Campus Water Accessibility: Analysis of Water Behaviour Five Years Post Ban

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Introduction

Description of Topic Area

The University of Toronto has been a *bottled water free campus* since 2011 as a result of the collaborative effort between students, faculty and staff to raise awareness of the social and environmental impacts of commodified water. The three reasons that motivated the university to ban the sale of bottled water include promoting the access to free drinking water as a basic human right, a desire to reduce the production of plastic waste and the fact that water quality of municipal tap water is higher than bottled water. As part of the *Bottle Free* program, the university began installing additional refill stations and encouraged students to bring reusable water bottles. This also included a Water Map to help the campus community find public sources of water on St. George campus (University of Toronto Food Services, 2016).

According to last year's study on the *Water Bottle Campus Ban*, commissioned by the Sustainability Office, there is still a significant portion of the student population that is unaware of the bottled water ban and the impetus behind the ban (Watson et al., 2016). Our client, the Sustainability Office, is concerned about this low awareness of the ban and the need to update the current Water Map in order to provide students, staff and faculty a way to access publicly available water on campus.

Scope of Project

To address the issue of water accessibility on the St. George Campus, there is a need to educate the campus community (students, staff, faculty and guests) about the bottled water ban and where they can access water on campus. Our overall goal for this applied research project is to create an inventory for the current St. George campus "Water Map", which has not been updated since 2011. This deliverable includes a master list of the locations of drinking fountains and water refill stations on campus accompanied by maps of their approximate location in each building. It was determined that food outlet taps were beyond the scope of this project and were not included in the inventory.

Our second deliverable is to design a communication/marketing strategy to increase awareness of the bottled water ban and where members of the university community can access publicly available sources of water. This includes drafts of posters, signage, maps, social media platforms and a campaign outline to communicate the bottled water ban and the locations of water drinking infrastructure.

Objectives of Project

Our specific project objectives to address this issue are the following:

1.   To determine best practices from other universities in addressing water accessibility   on campus and identify elements of an effective marketing strategy.
2.   To identify the current locations of water fountains and water refill stations on campus.
3.   Using the above information, to draft a master list of water refill stations/drinking fountains on campus and create an updated map.
4.   Using the above criteria, design a marketing strategy, including the drafts of posters, maps and social media platforms to communicate to the campus community the existence of a water

bottle ban, the motivations behind the ban and where to access public drinking water on campus.

Background Analysis

Bottled water bans from various universities and colleges across Canada were analyzed to determine best practices to inform our marketing campaign. The relevance of these findings was based on the size, population, and location within Canada and the potential to provide valuable insights into successful campaign methods. This provided a range of different perceptions and campaign objectives. Best practices from these schools were defined as methods that appeared in more than one university/college campaign.

Firstly, one of the most commonly discussed methods to address water accessibility on campus was the creation of an inventory of drinking water infrastructure (i.e. drinking fountains and refill stations) and a water map. This is to create a baseline of the existing drinking water infrastructure to ensure there is a sufficient amount of publicly accessible water sources available to the campus community. It is also used to identify areas where additional refill stations need to be installed to compensate for the removal of bottled water on campus. While this typically occurs at the beginning of the campaign, it is a best practice to continuously update the drinking water infrastructure and canvass the campus to compile a list and map all of the water fountains and refill stations. This practice was common among several schools including Queen's University, University of Ottawa, Ryerson University, Fleming College Frost Campus, University of British Columbia, and University of Toronto. While the University of Toronto created a Water Map and installed more drinking water infrastructure, a backlash ensued after the ban commenced due to student concerns regarding the lack of fountains and refill stations on campus. This lack of drinking water infrastructure made the transition to the new campaign extremely difficult. (Parris, 2011).

Many institutions are collaborating during orientation week, to promote and raise awareness of the bottled water ban and provide incoming students with free reusable water bottles. By providing the water paraphernalia to incoming students, this provides the motivation for them to use the fountains and refill stations rather than purchasing bottled water. While many institutions have already implemented this practice without referencing a bottled water ban, several institutions have explicitly stated that this is a campaign practice to raise awareness of the ban. These institutions include Ryerson University, Brandon University, Bishop University, and Vancouver Island University.

Moreover, every single school campaign emphasized the importance of including an educational or awareness component to inform the campus community of the ban and the reasons behind it. Education is a central part of University of British Columbia's *Tap That* campaign as they do not seek to implement an outright ban on bottled water, but instead seek to educate, and increase awareness of the benefits and barriers of bottled and tap water (Common Energy, n.d.). Some other institutions that also used this method included University of Winnipeg, Queen's University, Ryerson, Brandon University, and University of Toronto.

Signage and the use of visual aids were another common theme amongst the campaigns. This method was undertaken by several institutions including Ryerson University, Queen's University, University of Ottawa, Bishop University, Brandon University, and University of Toronto. This is important as it visually informs students, faculty, staff and members of the

public on the nearest drinking fountain or refill station within their vicinity. Visual communication is a powerful marketing tool in modern campaigns. The use of any visual content including images, posters, videos, websites, signs, and social media can convey information quickly and effectively to influence the behaviour of a large segment of the population. The majority of individuals remember 80% of what they see visually and only 20% of what they read, indicating that human perception is mainly visual (Manic, 2015).

While the majority of campaigns did not indicate social media usage, University of British Columbia incorporated it as part of their awareness campaign. The *Tap That* campaign has been successful in raising awareness of the benefits of drinking tap water and impacts of bottled water through promotional videos, its website, movie screenings, and social media including Facebook and Twitter (Cheng, 2013). Social media in particular is an important form of visual communication that will be necessary to utilize in modern marketing as it has the potential for conducting promotional activities and communicating a targeted message to a mass audience (Vinerean, 2017). It is important to note that while Facebook and Twitter were popular in early 2010, Instagram and Snapchat were created more recently (Instagram, 2017; Snapchat, 2011) and thus were not used in these campaigns but may be an important communication platform in future campaigns.

Furthermore, effective campaigns that aim to raise awareness and change behaviour require an understanding of current behaviours and perceptions. Research has indicated that there are several factors that influence an individual's preference for bottled water or tap water. These factors can be categorized into the barriers and benefits including water quality and environmental impacts (Güngör-Demirci et al., 2016; Saylor, Prokopy, & Amberg, 2011).

