

Rural Drinking Water in Newfoundland and Labrador

Exploring Solutions for Sustainable Rural Drinking Water Systems

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Outline

- ◆ Introduction to project and methodologies
- ◆ Survey findings and implications
- ◆ Next steps for the project

About the Project

What are we trying to do and why?



Our Research Project



- 💧 Risks and challenges influencing drinking water quality and availability
- 💧 Emphasis on communities of 1,000 residents or less in NL
- 💧 What is working, factors for success, possible solutions and future research

Major Components of Research



- ◆ Source water quality and quantity
- ◆ Infrastructure and operations
- ◆ Policies and governance
- ◆ Public perception, awareness, and demand

(Annual Report, 2012)

How?

- 💧 Literature Review
- 💧 Media Scan
- 💧 Legislation and Policy Review (DPSIR)
- 💧 Municipal Surveys and Consultations
- 💧 Case Studies





Source: KEDC, 2011

Kittiwake

Kootenays



Survey Results

Highlights



Respondents- Administrators Survey

- 209 Respondents- **46%**
Response Rate

- 119 - Municipalities

- 48 - LSDs

- 42 - anonymous / did not
answer question

- 42%** of all COTOLS
answered the survey

- Regional coverage of
municipalities/LSDs
who answered survey:

- Avalon 18%

- Eastern 21%

- Central 29%

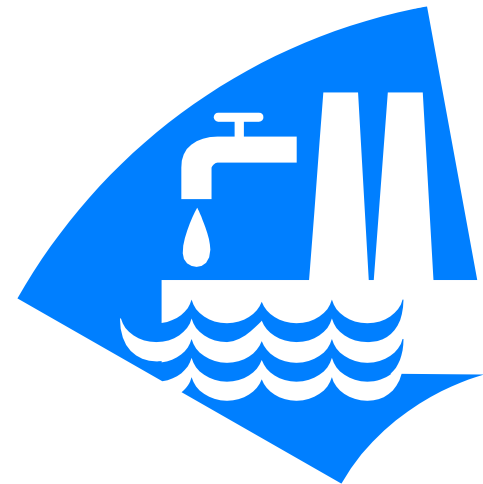
- Western 19%

- Northern 7%

- Labrador 6%

Respondents- Water Operators Survey

- **78** Respondents as of March 4, 2014
 - **60**- Municipalities
 - **15** - LSDs
 - **3** - anonymous / did not specify



Water Services



Water Service- All Municipalities/LSDs (Administrators)

Question	All	1000 or less	1000 +
Operate a water system for residents?	83%- Yes	78%- Yes	94%- Yes
If no, why not?	58%- Not a priority	58%- Not a priority	50%- Not a priority
	54%- No \$ to install	54%- No \$ to install	50%- No \$ to install
	54%- No \$ to maintain	54%- No \$ to maintain	50%- No \$ to maintain



