

Reduce, Reuse, Replenish: Implementation of water conservation strategies

Bryan Bear

9-12-19

Drinking Water 1-2-3 Academy



Integrated Water Management



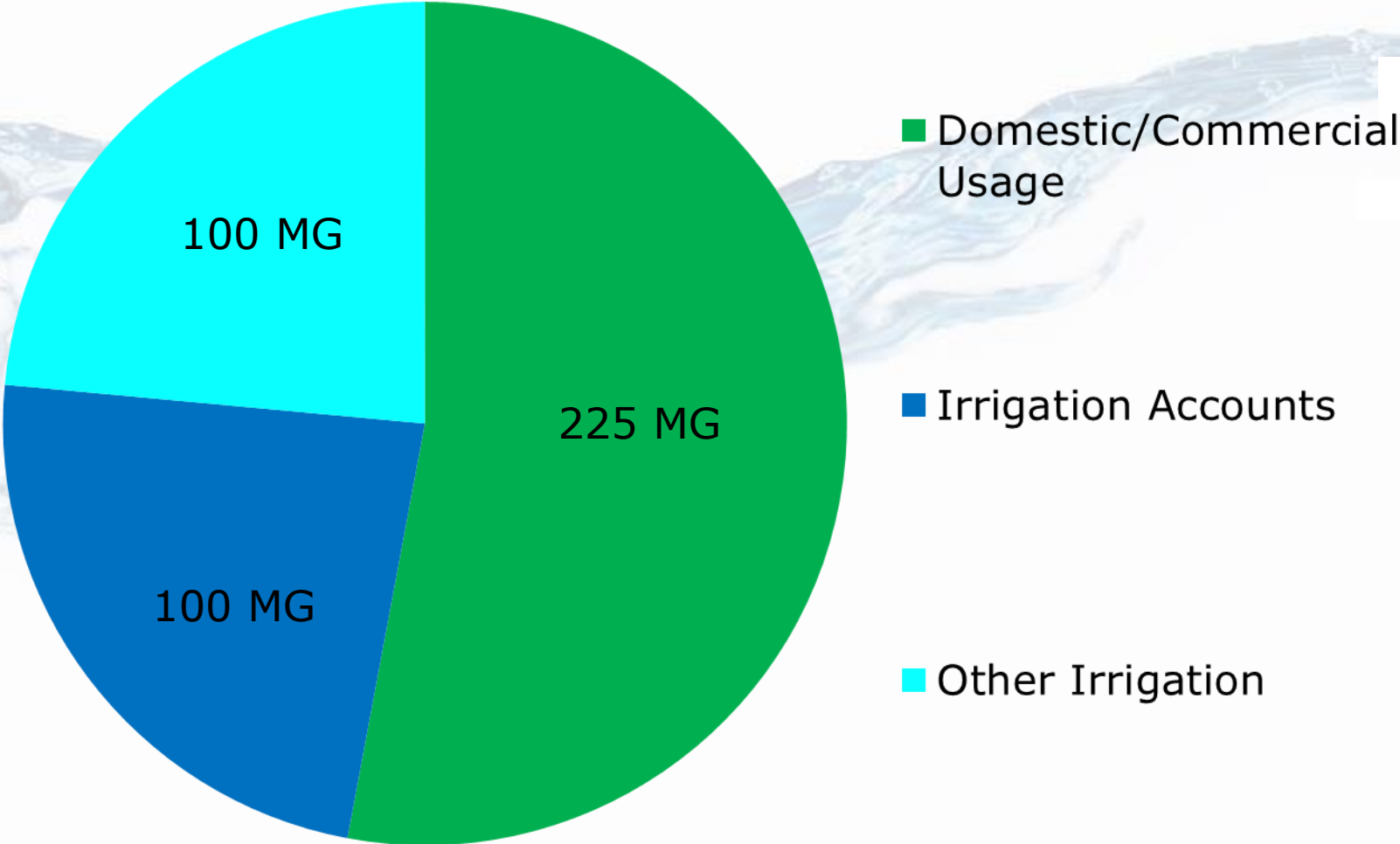
Water Supply Constraints in NE Metro

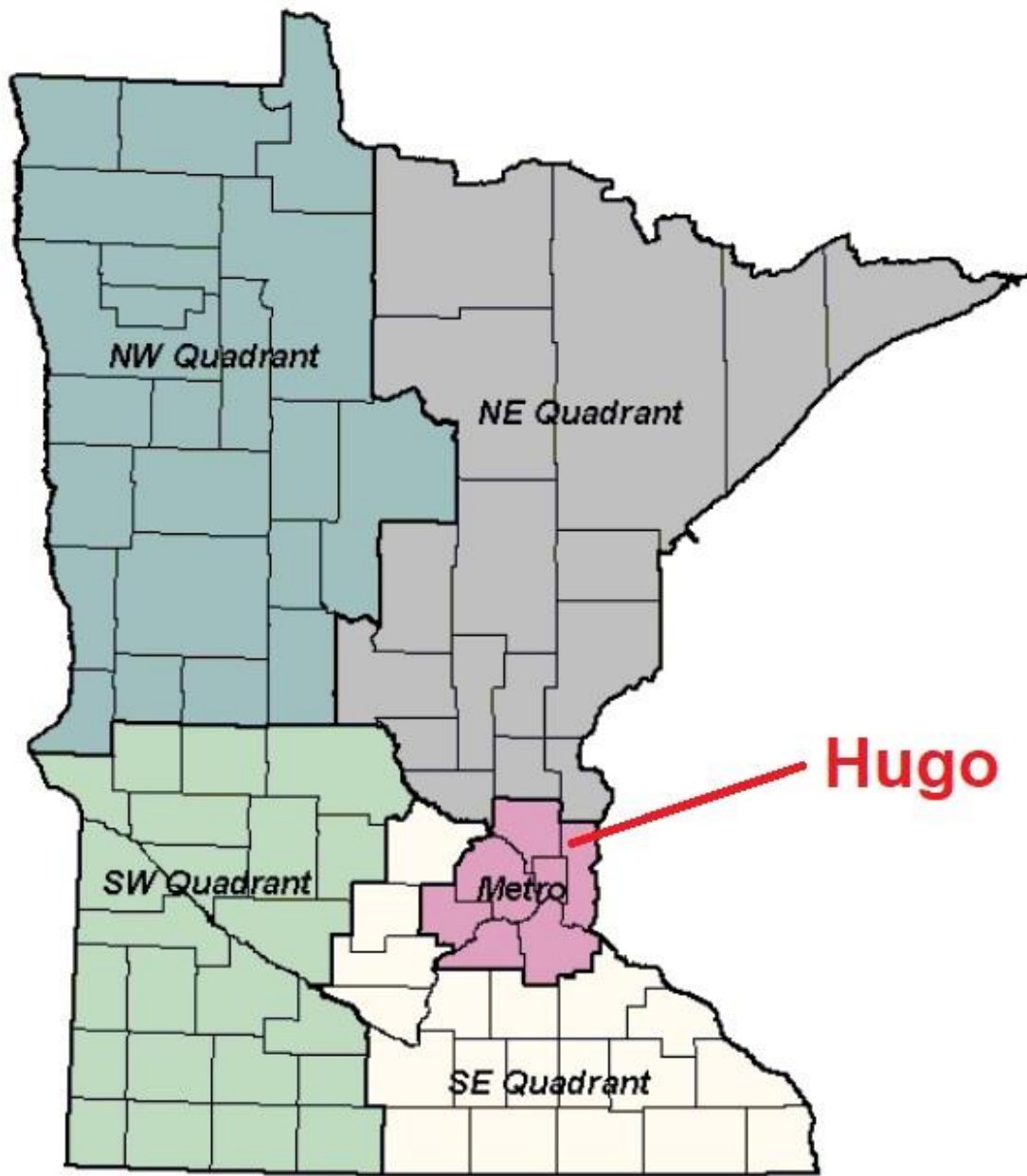
- Hugo is in a high growth area
- Not adjacent to large surface water sources
 - Dependent on groundwater
- City is required to grow
- 15,000 now: Plan for 40,000 by 2040
- Groundwater supply is limited
- Pumping groundwater may impact surface waters
 - High profile lawsuits

