



# Additional Modeling Scenarios for Augmentation

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- Previously analyzed model scenarios
- Projected availability of treated wastewater
- Direct augmentation of treated wastewater
- Availability versus need, transition period to Ultimate demand?

# Previous Augmentation and Injection Scenarios

- Direct augmentation up to 780 MGY during warm season (Hugo 2)
- Injection of 1 or 2 MGD treated wastewater into Prairie du Chien or Jordan aquifer (Hugo 1)
  - Injection alone
  - Injection combined with combined with surface-water supply scenarios

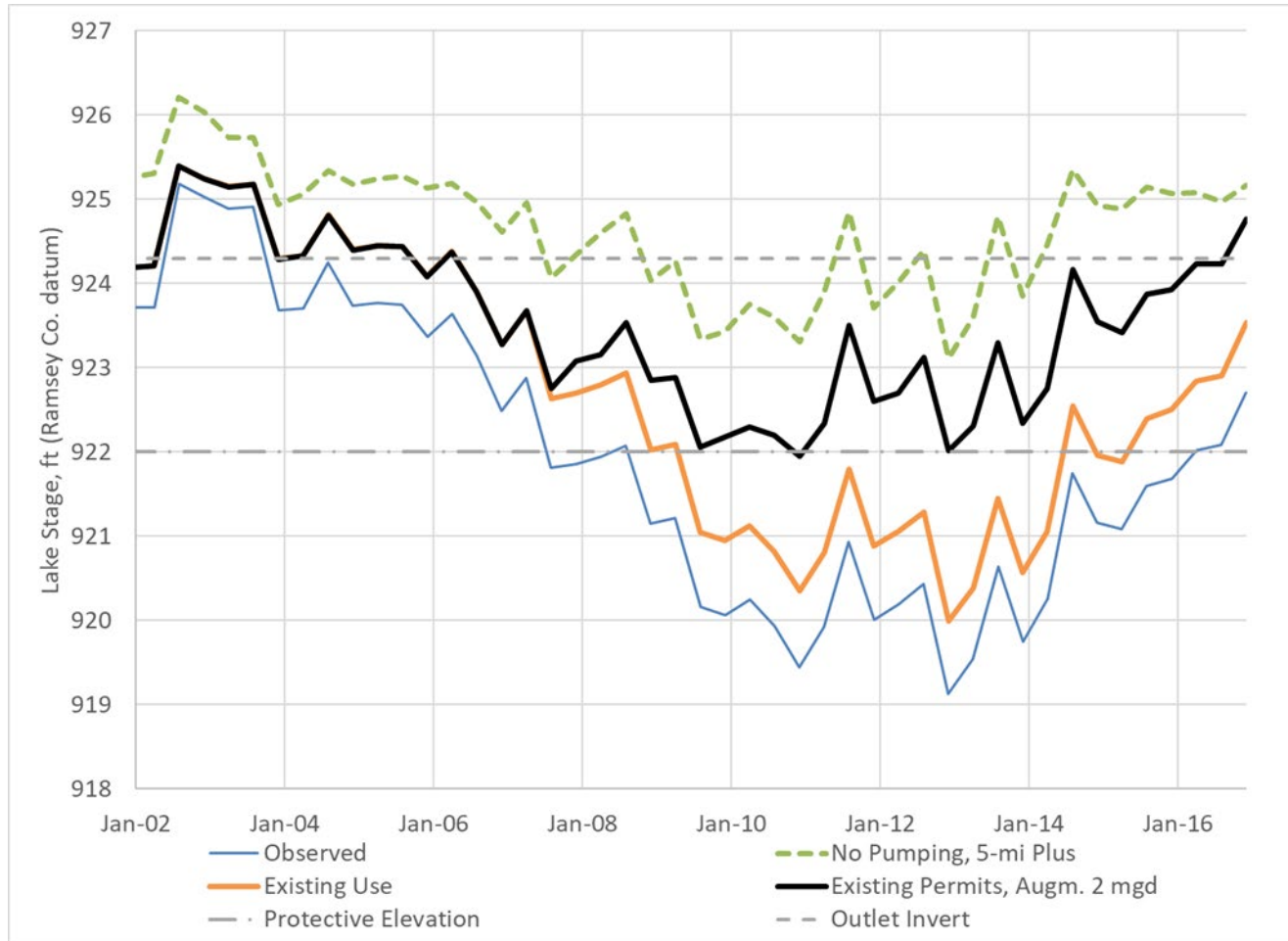
