



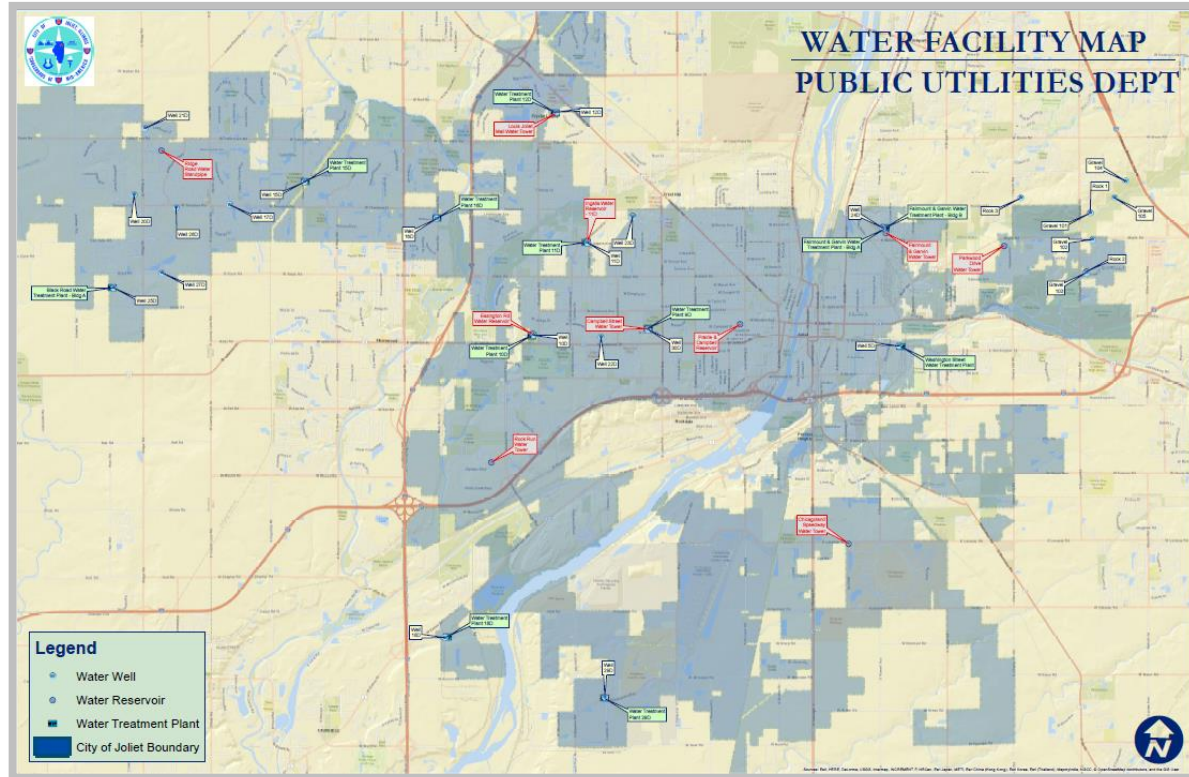
# Joliet's Future Water Supply

April 17, 2019

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*City of Joliet*  
*Director of Public Utilities*

