



# Alternative Water Source Evaluation

Part 4 – Public Meeting

Village of Oswego, Illinois

November 2, 2021

*Draft Report*

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Consulting Engineers

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## LIST OF ABBREVIATIONS

- avg - average
- CDWM - Chicago Department of Water Management
- CMAA - Chicago Metropolitan Agency for Planning
- DWC - DuPage Water Commission
- EPA - Environmental Protection Agency
- ft - feet
- ft<sup>2</sup> - square feet
- ft<sup>3</sup> - cubic feet
- gpd - gallons per day
- gpm - gallons per minute
- gpcpd - gallons per capita per day
- IAWC - Illinois American Water Company
- IDNR - Illinois Department of Natural Resources
- IEPA - Illinois Environmental Protection Agency
- ISWS - Illinois State Water Survey
- max - maximum
- MG - million gallons (or mil gal)
- MGD - million gallons per day
- mg/L - milligrams per liter (parts per million in dilute solutions)
- min - minimum
- PRV - pressure reducing valve
- psi - pounds per square inch
- US EPA - United States Environmental Protection Agency

## 19. PART 4 INTRODUCTION

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Part 4 of the Alternative Water Source Evaluation (Study) includes a summary of the combined Public Meeting held for the Montgomery, Oswego, and Yorkville communities. The purpose of the Study is to update and align the previous source water analyses completed for the Fox River Option (Engineering Enterprise, Inc., 2017) and Lake Michigan Water via DuPage Water Commission Option (AECOM, 2018) with two new Lake Michigan Water alternatives: the proposed Joliet Water Commission Option and the Illinois American Water Option. The specific design recommendations from the previous Fox River and DWC studies have not been altered as part of this study.

The Village is partnering with the Village of Montgomery and United City of Yorkville to evaluate several alternative water supply sources. The alternatives evaluated in the Study are sized to meet the 2050 demands of Montgomery, Oswego, and Yorkville, with consideration given to the ultimate demand when the three communities are fully developed.

Part 1 of the Study provided the following:

- A summary of the existing water source in Montgomery, Oswego, and Yorkville
- An analysis of population and water demand projections and water conservation efforts
- A summary of Oswego's existing water system
- The results of the Illinois State Water Survey analysis
- An overview of the Fox River and Lake Michigan alternative water sources
- A description of the comprehensive Study approach and next steps

Part 2 of the Study provided the following:

- An overview of the key considerations used for evaluation
- A detailed discussion of the identified water source options
- The internal system improvements necessary when changing water sources

Part 3 of the Study provided the following:

- A discussion of the need and requirements for water conservation
- Examples of conservation measures in other areas
- An overview of current conservation practices in Oswego
- Examples of proposed conservation measures

Part 4 of the Study provides the following:

- A summary of the information shared at the Public Information Meeting

Future parts of the Study will address the following:

- Cost estimates
- Funding alternatives

Water is an essential and finite resource. Water use demands are impacted by population and development growth and climate; over the past 50 years in the United States, population has doubled while water demands have tripled. According to the American Water Works Association (AWWA), water conservation is the practice of using water effectively to reduce unnecessary usage. Conservation is critical to ensuring the availability of water, sustaining the natural world and supporting economic, recreation, and drinking water needs.

Development of new water supply and distribution infrastructure is a very costly endeavor. Implementation of water conservation practices may allow Oswego to defer some capital improvements in the short term, but the projected population and development growth in the region means that conservation alone will not be enough to address the need for an alternative water source.

## 20. PUBLIC INFORMATION MEETING

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The three communities Montgomery, Oswego, and Yorkville held a shared public information meeting on September 15 at the Yorkville Grand Reserve Elementary School in Yorkville. The public information meeting was open for residents of all three communities from 4 to 7 pm. Informational boards shared information on the future of the region’s aquifer and the four water supply options, including a new regional Fox River Water Treatment Plant, Lake Michigan Water via the DuPage Water Commission, Lake Michigan Water via the Joliet Water Commission, and Lake Michigan Water via Illinois American Water. Residents were invited to tour the informational boards and ask questions about the future water supply alternatives. A comment box was provided for residents to provide feedback.

### 20.1 Water Supply Alternative Boards

The information shared on the Water Supply Alternative Boards is included as Appendix A. Boards sharing information including the future of the region’s aquifer and the four water supply options and their relevant key considerations. Information on the existing water systems for each community was provided along with information on the impacts of water conservation. The boards also included information on the proposed schedules for each option and the decision schedule. Cost estimates for the four water supply alternatives were not provided at the public information meeting but will be presented in Part 5 of the Study.

### 20.2 Resident Participation

35 residents attended the public information meeting including nine Montgomery residents, 11 Oswego residents, 13 Yorkville residents, one Plano resident, and one Kendall County resident.

Residents were encouraged to provide feedback on comment cards and eight comments were received and included in Appendix B.

## 21. CONCLUSION

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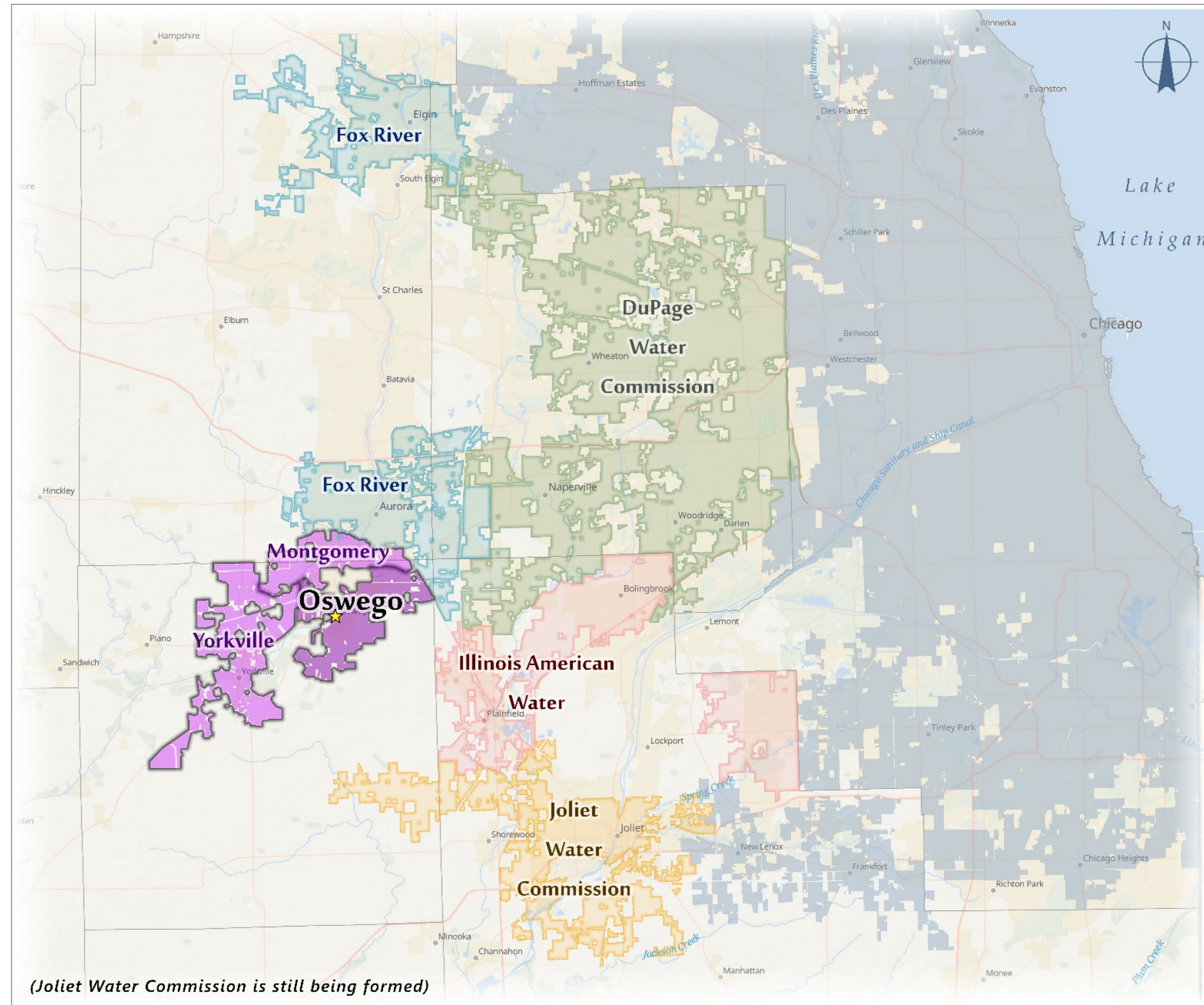
### 21.1 Study Next Steps

Future parts of this Study will include cost estimates for each option to compare the expected construction costs, as well as operations and maintenance costs of each option. In addition to cost estimates, the Study will identify sources of funding including the Water Infrastructure Finance Investment Act (WIFIA), IEPA State Revolving Fund (SRF), and revenue bonds. Conservation ordinances, schedules for permits, and state legislative initiatives are under review.

