

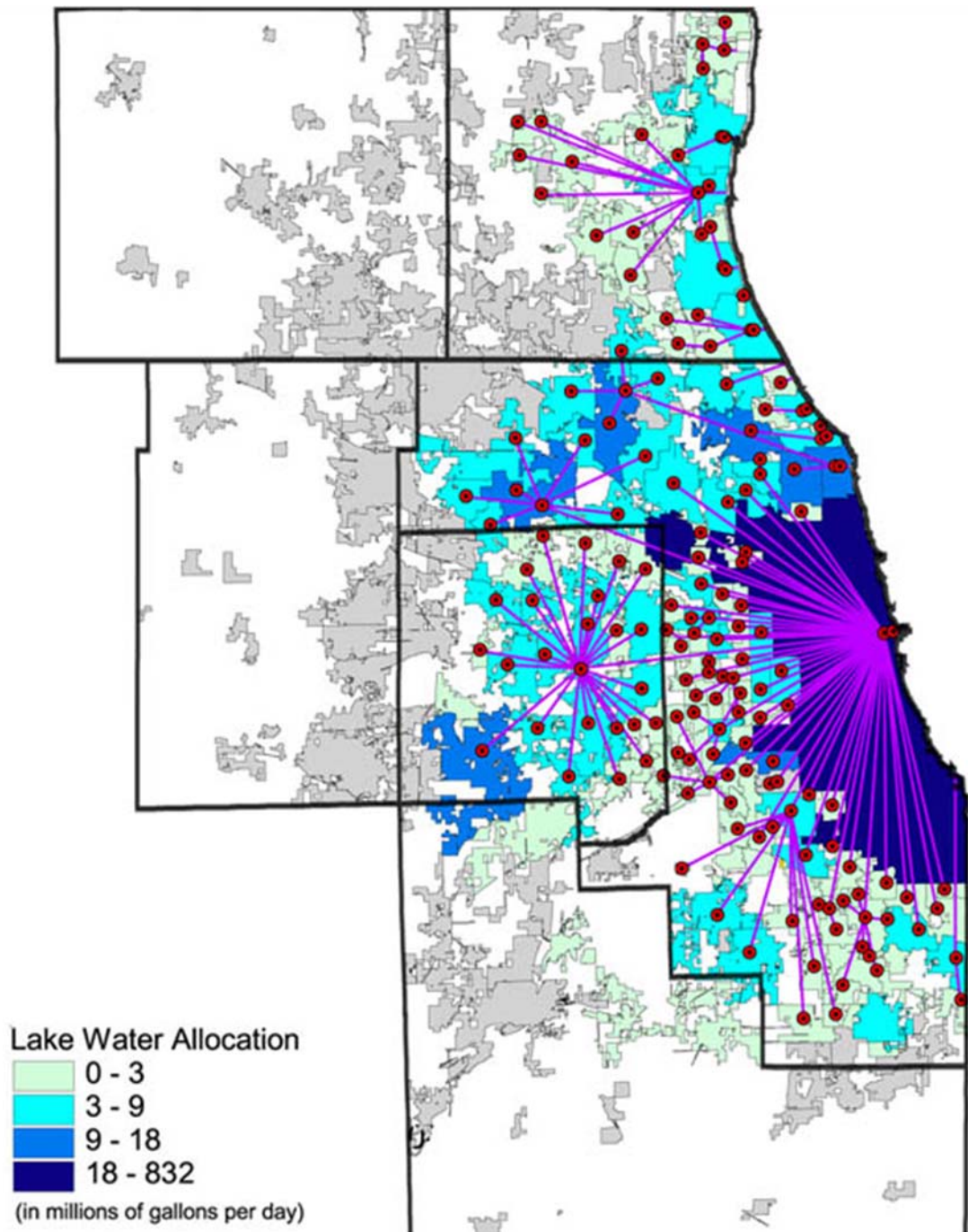
Synoptic measurement 2014: Update

George Roadcap, Daniel Abrams, and Dan Hadley

January 26, 2015

Lake Michigan Allocation in 2000

From Martin Jaffe - UIC



Source of Municipal Water in 2012

County Boundary

Groundwater

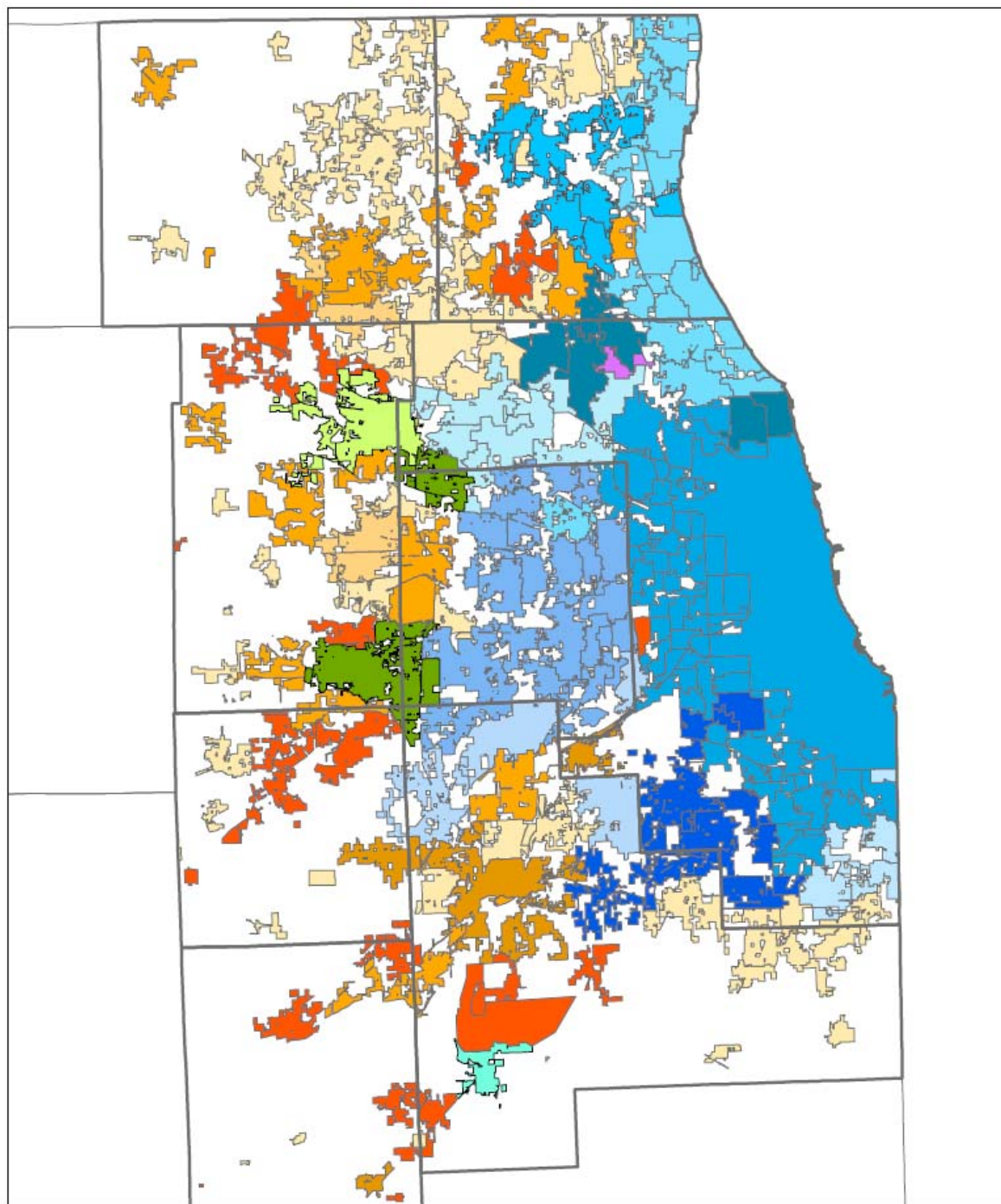
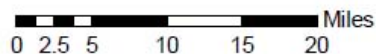
- Shallow
- Mostly Shallow
- Mixed Shallow and Deep
- Mostly Deep
- Deep
- Mixed Groundwater and Lake Michigan

Lake Michigan Water

- North Shore
- Lake County JAWA
- Evanston
- Chicago
- NW Suburb JAWA
- DuPage
- Illinois American
- Oak Lawn
- Hammond

Surface Water

- Kankakee River
- Fox River
- Mixed Fox River and Groundwater



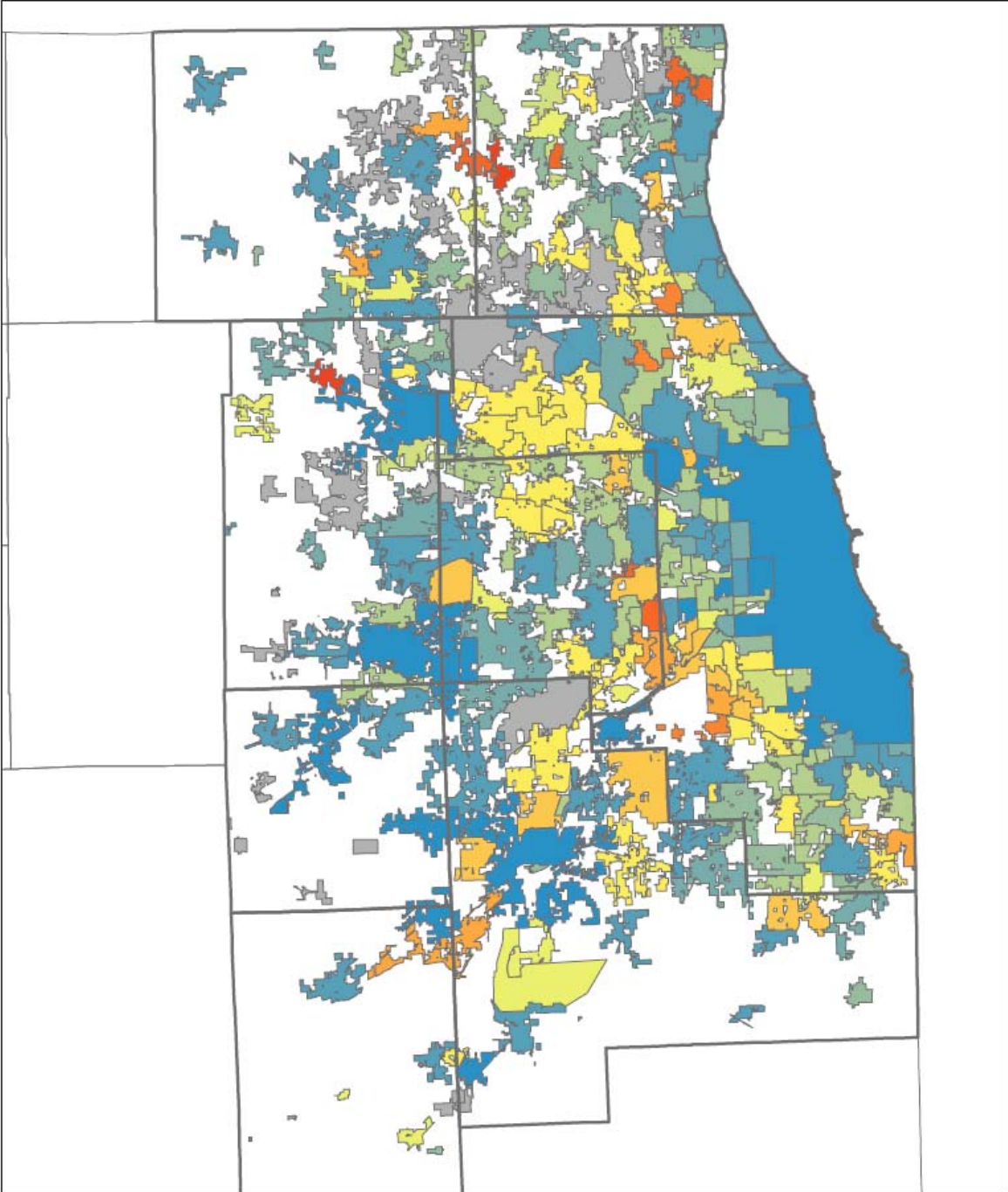
Establishment of Public Water Supply by Decade

