GUELPH WATER

OUTSIDE WATER USE PROGRAM

Wayne Galliher
Water Conservation Program Manager
Guelph Water Services
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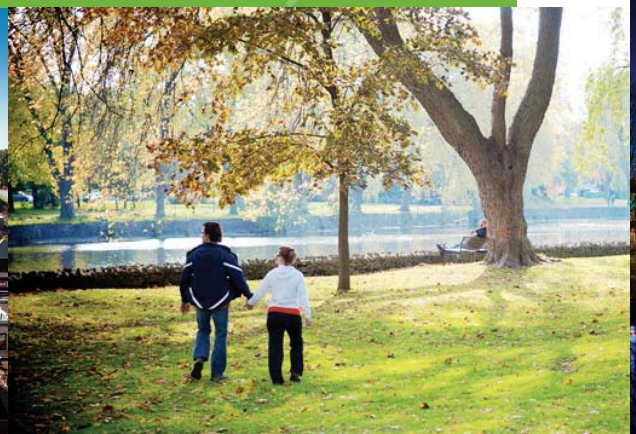
CITY OF GUELPH, ONTARIO BACKGROUND

- One of Canada's largest communities reliant solely on groundwater
- 123,000 residents, with additional 55,000 persons by 2031 forecasted through Province of Ontario Places to Grow Plan
- Sustainability a guiding principle for local growth



WATER SUSTAINABILITY: A GUELPH PRIORITY

Water Supply Master Plan (2006)

Targets:

- 10% reduction (5.3 MLD) in daily production by 2010
- 15% reduction (7.9 MLD) in daily production by 2017
- 20% reduction (10.6 MLD) in daily production by 2025

Community Energy Initiative (2007)

GOAL: "To use less water and energy per capita than any comparable Canadian City"