Boil Water Advisories



Boil Water Advisories – DOEC Data

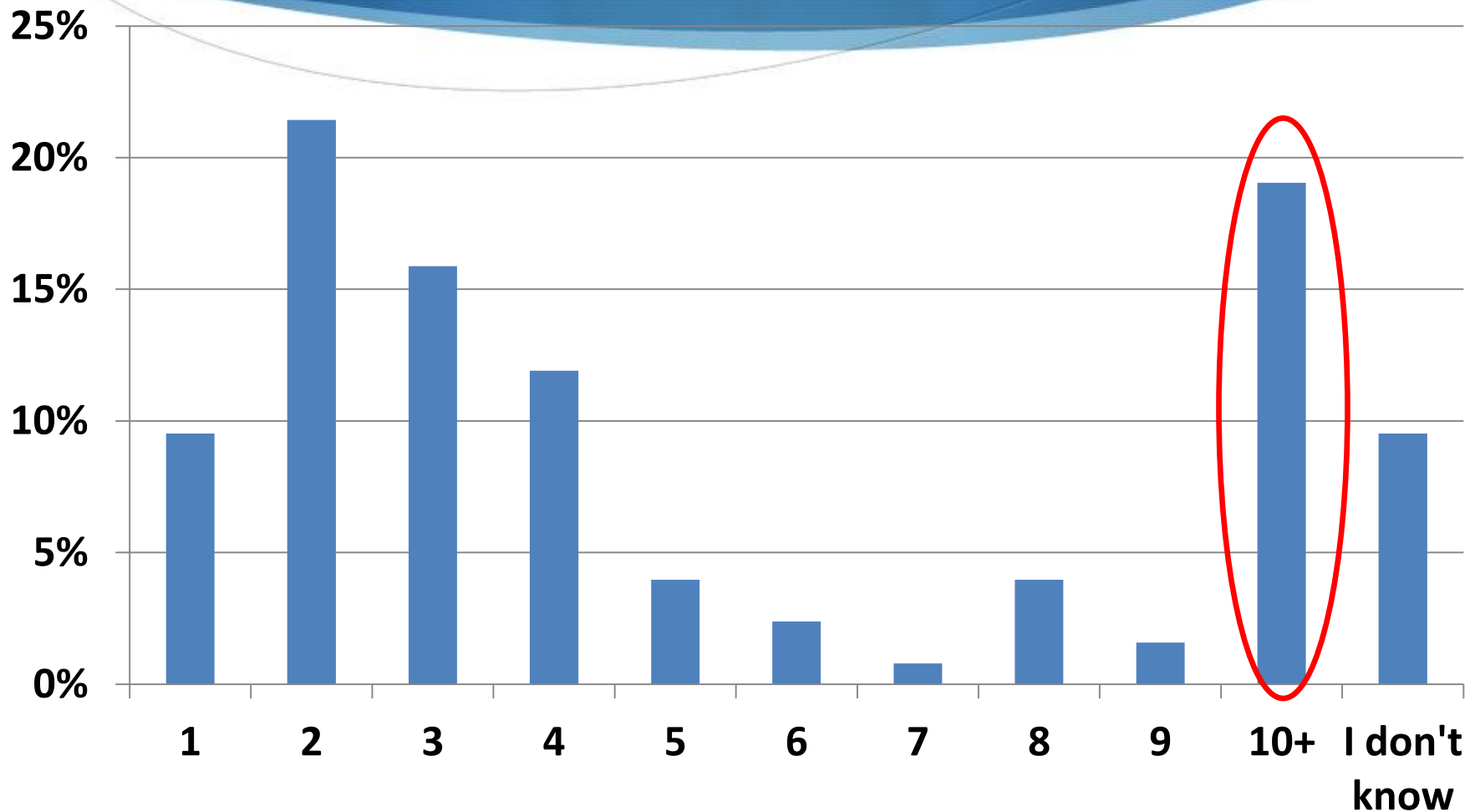
Boil Water Advisories (BWAs)

- July 29, 2013 - **256** BWAs affecting 184 communities in NL (Gov't of NL, 2013c)
- 96%** communities 1,000 or less
- 55%** of BWAs for communities 1,000 or less have been in place for 5+ years