County Boundary

Decade

- Before 1890
- 1890s
- 1900s
- 1910s
- 1920s
- 1930s
- 1940s
- 1950s
- 1960s
- 1970s
- 1980s
- 1990s
- 2000s
- Data Not Available/No PWS

0 2.5 5 10 15 20 Miles



Switch from Groundwater by Decade

County Boundary

Decade

Before 1890

1890s

1900s

1910s

1920s

1930s

1940s

1950s

1960s

1970s

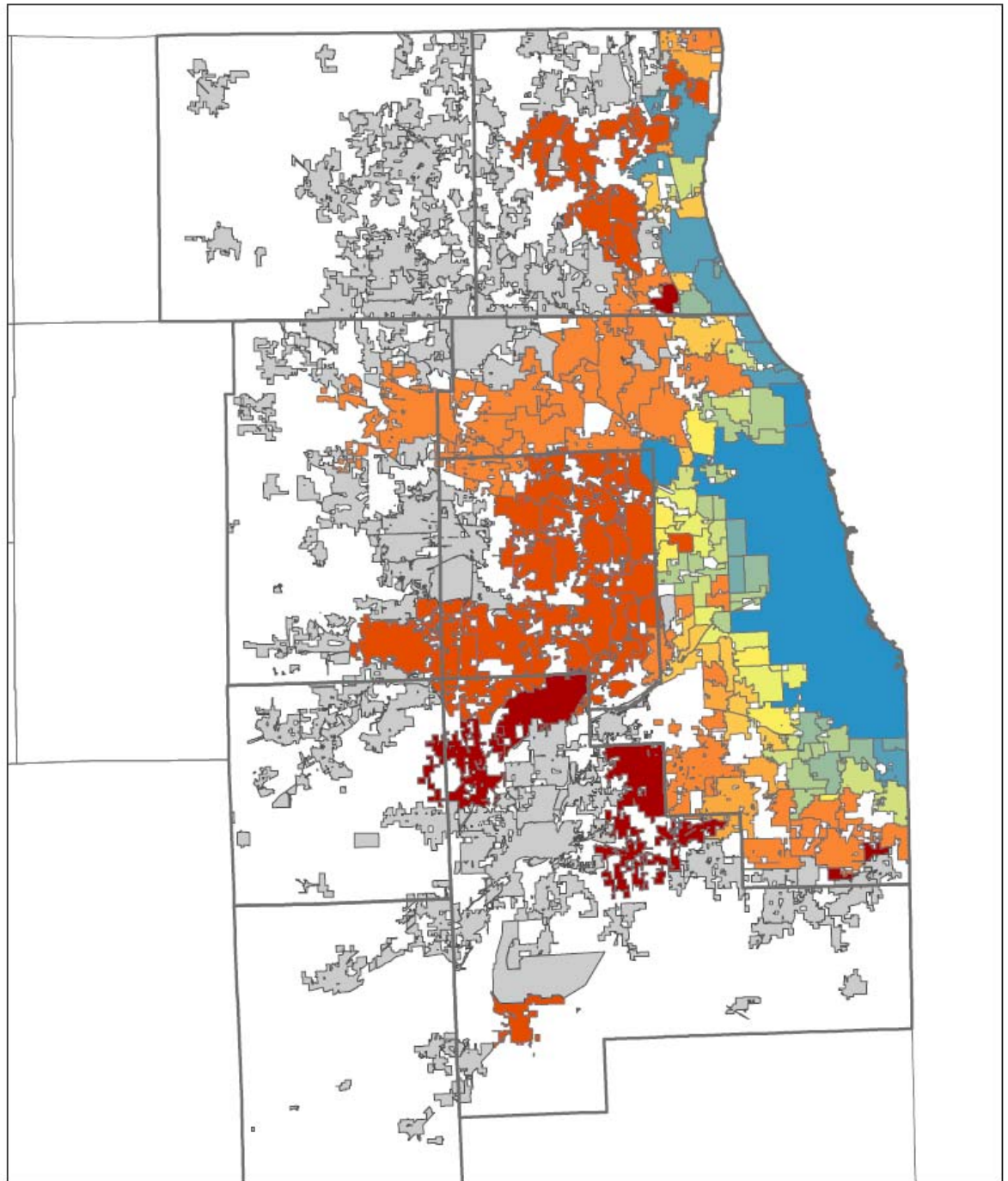
1980s

1990s

2000s

No Switch Has Occured

0 2.5 5 10 15 20 Miles



Change in Municipal Water Use

County Boundary

Municipalities that haven't switched

Lake Michigan

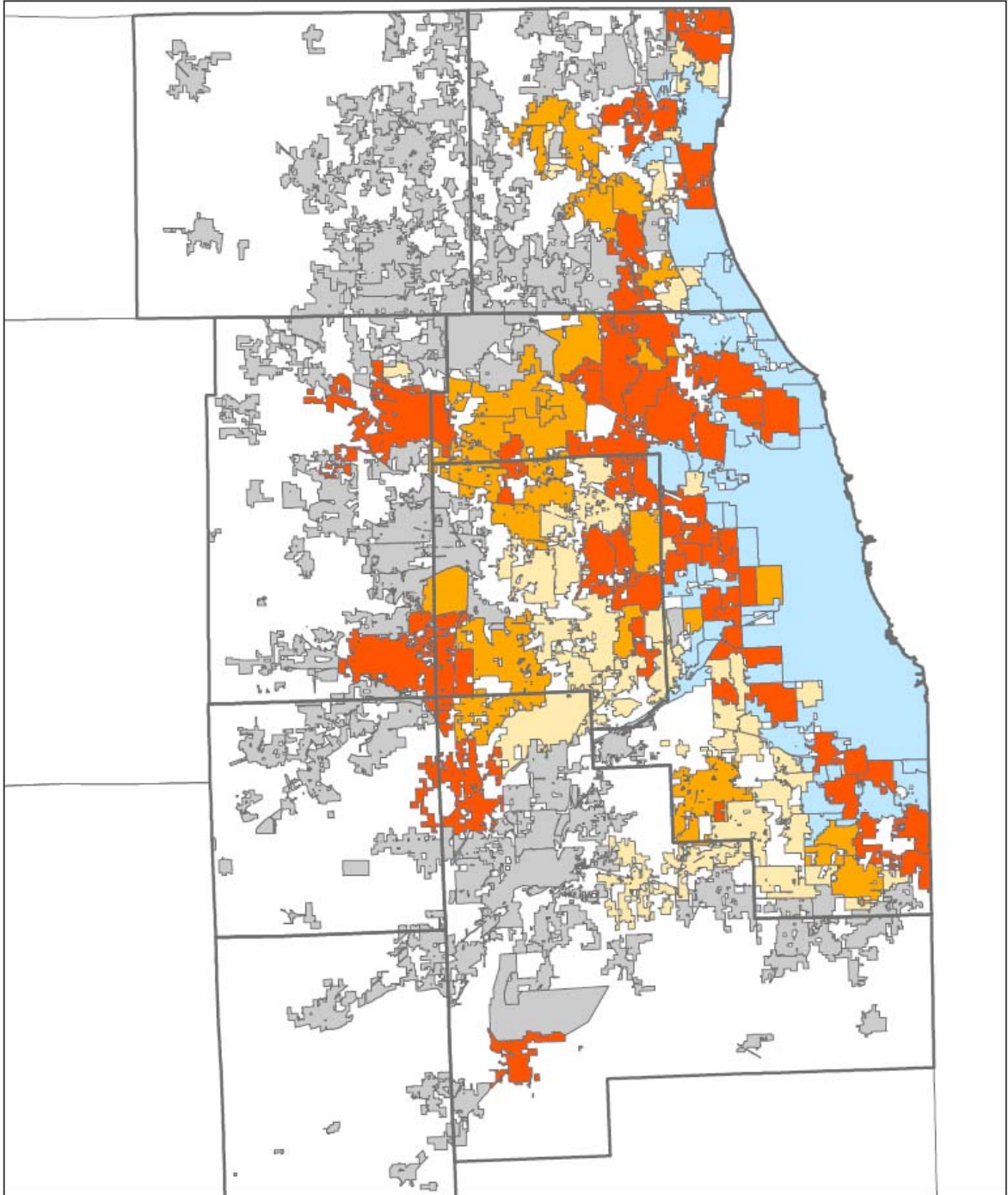
Groundwater