Permits for new groundwater wells are hard to get

- State rules are restrictive and vague
- Uncertainty makes planning difficult

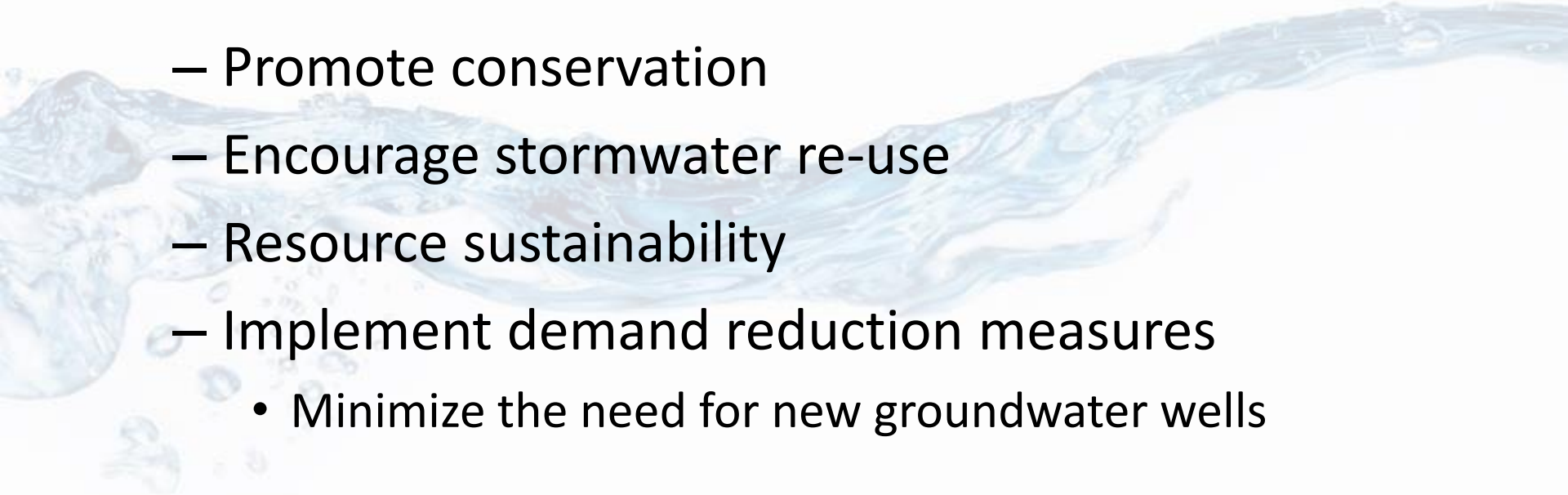
Hugo – Water Usage



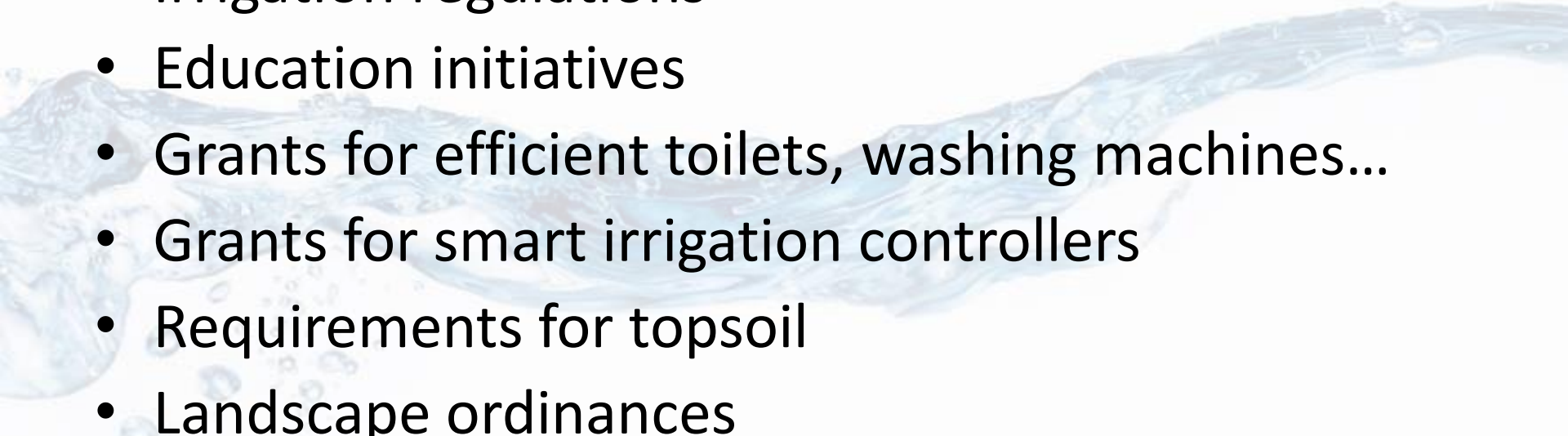


Comprehensive Plan

Water Supply Plan Principles


- Maximize efficiencies
 - Promote conservation
 - Encourage stormwater re-use
 - Resource sustainability
 - Implement demand reduction measures
 - Minimize the need for new groundwater wells
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Water Conservation Efforts

- New water rates
 - Irrigation regulations
 - Education initiatives
 - Grants for efficient toilets, washing machines...
 - Grants for smart irrigation controllers
 - Requirements for topsoil
 - Landscape ordinances
 - Industrial and commercial re-use
 - Collaboration with other cities
 - **Stormwater re-use is king...**
- 

Water re-use

Financial Partners

- City of Hugo
 - Met Council
 - Rice Creek Watershed District
 - Clean Water Legacy Fund
 - Private developers