 Water quality issues are deemed to be the most important determining factor as many individuals believe there is a risk in drinking tap water due to a lack of regulation with the water quality and the risk of contamination events (Güngör-Demirci et al., 2016; Saylor et al., 2011). Many sources state that there is very little difference between the quality of bottled water versus tap water, with regulation of the two being the primary difference. Bottled water is regulated as a food product in Canada and must comply with the *Food and Drugs Act* (Government of Canada, 2013; University of Toronto Food Services, 2016). This means that bottled water is regulated federally where responsibility is shared by Health Canada and the Canadian Food Inspection Agency to ensure the health and safety standards (Government of Canada, 2013). While bottled water is regulated by stringent federal laws, each province and territory can establish additional requirements for the regulation of bottled water in their jurisdiction (Government of Canada, 2013). On the other side, tap water is regulated provincially and municipally with regular testing occurring every six hours to monitor the water quality (University of Toronto Food Services, 2016). In contrast, bottled water is not tested every four hours, and since 2000, the Canadian Food Inspection Agency has recalled 27 out of 49 bottled water products (University of Toronto Food Services, 2016). Health Canada has even stated that bottled water is not actually any safer than municipal water and both are quite similar in quality and safety (Government of Canada, 2013). Therefore, the notion that bottled water is better quality than tap water has no standing. Although some individuals find tap water risky due to health outbreak events that can cause illness and can weaken public trust of tap water (Saylor, Prokopy, & Amberg, 2011).). Educational campaigns can work to address and promote these barriers and benefits to influence more preferences in choosing tap water.

Methodology

Mapping

Phase one of our data collection focused on collecting and mapping data on water fountains/refill stations in 153 buildings on the St. George campus to draft a master list of water fountains/refill stations. Our clients wanted us to verify the locations of existing drinking fountains and refill stations and record any additional ones that were not included on the 2011 map.

First, we split the campus into six sections so that each one of our team members could canvas and collect the necessary data for the new and improved map. The information our team collected for each building included the building name, floor number, nearest room number (if applicable), description of location, water source type (drinking fountain or refill station) and a physical location marker on the U of T campus map. Once all of the information was gathered, it was synthesized into one master list and each fountain location was assigned a number. Each number coincided with a number on the final map and section maps.

Survey

A survey was developed to help understand the behaviours and perspectives of the St. George campus community on drinking water consumption. The primary purposes of the survey were to examine awareness of the ban and to gather opinions that would inform the marketing strategy. To achieve these goals, the following survey questions were selected:

- Are you currently a student, staff member or faculty member on the U of T St. George campus?
- Do you carry a reusable water bottle with you on campus?
- Please rate your experience with finding refill stations and water fountains on campus?
- Is there a ban on the sale of bottled water on campus?
- What are the best methods for U of T to inform you about the bottled water ban?
- What are the best methods for U of T to inform you of the locations of water refill stations and fountains?
- Please provide additional comments or concerns you have regarding the accessibility of drinking water on campus and the bottled water ban.

The 7-question survey was distributed through student networks, student Facebook groups with hundreds of students from a variety of academic disciplines and to professors and teaching assistants specializing in various fields of study. This method was used in order to sample a population that was representative of the U of T campus community, which includes students, staff and faculty members. Within a 10-day sampling period, 100 survey responses were collected using SurveyMonkey. Collected data was displayed in bar charts to visualize the results. Open-ended responses given in question 7 were categorized and displayed in a bar chart to display common answers.

Results

Mapping

After compiling and synthesizing the data into a master list of water fountains/refill stations on campus and producing maps for each section, it was determined that there are approximately 283 drinking fountains and water refill stations. More specifically, there are 124 water refill stations and 159 drinking fountains on campus as shown in Table 1. Table 2 shows the percent change for each section. Overall, there was approximately a 204 percent increase in the publicly available water sources (drinking fountains and water refill stations) on campus since the Water Map was created in 2011. From Table 2, it can be seen that section 1 and section 5 have the largest percent increase in water refill stations and drinking water fountains. Section 1 is predominantly faculty/administration buildings with a few large lecture halls and libraries while section 5 contains majority of the large lecture halls as seen in Figure 8 and Figure 9. In addition, approximately 30 percent of the water fountains/refill stations are located near a washroom and 10 percent are located in a foyer or common area.

Based on observations made during data collection, older buildings on campus have less drinking fountains and water refill stations available to the campus community while there are more refill stations installed in buildings frequently used by students. The south-western part of campus has the most water refill stations installed than any other area on campus (refer to Figure 8). Overall, there has been a quantifiable increase in the amount of publicly available water sources on campus compared to the 2011 Water Map.

Table 1: Type and Amount of Water Sources on Campus

Total Number of Publicly Accessible Water Sources	Total Number of Water Refill Stations	Total Number of Drinking Fountains

283	124	159

Table 2: Percent Increase in Drinking Water Infrastructure on Campus

Section	Number of Buildings	Number of Drinking Fountains/Water Refill Stations	Number of Drinking Fountains/Water Refill Stations (2011)	Percent Change (%)
1	27	67	10	570
2	21	32	10	220
3	31	29	12	141
4	22	25	13	92
5	24	88	23	282
6	28	42	25	68
Total:	**153**	**283**	**93**	**204**

Surveying

Are you currently a student, staff member or faculty member on the U of T
St. George campus?
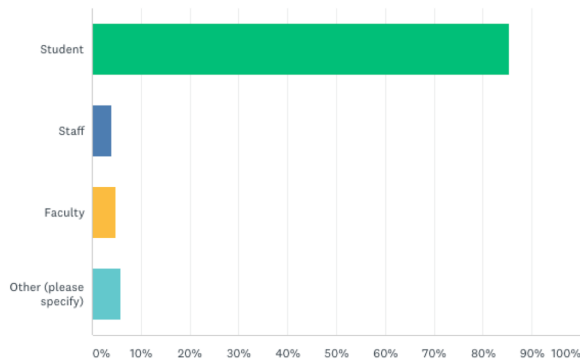
Answered: 102   Skipped: -2

Figure 1: Survey Results for Question 1

The results for question 1 (Figure 1) indicated that the survey sample size was 100 – composed of 85 students, four staff members, five faculty members and six alumni.

Do you carry a reusable water bottle with you on campus?
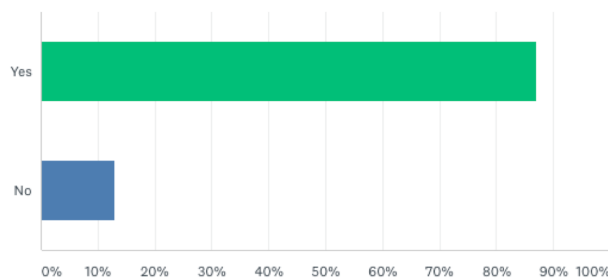
Answered: 92   Skipped: 8

Figure 2: Survey Results for Question 2

The results for question 2 (Figure 2) indicated that 87 percent of respondents carried a reusable water bottle with them on campus. The remaining 13 percent of respondents indicated that they did not carry a water bottle and provided additional comments. Additional comments included the following:
- "Often"
- "When going to the gym"
- "During the warmer months I carry one"
- "If I remember, yes, if not I buy a bottle of water for that day"
- "2, 3 times a week"
- "I forget sometimes"

Please rate your experience with finding refill stations and water fountains on campus.
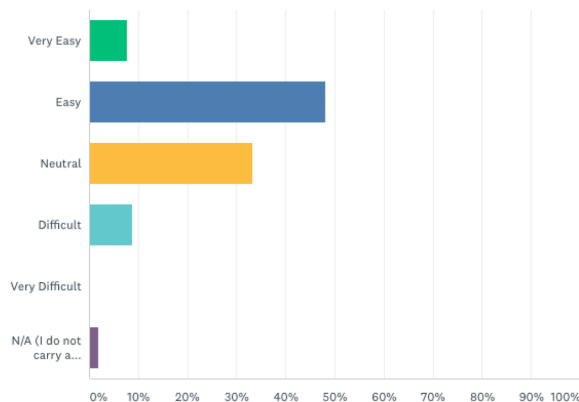
Answered: 102   Skipped: -2

Figure 3: Survey Results for Question 3

The results for question 3 (Figure 3) show various levels of experience finding drinking water on campus. 8 percent and 48 percent of respondents indicated that finding drinking water was "Very Easy" and "Easy", respectively. 33 percent of respondents rated the experience as "Neutral" and 9 percent rated it as "Difficult". The remaining respondents indicated "N/A", as they did not carry a reusable water bottle.