Source of Groundwater Prior to Switch

Shallow Groundwater

Mixed Shallow and Deep Groundwater

Deep Groundwater



0 2.5 5 10 15 20 Miles

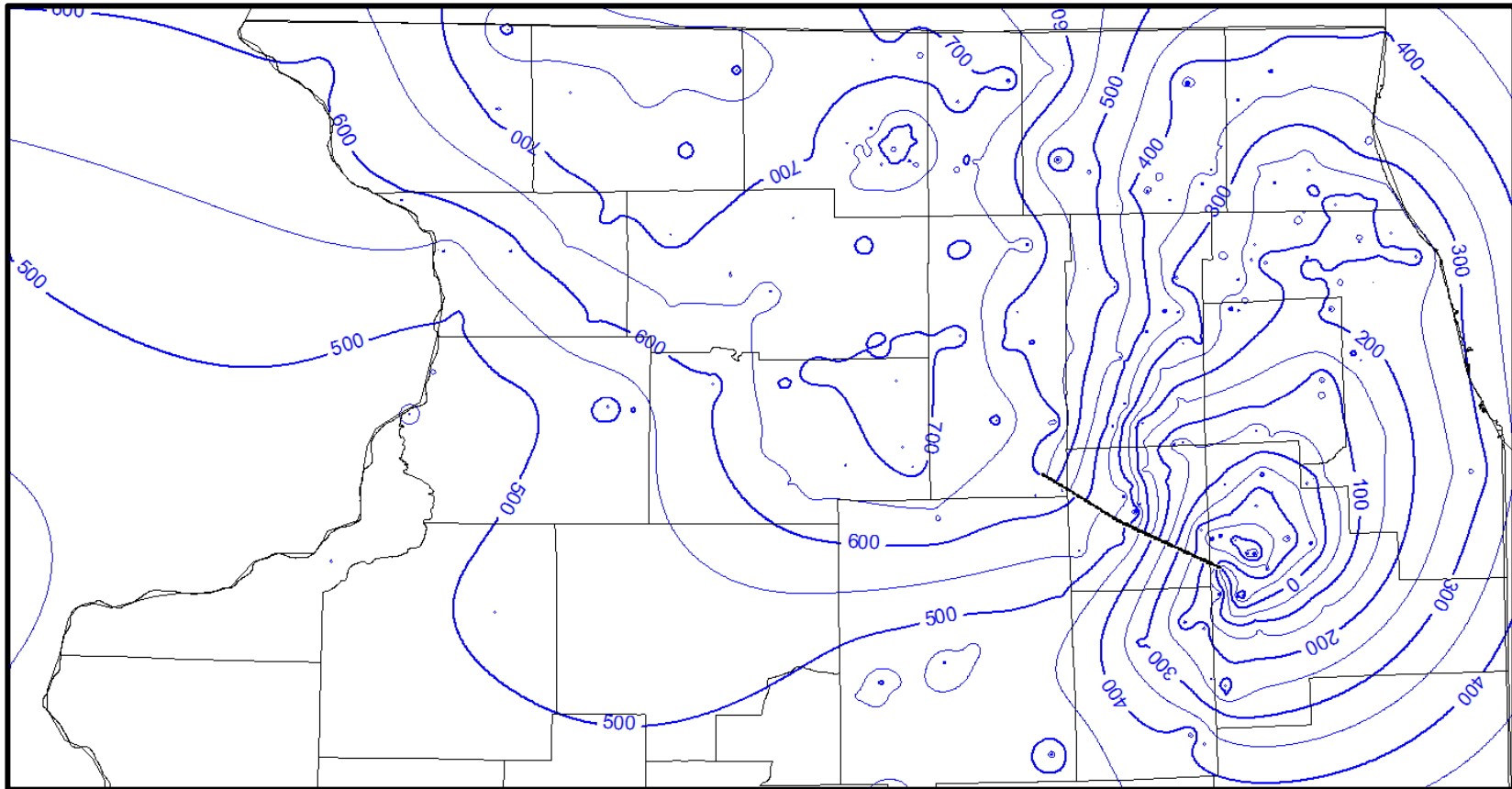


2014 Synoptic Measurement of Sandstone Wells

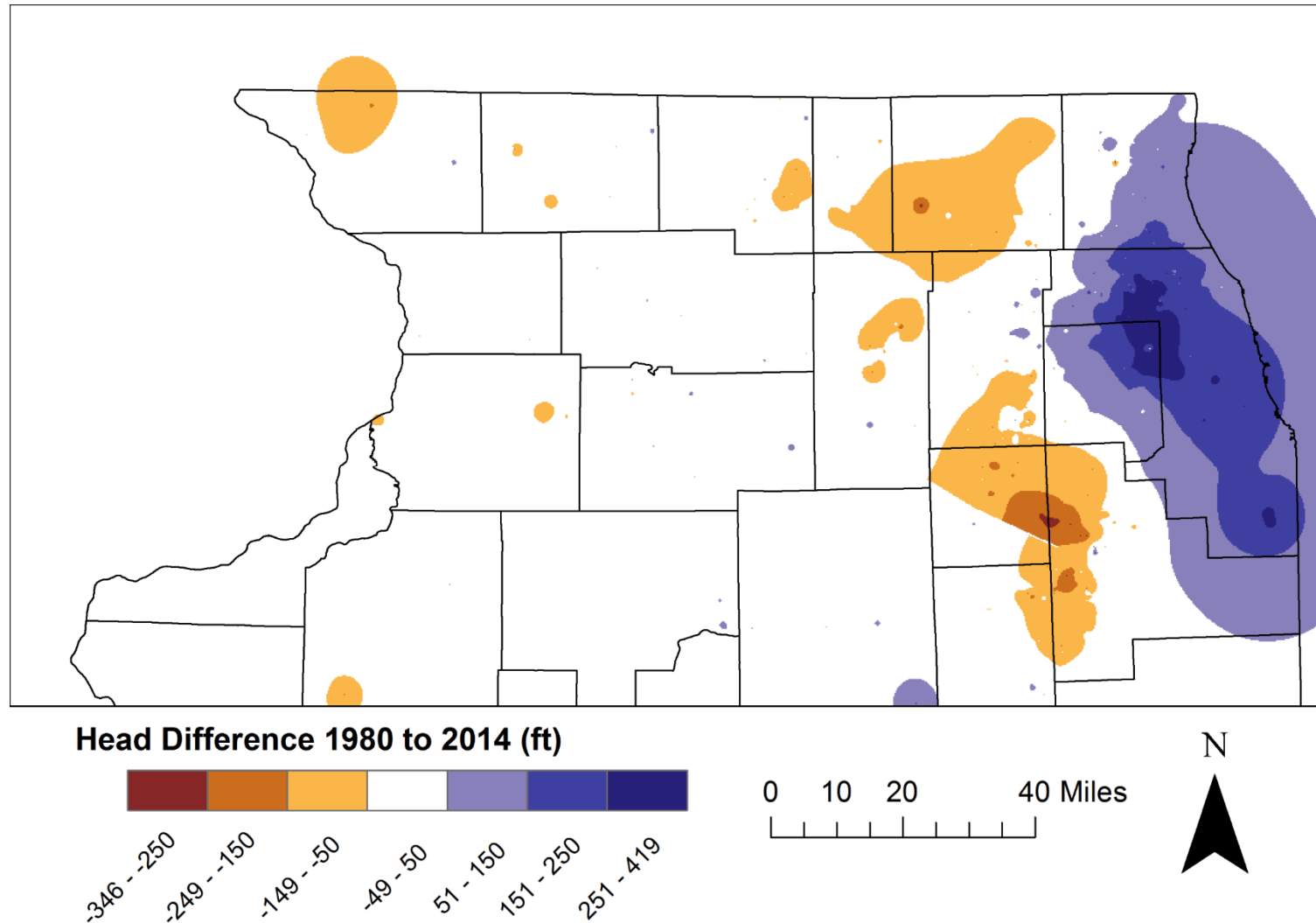


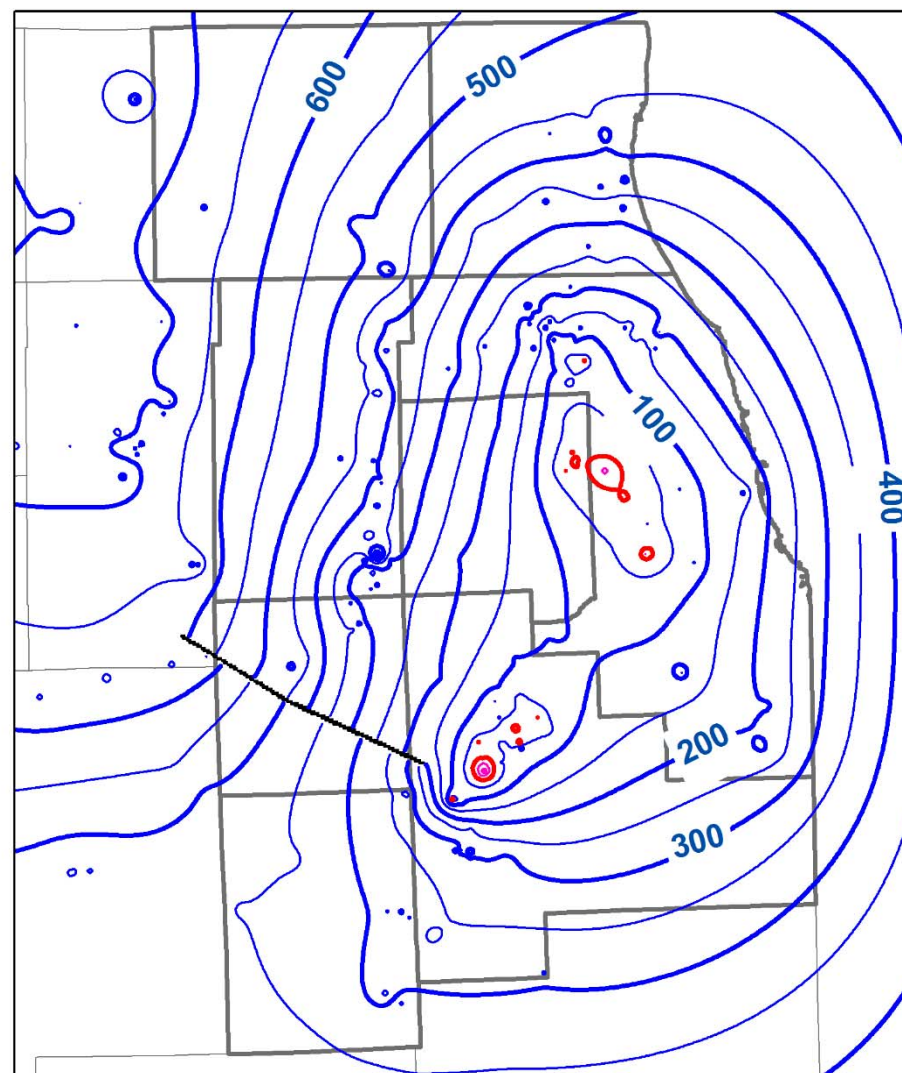
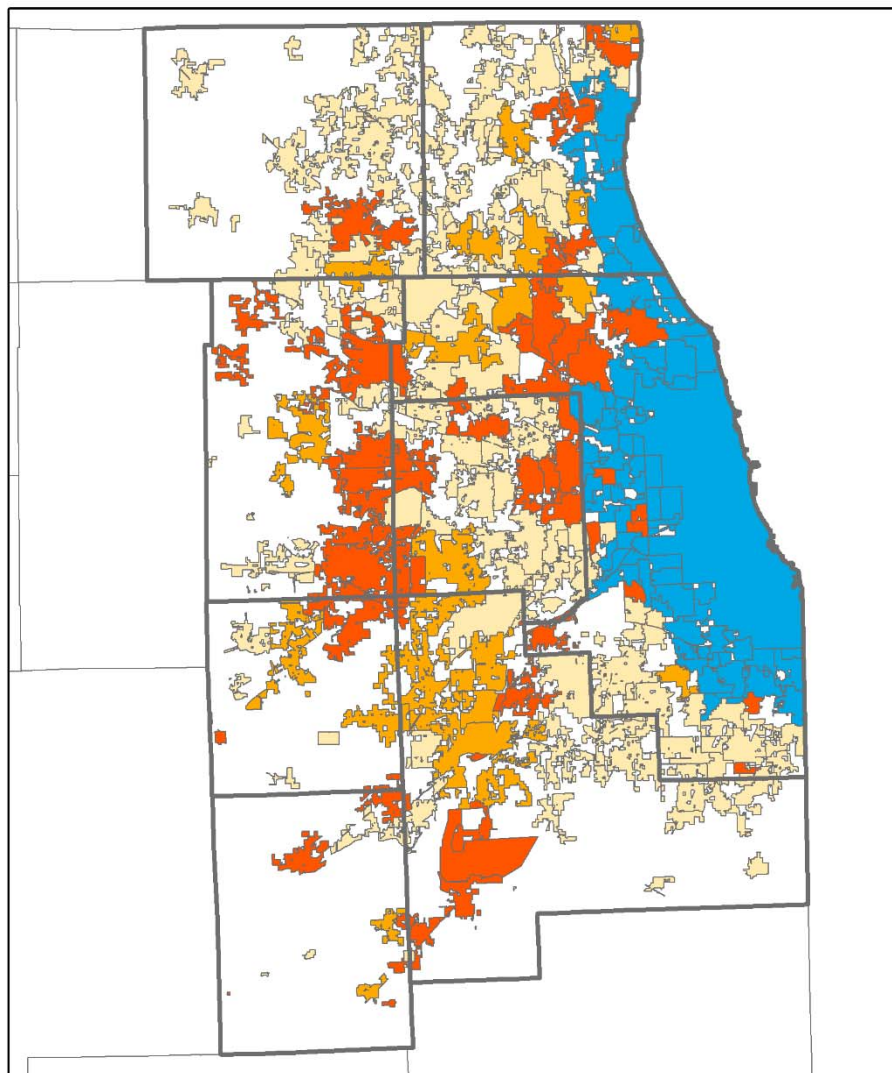
- We measured water levels under static (nonpumping) conditions
- 195 facilities were visited from July 2014 to present
 - 142 Public Water Supplies
 - 53 Self-Supplied Commercial and Industrial or Irrigation
- Over 500 wells have been measured thus far

