Optimizing Sprinkler Performance in the City of Woodbury

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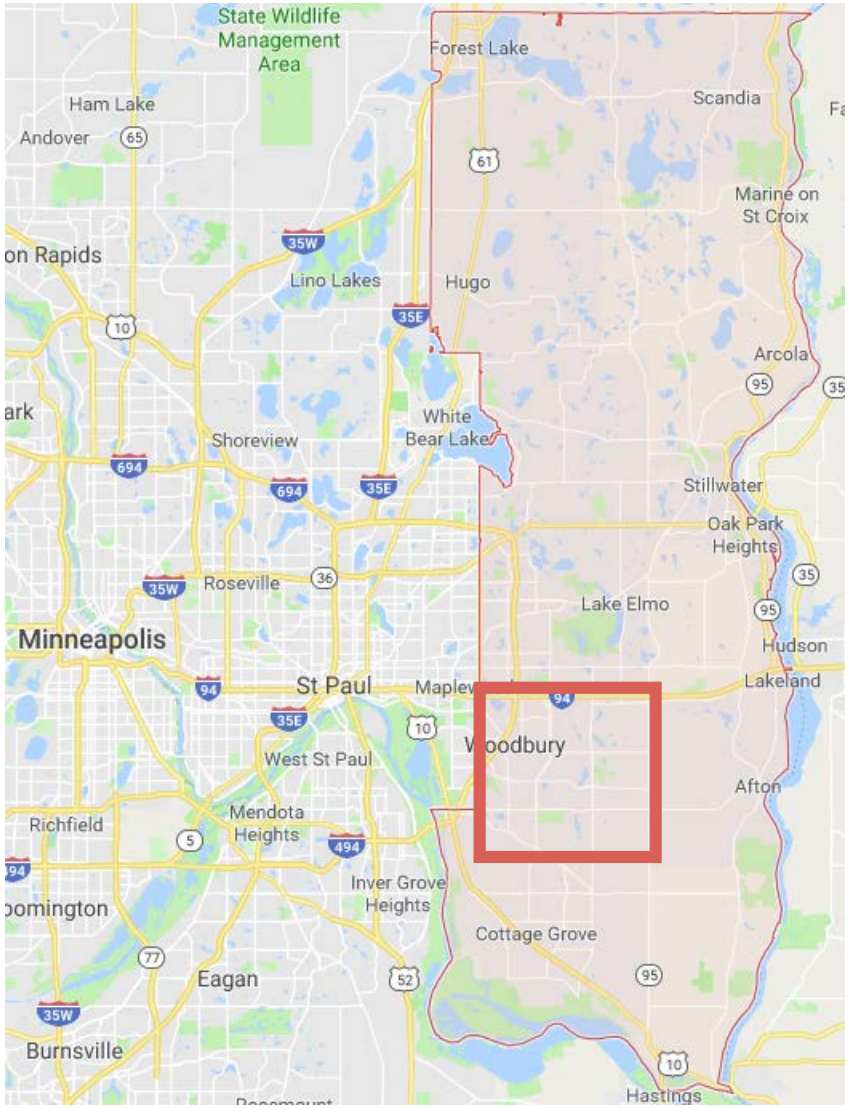
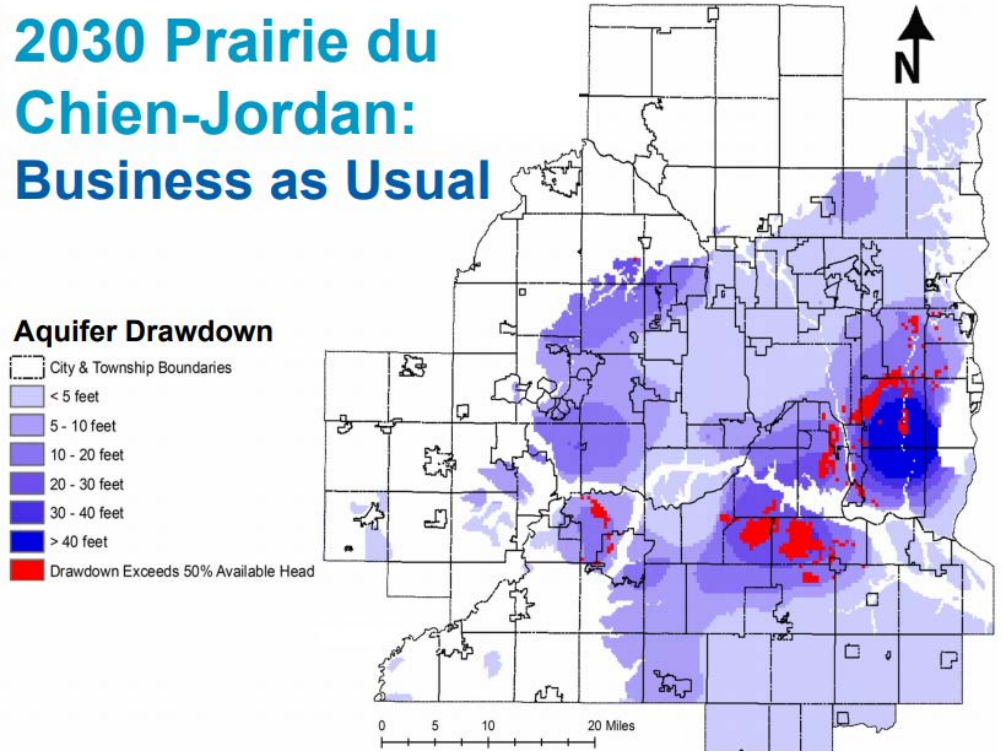
City Background