 - Homeowners Associations
- 

Oneka Ridge Golf Course





Beaver Ponds Park



Beaver Ponds Park



Residential Re-use Retrofit



Water's Edge Development Phase 1





Waters Edge

- **1100 homes with HOA**
- **At their peak usage: \$120,000 water bill**
- **Retrofit all irrigation from groundwater supply to surface water supply**
- **City owns pumps, pipes and delivers stormwater to HOA**
 - We charge them for it
- **Reduces peak demand on city water system**
- **Phase 1 complete. Phase 2 in 2019**



Phase II Features

- Add 2nd pump
- Include Oneka Pkwy
- Prairie Village HOA
- Guidance Homes HOA
- Oneka Elementary



Clearwater Cove









CSAH 8 Landscaping



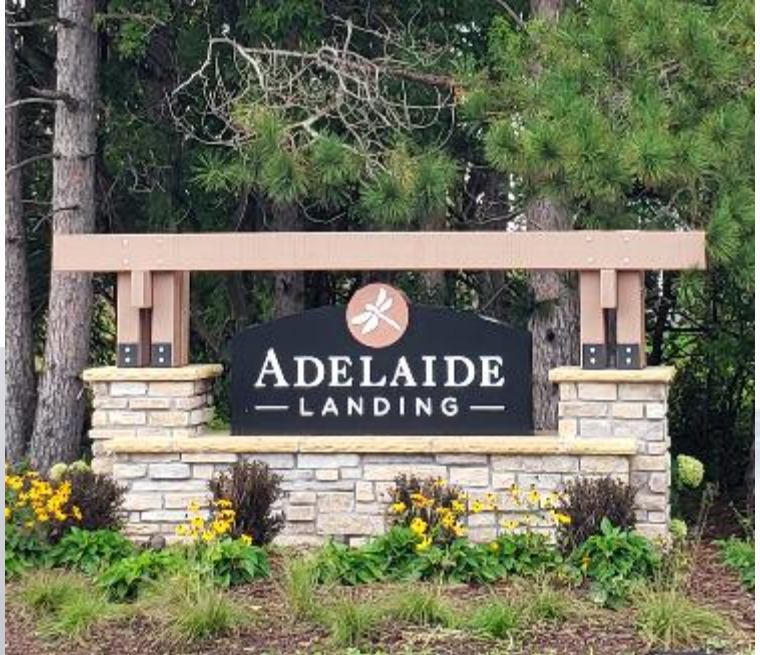
CSAH 8



ILLUSTRATIVE NEIGHBORHOOD PLAN



PROJECT	Gross Site
Collector CSAH 61: 130th Street	Existing V
Floodzon (beyond wetland)	Net Develop
Park/Open (includes pond)	Proposed
Overall G 319 units / 197	45' & 55' V
Overall N 319 units / 146	50' Single
Aerial photograph Topography	65' Single
	70' Single
	85' Single
	*Includes 20





