

CLEAN WATER NOW!

Tottenham
Water Quality Survey

November 2019



CLEAN WATER NOW! TOTTENHAM WATER QUALITY SURVEY

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TOTTENHAM WATER QUALITY SURVEY



Representatives from Tottenham-Water discuss the preliminary results of the Tottenham Water Quality Survey.
Photo: Dani Lindamood

water quality issues in Tottenham, the role public offices and officials have played to date in addressing these water issues, and the efforts of Tottenham-Water to advocate for higher levels of transparency and action.

STATEMENT OF INTENT

"The intent of collecting and publishing the results of our independent survey is to share important information with the residents of Tottenham and to share resident experiences with the whole of New Tecumseth. We believe this will compel all levels of government to both assess the issues around our municipally supplied drinking water and act to fix these issues without further delay. Our intent is not to cast specific blame through sharing this information, but to create conditions for accountability & action by demonstrating the deep impact of Tottenham's water quality issues on its residents. In the short-term, we hope this will lead to an unbiased, independent health study on the potential health & lifestyle impacts of our town's drinking water supply and in the long-term, the creation of a culture of communication & transparency between the multiple levels of government involved in this issue and the residents which it affects on a daily basis. We also seek to ensure that this issue is assessed, investigated, and managed in such a way that any citizen or other interested party can have access to any information – past, present, or future – that may be relevant to our local water quality, including the specifics of how and when these water quality issues will be resolved. Ultimately, our intention is for the sharing of these survey results to lead to clean, safe, reliable drinking water for every single resident in this community and beyond."



Representatives from Tottenham-Water at the Town of Tottenham Conservation Area pond.
Photo: Tottenham-Water

- Tottenham-Water

EXECUTIVE SUMMARY

Residents of Tottenham, Ontario have lived with water quality issues for more than a decade, but their experience with the local water supply has never been captured or analyzed. Tottenham-Water, a non-profit advocacy group formed in 2016, sought to capture these experiences with the "Tottenham Water Quality Survey" which asked Tottenham residents about various dimensions of their awareness, experiences, and interactions with Tottenham's water and those who manage it. This document explores the survey results and reflects on the potential implications of this information.

SURVEY INFORMATION

- 63 questions (appended)
- Responses collected online from July 31st - October 21st, 2019
- 455 surveys analyzed
- 100% completion rate

SUMMARY OF RESULTS

Overall, a majority of respondents consistently report experiencing problems with and concerns over Tottenham's water quality. This was consistent across all categories. Awareness of the general water quality issues in Tottenham with trihalomethanes (THMs) is evident amongst respondents (*see Section II, i*), but actions to reduce exposure to THMs are not as consistent (*see Section II, ii*). Respondents self-report both health concerns for themselves and their household members (*see Section II, i & ii*) and damage to property (*see Section II, iii*). Respondents are uniformly dissatisfied with the management and governance behind Tottenham's water quality issues, including displeasure with communication from public officials on various water quality issues and proposed solutions (*see Section II, iv*). Respondents shared further concerns through free responses at the end of the survey, giving deeper voice to the survey data (*see Section II, v*). Cross-tabulation of survey responses reveals interesting socio-economic, gender-based, and health implications of the Tottenham Water Quality Survey. A discussion of the implications of these results follows from the analysis.

SUMMARY OF IMPLICATIONS

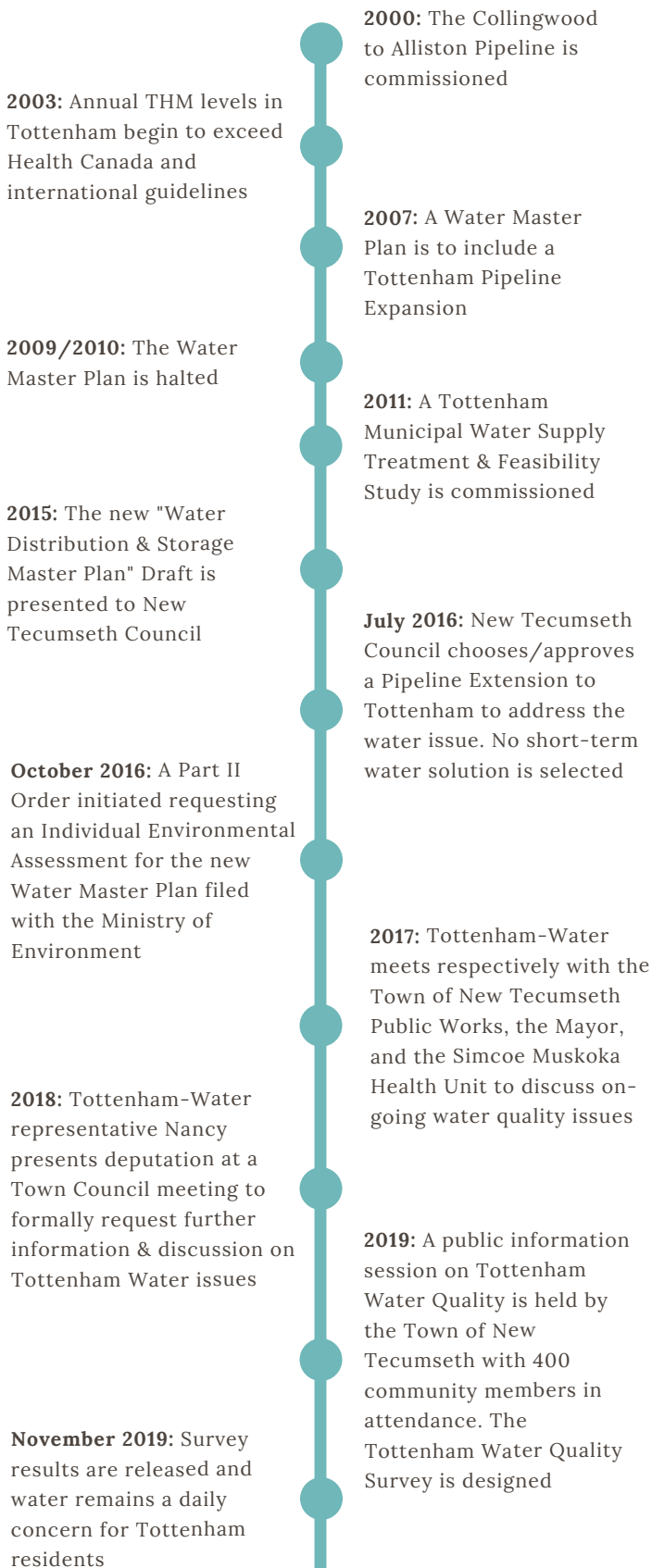
- Health concerns are prevalent amongst respondents and may be hard to identify due to the disaggregated nature of Tottenham residents' health data across southern Ontario medical institutions
- Perceptions of and experiences with water quality in Tottenham are in conflict with provincial and federal drinking water guidelines
- Perceived water quality issues are creating economic burdens on Tottenham residents
- There are gendered and socio-economic implications to the data
- Residents have lost confidence and trust in multi-level government officials & offices
- Residents may be entitled to reparations

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I. BACKGROUND & PROBLEM CONTEXT



Tottenham is a small community in southwestern Ontario about an hour northwest of Toronto, home to more than 5,100 people.¹ At least since 2003, issues with water quality have persisted in Tottenham and residents have had to pay for undesirable qualities of drinking water supplied by the Town of New Tecumseth. This water is considered potentially dangerous due to high levels of trihalomethanes, better known as THMs. First recognized in 1974, THMs are a disinfection by-product formed when chlorine is used to disinfect drinking water containing natural organic matter. Over 40 years of scholarship on THMs has not led to consensus on the potential health risks of THM exposure, though some studies present viable hypotheses for health effects such as cancer and increased reproductive risk concerns.² Canadian drinking water quality guidelines from Health Canada reflect the international consensus for a cautious approach to water treatment for THMs. Figure 1 illustrates annual THM levels in Tottenham from 2003-2017 which exceed maximum allowable levels 11 out of 15 years under Canadian guidelines.³ High iron levels in the community water supply may also be of concern,^{3, 4} but potential health impacts from THM exposure remain of primary interest.