Nick Gornick  
*City of Joliet*  
*Plant Operations Superintendent*

# Joliet's Water System



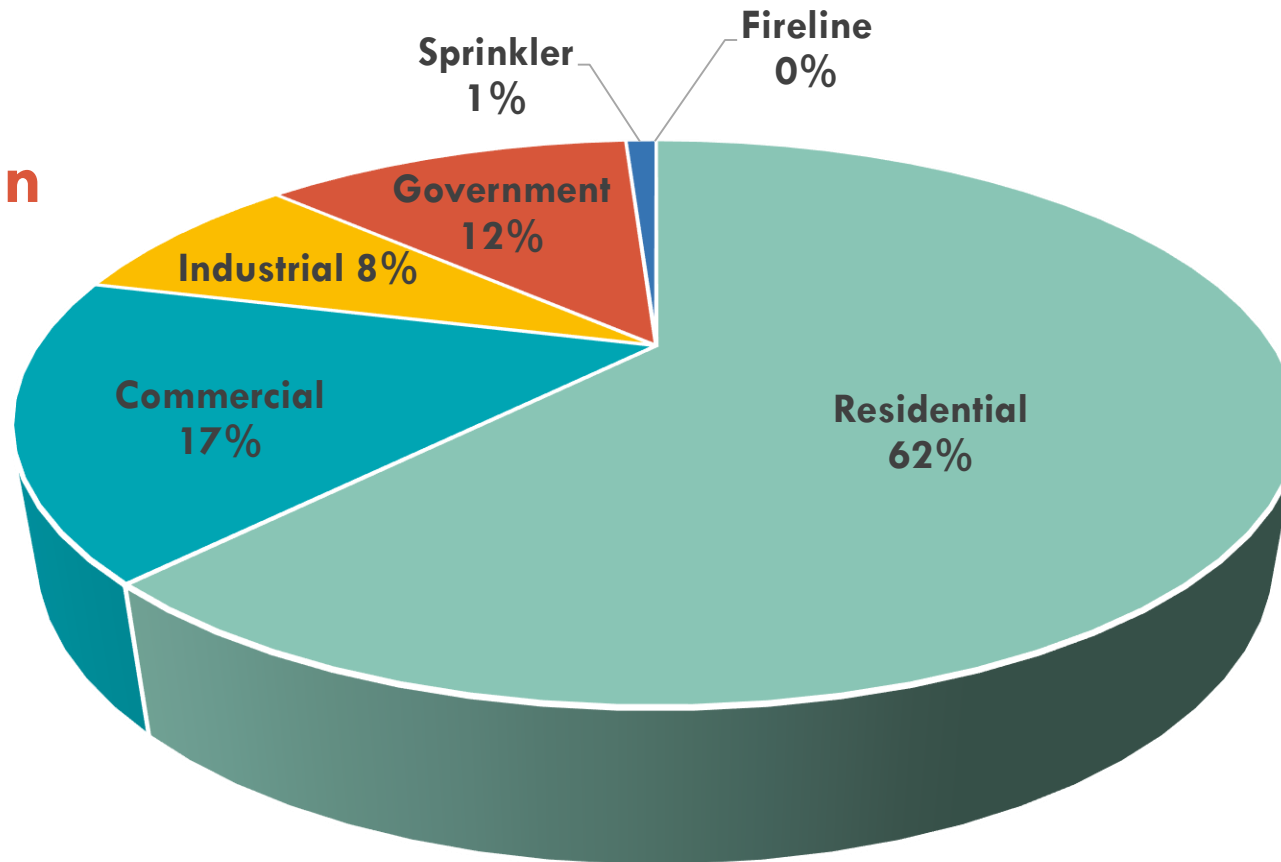
- **19** MGD average day demand
- **21** deep groundwater wells
- **5** shallow groundwater wells
- **11** water treatment plants for removal of radium
- **642** miles of water main
- **Decentralized** system

# Joliet's Water System



CITY OF JOLIET

## 2017 Water Consumption by Class



Population  
Served:  
**149,386**

# Joliet's Water History



1884

**The original Joliet Water Works was founded as a private company in 1884.**

The initial 20 drift wells which were approximately 40 feet deep were located along Hickory Creek and had a combined yield of 1.25 MGD.

1888

**The City of Joliet purchased Joliet Water Works in 1888**

and began operations at the existing Water & Sewer Service Center at 921 Washington Street.