# APPENDICES

# WELCOME

# Alternative Water Supply







# Regional Water Source Background

## Ironton-Galesville Aquifer

- ▶ Naturally Occurring Radium 226 and Radium 228
- ▶ Illinois State Water Survey Projects the Aquifer is pumped beyond its sustainable yield and water levels are dropping
- ▶ City of Joliet has decided to abandon the use of the Ironton-Galesville Aquifer for Lake Michigan Water

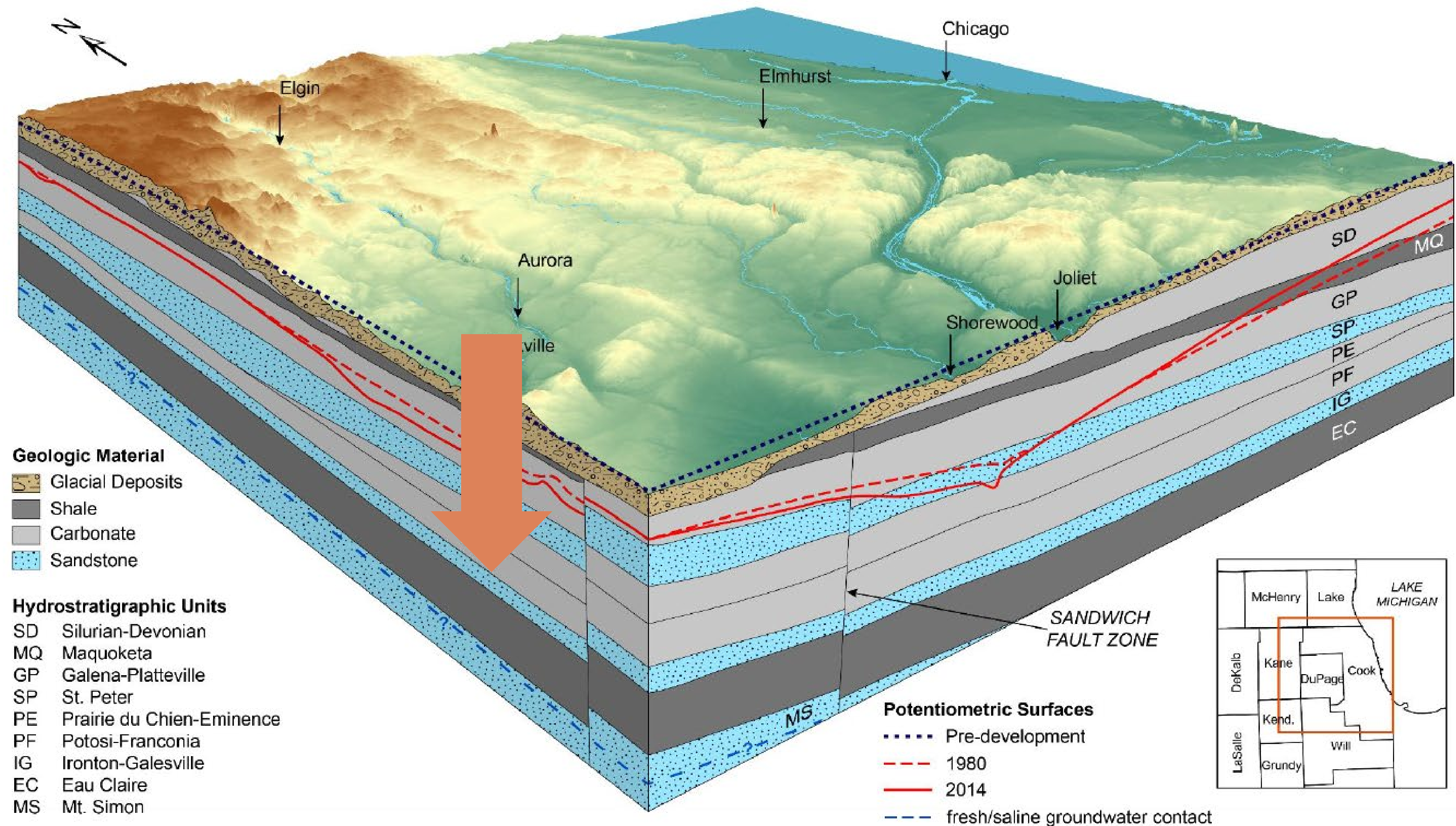
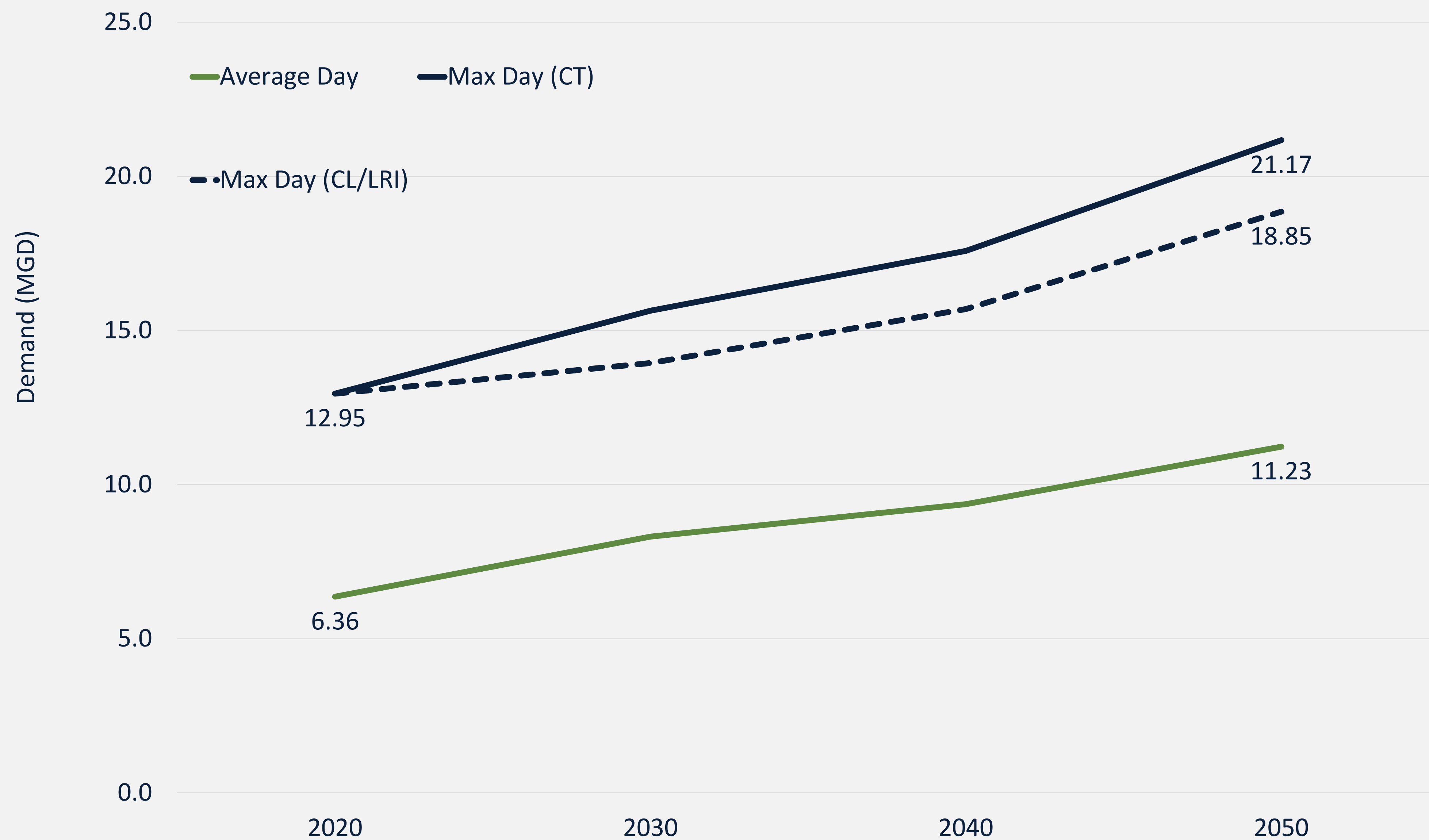


Figure 23: Potentiometric surface of the Cambrian-Ordovician sandstone aquifers for predevelopment, 1980, and 2014 in northeastern Illinois. The left cutaway runs through southern McHenry, Kane, and Kendall Counties. The right cutaway runs through Kendall, Will, and southern Cook Counties