Is there a ban on the sale of bottled water on campus?
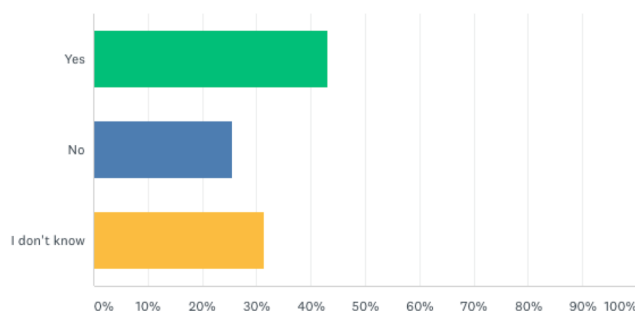
Answered: 102   Skipped: -2

Figure 4: Survey Results for Question 4

The results for question 4 (Figure 4) show that the majority of respondents are unaware of the bottled water ban. 43 percent of respondents responded "Yes" to the question of "Is there a ban on the sale of bottled water on campus." However, 26 percent responded "No", and another 31% responded "I don't know." These findings demonstrate that a combined 57 percent of the campus community does not know that there is a ban on the sale on bottled water.

What are the best methods for U of T to inform you about the bottled water
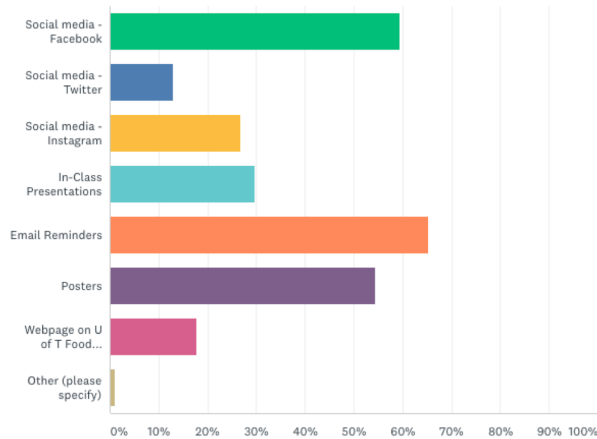ban? (Select up to 3 methods)

Answered: 101   Skipped: -1

Figure 5: Survey Results for Question 5

The results for question 5 (Figure 5) show that the campus community prefers a variety of different marketing and communication methods to learn about campus initiatives. When comparing social media platforms, survey results indicated that 59 percent, 13 percent and 27 percent of respondents indicated that they preferred Facebook, Twitter and Instagram to learn about the bottled water ban, respectively. 30 percent of respondents said that In-Class Presentations would be the best method to inform the campus community, while 65 percent indicated that the preferred Email Reminders. Posters were said to be the best method by 55 percent of the campus community. Finally, 18 percent indicated that a webpage on the U of T Food Services website would be the most effective communication tool.

What are the best methods for U of T to inform you of the locations of water
refill stations and fountains? (Select up to 3 methods)
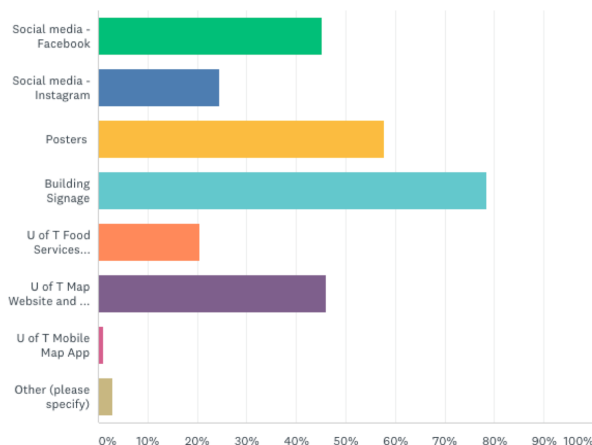
Answered: 102   Skipped: -2

Figure 6: Survey Results for Question 6

The results for question 6 (Figure 6) also show that the campus community has various communication method preferences. When comparing social media platforms, survey results indicated that 45 percent and 25 percent of respondents said that they preferred Facebook and Instagram to learn about the locations of drinking water, respectively. Similar to question 5, posters were a popular response that accounted for 58 percent of the responses. However, the most popular answer choice was Building Signage with 78 percent of the responses. Finally, when looking at website communication methods, 47 percent said that the U of T Map Website and App was the best method to inform people of the locations of drinking water on campus. Furthermore, 21 percent of respondents said that posting on the U of T Food Services website was the best method.

Please provide additional comments or concerns you have regarding the accessibility of drinking water on campus and the bottled water ban
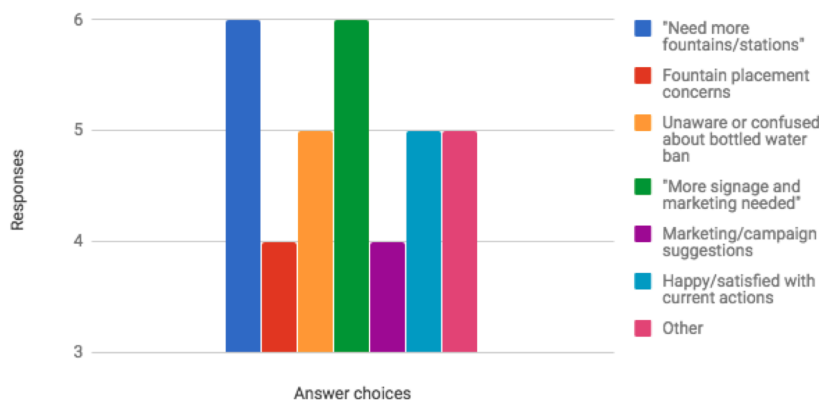
Figure 7: Survey Results for Question 7

The results for question 7 (Figure 7) show that there are many concerns regarding the accessibility of drinking water on campus and the bottled water ban. From the 35 responses collected for this question, six responses spoke about the need for more fountain and refill stations on campus. Also speaking to concerns about water accessibility, four responses mentioned that the placement and even distribution of fountains on U of T campus could be improved. Five respondents said that they had concerns about the bottled water ban or had not heard of it. Six responses indicated that more signage and marketing efforts were needed to support U of T's current initiative. Four responses provided recommendations as to how the current actions could be improved. Finally, five respondents indicated that they were pleased with the accessibility of water on campus and the current marketing efforts.