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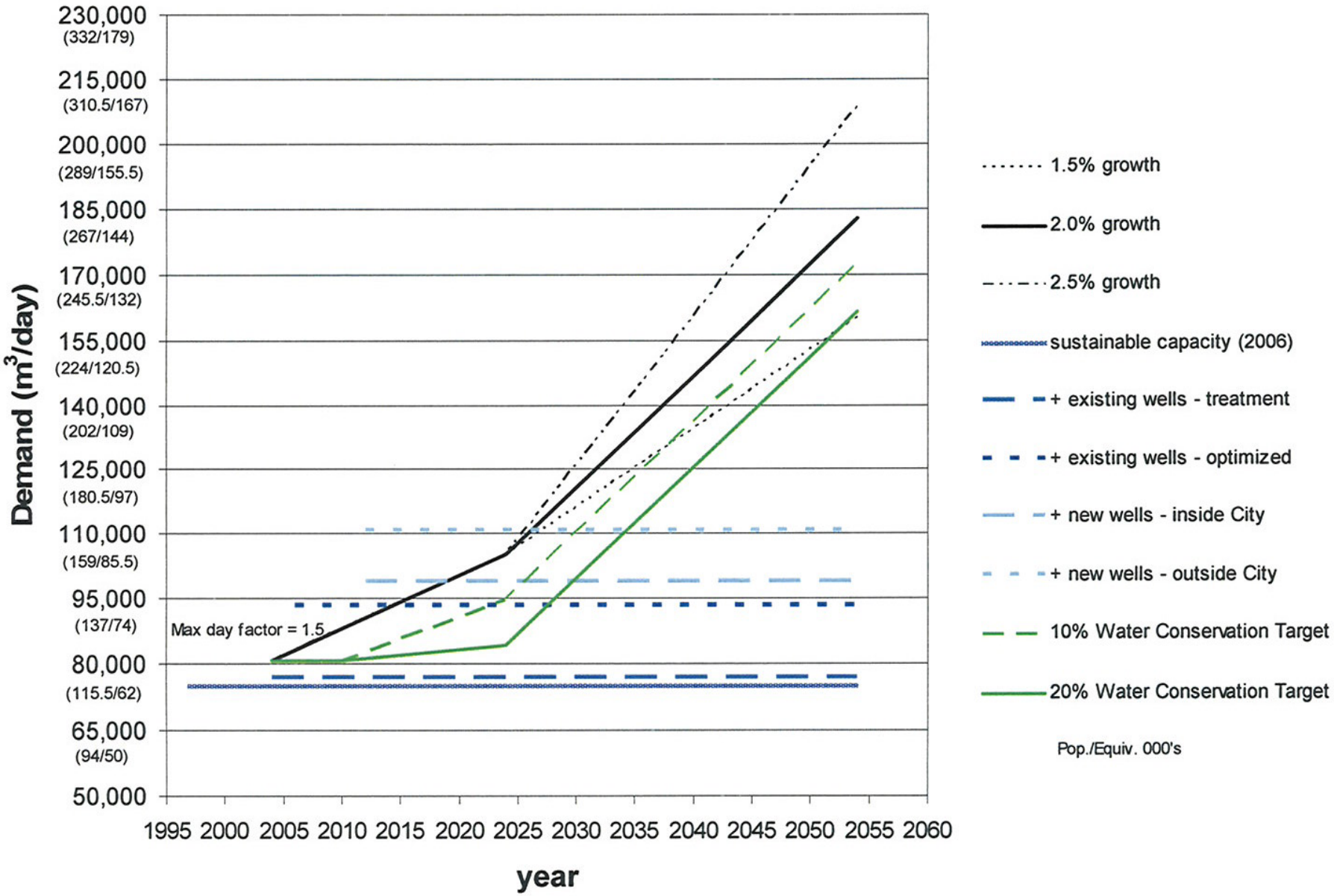
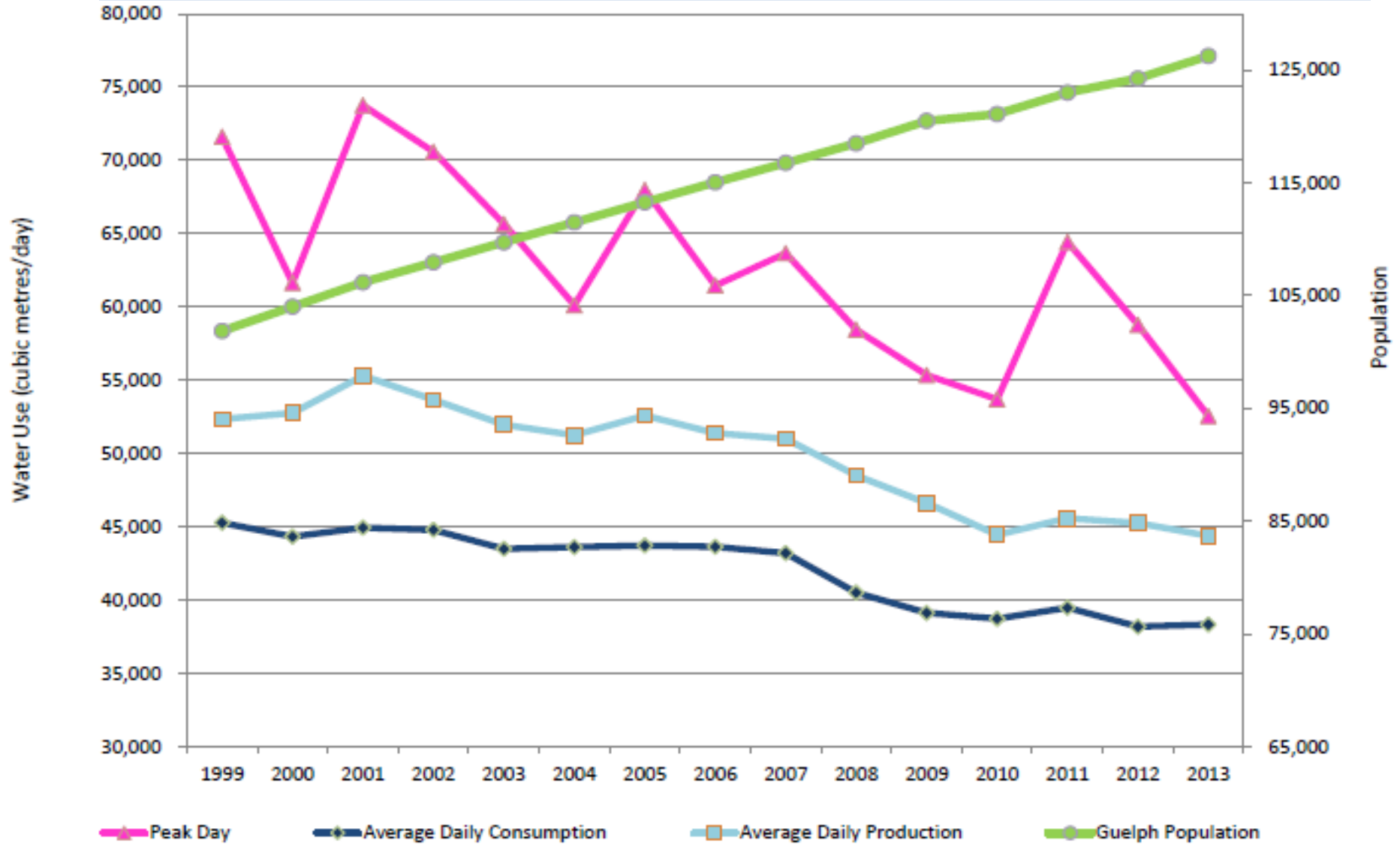
Groundwater Supply Potential