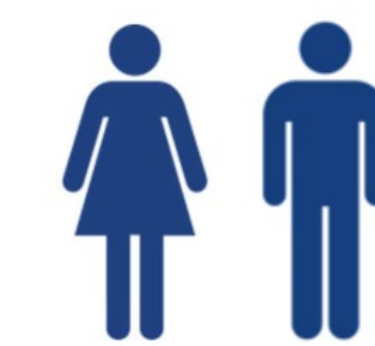
# Region Water Demand Projections



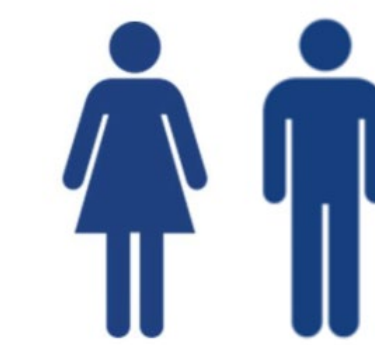
Montgomery, Oswego, and Yorkville



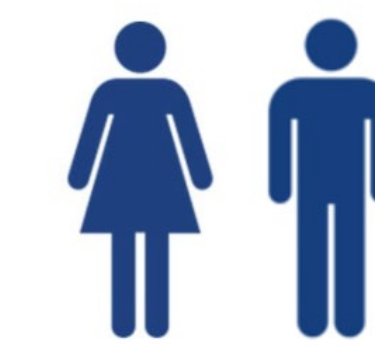
## 2050 Population Estimates



Montgomery → 42,000



Oswego → 53,853



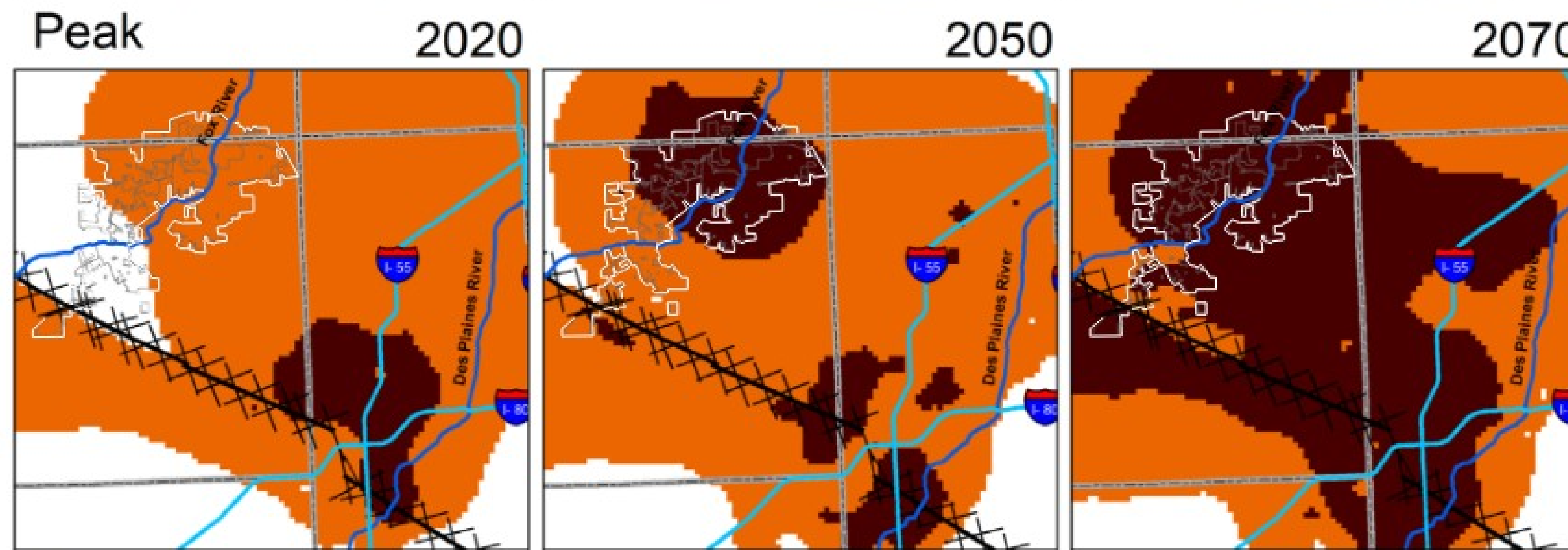
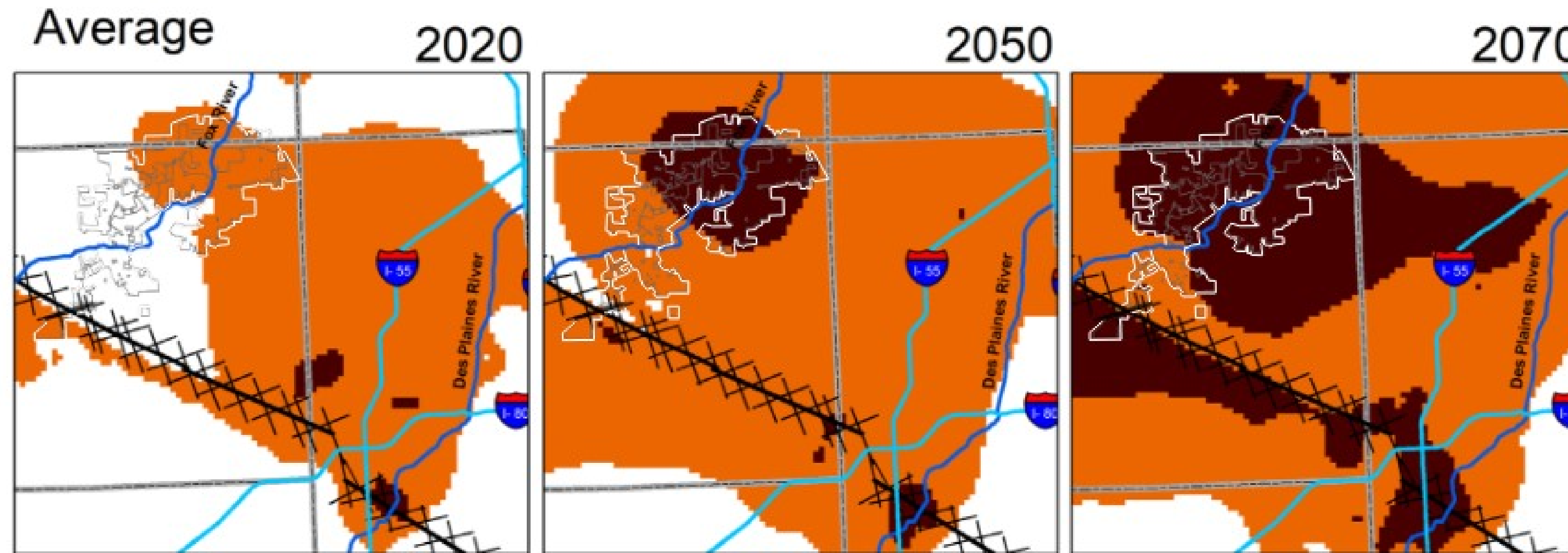
Yorkville → 47,796

Montgomery population and water demand projections based on full buildout before 2050

Oswego and Yorkville population and water demand projections based on CMAP GO TO 2050



# Illinois State Water Survey (ISWS) Groundwater Model



### Risk Zones

- Risk of declining well performance
- Risk of well inoperability

- Interstates
- Major Rivers
- County Boundary
- Municipal Boundaries
- Sandwich Fault Zone

ISWS Letter Report: Oswego, IL: Sandstone Water Supply Summary, May 25, 2021

ISWS Model Scenarios shows aquifer drawdown is severe throughout the Region

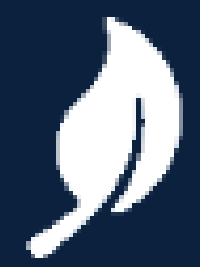
*Illinois State Water Survey (ISWS) projects that Montgomery, Oswego, and Yorkville will be at “severe risk of being able to meet demands and becoming inoperable” by 2050.*



# Illinois State Water Survey (ISWS) Impact on Water Supply



## Possible Impacts of Declining Water Levels



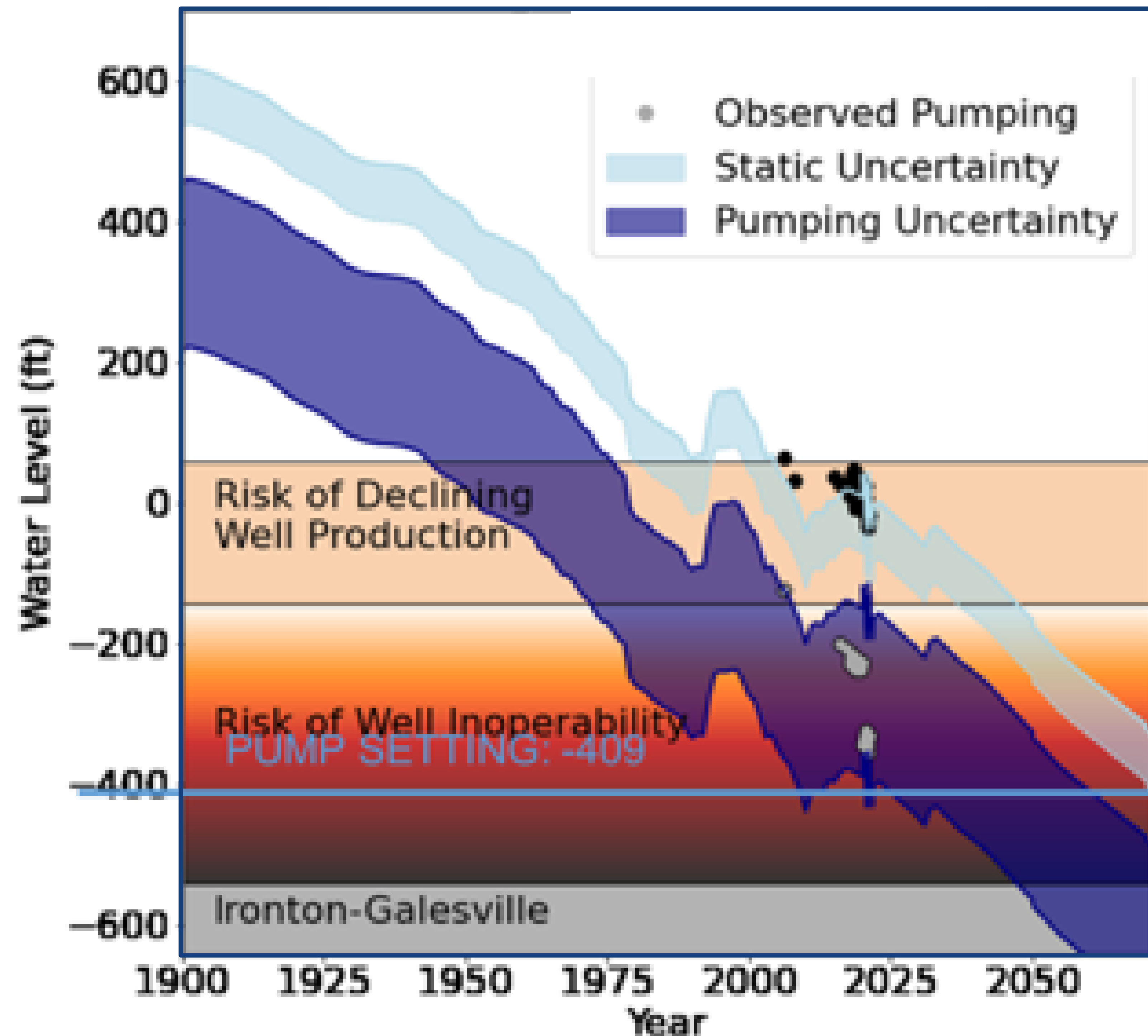
### SUSTAINABILITY OF WATER SOURCE

- ✓ Reduced production capacity of the well
- ✓ Potential for caving in the deeper sandstone formation
- ✓ Limits on depths for pump settings
- ✓ Increased risk of pumping sand



### COST

- ✓ Increased cost associated with lifting water over a greater distance
- ✓ Increased cost associated with more frequent well rehabilitation



