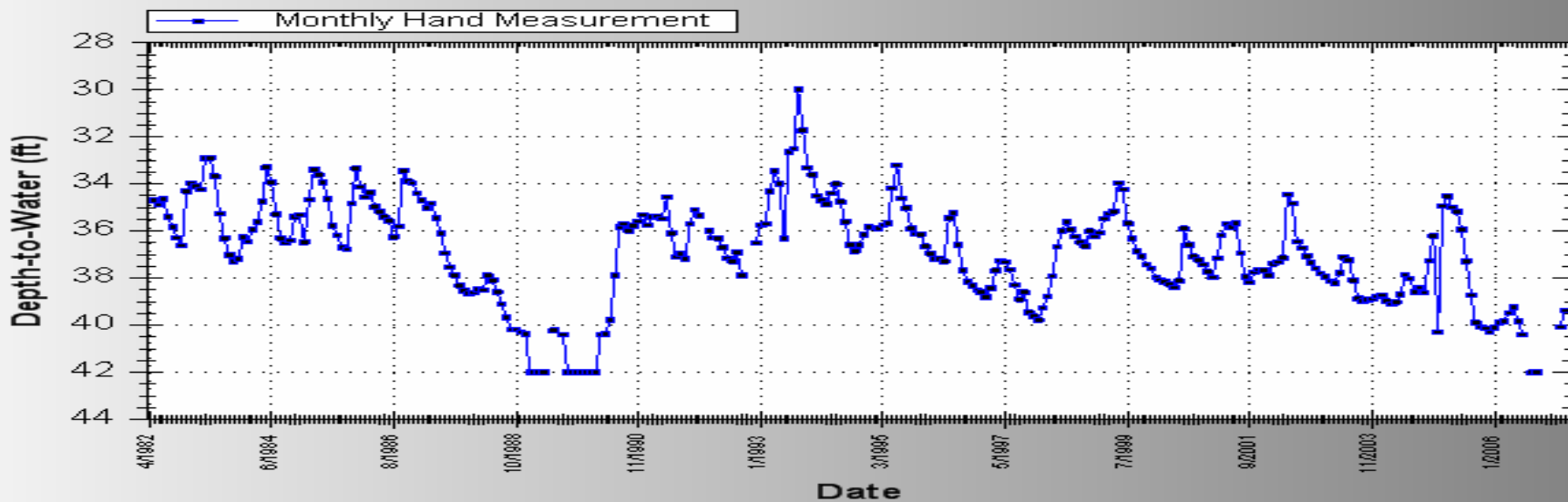
WARM wells (monthly) **ICN wells (hourly)**