2014 Mass Measurement- *Draft* Contours



Largest mass measurement since 1980

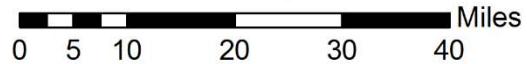




Source of Municipal Water Use

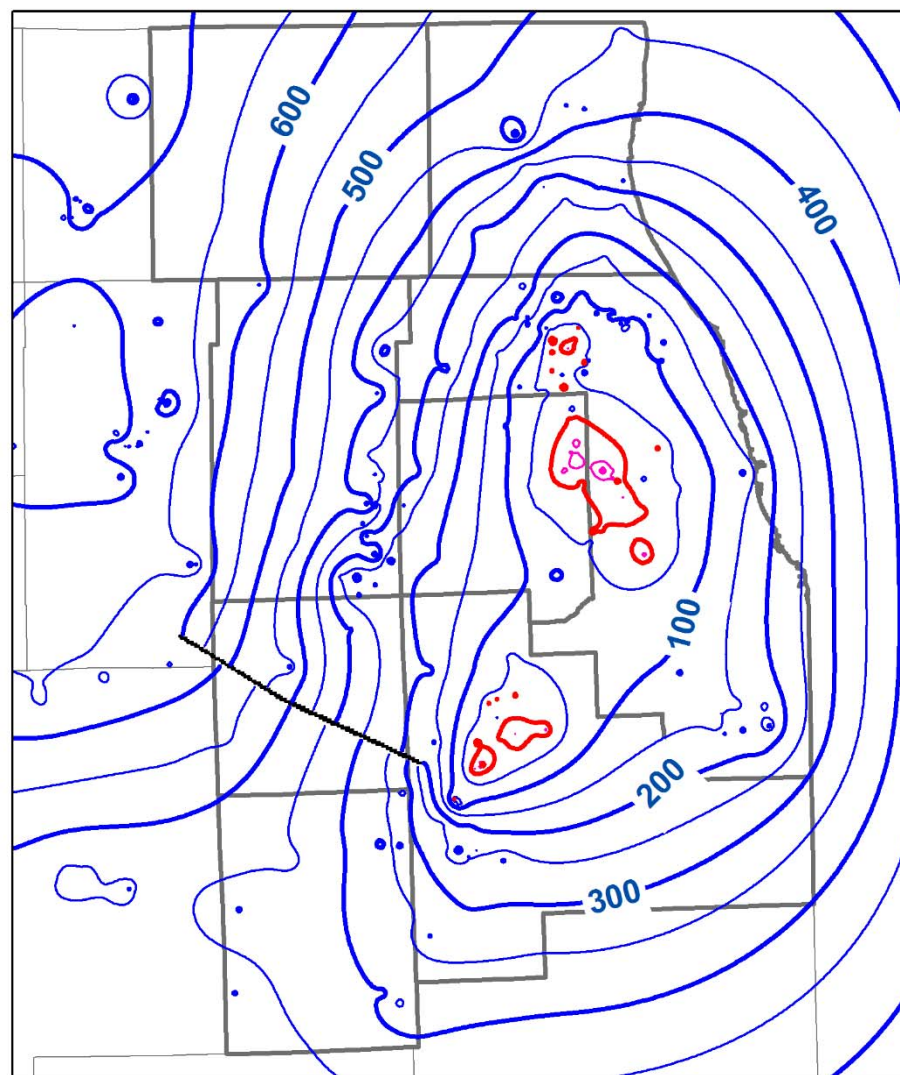
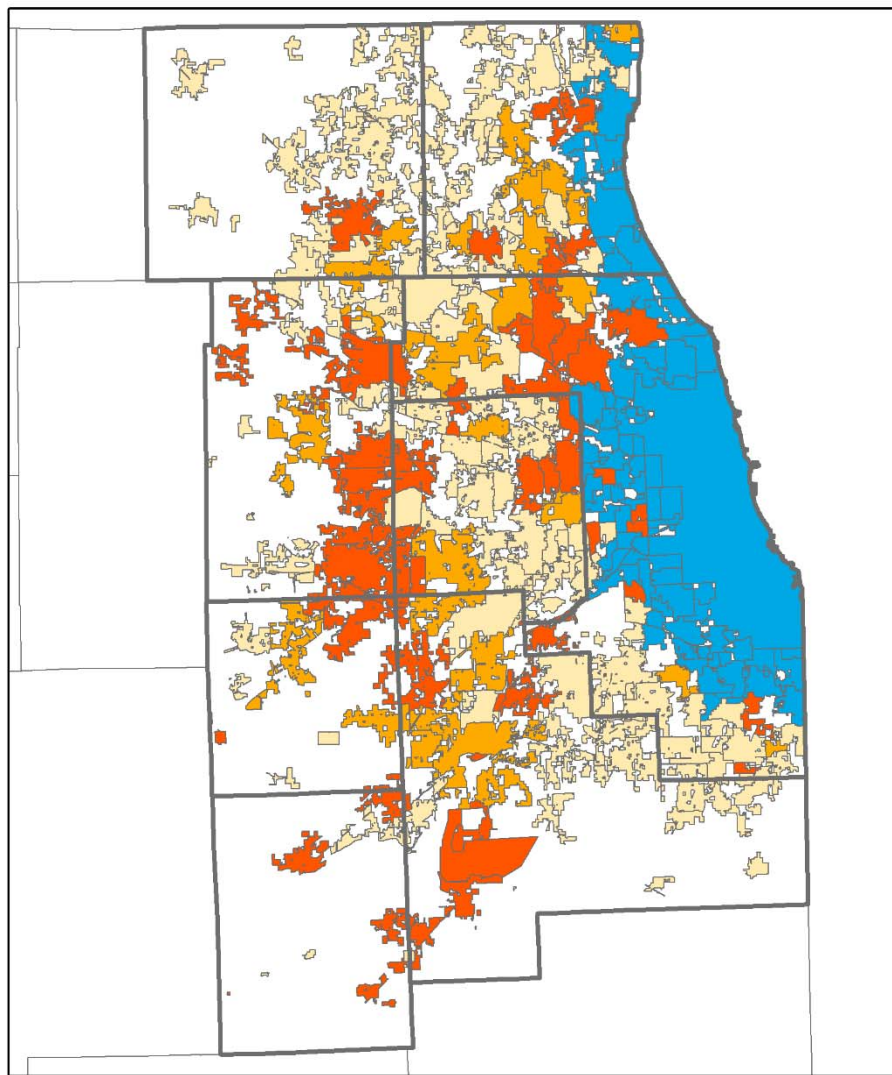
- Shallow Groundwater
- Mixed Groundwater
- Deep Groundwater
- Lake Michigan Water
- Surface Water
- Mixed Surface and Groundwater

- Water level at MSL
- Water level below MSL
- Water level above MSL
- Sandwich Fault
- County Boundaries



1966

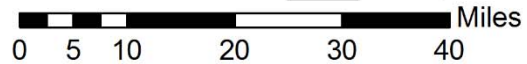




Source of Municipal Water Use

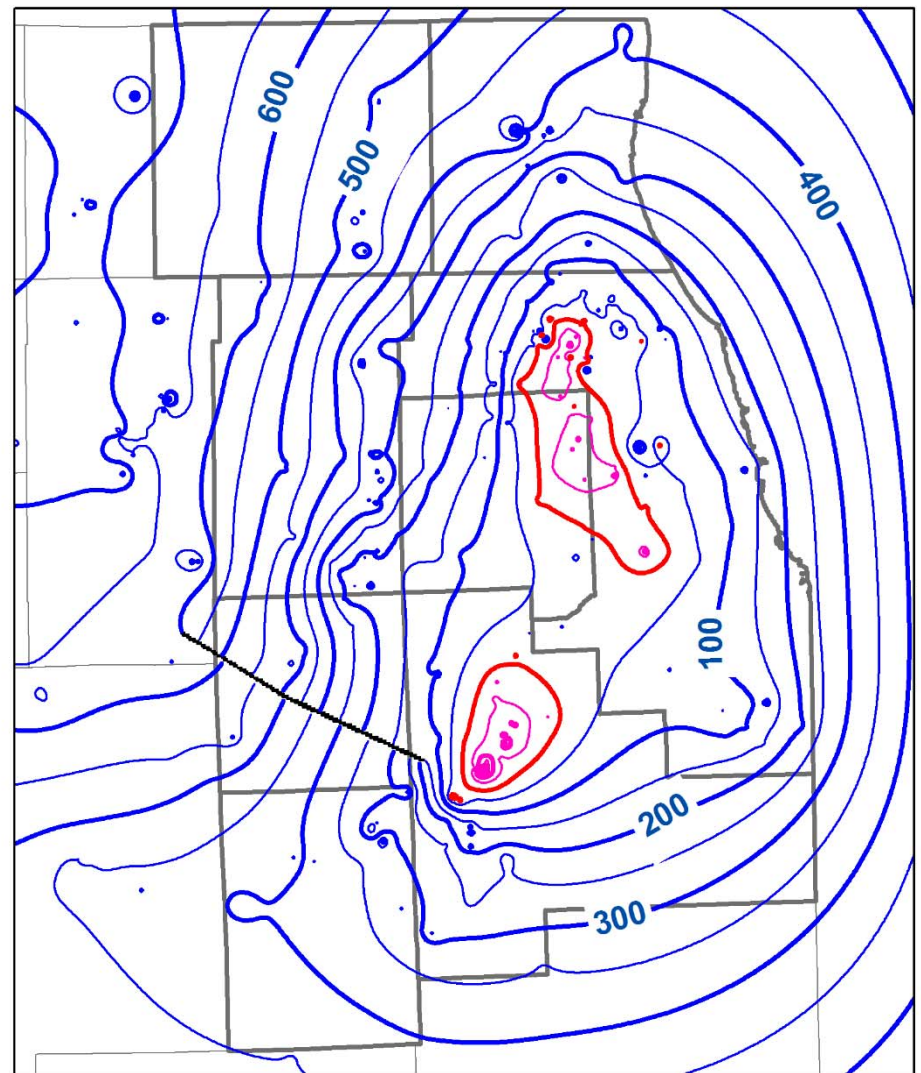
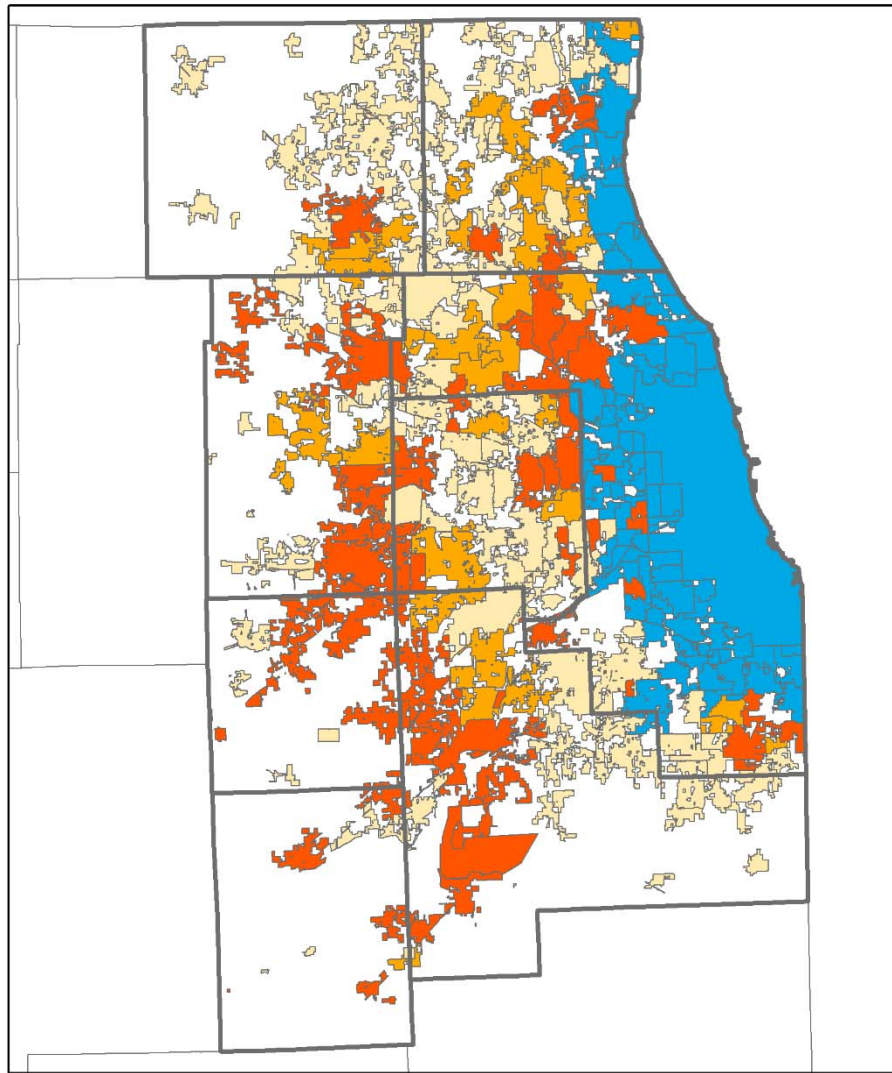
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1971