Water Use and Community Growth



2009 WATER CONSERVATION & EFFICIENCY STRATEGY

- 10 year, $20 million Water Sustainability Strategy
- Goal: Reduce water use by **8.7 MLD by 2019**
- **Co-benefits:**

  GHG Reductions : 2,412 tonnes/yr CO_2 E

  Operational Savings : $141,000/yr
- Multi-sector approach (res, multi-res, ICI, new dev, municipal)
- Emphasis on public and youth education
- Water loss mitigation strategy
- Support for innovation and capacity building

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BUSINESS CASE FOR WATER CONSERVATION

NEW SUPPLY

Cost of new water supply and wastewater treatment infrastructure

$3 - $8 per litre capacity per day

VS

RECLAIMED SUPPLY

Cost of water and wastewater capacity regained through conservation and efficiency

< $4 per litre capacity per day

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Water Efficiency Net Financial Benefit

Plan	Net Present Value (NPV) with Reduced Conservation Programming (2006 dollars)	Net Present Value (NPV) with WSMP 20% Reduction Target (2006 dollars)
Water Supply Master Plan	$92,515,456	$49,847,529
Wastewater Treatment Master Plan	$59,743,881	$16,657,935

Net Benefit in Avoided Infrastructure Costs (NPV 2006 Dollars)

Water: $42,667,927
Wastewater: $43,085,946

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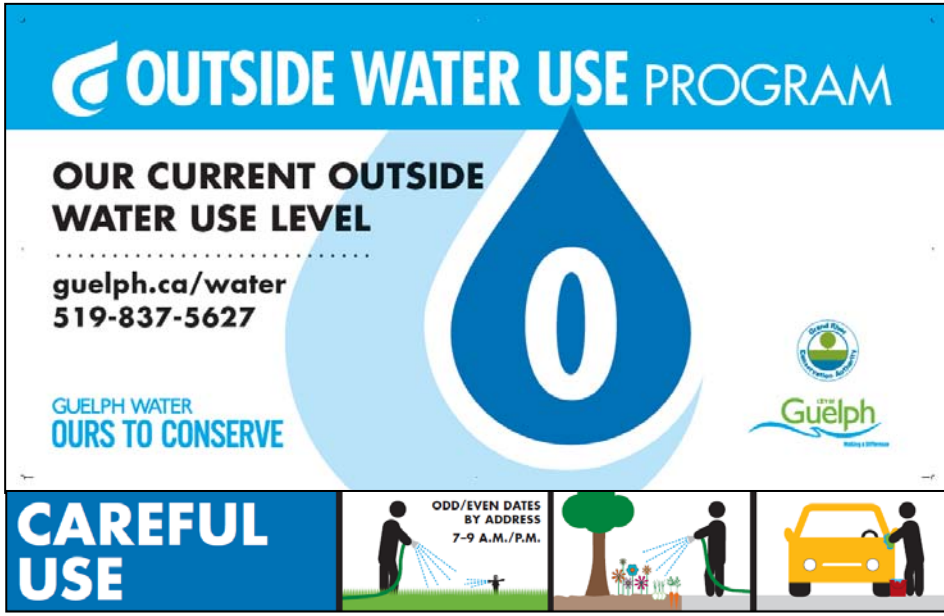
CITY OF GUELPH OUTSIDE WATER USE PROGRAM

Overview:

- First Implemented in 2001
- Phased Restrictions targeting essential water uses
- Indicator Basis: Environmental and Operational Needs
- Legislative: Ontario Low Water Response & PTTW Requirements
- Terms apply to Residential, ICI & Municipal Water Uses
- Active Engagement & Enforcement