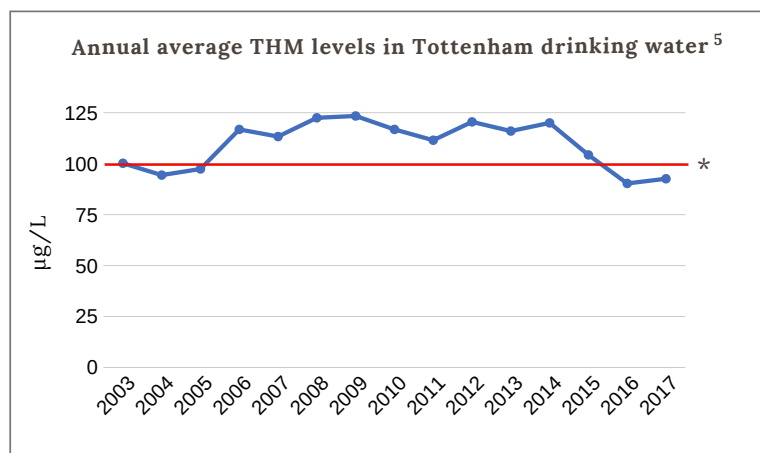


Figure 1: Annual average THM levels from quarterly samples in Tottenham drinking water from 2003-2017

* Limit of 100 µg/L for THMs from Health Canada³

II. SURVEY RESULTS

i. Perceptions of & Experiences with Water Quality

Overall, 90%* of all respondents have experience with undesirable water colour. This is of particular concern as "colour is directly related to almost every other drinking water quality parameter"⁶ and inadequately addressed water colour "[m]ay interfere with disinfection."³ Table 1 summarizes respondent experiences with different water quality parameters including colour, smell, and sediment. The majority of these data show water qualities are in conflict with national and provincial standards for the provision of drinking water, but the high occurrence of problems with water colour in particular signify technologies and methods at use in New Tecumseth may not sufficient to treat water to drinking water standards. **89 respondents (20%) have not seen clear water in their taps** and Figure 2 below explores other water smells reported by Tottenham

residents which further qualifies negative experiences with and perceptions of water quality in Tottenham. These are also described as undesirable water qualities by Canadian drinking water standards.³

Table 1. Experiences with water quality

Have you experienced...		
Yellow water	400	88%
Foggy / cloudy water	370	81%
Chlorine smells	339	75%
Silt, sand, or sediment while filling	311	68%
Silt residue after draining	280	62%
Orange water	276	61%
Brown water	267	59%
Other smells	251	55%
Slime residue	246	54%
Sandy residue after draining	237	52%

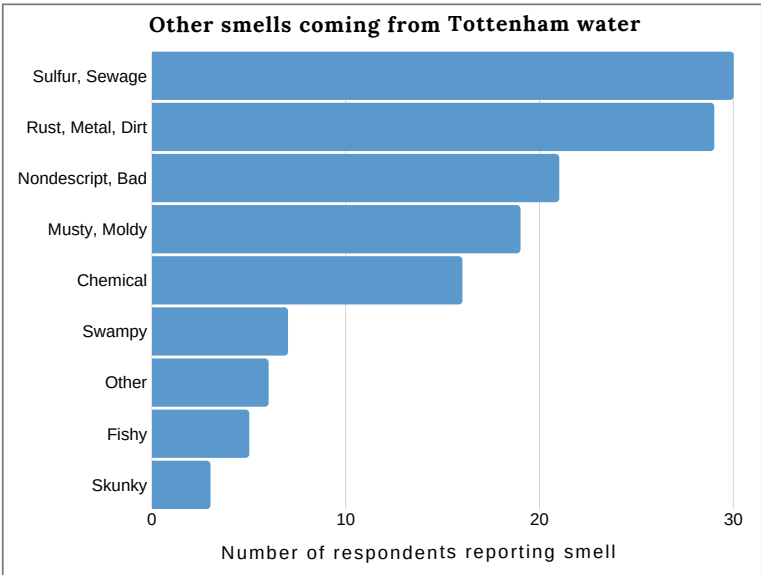


Figure 2. Other water smells experienced by respondents

82%

feel Tottenham's drinking water is not safe

7%

feel Tottenham's drinking water is only safe sometimes

6%

are unsure if Tottenham's drinking water is safe

95%

have doubts about the safety of Tottenham's drinking water

* All percentages are calculated based on 455 respondents unless otherwise specified

PHYSICAL HEALTH

While this survey was not designed to give scientifically robust insight into specific physical health indicators, it does capture levels of health concerns amongst respondents in relation to the existing water quality issues. At least **207 respondents (46%) believe they or a family member may have experienced health issues related to the water quality issues in Tottenham**. Hair loss (30%) and skin issues (26%) are the most commonly reported. Cancer (12%) asthma (11%), autoimmune disease (8%), miscarriage (7.5%), and thyroid disease (7%) are the next most commonly reported.

In addition to this, anecdotal evidence supports the perception that water quality issues in Tottenham may have real health impacts. One resident shared, "We lost our son in March. Originally, he had suffered from Cystic Fibrosis, but he drank 5-6 large glass of water daily and

we used the tap water from the sink to fill his machines that assisted with his breathing. His health was not bad, but took a huge decline not long after moving to Tottenham last September. I do now believe the drinking water is most likely to blame, knowing that his immune system was too weak to defend him from any and all [contaminants] in the water in Tottenham."

While such anecdotes do not prove causation, they do illuminate the depth of health concerns amongst Tottenham residents and contextualize the need for a deeper investigation into local health concerns. Because Tottenham is home to many people who commute for work, residents seek and receive their healthcare in many places across southern Ontario, making it difficult to identify if levels of various diagnoses are within a normal range in the community of Tottenham.

MENTAL HEALTH

The particular mental health indicator of "stress or anxiety" was explored in this survey. 269 respondents (59%) feel "a great deal" or "a lot" of stress about the water quality issues in Tottenham while **334 (73%) "always" or "usually" have concern over impacts the water might have on household members' lives**.

A combination of demographic information from respondents, survey responses, and free response data reveals **the mental burden of stress** around water quality impacts **may have a gendered dimension, where women are disproportionately affected**. First and foremost, at least 70% of respondents (320) are women. This could demonstrate the elevated level of concern women have on local water issues compared to men in Tottenham. Additionally, 53% of women (169) reported high levels of stress

versus 46% of men (58), illustrating this potential gender gap in stress levels (see Appendix C, Table 8).