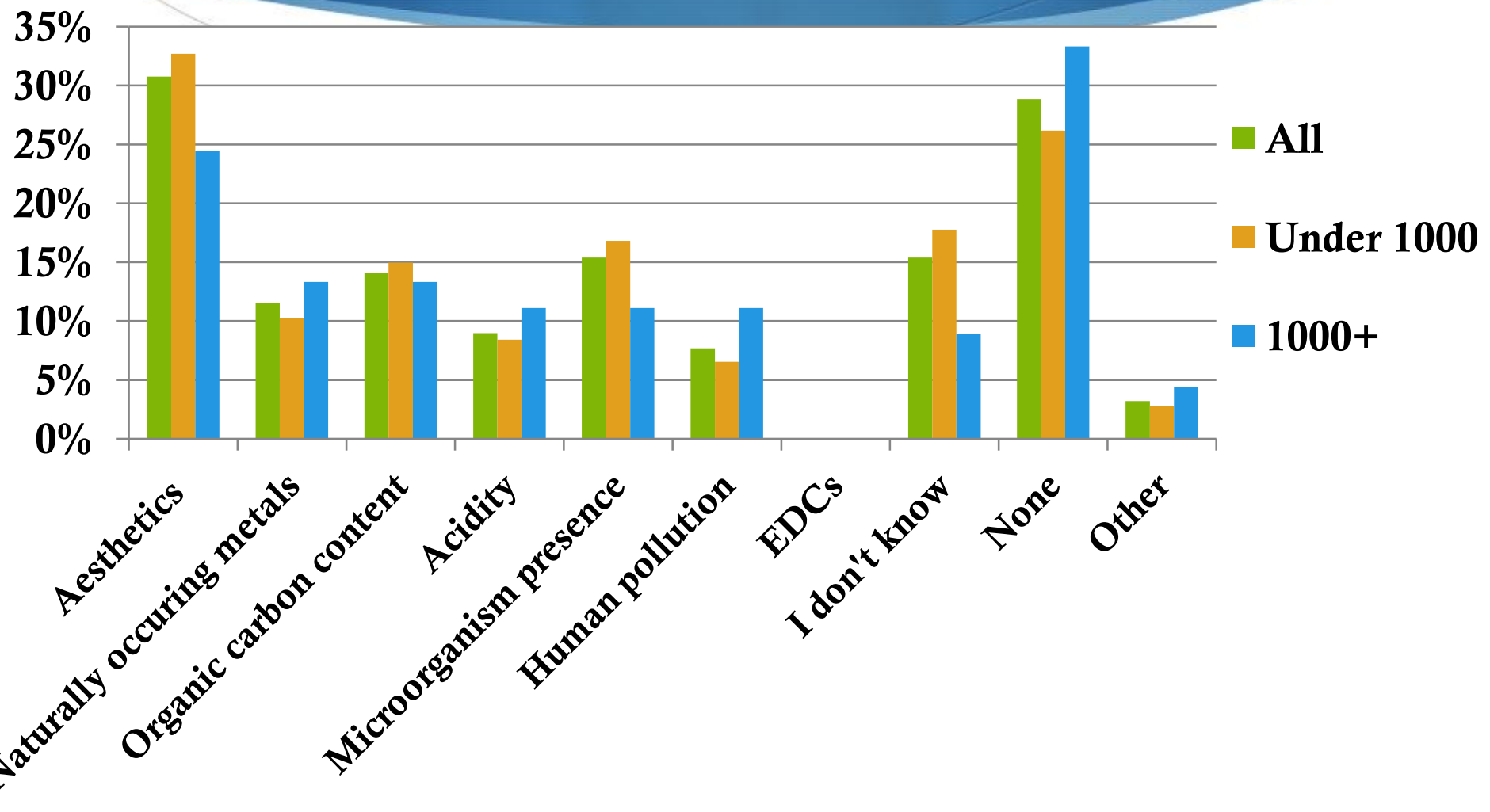


84% of respondents indicated they have had a BWA in last 4 years
(Administrators survey)

How many times has a boil water advisory been declared in your municipality/LSD over the last 4 years? All Municipalities (Administrators Survey)