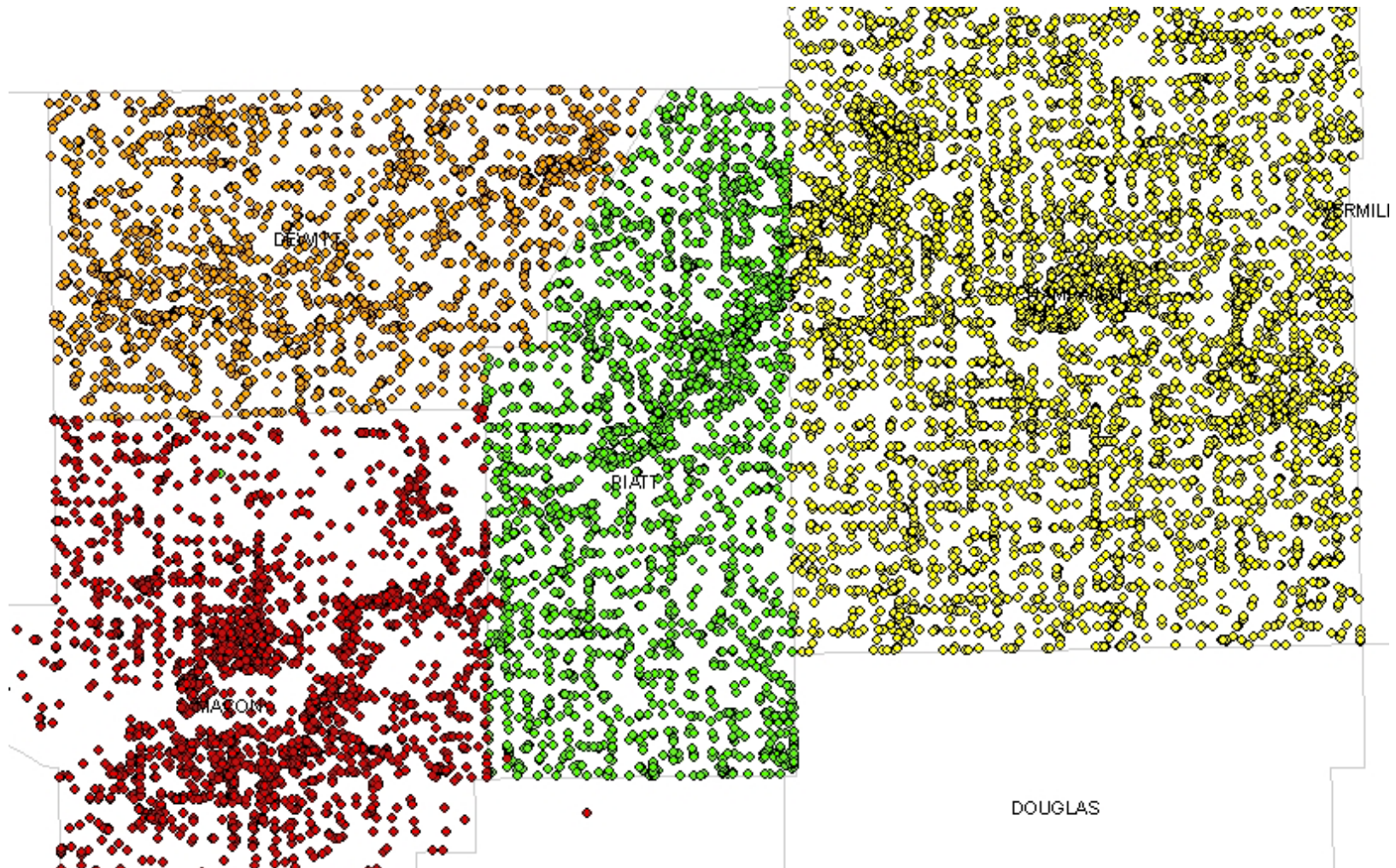
Hydrograph of Bondville WARM Well



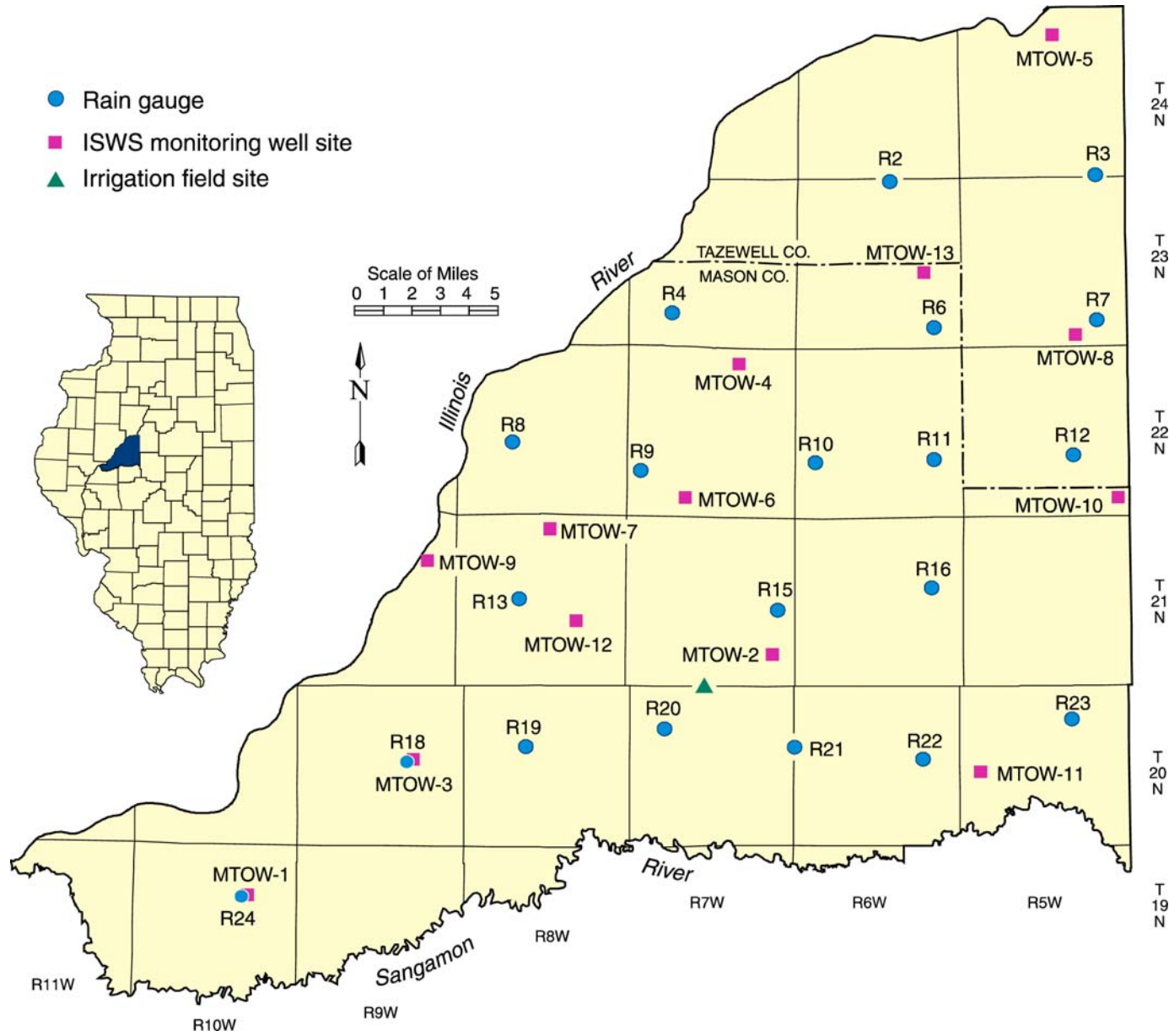
Hydrograph of Snicarte WARM Well



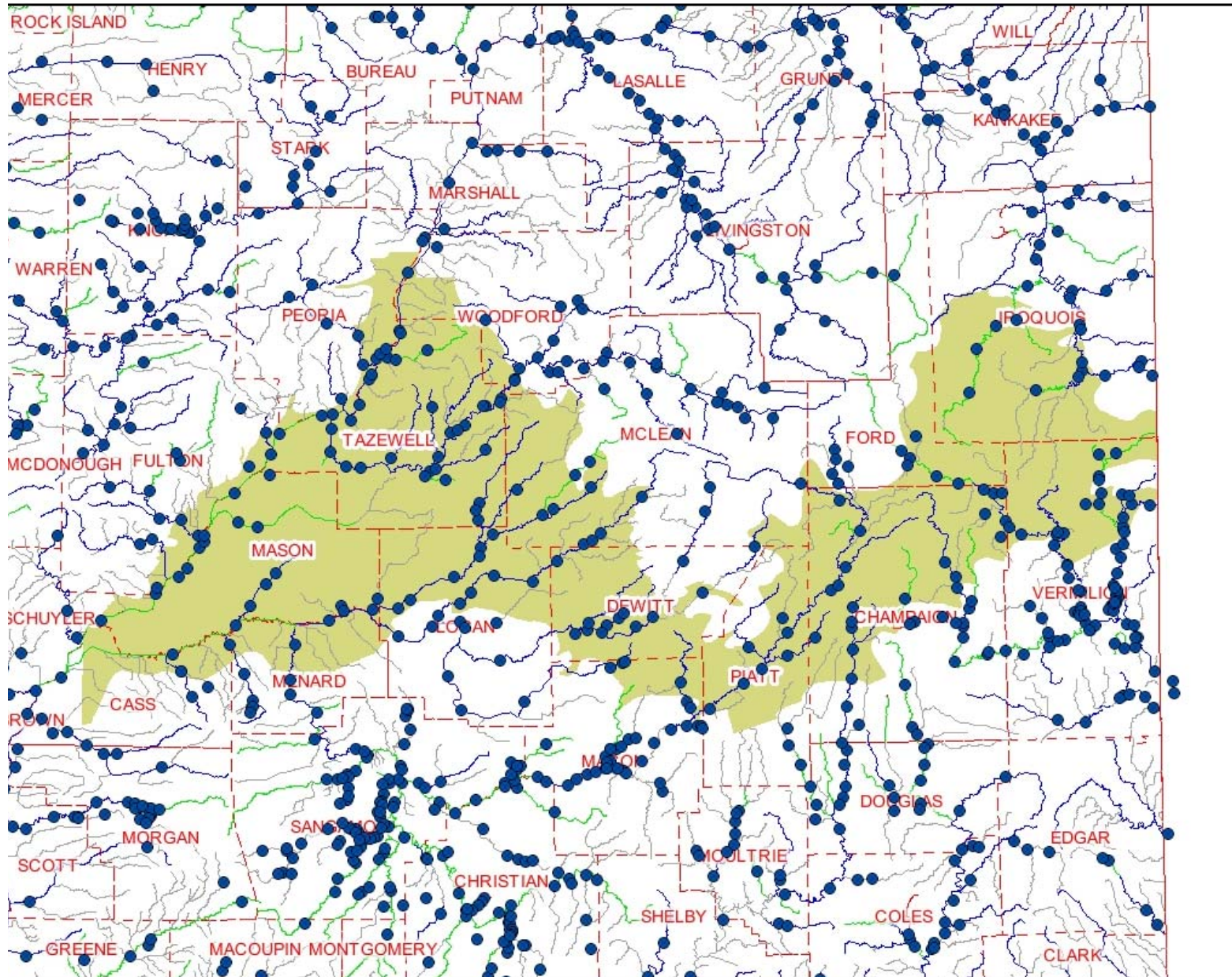
Domestic Wells in Champaign, Piatt, Dewitt, and Macon Counties