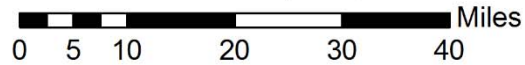




Source of Municipal Water Use

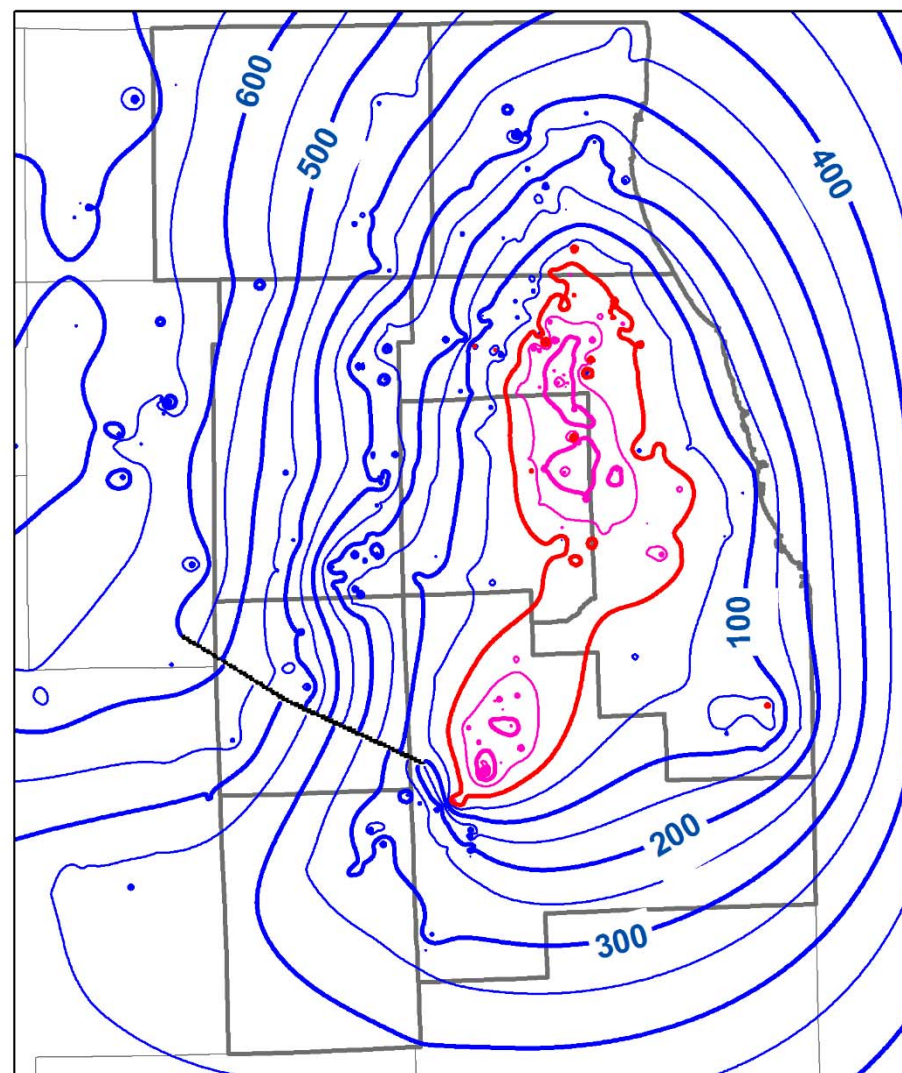
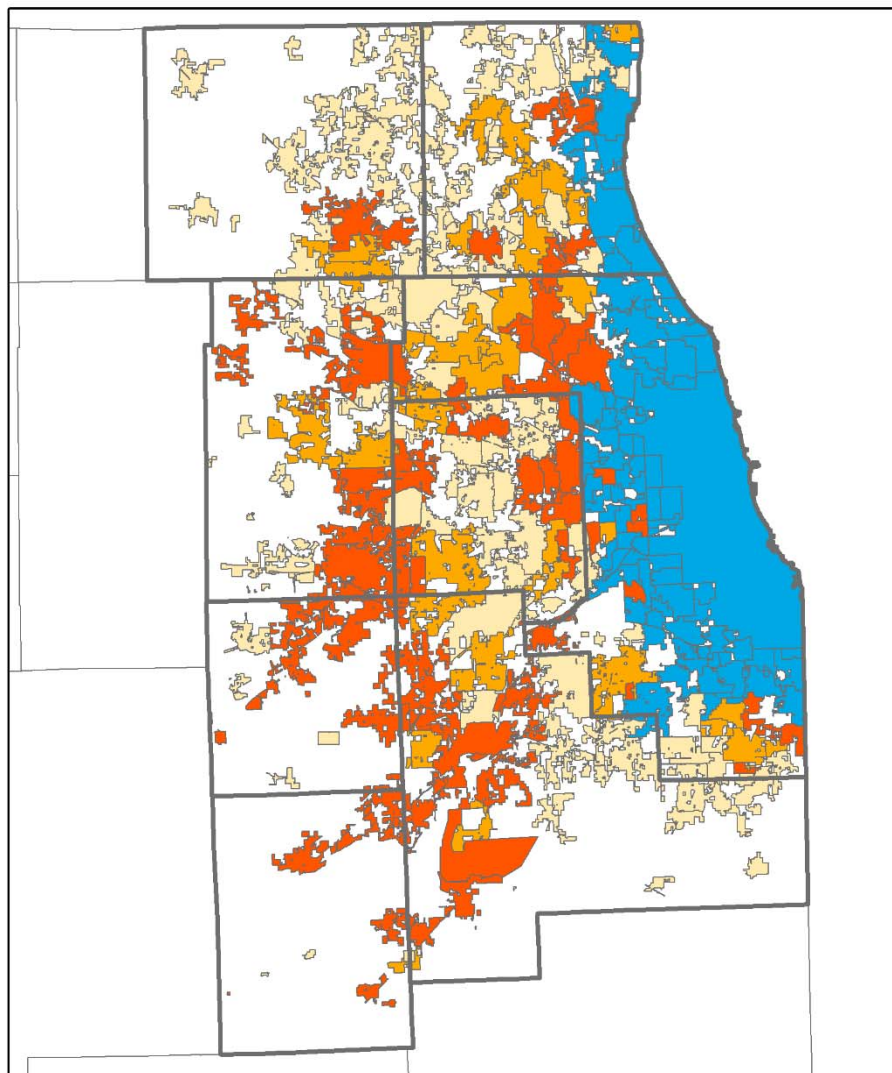
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1975

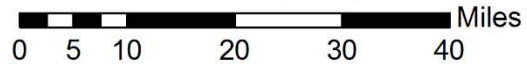




Source of Municipal Water Use

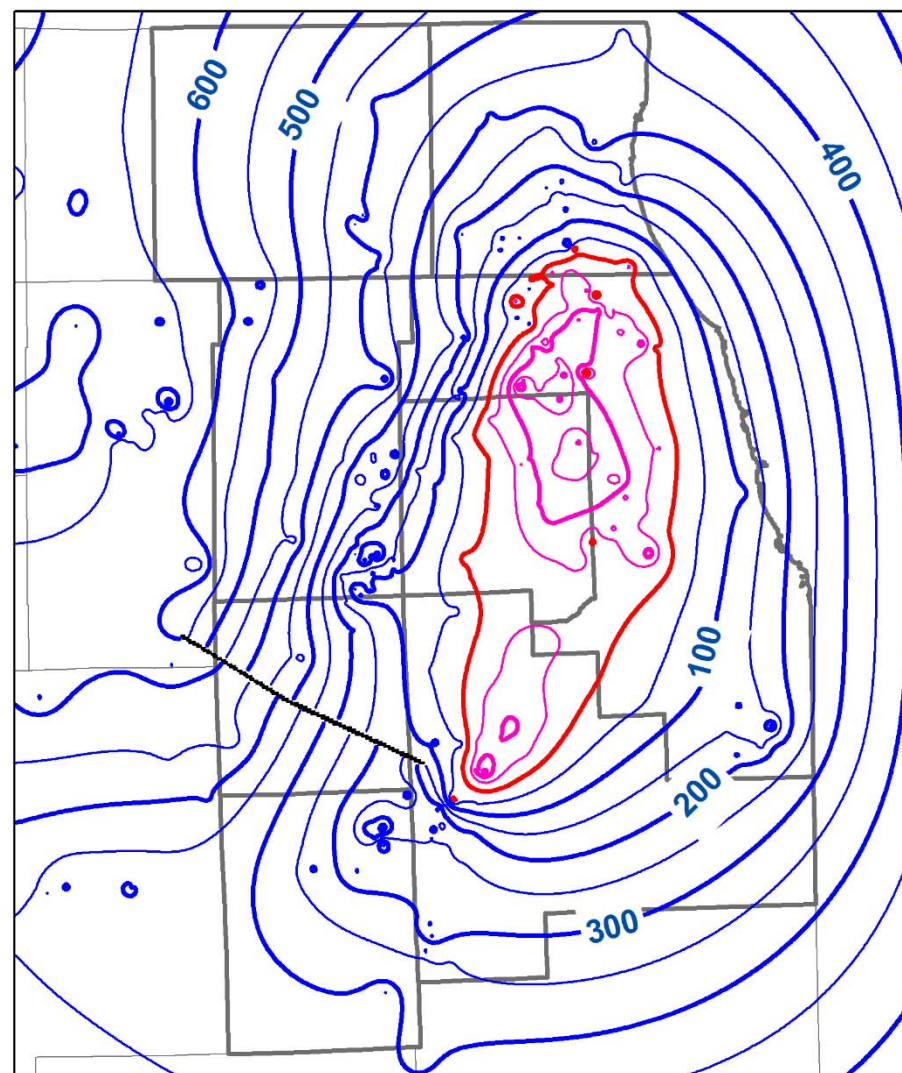
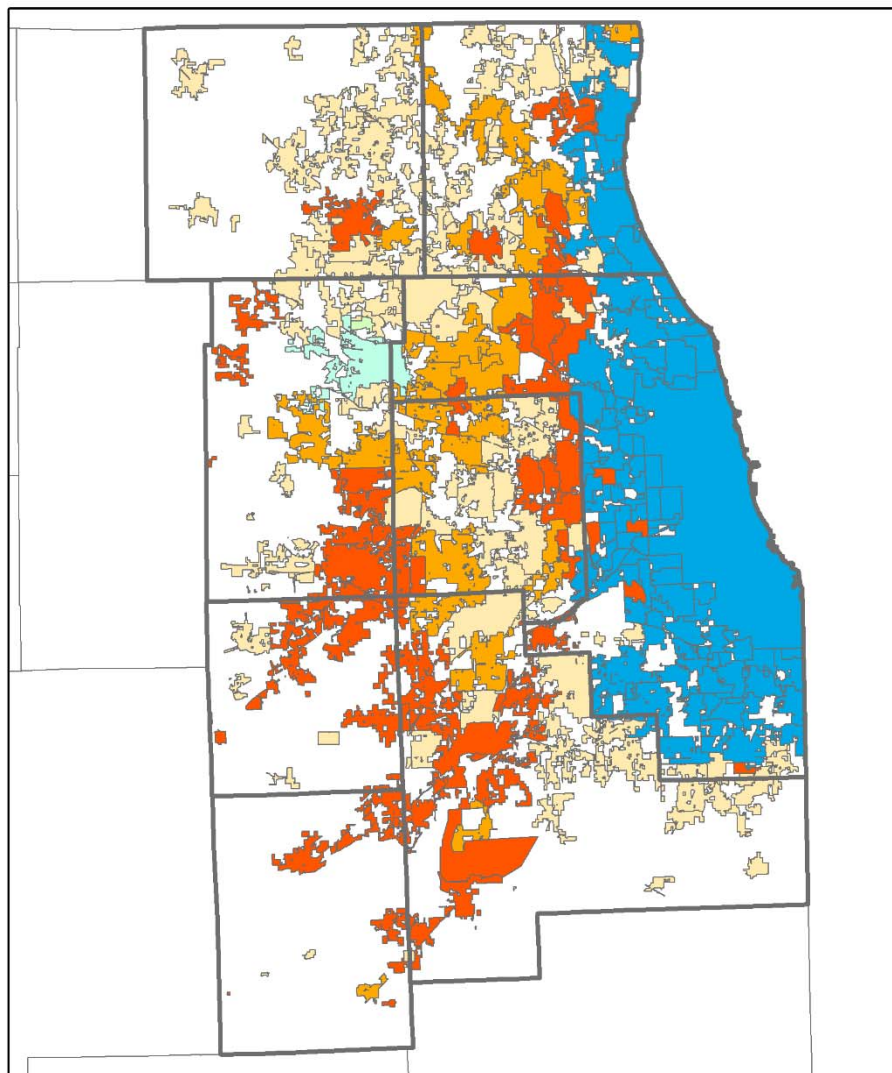
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1980