Source: ISWS



# Joliet's Water History



1907

**First deep well constructed at Ottawa Street**

1930s

**Pumping equipment lowered** due to decreased capacity

1950s

**Major growth spurt** resulted in construction of the Hadley Valley Well Field and construction of the 1 million gallon elevated tank on Larkin Avenue to prepare for continued growth to the west



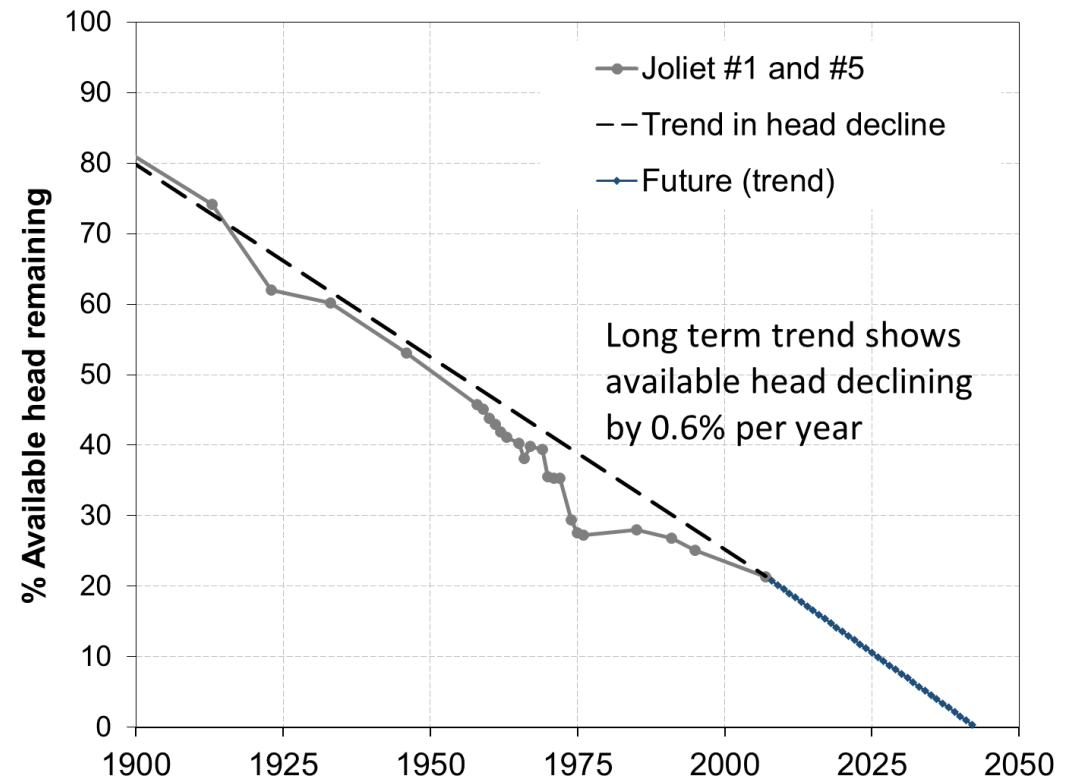
# Joliet's Water History



1960s

Since the 1960's, aquifer desaturation has been monitored and the City and region have studied alternate water sources

**Data trends in the Joliet region**  
*(head remaining above the top of the IG)*



Source: ISWS

# Joliet's Water History



**1970s**  
**Public Water Commission** of Frankfort, Joliet, Lockport, Mokena, New Lenox, Rockdale and Romeoville was formed

**1980s**  
**City of Joliet purchases property** for future intake from Kankakee River

**2000s**  
**City decides to maintain groundwater as primary source** and constructs water treatment plants to remove radium

**2015**  
**Illinois State Water Survey** publishes results of groundwater modeling indicating that desaturation of aquifer could occur within 15-30 years