Discussion

Mapping

From updating the current Water Map and creating an inventory of the current locations of drinking water infrastructure, it was determined that there has been a quantifiable increase in the amount of water refill stations and drinking fountains for the campus community to access publicly available water. Since the bottled water ban was implemented in 2011, there has been an additional 190 drinking water sources installed on campus, with majority of these sources being drinking fountains as seen in Table 1. However, while each section experienced an overall increase in publicly available water sources, this increase was most notable in sections 1 and 5, where majority of the newer buildings and study areas are concentrated and used by students such as Robarts Library are located (refer to Figure _). In contrast, sections 3 and 4, the areas that experienced a smaller increase, were predominately where the older buildings were located and had a larger concentration of drinking fountains. It appears that newer buildings being constructed on campus are installing water refill stations while older buildings such as University College remain with their existing infrastructure, which are mostly drinking fountains. There appears to be an inequity in water accessibility as older buildings have outdated drinking water infrastructure, which need to be repaired or have less water sources.

Due to the bottled water ban, there has been an overall increase in drinking water infrastructure on campus. However, the increase is not equitable across campus and the type of infrastructure being installed (i.e. drinking fountain vs. water refill station) may need to be taken into consideration to ensure it is meeting the needs of the campus community.

Surveying

The survey served as a valuable tool in identifying awareness of the bottled water ban and gathering opinions to help guide the water accessibility marketing strategy. The following analysis will describe the notable and surprising findings from the survey results.

One key finding was that 57 percent of respondents were unaware of the bottled water ban. This sample group included those that responded "No" and "I don't know" to the question of "Is there a ban on sale of bottled water on campus?" This was a surprising finding given the current efforts from the Sustainability Office to increase awareness of the ban. It is evident that more marketing efforts should be targeted toward educating the campus community about the environmental, health and human rights issues relating to acquiring and consuming bottled water. Increasing educational initiatives could inspire students to lead change on campus, and support widespread positive behaviour changes relating to drinking water consumption on U of T campus. Learning about the importance of the bottled water ban is a crucial long-term investment into the sustainability strategy at U of T.

Another key finding from the survey was that 42 percent of respondents indicated that their experience with finding drinking water on campus ranged from Neutral to Difficult. This answer choice was coupled with numerous concerns about drinking water accessibility on the St. George campus. These included wanting "more refill stations" and frustrations with finding "lots of fountains in some areas but none in others." Although the majority of students rated their experience as Easy to Very Easy, it is important to consider the concerns of the large sample of the campus community that are not satisfied with the placement and amount of fountains found on campus. These concerns were considered in our recommendations for the Sustainability Office as to how they can move forward with the bottled water ban campaign and improving water accessibility on campus.

Our survey concluded with an opportunity for the campus community to provide suggestions for informing students about the bottled water ban and the locations of drinking water on campus. Our data collected for both marketing questions indicated that the campus community had a variety of preferences for communication methods. However, to effectively guide our marketing strategy, we acknowledged that Facebook, email reminders and posters were the most popular responses to guide our bottled water ban campaign. To inform the campus community about the locations of water refill stations and fountains, we incorporated the popular choices of posters and building signage into the marketing strategy.

Finally, our team discussed the complex link between increasing awareness of the ban and changing behaviour. 88 percent of respondents said that they carried a reusable water bottle with them on campus. However, 57 percent of the same sample group was unaware of the bottled water ban. This surprising observation indicates that people can exhibit sustainable behaviours despite their awareness of the bottled water ban. Conversely, it is difficult to conclude that increasing awareness of the ban would influence more environmentally-responsible behaviours. Further research efforts should be focused on this complex relationship.

Limitations of the Study

During the mapping and surveying phases of the project, many challenges were encountered. During the mapping of water fountains and refill stations on campus, our team faced issues with accessing all buildings on the U of T St. George campus. These buildings included residence buildings, operational facilities and administrative office buildings which were not typically accessed by the majority of the campus community. Without receiving approval to enter the premises or acquiring a key to the entrances, these buildings were not accessible. This prevented our team from mapping out all drinking water sources found in these areas. As a result, our team decided to narrow our scope to include only publicly accessible fountains and refill stations on campus. However, we feel that identifying the positions of fountains in these buildings would have greatly benefited the students, staff and faculty members routinely using these areas. In addition, it was difficult to utilize existing inventory and mapping of water sources to effectively compare changes in the type of water source being installed pre and post ban due to the 2011 data set not accurately identifying whether a site was a water refill station or a drinking fountain.

The process of surveying the campus community was also faced with several limitations. Given our short timeline (10 day sampling period), we recognize that our process of acquiring survey responses by posting in Facebook groups and to our professors was not perfectly randomized. We acknowledge that a response bias is likely present, as we had an increased chance of surveying individuals studying sustainability-related coursework. It is difficult to control and monitor the number of individuals that see the survey compared to those that decided to complete the survey. Thus, we understand that those that completed the survey likely are more knowledgeable on this subject, and perhaps exhibit more socially responsible behaviours relating to drinking water consumption on campus. To manage these biases, we first assume that those that did not respond would have responded in the same way that our recorded respondents did. We also recognize that although those that responded were likely studying sustainability, the perspectives of these individuals may be more informed and more profound. When designing a marketing plan, it is important to inspire and learn from these individuals. Finally, through identifying these potential biases and understanding how they may have

impacted our study, we can better understand the results and limit their negative impact. Ultimately, we viewed them as a valuable guide for our marketing strategy despite these limitations.

Recommendations
Marketing Plan

As discussed, the data collected from the study highlights the need for an educational and impactful marketing campaign. For example, more than half of the participants were unaware of the bottled water ban, which was reiterated in the comment section of our survey, as some responses highlighted that more information should be shared about the ban. Therefore, we have developed an integrative and feasible marketing campaign that can be active year-round using communication methods preferred by the University of Toronto community. More specifically, we created a campaign based on three pillars: visuals (for creative content), communication (for proactivity and increased engagement), and social media (to build momentum).

The first part of our marketing campaign utilizes social media as a strong educational tool for students to learn more about the ban, why it has been implemented, and where they can access water on campus. With the help of our client's connection to the manager of the official University of Toronto Instagram account, we will create a series of short clips that, when combined, will build a short movie including all the information pertaining to the bottled water ban. In these "stories", we will discuss cost, consumer perception, and environmental and socio-political concerns of consuming bottled water. In turn, we hope that shedding light on this issue through this highly-used platform will foster a sense of caring and proactivity from students and encourage a behaviour change. In addition to posting Instagram "stories" on the recognized University of Toronto Instagram page, we will recommend publishing posts on Facebook with information pertaining to water conservation, events happening on campus (to be discussed further below in more detail), and links to the water bottle map. Finally, we have also generated a hashtag to further gain momentum in this campaign: #watergoals. We believe this hashtag is straight to the point and illustrates the necessary steps towards water conservation as positive and exciting.