Oneka Place

CONCEPT SKETCH PLAN #5

CONCEPT DATA

Gross Site Area: 117.5 ac
 Existing Wetlands: 23.9 ac
 Net Developable Area: 93.6 ac
 Park: 11.2 ac
 (not wetlands & roads)
 Open Space: 14.5 ac
 (not wetlands, including ponds, wet buffers, road buffers, woods, etc.)
 Net Developed Area: 67.9 ac

Proposed Residential Lots: 177 Lots
 80-85' Lots Open to Builders: 50 Lots
 65' Lots Capstone Homes: 47 Lots
 55' Villas / SF Capstone Homes: 80 Lots

Overall Gross Density: 1.5 ac
 177 ac / 117.5 gross acres
 Overall Net Density: 1.9 ac
 177 ac / 93.6 net acres
 Adjusted Net Density: 2.6 ac
 177 ac / 67.9 net developed acres

Aerial photography from State of Minnesota
 Topography from State LIDAR

CAPSTONE HOMES
 TYPICAL 55' VILLA HOMES



CAPSTONE HOMES
 TYPICAL 65' SF HOMES



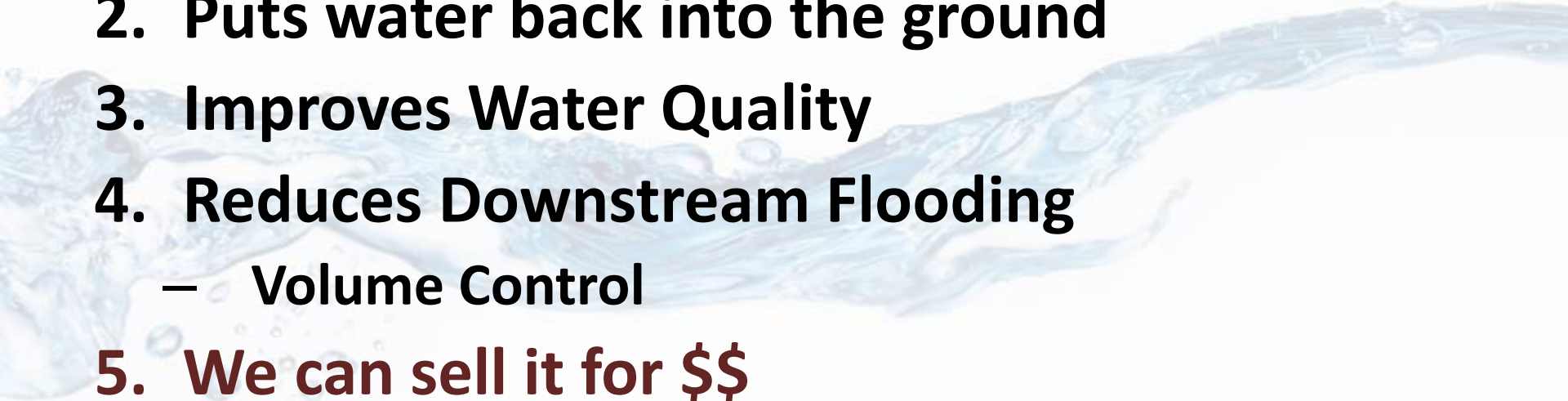
Creekside Heights



Meadows of Hugo



Using Surface Water

1. Reduces groundwater use
 2. Puts water back into the ground
 3. Improves Water Quality
 4. Reduces Downstream Flooding
 - Volume Control
 5. We can sell it for \$\$
 - Lower priced water for residents
 6. Reduces peak demand on city water system
 7. There are barriers
 - It is harder to do than it should be
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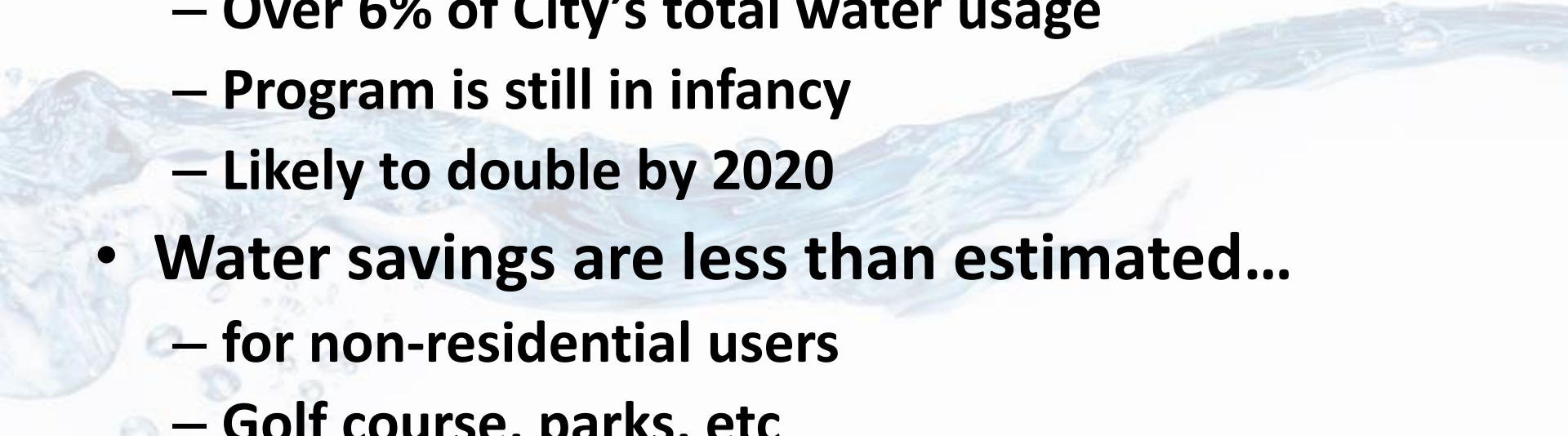
Peak demand

- Water system is designed for peak usage
 - Requirement to operate system on peak day with one well off-line
 - Peak day usually occurs in July or Aug
 - Irrigation contributes to peak usage
- Stormwater use -- lowers the peak
- 2030 comp plan = 40,000 population
 - 11 wells and 4 water towers
- 2040 comp plan = 40,000 population
 - 7 wells and 3 water towers
- Capital savings!



- Construction cost = \$3,510,500
- Each new well > \$1,500,000