Finally, one respondent noted, "I cannot express how much this issue is affecting my life and my family. I have 2 young children that I no longer give baths to and only allow quick showers. And all the while I am full of anxiety and panic watching them bathe in this filthy water. I cannot sleep sometimes worrying about this. I feel like every time I or my family touches the water that we are getting infected with chemicals and disease." This was one of at least 18 other free response concerns around health, half of which expressed similar concerns over the health and safety of family members, pets, and other community members. Anxiety and stress over economic burdens add to the complexity of mental health impacts. **The mental and emotional burden of Tottenham's water issues on residents cannot be overlooked.**

AWARENESS

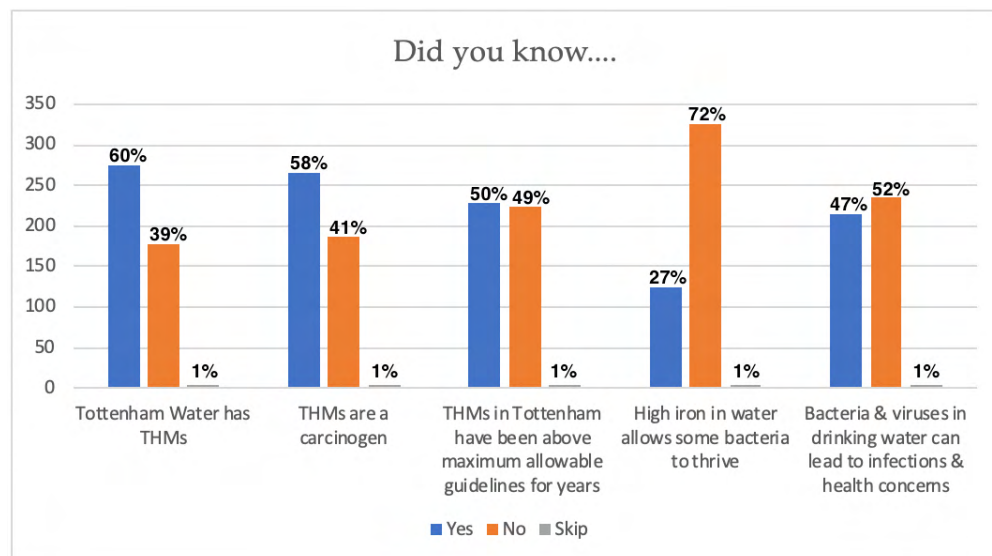


Figure 3: Summary of water issue awareness

As seen in Figure 3, about 60% of respondents are aware of THMs in Tottenham water and that THMs are potentially carcinogenic. Awareness about the longevity of high THM levels in Tottenham declines with about 50% awareness amongst respondents. The potential implications of high iron for health are not well-known at 27%. Under half of respondents are aware bacteria & viruses in drinking water can negatively affect health.

Another awareness concern raised by multiple respondents throughout the free response sections of the survey included awareness issues amongst newer residents. One respondent shared, **"When moving to Tottenham November 2018, no one made us aware that there was any water issues. This should be mandatory for all new residents or potential residents to know and learn about what they're in store for. It's unacceptable. It needs to be addressed more officially."** This perspective is reflected in the data as awareness levels on Tottenham water quality issues are much lower amongst those who have been residents for 5 years or less (see Appendix C, Table 7). Respondents further qualified concerns around nondisclosure from developers, particularly noting health concerns and economic damages resulting from the water quality issues in Tottenham. Additionally, the data reveals the realities and implications of a nondisclosure issue are far-reaching and hard to quantify. It includes but is not limited to financial considerations and potential physical & mental health issues.



Homes in a new-build housing development in Tottenham.
Photo: Dani Lindamood

There is an additional aspect that may impact awareness levels which arose in discussion with Tottenham residents concerning tenure or ownership status of private households. Renters, both recognized under census data and informal tenants, may not have equal access to any information being shared by mail notices to households. While this was not quantified in this survey, it is important to recognize communication methods for water information that may impact awareness or health should be inclusive and consider the diversity of living situations amongst community members.

ii. Water Use

WATER FILTRATION

A little under half of respondents (196) have purchased a water filtration system for their home. Filtration methods can be seen in Table 2 to the right. It is noteworthy that **some self-reported filtration methods are not necessarily effective for treating water** (i.e. water softener, boiling water, some refrigerator filters). This means some believe they are filtering water to safe consumption levels, but may not be in reality.

Single-use and bulk bottled water are also widely used as filtered options amongst respondents with 175 (42%) reporting usage over 50 single-use water bottles a month.

Table 2. Self-reported filtration methods

Filtration Methods		
In-home system	243	53%
Bottled (purchased)	150	33%
Brita / water jugs	148	33%
Refrigerator	19	4%
Reverse Osmosis	9	2%
Water Softener	9	2%
Carbon filter	5	1%
Stand-alone filtration unit	3	<1%
Boil	1	<1%

HOUSEHOLD WATER USE

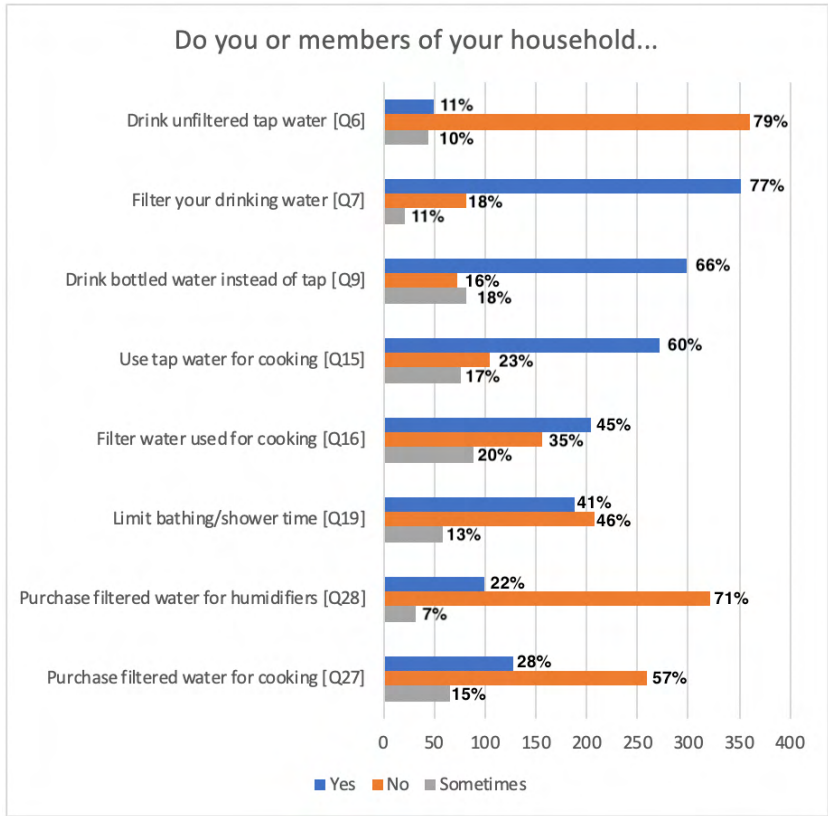


Figure 4: Summary of household water uses

In the summary Figure 4, a **large majority of respondents** can clearly be observed to **exercise caution around water use for direct consumption** with 79% who do not drink unfiltered tap water, 77% filter their drinking water, and 66% drink bottled water instead of tap water.

Respondents however **do not exercise the same degree of caution for other uses**, such as bathing, cooking, and for household appliances where **rates of cautious action fall below 42%**. This shows **Tottenham residents may not fully understand the implications of their water use**, such as increased exposure to THMs through water from sources other than drinking.

PETS

153 respondents or **a little more than half of pet owners do not allow their pets to drink tap water** whereas 136 people do. 184 respondents (56% of pet owners) said their pets drink filtered water and about half of pet owners (169) purchase filtered water for their pets' consumption regularly. Only 91 respondents were aware that some vets recommend pets drink filtered water until Tottenham's water issues are resolved, but the higher number of respondents already limiting their pets' exposure to unfiltered water shows **pet owners are exercising caution around tap water use for their pets.**

iii. Economic Considerations & Impacts

Data trends clearly show **respondents report impacts to personal property and elevated expenses** in connection to water quality issues in Tottenham. Table 3 summarizes negative impacts to possessions and Table 4 shows additional water costs reported by respondents. **Overall, 303 people (66%) have considered moving to due to the water quality** - an option not available to all residents.