Secondly, our marketing campaign includes the organization of a Water Fountain Scavenger Hunt on the University of Toronto St. George campus that is ready to be implemented (see Appendix, Figure 24). The goal would be to find the highest number of water fountains on campus within an hour and the winner would receive a basket of locally-sourced fruit and vegetables. The basket would come from Mama Earth Organics, only cost $30CAD to the Sustainability Office, and would be delivered for free. We recommend this prize because buying local saves water which highlights the relationship between water conservation and other aspects of sustainability such as sustainable agriculture. This an entertaining, interactive, and educational way of sharing the multiple locations of water fountains and refill stations on campus to students and raise awareness about the water bottle ban, but it also generates incentive for students to grow their participation in this movement.

Thirdly, we recommend all the registrar offices to send a school-wide email to all students, staff, faculty, and groups at the beginning of each semester to remind the community about the water bottle ban, how they can find water fountains on campus using the updated water map, and where to find more information about why the ban was implemented. We have already drafted the first potential email (refer to Appendix, Figure 23), but future versions could include the financial, health, social benefits of reusable water bottles. These benefits include reducing plastic use, promoting sustainable behavior, increasing access, saving money and reducing risks associated with contact with BPA plastic including increased risks of breast and prostate cancer. Although it was surprising to find that email reminders ranked amongst the most preferred methods of communication, email correspondence is one important avenue through which the campus community receives information about the university. This email can foster communication between the registrars and the rest of the campus community especially active campus groups such as clubs and associations that have a strong student voice.

Finally, our group has designed directional signage and posters to communicate the locations of water fountains and refill stations throughout campus and information about the bottled water ban. Building signage and posters were the two most popular methods selected by survey respondents to communicate the locations of drinking water infrastructure on campus. These signs and "did you know" posters would be placed in all buildings with a water fountain or refill station in high traffic areas such as a foyer or common area, since 10 percent of drinking water infrastructure was located in these areas. The "nearest water fountain" sign (see Appendix, Figure 22) would be ideally paired with bathroom signage since 30 percent of drinking water infrastructure was located near a washroom. Signage placement should be prioritized in older buildings as there are less water sources available and these are difficult to locate. This would ease the search for the nearest water fountain location for the campus community and connect them to the Water Map to locate water sources on the go.

Water Accessibility Improvements
To improve water accessibility on campus, access needs to be equitable across all areas of campus and there needs to be a timely update on the Water Map, which serves as the tool to guide the campus community to publicly accessible water sources.

Firstly, there are areas of campus that experienced a smaller increase in drinking water infrastructure, especially in refill stations that allow for the easy refill of tap water. This was most present in older buildings such as Knox College or Hart House, which are in need of water refill stations on every level of the building. Many of the older buildings on campus only have a single drinking fountain in the basement. This can be challenging for individuals with difficulties associated with accessibility or individuals who are not familiar with a building. The installation of water refill stations on the main floor of these buildings will help to alleviate this issue.

Secondly, a centralized drinking water infrastructure database should be maintained by facilities that tracks the instalments of all new water fountain/refill stations. The process of canvassing the campus to find water fountains/refill stations is cumbersome and inefficient, considering the size of the campus community and the St. George campus, resulting in a gap in water accessibility. A database would allow for an easy and routine update to the Water Map every year. The database would track water fountains/refill stations that have been added, removed, broken and replaced/upgraded in each building making it easier for the Sustainability Office to update the online Water Map. This ensures a timely update to the Water Map for the campus community to locate the nearest water source.

Lastly, the administration staff of high occupancy buildings, especially those that are frequently used by students such as Robarts Library, Bahen Centre and Medical Sciences Building were not only unaware of the bottled water ban but were unable to locate the nearest water source on the main floor of their respective building. The administration staff in buildings are an important source of information as they are often consulted by campus guests to provide specific information including where to access water within the building. During the placement of signage and posters within these buildings, the Sustainability Office should engage with the administration staff to discuss the bottled water ban and the importance of communicating the nearest water source to the campus community. These three suggestions would increase the campus community's access to publicly available water sources.

Next Steps for Living Lab
Within this project, our team realized there could be more research done on this topic that explores a variety of relationships and issues associated with a bottled water ban and general campus water accessibility. Here are a few research ideas we propose for future groups to investigate within this course:

First, more research needs to be done to determine the differences between reported behaviour and actual behaviour. In our survey, we found that an overwhelming amount of people reported that they carried reusable water bottles but how valid was this response. A survey in which random people are stopped and asked if they have a reusable water bottle currently on them would have provided a more accurate result than our online survey. With this information a more accurate conclusion could be determined about the possible link between implementing a bottled water ban and a positive behaviour change.

Secondly, the survey showed that many individuals prefer to receive information via email over other forms of communication. This would also be an interesting result to challenge. The campus community receives multiple emails in a day, and many go unread. An experiment to determine the approximate percentage of students who actually open an email memo about the bottled water ban on campus may be helpful to better inform future marketing strategies.

Finally, experiments testing different types of visual communication (poster, signage indicating locations, maps, etc.) may prove helpful. There are many different visual communication strategies and an experiment testing the efficiency of different types could help identify which visual aids are the most effective.

Conclusion
In conclusion, the University of Toronto implemented *bottled water free campus* initiative in 2011 to address the environmental, health and human rights issues relating to bottled water consumption. Our team identified that there is still a lack of awareness of the bottled water ban, demonstrating that there is a need to educate the campus community on this matter and the reasons behind this ban. Our team conducted research to determine effective techniques and solutions to tackle these issues. We've provided our clients with ideas and drafts of materials to raise awareness, educate and encourage all members on campus to only use reusable water bottles. We have provided an updated water map so that people know how to easily access drinking water on campus. Through recognizing that marketing strategies impact every individual in a different way, we designed a comprehensive marketing strategy with several approaches to help educate the campus community. All of these findings will contribute to future progress surrounding the bottled water ban and help inspire positive behaviour change. Our

hope is that we will accomplish our #watergoals by inspiring the U of T community to adopt sustainable behaviours and to lead change within their classes, faculties, workplaces, residences and peer groups.