OWUP AT A GLANCE

Water Response Level	0	1	2
When does it come into effect?	**Blue is our standard** Outside Water Use level. Blue indicates there are no serious storage, rainfall or stream flow issues.	**Yellow can occur when:** ▪ Less than 80 per cent of historical average of precipitation occurs over one and/or three months; ▪ Two weeks without rain; ▪ Eramosa River flow is less than 70 per cent of minimum low flow; ▪ Water storage level is less than 75 per cent of average	**Red can occur when:** ▪ Less than 60 per cent of the historical average over one and/or three months ▪ Three weeks without rain; ▪ Eramosa River flow is less than 50 per cent of minimum low flow; ▪ Water storage level is less than 65 per cent of average.
Lawn Watering	Alternate day and time restrictions. Permits are required for watering new lawns and treated lawns outside guidelines.	Alternate day and time restrictions. Permits are required for watering new lawns and treated lawns outside guidelines.	Lawn watering is not permitted. Permits are required for watering new lawns and treated lawns outside guidelines.
Watering Plants	No restrictions	No restrictions	Alternate day and time restrictions
Recreational Sprinkler Use	No restrictions	No restrictions	No restrictions
Filling Pools, Ponds, etc.	No restrictions	No restrictions	No restrictions
Fountains	Must recirculate water	Must recirculate water	Must recirculate water
Vehicle Washing	Anytime. Must have shut-off nozzle on your hose.	Anytime. Must have shut-off nozzle on your hose.	Alternate day with time restrictions. Must have shut-off nozzle on your hose. Permits are required for watering outside guidelines.

ENVIRONMENTAL INDICATORS

Old stumps and roadways can be seen at the bottom of Guelph Lake.

Photo by Chris Seto, Guelph Mercury

PUBLIC CONDITIONS REPORTING

Current status of Outside Water Use Program indicators (September 5 - 11, 2012)

	1-month precipitation (% of normal)	3-month precipitation (% of normal)	Weeks without rain	Eramosa River flow (% of min. low flow)	Water storage capacity (avg.)	Avg. daily production (avg.; % of last summer average)
This Week	92% 0	64% 1	0 0	41.8%* 2	83% 0	104.01%
Level 1 Yellow Threshold 1	80%	80%	2 weeks	0.77 m^3/s (70%)	75%	n/a (used to contextualize other indicators)
Level 2 Red Threshold 2	60%	60%	3 weeks	0.55 m^3/s (50%)	65%	n/a

*** Eramosa River Flow – taken September 12, 2012**

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OUTSIDE WATER USE BY-LAW REVIEW

Overview:

- Initiated in early 2013 to evaluate community response to drought vs. current needs and social norms
- Multi-phased engagement process
- Assessment of City Operations Response and Protocol Development
- Revised bylaw endorsed Mar 2014
- More information available at: www.guelph.ca/owureview