Table 3. Negative impacts to possessions

Have you had negative impacts to possessions?		
Staining to fixtures / commodities	408	90%
Discolouration to laundry	338	74%
Washing machine	320	70%
Kettle	300	66%
Dishwasher	290	64%
Hot water tank	286	63%
Humidifier	228	50%
Ice/water dispenser in refrigerator	181	40%
Other	40	9%

Table 4. Economic considerations & costs

Additional water costs		
Purchase filtered water to drink	422	93%
Purchased a water filtration system for your home	206	45%
Purchase filtered water for cooking	194	43%
Purchase filtered water for humidifiers	131	29%

While specific estimates of total expenses cannot be directly drawn from the survey data, the figures to the right show expenditures for filtered water amongst respondents. Overall, 206 (45%) reported expenses from buying an in-home water filtration system and **418 (92%) believe the Town of New Tecumseth should offer a rebate** for such systems. As seen in Figures 5 and 6, these **costs can be significant over time.**

Some Economic Expenditures for Filtered Water

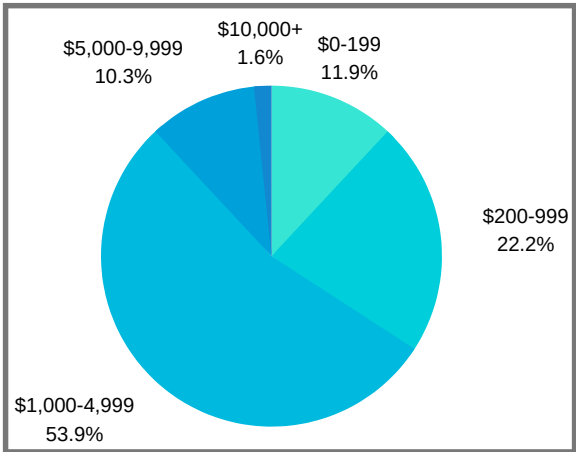


Figure 5: In-home water filter one-time expenses *

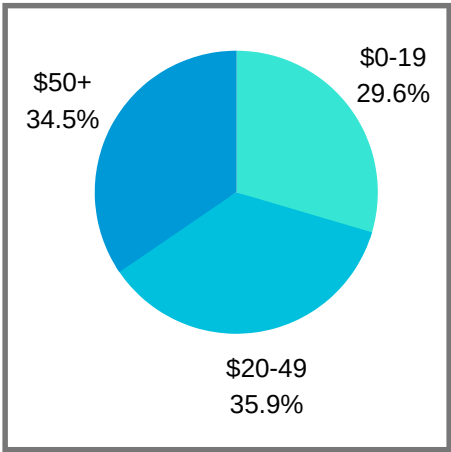


Figure 6: Monthly filtered water expenses *

*Figures 5 & 6 percentages are adjusted based on number of responses

ESTIMATES OF ECONOMIC IMPACTS

While this study did not specifically investigate all costs borne by respondents in connection to Tottenham water quality issues, there are numerous economic data points that show there may be significant economic burdens as a result of this issue. Figure 7 details some of the various one-time and on-going costs.

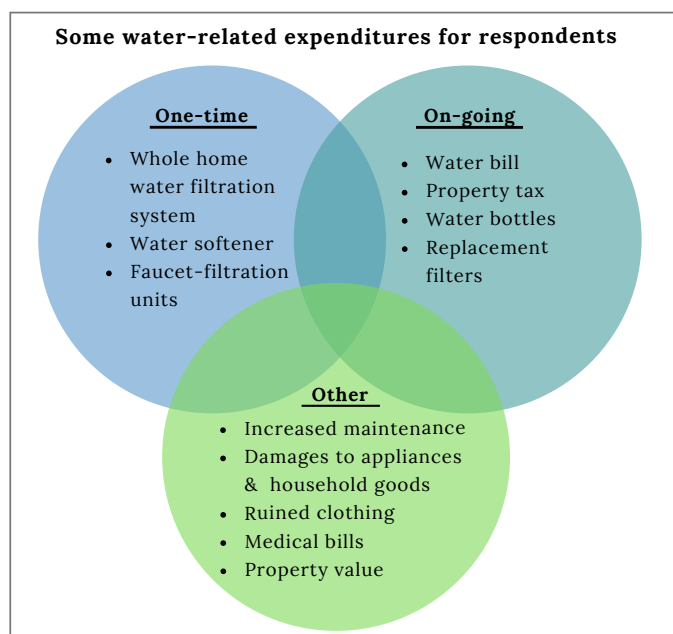


Figure 7: Some water-related expenditures for Tottenham residents

One dimension of these costs that is of particular concern is that many respondents are spending money twice for drinking water: paying once to the municipality through their water bill and again to businesses who supply filtered water. One respondent gave voice to this, writing, "This has caused me anxiety for the last few years. I have 3 children and pets. I can't afford to put in a water system in my home and I am buying big bottles of water every week to cook food and drink with. I'm spending money TWICE for water. That's unfair."

These tables only begin to detail conservative estimates of potential costs and economic impacts and do not consider additional costs from things like medical bills, additional travel that may be necessitated, or impacts to real estate values as **direct or indirect results of water quality issues which should be quantified in any future studies.**

SOCIO-ECONOMIC CONSIDERATIONS

Table 5 below compares household income against if respondents purchase filtered water. Percentages within the \$15,000 - \$29,999 income bracket indicates that **lower incomes may be linked to lower rates of purchasing water**, perhaps due to financial constraints. This is supported by one respondent who wrote, "Thank you for fighting for those of us who cannot afford to purchase bottled water or filtration systems." The data are insufficient to draw strong conclusions on levels of socio-economic impacts, but the data do warrant further consideration of equity issues in the economic burdens borne by residents during any future studies of Tottenham water quality impacts.

Table 5. Household income vs. purchase of filtered water

Household Income	Purchase Filtered Water	Total	Percent
Under \$15,000	Yes	2	100.00%
Under \$15,000 Total		2	0.44%
Between \$15,000 and \$29,999	No	2	22.22%
	Sometimes	2	22.22%
	Yes	5	55.56%
Between \$15,000 and \$29,999 Total		9	1.98%
Between \$30,000 and \$49,999	No	2	9.09%
	Yes	20	90.91%
Between \$30,000 and \$49,999 Total		22	4.84%
Between \$50,000 and \$74,999	No	3	5.66%
	Sometimes	4	7.55%
	Yes	46	86.79%
Between \$50,000 and \$74,999 Total		53	11.65%
Between \$75,000 and \$99,999	No	3	3.19%
	Sometimes	4	4.26%
	Yes	87	92.55%
Between \$75,000 and \$99,999 Total		94	20.66%
Between \$100,000 and \$150,000	No	6	5.56%
	Sometimes	6	5.56%
	Yes	96	88.89%
Between \$100,000 and \$150,000 Total		108	23.74%
Over \$150,000	No	9	15.52%
	Sometimes	4	6.90%
	Yes	45	77.59%
Over \$150,000 Total		58	12.75%
prefer not to answer	No	6	6.00%
	Sometimes	9	9.00%
	Yes	85	85.00%
prefer not to answer Total		100	21.98%
(blank)	No	1	11.11%
	Sometimes	1	11.11%
	Yes	6	66.67%
	(blank)	1	11.11%
(blank) Total		9	1.98%
Grand Total		455	100%

iv. Management, Governance, & Civic Engagement

90%

are dissatisfied with the Town of New Tecumseth

MANAGEMENT & GOVERNANCE

Respondents were asked to rank accountability levels from 1 (highest) to 5 (lowest) of select individuals & agencies involved in water management & distribution at various levels. Considering ranks 1 and 2, **all individuals and agencies are perceived amongst respondents as at least 65% accountability for ensuring Tottenham's water is safe.** Two levels of perceived accountability emerged from the data: primary accountability (75% and above) and secondary accountability (between 65-74%). These results are as follows:

Primary Accountability

- Mayor of New Tecumseth
- New Tecumseth Councilors
- Simcoe Muskoka District Health Unit
- Minister of Health

Secondary Accountability

- MPP Jim Wilson
- Minister of Environment, Conservation, and Parks
- MP Kellie Leitch

89%

are dissatisfied with how they've been informed about water quality issues

Regarding different plans of action to address Tottenham water quality issues, **a majority of respondents do not believe current plans will be sufficient.** 269 respondents (59%) express doubts about the effectiveness of the pipeline from Beeton to Tottenham and 308 respondents (68%) remain unconvinced that an aeration system will reduce THMs to acceptable levels, although a majority of people were okay with the timeline for the aeration project with 275 people (60%) identifying as satisfied or neutral.