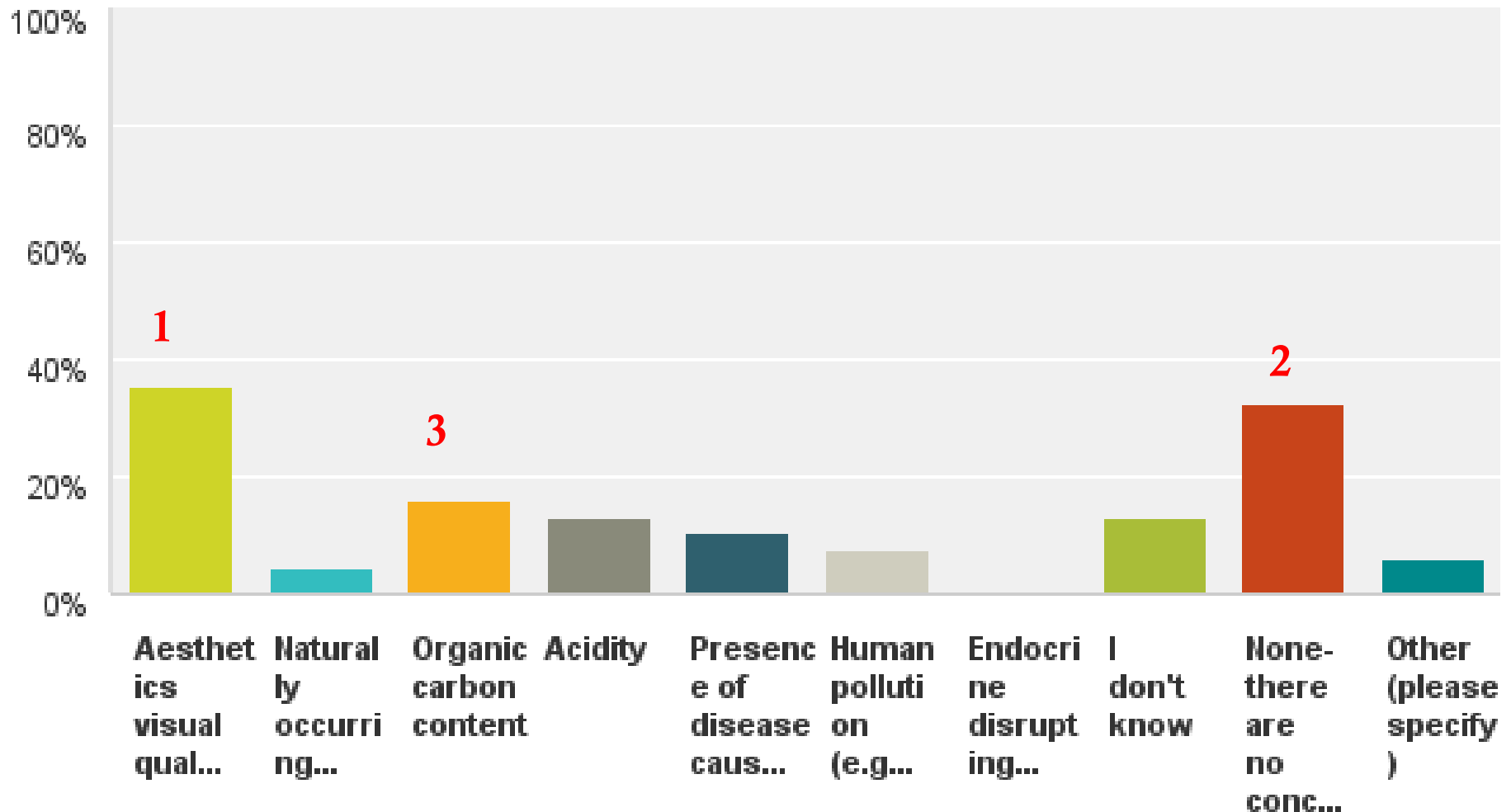


Which of the following are concerns for your water system? Choose all that apply. (Administrators Survey)



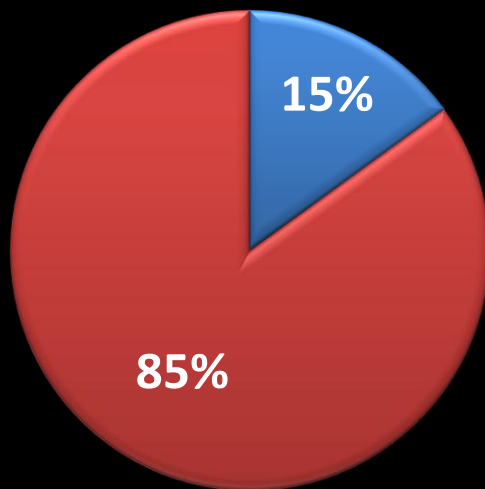
Which of the following are concerns for your drinking water system?