**2017**  
**Mayor O'Dekirk** re-establishes the Environmental Commission

**2018**  
**City contracts with CMT/EEI/Stantec team** to evaluate options and determine new water source

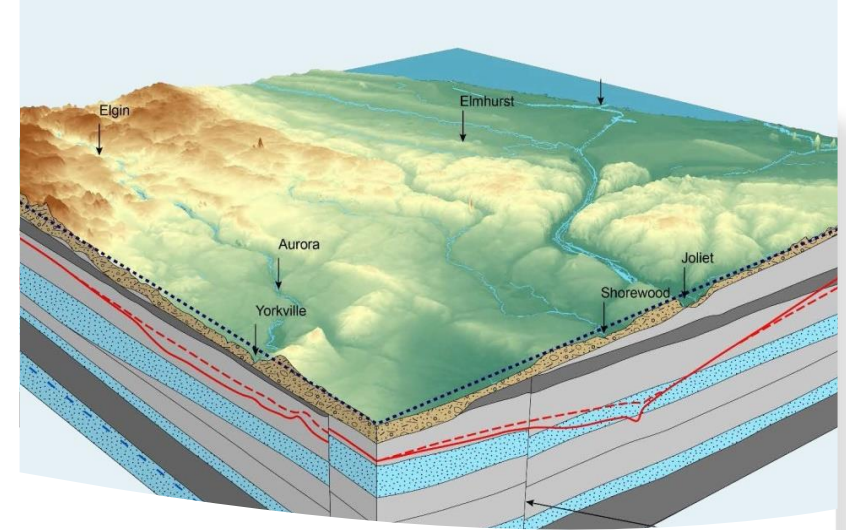




# Current Problem

Modeling completed in Fall 2018 found that at current usage rates, **the City will not meet maximum day demands by 2030.**





# Alternative Water Source Study

- Environmental Commission recommended a study be completed to evaluate all alternative water sources.
- Crawford, Murphy & Tilly team selected to perform study in two phases. Team members include Stantec, and EEL with support from the Illinois State Water Survey, Images Inc., Showpiece Solutions and Holland & Knight.

# Study Schedule



## Phase I: August 2018 – January 2019

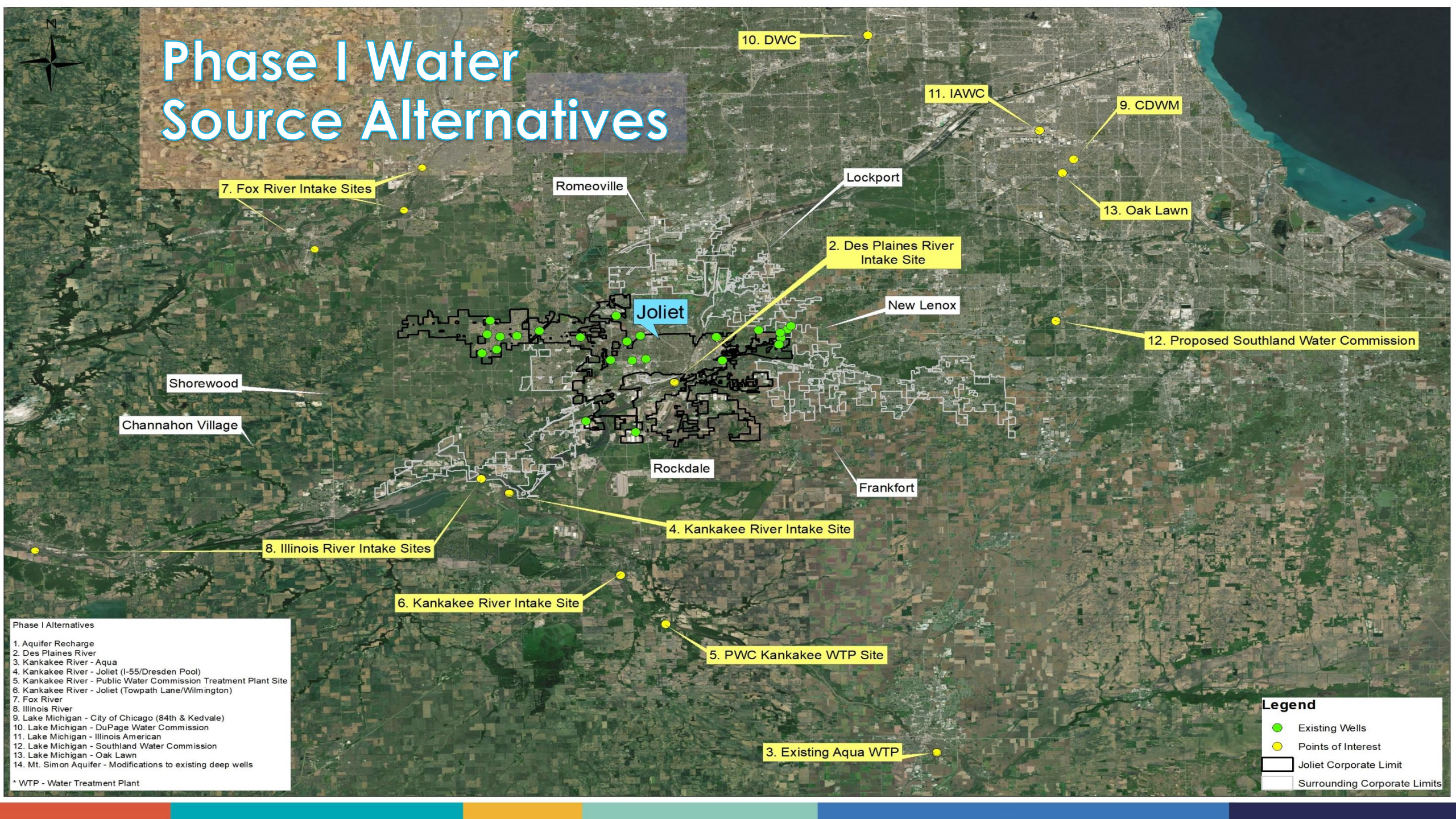
- Stakeholder Engagement and Strategic Planning
- Water Demand Projections, Groundwater Model Updates, Water Conservation Efforts and Short Term Emergency Planning
- Evaluation of 14 alternative water source options
- Identification of viable alternatives primarily based on quantity and quality