CIVIC ENGAGEMENT

Varying levels of civic engagement are seen throughout the data. 40% of respondents said they have raised concern with a public figure or department regarding the water quality. This is juxtaposed with a 100% completion rate amongst survey respondents, where all people who started the 63 questions survey finished it. A 100% completion rate is extremely high and signifies high levels of engagement on this issue amongst the survey population. Free response data suggests **formal civic engagement** through government agencies and offices **is perceived as ineffective amongst Tottenham residents.** People are therefore looking for alternative ways to engage. One respondent shared, "[The local government] have been fully aware of this for years and they have done nothing but shove it under the carpet... Thank you to those involved, keep up the great work," further supporting this interpretation and contextualizing the importance of this survey to respondents.

40%

have raised concern with a public figure or department

100%

of respondents who started the survey completed it.

iv. Free Response Data

Respondents were given the opportunity at the end of the survey to share additional comments, concerns, or perspectives in a free response section. **158 respondents (35%) shared thoughts over a few key areas:**

- Insufficient government action
- Nondisclosure of water quality issue to new residents
- Sources of the problem & solutions
- Health & safety
- Water quality concerns
- Taxpayer dollars and remittance
- Economic considerations
- Children-specific concerns
- Pathways to urgent action

The majority of free response data was integrated into the other data sub-sections in Section II of this report, but three areas in particular warrant further elaboration.

SOURCES OF THE PROBLEM & SOLUTIONS



22 respondents raised questions or concerns around the true sources of water quality issues in Tottenham, including how different proposed solutions will address these issues. This is important because it illuminates clear gaps in communication between government offices and officials who should be taking steps to address water quality issues and the community members who are impacted on a daily basis.

TAXPAYER DOLLARS & REMITTANCE



Over 60 respondents alluded to or shared their displeasure with the financial implications of Tottenham water quality, especially given community members pay taxes and other fees for the provision of safe drinking water and feel forced to buy additional water. Respondents noted concerns over accountability for various aspects of these financials as well and noted the need for remittance or compensation to be paid to Tottenham residents.

PATHWAYS TO URGENT ACTION



54 respondents directly voiced the need for urgent action on these water issues, especially in light of the longevity of water quality issues in Tottenham, potential health concerns, and the on-going financial burdens to residents. Within this context, many also expressed gratitude for the chance to share their experience and give voice to the daily struggles of Tottenham community members through participation in this survey.

IMPLICATIONS

RESIDENT HEALTH & WELL-BEING

The health implications of Tottenham water quality issues are not well understood. A combination of survey data and anecdotal evidence signal there may be elevated rates of various conditions in Tottenham compared to provincial or national averages. These high pockets of health concerns and diagnoses that are potentially happening in Tottenham may be hard to identify because residents often seek medical advice and treatment at various institutions outside of Tottenham. The mental health burden from water concerns impacts Tottenham residents' overall well-being. This burden may be disproportionately borne by women.

ECONOMIC CONSIDERATIONS

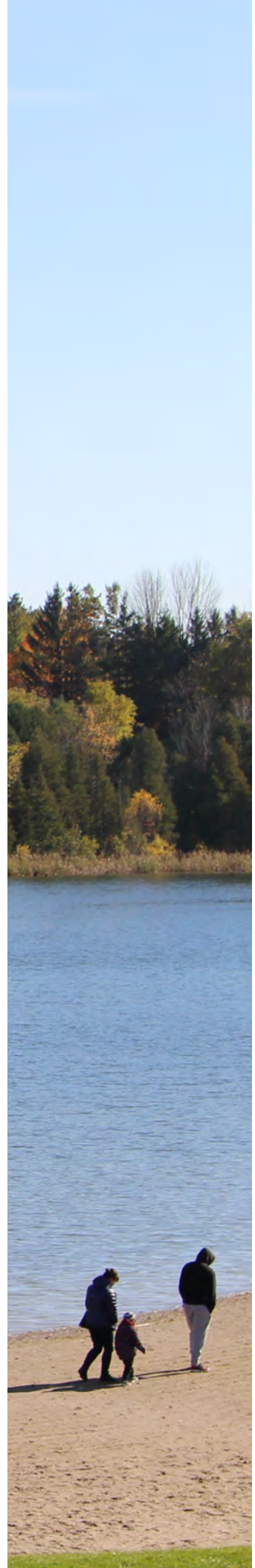
While hard to quantify, it is clear Tottenham residents are experiencing economic burdens from water concerns. These burdens include paying for municipally supplied water which many do not use, purchasing bottled water, damages to personal property, decreased lifetimes of various water-using appliances, potential impacts to property values, medical bills, and more. These are economic burdens that other taxpayers in New Tecumseth do not bear.

SOCIO-ECONOMIC DYNAMICS

Tottenham water issues may disproportionately impact residents in lower socio-economic brackets. Data collected during this survey are insufficient to provide conclusive evidence of this, but do signal a need for greater consideration of equity issues.

MANAGEMENT & GOVERNANCE

Perceptions of and experiences with water quality in Tottenham are in conflict with provincial and federal drinking water guidelines. Residents have lost confidence and trust in multi-level government officials & offices who are responsible for the management and governance of water issues in Tottenham. The long-term nature of many respondents' experiences with undesirable and potentially unsafe water qualities signals a need to enforce provincial and federal guidelines for the provision of clean, safe, reliable drinking water for all Canadians.



CONCLUSION

The data collected from the Tottenham Water Quality Survey paint a problematic picture for Tottenham residents' experience with municipally supplied drinking water & its management. The experience of respondents is particularly alarming considering federal and provincial guidelines for the provision of safe drinking water, including for colour, smell, and chemical makeup, as well as the longevity of water issues in Tottenham. This includes but is not limited to historical THM levels in the water supply which have been in conflict with national and international guidelines for over a decade.

These data give us a brief overview of people's perceptions and experiences with their tap water in Tottenham, but **more information is needed to truly understand the depth and breadth of Tottenham water issues.** Such studies should include health, water quality, and economic assessments as a starting point to clarify the reality of these water issues. This information will also provide important insights into the extent of impacts experienced by Tottenham residents. While there is a need for more data to characterize any historical, ongoing, and potential future water issues, **there is a clear disconnect between respondents' expectations for their water, the quality of water they are provided, and the information they are receiving from the responsible officials.** All warrant further discussion and study.