Municipalities/ LSDs (Water Operators)



Comparison with DOEC Data

Communities Reporting "No Concerns" Regarding Drinking Water System



■ Has not had recent issues

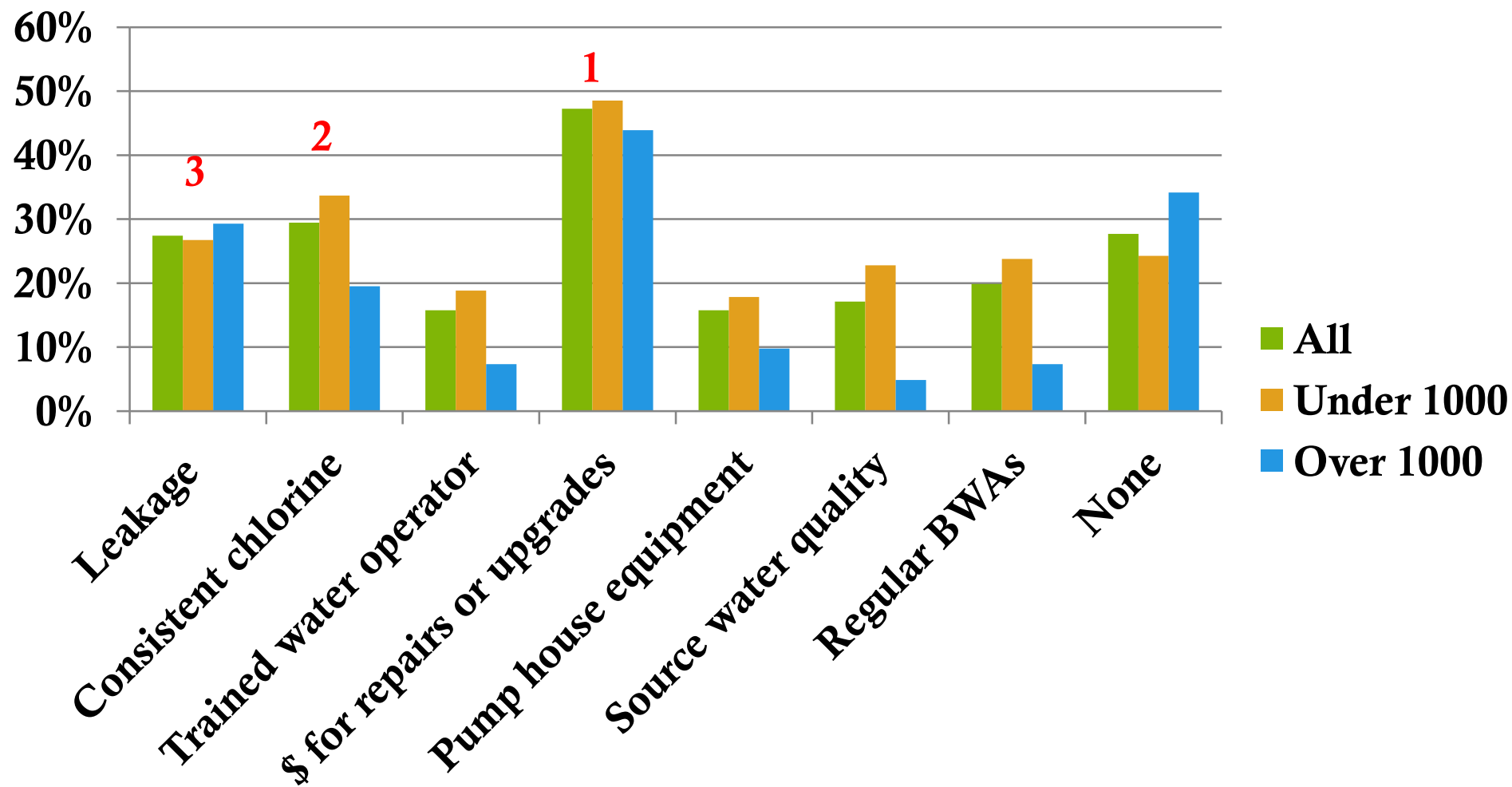
■ Has had recent issues

Another question asked if they have had HAAs or THMs in the past 4 years
➤ **59%** of those who said NO had exceeded the HAA or THM in the last 4 years

Infrastructure Issues



What challenges does your water system currently face? – All Municipalities/LSDs (Administrators Survey)



Infrastructure- All Municipalities/LSDs (Administrators Survey)

- ◆ Aging infrastructure
 - ◆ 20% of all municipalities/LSDs completed work in the 1970's or earlier
 - ◆ 22% of all communities of 1,000 or less completed work in the 1970's or earlier
- ◆ Need for repairs and upgrades
 - ◆ 68% with 1,000 or less
 - ◆ 74% with 1,000+
- ◆ Financial barriers to upgrades



