THINK OUTSIDE THE BOTTLE CAMPAIGN AT WPI

With Assistance By:
Corporate Accountability International

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Abstract

This project follows the goals of the global Think Outside the Bottle campaign: promote public tap water by educating the community about its environmental and economic benefits, and expose the misleading marketing of the bottled water industry. Through this, a publicity campaign was started on campus to phase out disposable water bottles, and recommendations for moving forward are laid out.

Executive Summary

In the United States prior to the 1970's water was mainly consumed through the tap, but when trust in the government began to shift, corporations saw an opportunity and thus began the rapid sales of bottled water. The exponential increase in sales of bottled water was mainly due to corporations' aggressive advertising campaigns misrepresenting the quality of bottled water as far superior to tap water and hinting that tap water may be harmful to public health or that there were special minerals in bottled water (Poland Spring, 2011). Consequently, consumption and confidence in the public water system began to wane. The sale of plastic water bottles has increased over the past 30 years partly because of the apparent increased convenience of a disposable, readily available product and partly because of the negative media attention from bottle water companies on tap water. "Bottled water has become so ubiquitous that it's hard to remember that it hasn't always been here" (Bottled and Sold, Gleick, page 6). The general convenience of buying a bottle of water rather than bringing a reusable one from home was an attractive concept to a society that was starting to choose the easy way out. However, cost and convenience are not the only issues with disposable water bottles. Bottled water has harmful effects on both the environment and our community. By educating the Worcester Polytechnic Institute (WPI) community on these issues, we hope to gain its support and phase-out the sale of disposable water bottles on our campus.

We worked with Corporate Accountability International (CAI), a non-profit organization aimed at "protecting human rights, public health and the environment from corporate greed and abuse around the world" (www.stopcorporateabuse.org) .Our project followed the goals of the global Think Outside the Bottle campaign: promote public tap water by educating the community about its environmental and economic benefits, and expose the misleading marketing

of the bottled water industry. Our goal was to establish this campaign on campus and by gaining the support of the WPI community, establish a plan to phase out the use of disposable plastic water bottles on campus.

Methodology

After compiling all of the background knowledge needed to have a good understanding of the general positive and negative aspects of both bottled water and tap water, our approach for obtaining the project goal was developed. The goal of this project is to develop a campaign which would phase out the use of disposable bottled water on the WPI campus. We developed a set of objectives each aimed at a different aspect of the campaign in order to accomplish our goal.

1. Educating ourselves on the current state of disposable water bottles on campus and the thoughts of the community on the elimination of bottled water.
2. Educating the WPI community by creating awareness and relaying facts about tap water versus bottled water.
3. Developing events for the community that displayed and helped show support for the "Think Outside the Bottle" campaign.
4. Developing and researching the effects and outcomes of implementing a reduction or elimination of disposable water bottles on WPI campus.

These set of objectives provided a set of categories in order to separate the campaign into sections making it more effective and efficient to implement on campus. With these objectives in mind we compiled a set of methods which would achieve the desired objectives.

1. In order to educate ourselves on the opinions and ideas of the WPI community we established focus groups, interviews and distributed surveys. This allowed us to gain both quantitative data and qualitative data on the ideas of the community.
2. To heighten the knowledge of the community on the issues of bottled water we tested local brands to gain information that can hit a personal level with the community and then spread awareness through local media sources and visual presentations.
3. In order to promote the campaign we worked closely with Corporate Accountability International and the tools they provided us, such a providing us with a guide for developing a blind taste test to help convince the public that there is no real difference between the taste of tap water and bottled water.
4. Finally after having the backing of the community we developed interviews and presentations with higher up management figures in order to help develop the idea and gain some ground on phasing out the sale of bottled water. This was mainly achieved through investigating proper alternatives in order to combat the negative effects of phasing out the bottle.

Findings and Discussion

Community Support

Our research and analysis established that the majority of people within the community felt that it would be feasible to use mainly tap water as a means of obtaining drinking water. Through the analysis of our survey it was determined that 59% of survey takers responded that they would be willing to pledge to use tap water 100% of the time. 52% of survey takers were either satisfied or very satisfied with the tap water at their residence, while 86% of survey takers

lived off campus. This leads to the conclusion that people are generally satisfied with Worcester's public tap water.

The majority of the focus group participants liked the idea of obtaining more bottle refill stations similar to the ones in the Recreation Center. One participant even stated they take the effort and go out of their way of use the stations in that location. Focus group participants thought that the filters in the stations helped debunk the idea that tap water is unclean. Participants also talked about there being a difference in taste, which based on the taste test was largely proven false.

Most WPI community members could not differentiate a difference between Worcester tap water and bottled water when attempting the Tap Water Challenge. A common theme seen during Tap Water Challenges were people thinking they knew exactly which water sample was which, however when given the answers only 4.2% of the total 97 participants correctly guessed all water sources and a majority of participants were shocked to find that none of their guesses were correct. In addition to the Tap Water Challenge, 67 petition signatures were obtained within the short span of about twelve hours pledging to use tap water 100% of the time.

Reasons for Not Supporting the Campaign

A portion of the WPI community felt that bottled water is needed in case of a state of emergency. When holding meetings with WPI executives, such as Philip Clay, the constant question that arose was that tap water may not be readily available during emergency cases and bottled water may be the only alternative. Some of the participants and passersby also felt that in those situations the only means of getting safe water would be through bottled water. It no longer is a question of cost or cleanliness but a necessary alternative during emergency scenarios.

A portion of the student body did not use the current water fountains available on campus and did not find them very appealing. One question on the survey was: “is there anything you particularly dislike about tap water at your residence?” This question was partially intended to solicit responses along the lines of “it’s dirty” or “it’s not as clean as bottled water”. Some other responses discussed an aversion to the chlorine taste in the water, which is merely a matter of preference, though a taste of chlorine would seem to indicate the water’s cleanliness. Also during the focus group a number of participants felt that the residence halls had similar issues of pressure, temperature and taste issues.

A portion of the WPI community felt that they simply did not support the ban because it was a “ban” which implied a choice was being taken away. Many members of WPI executives including those of the President's Task Force felt that by placing a ban or eliminating bottled water, that a individuals rights was being taken. Feedback on the survey also showed that some faculty supported the campaign, but did not like the implication that they are restricting the choices of the people. They felt people of the community should be informed about the harms of bottled water and based on that make a educational decision to use it or not, but a educational decision nonetheless.

New Ideas

Based on our school demographic and viewpoint, we developed new ideas. Through various meetings and interviews we gained new ideas that helped further the “Think Outside the Bottle” campaign. Jill Appel provided us with marketing aspects and ideas which were helpful in moving our campaign forward. Particularly the idea of Tap Buddy, a free downloadable app which displays the nearest tap water source on campus caught our interest.

New ideas developed during the campaign to gain a marketing edge. Additional ideas were to give out free “WPI is green” themed refillable water bottles on special awareness days. In our discussion we joked about new ideas and one which seemed very feasible and fun, was the idea of waterbucks. They would be paper money with water drops in the center.

During the focus groups and from participants during the Tap Water Challenge, a new idea for testing samples located on WPI campus was developed. We tested both samples straight from the water fountains on campus and from bottled water brands used. The samples can back completely clean leading to the conclusion that there is no difference between bottled water and tap water. Everything is the same besides the price.

Progress

Through our presentation to the President's Task Force and our interview with Philip Clay and Joe Kraskouskas we established that in addition to the educational aspect, the business aspect needed to be incorporated. The financial aspect was determined through talks with Genevieve Moss-Hawkins and Mary Whitney in order to determine statistical comparisons. The economic feasibility and alternatives to the cost of phasing out bottled water was discussed in interviews with the catering company Joe Kraskouskas and The President's Task Force compiled of influential executives of the college.

Recommendations

After conducting focus groups, distributing a survey, holding Tap Water Challenges and countless interviews, our group developed the following recommendations for the use of furthering the “Think Outside the Bottle” campaign on the WPI campus.

WPI Implementing the first step of phasing out the disposable water bottle

We recommend that the renovation be made to existing water fountains to fountains with filters. We have researched popular water fountain brands with water bottle fillers, like Globaltap, and we think that those models would be ideal to use for students to refill their reusable water bottles. We also recommend that there be research done on the of refrigeration water fountain units versus the units that are just simply hooked up to the tap due to a higher electricity cost to WPI. The renovations of the water fountains will allow for students to be more apt to want to use them then to use old water fountains that look unappealing.

We recommend that Chartwells have pitchers at catered events instead of bottled water. We recommend that with this simple change, it could mean dramatic differences in the amount of disposable plastic water bottles the campus consumes. By having water in pitchers the default option, and bottles available by request, a significant portion of water bottle consumption on campus could be eliminated without forcing any significant changes to the events hosted on campus, as bottles would still be available when appropriate.

Future IQP groups and the student Green team to implement on campus

We recommend that establishing more events (such as the Tap Water Challenges, petitions, and the Facebook page) and public activities, it will enable the furthering of the campaign and allow the progress already made to grow. Through more events like the taste test and a film showing, we will be able to educate the public on the issue and help decrease the sales of disposable water bottles. By working closely with Chartwells, the campus catering company, we can determine the decrease in sales based on the increased awareness on campus. Also our research has shown that when we host events that are creative and new, the WPI community is

more responsive and approving of our final goal to phase out disposable water bottles on campus.

We recommend continuing all communication and work with both the President's Task Force and the Executive of Chartwells. Through our experience, the more communication that occurs the more support we gain. We recommend frequently holding meetings with progress updates and ideas of the campaign for a good understanding to be established and miscommunications to be resolved.

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1.0 Introduction

In today's consumer market, it is not uncommon to see two competing versions of the same product, Pepsi and Coke for example. The duopoly persists because corporations make arguments about each product's uniqueness. But what if there were two such products that were so identical that even fervent consumers of one could not tell it from the other? Once more, what if one product cost hundreds of times more than the other, while causing severely more damage to the environment? Surely there would be no competition, and the cheaper, friendlier option would take over in an instant, right? What has just been described is the competition between tap water and bottled water. Tap water is the more affordable, higher quality option, and yet bottled water is outselling it.

Why Plastic Water Bottles?

Much of the public favors plastic water bottles over public tap water. Consumers like the convenience of bottled water as they can find them at any shop around the corner. In contrast, how easy is it to find a clean, usable water fountain?

In addition to convenience, consumers choose to drink water from a trustworthy source. However, how trustworthy really is bottled water? It is less rigorously regulated, less rigorously tested, and not monitored for the same 90 contaminants that tap water is regulated for. So why do consumers seemingly trust big companies over the government? Companies like Poland Spring advertise their water as natural 'born better' water (Poland Spring, 2011). How accurate is this statement? Which source really is cleaner? The popularity of the plastic water bottle is due to the convenience of bottled water, the well-constructed advertising as a natural clean water source,

and the trust in big companies dedicating their time to their product. Conversely, public drinking water is underutilized because of consumer perception about its quality and convenience.

Most people today have used a plastic water bottle and have either recycled it or thrown it away. Most people also know that the use of plastic water bottles is harmful to the environment, but do they know why it is harmful, or the gravity of the harm? Do they know why they are drawn to buy bottled wat**e**r rather than using a personal bottle? Do they know what agency regulates the public water vs. the bottled water and to what degree?

Many people are aware that bottled water is not the best solution to use but they have grown dependent on it. Not enough people know the hard facts of the bottled water industry, nor how bottled water affects the environment and the community.

Environmental and Community Impacts of Bottled Water

Consumers need to be educated about the bottled water industry's impact on the environmental and community. When a water bottle enters a landfill it takes 300 years or greater to decompose due to the chemical compounds that make up the hard plastic material. Moreover, the production along with the recycling of plastic water bottles still produces large quantities of greenhouse gasses due to the fact that as much as 40% of recycled bottles are first exported overseas.(Arnold, E, 2006) Most people would assume that the regulations on the bottled water versus tap water are the same. However, bottled water is regulated by the United States Food and Drug Administration (FDA), while tap water is regulated by the Environmental Protection Agency (EPA). The FDA is a government organization that regulates a myriad of products including food and pharmaceuticals. For regulatory purposes, bottled water is considered a food.