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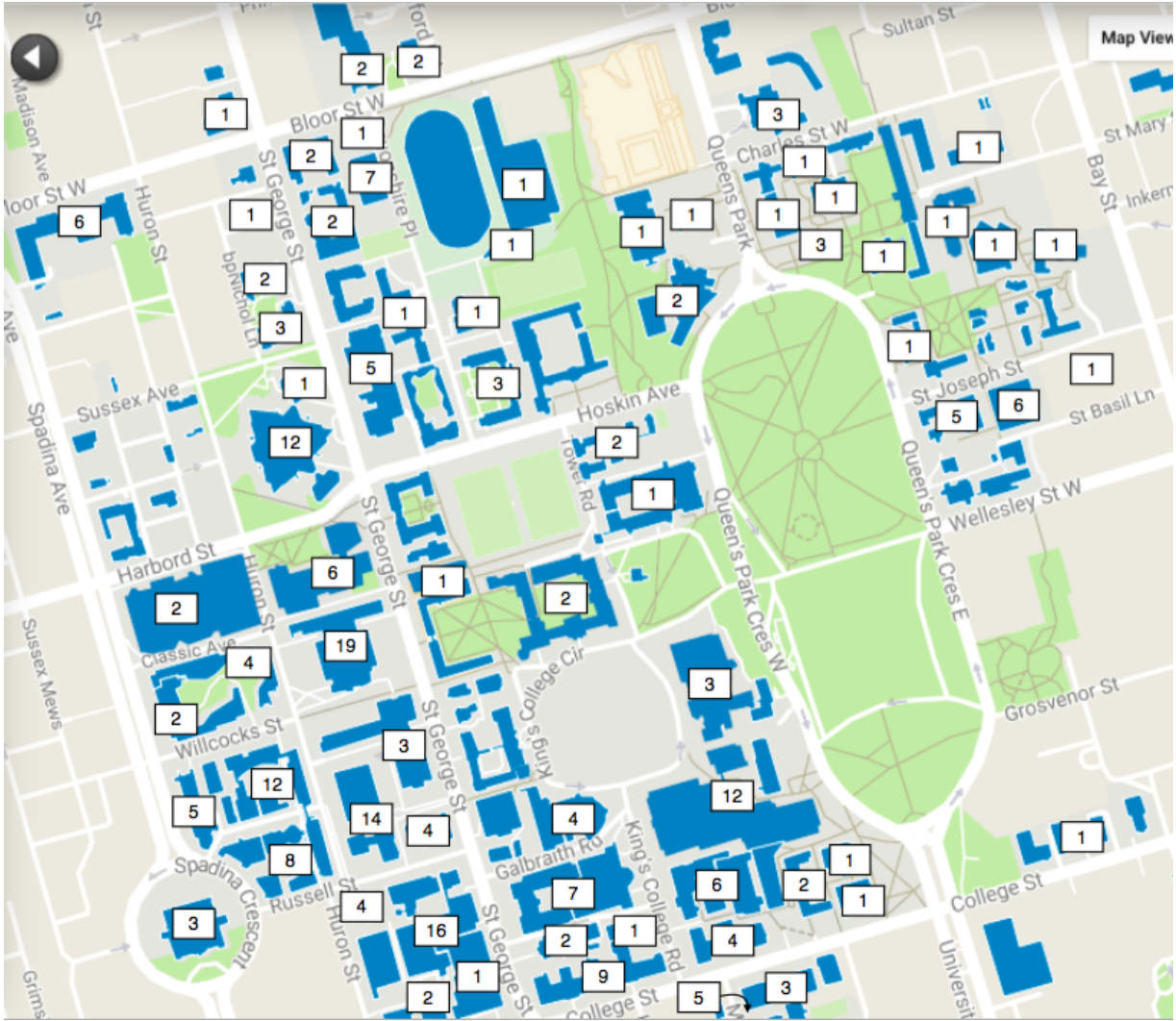2016.

Appendix

Figure 8: Map of the locations of Drinking Fountains/Water Refill Stations on St. George Campus
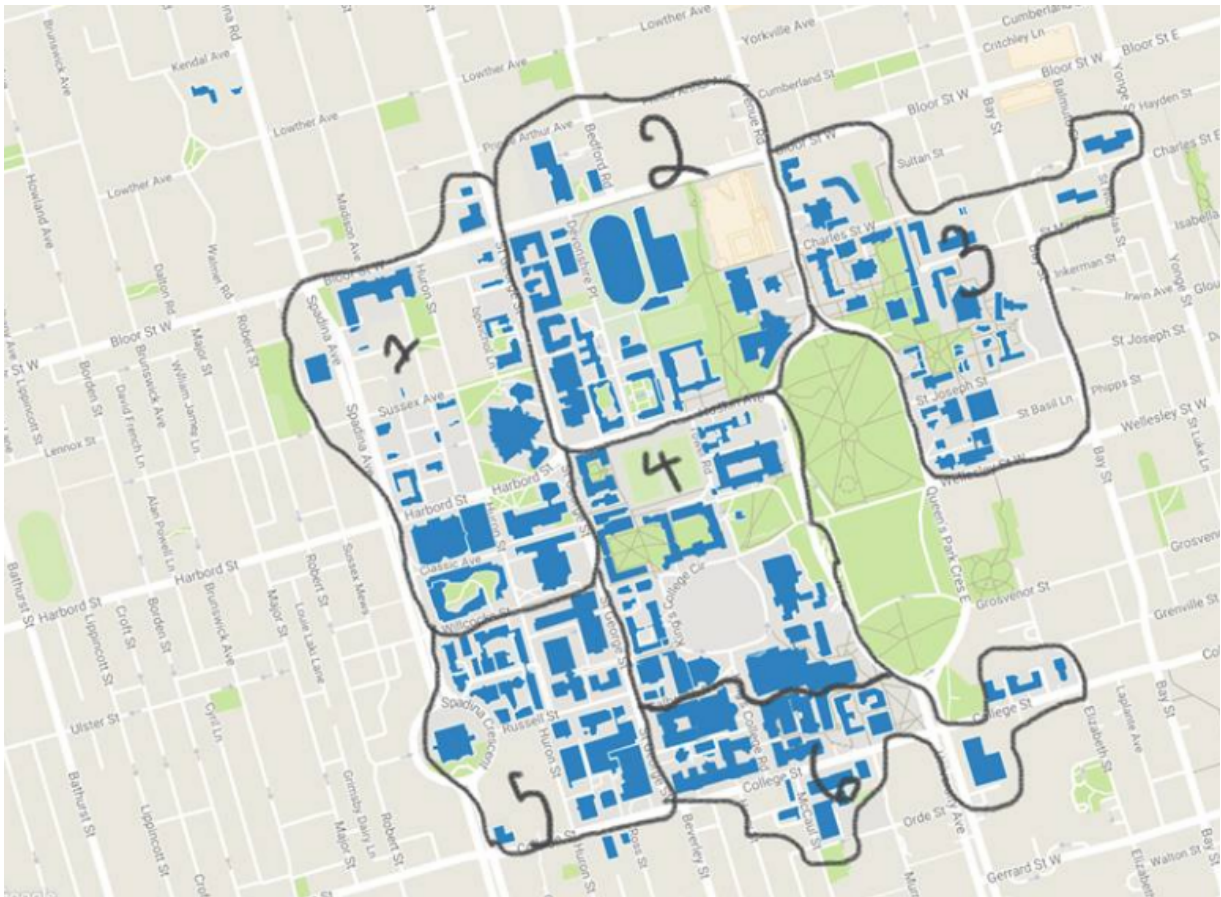
Figure 9: Sections used to create drinking water infrastructure inventory