# Availability of Treated Wastewater

- Assume direct augmentation would only occur ~ 7 months of year
- Recent availability after treatment: 2 MGD (~ 425 MGY)
- Ultimate availability after treatment: 3.8 MGD (~800 MGY)
- Up to 2 MGD injection considered previously under Ultimate water demands

# Recent Conditions

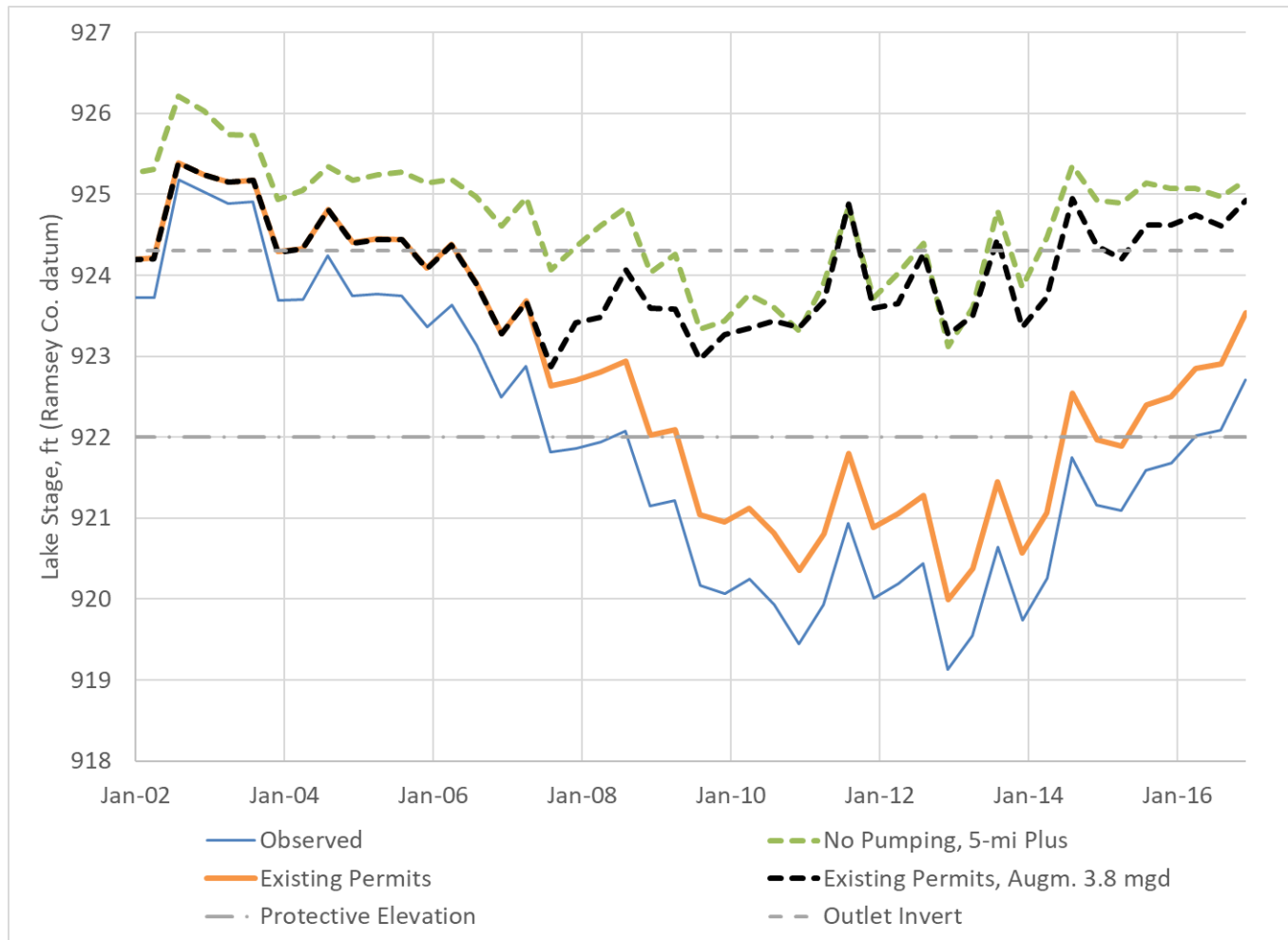
- “Existing Use” scenario (circa 2017-18) best available to represent recent conditions
  - Total, average use at 2023 population nearly same as Existing Use scenario
  - Average use (2014-23) at 2023 population for permits with top 7 impacts ~ 8% less than Existing Use (2008-17 average)