## Phase II: February – December 2019

- Detailed analysis of 5 selected options identified in Phase I
- Identification of improvements for each viable alternative and their associated cost
- Refinement and prioritization of Phase II criteria (control, governance, maintenance, redundancy and risk to schedule)
- Selection of alternative water source at completion



# Phase I Water Source Alternatives



7. Fox River Intake Sites

Romeoville

10. DWC

11. IAWC

9. CDWM

Lockport

13. Oak Lawn

2. Des Plaines River Intake Site

Joliet

New Lenox

12. Proposed Southland Water Commission

Shorewood

Channahon Village

Rockdale

Frankfort

4. Kankakee River Intake Site

8. Illinois River Intake Sites

6. Kankakee River Intake Site

5. PWC Kankakee WTP Site

3. Existing Aqua WTP

### Legend

- Existing Wells
- Points of Interest
- Joliet Corporate Limit
- Surrounding Corporate Limits

- Phase I Alternatives
1. Aquifer Recharge
  2. Des Plaines River
  3. Kankakee River - Aqua
  4. Kankakee River - Joliet (I-55/Dresden Pool)
  5. Kankakee River - Public Water Commission Treatment Plant Site
  6. Kankakee River - Joliet (Towpath Lane/Wilmington)
  7. Fox River
  8. Illinois River
  9. Lake Michigan - City of Chicago (84th & Kedvale)
  10. Lake Michigan - DuPage Water Commission
  11. Lake Michigan - Illinois American
  12. Lake Michigan - Southland Water Commission
  13. Lake Michigan - Oak Lawn
  14. Mt. Simon Aquifer - Modifications to existing deep wells
- \* WTP - Water Treatment Plant