IMPERIAL VALLEY



IEPA Stream Monitoring Stations - East Central Illinois



Legend

Monitoring Stations

- Monitoring Stations

AQUATIC

- F - Full
- T - Threatened
- P - Partial
- N - Non Support
- X - Not Assessed

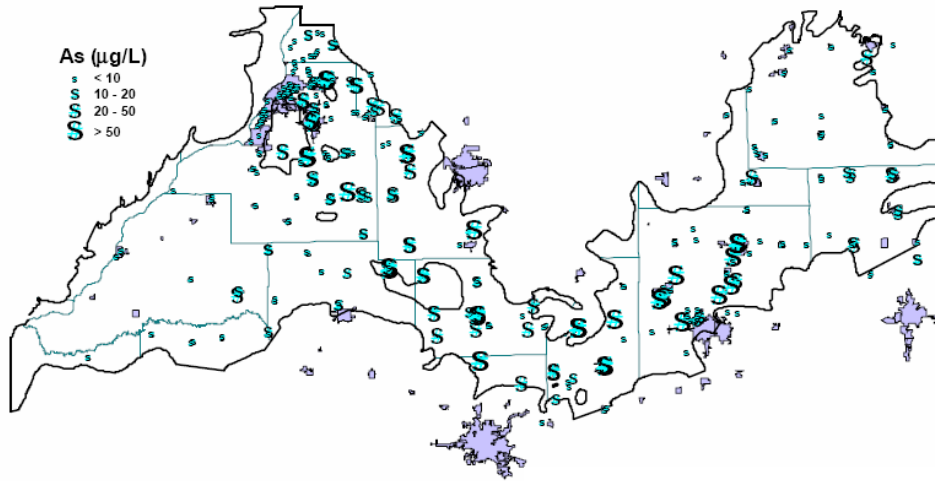
--- County lines

■ Mahomet Aquifer

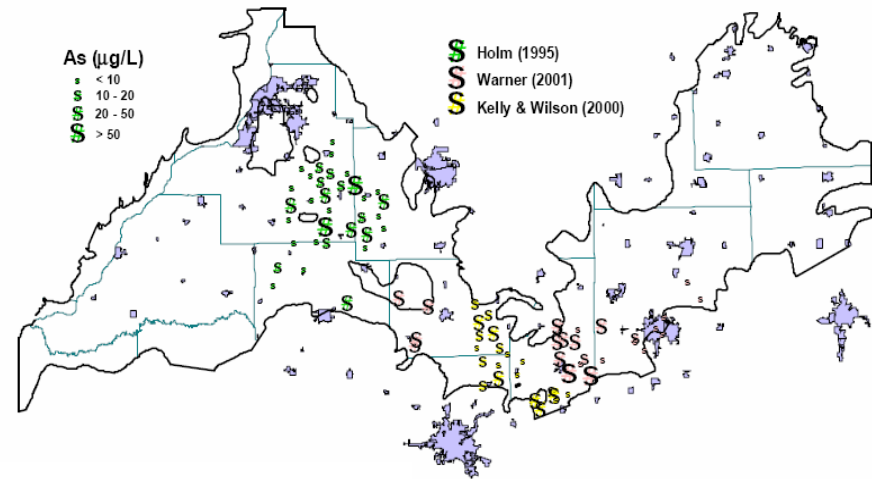
0 5 10 20 30 40 ...