# Model Results– Augment Up To 2 MGD



- “Existing Use”
- Augmentation season ~7 months
- Start after lake level drops to 923 feet

# Model Results– Augment Up To 3.8 MGD



- “Existing Use”
- Augmentation season ~7 months
- Start after lake level drops to 923 feet

# Transition, Recent to Ultimate

- Modeling approach not suited to directly evaluate transition period
- Considerations
  - Full impacts of increased groundwater use take > 15 years, but timing depends on locations of increased pumping
  - Unknown when augmentation might be needed in the future



# Thank You!

**Glen Champion**

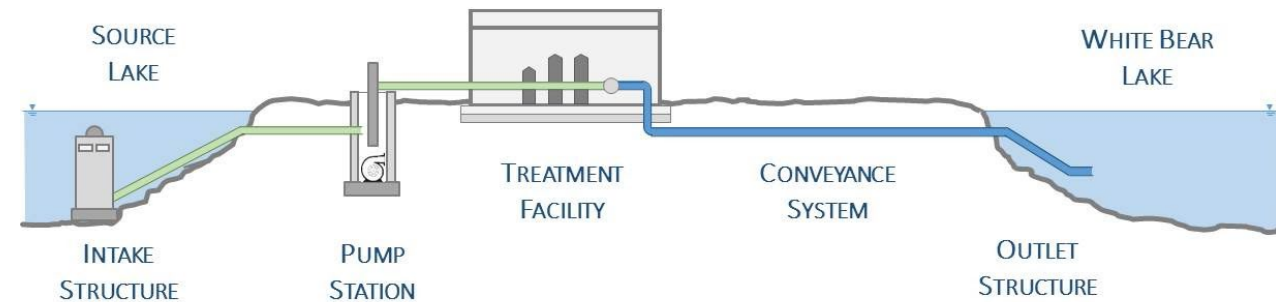
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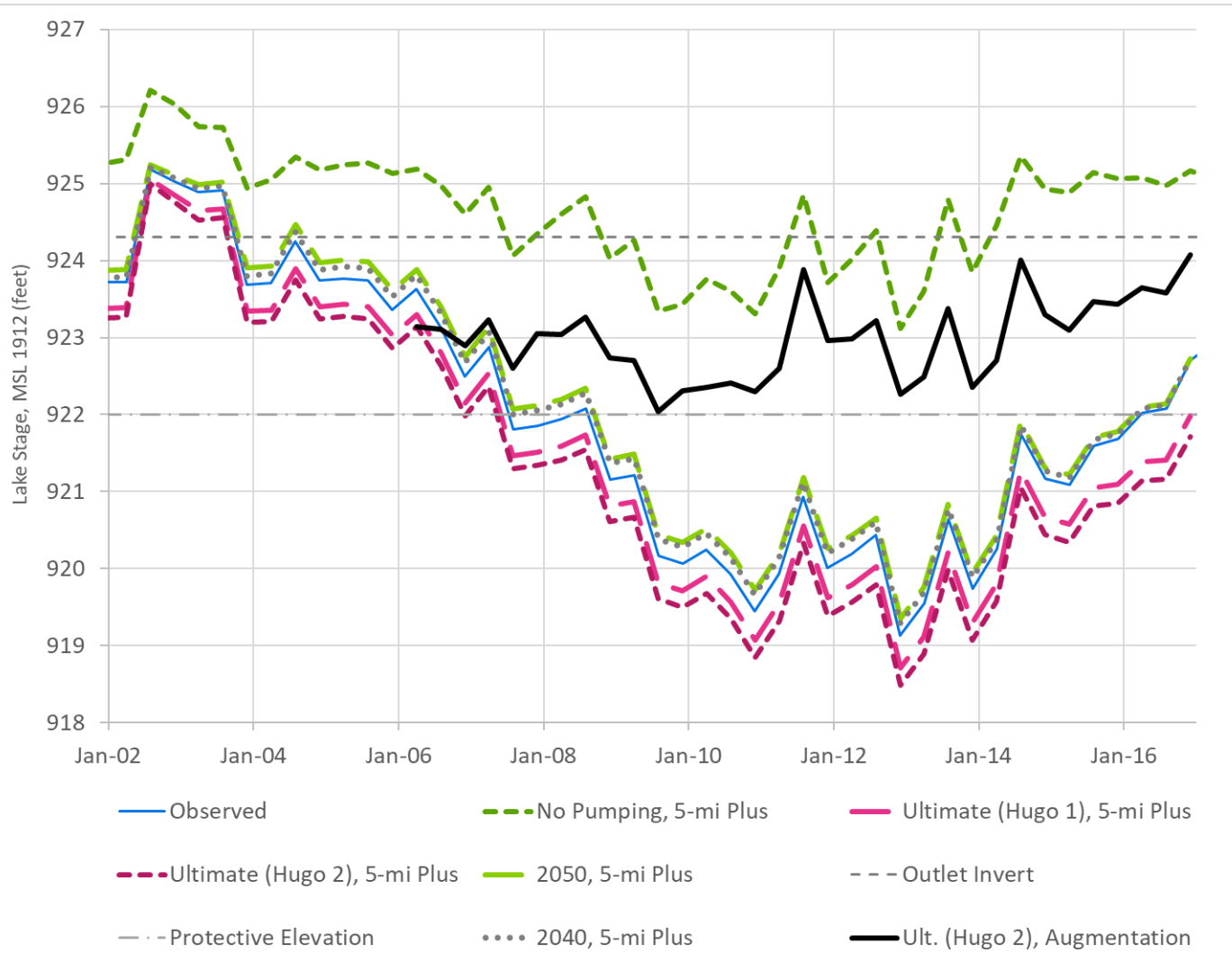
# Supplemental Slides

# Lake Augmentation

- Two previous conceptual cost studies (Met Council, 2014 and DNR and Met Council 2016)
- Water-quality study starts soon
- Initial model test
  - Hugo 2, all communities remain on groundwater supplies
  - Augmentation during open-water season
  - Trigger - 923 ft if not rising
  - Up to 780 MGY (< ½ previously studied)
  - Max rate ~ 4 mgd