# Phase I Conclusions/ Recommendation

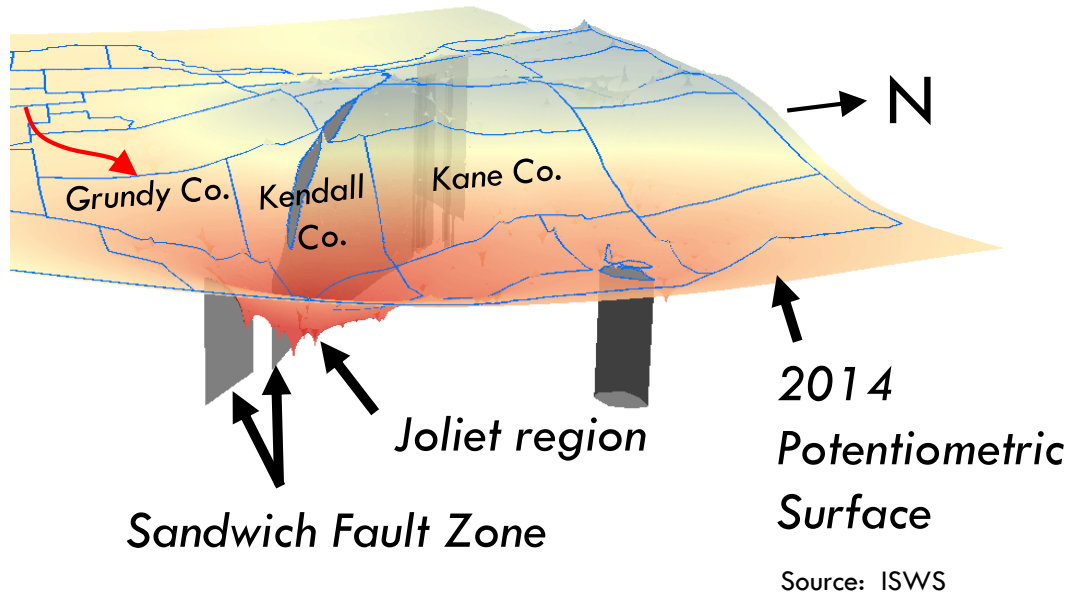


The following alternatives were **recommended to advance to Phase II** for further analysis:

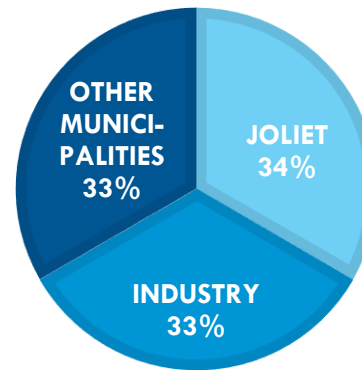
- **Kankakee River**
- **Illinois River**
- **Lake Michigan Water – Chicago Department of Water Management**
- **Lake Michigan Water – DuPage Water Commission**
- **Lake Michigan Water – Southland Water Agency**