GROUNDWATER: WATER QUALITY

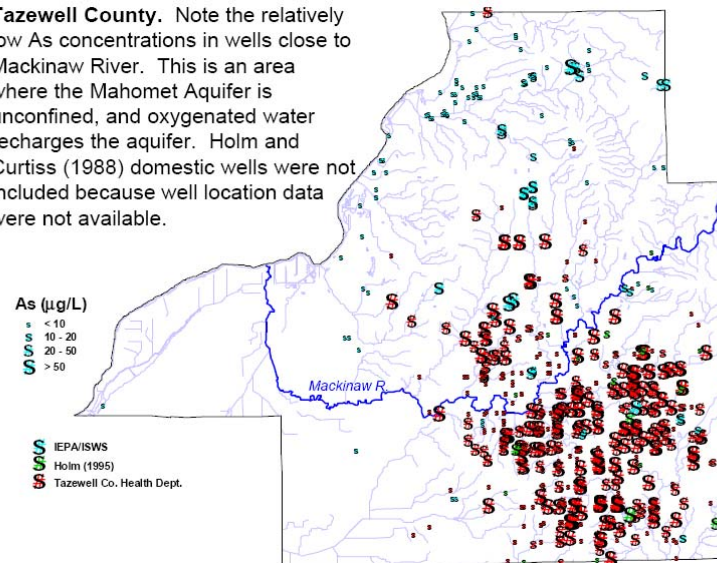
IEPA/ISWS Database: Municipal Wells



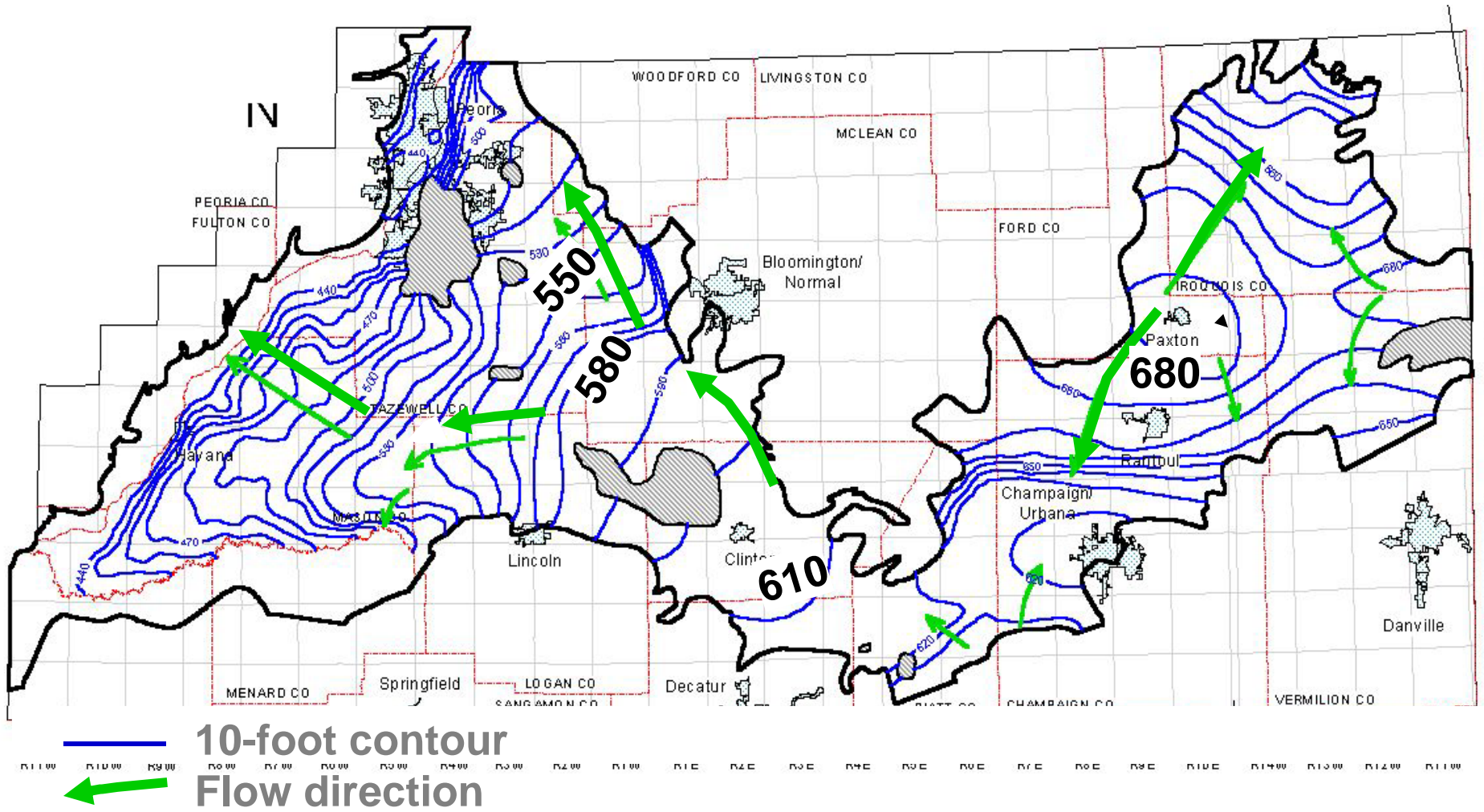
Domestic and Monitoring Wells



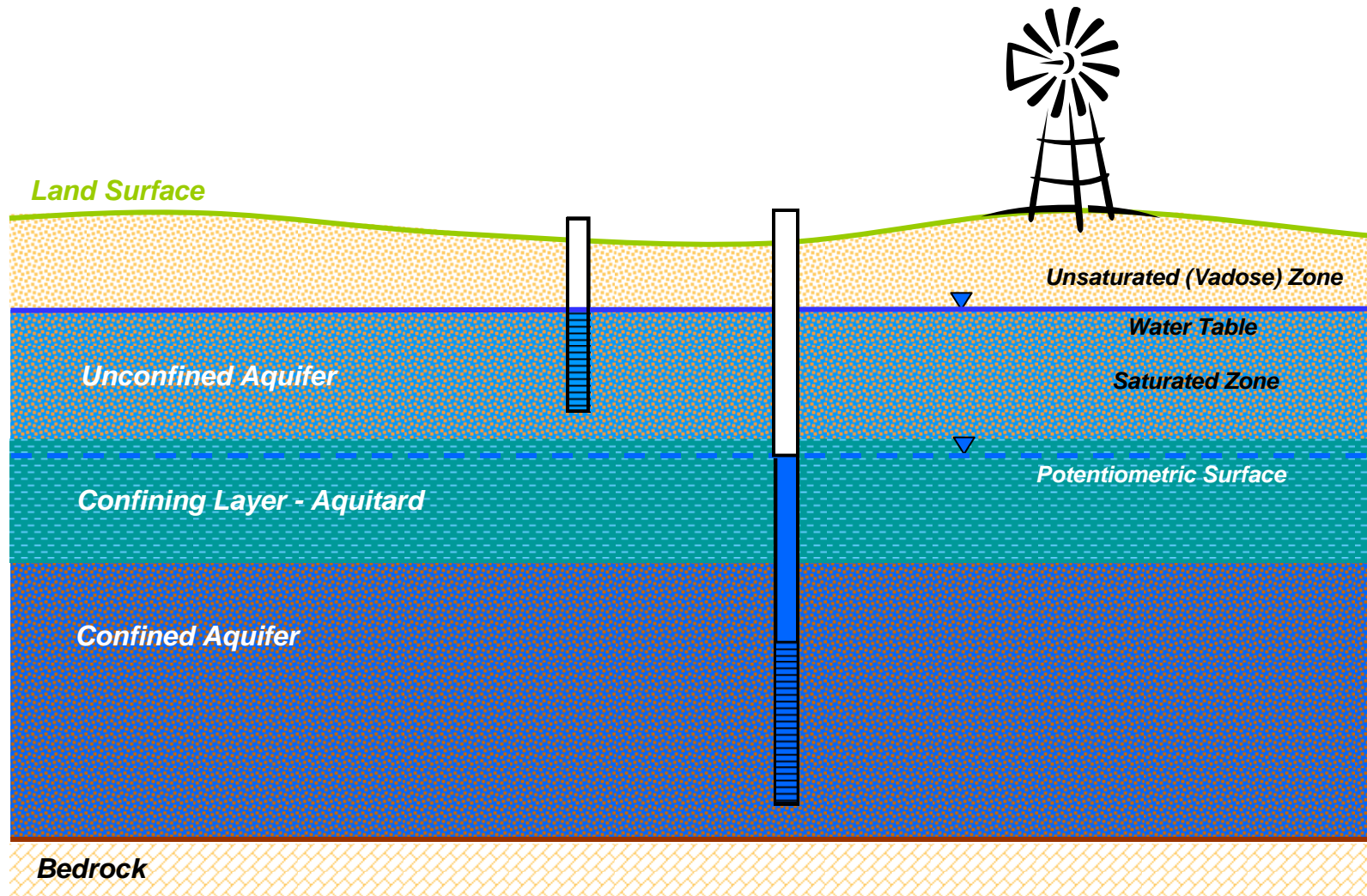
Tazewell County. Note the relatively low As concentrations in wells close to Mackinaw River. This is an area where the Mahomet Aquifer is unconfined, and oxygenated water recharges the aquifer. Holm and Curtiss (1988) domestic wells were not included because well location data were not available.