ISWS Letter Report: Oswego, IL: Sandstone Water Supply Summary, May 25, 2021

# Alternative Water Sources

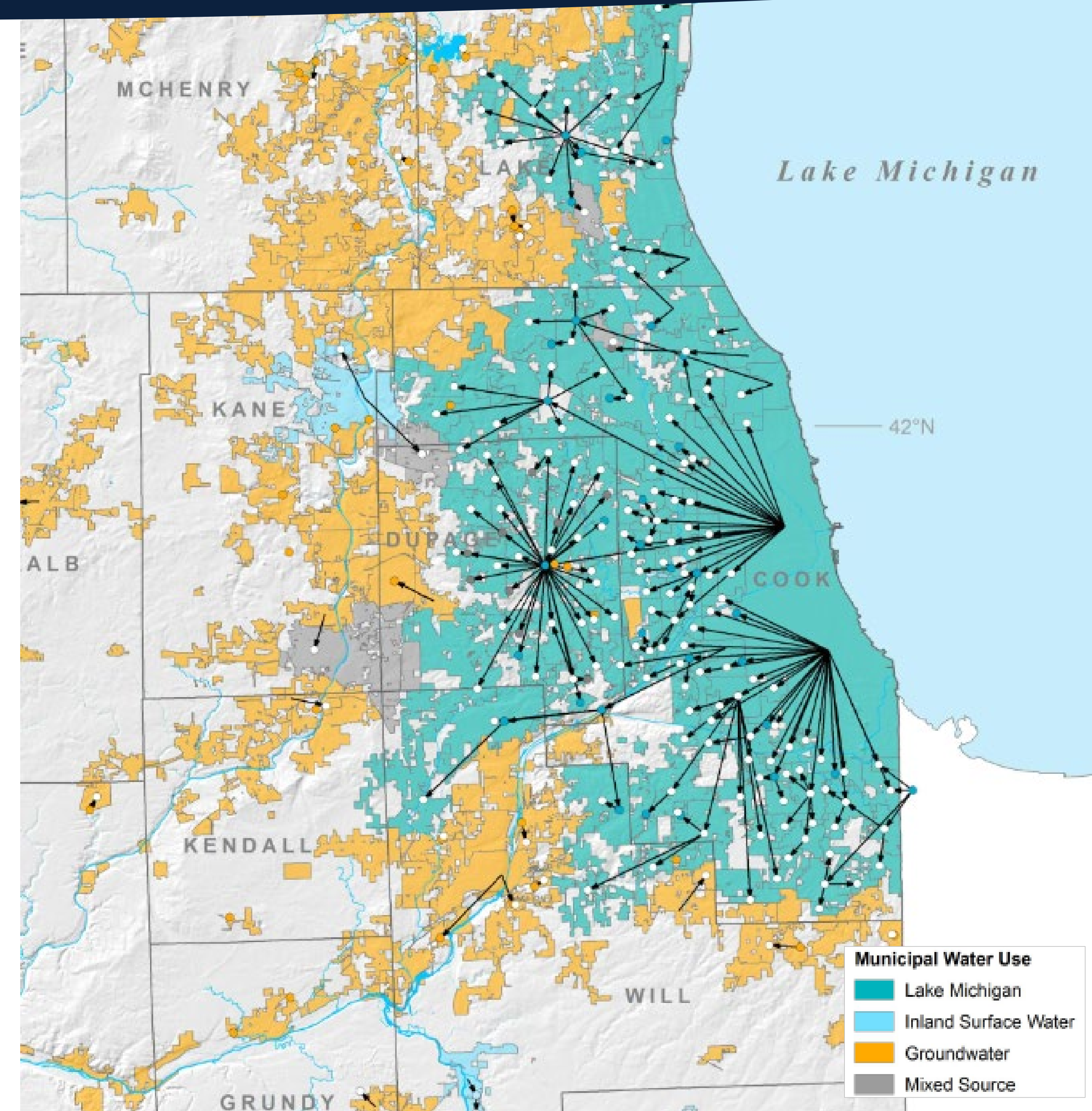


## ▶ Fox River

- Drains 938 square miles in Wisconsin and 1,720 square miles in Illinois
- Carries storm water and wastewater treatment plant effluents
- Water withdrawal may be restricted due to low flows
- Water source for Cities of Elgin and Aurora
- New regional surface water plant required
- IDNR governs flow withdrawal from Fox River
- Water hardness 260 – 400 mg/l
- Communities required to keep some wells

## ▶ Lake Michigan

- Watershed covers 45,600 square miles in WI, MI and IL
- Source of drinking water for Chicago area since mid-1800s
- Chicago River reversal helped carry sewage away from Chicago's water supply
- 1967 Supreme Court decree limits amount of water to 2,068 MG
- 6.6 Million Illinois residents receive Lake Michigan Water
- IDNR governs water allocation from Lake Michigan
- Water hardness 140 – 150 mg/l
- Not required to keep backup wells but can keep for emergency



# Alternative Water Supply Key Considerations



## SUSTAINABILITY OF WATER SOURCE

The ability of the water option to have sufficient water quantity to meet demand projections in 2050 and beyond



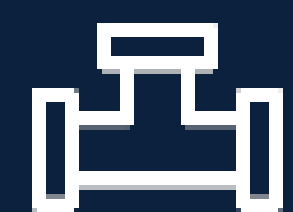
## WATER QUALITY & PERMITTING

The quality and variability of the raw water source



## GOVERNANCE & OPERATIONAL RESPONSIBILITY

The ability to maintain complete control of the water source, including operations and maintenance of infrastructure



## INTERNAL SYSTEM IMPROVEMENTS

The improvements required to each community including new water main, water storage, and pumping facilities



## TIMELINE

The total project schedule, including design, permitting, easement acquisition, contract negotiations, and construction



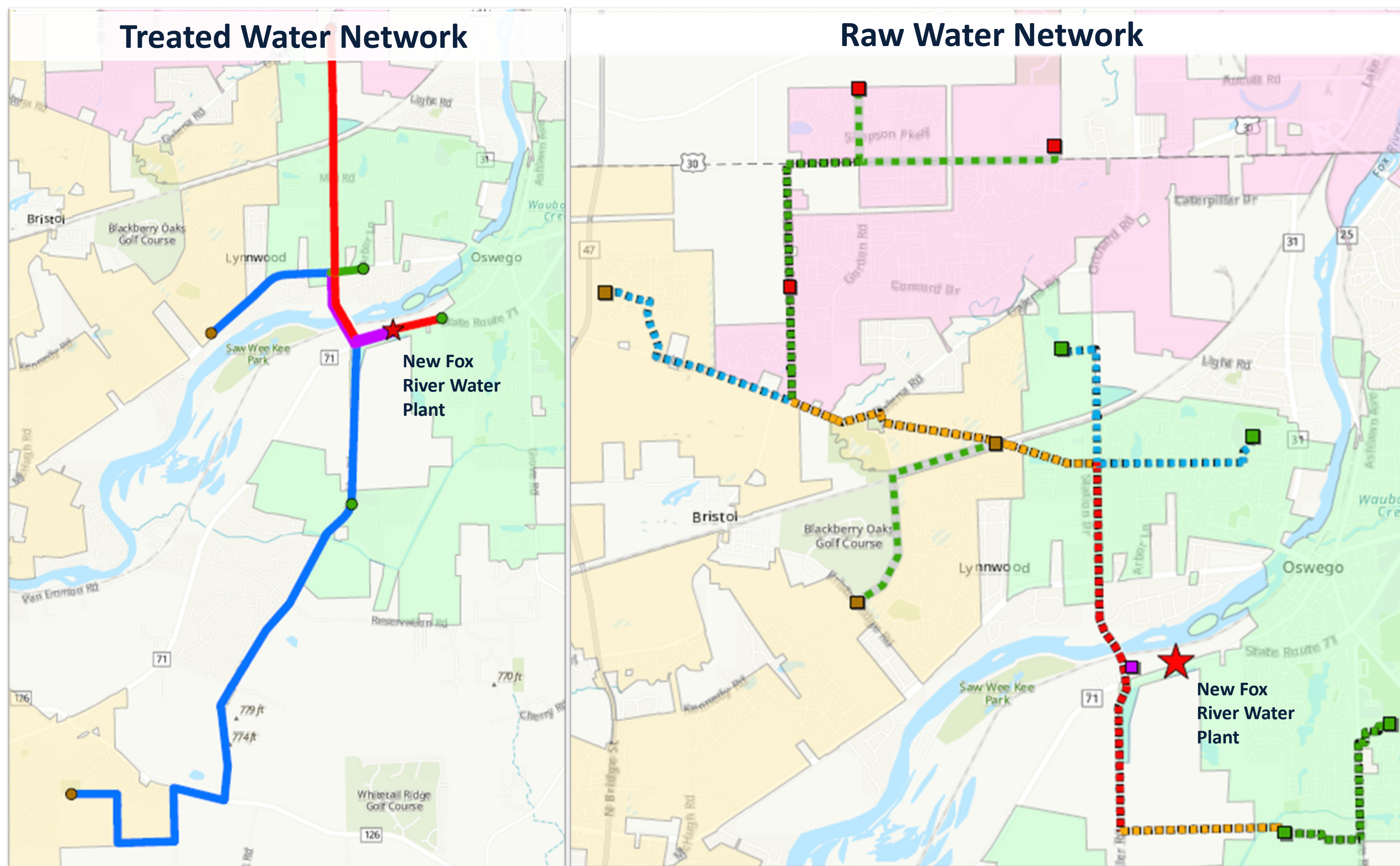
## COST

Cost information anticipated in September 2021

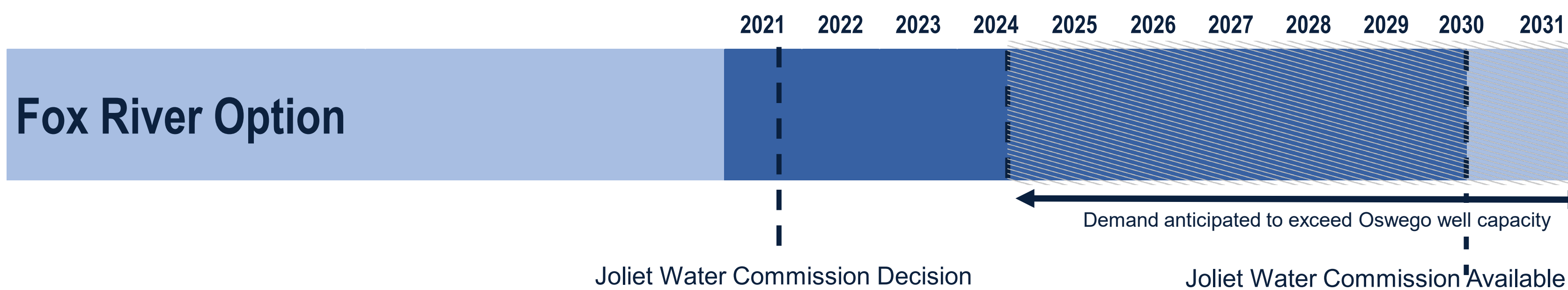
# Fox River Option Key Considerations



## ROUTE MAP



## PROJECT DURATION



## SUSTAINABILITY OF WATER SOURCE

- Fox River Water
- Low Flow/Seasonal Water quality restriction
- Network wells required for backup