Images from various Tottenham residents showing tap water qualities in their homes.
Photos: Courtesy of Tottenham-Water

For a digital copy of this report, visit: www.wellingtonwaterwatchers.ca

For more information about Clean Water Now!, please visit: www.tottenham-water.ca

To report water quality issues to the Town of New Tecumseth, go to:
<https://www.newtecumseth.ca/en/living-in-our-community/water-quality.aspx>



ACKNOWLEDGEMENTS

Tottenham-Water would like to recognize a number of people whom without this survey would not have been possible. First, the Residents/Citizens of our incredible Village of Tottenham within the Town of New Tecumseth for their support in the Tottenham Clean Water Campaign & initiatives. To the residents who took the time to participate in this independent water quality survey, we offer sincere thanks and hope that the results within empower you and offer you a glimpse into the fact that you are not alone in the pursuit of clean, safe, & reliable drinking water & accountability from your elected government.

To the members of this Grass Roots Community Advocacy Group called Tottenham-Water, your spirit & energy, dedication, and personal level of commitment in this campaign inspire us every single day.

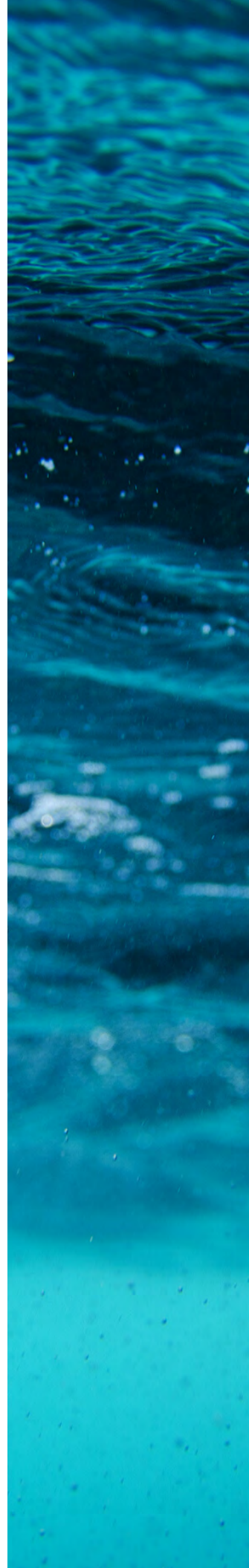
Thank you to The Wellington Water Watchers for their support on so many levels. A very special thank you to Mike Balkwill, campaign director of the Wellington Water Watchers, and a special mention to Paul Baines of The Great Lake Commons.

We would also like to extend a very special mention to the countless local advocacy and activist groups in Simcoe County & far beyond who have supported and inspired us to continue this hard, important work by always offering a hand up and an open door.

Finally, we'd like to thank our family and friends for their continuous understanding and support while advocating for change in our community. Gratitude is within our hearts every day. Thanks to you all.

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APPENDIX

APPENDIX A: SURVEY QUESTIONS

Tottenham Water Quality Survey



1 Do you feel Tottenham's drinking water is safe?

☐ YES ☐ NO ☐ SOMETIMES ☐ NOT SURE

2 Have you experienced the following colours of drinking water from your tap?

CLEAR →	<input type="checkbox"/> YES	<input type="checkbox"/> SOMETIMES	<input type="checkbox"/> NO
YELLOW →	<input type="checkbox"/> YES	<input type="checkbox"/> SOMETIMES	<input type="checkbox"/> NO
ORANGE →	<input type="checkbox"/> YES	<input type="checkbox"/> SOMETIMES	<input type="checkbox"/> NO
BROWN →	<input type="checkbox"/> YES	<input type="checkbox"/> SOMETIMES	<input type="checkbox"/> NO

3 Do you smell chlorine in your tap water?

☐ YES ☐ NO ☐ SOMETIMES

4 Are there other smells to your water?

☐ YES ☐ NO ☐ SOMETIMES

If "yes" or "sometimes", please describe:

5 Have you experienced residue of any kind while using the water in your home? (For example silt, sand, slime or any texture within the water when you use it for washing, showering, cooking, etc.)

Water contains visible silt, sand or sediment while filling sinks, tubs, containers, etc:

☐ YES ☐ NO ☐ SOMETIMES ☐ DON'T KNOW

Sandy residue after draining water from sinks or tubs:

☐ YES ☐ NO ☐ SOMETIMES ☐ DON'T KNOW

Silt residue after draining water from sinks or tubs:

☐ YES ☐ NO ☐ SOMETIMES ☐ DON'T KNOW

Water appears foggy or cloudy (may be in addition to discolouration of water):

☐ YES ☐ NO ☐ SOMETIMES ☐ DON'T KNOW

Slime that cannot be attributed to soaps, household cleaners etc.

☐ YES ☐ NO ☐ SOMETIMES ☐ DON'T KNOW

6 Do you/members of your household, drink Tottenham unfiltered tap water?

☐ YES ☐ NO ☐ SOMETIMES

7 Do you filter your drinking water?

☐ YES ☐ NO ☐ SOMETIMES

8 If you answered "yes" or "sometimes" to the above question, do you filter your water with:

☐ BRITA
☐ BOTTLED JUGS FROM FILTRATION STATION AT FOODLAND, VINCE'S OR ELSEWHERE
☐ WATER FILTRATION IN YOUR HOME OR ON YOUR TAPS
☐ OTHER (PLEASE SPECIFY)

9 Do you drink bottled water instead of tap water?

☐ YES ☐ NO ☐ SOMETIMES

10 Do your children drink unfiltered tap water at home?

☐ YES ☐ NO ☐ SOMETIMES ☐ NOT APPLICABLE

Tottenham Water Quality Survey

11 Do you filter drinking water for your children?

☐ YES ☐ NO ☐ SOMETIMES ☐ NOT APPLICABLE

12 If you answered "yes" or "sometimes" to the above question, do you filter your water with:

- ☐ BRITA
☐ BOTTLED JUGS FROM FILTRATION STATION AT FOODLAND, VINCE'S OR ELSEWHERE
☐ WATER FILTRATION IN YOUR HOME OR ON YOUR TAPS
☐ OTHER (PLEASE SPECIFY)
-
-

13 Do you give bottled water to your children instead of tap water?

☐ YES ☐ NO ☐ SOMETIMES ☐ NOT APPLICABLE

14 There are no filters in Tottenham's schools and Community Centre water fountains. Do your children drink from these fountains in Tottenham?

☐ YES ☐ NO ☐ SOMETIMES ☐ NOT APPLICABLE

15 Do you use tap water to cook with?

☐ YES ☐ NO ☐ SOMETIMES ☐ NOT APPLICABLE

16 Do you use filtered water for cooking?

☐ YES ☐ NO ☐ SOMETIMES ☐ NOT APPLICABLE

17 Do your pets drink tap water?

☐ YES ☐ NO ☐ SOMETIMES ☐ NOT APPLICABLE

18 Do your pets drink filtered water?

☐ YES ☐ NO ☐ SOMETIMES ☐ NOT APPLICABLE

19 Trihalomethanes are absorbed through your skin, from vapours as well as by drinking. Do you limit the length of time you take to bathe or shower because of concerns about the water quality?

☐ YES ☐ NO ☐ SOMETIMES

20 Because of the high levels of Iron, Trihalomethane and Chlorine in Tottenham's Municipal drinking water system, do you believe any of the following household appliances have had negative impacts from the quality of tap water?

	YES	NO	NOT SURE	NOT APPLICABLE
Kettle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dishwasher	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Washing machine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Humidifier	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hot water tank	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ice/water dispenser in refrigerator	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Other (please specify):

21 Have you noticed any discolouration in your laundry due to high iron content in the water?

☐ YES ☐ NO ☐ SOMETIMES ☐ NOT APPLICABLE

22 Have you experienced unsightly staining of household fixtures and commodities (shower/bathtub, commode basin/tank, dishwasher, tiles/grout, pool liner etc.) due to high iron content in the water?