Figure 10- Figure 21: Section Maps showing the locations of drinking fountains/water refill stations
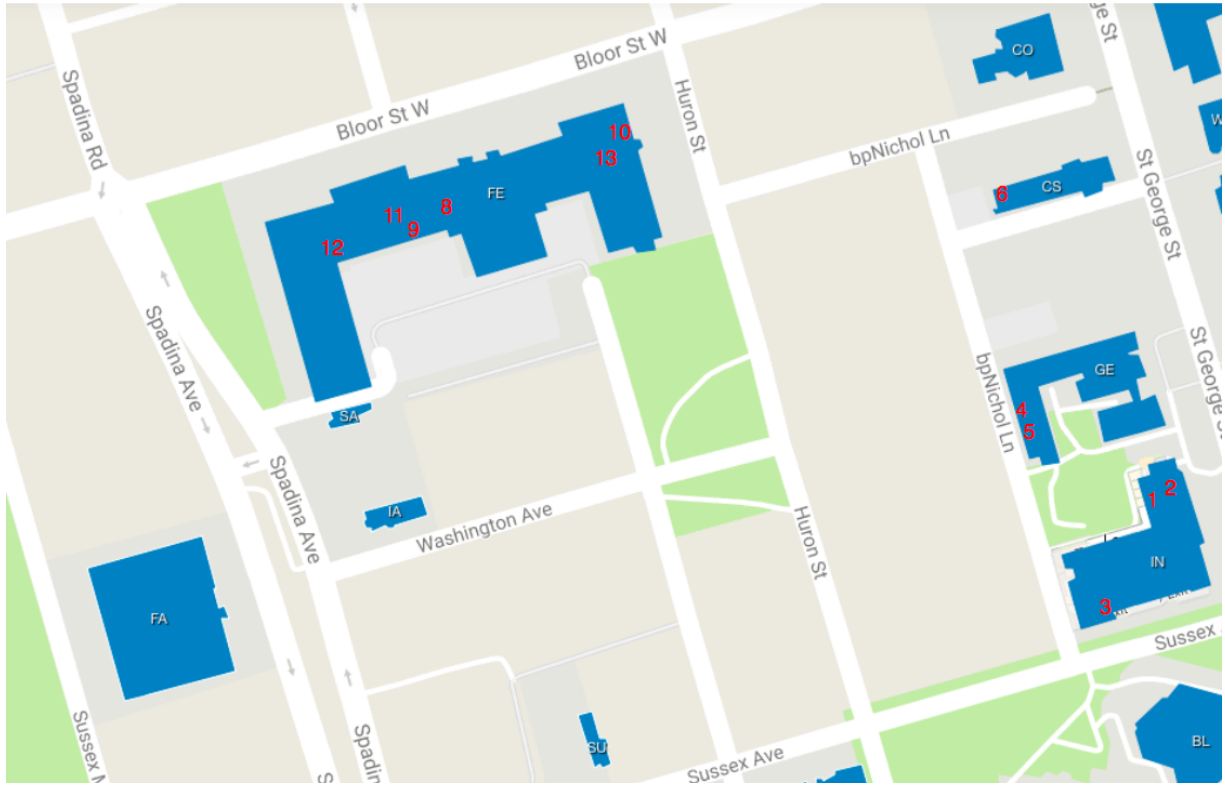
Figure 11

Figure 12

Figure 13

Figure 14

Figure 15

Figure 16

Figure 17

NF 117
118, 119
PR
LB
BR
BS
OH
WN
PH
SR
Elmsley Pl
GH
PI
MN
MH
BH
FS
St Joseph St
SV MZ
TF 104
CR
St Joseph St
C F
105
106
KL
107, 108, 111
St Basil Ln
TH 116
AH
Queen's Park Cres E
Que
XQ
112, 113, 114, 115
109, 110