Consequently the FDA regulates how bottled water companies put water into the bottles and have some regulations on the water source.(Posnick, 2002) Conversely, the EPA regulations of public drinking water are quite rigorous, limiting the quantity of close to 70 different possible contaminants.(40 CFR 141, 2012) The EPA and more directly, in Massachusetts, the Department of Environmental Protection, dictates how, when and what must be monitored in drinking water sources as well as reporting requirements. Tap water is the most regulated water source while the bottled water is of lesser quality. In our project we hope to educate the public on these issues and have the WPI campus become more aware of what resources they use.

The ultimate goal of this project is to find an economically feasible way of eliminating or reducing the amount of water bottles sold and consumed within the Worcester Polytechnic Institute campus. Through evaluation of current water systems, contracts, and habits, the team will create an awareness campaign on campus about the harm of plastic water bottles. We will garner campus community support of our campaign through petitions and public events. We will research and present alternatives to current water on campus to the head of facilities and the president. The research will be passed to campus organizations associated with greener college living so that they may help build support and the alternatives presented will hopefully be implemented on campus.

2.0 Literature Review

2.1 Introduction

The sale and consumption of disposable bottled water in the United States has increased exponentially over the past 30 years (See Figure 1), and that is partly due to the increased convenience for the consumers and partly as a result of the negative advertising circulated by the bottled water companies. “Bottled water has become so ubiquitous that it’s hard to remember that it hasn’t always been here” (Bottled and Sold, Gleick, page 6). Bottled water is sold in almost every store in the country and consumers are buying it when tap water is far cheaper and often times cleaner. The question however, is why? And, what is the solution?

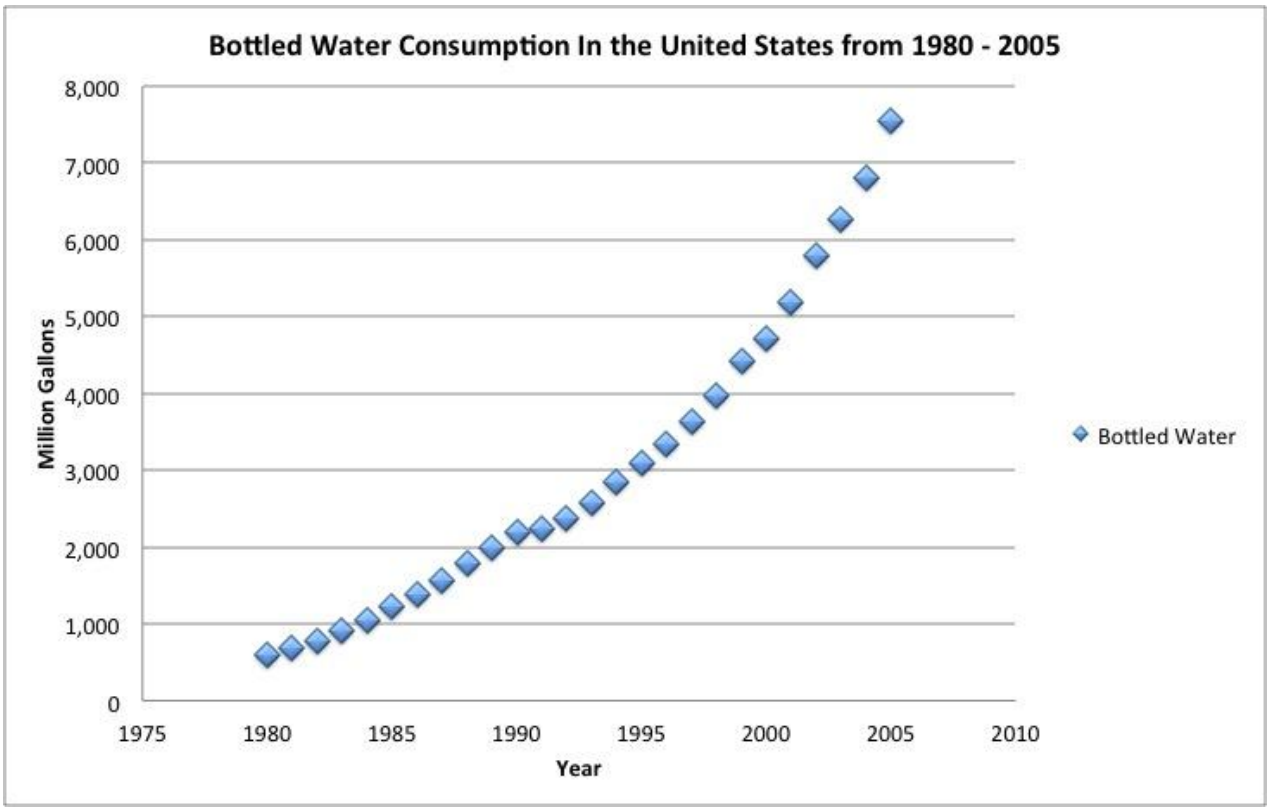

Figure 1

(Bottled Water Boycotts: Back-to-the-Tap Movement Gains Momentum, Janet Larsen)

The purpose of this project was to educate the WPI community on the effects and quality of bottled water on the environment and society. Additionally, our ultimate goals were to create consensus among the campus community on the projected path for phasing out the sale of bottled water from WPI's campus. In section 2.1 we discuss the regulations on public drinking water, the infrastructure of the public drinking water systems and specifics on Worcester, Massachusetts drinking water. Section 2.2 provides a background into the public water system and the confidence the public should have in their water. In section 2.3 we discuss the bottled water regulatory framework and the history behind the rise in the bottled water industry. Section 2.4 explains some of the environmental and economic problems with bottled water. In Section 2.5 we discuss past "Think Outside the Bottle" campaigns at different colleges within New England. In the final section we conclude with an explanation to why we researched this information as a background to our project on "Think Outside the Bottle".

2.2 Tap Water

Regulations on Public Tap Water

Tap water is subject to a strict and readily enforced regulatory framework. In the 1970's Congress passed the Safe Drinking Water Act (SDWA) to protect public health and ensure high quality public drinking water. The SDWA requires the United States Environmental Protection Agency (EPA) and state environmental agencies to work as partners to ensure delivery of safe drinking water to the public. The EPA implementing regulations set the floor for the SDWA regulation, but individual states with primacy authority may pass even stricter

regulations enforceable within state boundaries. The drinking water regulations establish maximum contaminant level limits for almost 100 different contaminants in public water systems. Additionally, the EPA determines maximum contaminant level limits, beyond which potential health effects exist. Compliance with these implemented regulations is vital for the cleanliness of the water, hence the reason for the establishment of the Enforcement Response Policy (ERP). The ERP, established in 2009, defines, prioritizes and addresses non-compliance with federal requirements. After the establishment of the ERP, the number of systems with violations decreased 47 percent in 3 years (Office of Enforcement and Compliance Assurance).

In Massachusetts, the Department of Environmental Protection (MassDEP) is charged with administering the SDWA and its implementing regulations. Pursuant to the SDWA and implementing regulations, public drinking water systems are required to distribute annual drinking water quality reports to every household receiving the system's water. The MassDEP does testing on water systems throughout the year; the water samples are tested in a state certified lab and the DEP receives the results. The MassDEP places varying priorities on the various contaminants that may be detected by these tests. For example, organic contaminants such as coliform content are treated as more serious violations than copper or iron content because the potential health effects of consuming them are far greater. This system persists even though consumer confidence in tap water has declined, as explained in the upcoming section.

Infrastructure and Finances

Over the past several years consumers have lost confidence in local tap water systems, partly due to the lack of government funding, but that was not always the case. In the 1970's,

state governments played a huge role in funding the maintenance and improvement of public drinking water infrastructure, in some areas as high as 70%. More recently, however, state governments only provide about 5% of the funds spent by municipalities to maintain their public water systems. This has been paralleled by a striking rise in sales and profits by almost all players in the bottled water market participants (Tapping Congress, 2011). These inverse trends can be attributed to the fierce advertising campaigns led by the bottling companies to reduce public confidence in the local tap water systems. This advertising caused a lack of political interest, and the ever-stretched federal budget was transferred to areas more urgently in need of attention. These transfers led to a decline in infrastructure maintenance, which the bottle media saw as vulnerability and used it as fuel on the fire of doubt, sending the process into a loop that has resulted in wildly uninformed perceptions of the quality of tap water. This caused a migration of consumers from tap to bottle, and grew the bottle market into what it is today. These perceptions are inaccurate however, "over 90% of U.S. municipal water systems regularly meet or exceed the EPA's stringent regulatory and monitoring requirements" (Corporate Accountability International, 2012). Tap water is held to the standards of the EPA, which in some cases surpass those set for bottled water by the FDA.

Worcester's Public Drinking Water System

Worcester epitomizes the high standard of public water created by the MassDEP regulations. Annually, a consumer confidence report (CCR) is delivered to Worcester residences providing information about the quality of Worcester's drinking water. The CCR contains information about where water comes from, how water is treated, water quality test results and

cross connection and conservation tips. Consumer confidence reports from 2008 through 2011 state that Worcester protects the city's drinking water by maintaining very strict control over land that holds water supply systems. Worcester actively provides 10 reservoirs, in addition to other sources for emergency purposes.

For water treatment, Worcester uses multiple processes to improve water quality. Filtration, a main process in water treatment, targets and removes unwanted particles. pH adjustments are used to make water less corrosive and less acidic. Corrosion control is used to make water less corrosive. Less corrosive water will not allow lead and copper, found in house plumbing, and iron, found in water mains, to be dissolved into the water (Worcester Consumer Confidence Report 2011).

Water quality tests are conducted to monitor levels of contaminants and ensure that clean, safe water is distributed into the city of Worcester. Hardness of water is tested and measured to a improve taste. The 2011 consumer confidence report for Worcester states that hardness was measured at an average of 27 ppm (see Figure 2), which is considered to be soft, tasteful water. Tests are also conducted on more vital contaminants, such as copper and lead levels. Copper and lead are tested using The Copper and Lead Rule, a statistical procedure of the 90th percentile where 9 out of every 10 samples must be at or below action levels. Worcester's water systems did not exceed action levels for copper or lead in 2011 (Worcester Consumer Confidence Report 2011) (See Figure 3).

SUBSTANCE	AVERAGE	RANGE DETECTED	TYPICAL SOURCE
Alkalinity	12.7 ppm	6—20 ppm	Naturally occurring. Buffering capacity of water.
Aluminum	0.083 ppm	0.022—0.266 ppm	Natural sources and water treatment processes.
Calcium	9.2 ppm	5.2—12.6 ppm	Natural Sources and water treatment processes.
Chloride	21 ppm	18—26 ppm	Natural and manmade sources.
Conductivity	126 umhos/cm	95—166 umhos/cm	An indirect measure of dissolved solids.
Hardness	27 ppm	19—36 ppm	Naturally occurring. An indirect measure of Calcium and Magnesium.
Iron	0.078 ppm	0.015—0.603 ppm	Natural sources and old water mains.
Orthophosphate	0.587 ppm	0.268—1.12 ppm	Added to water during treatment as corrosion inhibitor.
pH	7.6 units	7.09—9.23 units	Measure of the acidity or basicity of water.
Sulfate	8.9 ppm	7.0—12.1 ppm	Natural sources and water treatment processes.
Temperature	14 °Celsius	3—25 °Celsius	Natural processes.
Total Organic Carbon	1.85 ppm	1.01—2.5 ppm	Natural sources.
Total Phosphate	1.07 ppm	0.87—1.42 ppm	Added to water during treatment as corrosion inhibitor.
Zinc	0.004 ppm	<0.001—0.018 ppm	Natural sources and some galvanized plumbing material.

Figure 2

(Worcester Consumer Confidence Report 2011)

LEAD AND COPPER

For Lead and Copper compliance testing Worcester works cooperatively with the Elm Hill and Woodland Water Districts in Auburn, both of which purchase water from the City.