☐ YES ☐ NO ☐ SOMETIMES

23 Have you considered moving due to the water quality in Tottenham? Do you use filtered water for cooking?

☐ YES ☐ NO

24 Do you purchase filtered water, water filtration, or bottled water to drink?

☐ YES ☐ NO ☐ SOMETIMES

25 If you purchased a water filtration system for your home, how much did you pay in total? (A water softener is NOT a water filtration system)

☐ \$0 - \$199 ☐ \$5000 - \$9,999
☐ \$200 - \$999 ☐ MORE THAN \$10,000
☐ \$1000 - \$4,999

Tottenham Water Quality Survey

26 Do you purchase filtered water for your pets to drink?

☐ YES ☐ NO ☐ SOMETIMES ☐ NOT APPLICABLE

27 Do you purchase filtered water for cooking?

☐ YES ☐ NO ☐ SOMETIMES

28 Do you buy filtered water for humidifiers?

☐ YES ☐ NO ☐ SOMETIMES

28 Do you buy filtered water for humidifiers?

☐ YES ☐ NO ☐ SOMETIMES

29 How much do you estimate you spend per month on purchased filtered water?

☐ \$0 - \$19 ☐ \$20 - \$49 ☐ MORE THAN \$50

30 Do you purchase water jugs that use filters (like Brita)?

☐ YES ☐ NO ☐ SOMETIMES

31 Did you purchase filters for household faucets?

☐ YES, FOR ALL FAUCETS IN HOME
☐ NO
☐ FOR SOME FAUCETS

32 How many single use bottles of water does your household average in one month?

☐ 0 - 14 ☐ 50 - 99
☐ 15 - 29 ☐ MORE THAN 100
☐ 30 - 49

33 Have sales representatives from water filtration companies approached your home to ask you to purchase a filtration system due to Tottenham's water quality?

☐ YES ☐ NO ☐ NOT THAT I AM AWARE OF

34 Have you purchased a water filtration system for your home?

☐ YES ☐ NO

35 Are you considering purchasing a water filtration system for your home?

☐ YES ☐ NO ☐ UNSURE

36 The Town of Tecumseth manages our drinking water. Do you think the Town of New Tecumseth should offer a rebate for water purification systems installed in Tottenham's homes, businesses and schools?

☐ YES ☐ NO ☐ DON'T KNOW

37 Did the Town of New Tecumseth or any government agency provide recommendations to you for in-home water filtration systems?

☐ YES ☐ NO ☐ NOT THAT I AM AWARE OF

38 Did the Town of New Tecumseth or any government agency advise you NOT to purchase, install or use in-home water filtration devices or systems?

☐ YES ☐ NO ☐ NOT THAT I AM AWARE OF

About Trihalomethanes

Trihalomethanes are carcinogens that are created when chlorine is added to water containing organic matter. The more organic matter, the more chlorine that is added to kill things like E.coli and to keep drinking water "safe". The Ontario Safe Drinking Water Act of 2002 has a maximum acceptable guideline for Trihalomethanes in drinking water and that is 100 ug/L (parts per billion). Tottenham's Trihalomethane yearly average has exceeded this maximum acceptable guideline for the past 11 out of 16 years. And the five years it was below 100 ug/L, it was never below 90 ug/L. Alliston's Trihalomethane levels average in the mid 30's. Trihalomethanes are believed to be linked to thyroid, liver, kidney, breast, bladder and colon cancer/disease as well as miscarriage, stillbirth and other health issues.

39 Did you know that Tottenham's water contains a chemical compound called Trihalomethanes (THMs)?

☐ YES ☐ NO

Tottenham Water Quality Survey

- 40** Did you know that Trihalomethanes (THMs) are a known carcinogen that may cause a wide range of health risks?

☐ YES ☐ NO

- 41** Did you know that Tottenham's water quality has been above the maximum allowable guideline for Trihalomethanes in Ontario for many years?

☐ YES ☐ NO

- 42** Did you know that high levels of iron in drinking water allow iron bacteria to thrive in water pipes? This bacteria creates a biofilm that protects viruses (such as legionella and pneumonia) from chlorine. These viruses and bacteria are loosened during flushing and swabbing Tottenham's pipelines and then pushed into our homes during the process.

☐ YES ☐ NO

- 43** Did you know that when drinking water contains bacteria and viruses it may facilitate infection and further compromise the health of certain at risk individuals with underlying conditions?

☐ YES ☐ NO

- 44** Have you or your family experienced any health issues you feel may be related to the water quality issues in Tottenham?

☐ YES ☐ NO ☐ SOMETIMES

☐ OTHER (PLEASE SPECIFY):

- 45** There may be links between high levels of Iron, Chlorine and Trihalomethanes in drinking water and certain health issues. The levels of Iron, Chlorine and Trihalomethanes may cause or exacerbate these health issues. Have you or your family been diagnosed with any of the following health issues while living in Tottenham. Check all that apply:

<input type="checkbox"/> CANCER (describe type below)	<input type="checkbox"/> LUPUS
<input type="checkbox"/> GUILLAIN BARRÉ SYNDROME	<input type="checkbox"/> LEGIONNAIRES DISEASE
<input type="checkbox"/> TYPE 1 DIABETES	<input type="checkbox"/> LIVER DISEASE
<input type="checkbox"/> KIDNEY DISEASE	<input type="checkbox"/> AUTOIMMUNE DISEASE
<input type="checkbox"/> THYROID DISEASE	<input type="checkbox"/> STILLBIRTH
<input type="checkbox"/> MISCARRIAGE	<input type="checkbox"/> RASHES
<input type="checkbox"/> ASTHMA	<input type="checkbox"/> LOW BIRTH WEIGHT
<input type="checkbox"/> HAIR LOSS	<input type="checkbox"/> NONE OF THE ABOVE
<input type="checkbox"/> OTHER (PLEASE SPECIFY):	

- 46** Are you aware that some veterinarians in the area have suggested your pets drink only bottled or filtered water, until Tottenham's water quality issues are resolved?

☐ YES ☐ NO

- 47** Have any of your pets been diagnosed with any of the following health issues that you feel may be related to the water quality issues in Tottenham? Check all that apply:

☐ CANCER (IF YES PLEASE DESCRIBE IN COMMENT AREA)

☐ THYROID

☐ KIDNEY DISEASE

☐ LIVER DISEASE

☐ DIABETES

☐ OTHER (IF YES PLEASE DESCRIBE IN COMMENT AREA)

☐ NONE OF THE ABOVE

- 48** Do you feel stress or anxiety because of Tottenham's water quality issues?

☐ A GREAT DEAL ☐ A LOT ☐ A MODERATE AMOUNT ☐ A LITTLE ☐ NONE AT ALL

Tottenham Water Quality Survey

- 49** Do you have any concerns about the impact of water quality in Tottenham on your life and the lives of those in your household?

☐ ALWAYS
 ☐ USUALLY
 ☐ SOMETIMES
 ☐ RARELY
 ☐ NEVER

☐ OTHER (PLEASE SPECIFY):

- 50** Please rate how accountable you feel each of the following should be for ensuring Tottenham's water is safe? Please circle a number from 1 (the highest) to 5 (the lowest).

MAYOR OF NEWTECUMSETH	1	2	3	4	5
NEW TECUMSETH COUNCILLORS	1	2	3	4	5
SIMCOE MUSKOKA DISTRICT HEALTH UNIT	1	2	3	4	5
MPP JIM WILSON	1	2	3	4	5
MINISTER OF ENVIRONMENT, CONSERVATION AND PARKS	1	2	3	4	5
MINISTER OF HEALTH	1	2	3	4	5
MP KELLIE LEITCH	1	2	3	4	5

OTHER (PLEASE SPECIFY):

- 51** How satisfied are you that the Town of New Tecumseth has adequately addressed the high Trihalomethane (THM) levels in Tottenham's drinking water?