Source: Paula Dawe, P. Eng

Water Operator Education, Training and Certification

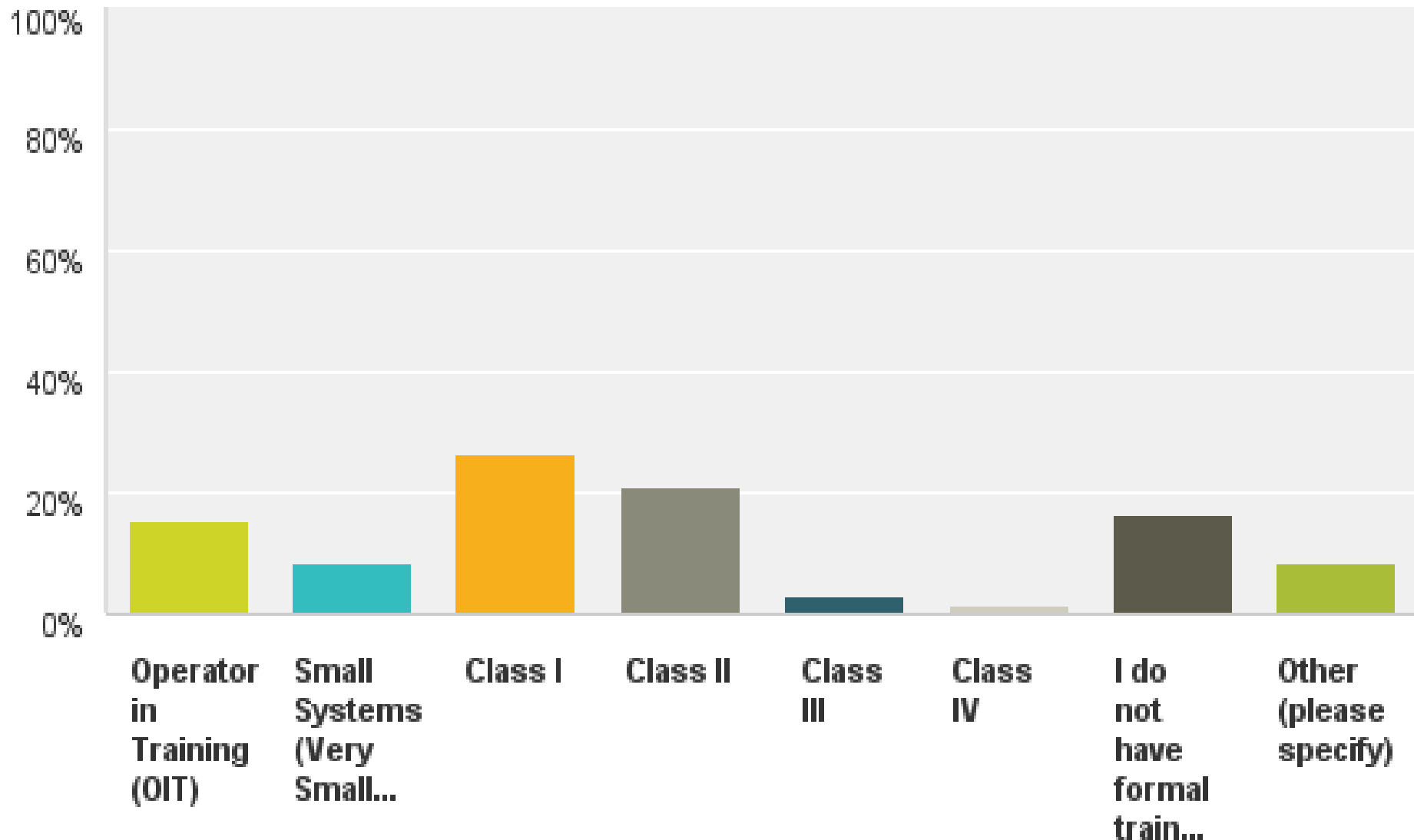


Water Operator Training – All Municipalities/LSDs (Administrators Survey)

Question	All	1000 or less	1000 +
Position of Water Operator	53%- Paid Full Time	39%- Paid Full Time	91%- Paid Full Time
Operators highest level of training	28%- None	32%- None	16%- None