System	Contaminant	90 TH Percentile	AL	MCLG	# of Samples Tested	Exceeds AL (Yes/No)	# of Samples Exceeding AL
Combined Results For All 3 Systems	Lead	2 ppb	15 ppb	0	100	No	2
	Copper	0.110 ppm	1.3 ppm	1.3 ppm	100		0
Worcester	Lead	2 ppb	15 ppb	0	85	No	2
	Copper	0.110 ppm	1.3 ppm	1.3 ppm	85		0
Elm Hill	Lead	1 ppb	15 ppb	0	10	No	0
	Copper	0.096 ppm	1.3 ppm	1.3 ppm	10		0
Woodland	Lead	3 ppb	15 ppb	0	5	No	0
	Copper	0.103 ppm	1.3 ppm	1.3 ppm	5		0

Figure 3

(Worcester Consumer Confidence Report 2011)

The Worcester Water Filtration Plant is located at 71 Stone House Hill Road in Holden, next to a reservoir and surrounded by the beautiful scenery of central Massachusetts. Worcester drinking water goes through a filtration plant and rigorous testing prior to reaching residents' faucets. Worcester water is sourced from the reservoir, and first allowed to seep through layers of anthracite coal of increasing particle size. By passing through various grades in an increasing sequence, all but the smallest material contaminants are removed. The water is then stored in

standing tanks and ozone bubbles are allowed to float up through it. The volatile nature of the ozone molecules effectively and safely disinfects the water. Finally, lime and chlorine slurries are added. The lime acts as a base to control the pH of the water, as it tends to be a bit acidic after the prior processes. The chlorine reduces the turbidity, or cloudiness, of the water. The result of these processes is a water product that is clean and safe for the residents of Worcester. This information was obtained via a tour given by Darin LaFalam, an employee of the Worcester Water Filtration Plant.

2.3 Bottled Water

Regulations on Bottled Water

Much like tap water, bottled water must follow regulations set by government agencies. Unlike tap water however, bottled water is regulated by the United States Food and Drug Administration (FDA), as it is technically considered a food. The regulations govern everything from sourcing, to transporting, and every step in between. Water must be processed, transported, and packaged under sanitary conditions, and the periodical testing of this is expected of the facilities processing them. Such contaminants which are regulated are coliform levels, odor, color, turbidity, radiation and various minerals, totaling at over 70 regulated parameters. Various facilities must also ensure that their methods used to test for these, while not required to be identical to those of the FDA, must be able to replicate results as produced by FDA testers should the FDA choose to audit a facility. The FDA may randomly choose to audit a facility, performing quality tests on the water bottled there. Unfortunately, bottling plants are grouped in the same auditing pool as food production facilities, rather than a separate category,

and are rated low priority among these, causing them to be tested rather infrequently in comparison to a meat packing facility, for example. Also, when the FDA does test a facility, it does not test the levels of all 70 contaminants, but rather a select few based on the reason of the audit, such as microbial or radiological samples for a related violation. Through this system, bottled water is shown to be subject to comparatively less government regulation than public drinking water. The FDA does take contaminant violations into account by testing such facilities at a somewhat higher frequency until the violation is determined to be resolved (Posnick, 2002).

Bottled Water Sourcing

Sourcing regulations allow for multiple classifications to be bestowed on bottled water, and must be present on the label. An example, spring water is defined as "Water derived from an underground formation from which water flows naturally to the surface of the earth at an identified location. Spring water may be collected at the spring or through a bore hole tapping the underground formation feeding the spring, but there are additional requirements for use of a borehole"(Posnick, 2002). Other common classifications include sparkling water and mineral water. These classifications limit what may be done to water before selling it, and aside from purified water, they ensure that the water remains largely the same as when it came out of the ground. Fluoride however, and certain antimicrobial agents may be added under the regulations (Posnick, 2002). Big brands such as Dasani are considered purified water due to the filtration and reverse osmosis processes that it undergoes prior to packaging (Coca-Cola Company, 2012). Poland Spring, another tycoon water company, advertises that they only filter and disinfect their water after sourcing it from spring water, and as such their water is labeled as

spring water. A testament to corporate strategy, they also claim in this report that regulations on bottled water are stricter than on tap water, a claim that our research has proven false (Nestle Waters North America Inc., 2012).

Poland Spring and Aquafina are two of the biggest water bottle suppliers in the country. Aquafina has a purity section on its website, which includes statements like "Bottled water is regulated under standards set by both the Environmental Protection Agency (EPA) and the Food and Drug Administration (FDA)" (Aquafina, 2012). This is technically correct, as Aquafina is among the 40% of bottled water brands that are sourced from tap. They use the EPA and FDA to reinforce the idea that bottled water is more pure than tap water. It helps to establish their water product as better than tap because of all the regulations and testing it goes through. However, only the FDA, whose regulations are much less strict than the EPA's, regulate the transportation and sanitation aspects of the bottling process, which leaves room for contaminants to be introduced after the water is taken from the tap if the regulations are not being strictly followed. The advertising of the website makes the wording and picture very simple. The bottle pictures reinforce the idea that their water is pure with simple writing and an easily accessible page (Aquafina, 2012). Poland Spring on the other hand decided to set themselves apart and make environmentally friendly products. They claim that the bottle uses 60% less PET, and they also use 30% less plastic in their 500mL bottles.

2.4 Economic and Environmental Effects of the Bottle

The Truth Within The Plastic

The plastic water bottle is primarily made out of PET (polyethylene terephthalate), a synthetic fiber used primarily for its strength and resilience. This type of plastic can last in the environment from 450 to 1000 years (Contaminant Levels in Recycled PET Plastic, 2007). The plastic water bottle is not an environmentally friendly option, even with reduced use of PET.The space in landfills is still used and the material still resists decomposition in the relatively undisturbed environment. This is primarily due to the nature of synthetic materials, which aren't able to decompose in bioactive environments such as those found in landfills. PET is a petroleum based plastic, and only certain bacteria can break it down, hence is why the amount of time it takes for this plastic to break down is so excessive (Contaminant Levels in Recycled PET Plastic, 2007). Figure 4 displays the molecular diagram of a PET polymer. The molecule is so strongly fused that separating the molecule will take special bacteria in order to break the bond (Contaminant Levels in Recycled PET Plastic, 2007).

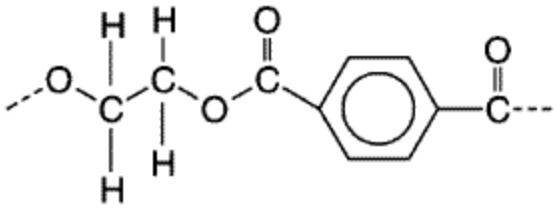

Figure 4

(Contaminant Levels in Recycled PET Plastic, 2007)

PET as described before is an inorganic compound. This not only makes resist degradation, but also makes it a difficult material to recycle. The PET material requires temperatures of at least 170°C, along with a suitable catalyst material to manually degrade. This

method of recycling is not only expensive, but also consumes much fuel, which consequently creates more greenhouse emissions. (recycled PET, 2003) Incineration plants utilize the burning of coal to maintain the fire, not just allowing the chemicals from the burning plastic to be released into the atmosphere, but also the chemicals from the burning coal. This contributes to environmental problems like the greenhouse gas effect (Recycled PET, 2003).

Currently only about 20% of the plastic that Americans place in their recycling bins is actually recycled (Recycled PET, 2003). The rest is deemed non-recyclable and is placed into landfills. Although recycling is a good means of reducing the amount of waste in the environment, it is not completely environmentally friendly due to the contaminants placed in the environment by the energy-intensive recycling process. (Recycled PET, 2003)

Plastic bottles are not only deposited in landfills, but have also been found in aquatic areas such as beaches and oceans when no effort is made to recycle them (Polymer Surfaces,2008). It has been shown that bacterial populations flourish on PET plastic surface (Polymer Surfaces, 2008). This bacterial growth can change the surface chemical characteristics and topography of the PET plastic. This results in increased degradation of the plastic, but this also results in an increase in bacterial activity of the aquatic area, which can have detrimental effects on the surrounding environment (Polymer Surfaces, 2008).

Economic Harm of the Bottle

During the 1970's government spending on public drinking water infrastructure steadily increased and peaked around 5.5 billion during the 1980's, as seen in figure 5. (Tapping Congress, 2011) However since the 1980's government funding on government regulated

infrastructure has decreased (Tapping Congress, 2011). This governmental Achilles heel gave the bottled water industry an opportunity for the successful marketing campaigns targeted at consumer fears of public drinking water-quality (Tapping Congress, 2011).

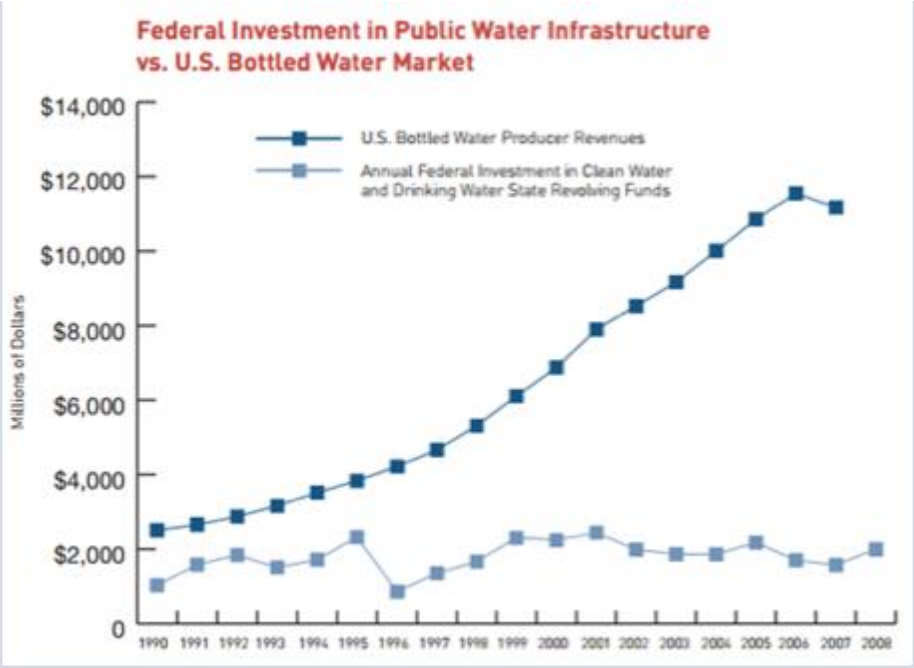

Figure 5

(Tapping congress, 2011)

Tap water on average costs about 99% percent less than bottled water. This cost differential is not prohibitive for many families, particularly middle class families, but still unnecessary. (Market Overview, 2012). On average middle class families spend about 20 dollars a month on bottled water. In one year the average family will be spending about 240 dollars just on bottled water. This is an extra expense misunderstood as necessary to families which already have strained budgets due to the economic issues facing the nation. This expense can be severely

reduced or eliminated with the replacement of tap or filtered water systems being or readily used throughout the nation (Market Overview, 2012).

2.5 Think Outside the Bottle at Campuses in the Area

Think Outside the Bottle at University of Vermont

This movement, though still growing out of its infancy, is not one being initiated here and now. Rather, many campuses across the world are adopting the campaign. One of the most recognized green universities stopping the sale of bottled water on their campus is the University of Vermont (UVM). UVM started their fight against bottled water in 2008 when student groups such as the Vermont Student Environmental Program and the student government got together and spread the word on campus through student petitions, talks with the school board, and working with catering companies to stop the sale of plastic water bottles. One of the biggest obstacles to accomplishing the ban was not convincing the general UVM community to ban the sale of bottled water and use drinking stations, but rather breaking up the monopoly that Coca-Cola had on the campus to sell "100 percent of beverages in vending machines and 80 percent of bottled beverages served in retail, residential dining, and catering, totaling more than 1.1 million bottles per year" (Reidel, 2012). Through the support of the students, faculty and board members UVM has been able to cut ties with Coca-Cola. Now UVM allows the catering companies and on- campus stores to choose their own local service providers and contract terms (Reidel, 2012).

The Vice President of finance and administration at UVM, Richard Cate, explains that the loss of the Coca-Cola contract has not altered the college's funds and will be replaced by other contracts from local vendors of the catering company's choice. Cate also states that the

new funds from the new contracts will generate more revenue for financial aid, and support student organizations (Reidel, 2012). The new contracts for UVM also allow for a diversified array of drink options and healthier drink choices for the campus supporting the campus healthy living message. Along with the healthier drink option, UVM added additional water bottle filling stations and began selling reusable bottles at their campus stores at a price affordable for the college students. UVM's ban the bottle efforts have ignited other sustainability groups in area colleges to join the ban the bottle fight.