# Regional Water Trends

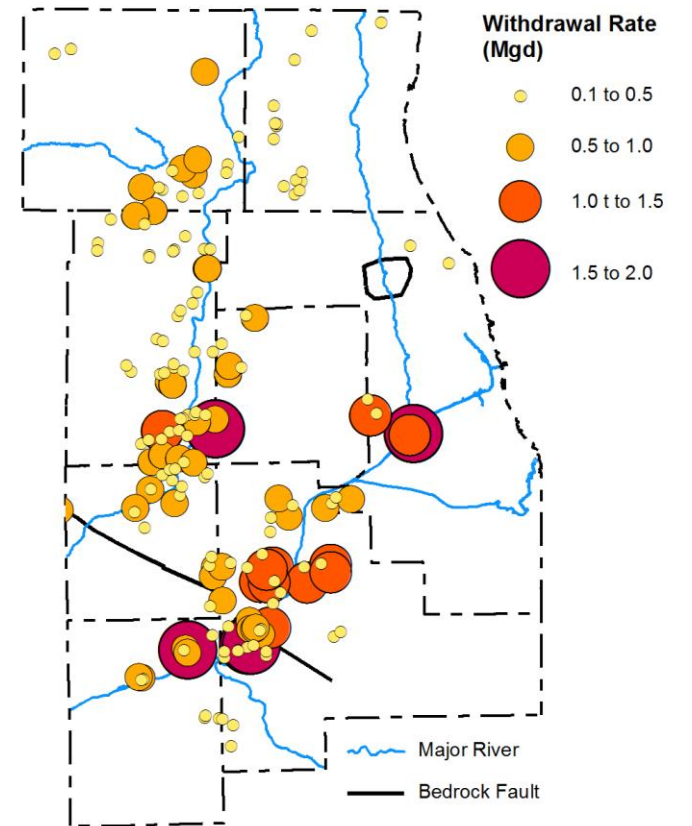
3D IMAGE OF GROUNDWATER LEVEL DEPRESSION IN JOLIET AREA



REGIONAL PUMPING FROM IRONTON-GALESVILLE AQUIFER



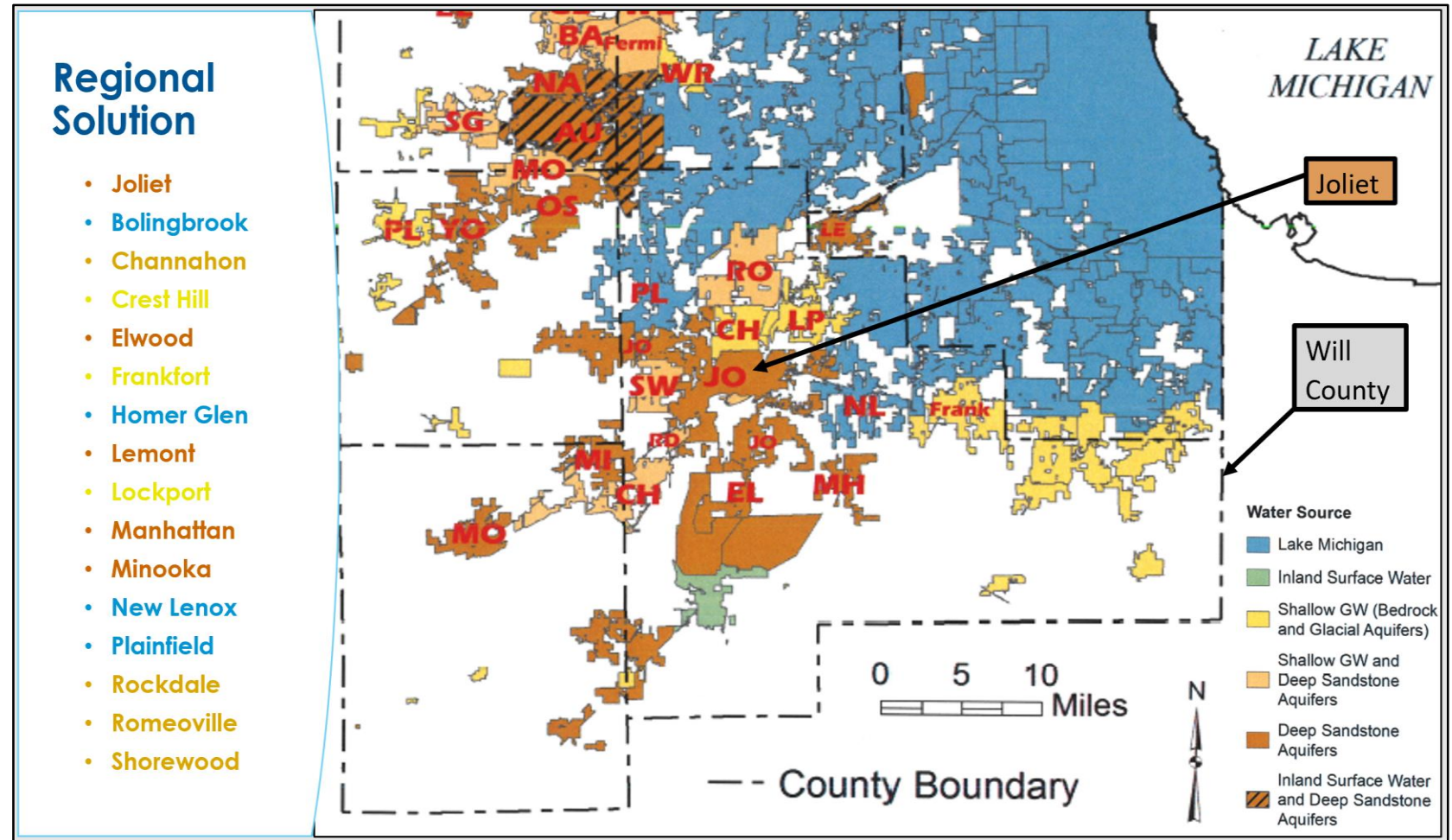
Sandstone Aquifer



Joliet switching water sources will not solve the problem for the region.

# Regional Solution

Alternatives will be evaluated as a solution for Joliet and as a solution for the region.





# Regional Planning Efforts



- Southwest Water Planning Group Technical Committee is meeting monthly.
- Committee includes Joliet, Industry, ISWS and surrounding communities
- Immediate goal is to work on regional groundwater modeling for both deep and shallow aquifers
- Long Term goals are to build consensus for conservation efforts and work together to educate the public

# Water Planning Scenarios



Water Use Projections range from **28 MGD** to **123 MGD**

		Water Use Projections	
		Average Day Demand (ADD)	Maximum Day Demand (MDD)
Scenario 1 – Joliet only	2050 CT	27.14 MGD	33.75 MGD
	2050 LRI	21.17 MGD	26.25 MGD
Scenario 2 – Joliet plus Deep Well Communities (Channahon, Elwood, Lemont, Manhattan, Minooka, Rockdale, Romeoville and Shorewood)	2050 CT	47.18 MGD	69.50 MGD
	2050 LRI	38.29 MGD	54.78 MGD
Scenario 3 – Joliet plus Public Water Commission Communities (Frankfort, Lockport, New Lenox, Rockdale and Romeoville)	2050 CT	45.84 MGD	67.51 MGD
	2050 LRI	36.27 MGD	50.34 MGD