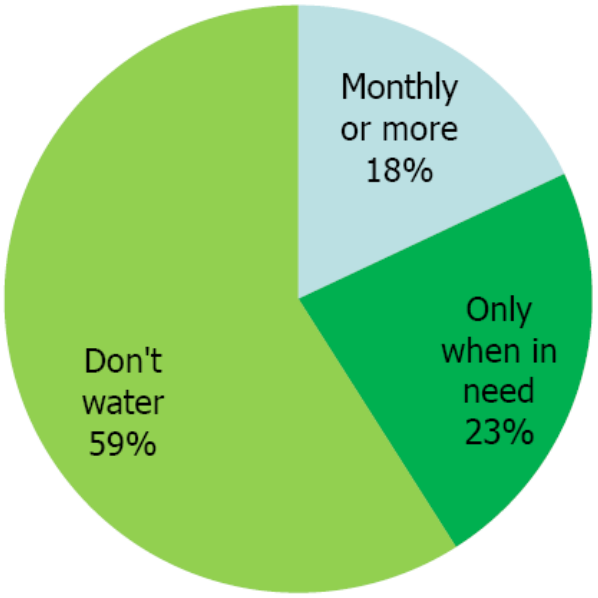
SOCIAL RESEARCH & BENCHMARKING

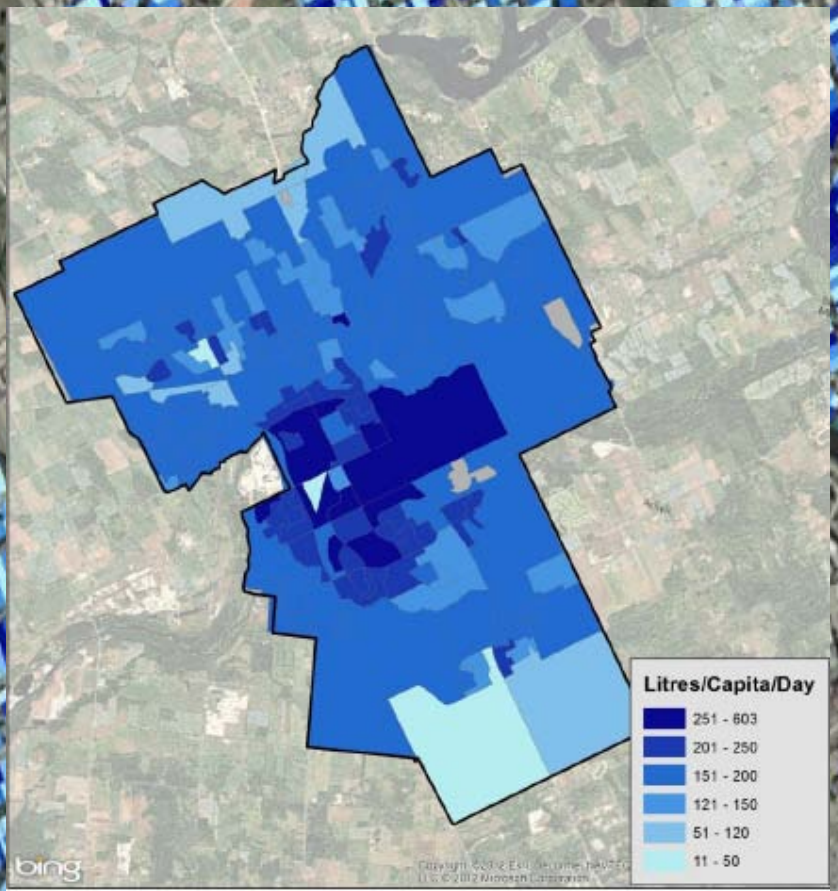
Lawn Watering Frequency Compared to 5 years ago	**Total**	**High water users**	**High per capita**
		$300m^3$+	275 Lcd+
More	3%	1%	3%
Same	42%	49%	44%
A little less often	19%	16%	14%
A lot less often	36%	34%	39%

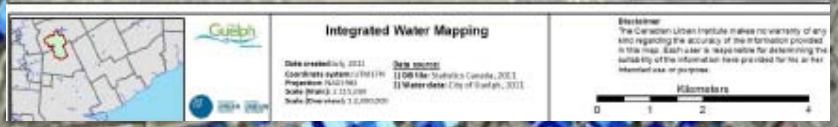
Source of Awareness

- Newspaper 49%
- Billboards/Signs 36%
- Radio 27%
- Guelph Web Site 11%
- Other 9%