Think Outside the Bottle at Stonehill College

Stonehill College located, in nearby Easton, Massachusetts, joined Corporate Accountability International's Think Outside the Bottle Campaign in 2010. Stonehill has been very successful in their efforts and is starting to wean the campus of the sale of plastic water bottles. The students and board of directors worked together to established a timeline for the complete removal of plastic water bottle on campus. As part of the timeline, Stonehill has begun the process of establishing on-campus potable water alternatives. Stonehill College's efforts include:

- Increasing on-campus water filling stations.
- Working with the campus catering company Sodexo to consistently provide pitchers of tap water at on-campus events.
- Providing reusable water bottles to students and guests.

(Corporate Accountability International, 2012).

2.6 Conclusion

Currently about $182 million is awarded to Massachusetts for water infrastructure and maintenance under the Safe Drinking Water Act. A part of this money will also be provided for a greener and environmentally friendly infrastructure (State Revolving Fund, 2009). These funds help to establish the quality and tests that needs to be met, as required by EPA regulations. Each year the EPA creates a report of standards that needs to be met by states in accordance with the Safe Drinking Water Act. In 2009 about 20% of the U.S. water systems had violations, most of the violations were quickly found, due to good monitoring and reporting. (EPA National Compliance Report, 2009)

Tap water within the nation is highly regulated and is checked by the EPA. Despite well-regulated tap water, bottled water seems to be gaining revenue throughout the country. Tap water has just as many regulations and is more thoroughly monitored than bottled, however, the general public views bottled water as more clean than tap water. Schools such as WPI can take the first steps into creating awareness for this problem by talking with different groups and holding events on campus targeting students and other staff members. These events can begin with blind taste testing of water for the WPI community that can make future consumers and legislators of our country aware of these public problems, hopefully leading to a change in our nation.

3.0 Methodology

The main goal of this project was to raise support to completely phase out the use of plastic water bottles and establish economically feasible alternatives on the WPI campus. The project team had several objectives for the completion of the project:

1. Educate ourselves
2. Educate the community
3. Host events that support the "Think Outside the Bottle" campaign
4. Implement possible changes to reduce the use and purchase of plastic water bottles on WPI's campus.

In order to accomplish these objectives the project team made use of multiple methods to obtain a good understanding of the WPI community's view of plastic water bottles. In the first section of this chapter we detail our methods for ascertaining WPI community sentiment on banning the bottle. In the second section we discuss our methods for educating the campus community of the importance of a disposable water bottle ban. In the final section we discuss the changes we plan to implement at WPI to have a disposable bottled water free campus.

3.1 Educate Ourselves

In order to catalyze change in water bottle usage, and before we legitimately and confidently convey the importance of our campaign, we first educated ourselves. The first step to achieving this project's main goal was to compile all the necessary information about plastic water bottles: their impact on the environment both locally and globally, and the misconceptions being marketed by disposable plastic water bottle companies. The team gathered data on the

dichotomy between the tap and bottled water regulatory frameworks so we would have sufficient depth of understand to convince WPI community of the superior quality of Worcester tap water. Using this information we created presentations and media advertisements targeted at the campus community.

Focus Groups

The project team convened two focus groups to get a better understanding of what the WPI community's opinions are on eliminating the sale of bottled water. Using emails and promotions, we collected a group of people from the WPI student community. Minor incentives, like cookies and cupcakes, were used to help in acquiring a sizeable group. We asked questions about community members' opinions on eliminating disposable bottles and seeing their feedback, a general feel for the reactions of the community can be established. The groups took well to the style of the discussions and were very forthcoming with their opinions. (see Appendix A for focus group discussion questions and minutes)

Interviews

We created interviews to get a better idea of the current expense and proceeds of bottled water at the school. We conducted our interviews in a semi-structured manner. Some of the material that we expected to gain was sensitive to the interviewee, thus semi-structured interviews were needed. This allowed for the interviewee to feel comfortable enough with the interviewer to divulge the material needed, while still asking the specific questions so we could obtain the necessary information. We interviewed a multitude of individuals who held prominent positions with regard to past campaigns or information regarding the future of ours.

First, we interviewed the sustainability coordinator of facilities, who is also on the President's Task Force for Sustainability. We further interviewed sustainability coordinators from other instances of the campaign, Brown University, Chatham University, and the town of Concord, Massachusetts specifically. We then interviewed the project manager of facilities to investigate the possibility of installing new water refill stations on campus. We concluded with interviews with the coordinators of Chartwells to investigate the school's contract with Coca-Cola.

Surveys

Once the focus group participants' contributions were analyzed, we developed a target survey using the opinions originating in the focus groups as guidelines for what topics the community was most likely to respond to. The survey provided feedback for a larger portion of the community, making it a more accurate approach than the focus group, and more generalizable for the purposes of statistics due to the larger sample size. The surveys gave us a hold on what changes the WPI community would like to see on campus. In addition, the surveys allowed us to custom tailor the media outreach to the needs of the campus, as it provided rough statistics about the campus. (see Appendix B for the survey questions) From the quantitative data collected in the surveys, we created visual representations, including pie charts and histograms to display our findings. These visuals will be useful presentation tools as they represent the data in a easy to understand format. The data collected will be used to create persuasive presentations, both for target organizations and the campus community as a whole.

3.2 Educating the Community

Presentations to various groups on campus

To make the WPI community more aware of the campaign and the reasoning behind it, we went to the environmental and sustainability groups on campus and gave presentations including national statistics gathered through our own research, and data about the WPI community gathered through our survey. The presentations aired more on the technical side, as WPI students and faculty generally respond well to such a format, and allowed us to fully explain our goals. The presentations went more in-depth with statistics about the economic aspects of our project. Through this, the project extended beyond the IQP group and into the various other organizations on campus. With more groups on campus backing the campaign, the effect will grow more powerful, gaining the campaign more influence on campus.

These presentations also carried the dual purpose of offering the student groups the opportunity of joining in and helping with the campaign. This was intended as the first steps of the eventual planned transition of the campaign from the project team and into the hands of the sustainability groups on campus. This action allowed for the organizations to continue our efforts during and long after the conclusion of our IQP.

WPI Media

The Towers is the campus newspaper, written and edited entirely by students. The newspaper has existed at the school since 1905, and has become a staple of student life. Whenever a new printing is released, copies are distributed to lobbies and waiting areas all across campus, and provide a quick read to students waiting for class, eating lunch, etc. The

Towers likes to be involved in campus activities, and have recently reached out to student organizations asking for notification of events which they may cover.

An article was published in the weeks following the Thanksgiving break calling for support of the campaign from the community. The article discusses the efforts of the team on campus, and called for support for upcoming events. The article also contained links to the team's campaign Facebook page, as well as the team's weekly blog. Unfortunately, the article was published after the last tap water challenge, but still was an effective tool for gaining support.

Every student, faculty, and staff member at WPI is given a WPI email address. The school allows for mass messages to be sent to every WPI email address in anticipation of large campus events. The established rules allow one message per event. Using this communication medium, we created captivating email posters advertising taste tests, general presentations, activism days, or anything for the project that could qualify as its own event, and emailed to the entire WPI community. This was effective until the moderator of of this service warned us that we were abusing the privilege. Afterwards, alternative methods of notifying the community had to be sought.

3.3 Host events that support the "Think Outside the Bottle" campaign

As a small group attempting to ban the plastic water bottle from WPI's campus, joining and supporting the national "Think Outside the Bottle" campaign is vital to increase the strength of our efforts. The campaign has worked with multiple colleges since 2006 providing student organizations or groups on college and university campuses, such as WPI, with proven methods

for success. Holding events in supporting the "Think Outside the Bottle" campaign is an objective the CAI group strove to achieve.

The Tap Water Challenge

The main objective of the Tap Water Challenge is to engage the entire WPI campus community, giving participants their own personal experience, exposing the true difference between tap water and bottled water, and most importantly projecting a realistic and positive perception of Worcester tap water. The Tap Water Challenge is a blind taste test between tap water bottled water, and one of the most successful and interactive events the "Think Outside the Bottle" campaign has demonstrated. When running the Tap Water Challenge, some volunteers were recruiting people while others were conducting the blind taste test. The water samples used consisted of two local tap water sources and three popular bottled water brands sold on WPI's campus. Each water sample was held in the same exact cups, to blind the identity of the water source. Participants receive one cup of each sample, and had to differentiate between the samples, matching the cup, lettered A-E, with the appropriate water sources. (see Appendix C for quiz sheet). The quiz also contained a few questions about the participants' habits and thoughts about plastic water bottle use and the "Think Outside the Bottle" campaign on campus. When the participants finished the quiz, volunteers revealed the answers, emphasizing that, contrary to popular belief, bottled water is not objectively better than tap. Volunteers then shared facts about the quality of public drinking water and the less rigorous regulation of bottled water.

The Tap Water Challenge educates and engages the WPI community by giving every participant their own personal experience. Additionally it increases WPI's awareness of the

"Think Outside the Bottle" campaign and what bottle-free plans the CAI team has for the WPI campus. Accompanying the test with quizzes to participants gives our group a better understanding of what the community thinks and favors, enabling us to further tailor our approach to specific WPI community desires. The Tap Water Challenge is perfect for further gathering of statistics on WPI and, we anticipate, will shed light on the realistic and positive perception of Worcester tap water by giving members of the community a powerful experience that involves them in the campaign.

3.4 Implement the possible changes to reduce/eliminate plastic water bottles at WPI

The last step in our process was the action plan. We gained the support of WPI facilities and the President's Task Force on Sustainability. We then turned our attention to the researching the recommendations to made to future groups carrying on the campaign. WPI goes through a series of renovations on certain academic buildings every year and the new water stations could simply be included in with these. There are many different ways that WPI can refurbish or renovate the campus to accommodate the increasing use of water filling stations. We assessed which option is the most cost effective for the school to install. The possibility of this was elaborated upon in the interview with Chris Salter. We then presented a proposal to facilities management and the President's Task Force encompassing all the benefits and methods of implementing the conclusion of the sale of plastic water bottles on campus through an extinguished contract with Coca-Cola, new water refilling stations, and re-branding WPI.

Ending the contract with Coca-Cola

Currently the Chartwells catering company holds the contract for selling the Coca-Cola brand water, Dasani to on-campus consumers. The project group held an interview with Phillip Clay and Joe Kraskouskas regarding bottle purchasing and the Coca-Cola contract. To deal with the contract issue we would look for feedback from other colleges and universities that have gotten their contracts annulled. We also intended to discuss the possibility of using water pitchers in place of water bottles at catering events, as many other schools have. Following the steps of other successful colleges who took on big corporations will help the project team become more successful in the endeavor to think outside the bottle.

Water refilling stations on campus

There are many options when it comes to changing the water filling stations on campus. One option that the project team discovered is the addition of a spigot to all existing water fountains. At this early stage in our research we believed the plumbing for the new piping and the fixture would be relatively inexpensive and easiest for the facilities to install . Another option would be to add specific water bottle filling stations on top of the existing water fountains. These stations are more aesthetically pleasing and would be a more permanent fixture than that of the spigot. The third option would be to replace all the water fountains in the buildings that the facilities department is working on each year. This third option would spread the cost of renovating the water fountains over a larger time span so the cost output is more manageable.

Rebrand WPI

WPI is already recognized as a green and environmentally friendly school having three buildings LEED certified and a guarantee that all new buildings will be built to LEED standards. This next step with WPI going plastic water bottle free would be another notch to add to WPI's sustainability effort. We proposed that new water bottles be sold to the community in support of the campaign. We proposed that this bottle be marketed as the WPI "Green" water bottle reminding students to be more environmentally conscious. The funds from the water bottle sales could be used to support the creation of additional water filling or new green technology improvements to WPI's campus. Our vision was that the sale would coincide with an aspect of our campaign to educate the on-campus community of the high quality of Worcester tap water.

3.5 Conclusion

Through our efforts we hoped to not only eliminate the plastic water bottles from campus, but also to make the WPI community aware of the effect it may have. Our project will lead the way for new and better ways of drinking and obtaining water, which isn't heavily marketed and advertised. This method of increasing the knowledge of the WPI community will likely lead to changes done on campus. By getting media attention the issues we are trying to address will be publicly broadcast increasing awareness. Through the events for the campaign, a hands on approach is able to be placed on the problem and people within the community are fully able to understand the issues. The final steps for our project were to suggest changes be to implemented on campus by groups following us. This will hopefully lead to similar changes on other campuses as well.