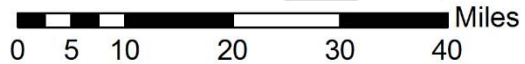




Source of Municipal Water Use

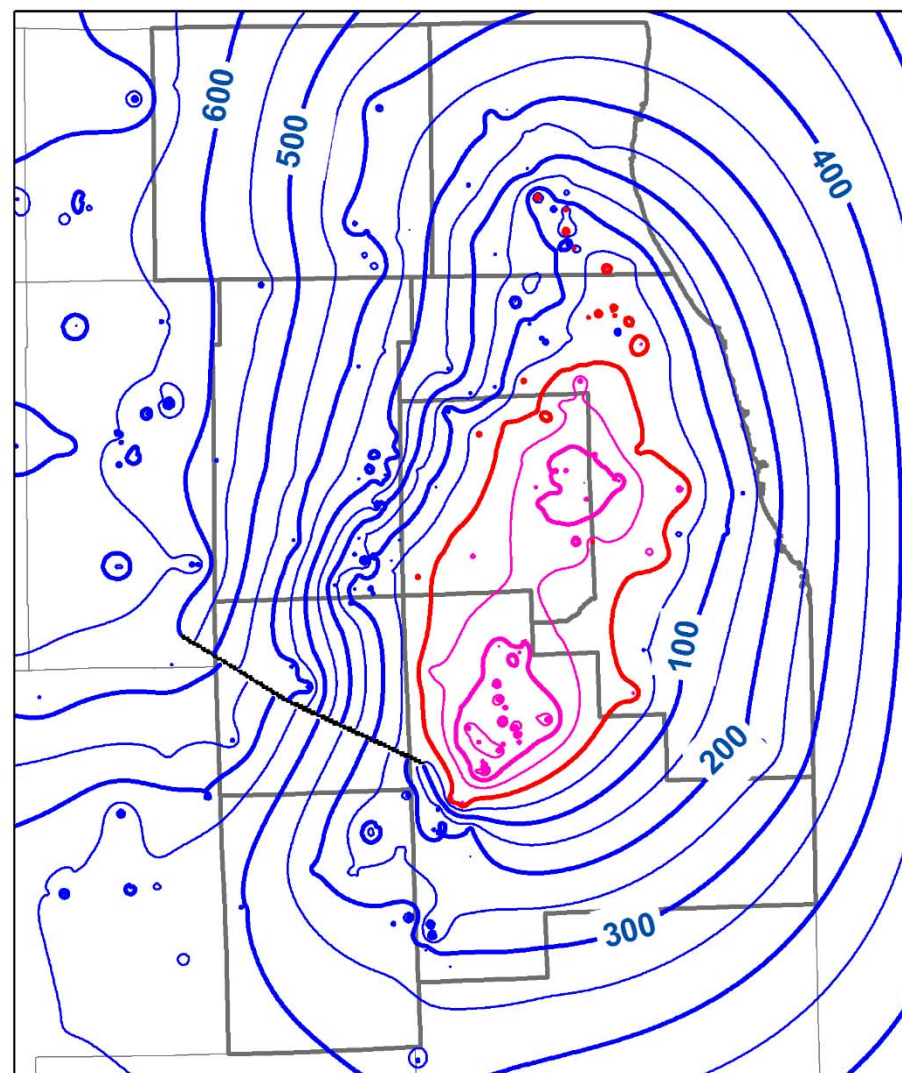
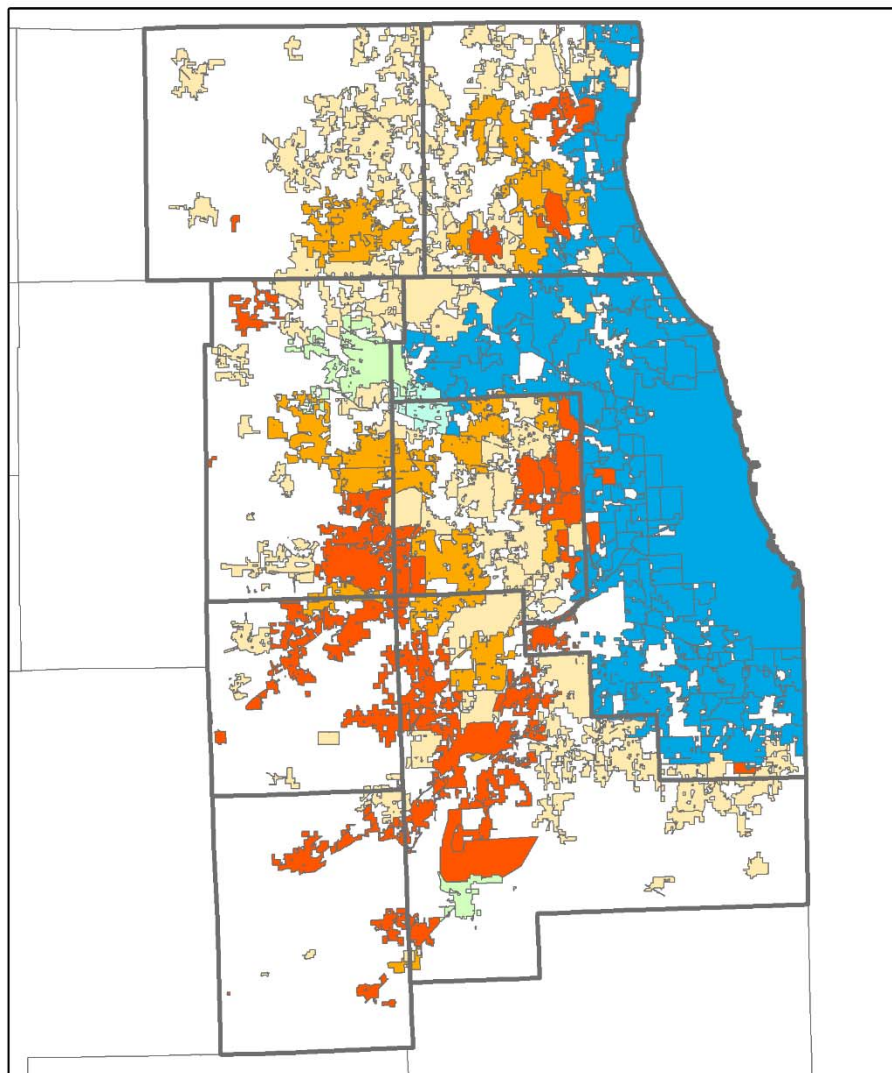
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1985