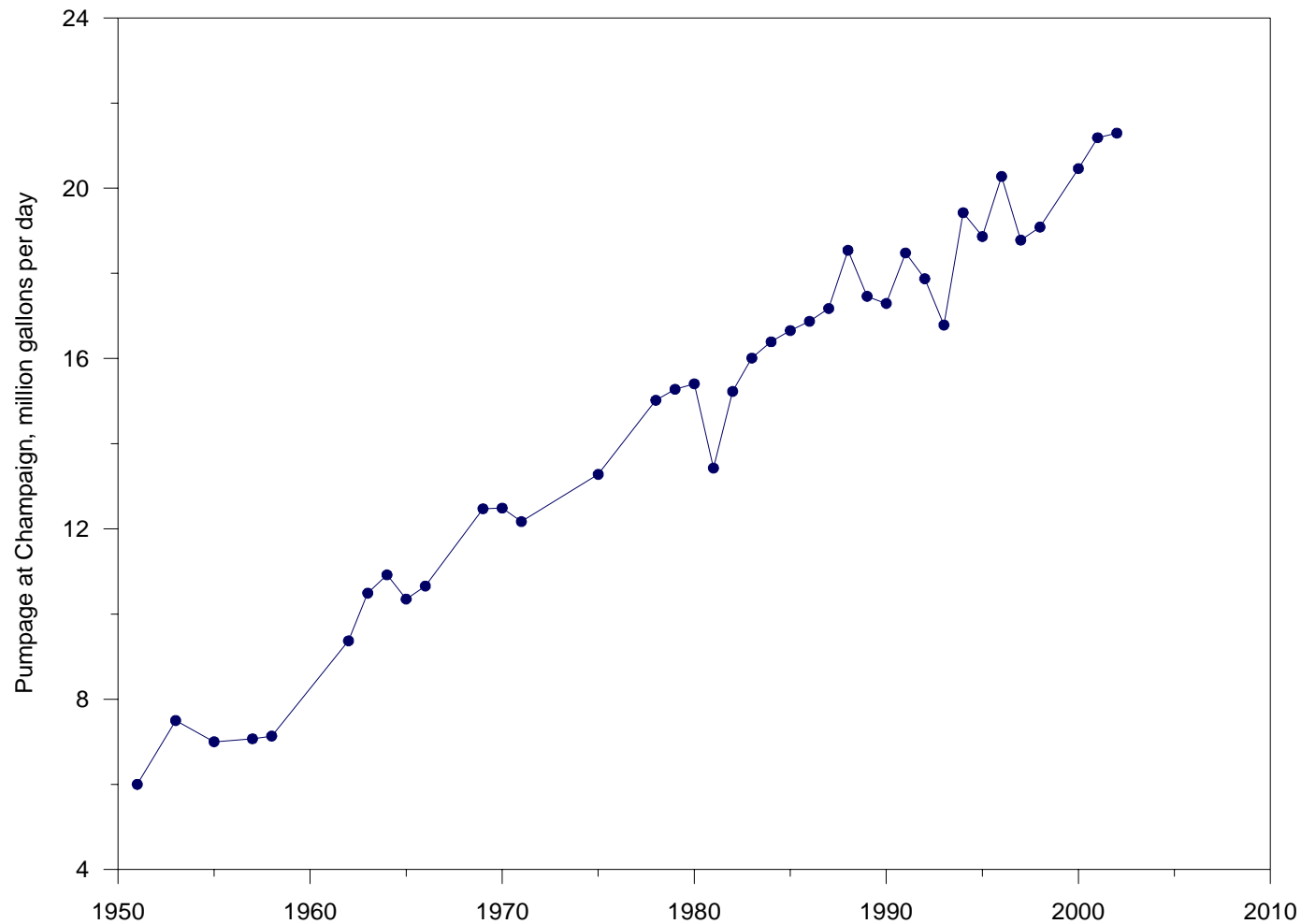
Mahomet Aquifer Potentiometric Surface



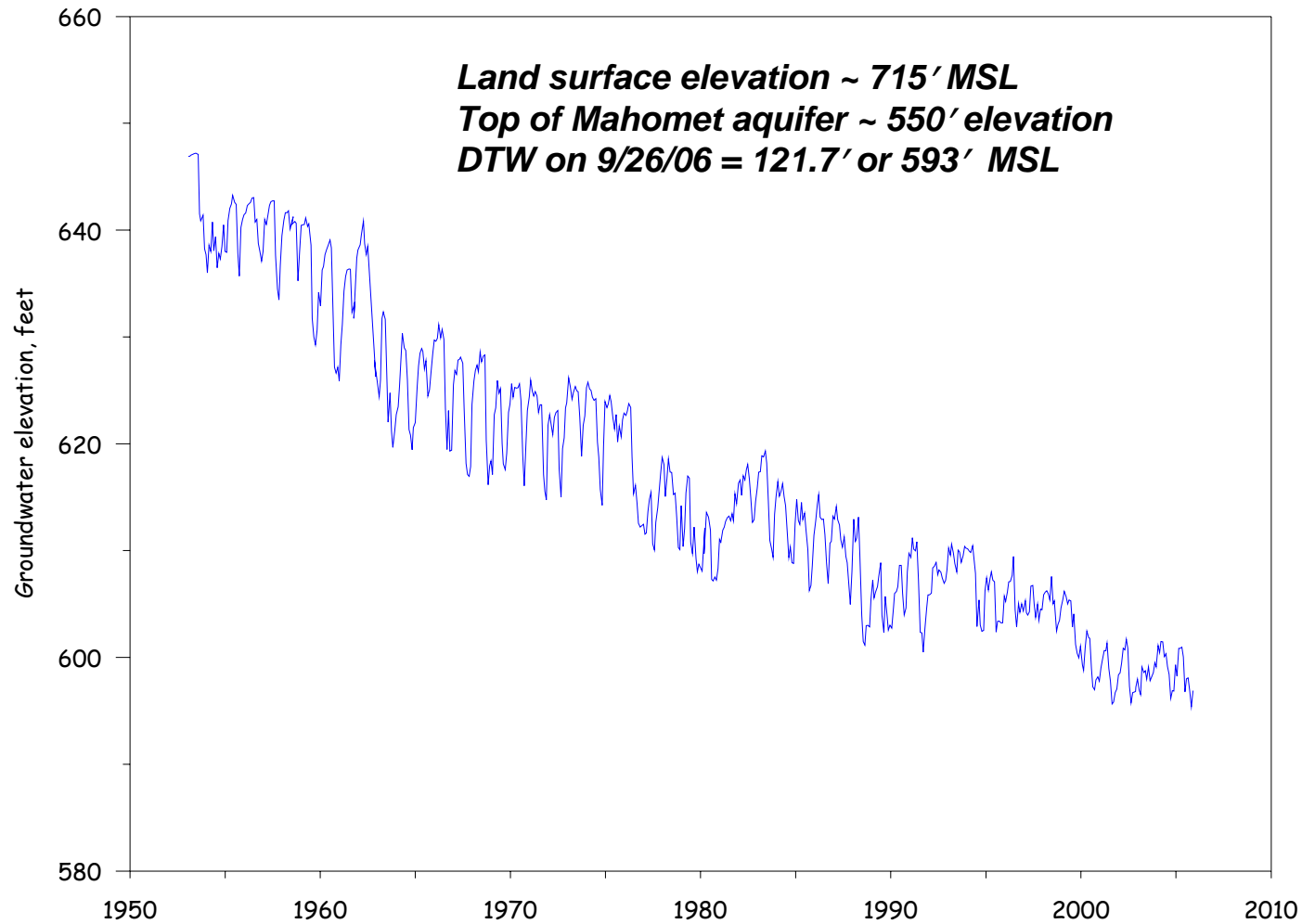
Unconfined and Confined Aquifers