4.0 Findings and Discussion

In this section we will summarize the results of the various data collection methods utilized by our group. In section 4.1 we will discuss the community support we obtained from our focus group, survey, and Tap Water Challenges. In section 4.2 we discuss reasons why WPI community members were not in support of the Think Outside the Bottle Campaign. Section 4.3 we discuss new ideas that were brought to the table in support of our campaign. Finally in section 4.4 we will discuss our progress toward phasing out the sale of disposable water bottles on the WPI campus.

4.1 Community Support for the Think Outside the Bottle Campaign at WPI

Many of the students we talked to during our publicity events were proponents of phasing out bottled water on campus, and even more claimed to already use refillable water bottles when possible. From our discussions we can predict a majority of the WPI campus community will have a positive response to the campaign.

We next created a simple, 12 question survey to collect basic statistics about water bottle use habits on campus. The survey, viewable in its entirety in Appendix B, aimed to gather quantitative data about people's water bottle use habits on campus. The survey took around two minutes to complete, and gathered a total of 364 responses. Of these 364, roughly 100 were faculty or staff. The first question asked, on average, how many disposable water bottles they used in a week. Figure 6 below represents the answers in the form of a histogram. Notice how nearly half of the total responses were zero, and how the majority of all responses were five or less. This supports the conclusion that habits which are compliant with the campaign are already

present on campus, and that disposable water bottle use is reasonably minimal among the campus community.

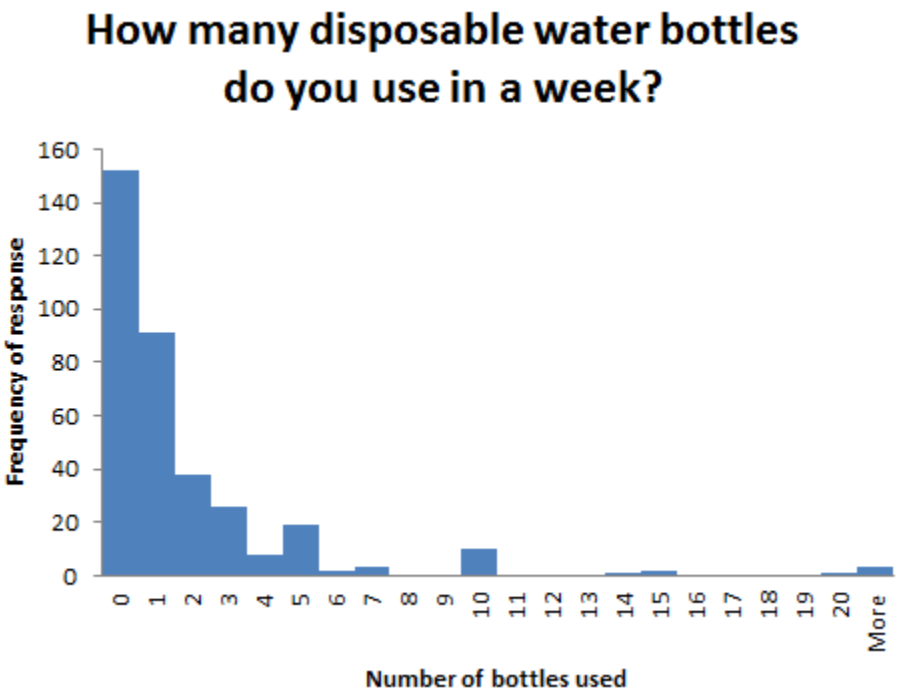

Figure 6

The second question regarded the details behind the first question. Participants were asked to identify their favorite brand of disposable water bottle. The results can be seen below in Figure 7. Poland Spring is by the far the favorite of the campus community, with 37% selecting it as their choice. Dasani, the Coca-Cola Brand, and the one sold in campus vending machines, is the second choice at 14%. Aquafina, the PepsiCo brand, had only two fewer participants choose it as their favorite brand than smart water, but is also featured heavily in the local stores, and as such is prominent in the area. The results of this question, combined with prior research, led to the decision to use Poland Spring, Dasani, and Aquafina being selected as the brands to be

used in the tap water challenge.

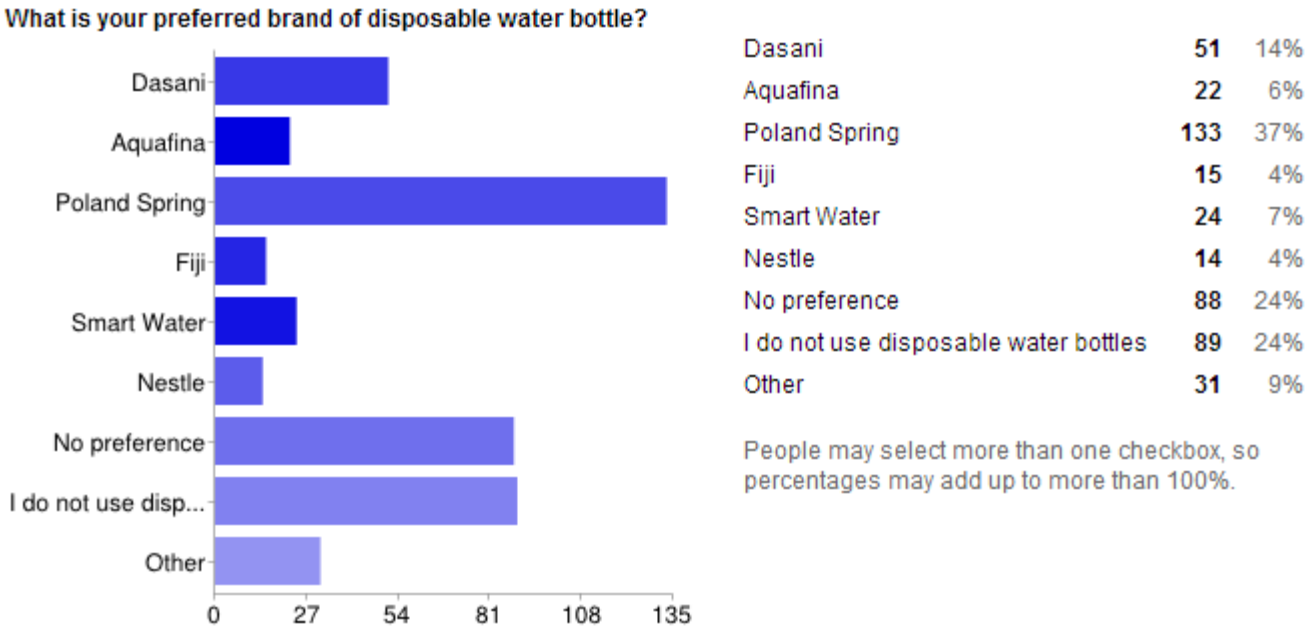

Figure 7

Another question asked how satisfied participants were with the tap water at their residence, and 53% responded that they were either satisfied or very satisfied, as shown below in Figure 8. This, combined with the results of another question where 86% of participants responded that they lived off campus, leads to the conclusion that the majority of community

members are largely satisfied with the quality of tap water in the city of Worcester.

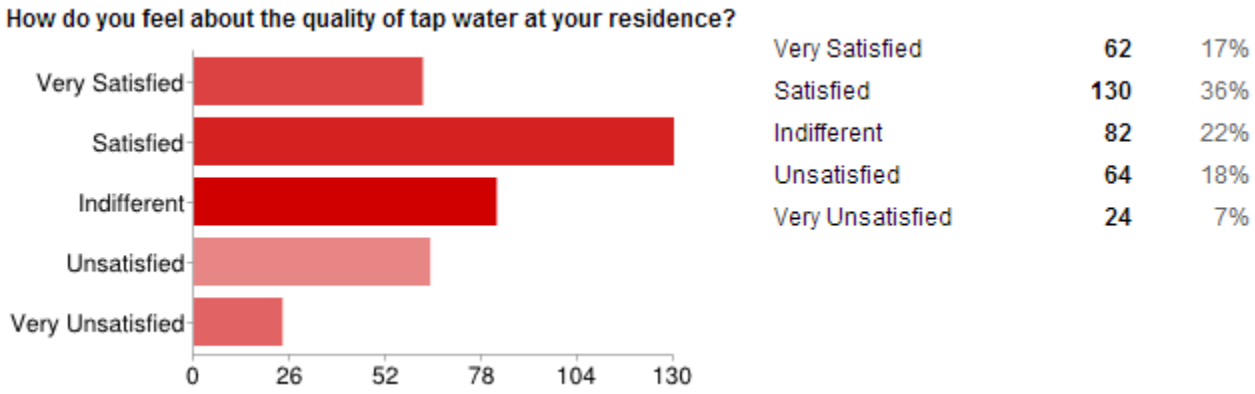

Figure 8

A later series of questions concerned user satisfaction with water fountains around campus. Specifically, they asked users to gage their satisfaction with the water fountains at the new Sports and Recreation Center (herein, which are filtered and feature hands-free bottle refilling stations, and the water fountains elsewhere on campus, some of which are filtered, but none of which feature bottle refilling stations. The results can be seen in Figure 9 below. From the two graphs, one can discern that the community is much more satisfied about the Rec Center fountains than those elsewhere on campus. Information gathered from the focus groups, and a later question asking for comments on what would improve participants' perceptions of tap water on campus, elaborate on this. In the groups, and indeed also the survey question, participants mentioned that fountains elsewhere on campus are often too filthy, dispense water that is too warm, or have water pressure that is too high or too low to use properly. The fountains in the Rec Center do not suffer from these issues and thus are favored by the community. Because of this, the fountains in the Rec Center would be the clear choice for a replacement model to be installed across campus in place of the existing ones.

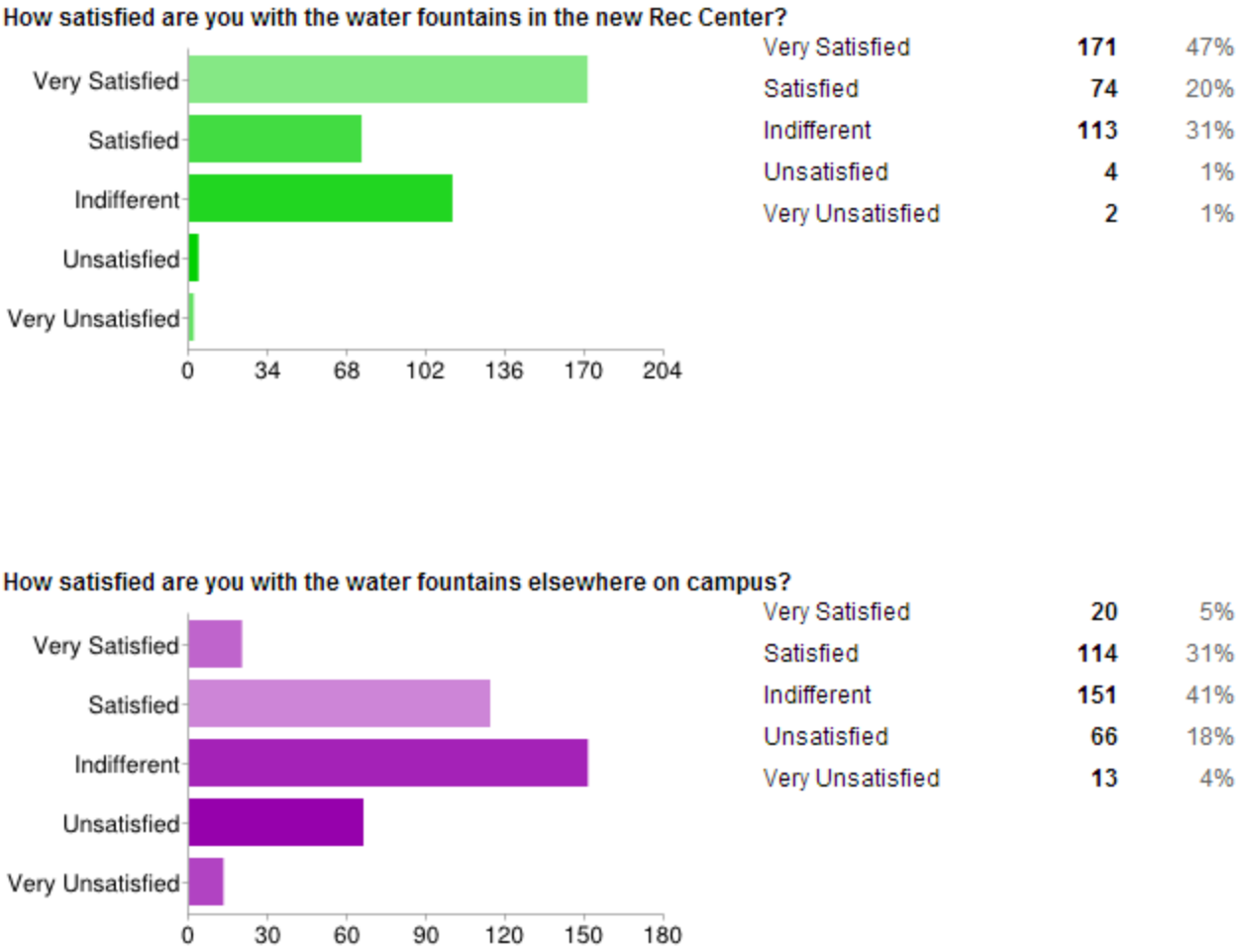

Figure 9

Finally, there were two questions which asked about people's reusable water bottle use habits. One asked if participants carried a reusable water bottle, to which 69% responded that yes, they do. The second asked if participants would be willing to use public water 100% of the time, to which 59% responded that yes, they would. These two questions prove one very important thing: that habits promoted by the campaign are already present on campus, and that a major part of the campaign must revolve around reinforcing these habits, causing them to spread to the the community members who have not yet adopted them.