GS
Willcocks St
MM
WI
215, 216, 221
Willcocks St
LM
214, 217, 220
229
194, 195, 196
St George St
211
198, 199
KX
FC
ES
NR
Spadina Ave
201 197 200
Nona-MacDon
231 230
GU
BF
232, 233, 234
KP
212, 213 Bancroft Ave
223, 224
218, 219
Huron St
MP
AB
226
243
NB
235
202, 203, 204, 205, 206, 207, 208, 209, 210
244, 245, 246
Russell St
SB
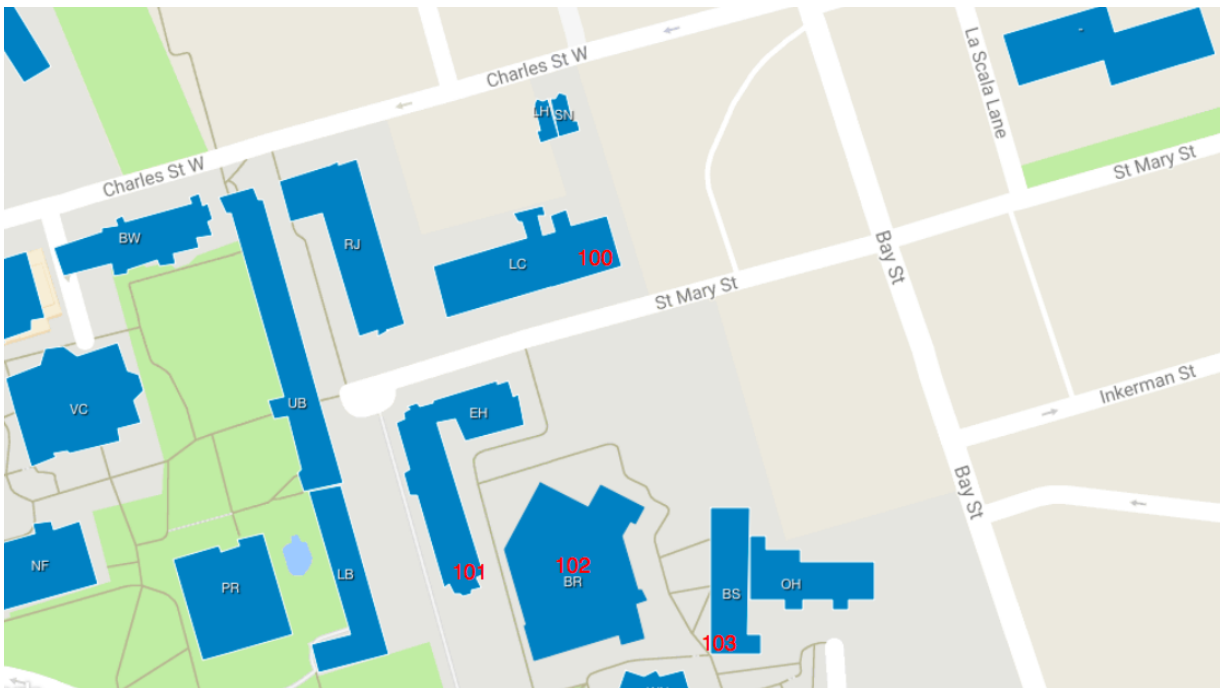Spadin
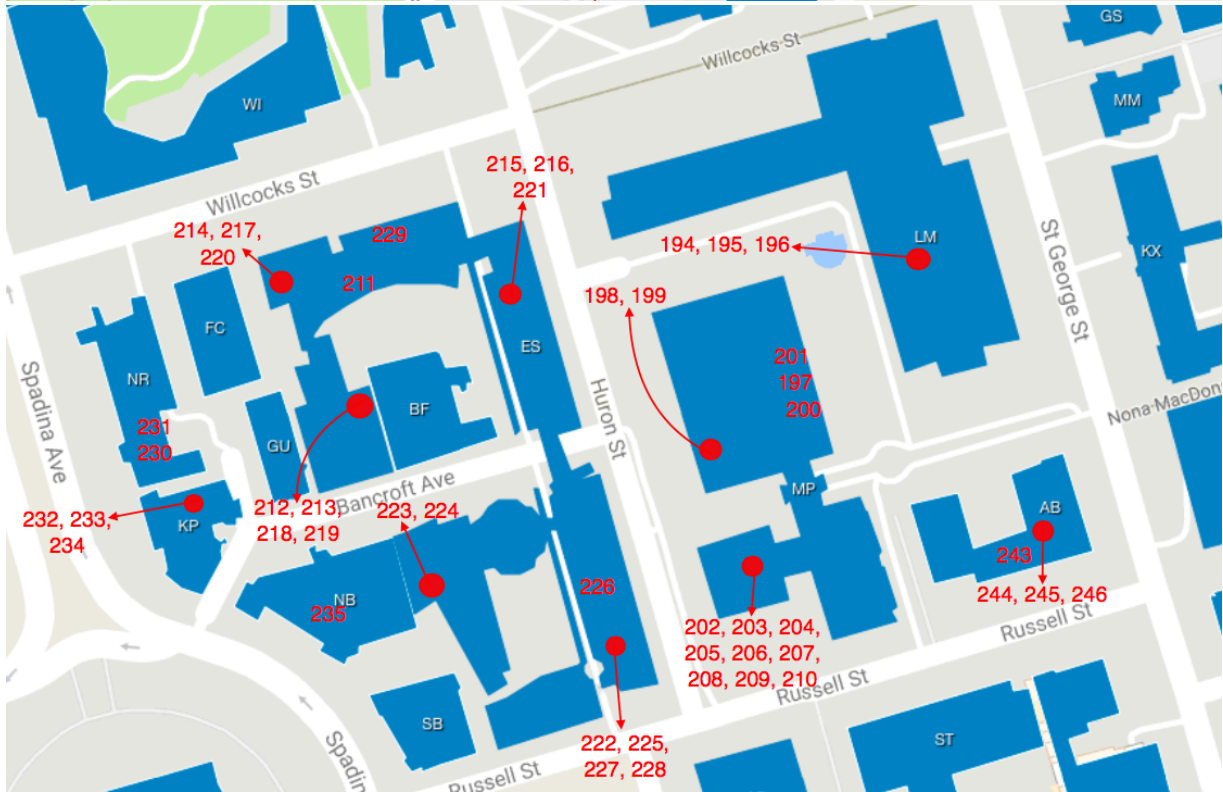222, 225, 227, 228
Russell St
Russell St
ST

Figure 18

Figure 19

Figure 20

Figure 21

Figure 22- Drafts of signage and posters for marketing strategy

Think outside the bottle. #watergoals

NEAREST WATER FOUNTAIN

BESIDE THE WOMEN'S WASHROOM

VISIT MAP.UTORONTO.CA/WATER TO FIND WATER ANYWHERE!

DID YOU KNOW?

- UOFT HAS A WATER BOTTLE BAN
- UOFT HAS A MAP OF ALL REFILL AND DRINKING FOUNTAINS
- THINK OUTSIDE THE BOTTLE AND SPREAD THE WORD USING #WATERGOALS

DID YOU KNOW?

- UOFT HAS A WATER BOTTLE BAN
- ONLY 14% OF WATER BOTTLES IN ONTARIO GET RECYCLED
- AND IT TAKES 700 YEARS FOR ONE PLASTIC BOTTLE TO DECOMPOSE
- YOU CAN MAKE A DIFFERENCE BY USING REFILL FOUNTAINS AVAILABLE ON CAMPUS
- #WATERGOALS

Dear student, staff, and faculty,

On behalf of the Sustainability Office, we would like to happily remind the entire campus community that there is a **water bottle ban** on the University of Toronto campus.

This initiative was launched 2011 to ban the sale of bottled water on campus due to environmental (recycling) and socio-political (access & commodification) reasons.

In response to the ban, the University of Toronto has installed many **water fountains** and **refill stations** around campus which provides free and filtered water to the Toronto campus community. We also encourage the use of refillable water bottles on campus which can be purchased at the bookstore.

Finally, we would like to inform you that an updated map of all refill and drinking fountains on campus is available by clicking on the link below:

<div align="center">

http://map.utoronto.ca/water

</div>

If you would like to learn more about University of Toronto's initiative to ban water bottles on campus, please visit the following page: https://ueat.utoronto.ca/everythingfood/environmental-initiatives/bottle-free-campus/

As the commodification of water is an increasing issue on campus, across Canada, and around the word, we incite students to discuss this matter amongst each other, learn more about the issues regarding the use of water bottles, and use the hashtag **#watergoals** to voice their contribution on social media.

Figure 23- Draft email reminder

UofT Campus Water Fountain Scavenger Hunt

What
The UofT Water Fountain Scavenger Hunt is an entertaining and interactive way to raise awareness about the campus water bottle ban and to get the campus community involved in water conservation practices. The event requires participants to find as many water fountains on campus in a span of one hour. The participant that proves they've visited the most water fountains wins a prize. This prize would be a basket of fresh organic fruit and vegetables from local Ontario farms. The basket would be delivered by Mama Earth at the participant's address and would cost $30 for the Sustainability Office.

Why
College campuses are buzzing with busy students, staff and faculty, so being aware of all the water fountains isn't always easy. This was confirmed throughout our survey study. The Scavenger Hunt is an entertaining way to introduce students to a college campus that has widespread access to clean and free water and a water bottle ban. And, by letting them explore it on their own.

Who
The Scavenger Hunt is open at all campus community (undergraduate and graduate students, staff, faculty) with a valid university ID.

How
The event would be promoted on Instagram and by creating a Facebook event.

Other Items Needed
- Campus maps for participants
- Pens/pencils for each participant
- Camera phone or camera phone for each team leader

Basic Instructions
1. Sign up by emailing the UofT Sustainability Office and ask how you may participate to this event.
2. Fix a date and receive instruction on how to proceed.
3. Finalize the water fountain list. The list should include locations of each water fountain that was spotted and a picture (or other tangible evidence.)
4. Ask about any security access issues (if buildings cannot be entered without student ID cards, etc.)

Figure 24- Draft orientation event activity to promote bottled water ban