☐ VERY SATISFIED
 ☐ SATISFIED
 ☐ NEITHER SATISFIED NOR DISSATISFIED
 ☐ DISSATISFIED
 ☐ VERY DISSATISFIED

- 52** Have you raised your concerns about water quality with the Mayor / your councillor, Public Works or Water Department?

☐ YES
 ☐ NO

- 53** How satisfied are you with how the Mayor and Council have informed you about Tottenham's water quality issues?

☐ VERY SATISFIED
 ☐ SATISFIED
 ☐ NEITHER SATISFIED NOR DISSATISFIED
 ☐ DISSATISFIED
 ☐ VERY DISSATISFIED

- 54** The town claims that a pipeline from Beeton to Tottenham will be completed and may be hooked up by 2022. At that time, Collingwood water, mixed with Alliston well water will be sent to Tottenham to be mixed with our well water. Do you feel the proposed pipeline to be completed in 2022 will resolve Tottenham's water quality issues?

☐ VERY LIKELY
 ☐ LIKELY
 ☐ NEITHER LIKELY NOR UNLIKELY
 ☐ UNLIKELY
 ☐ VERY UNLIKELY

- 55** The town is installing an Aeration System as part of our drinking water process. Do you feel installing the proposed aeration system will reduce Trihalomethane levels in Tottenham's drinking water?

☐ DEFINITELY WOULD
 ☐ PROBABLY WOULD
 ☐ PROBABLY WOULD NOT
 ☐ DEFINITELY WOULD NOT

- 56** The town claims the Aeration System will be installed by the end of September 2019. Are you satisfied with the timeline for installing an aeration system?

☐ VERY SATISFIED
 ☐ SATISFIED
 ☐ NEITHER SATISFIED NOR DISSATISFIED
 ☐ DISSATISFIED
 ☐ VERY DISSATISFIED

- 57** Are there any other comments you would like to share with us?

Continue on next page →

Tottenham Water Quality Survey

We have a few questions to provide a profile of the people who complete this survey. All of these questions are optional.

58 How many years have you lived in Tottenham?

- ☐ LESS THAN ONE
- ☐ 1 - 5
- ☐ 6 - 10
- ☐ 11 - 20
- ☐ 21 - 30
- ☐ MORE THAN 31

59 Household composition:

How many adults are in your household?

- ☐
- 0
- ☐
- 1
- ☐
- 2
- ☐
- 3
- ☐
- FOUR OR MORE

How many children are in your household?

- ☐
- 0
- ☐
- 1
- ☐
- 2
- ☐
- 3
- ☐
- FOUR OR MORE

60 Household Income:

- ☐ UNDER \$15,000
- ☐ BETWEEN \$15,000 AND \$29,999
- ☐ BETWEEN \$30,000 AND \$49,999
- ☐ BETWEEN \$50,000 AND \$74,999
- ☐ BETWEEN \$75,000 AND \$99,999
- ☐ BETWEEN \$100,000 AND \$150,000
- ☐ OVER \$150,000
- ☐ PREFER NOT TO ANSWER

61 What is the age of person who completed this survey?

- ☐ 18-21 ☐ 50-59
☐ 22-29 ☐ 60-69
☐ 30-39 ☐ 70 OR OLDER
☐ 40-49

62 What is the gender of the person who completed this survey?

- ☐ FEMALE ☐ MALE ☐ OTHER

63 What is your postal code?

APPENDIX B: DEMOGRAPHIC INFORMATION

GENDER

- **Female:** 320 (70.5%)
- **Male:** 127 (28%)
- **Other:** 2 (<.5%)
- **Skipped:** 6 (1%)

AGE

- **18-21:** 5 (<1%)
- **22-29:** 35 (8%)
- **30-39:** 168 (37%)
- **40-49:** 94 (21%)
- **50-59:** 86 (19%)
- **60-69:** 43 (9.5%)
- **70+:** 21 (4.5%)
- **Skipped:** 5 (<1%)

YEARS OF RESIDENCE IN TOTTENHAM

- **Less than 1 year:** 47 (10%)
- **1-5 years:** 211 (46%)
- **6-10 years:** 45 (10%)
- **11-20 years:** 53 (12%)
- **21-30 years:** 45 (10%)
- **31+ years:** 51 (11%)
- **Skipped:** 3 (1%)

INCOME

- **Under \$15,000:** 2 (<.5%)
- **\$15,000-29,999:** 9 (2%)
- **\$30,000-49,999:** 22 (5%)
- **\$50,000-74,999:** 53 (11.5%)
- **\$75,000-99,999:** 94 (20.5%)
- **\$100,000-150,000:** 108 (24%)
- **Over \$150,000:** 58 (13%)
- **Skipped:** 109 (24%)

POSTAL CODES

A vast majority of respondents live in LOG 1W0 (93%). This location-based data helps to verify the legitimacy of responses by showing where respondents live, namely in Tottenham.

Table 6. Postal codes

LOG 1W0 (Tottenham)	422
LOG	2
LOG 1L0 (Loretto)	1
LOM 1S0 (Stayner)	1
L9R 1L2 (Alliston)	1
L9R 0H8 (Alliston)	1
L7G 1W0 (n/a)	1
Skip	26

APPENDIX C: CROSS-TABULATION TABLES

Table 7. Years in Tottenham [Question 58] vs. Awareness of THMs in Tottenham water [Question 39]

Years in Tottenham	Awareness of THMs in Tottenham water	Total	Percent
☐ 1-5 years	No	91	43.13%
	Yes	120	56.87%
1-5 years Total		211	46.37%
☐ 11 - 20 years	No	13	24.53%
	Yes	40	75.47%
11 - 20 years Total		53	11.65%
☐ 21 - 30 years	No	16	35.56%
	Yes	29	64.44%
21 - 30 years Total		45	9.89%
☐ 31+ years	No	13	25.49%
	Yes	36	70.59%
	(blank)	2	3.92%
31+ years Total		51	11.21%
☐ 6-10 years	No	19	42.22%
	Yes	26	57.78%
6-10 years Total		45	9.89%
☐ less than 1 year	No	25	53.19%
	Yes	22	46.81%
less than 1 year Total		47	10.33%
☐ Response	Response		
Response Total			0.00%
☐ (blank)	Yes	1	33.33%
	(blank)	2	66.67%
(blank) Total		3	0.66%
Grand Total		455	100.00%

Table 8. Gender [Question 62] vs. Experience stress or anxiety about Tottenham water issues [Question 48]

Gender	Experience stress of anxiety about Tottenham water issues	Total	Percent
☐ Female	A great deal	132	41.25%
	A little	37	11.56%
	A lot	74	23.13%
	A moderate amount	64	20.00%
	None at all	12	3.75%
	(blank)	1	0.31%
Female Total		320	70.33%
☐ Male	A great deal	37	29.13%
	A little	21	16.54%
	A lot	23	18.11%
	A moderate amount	35	27.56%
	None at all	11	8.66%
Male Total		127	27.91%
☐ Other	A great deal	1	50.00%
	None at all	1	50.00%
Other Total		2	0.44%
☐ (blank)	A great deal	2	33.33%
	A moderate amount	1	16.67%
	None at all	1	16.67%
	(blank)	2	33.33%
(blank) Total		6	1.32%
Grand Total		455	100.00%

For more information about this report, survey data, or the Clean Water Now! campaign, **please contact info@wellingtonwaterwatchers.ca**