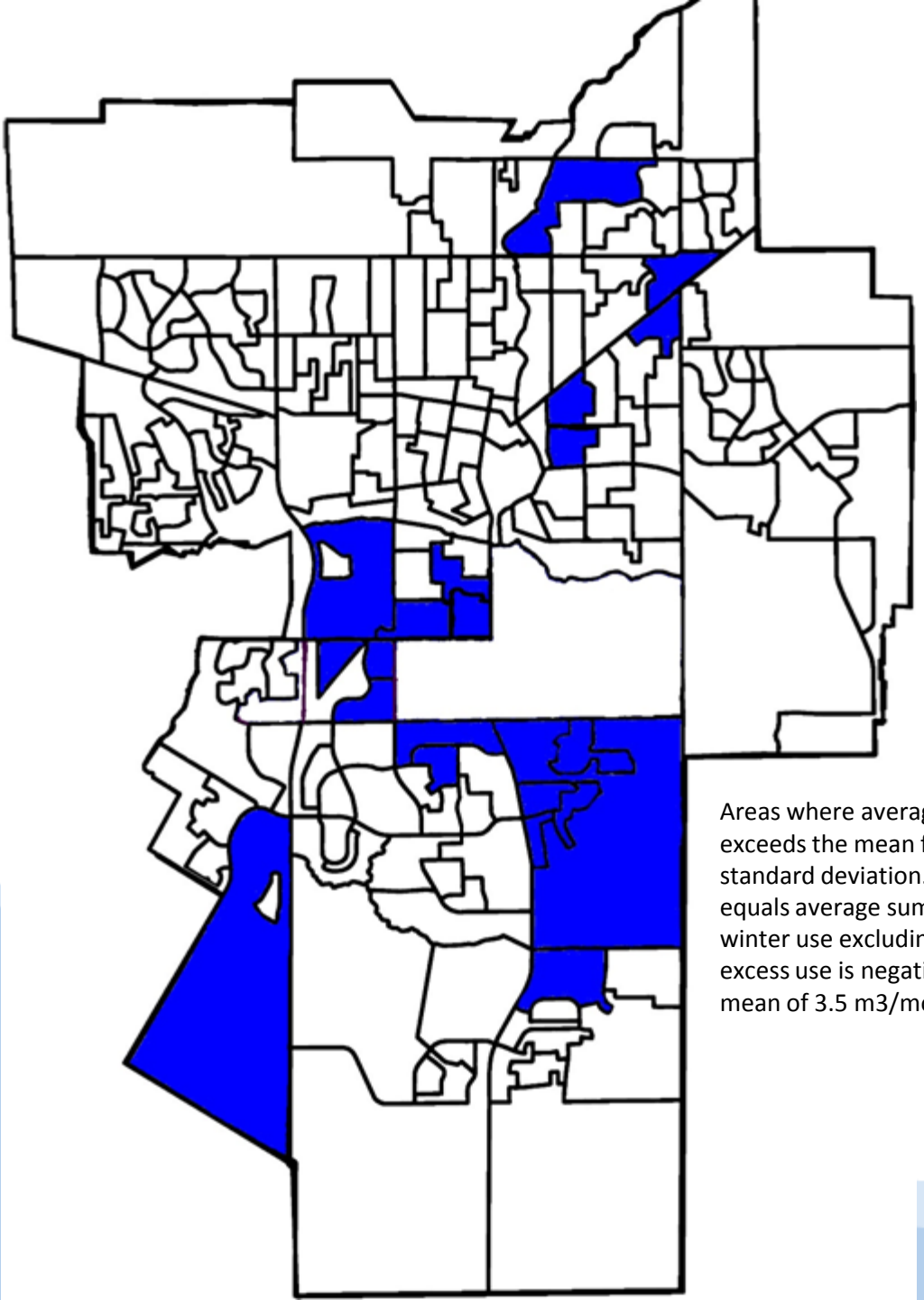
Lawn Watering Frequency

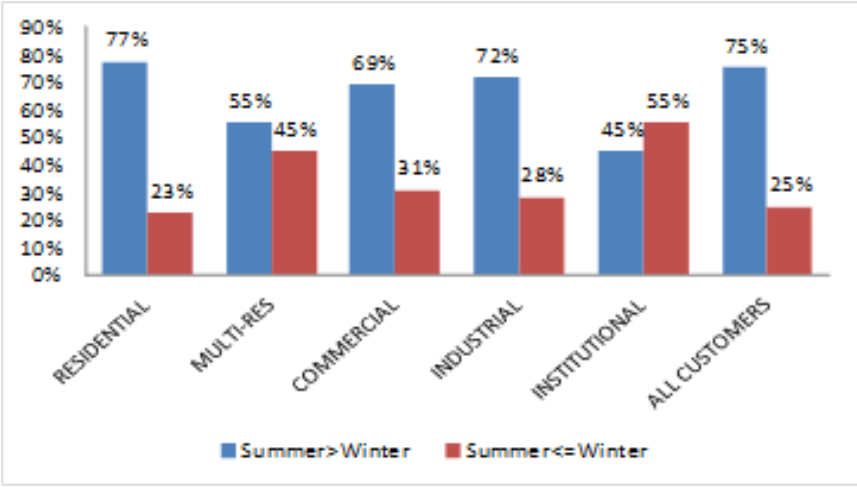



Litres/Capita/Day
251 - 603
201 - 250
151 - 200
121 - 150
51 - 120
11 - 50
bing


Integrated Water Mapping
Kilometers
0
1
2
4

PEAK DEMAND: ASSESSING REDUCTION OPPORTUNITIES





Areas where average EXCESS SUMMER use exceeds the mean for all DAs by one standard deviation. Excess summer use equals average summer use minus average winter use excluding observations where excess use is negative. (5.4 m3/mo vs DA mean of 3.5 m3/mo). M.Fortin (2013)

PEAK DEMAND: ASSESSING REDUCTION OPPORTUNITIES

Q.18 By what means do you water your lawn?