Is the level of training an issue?	7%- Yes	8%- Yes	7%- Yes
Maps/blueprints of all infrastructure?	48%- Yes of all	48%- Yes of all	53%- Yes of all

50% of LSDs have a volunteer water operator vs. 3% for municipalities

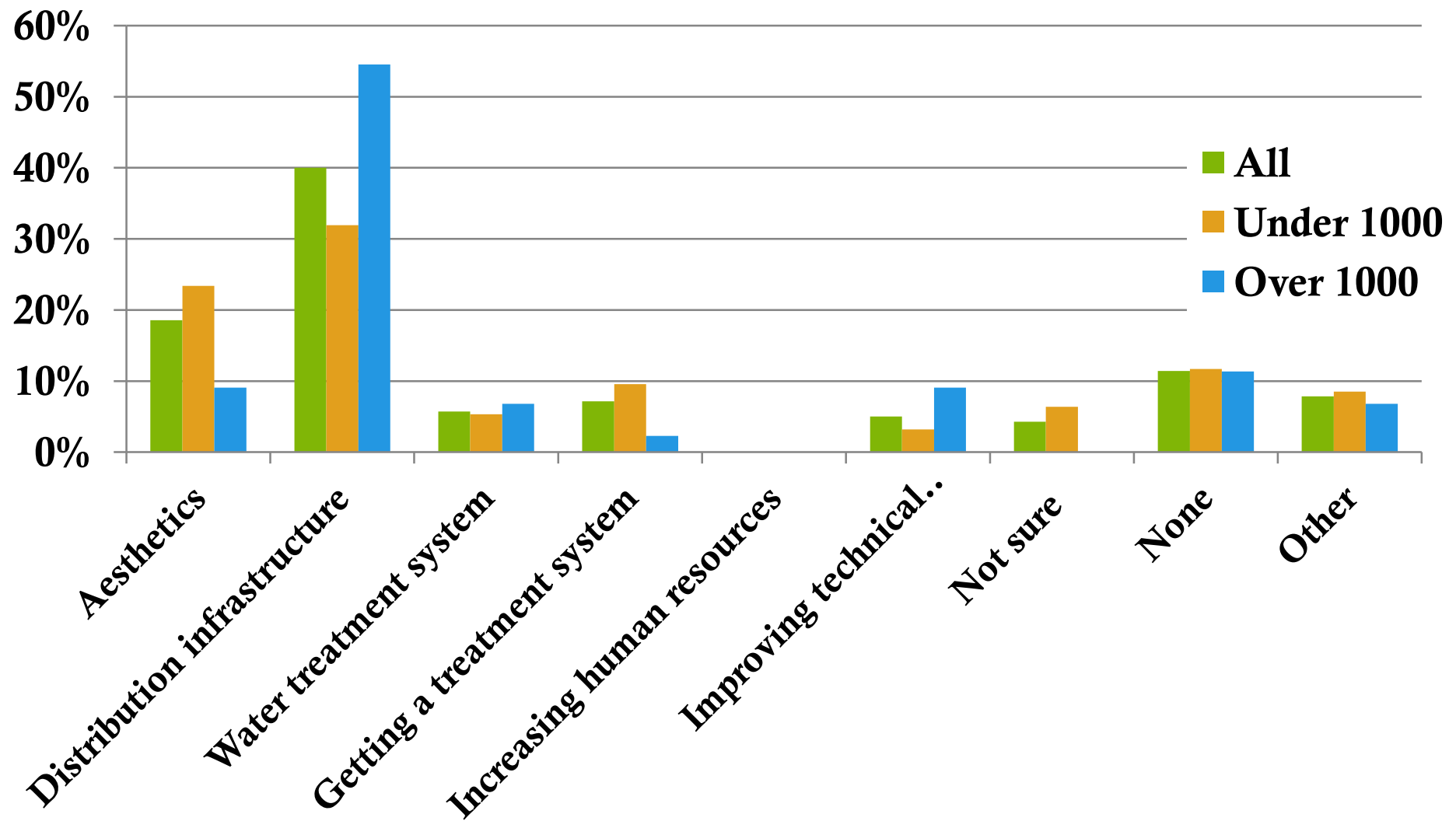
Highest Level of Training Indicated- All Municipalities/LSDs (Water Operators Survey)