## GOVERNANCE & OPERATIONAL RESPONSIBILITY

- Intergovernmental agreement needed between Montgomery, Oswego, and Yorkville
- Shared ownership and control of source, treatment, and distribution

## WATER QUALITY & PERMITTING

- Lime Softening Water Plant with Ultrafiltration (Class A)
- Seasonal changes in water quality
- 3 miles downstream of Fox Metro Water Reclamation Facility

## INTERNAL SYSTEM IMPROVEMENTS

- Transmission mains
- New wells
- New storage
- New Oswego well likely needed

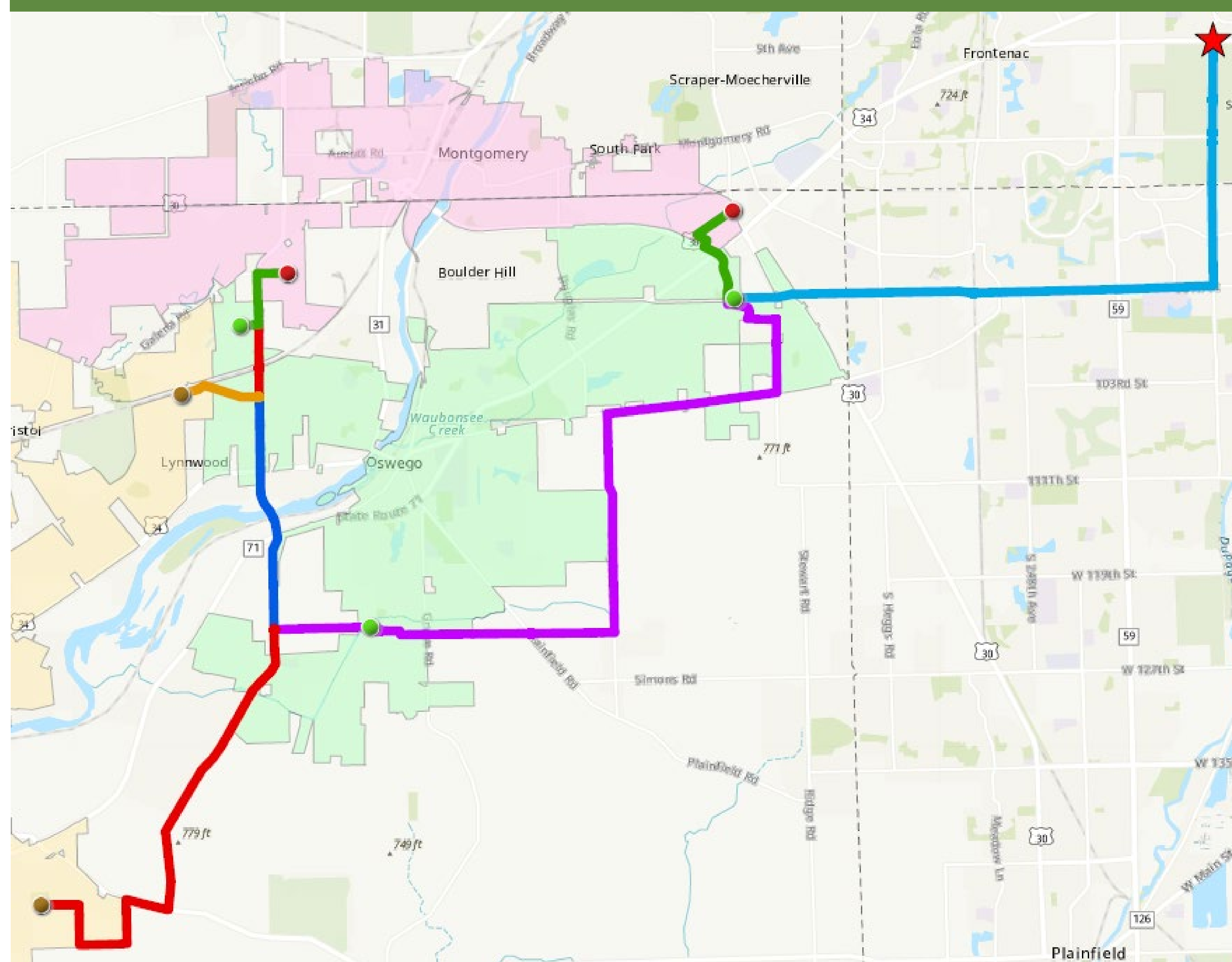
## TIMELINE

- Estimated 9-11 years

# DuPage Water Commission Option Key Considerations



## ROUTE MAP



## PROJECT DURATION

2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031

DuPage Water Commission Option

Joliet Water Commission Decision

Demand anticipated to exceed Oswego well capacity

Joliet Water Commission Available



## SUSTAINABILITY OF WATER SOURCE

- Lake Michigan water
- No seasonal restrictions/ MDD:ADD 1.7
- Wells kept for emergency
- Looped water mains in DWC



## GOVERNANCE & OPERATIONAL RESPONSIBILITY

- No direct ownership or control of source water
- Indirect control of the transmission infrastructure



## WATER QUALITY & PERMITTING

- Chicago treats water
- Chlorine disinfection of treated water (Class C)
- Seasonally consistent water quality



## INTERNAL SYSTEM IMPROVEMENTS

- Transmission mains
- New storage
- Receiving station/pumping stations



## TIMELINE

- Estimated 4-5 years

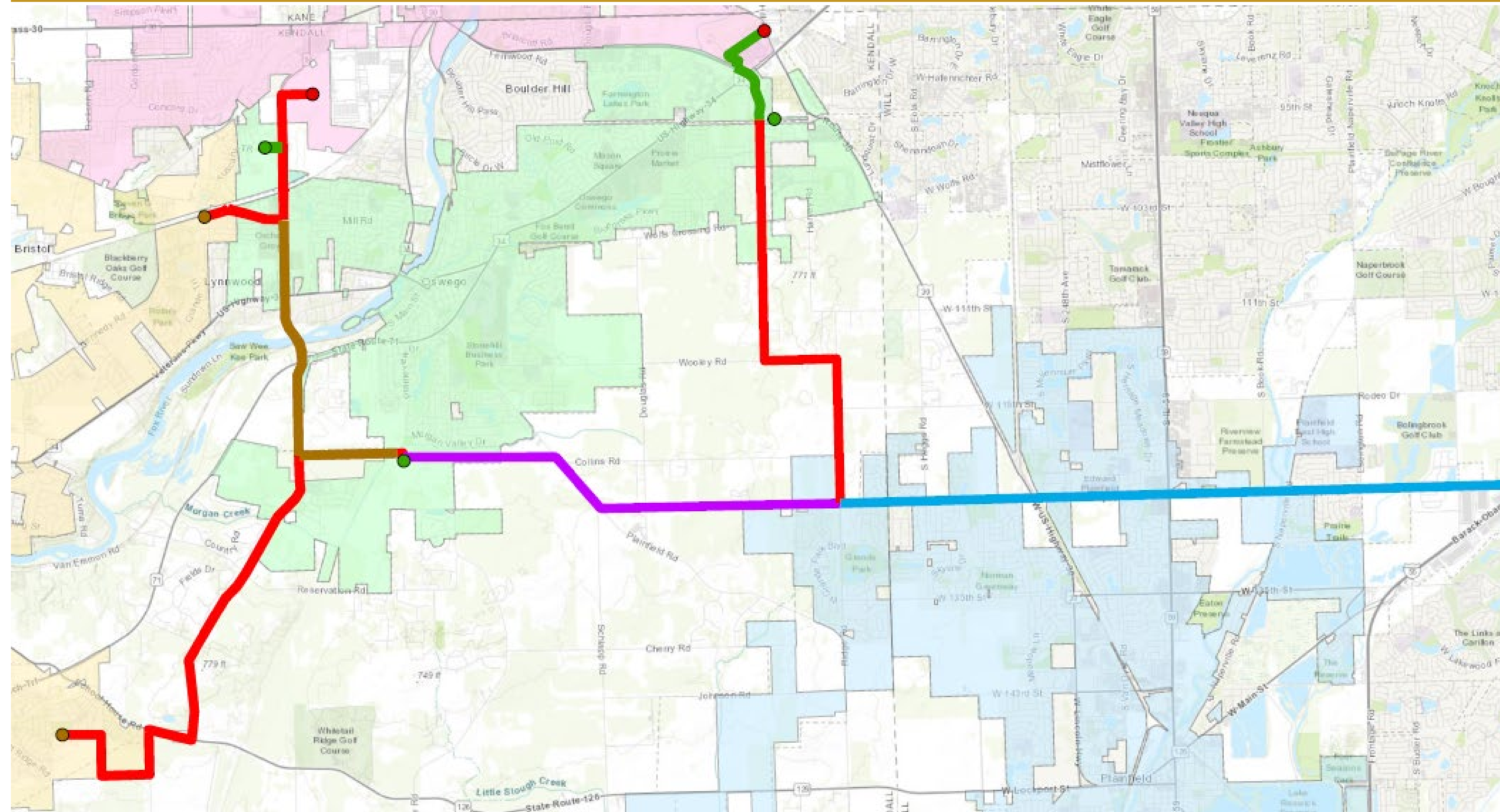




# Joliet Water Commission Water Option Key Considerations

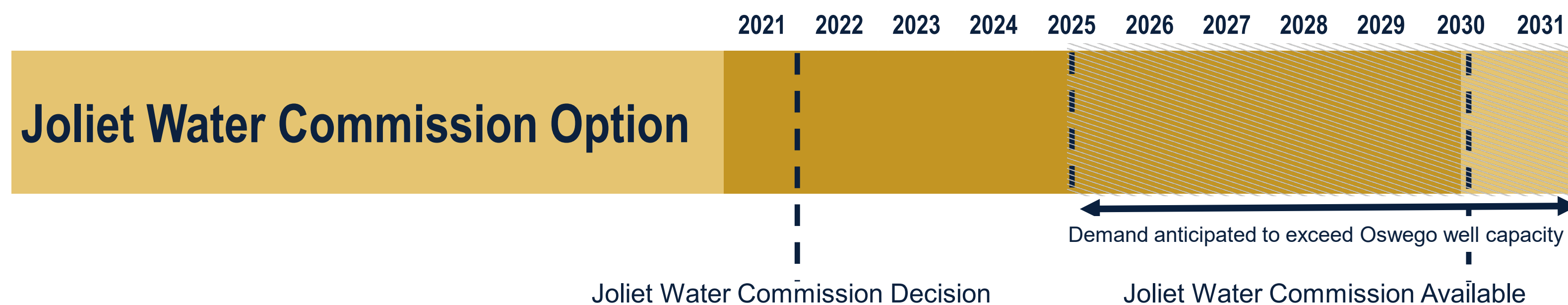


## ROUTE MAP



*\*Transmission main route is not final*

## PROJECT DURATION



## SUSTAINABILITY OF WATER SOURCE

- Lake Michigan water
- No seasonal restrictions/ MDD:ADD 1.7
- Wells kept for emergency
- Single supply/not looped main