As mentioned previously, much of the campus community would seem to already support the use of tap water, and by extension, a phasing out of disposable water bottles. The first indication of this trend came during the focus groups, where nearly every volunteer in attendance was in favor of using public water, and indeed carried a refillable water bottle with them to the meeting. The team saw this as an immediate sign that campus was very close to adopting the habits endorsed by the campaign. Upon further inspection, it was later acknowledged that the focus groups were not a representative sample of the campus community, based on the fact that the focus groups as advertised were more appealing to community members who had some prior involvement with public water or similar "green" movements, and would be less likely to attract people who had no strong opinions regarding disposable water bottles. Regardless, the focus groups did reinforce the notion that an element of desire for public water did exist on campus, and yielded many new ideas for approaching the campus with the campaign, each a road approaching the problem from a different angle and therefore exposing as much of the community as possible to the campaign.

The result that did inevitably disprove our nullified conclusion following the focus groups was that of the water bottle use survey. The numerical results, discussed previously, confirmed that the portion of the campus community that supports the campaign is indeed in the majority. This means, quite simply, that the job of the project team will made fairly easy, as it is much easier to convince 41% of the campus to do something than to convince the entire campus of something.

The results from the Tap Water Challenge garnered a positive result to our campaign when a high percentage of the participants could not tell the difference between water samples. A

recurring theme seen during Tap Water Challenges was people thinking they knew exactly which water sample was which, however when given the answers only 4.2% of the total 97 participants correctly guessed all water sources. Additionally, many participants were extremely surprised to find none of their answers correct. In total there were 484 guesses, with five per person and subtracting one that a participant did not fill in, and 133 correct guesses. (See Figure 10 for a data summary) This calculates out to 29.3% of the total guesses being correct. This data proves quantitatively that community members cannot reliably differentiate various tap waters from various bottled waters on taste alone. This reinforces the central methodology of the campaign, which is that once all the labels and advertising are taken away from the water, it is just water. By proving this to the members of the campus community in such an intimate way, even people who may have been originally opposed to public water can be convinced of its benefits.

				Actual		
		Rec Center Tap	Campus Center Tap	Aquafina	Dasani	Poland Spring
	Rec Center Tap	27	21	18	12	19
	Campus Center Tap	26	25	13	20	9
Guess	Aquafina	14	12	34	22	17
	Dasani	14	13	14	25	30
	Poland Spring	15	24	20	18	22

Figure 10

In addition, there was also a petition to sign at the end of the Tap Water Challenge. The petition (see Appendix D) serves as a quantitative measure of the support on campus. Specifically, the petition tells the final number of people who have pledged to use public water 100% of the time, and can be used as proof of this support. The petition collected

67 signatures in the short twelve hours that it was available for signing alongside the Tap Water Challenges. The project team is confident that the petition will continue to gather signatures at a steady rate if both it and the Tap Water Challenges are continued by the targeted student groups.

After our events for the campus we reached out to specific members of the WPI community and the sustainability groups to gain their individual support and guidance on the project. We first reached out to the Sustainability Coordinator for WPI, Liz Tomaszewski who was able to get us in contact with the necessary members of the campus community that would help with our project and support us. Liz Tomaszewski was able to help us contact the student Green Team, the President's Task Force on Sustainability, and Facilities members, all of whom were able to meet with us and help us make steps to furthering our campaign on campus. We also were in contact with outside sources from other universities and towns taking on the Think Outside the Bottle campaign. We met with Jill Appel, the leader for successfully banning the bottle in Concord, Massachusetts, and we were able to got an abundance of new ideas and methods for gaining support from the WPI campus community. We talked to and had correspondence with the sustainability coordinator from Chatham University and a student who ran the Think Outside the Bottle campaign at Brown University, who informed us about the business aspect and financial side of the Think Outside the Bottle campaign and . These contacts were a big help in our project and we were able to use their recommendations to furthering our campaign.

4.2 Reasons for Not Supporting the Think Outside the Bottle Campaign at WPI

Though the response from the community was largely positive, there were some responses to various research methods performed that revealed some opposition on

campus. This opposition was able to be analyzed and sorted into four distinct categories.

First, many community members were not supportive of tap water because of the unfortunately common preconception that tap water is unclean or unsanitary. This can be seen as a result of the decline of public water as discussed in section 2.2. The misleading marketing of the water bottle industry over the past 30 years has resulted in the public believing that tap water is "dirty", and those misconceptions are slow to combat. On our scale, support of this stance can also be attributed to the state of water fountains across campus. Many of the water fountains on campus, as previously discussed, can be seen as unclean or filthy. In addition they often exhibit warm water temperatures or water pressure that is too high or too low to allow proper use, which can cause them to seem in a state of disrepair, lending to the preconception that they are unclean. Fortunately, this misconception about tap water is being "dirty" is exactly the thought that the Think Outside the Bottle Campaign was created to combat. Additionally, one of the products of our campaign is a series of recommendations for exchanging the existing water fountains on campus with replacements akin to those present in the Rec Center, which the community responds almost uniformly positively to. The combination of these two facts should be able to, over time, increase these people's perceptions of public water.

Another negative reaction to the campaign seen somewhat commonly is the relatively cynical notion that the economic investment necessary to remove bottled water is prohibitive. The common thought behind this is that the school will not do anything that does not ultimately make money. This idea is uninformed, though not ungrounded. While the school, as with any organization with a budget, will not invest in something with no foreseeable return, the campaign does not fall into that category. The potential results of the campaign also involve

marketing the school as a green campus and as a leader of sustainability. This in turn makes the school more appealing to potential students and businesses looking to recruit new employees.

A precaution that came up concerned the eventuality of an emergency concerning the public water system. A viable proof of concept, and an unfortunate hindrance to the promoting of the campaign, the Worcester public water system experienced such a hindrance when a major water main break that caused a drop in water pressure and a two-day boil water order early in the week of November 13th. This caused a massive spike in water bottle consumption on campus and within the city, as consumption of public water required preemptive boiling. Many asked what would be done if there were no bottled water to fill the need that abruptly arose.

In response to this, the campaign was modified to desire an outcome similar to that of Concord, Massachusetts's campaign success. In Concord, the sale of disposable water bottles only larger than a certain size is lawful. Vendors are still allowed to sell bottled water in bulk containers, and as such it is still available in the unlikely occurrence that something like the Worcester water main break happens again. By eliminating the sale of conveniently sized disposable bottles, but retaining bottled water in larger containers, community members will be more likely to utilize public water for drinking purposes, but bottled water will still be available in the event of an emergency.

Finally, some people were understandably opposed to banning the bottle simply because they supported choice, and did not support a "ban" on anything. The wording then struck us as unusual considering the other communities that participated in the Ban the Bottle Campaign had not even completely eliminated all disposable bottles. Additionally, as a result of changing course to eliminate only smaller sized bottles with our own campaign, the word "ban" hardly

seemed appropriate. Furthermore, a complete elimination was years away at best, based on results from other successful communities, and projecting that the team was trying to ban the bottle made the campaign seem much more sudden and drastic than it actually was.

From these realizations, the decision was made to change every instance of "ban" in all essays, articles, and media to "phase out". With this change, our mission was to "phase out the sale of disposable water bottles", which seemed much more friendly and gradual, and seemed much more in line with our campaigning efforts. This resulted in people opposed to outright banning anything reacting much more positively to the campaign, as a choice would still ultimately be present after our campaign was deemed a success.

4.3 Ideas for Mobilizing Increased Support on Campus

During the focus groups, participants were very helpful in suggesting new ideas, several of which were utilized by the team. Most notably, one participant suggested testing water samples from various locations on WPI's campus, and comparing them to tested samples from a variety of water bottle brands.

A simple idea relates to the food court style cafeteria present in the Campus Center. There, students are allowed free refills of water from the soda fountain, but this is not clearly labeled, and many students are therefore unaware of this fact. The suggestion was to simply post a sign advertising this fact to benefit the campus community.

Yet another idea suggested that WPI give out free "WPI is green" themed refillable water bottles on special awareness days. This would have a massive impact on the campus community, and would lead to a massive rise in refillable water bottle use, if only because the

bottles are free and less so the message they convey. This would require a large monetary investment on WPI's part, and would see little return of a similar nature, and would therefore be unlikely to occur at the behest of an IQP team. One participant also suggested that the team install bottle refilling stations, similar to those in the recreation center, in the dorm buildings. Having this suggested at a focus group helped to reinforce the team's methodology, as this was already part of the plan from the beginning.

Jill Appel, a woman who worked with the town of concord to ban the bottle, had many suggestions which helped improve our campaign. She provided us with marketing aspects and ideas which were helpful in moving our campaign forward. Particularly, the idea of Tap Buddy, a free downloadable app which allows for the nearest tap water source to be identified, caught our interest. This would be a great marketing aspect in our school, due to the high technical affinity of students. This would be a free and creative way to gain support for the campaign, by placing the tap sources available in our school. This app speaks to the tech-savvy nature of the campus community.

One idea that seemed downright silly at first, but evolved into something interesting and useful, was Waterbucks. They would be paper money with a water drop design in the center. These would be rewards that would be handed out during "Ban the Bottle" events, such as taste tests and film showings. With three, or some predetermined number, Waterbucks, people can exchange the them for a refillable water bottle. This would encourage more people to attend events and provides people with more opportunity to gain information about the harms of plastics disposable water bottles. Again, this would require a monetary investment from WPI, but would push the campaign forward on campus by leaps and bounds.

With these suggestions and ideas from the focus groups, the people of the WPI campus community, and the campaign leaders, the campaign will progress and grow. The main goal of any campaign is to gain support and backing, with these new ideas, the campaign will accomplish just that.

4.4 Progress Toward Phasing Out the Sale of Disposable Water Bottles at WPI

For any progress in sustainability on WPI's campus we needed to talk to Liz Tomaszewski the sustainability coordinator for WPI. We were able to meet with Liz Tomaszewski during the first few weeks of our campaign and really were able to get a feel for WPI's sustainability efforts so far and how our project would promote WPI as an even "Greener" Institution. We spoke to Liz about what could be done on campus and who we should talk to to get the process started and accomplish our goal. Liz pointed us in the direction of the student Green Team, the President's Task Force and many other influential members of the WPI campus community. We worked throughout the project with the student Green Team and kept them updated on our progress and events. Through this, we arrived at the conclusion that the campaign would be handed off to the student green team when we had finished our time with it. With these contacts and leaders in sustainability on campus we were able to further our campaign on campus.

The capstone of the campaign was presenting to the President's Task Force on Sustainability, the central governing body of sustainable changes on campus. In this presentation, the project team aimed to briefly pitch the most prominent reasons to phase out water bottles, recap the team's progress so far, and present an array of potential changes on campus which would help facilitate the phasing out. The Task Force responded very positively

to the presentation, and was very excited to lend their support to the campaign. While they will not be helping in any direct manner, they are willing to incorporate it into their future plan for sustainability-based improvements to the campus with the continued promoting of the campaign.