Scenario 4 – Joliet plus ALL Communities (Bolingbrook, Channahon, Crest Hill, Elwood, Frankfort, Homer Glen, Lemont, Lockport, Manhattan, Minooka, New Lenox, Plainfield, Rockdale, Romeoville and Shorewood)	2050 CT	73.02 MGD	123.17 MGD
	2050 LRI	58.202 MGD	88.92 MGD



# Water Conservation

- **Less Resource Intensive water demand projections** could extend the life of the aquifer and reduce capital improvement costs

- **Formation of water conservation subcommittee** to identify opportunities for reducing water demand (education, rebate programs, ordinances, tiered rate structure, WWTP effluent reuse)



JOLIET

### Rain Barrel Subsidy Program:

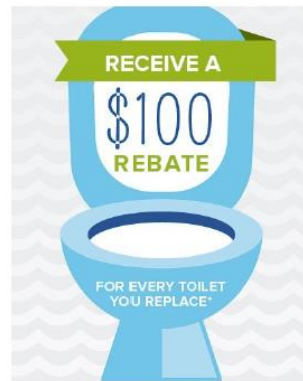
A low tech way  
to conserve  
water and save



City of Joliet  
Department of Public Utilities  
[www.rethinkwaterjoliet.org](http://www.rethinkwaterjoliet.org)

JOLIET

### Low Flow Toilet Rebate Program



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Department of Public Utilities  
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- Low Flow Toilet Replacement Rebate Program
- Rain Barrel Subsidy Program
- ISTC Water Audit
- Even/Odd Lawn Watering Ordinance





# Stakeholder Engagement

- **Identification of stakeholders**  
(Top water users, Industry, Business community, the Public, Schools, Environmental Advocacy Groups, Other municipalities)

- **Environmental Commission Meetings**
- **Public Relations Campaign**





[www.rethinkwaterjoliet.org](http://www.rethinkwaterjoliet.org)

Rethink the Source of Our Water

Rethink the Value of Water

Rethink How We Use Water





**Questions?**