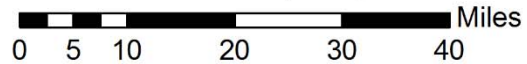




Source of Municipal Water Use

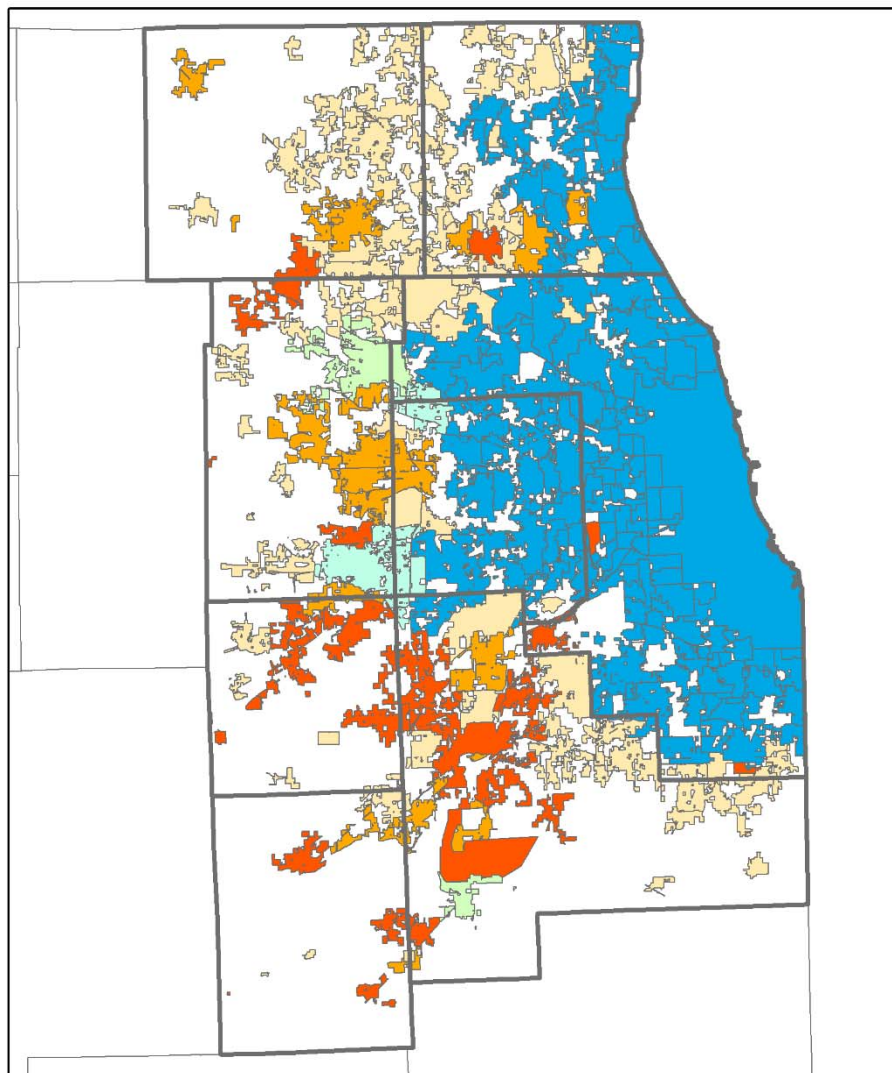
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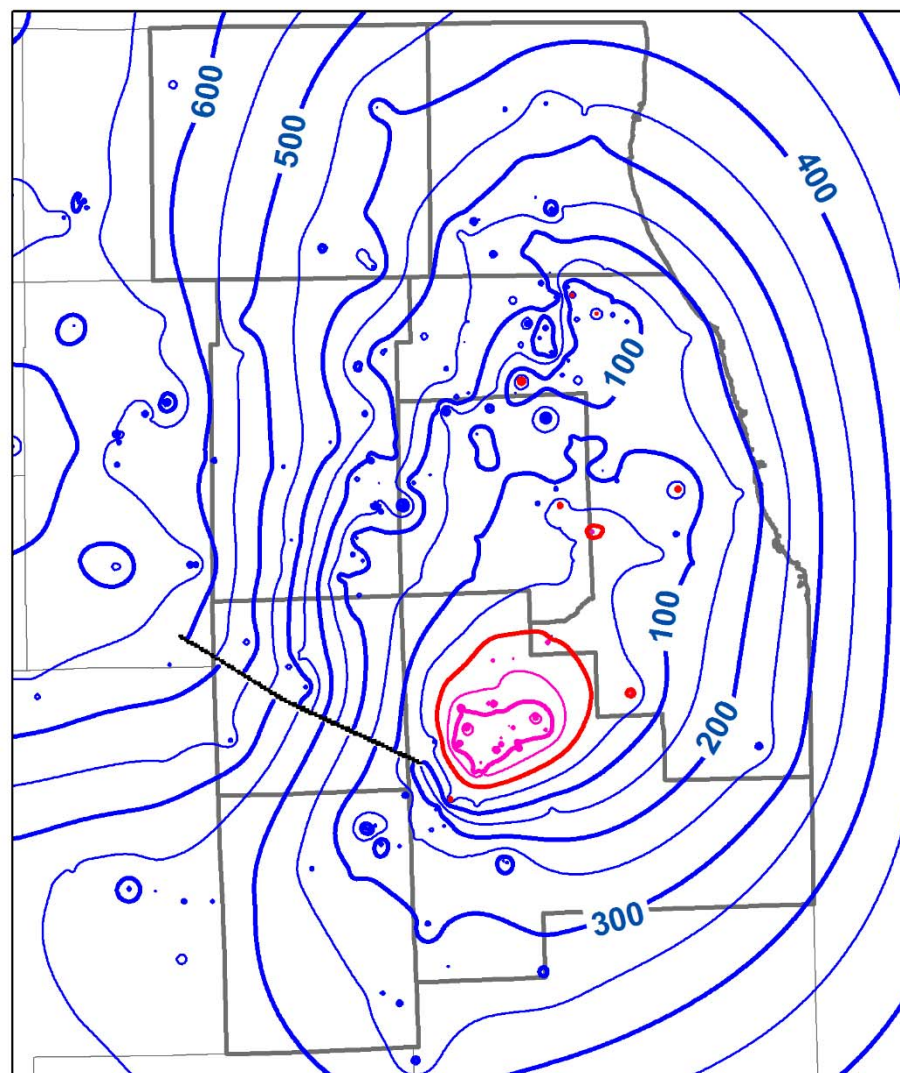
1991



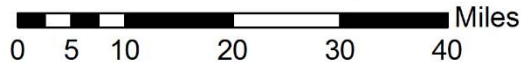


Source of Municipal Water Use

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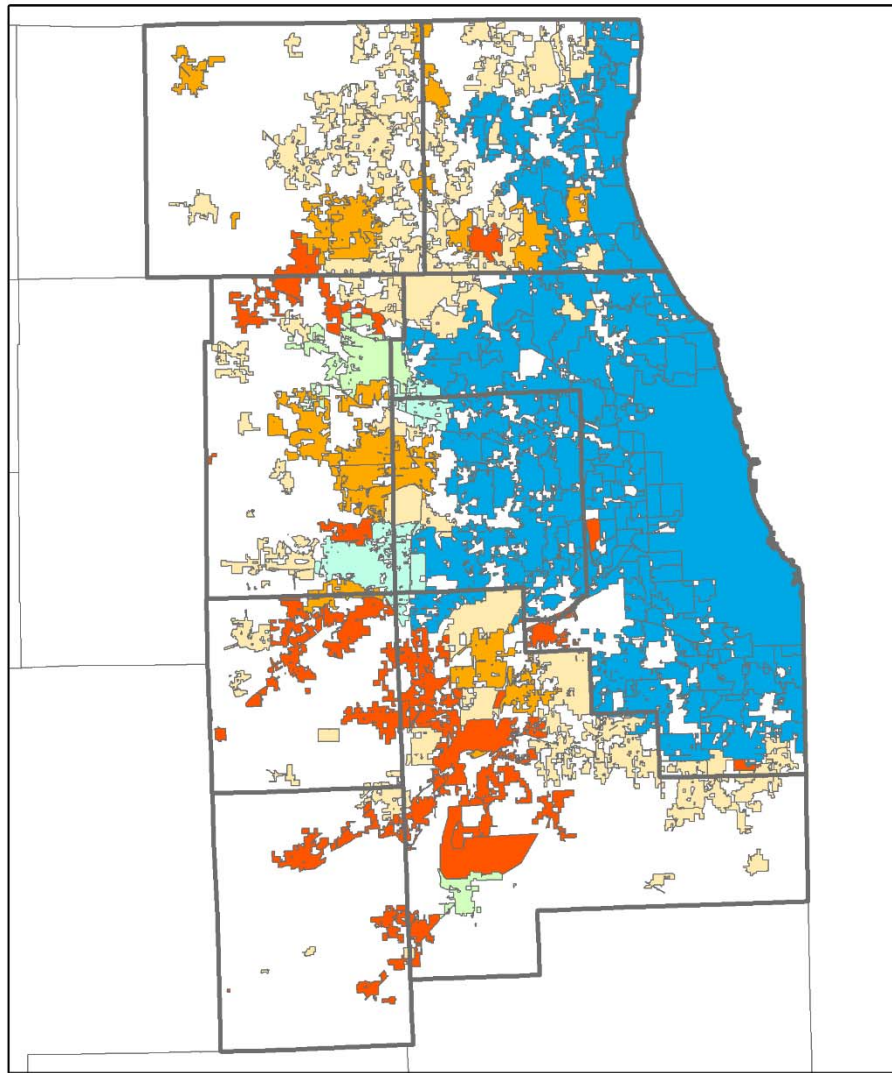


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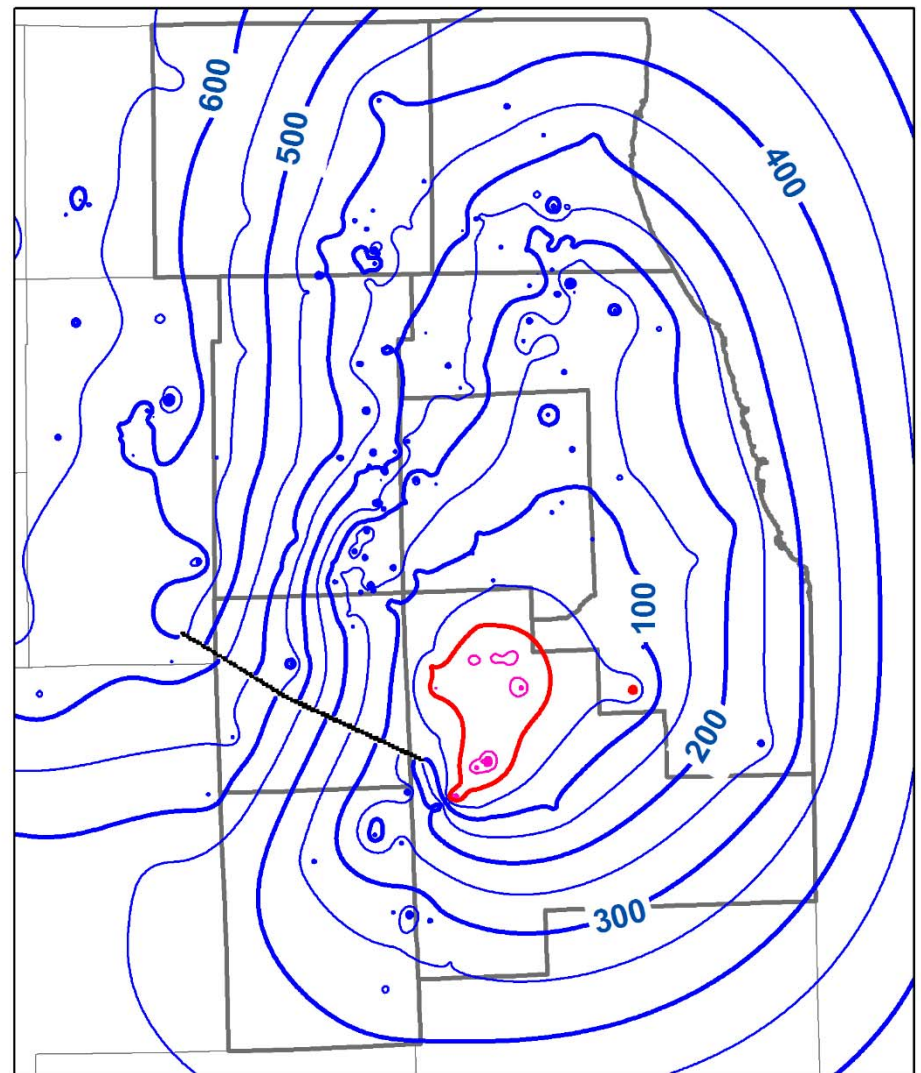
1995