- Woodbury is the largest city in Washington County
- Population expected to grow an additional 34% by the year 2040
  - "Flat Water Use by 2030" goal
- Minnesota GreenStep City since 2013
- City Council adopted water as a strategic initiative
- Residential and commercial irrigation water use for new sod and maintenance of lawns is high



Incentives to Change

- **Quantity and quality concerns with groundwater**
  - Drawdown
  - PFC contamination
  - Population growth
  - Costs
- **Alternative water source and water treatment facility**
- **42% of water used for irrigation**



Metropolitan Area Water Supply Advisory Committee

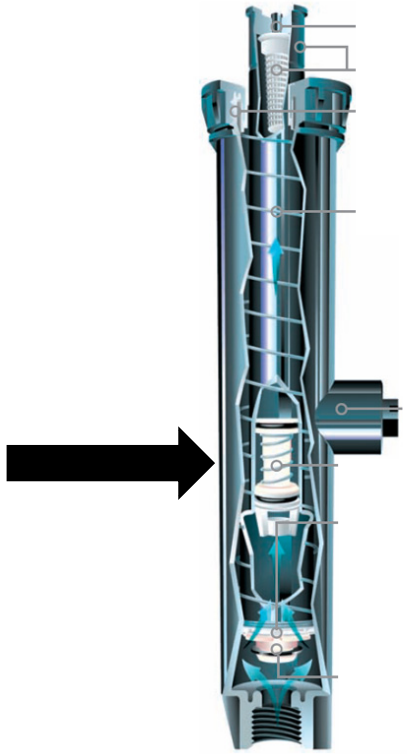
Approach

- **Programs have improved water efficiency on over 40 businesses and homeowners associations**
- **The residential smart irrigation controller program**
  - More than 1,500 homes involved
  - Reduces 30,000 gallons annually per household
- **Study on six residential homes by implementing pressure regulated sprinklers**
- **Project replication with other cities in Washington County with Washington County**

WaterSense label indicates a certified product that uses at least 20% less water than regular models

Project Overview

- **Higher than optimal pressures for an irrigation system**
- **Pressure regulated sprinklers decrease water waste**
- **Excess pressure in an irrigation system leads to:**
  - Smaller water droplets
  - Increased evaporation
  - Poor distribution uniformity
  - Increased irrigation system maintenance



Rain Bird 1800 Pressure Regulated Spray Sprinkler

Pilot Study Overview

1. **Selected six random homes from residential smart controller program**
2. **Completed first irrigation audit**
   - System inspection and flagging
   - Performance testing
   - Uniformity calculations
3. **Contacted contractors to accomplish the installations**
4. **Completed second irrigation audit**
5. **Shared results**
6. **Recycled 175 sprinklers through Tech Dump**

Findings and Recommendations

- **Two primary kinds of sprinklers**
- **Install pressure regulating spray sprinklers**
  - Reduction of 0.5 gallons used per minute per spray sprinkler
- **Install pressure regulating rotor sprinklers**
  - Reduction of 1 gallon used per minute per rotor sprinkler
- **Additional water savings can be realized from reducing irrigation run-times**

Rotor sprinkler

Spray sprinkler

Results

	Total Water Savings Per Day (gal/day)	Total Water Savings Per Year (gal/yr)
Home 1	280	18,700
Home 2	900	59,900
Home 3	740	49,100
Home 4	240	15,600
Home 5	400	26,600
Home 6	360	24,000

Total Average Savings Per Home (gal/yr)	Total Savings for Pilot Study (gal/yr)	Program with 100 participants (gal/yr)	Program with 500 participants (gal/yr)	Program with 1,000 participants (gal/yr)
32,000	**193,900**	**3,200,000**	**16,000,000**	**32,000,000**

Results

Water reduction option	Per Unit Cost	Per Unit Cost with Contractor Installation
Pressure Regulating Spray Sprinklers	$9.95	$19.75
Pressure Regulating Rotor Sprinklers	$19.95	$33.75
Total Cost per Household	$800	

A Future Program

1. Find eligible homes to take part in the program
2. Upload educational and outreach materials on Woodbury Water Efficiency webpage
3. Send out information to interested residents
4. Fill out screener questions and eligibility requirements
5. Pass on information from screener questions to contractor(s)
6. Installation of sprinklers by contractors

Educational Resources

- Guides for residents about pressure regulation
- Calculator for water savings
- Document detailing irrigation issues residents should look for

Personal Benefits

- **Learned about:**
  - City government
  - Water savings potential through irrigation
  - Project management
  - Time management

Thank you!