## WATER QUALITY & PERMITTING

- Chicago treats water
- Chlorine disinfection of treated water (Class C)
- Seasonally consistent water quality

## GOVERNANCE & OPERATIONAL RESPONSIBILITY

- Joliet Water Commission still being formed
- No direct ownership or control of source water
- Indirect control of transmission infrastructure

## INTERNAL SYSTEM IMPROVEMENTS

- Transmission mains
- New storage
- Receiving station/pumping stations
- New Oswego well likely needed

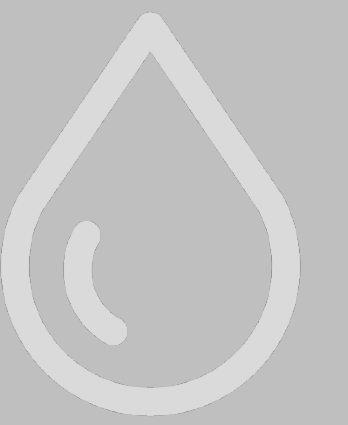
## TIMELINE

- No earlier than 2030

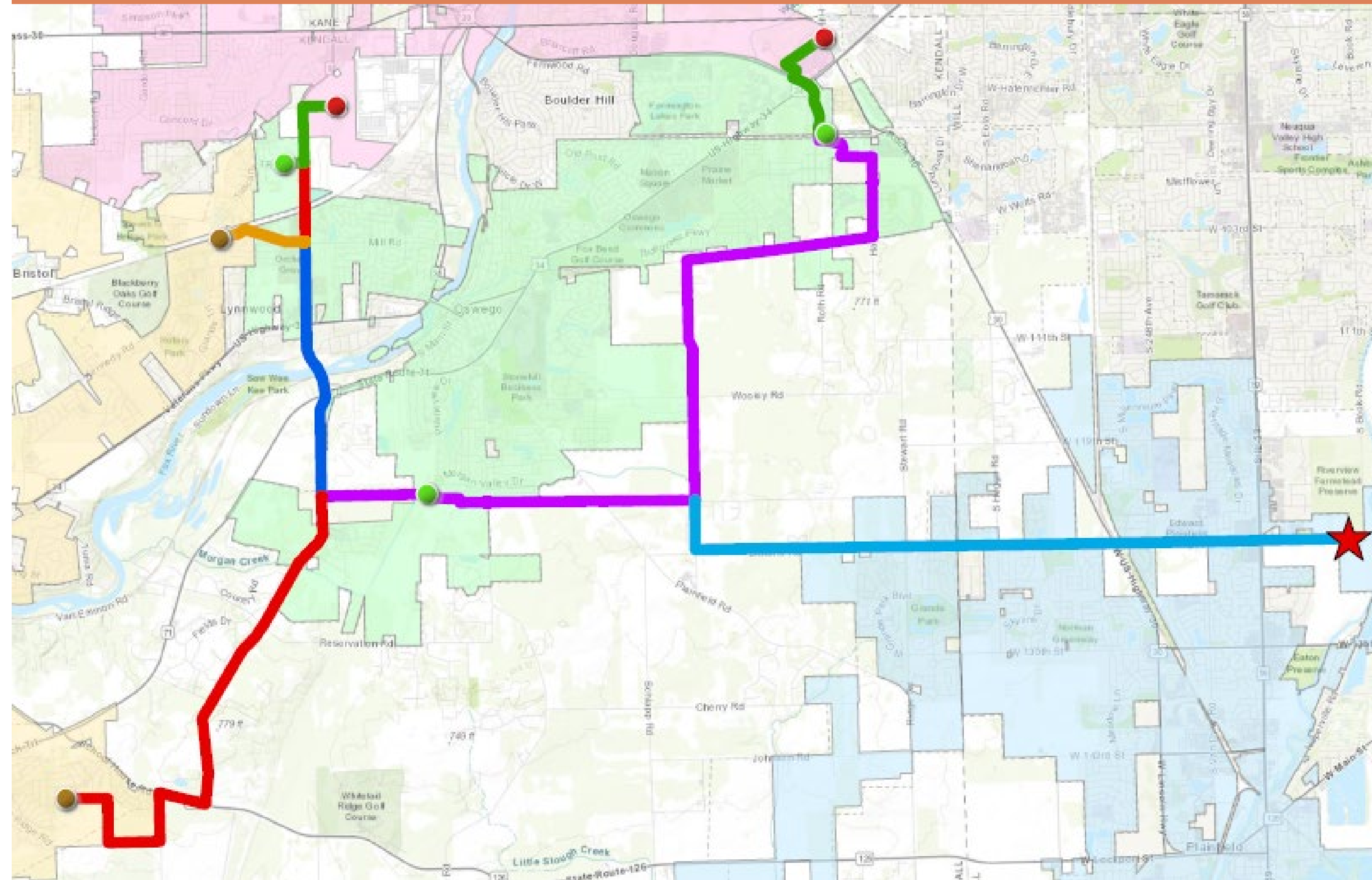


# Illinois American Water Option

## Key Considerations



### ROUTE MAP



\*Transmission main route is not final

### PROJECT DURATION

2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031

Illinois American Water Option

Joliet Water Commission Decision

Demand anticipated to exceed Oswego well capacity

Joliet Water Commission Available



### SUSTAINABILITY OF WATER SOURCE

- Lake Michigan water
- No seasonal restrictions/ MDD:ADD 1.7
- Wells kept for emergency
- Unlooped supply mains



### GOVERNANCE & OPERATIONAL RESPONSIBILITY

- Illinois American Water is a private utility
- No direct ownership or control of source water
- No direct control of the transmission infrastructure



### WATER QUALITY & PERMITTING

- Chicago treats water
- Chlorine disinfection of treated water (Class C)
- Seasonally consistent water quality



### INTERNAL SYSTEM IMPROVEMENTS

- Transmission mains
- New storage
- Receiving station/pumping stations

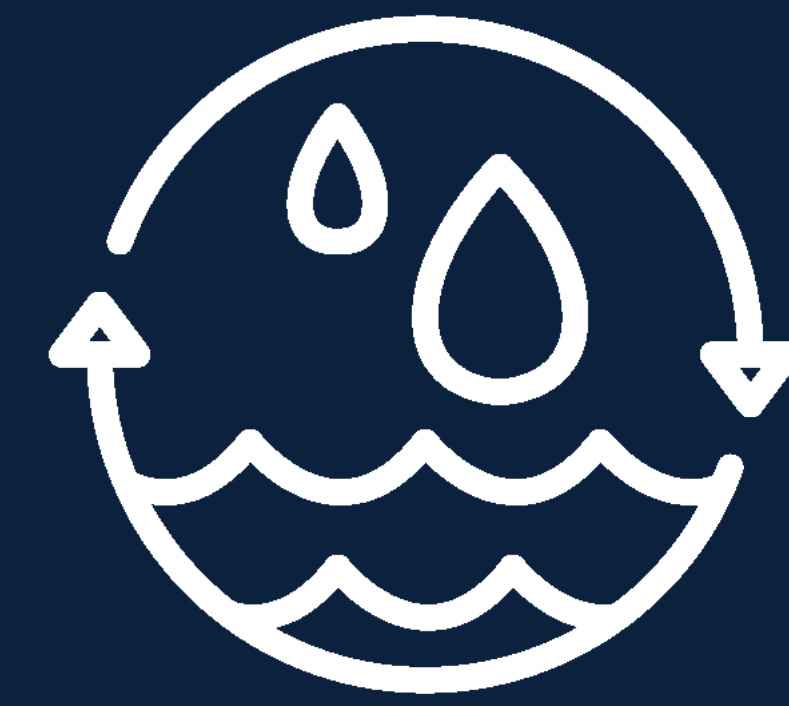


### TIMELINE

- Timeline still to be determined, estimated 4-5 years



# Water Conservation



Conservation is critical to ensuring the availability of water, sustaining the natural world and supporting economic, recreation, and drinking water needs.

## Water Conservation Practices:

- ▶ USEPA WaterSense
- ▶ Low Flow Plumbing
- ▶ High Efficiency Appliances
- ▶ Public Education
- ▶ Seasonal Peak Demand Reduction
- ▶ Irrigation Requirements
- ▶ Lawn and Watering Restrictions
- ▶ Sod/Seed Restrictions