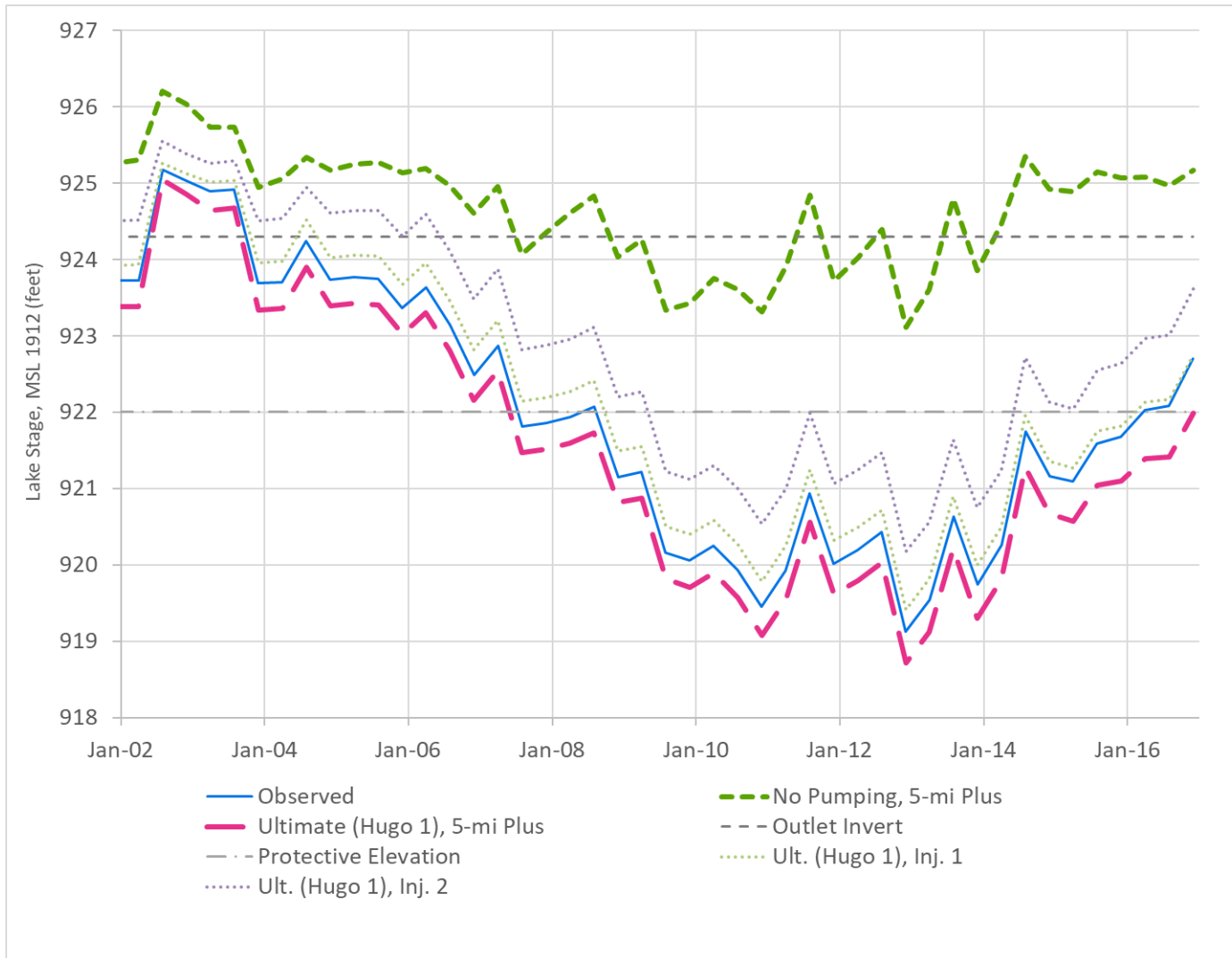


# Augmentation Example

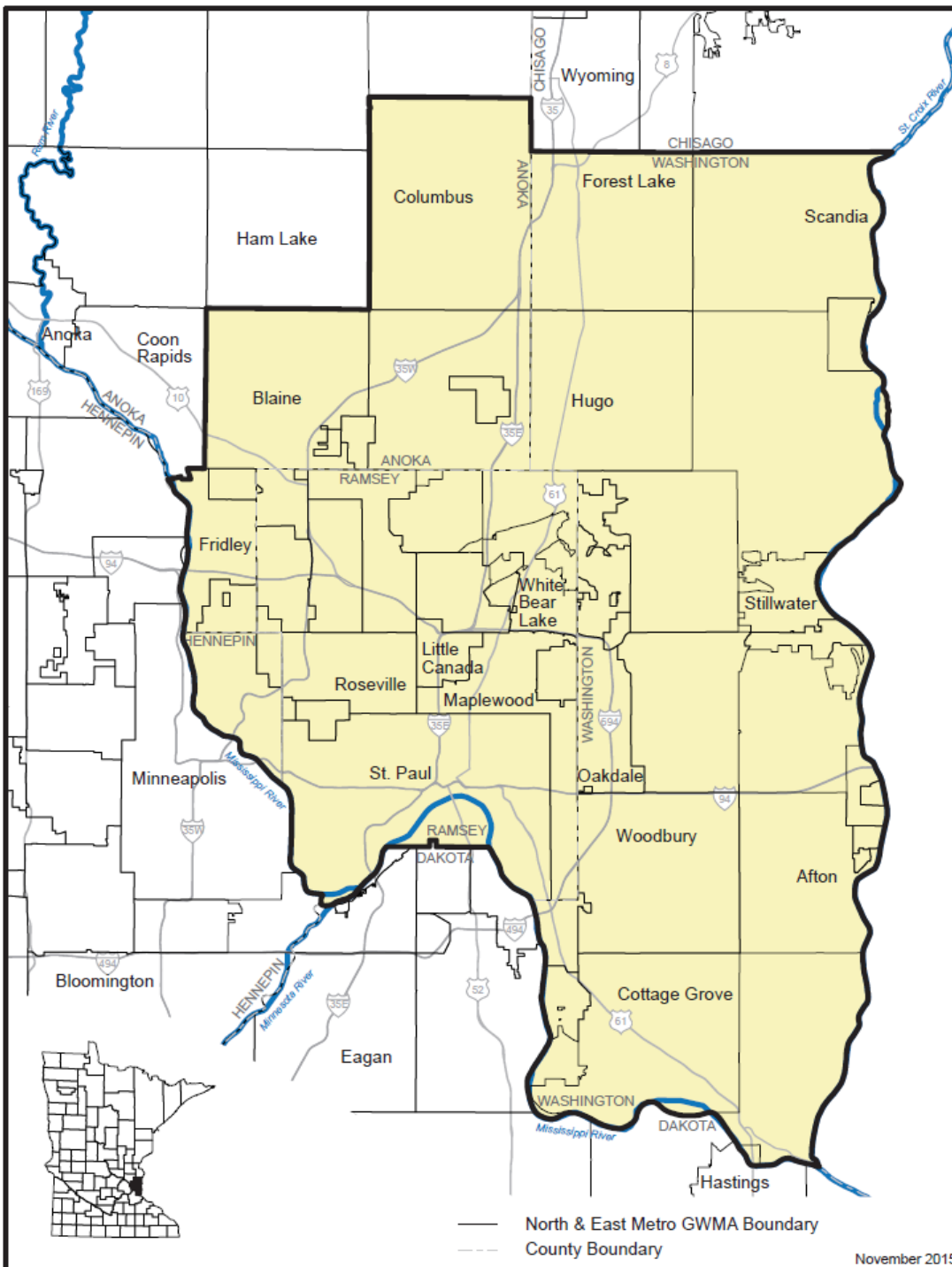


- Hugo 2
- Augmentation during open-water season 2006-07, part of 2008, 2009-10, part of 2011, and part of 2012

# Injection of Treated Wastewater



- Ultimate (Hugo 1)
- Injection well(s) adjacent to WBL, 1 mgd or 2 mgd



## North and East Metro Groundwater Management Area

# Permits and Wells w/in 5 Mile Area