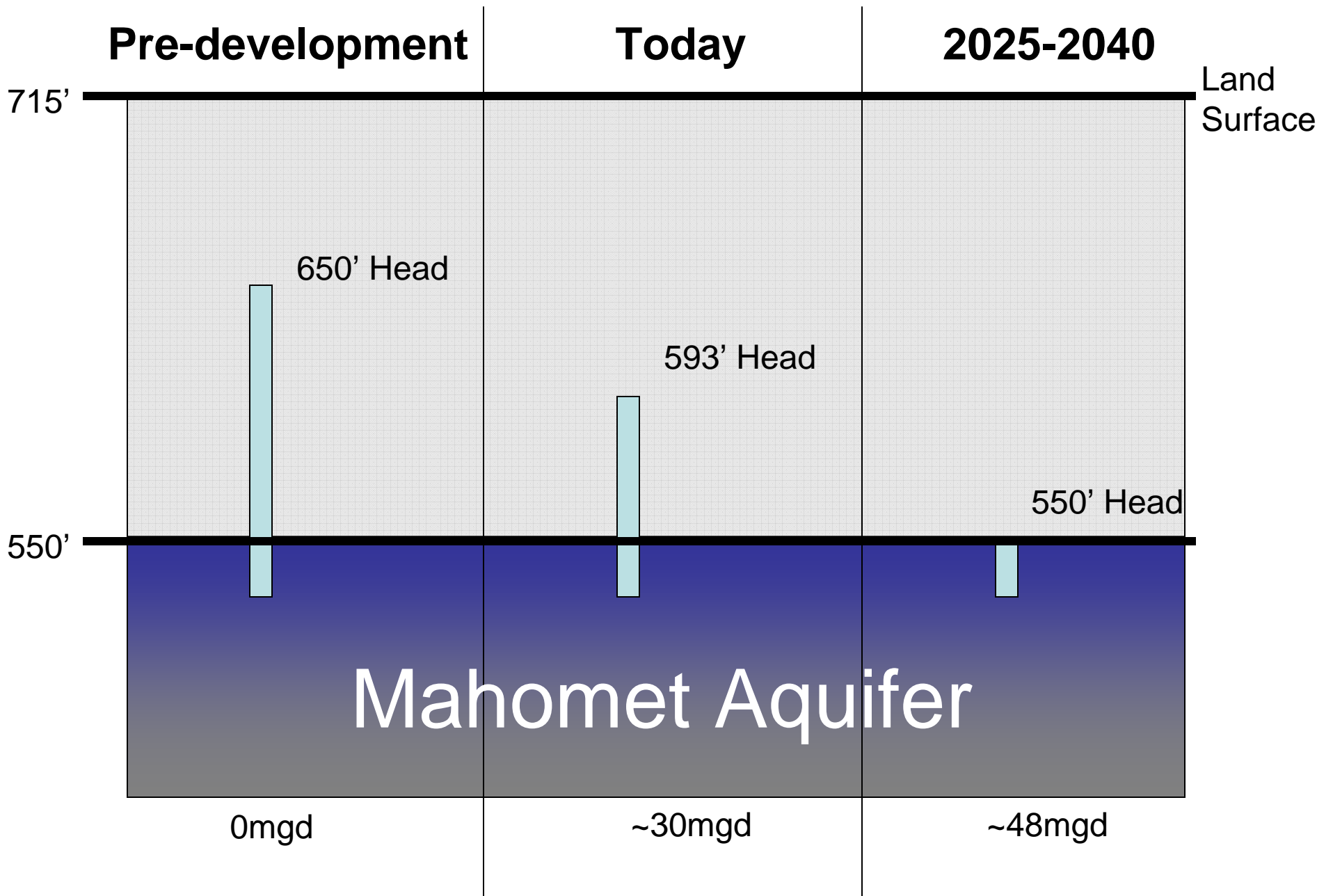


Increasing water withdrawals to meet increasing water demands



Mahomet Aquifer Heads near Champaign