AVERAGE GALLONS OF WATER  
USED PER PERSON PER DAY



*Montgomery residents use 84  
gallons of water per person*



*Yorkville residents use 84  
gallons of water per person*



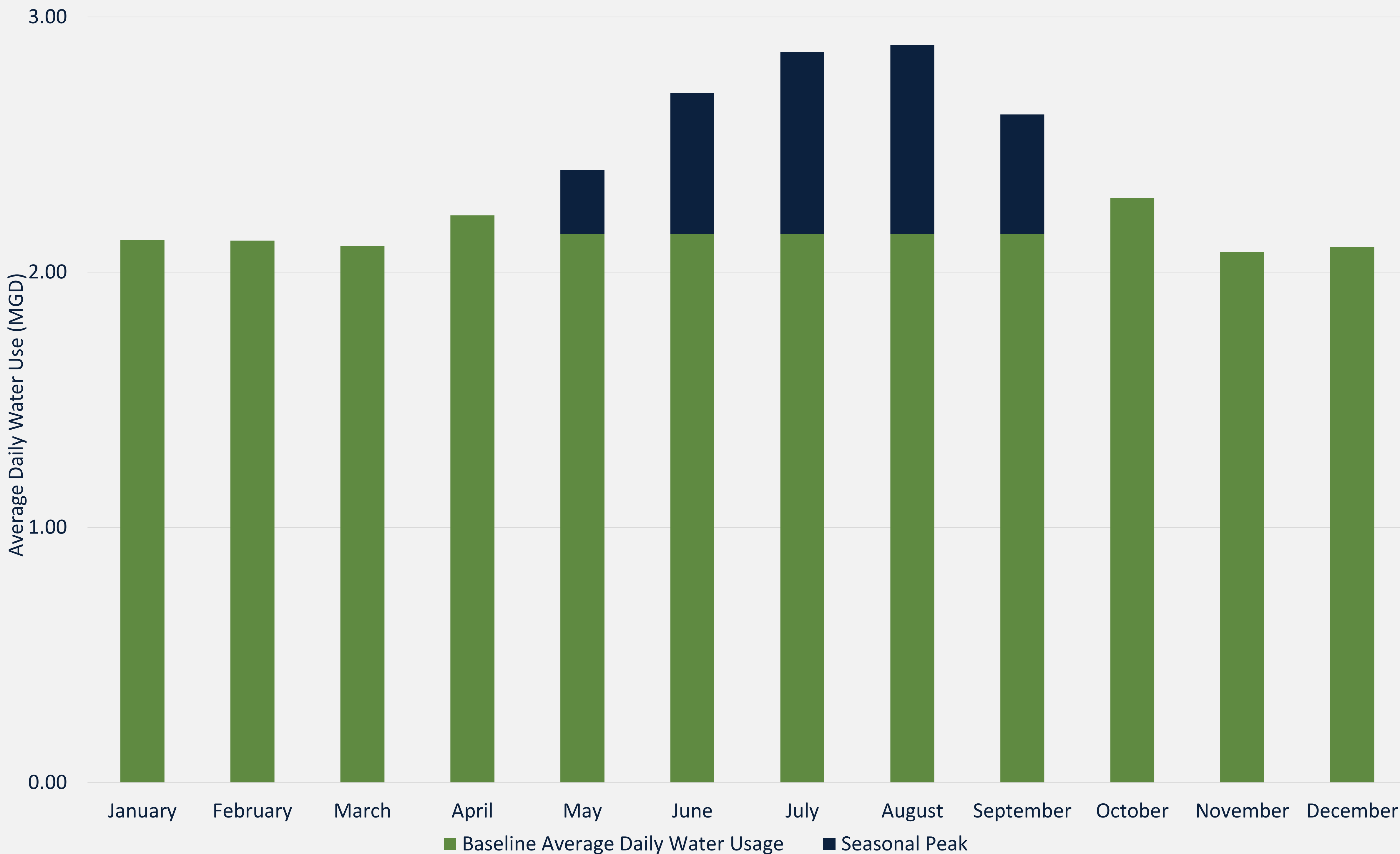
*Oswego residents use 68  
gallons of water per person*

# Water Conservation

## Minimize Peak Water Demands



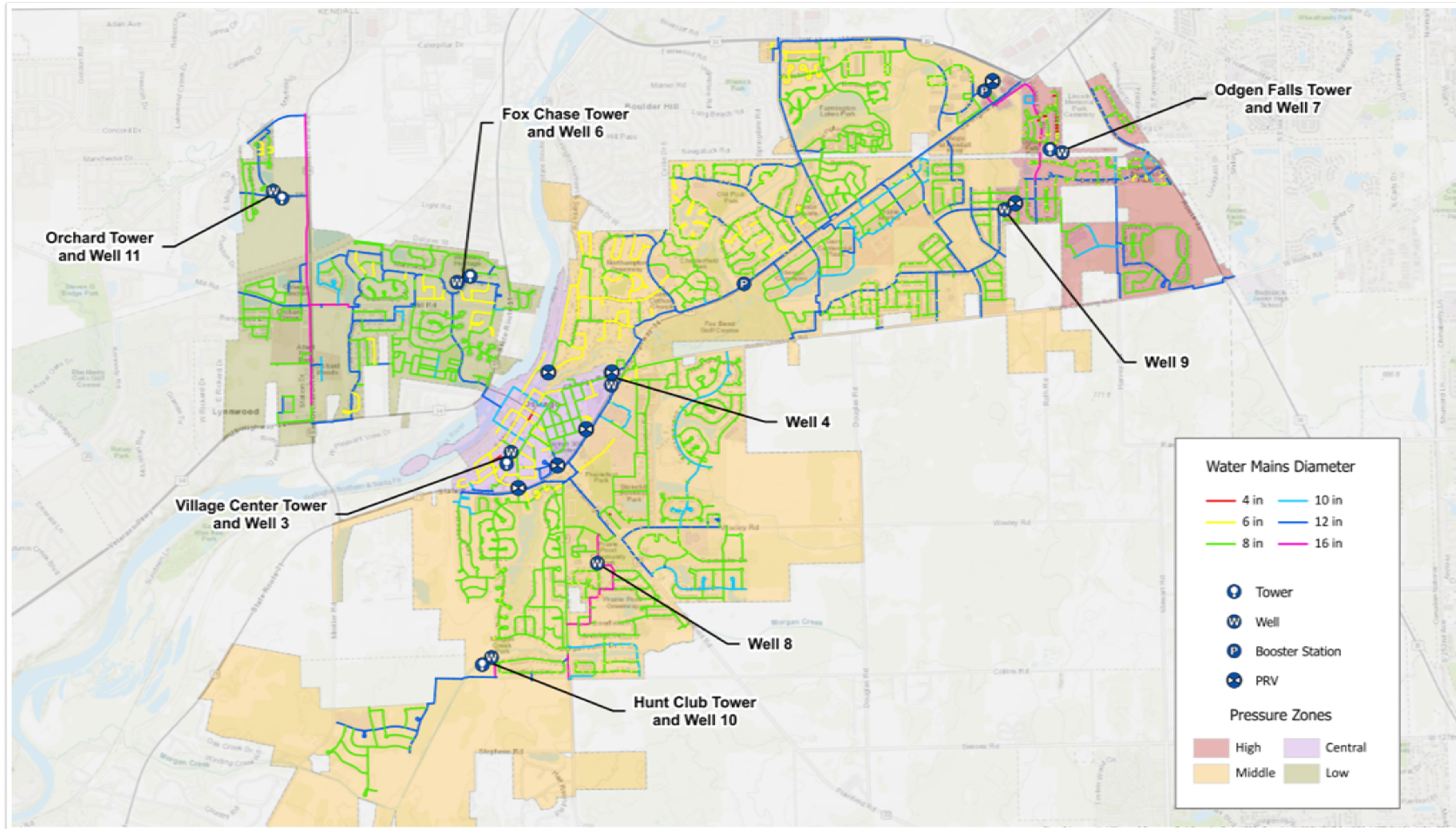
Sample Daily Water Usage - Baseline & Seasonal Peak



- ▶ **Baseline Demand**
  - Low-flow plumbing
  - High efficiency appliances
  - Public education
- ▶ **Seasonal Peak Demand**
  - Irrigation requirements
  - Lawn watering restrictions
  - Sod/seeding restrictions
- ▶ **Defer short-term capital improvements needed to meet increasing water needs**