Observations

- **Nearly 20,000,000 gallons saved in 2018**
 - Over 6% of City's total water usage
 - Program is still in infancy
 - Likely to double by 2020
 - **Water savings are less than estimated...**
 - for non-residential users
 - Golf course, parks, etc
 - **Residential users are pumping more than expected**
 - Should be primary focus for future
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- A decorative graphic of a water splash or wave, rendered in a light blue and white color scheme, positioned horizontally across the middle of the slide behind the text.

Barriers

- 1. Finding enough surface water**
- 2. Learning curve for residents (HOA's)**
 - Management, costs, and low pond levels
- 3. Maze of regulation concerning water**
 - Tremendous uncertainty
- 4. White Bear Lake Lawsuit**
- 5. Untested – risky. Up-front investment**
- 6. Maintenance of pumps, longevity, etc**
- 7. Future health codes**
- 8. Conservation mindset among regulators**
- 9. Much easier to use drinking water**
- 10. Water utility loses its biggest customers!**

Clearwater Cove – Re-use Discussions

- Appropriation permits
 - Conservation of stormwater???
- Change in statute concerning permits
- Discussion on Mixing of Waters
 - Triggers permits again??
- Discussion on future health codes
 - Filters?
 - Accommodate for changes?
 - Uncertainty
- Water availability
- Interconnection with City water
- Additional set of pipes throughout neighborhood
 - Stormwater Pipes
 - Maintenance?
 - Locates
- Treating water where it lands
 - On-site BMP's
- Credits for excess infiltration
- Shoreland requirements
- Agreements with Developer
- Covenants for HOA
- Education of Residents
- Management by HOA
 - Balancing irrigation needs with pond aesthetics