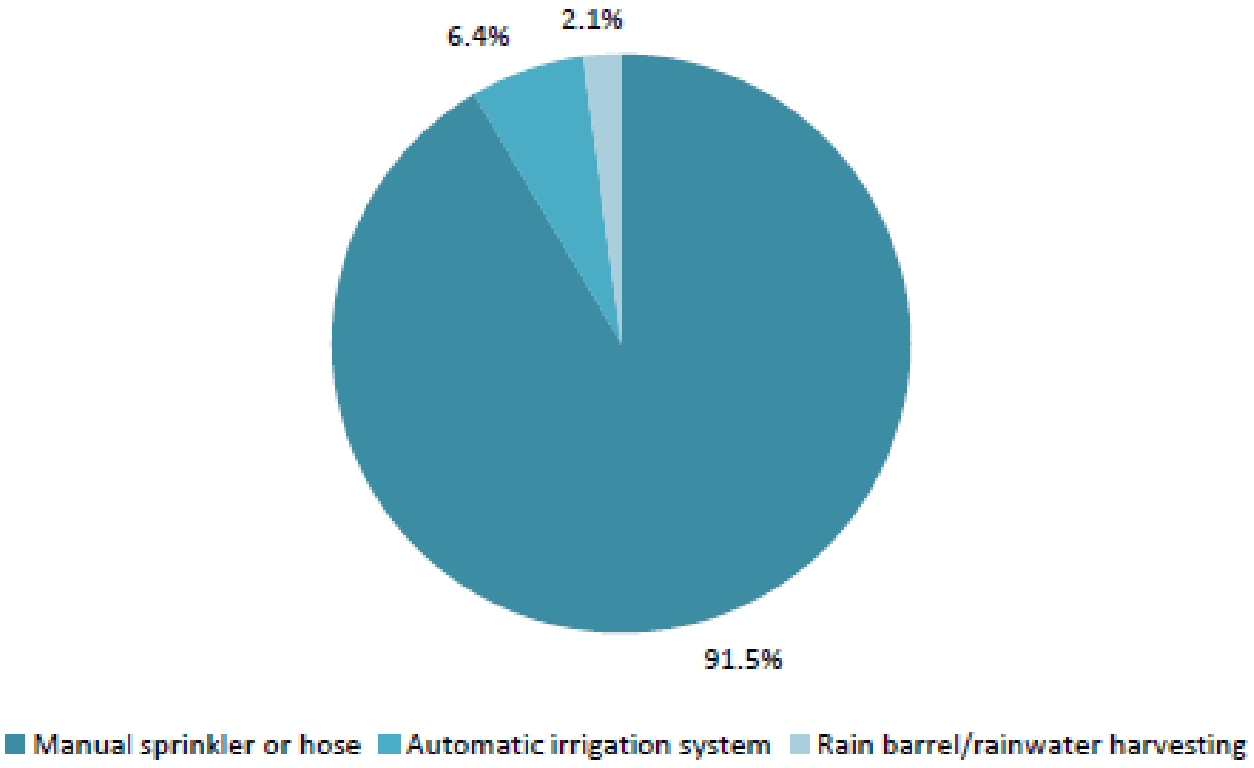


Figure 11: Method of Lawn Watering (n=141)

PEAK DEMAND: ASSESSING REDUCTION OPPORTUNITIES

Q.20 If the City were to offer an audit service to help irrigation system owners reduce their system's water use, would you participate in such a service?

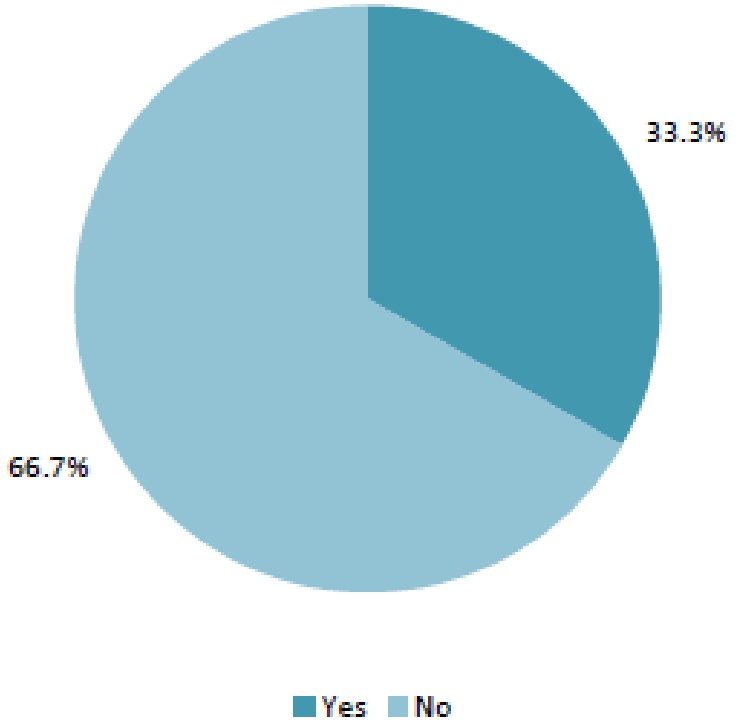


Figure 13: Likelihood of Irrigation System Owners to use an Audit Program to Reduce Water Consumption (n=9)

PEAK DEMAND: ASSESSING REDUCTION OPPORTUNITIES

Q.19 If the City provided a rebate to install a device on your existing automated sprinkler system to help reduce water use or potential for leakage, would you consider installing such a device?