The next step was talking to Chris Salter, the project manager at WPI. He is in charge of all the building projects at WPI including the renovations. We contacted him about the possible implementation of more water refill stations around WPI's campus. He was able to give us an overview of how they renovate the buildings on campus and what the process we should take to implement our renovations to the water fountains on campus.

In order to begin phasing out the sale of disposable water bottles on campus we had to meet with Philip Clay, Dean of Students at WPI, and Joe Kraskouskas, Dining Services Manager, to learn more about WPI's contract with Coca Cola. We learned that Coca Cola and WPI have a ten year contract, and in 2018 there will be a negotiation to renew that contract. Additionally, Joe gave us a financial packet of the 2012 Dasani water bottles sales from January through November. We also learned WPI's profit margin from water bottle sales, being approximately 40%. By knowing the number of bottles sold and the percent of profit WPI makes, we can calculate that WPI approximately makes $46,000 each year on disposable water bottles.

We were able to establish economical comparisons from two other schools, Brown University and Chatham University. Each of these schools were successful in either completely eliminating the sale of bottled water on campus or effectively phasing it out. Mary Whitney is the sustainability coordinator at Chatham University. In our interview with her, she reported little to no loss in revenue yearly due to the already low purchasing rates of disposable water

bottles on campus. She reported purchasing reusable water bottles at a price of $6.25 and, with labels custom tailored for the campaign, selling them as a means to promote the use of tap water on campus. She did not choose to sell the reusable bottles for a profit because her yearly losses were minimal. But for other colleges like Brown University, which is bigger and the sale of disposable water bottles is more significant, lost profits must be made up. They received a similar deal for purchasing water bottles, but chose to sell them for a profit instead. They used this because they needed to make up the approximately $75,000 yearly loss in profits from disposable water bottles. In comparison with WPI these schools are the two extremes. Our school was calculated to have a loss of $46,000 yearly in profits is it were to stop selling disposable water bottles tomorrow, a number which fits right into the middle. Thus, a combination of both school's solutions would be appropriate for use at WPI as a means to make up some of the lost profits.

4.5 Conclusion

Now, at the end of our campaigning process, our team feels very positively about the product of the campaign. All three major levels of the hierarchy: the community, the student groups, and the President's Task Force, are now on board with phasing out the water bottle. With the community on board, the need exists for these changes to happen exists. With the student groups on board, the power to keep promoting the campaign after the project team is finished. With the President's Task Force on board, the power to cause actual change exists. Because of this, the project team finds it extremely likely that before too long, disposable water bottles will be phased out completely on the WPI campus.

5.0 Conclusions and Recommendations

Through this past term we worked to implement the main goals of this project, to raise support for the phasing out of disposable plastic water bottles, and to establish economically feasible alternatives on the WPI campus. In section 5.1 we will discuss the conclusions concerning the support that we got from the WPI community. In section 5.2 we will briefly discuss the information we obtained from our contacts at other colleges and universities on the financial and business aspect of the campaign. In section 5.3 we will make a recommendation on how WPI can further the campaign through educating the community and working with Chartwells and various WPI offices on the business aspects. In section 5.4 we will make recommendations for WPI to start implementing as a first step to phasing out the use of disposable water bottles on campus. Finally, in section 5.5 we will make recommendations for potential future IQP groups from the Worcester Project Center and the student Green Team for carrying the campaign forward. Through our conclusions we are able to draw up recommendations for WPI and organizations within the WPI community to use and further implement the campaign of phasing out the use of disposable water bottles on campus.

5.1 Conclusions on the Support From the WPI Campus Community

We have gotten many positive responses from the students who have participated in our on campus events. We were able to get a representation of the thoughts and concerns from the WPI community through our focus groups and surveys. The focus groups were set up such that we would be able to gain new ideas and adapt the campaign to the thoughts and opinions already present on campus. The surveys gave us a better representation of the campus due to the larger percentage faculty and staff responses than in the focus groups. We found the data from the

survey to be particularly positive with our main focus being two main questions asking if the community uses reusable water bottles, and if they would be willing to use tap water 100% of the time. In both of these questions more than 50% of those surveyed said that they do in fact carry a reusable water bottle, and they would be willing to stop buying disposable water bottles on campus. From these responses to our surveys we were able to conclude that over half of the campus community already uses reusable water bottles and is in the mindset to bring it with them around campus. This meant that in our campaign, we needed to educate and convince less than half of the community. With these positive responses, we concluded that we had enough support to proceed to our next step in educating the WPI on what is wrong with the concept of the disposable water bottle.

To educate the campus community we hosted a series of Tap Water Challenges that would let the WPI campus community see for themselves if they could in fact tell the difference between tap water and bottled water. We were able to surprise some students and staff when they took the challenge, about 70% of the participants said that they had a hard time telling the difference between the different cups of water. This is supported by the results mentioned in section 4.1, where only 29.3% of all guesses were found to be correct, and only 4.2% of participants guessed all five samples correctly. This led to the conclusion that the water samples in fact tasted very similar. The conclusion of this that we broadcasted to the WPI community, and which we found to be very effective following participants' often wrong answers on the tap water challenge, is that if the water all tastes the same, surely it is logical to drink the one that is also cleaner and cheaper. The tap water challenge, at least for participants, effectively removes

taste from the equation, leaving only cost and cleanliness as deciding factors for where to get water from, tap being the victor in both respects.

After taking the challenge we asked the participants to sign the petition to show their support to the campaign. 67 participants who took the challenge signed the petition to use tap water 100% of the time. The tap water challenges were an imperative part of the campaign as it provided the WPI community with a way to see and taste first hand that there is little to no taste difference, debunking the theory that bottle water tastes better.

5.2 Conclusions on the Business Aspect of Phasing Out Bottled Water on Campus

After we finished all of the tap water challenges and educating the WPI campus community, we were able to meet with the President's Task Force on Sustainability, a group of WPI professors, staff and students who work to make WPI an environmentally conscience and sustainable campus. We were also able contact other universities who have phased out, or are in the process of phasing out the water bottle on their campuses. We were able to obtain information about the cost and economic aspects of banning the bottle from both Brown University and Chatham University. Based on the information and population of each school, we calculated a rough estimate of the possible cost to WPI if the sale of bottled water were to be completely eliminated. We then had a presentation in front of the President's Task Force in order to gain their support of our campaign. We were able to gain their support of our project, but they were not willing to jump in head first, but rather agreed to implement it into their agenda for upcoming years. We want to continue working with the President's task force on our project by acting as a liaison to the faculty, staff and board of trustee's at WPI. With the support of the

President's Task Force we will be able to make the next step to implement phasing out the sale of disposable water bottles on campus.

5.3 Recommendations for WPI to Further the Think Outside the Bottle Campaign

Based on our conclusions we have some recommendations for furthering the campaign. There are many aspects to look at for the next steps. To move forward in our campaign we need to look at the business side. The two branches are important in the next step in achieving support from the faculty, staff and Board of Trustees. WPI is trying to be a sustainable institution with their new LEED certified buildings, and with this new campaign to phase out the sale of the plastic water bottle on campus WPI will be joining campuses across the country in the campaign to Think Outside the Bottle.

To further the campaign we recommend that the next group look into the business aspect of the disposable bottled water on campus. To promote the campaign we recommend that WPI sell reusable water bottles to gain back some of the profits lost from phasing out the sale of the disposable water bottle. We recommend that these water bottles have a special WPI sustainability design to both promote the use of tap water and to promote WPI as a green and sustainable campus. Another business aspect that WPI can look at is in the marketing side of the campaign and the marketing of WPI as a sustainable campus to students looking at WPI. The marketing department can work with admissions and market WPI to potential students as a leader of sustainability, contrasting it with other, similar engineering schools that prospective students were likely to also apply to. This would make the school more appealing to prospective students, and ultimately attract more.

5.4 Recommendations for WPI implementing the first step of phasing out the disposable water bottle

In order for disposable water bottles to be phased out, changes on campus must be made to better accommodate the easier use of tap water. One option is to start renovating and changing out the water fountains that get the most traffic during the day. The water fountains that get the most traffic would be renovated all together over the summer, and then the water fountains left would be renovated based on their usage and priority at a later date. The best model fountain for replacing these would be the same model that has already been installed in the new Rec Center. This model is the Elkay EZH2O model, displayed in Figure 11. These fountains have already been proven a success, and are popular among the campus community. Furthermore, each fountain only costs around $1000, which on the grand scale of things is not that much. (price retrieved from vendor web site: http://www.drinkingfountaindoctor.com/complete-units/by-manufacturer/elkay/ezh2o/single-cooler-combo) This plan to replace the old water fountains with new ones will make tap water seem more appealing to the campus community. This system would be the best option for WPI to start implementing by renovating the ten most widely used water fountains the first year.

Figure 11

Another step that WPI could take in implementing the phasing out of disposable water bottles on campus is to add outdoor water fountains to accommodate tap water at sporting events. We have researched popular water fountain brands with water bottle fillers, like Globaltap, and we think that these models would be ideal to use for students and guests too refill their reusable water bottles (See Figure 12). These specific water fountains are made of heavy-duty and stainless steel for outdoor and indoor use. They are corrosion resistant, graffiti proof and come with a two-year manufacturer's warranty. They each cost around $5000, but would be needed in much smaller quantities. (Price received via quote upon request from Globaltap) To start implementing fountains on campus WPI should look into two different options that we have discussed with Chris Salter the project manager at WPI. Along with the different options to renovate the existing water fountains we also recommend that there be research done on the of refrigeration water fountain units versus the units that are just simply hooked up to the tap. This

research into the electricity cost of the water fountains has the possibility to offset the cost of renovating the water fountains that WPI. The renovations of the water fountains will cause students to be more apt to want to use them then to use old water fountains that look unappealing.

Figure 12

Another step to begin implementing the campaign on campus is to work closely with Chartwells and Phillip Clay, the liaison between Chartwells as well as the Dean of Student's for WPI. We met with them to come up with ideas for plans to phase out the sale of the disposable water bottle on campus. The result of the meeting with both Phillip Clay and Joe Kraskouskas was a refinement of the plan for moving towards the ultimate goal of the campaign, phasing out the sale of water bottles. Discussed in the interview, the Coca-Cola contract does contain some flexibility with regards to what is actually sold at the school. The bounds of the contract

basically aim to maximize profits from the available vending space. In other words, a larger stock will be maintained of those products that sell faster. Similarly, products that do not sell many units will have a smaller stock amount. By this precedent, profits can be relatively maximized. Also by this precedent, an entire product line cannot simply be eliminated because the school wanted to, at least not within the current contract, which is not set re-negotiate until 2018.

This would seem to spell out a clear path for the campaign. Disposable bottles, specifically those sold on campus, cannot be phased out instantaneously. Rather, they must be phased out gradually, as a reaction to the campus community. If sufficient support can be raised by the campaign, the community will gradually consume fewer and fewer water bottles. This can, within the contract, be paralleled by the school by reducing the amount of water bottles stocked in cafeterias and vending machines. This reduction in bottled water will have the side effect of making disposable bottles more difficult to purchase, as there will be fewer of them for sale, causing more people to switch to tap. Through this process, water bottles can be effectively phased out on campus without ending or even modifying Chartwells's contract with Coca-Cola.

Chartwells is not a passive entity in this campaign, but rather can also take an active role in phasing out disposable water bottles. Chartwells, as part of their contract with the school, caters every event held on campus requiring food. Many of these events require water to be supplied. Disposable water bottles are most often chosen for this purpose, due to their convenience. Currently, bottled water is the default option for supplying water, with water in pitchers, coolers, etc, being available by request. We believe that simply reversing this standard would have a drastic effect on the school's water bottle consumption. By making water in

pitchers the default option, and bottles available by request, a significant portion of water bottle consumption on campus could be eliminated without forcing any significant changes to the events hosted on campus, as bottles would still be available when appropriate.