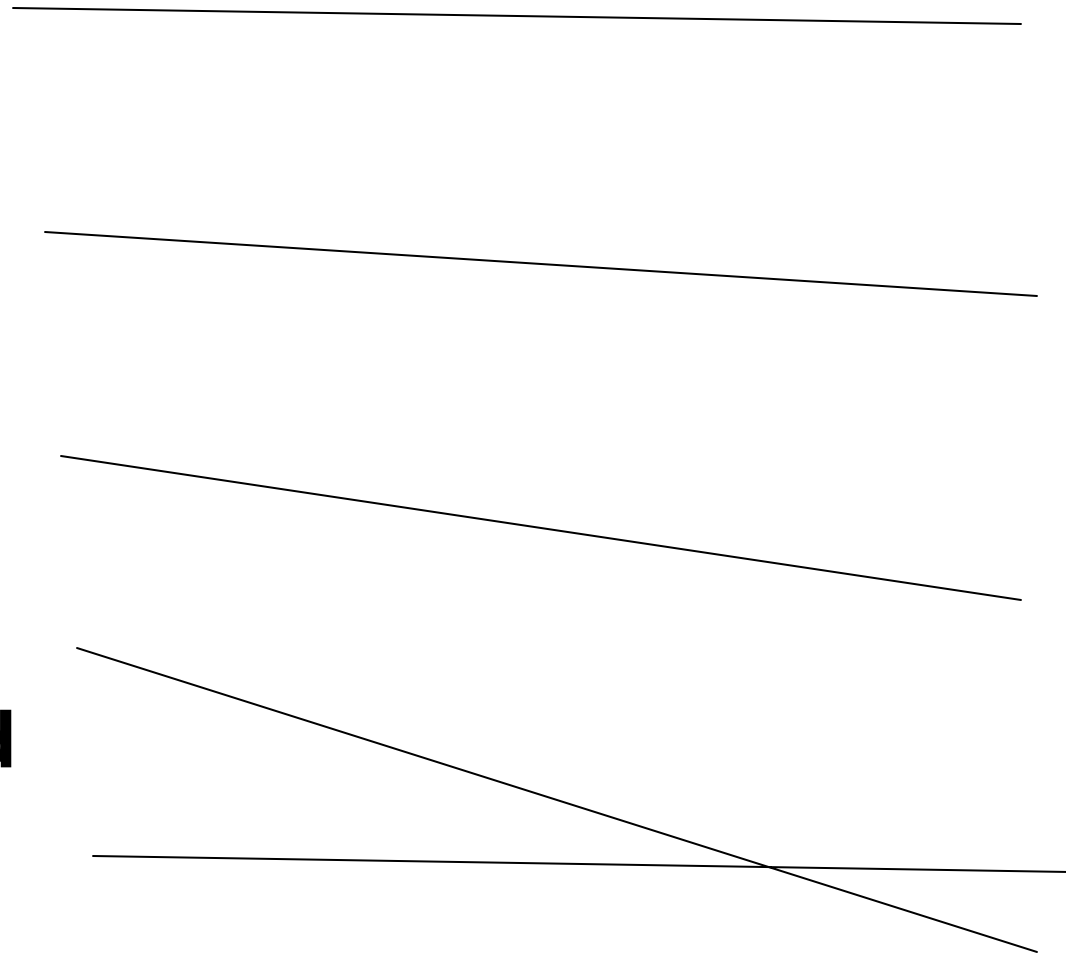




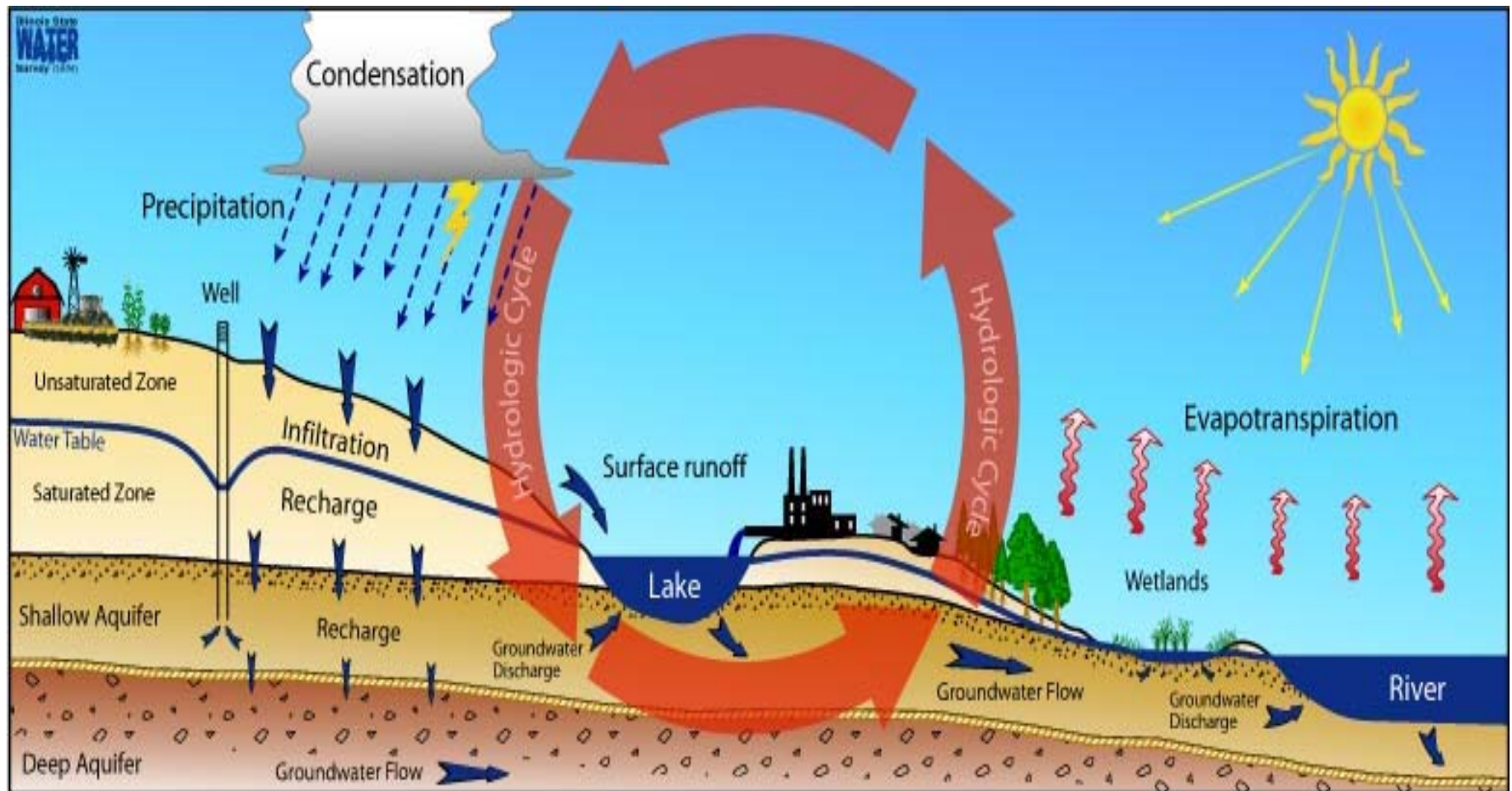
Decline in artesian head west of Champaign