# Oswego Existing System



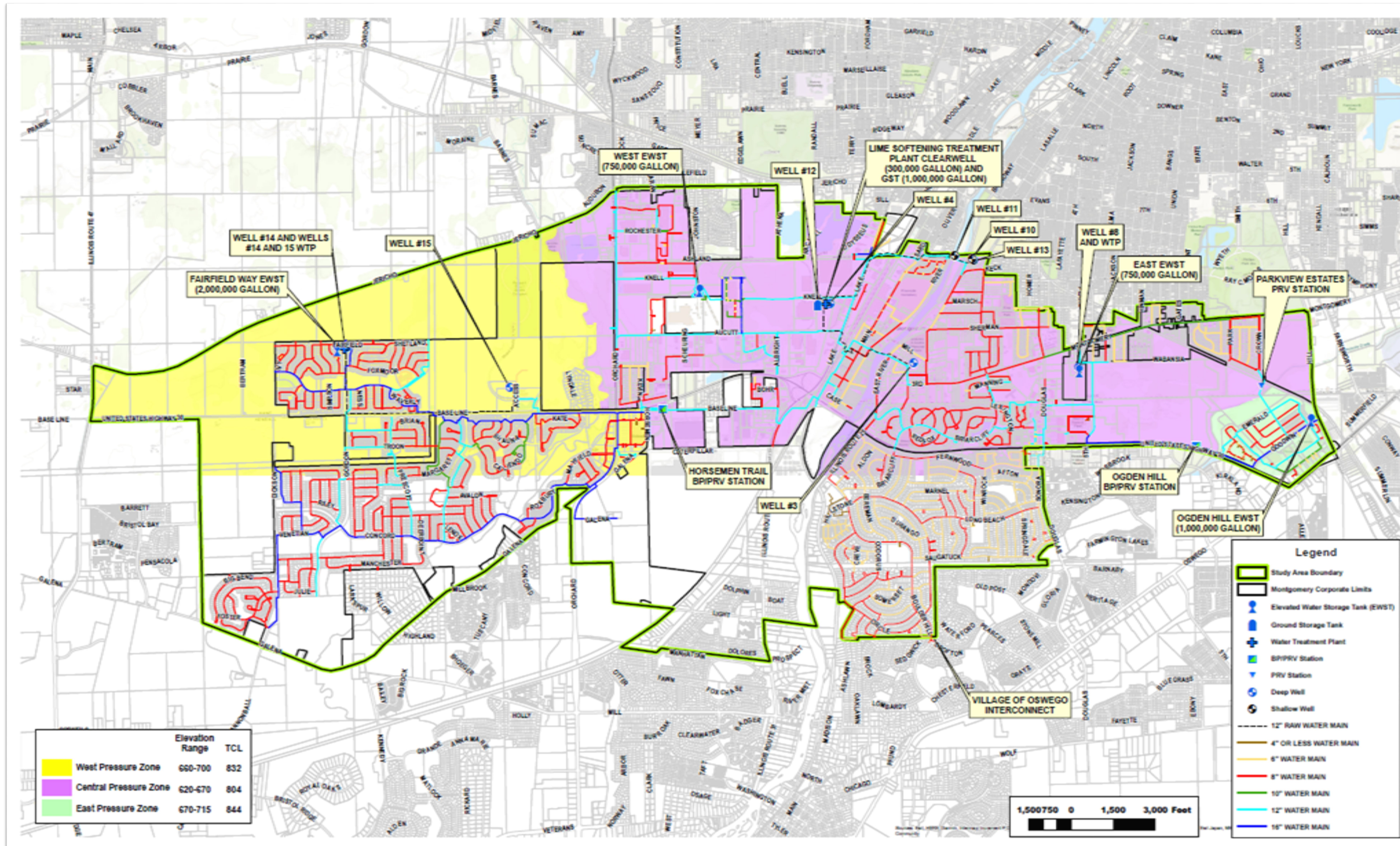
8 Deep Wells

8 Radium Removal Water Plants

5 Elevated Storage Tanks

170 Miles of Water Main

# Montgomery Existing System



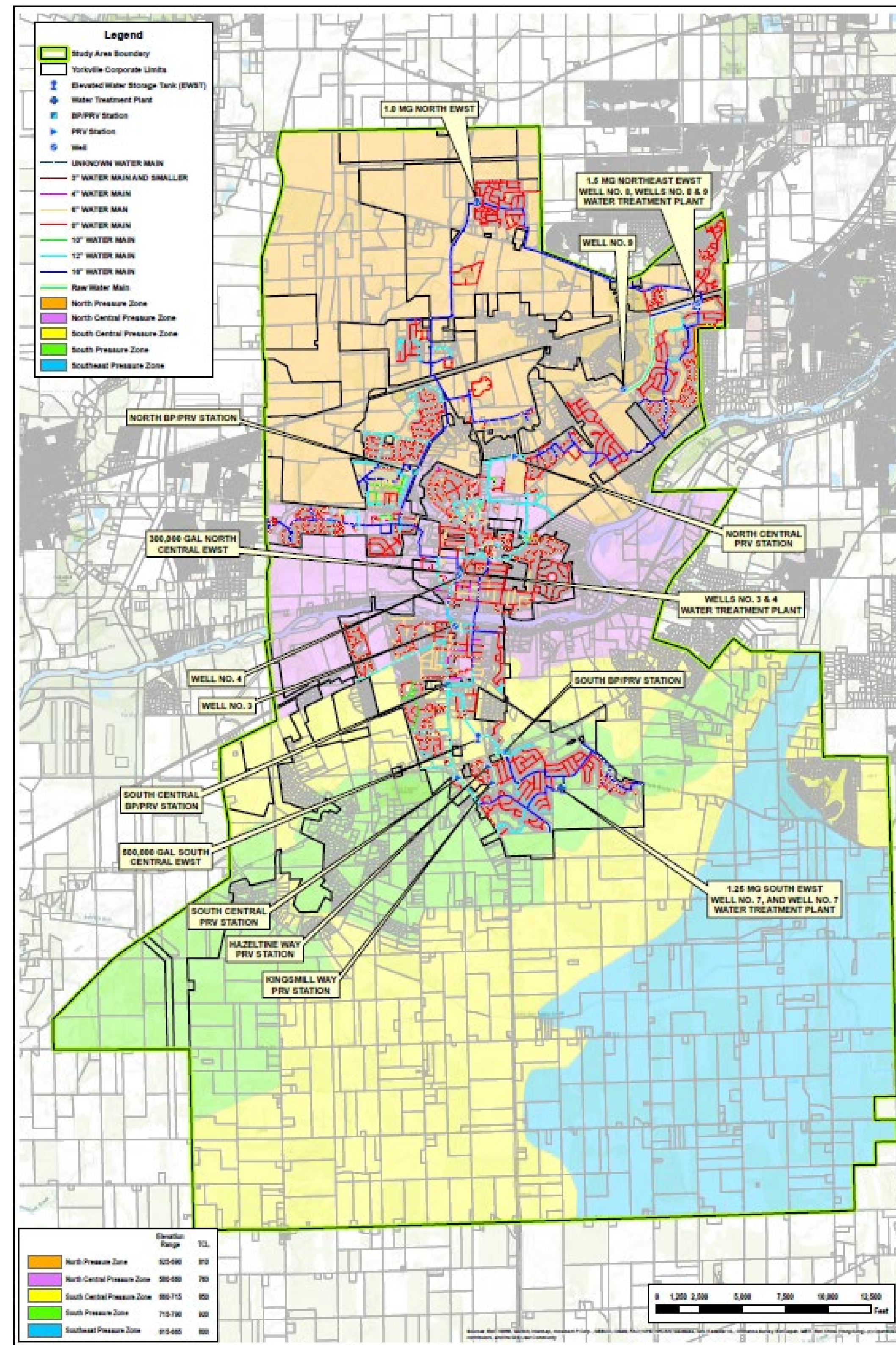
5 Deep Wells

3 Radium Removal Water Plants

4 Elevated Storage Tanks/  
1 Ground Storage Tank

135 Miles of Water Main

# Yorkville Existing System



4 Deep Wells

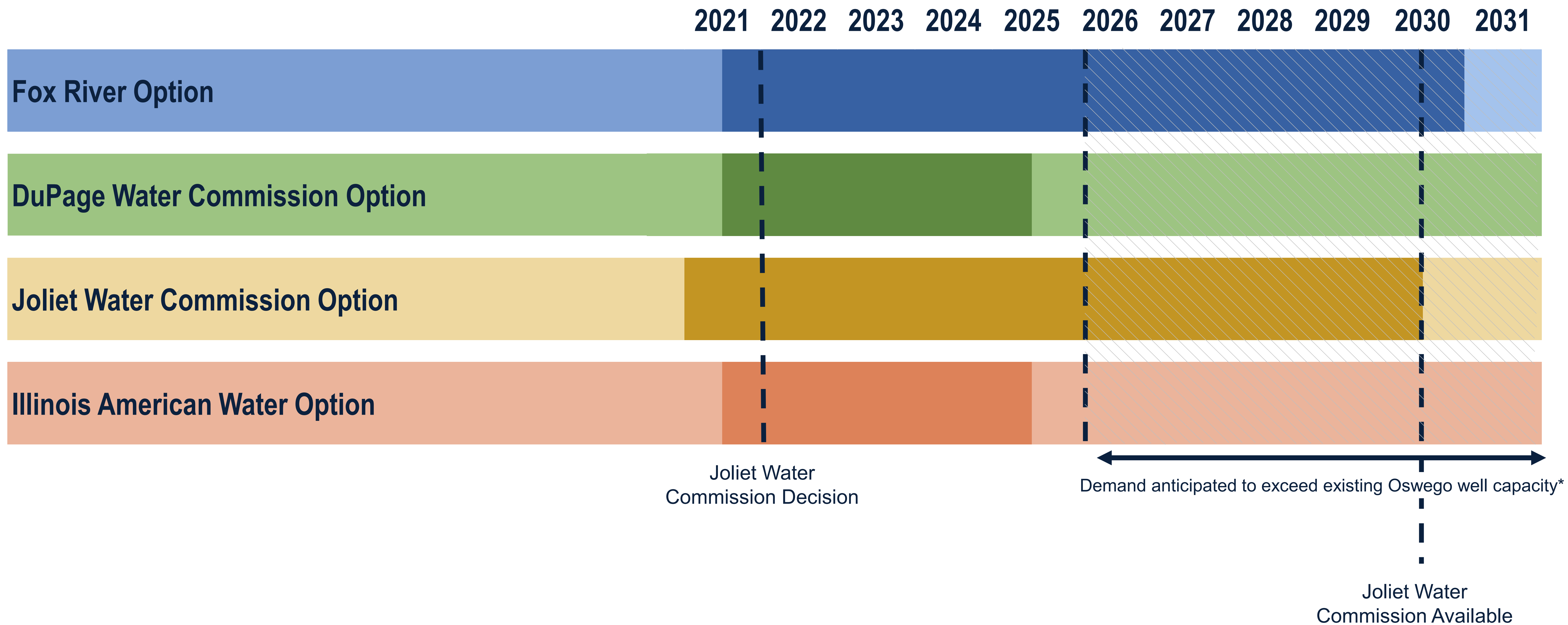
3 Radium Removal Water Plants

5 Elevated Storage Tanks

150 Miles of Water Main

# Water Supply Alternatives

## Estimated Timelines



\*Estimated well capacity timeline for Oswego only. Montgomery and Yorkville well capacity timeline are under review at this time.





# Decision Schedule



COMMUNITY	COST PRESENTATIONS TO BOARD/COUNCIL	BOARD/COUNCIL DISCUSSION	BOARD/COUNCIL DECISION
	2021		
Montgomery	October	November	December
Oswego	October	October/November	November/December
Yorkville	September/October	October/November	December



**Oswego, Montgomery, and Yorkville  
Alternative Water Source Evaluation**

**Appendix B  
Public Information Meeting Comments**

Resident Community	Comment
Montgomery	Thanks to Jennifer Hughes for excellent walkthrough of decision points and timing. I am an advocate for tie-in to Lake Michigan water via joining Joliet Water Commission.
Oswego	We are very impressed with the Public Works staff who walked us through this massive challenge. Our Oswego Board needs to honor and accept the expertise these staff people have provided. The water decisions and conservation are almost long overdue.
Oswego	Seems like Lake Michigan water is best option. Fox seems risky if more communities draw from it upstream. I would do DuPage if enough water is available but Joliet may have more flexibility since you would be starting out with them.
Oswego	Thank you for your time and work. Please say no to Fox River option.
Yorkville	Specific to Chicago water supply, please discuss how to keep the agreement of supply honest. 100 year contract with dollars tied to commodities of some sort. We can't allow Chicago to be in control too much.
Yorkville	I support connecting to Lake Michigan by the most economic and best method possible. I lived in Naperville when they switched from well to Lake Michigan water and that was a big improvement, better tasting, no new softener. The Lake Michigan connection will serve as a positive foundation for the future of Yorkville, Oswego, and Montgomery. Thanks for holding this informative session.
Yorkville	Both my husband and myself prefer the Lake Michigan option. We lived in another community went through the same process in the 1980s. We were very happy with the outcome.
Yorkville	Please do your best to show dollars in the four options. How will it compare today? Any chance pulling from Illinois River?