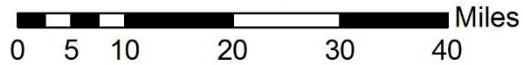


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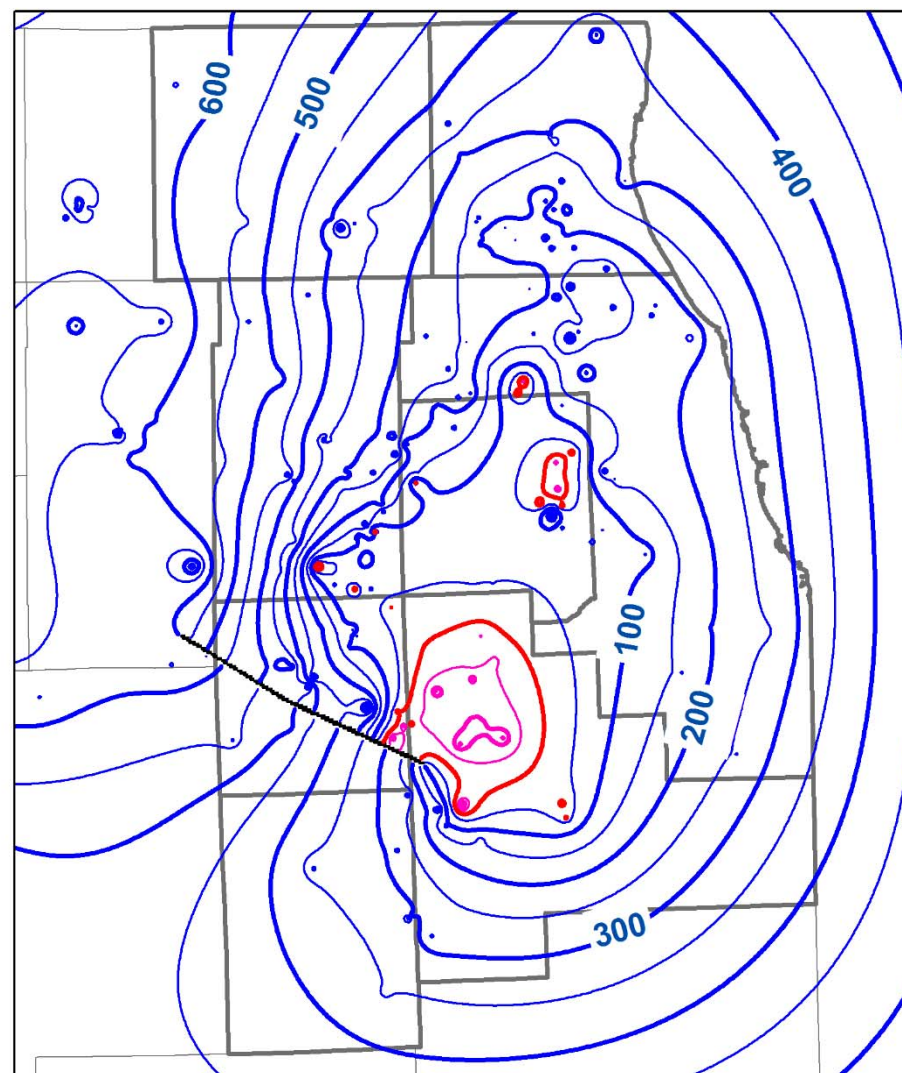
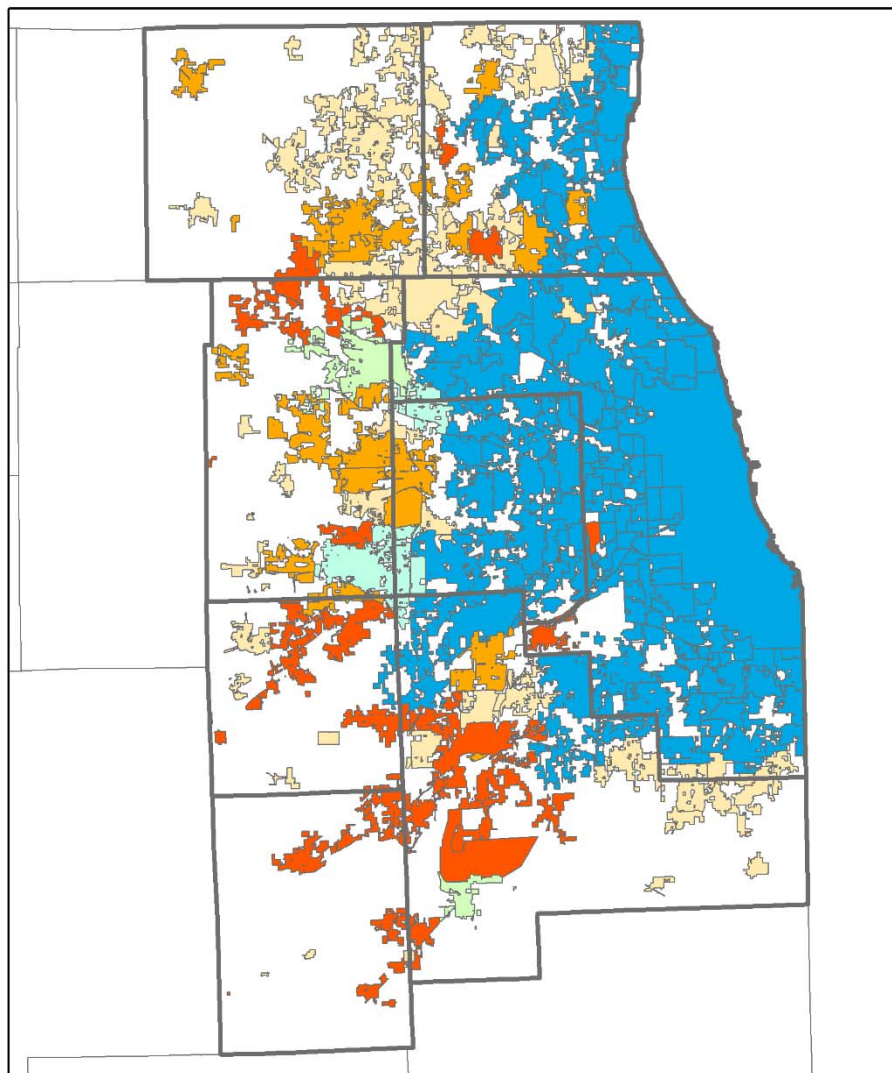


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2000

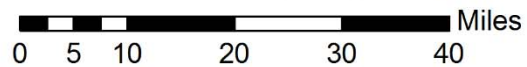




Source of Municipal Water Use

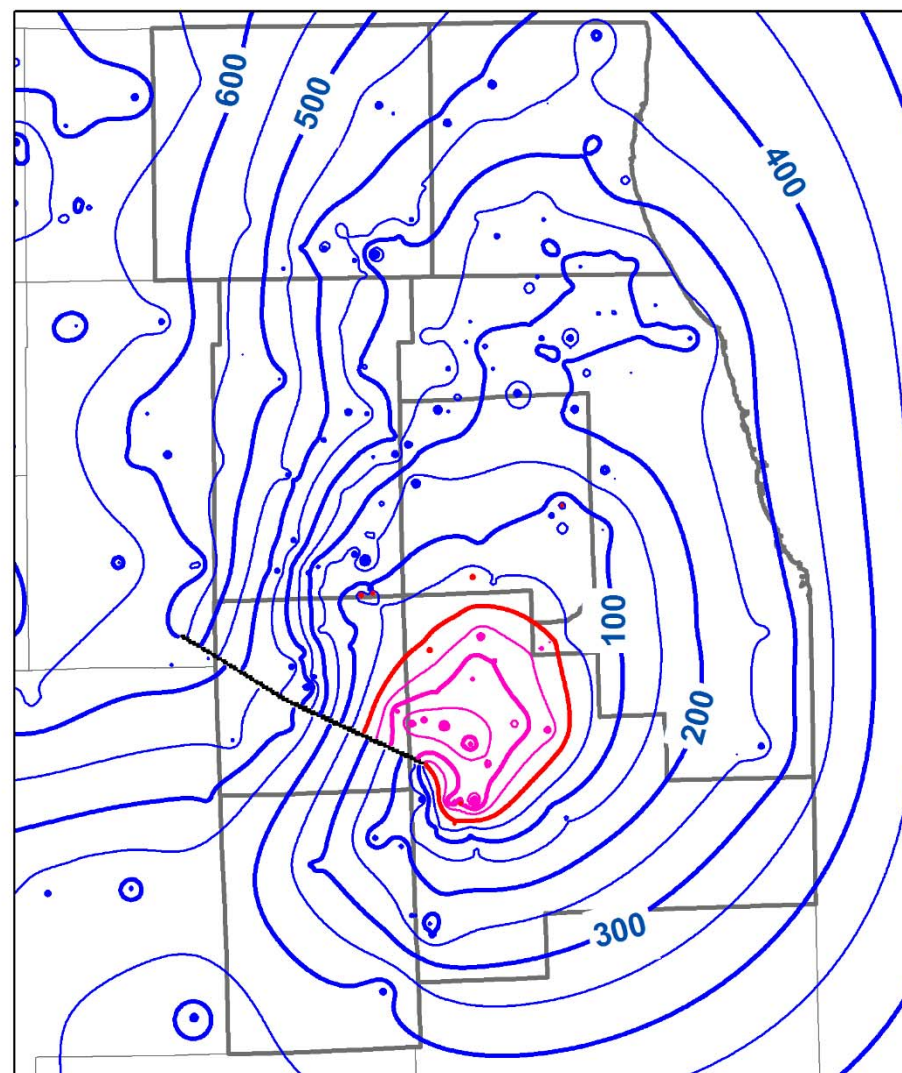
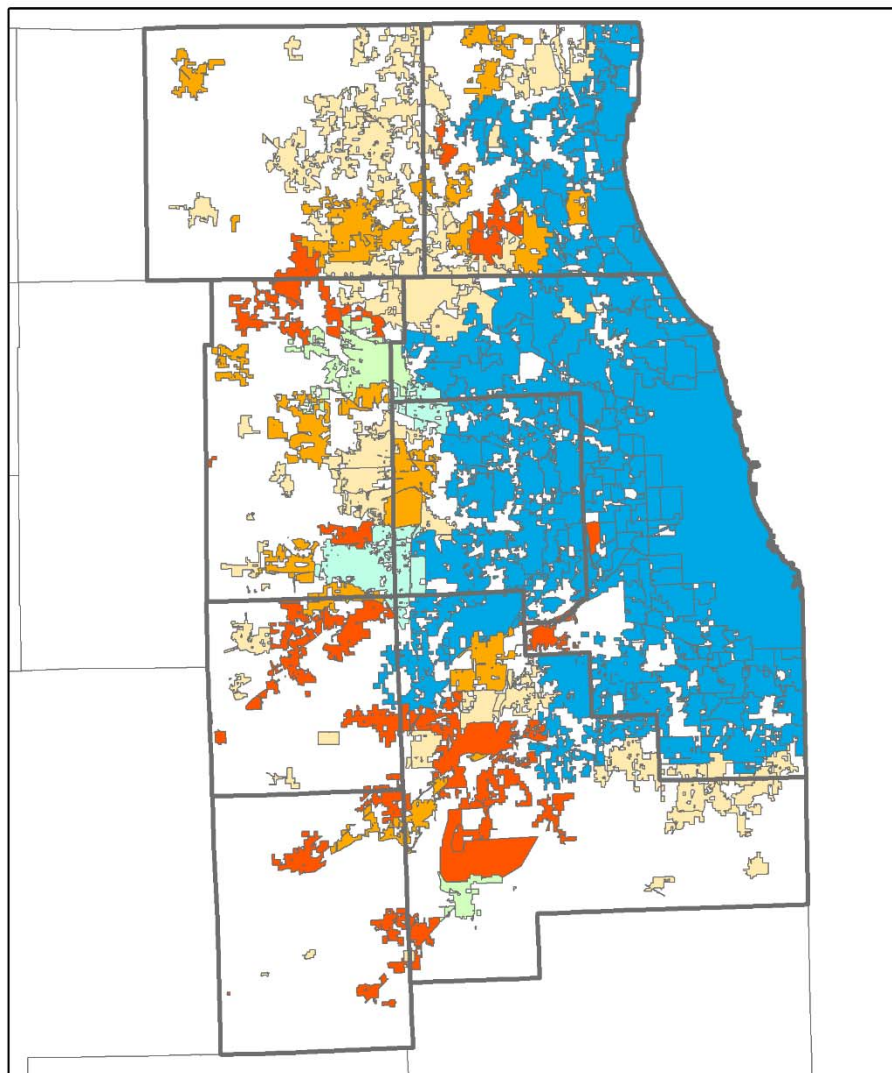
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2007

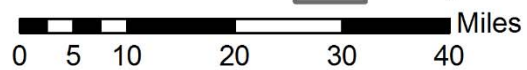




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2012/2014



2014 Mass Measurement-Head above the St. Peter

- **Hatched Area:** Complete desaturation of the upper sandstone
- **Red:** Partial desaturation of the upper sandstone
- **Blue:** Head is less than 200 ft above the top of the upper sandstone