CUMULATIVE IMPACTS WITH +10 MGD THRESHOLD

- **+2 mgd**
- **+4 mgd**
- **+6 mgd**
- **TOTAL +12 mgd**



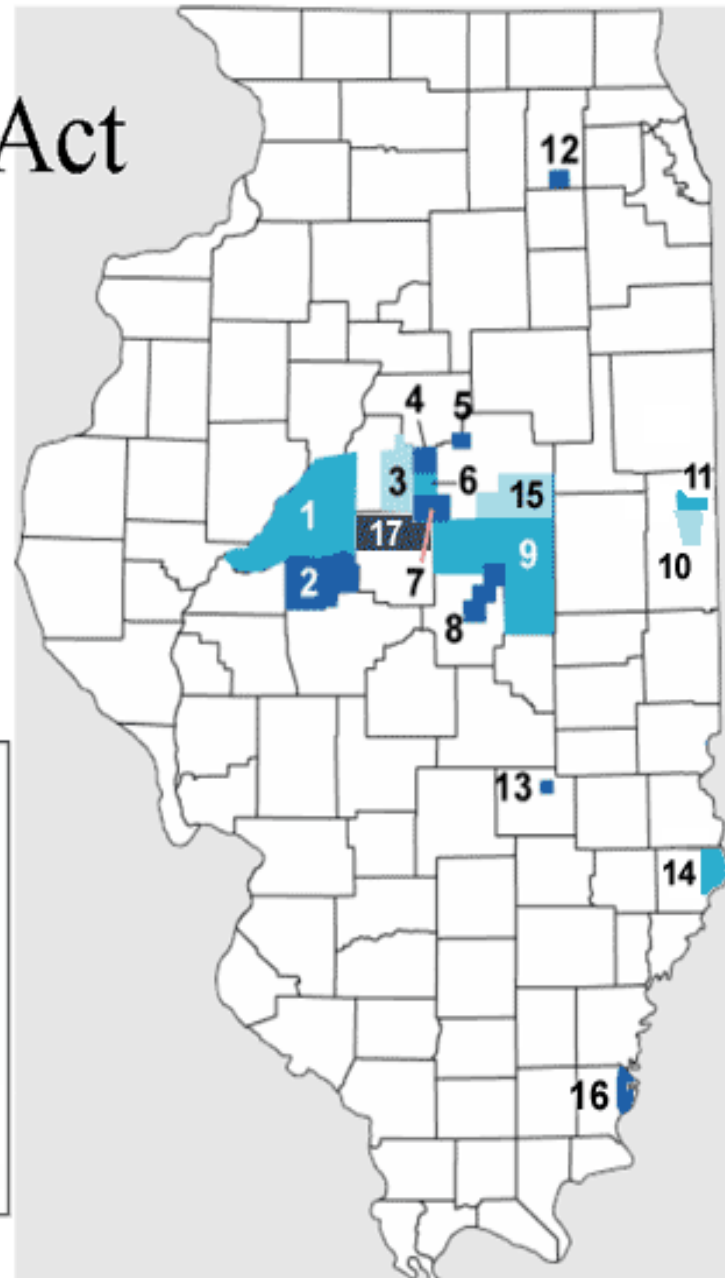
THE WATER CYCLE: CLIMATE, SURFACE WATER, and GROUNDWATER ARE ALL LINKED



Water Authorities Act

- Regional water authorities
- Broad powers
- Regulation

1 - Imperial Valley	12 - Sugar Grove Twp.
2 - Menard County	13 - Effingham <i>(near Effingham PWS)</i>
3 - Mackinaw Valley	14 - Russell-Allison <i>(2+ Townships)</i>
4 - Danvers Twp.	15 - SE McLean County <i>(8 Townships)</i>
5 - Hudson Twp.	16 - Shawnee/Gallatin Co. <i>(3 Townships)</i>
6 - Allin Twp.	17 - Northern Logan Co. <i>(8 Townships)</i>
7 - Mount Hope	
8 - Mahomet Aquifer	
9 - Mahomet Valley	
10 - Blount Twp.	
11 - South Ross Twp.	



KEY QUESTIONS

- **Water law – what is reasonable use?**
- **What is the sustainability of water supply?**
- **What will be the impacts of additional withdrawals?**
- **What impacts will be socially acceptable?**

KEY QUESTIONS (contd.)

- How can you manage water resources to ensure adequate water supplies during droughts?
- How can you manage water resources that vary regionally (e.g. Mason County vs Champaign County)?
- How can Water Authorities tie into regional water supply management?
- Can you manage water supply regionally with existing institutions and laws?