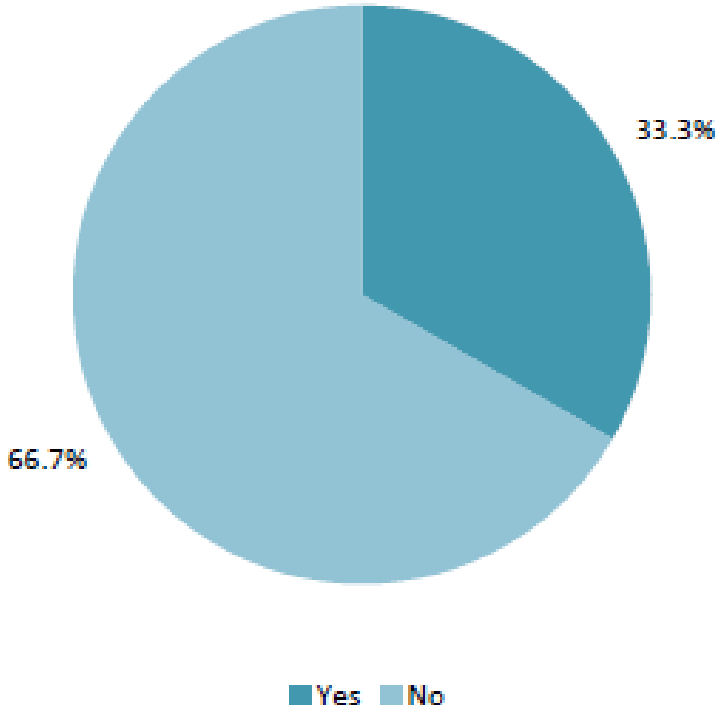


Figure 12: Likelihood of Respondent Consideration to Install a Device to Reduce Water Loss from Automated Sprinkler Systems if Given a Rebate (n=9)

PEAK DEMAND: ASSESSING REDUCTION OPPORTUNITIES

Q.21 Would you be supportive of the City requiring specific design requirements, such as master control valves to reduce water leakage, for property owners installing new automated sprinkler systems?

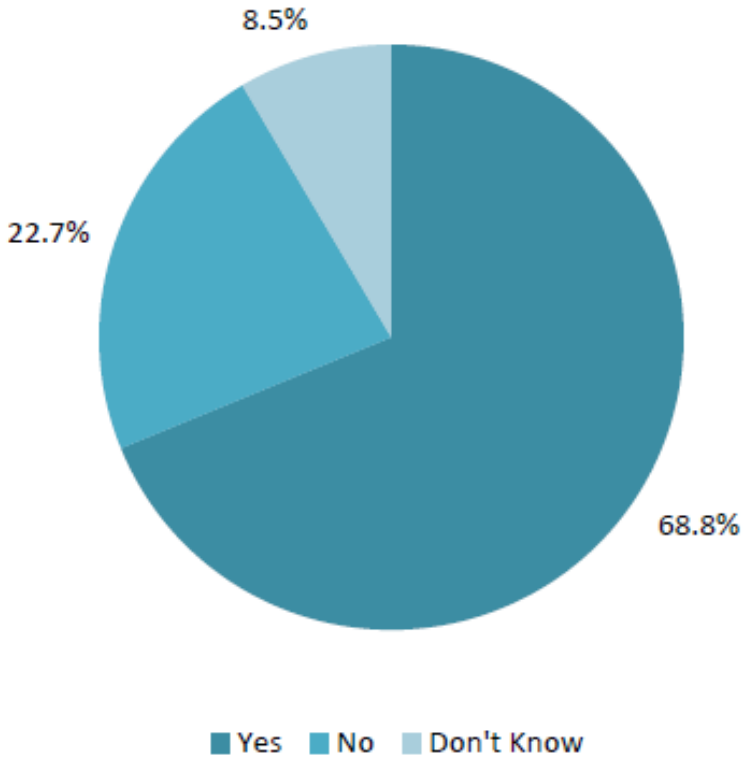


Figure 14: Respondent Support for Specific Design Requirements for New Automated Sprinkler Systems (n=141)

TAKE AWAYS

- Every Community and Individual Community's Needs are Unique – Avoid the Broad Brush
- Base need in something tangible to stakeholders
- Policy reform takes community champions, a strong business case and engagement
- Restrictions are but one tool
- Accept incremental wins and strive for continuous improvement
- Don't be afraid to tell you story and share your learnings

THANK YOU!

GUELPH WATER
OURS TO CONSERVE

For more information:
www.guelph.ca/ourstoconserve

Wayne Galliher, A.Sc.T.
Water Conservation Project Manager
City of Guelph Water Services
Wayne.Galliher@guelph.ca
Phone: 519-822-1260 x2106

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