5.5 Recommendations for future IQP groups and the student Green team to implement on campus

In order to achieve our mission we recommend that there be another group of WPI students to continue working on the Think Outside the Bottle campaign. We specifically recommend the continuation of Tap Water Challenges, petitions, and the Facebook page. Participants from the Tap Water Challenge gave us successful feedback, which proved invaluable to the campaign. Along with incorporating some of our past events we further recommend that there be a campus wide viewing of the documentary Tapped. Tapped examines the big water bottle industries in addition to the environmental effects of disposable water bottles. Additionally, we recommend furthering the campaign through creativity in events and public support. There are an infinite number of ways to promote the campaign, and continual creation and exploitation of new methods will be essential in maintaining the pressure. Our research has shown that when we host events that are creative and new, the WPI community is more responsive and approving of our final goal to phase out disposable water bottles on campus.

A side idea that was somewhat explored during our project term is testing water samples for contaminants. We acquired sterile containers per the treatment plant's testing protocol, filled them with five samples, the same five used for the tap water challenges, and sent them to our associate, Darin LaFalam, at the treatment plant for coliform testing. Somewhat unfortunately

for the purposes of our project, the tests came back negative on all five samples: there were no coliform contaminants in any of them. Darin explained that colder temperatures inhibit the growth of bacteria, to the extent that the water at the treatment becomes easier to purify. We recommend repeating this experiment closer to summer with a representative sample of bottled water that has been exposed to heat and light, such as that exhibited by a typical summer day.

We recommend that Tap Water Challenges be continued frequently throughout the campaign. The Tap Water Challenge is a fun way to engage the WPI community and to learn about our mission to phase out the sale of bottled water. Through this hands on experience, each participant puts their own ideas about water to the test. The Tap Water Challenge is a great way for the community members to not only test out their theories and ideas but also a way for the group to talk to them about the positives aspects of tap water and the environmental and economic issues of disposable water bottles. We found this event to be a successful event in the community and for the campaign, in addition to an eye opener for some members of the community. Along with verbally gaining students support for tap water we also had petition signing at all of our Tap Water Challenges. We recommend having petitions at all Think Outside the Bottle events. Petitions are a fast, easy, and effective way of gaining support from the broad span of community members at WPI, and provide a concrete number for the number of people actively supporting the campaign. This event is great for not only advertising but it also great to talk to members of the community about their thoughts on disposable bottled water.

Additionally, we recommend continuation of the communication with both the President's Task Force and the Joe Kraskouskas. Through our experience, the more communication that occurs the more support we gain. We recommend frequently holding

meetings with progress updates and ideas of the campaign for a good understanding to be established and miscommunications to be resolved.

With these recommendations we strongly believe that the Think Outside the Bottle campaign will succeed. These recommendations should be included in the next steps to the project as well as new events thought up by the next group.

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Appendix

Appendix A – Focus Groups, Questions and Minutes

"Think Outside the Bottle" campaign Focus Group Discussion Questions

Welcome: Hello everyone and thank you for participating in the focus group for the "Think Outside the Bottle" campaign for WPI. We would first like to go around the circle to introduce one-another, and say what grade you are in and your major.

1. How many plastic water bottles do you use in a day? Week?
2. How do you feel about the condition of the current water fountains on campus?
3. What would make you buy a water bottle on campus versus using a reusable one from your room?
    a. The condition of the water fountains on campus?
    b. The convenience of purchasing the water bottle and then being able to recycle it instead of carrying it around all day?
    c. You do not own a reusable water bottle?
4. What do you think about the quality of the Worcester water?
5. Do you use a water filter with your tap water?
6. Do you live on campus or off campus?
. Do you find that the water quality differs from on campus to off campus living?
7. Would you be opposed to using tap water 100% of the time?
8. Is there anything specifically you think that would motivate you to stop using water bottles?
9. How would you feel if WPI stopped selling plastic water bottles on campus and replaced them with more water refilling stations?

Group 1 (12pm -12:30pm) 10/26

Attendance: 6 members of the WPI campus community

Tap Water

- Some water is highly chlorinated
- community has no confidence in worcester tap water
- poor quality in tap water due to old pipes

Fountains

- Harrington - gross
- Rec Center - liked the fountains
- Dorms - hard to fill water bottles

Filters(Brita Filter)

- people are more willing to drink tap water if there are filters
- Not opposed to drinking tap water 100% of the time

Disposable Plastic Water Bottles

- Students buy packages of disposable plastic water bottles before classes start and store them in apartment/dorm
- New Student Orientation/Other WPI Events - disposable plastic water bottles are used a ton
- disposable plastic water bottles are a waste of money

Suggestions:
- hand out free reusable water bottles
- Awareness days with reusable water bottle giveaways
- Need water filling updates in the dorms as well

Water Quality:
- They feel that the water quality on and off campus is the same

Questions asked:
- Why are the water bottles that are bottled from local tap sources still a problem (essentially why are we fighting them)
  - For a number of reasons:
    - Corporate control of local water sources and depleting the public water sources.
    - The plastic bottles are bad for the environment
    - Corners can be cut in the bottling process and so the water might get dirty

Things to consider / look into:
- One participant said that they thought that the "Take Back the Tap" was the most successful campaign that they have seen so far.
- In the sustainability meetings we need to consider the time and money spent on the disposable bottle usage vs. the time and money chartwells would spend on the change to tap water and using pitchers instead of the convenience of water bottles.
- Need to discuss the issue with chartwells about the number of pitchers they have and to see if they can start using pitchers of water for events as a step in the right direction.

Group 2 (2pm-2:30pm) 10/26

Tap water
- water quality
  - depends on the location - buildings and houses with rusty pipes decrease the quality of tap water
- fountains
  - The Rec Center has the best fountains on campus; very popular. The filters incorporated into the water fountains increase the community's confidence in the final water product.
  - Certain fountains need updates, some are too gross to use.
  - Temperature: some fountain are lukewarm, cold water is better
  - Pressure: some fountains have too high or too low of pressure
- filters

- more comfortable using a filter for tap water.

Disposable Water Bottles

- WPI events use tons of disposable water bottles
- Advertising from disposable water bottle companies makes their water look cleaner and safer than tap water
- very convenient
- higher amounts of contaminants (students educated on the issues)
-

Suggestions/Comments:

- have free WPI reusable water
- one person commented: if the water bottles are banned on campus then people will just buy soda, but that is still plastic. they want all plastics to be banned and just have refillable stations for all drinks
- have quality tests on water from WPI verse water from disposable water bottles
- Pledged to not use plastic disposable water bottles

Appendix B - Survey

"Think Outside the Bottle" campaign Survey Questions

1. On average, how many Disposable water bottles do use in a week?

2. What is your preferred brand of disposable water bottle?

    a. Dasani
    b. Aquafina
    c. Poland Spring
    d. Fiji
    e. Smart Water
    f. Nestle
    g. No Preference
    h. I do not use disposable water bottles
    i. Other _____

3. Do you live on or off campus?

    a. On campus
    b. Off campus

4. How do you feel about the quality of tap water at your residence?

    a. Very satisfied
    b. Satisfied
    c. Indifferent
    d. Unsatisfied
    e. Very unsatisfied

5. Is there anything you particularly LIKE about tap water at your residence?

6. Is there anything you particularly DISLIKE about tap water at your residence?

7. Do you carry a refillable water bottle?

a. Yes
b. No

8. How Satisfied are you with the water fountains in the new Rec Center?

    a. Very satisfied
    b. Satisfied
    c. Indifferent
    d. Unsatisfied
    e. Very unsatisfied

9. How satisfied are you with the water fountains elsewhere on campus?

    a. Very satisfied
    b. Satisfied
    c. Indifferent
    d. Unsatisfied
    e. Very unsatisfied

10. Would you be willing to pledge to use tap water 100% of the time?

    a. Yes
    b. No

11. If no, what changes (such as more water fountains like those in the new Rec Center) would you need to see on campus before pledging to use tap water and refillable bottles 100% of the time?

12. Closing Comments?

Appendix C – Tap Water Challenge Response Sheet

Tap Water Response Sheet.

Match:

Cup A	Dasani
Cup B	Poland Spring
Cup C	Aquafina
Cup D	Rec Center Tap
Cup E	Campus Center Tap

Questions:

1. During the Tap Water Challenge did you have a hard time telling the difference?
    a. yes
    b. no
2. During the Tap Water Challenge which water sample did you end up favoring?
    a. Cup A
    b. Cup B
    c. Cup C
    d. Cup D
    e. Cup E
    f. none
4. Would you support the "Think Outside the Bottle" campaign?
    a. yes
    b. no
    c. indifferent

Appendix D – Petition Template

Petition to Ban the Disposable Water Bottle on Campus

Petition summary and background	The disposable water bottle is an over-priced, environmentally detrimental, and ultimately unnecessary alternative to public tap water. We are promoting the benefits of public water and acting to ban the bottle on campus.
Action petitioned for	We, the undersigned, are concerned members of the WPI community who pledge to use tap water and reusable water bottles in favor of disposable water bottles.

Printed Name	Signature	Email Address	Comment	Date

Appendix E-Transition Document

Transition Document

This transition document, drafted by the Think Outside the Bottle at WPI IQP team, contains all the information needed to host Tap Water Challenges, film showings, and generally continue the campaign on campus.

Tap Water Challenges

The tap water challenge serves as a tool for promoting the campaign on campus in a way that gathers attention from people walking past, and engages those who participate in an activity that is both informative and fun! Corporate Accountability International has established a set of guidelines that can be used in most situations to host a tap water challenge, and can be found by following this link: http://www.adropoflife.tv/tap_water_challenge_org_kit.pdf.

Through our experiences with the Tap Water Challenge, we have established a list of modifications to CAI's guidelines that are best suited for holding a challenge at WPI. Before any preparation can be done, table space must first be booked in the campus center. This can be done by emailing Kim Wykes at kwykes@wpi.edu and requesting a table. If there is room, booking two tables will make the table less crowded if petitions and promotional materials are being distributed as well. In addition, try to request the table closest to the the bookstore entrance, as you will then be able to book one of the bookstore windows for hanging up posters by talking to Jen Amedy, the bookstore manager, by emailing jamedy@wpi.edu, or by finding her at the bookstore.

Once space has been booked, supplies must be bought. For our challenges, we used two samples of tap water, and three of bottled water. The tap water sources we used were from the Sports and Recreation Center's bottle refilling stations, and from the soda fountain in the campus center basement. The three bottled brands most often consumed on campus are Aquafina, Dasani, and Poland Spring. These can be bought at any supermarket or department store, Target has all three, in 24-packs relatively cheaply. We also chose to have pitchers on the table for every sample of water, rather than just the tap water, to help disguise which was which. Simple drink pitchers can be purchased in packs of 5 from iParty, which is located next to Target in the Blackstone Valley Shoppes. It is recommended to obtain a sixth pitcher so that two can contain water from the Rec Center so that you don't have to walk all the way there as often to refill the pitcher. Finally, you will need cups to distribute the samples to the participants. The simplest option is the small, paper bathroom cups found at any supermarket.

The actual setup of the table can be seen in this picture from our blog: http://wp.wpi.edu/wcpc/files/2012/11/tap-water-challenge.jpg. The most efficient method we found was to label the pitchers with sticky notes A-E, and maintain at least 6 cups of each sample in front of the respective pitcher. Then place sticky notes A-E on the table in front of

the cups, as this is how they are identified on the response sheets. Have the petition form on the table as well, and offer it to participants as they finish the challenge.

Try to engage participants with facts about how good public water is while they take the challenge, and facts against bottled water after they take it.

Film Showing

A documentary showing on campus will allow for the WPI campus community to see what impact the disposable water bottles have on the environment outside our community. Documentary's are made to influence their audience on a social justice issue. We hoped to have the documentary Tapped show because it was highly recommended by Jill Appel, who leads the concord ban the bottle campaign. When doing a public showing for a film, permission for the showing of the film needs to be established, due to the copyright laws. This can be obtained in one of two ways. The first and most reasonable way of obtaining the copyrights would be through the company Atlas Films which we have contacted (contact information is listed below), but not obtained a reply. Another way of gaining copyrights would be by teaming with a green organization and then placing a formal request to the Student Government Association in order to obtain the money to gain the rights. Once the rights are obtained the movie can be ordered and this would allow you to have a public showing.

Once the rights to the film are established you must place a time and reserve a room through the WPI web page. When the room is booked and the confirmation email is obtained, a email can be sent out to the student body and the faculty member, other forms of advertising may be used. Once these steps have been taken then you have established a public film showing of the documentary "Tapped".

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