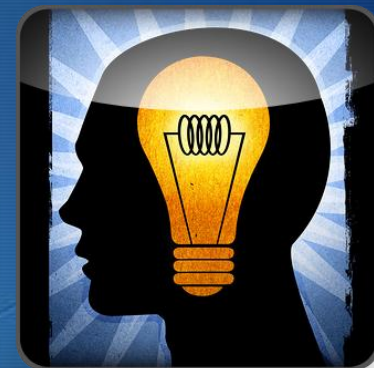
Moving Forward



What should be the highest priority for improving drinking water quality in your community?- All Municipalities/LSDs (Administrators Survey)



Solutions Undertaken



- ◆ **Source:** New wells; Dams; Moving intake; Regional approach
- ◆ **Filtration:** Sand screen at inlet in pond; Water filtration gallery
- ◆ **Treatment:** PWDU; MIOX; New/upgraded chlorination/booster systems
- ◆ **Pump upgrades**
- ◆ **Management and Operations:** Proactive leak detection; Automated monitoring systems (e.g. SCADA); Studies; Training council and town staff in water operations

New things that haven't worked...

- ◆ System treatment options too complex for operators to maintain/poor maintenance
- ◆ Poor production from drilled wells
- ◆ Lack of monitoring to ensure proper installation and testing
- ◆ New equipment not working
 - ◆ Mud deposits in regulators, etc



Next Steps



- ◆ Analysis of Water Operators

 - Survey

- ◆ Drinking Water Policy

 - Workshop

- ◆ Case study interviews and reports

- ◆ Targeted literature reviews

 - ◆ Cost effective DBP solutions for rural systems

 - ◆ In home treatments

 - ◆ Health impacts in relation to NL

- ◆ NL/BC comparative project-Focus group

- ◆ Reporting back

Thank you!

And stay in touch!

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GRENFELL
CAMPUS



Funding support
from the Harris
Centre – RBC
Water Research
and Outreach
Fund is gratefully
acknowledged

Closing Discussion

- ◆ Any questions?
Comments? Concerns?
- ◆ Are any of you from rural communities?
 - ◆ What kinds of challenges does your water system face?
 - ◆ Solutions?
 - ◆ Can our research help you?