SELECTMEN'S COMMITTEE TO STUDY BOTTLED DRINKING WATER

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NOTE – Appendices are not included in this document. Appendices including a Transcript from the Public Hearing on Bottled Drinking Water are available for review at http://www.brooklinema.gov/1310/Bottled-Water-Study-Committee.

I. INTRODUCTION

Warrant Article 14 of the May, 2015 Annual Town meeting ("WA14") proposed adding a new Town bylaw, Article 8.35. This Article would impose a ban on the sale or distribution of bottled drinking water, as defined in the Warrant Article, at events of more than 100 people in Brookline (§8.35.2) or on any property receiving a lease or other license to operate on Town property (§8.35.3) and prohibit the use of Town funds to purchase bottled water for use in Town buildings (§8.35.4). Only proposed bylaw §8.35.4 was approved by Town Meeting. The remainder of WA14 was referred to a committee of the Board of Selectmen for study and to report back to Town Meeting in May, 2016.

To carry out the wishes of Town Meeting, the Board of Selectmen established the Selectmen's Bottled Water Committee (the "Committee") to study bottled drinking water, as defined in WA14 and to prepare this report (this "Report") to the May Town Meeting. This report is organized to provide background data and information relative to Bottled Water, including (1) environmental concerns, (2) health related issues, (3) the experiences and views of other governmental and private bodies that have addressed bottled water, and (4) surveys of the views of the Brookline community, and (5) action steps that are ideas, recommendations, and suggestions of the Committee. The action steps are divided into (a) steps that can be implemented relatively easily, with minimal required approvals and at low or no cost, (b) steps that will require approval by the Selectmen or Town departments, but without Town Meeting legislation, and (c) those that will require action by Town Meeting. They are designed to provide ideas for reducing the use of Bottled Water by means of educational initiatives and steps that could make the use of alternatives to bottled water reasonable and practical for Town residents and visitors. At its first meeting on March 11, 2016, the Committee agreed to expand the scope of its work to include other plastic beverage containers in addition to bottled water.

For the complete Charge to the Committee of the Board of Selectmen, see Appendix A.

NOTE – Appendices are not included in this document. Appendices including a Transcript from the Public Hearing on Bottled Drinking Water are available for review at http://www.brooklinema.gov/1310/Bottled-Water-Study-Committee.

Members of the Committee

The Committee was comprised of Selectman Bernard Greene, who chaired the Committee and Dr. Alan Balsam, Director of Public Health and Human Services, who co-chaired the Committee.

The Board of Selectmen appointed seven public members to the Committee:

1) Lea Cohen, Advisory Committee member
2) Andrew Fischer, Town Meeting Member 13
3) Jane Gilman, Town Meeting Member 3
4) John Harris, Town Meeting Member 8
5) Crystal Johnson
6) Patrick Kessock
7) Nate Tucker

Town Commissions designated two members:

1) Dan Lyons, Parks and Recreation Commission
2) Clint Richmond, Solid Waste Advisory Commission; Town Meeting Member 6

The School Committee designated:

Ben Chang

The department/division directors who assisted the Committee, in addition to Dr. Balsam, included:

1) Robert Auffrey, Public Health Specialist
2) Michael Bartlett, Operations Manager - Parks & Open Space
3) Austin Faison, Assistant Town Administrator
4) Erin Gallentine, Director of Parks and Open Space
5) David Geanakakis, Chief Procurement Officer - Purchasing
6) Edward Gilbert, Environmental Health Supervisor - DPW
7) Wendy Machmuller, Special Projects Coordinator
8) Andy Martineau, Economic Development Planner
9) Frederick Russell, Director of Water & Sewers
10) Charlie Simmons, Director of Public Buildings

II. PREFACE

The process of Town Meeting decision-making is often as important as the decisions themselves. For a decision to adopt a Warrant Article to be defensible it must be based on good information. This Committee was charged by the Board of Selectmen, based on the vote of the May 2015 Town Meeting on WA14, to study the issues raised by WA14 and present to the spring 2016 Town Meeting good information for future decisions on bottled water in Brookline.

In response to Town Meeting discussion, this Committee set as its goals, to reduce the need for water packaged in single-use plastic bottles, to increase the availability of good drinkable public water, to reduce the use of plastic beverage containers generally, and to avoid the unintended consequence of people shifting their drinking habits from bottled water to sugary drinks in plastic bottles or other containers.

In preparing the data in Part III of this report, the Committee sought to gather and present information that was balanced, complete, and took into account the views and interests of all stake-holders. This allowed the Committee to identify potential unintended consequences of any decision. It also allowed the Committee to identify alternative actions to a ban on bottled water that would achieve the goals of Town Meeting in ways that were sustainable and defensible. A non-exclusive list of such alternatives is included in Part IV (Action Steps).

III. REVIEW OF THE LITERATURE AND BACKGROUND DATA

1. ENVIRONMENTAL

a. Solid Waste

In 2013, Americans produced about 254 million tons of trash. Of that, over 34 percent was recycled or composted equaling 87 million tons. That number breaks down to about 1.5 pounds per person per day. Approximately 13 percent of that is plastics (EPA, 2016). Recycling of present-day synthetic plastics is challenging, but not impossible as illustrated by the fact that many municipalities in the U.S. accept only plastics from the Society of the Plastics Industry (SPI) #1 and #2 categories. To address this problem, some commentators have suggested that the widely accepted concept of the 3 Rs – reduce, reuse, recycle (Bell, 1970) – will not suffice. Rather, building on previously proposed efforts, they propose a fourth R, to *rethink* at the systems level, and a fifth R, to *restrain,* with measures at the policy and governance level.

The enormous number of single use plastic water bottles creates other problems. Estimates range from 30 to 50 billion per year in the US, and that number is rising, as evidenced by a nearly 8% increase in bottled water sales in 2015 (Beverage marketing Corporation, 2016). Nearly all of these bottles are single-use containers of 1 liter or less. Brookline's share of this volume is on the order of 500 thousand per month.

Even if only a small percentage of the volume becomes litter, this causes a large amount of visual blight and animal harm (Derraik, 2002).

Plastic bottles are light, but compared to some other typical household solid waste occupy disproportionate space in recycling trucks and landfills.

These problems are compounded since plastic bottles do not biodegrade. Such plastics can persist for thousands of years. However, they are subject to fragmentation, and have entered our human food chain (Seltenrich, 2015, Wright, Thompson, & Galloway, 2013).

Plastic bottles suffer from low recycling rates compared to valuable natural materials like paper or aluminum. Plastic bottles are hard to process, which contributes to their low value. Plastic bottles are composed of three different materials bound together:

- PETE (polyester) bottle
- Polypropylene (or polyethylene) cap and ring
- Polyethylene film label

The Town actually loses money on plastic bottles. Contamination makes them unsuitable for food or medical applications. Contaminants include the synthetic non-degradable adhesive (also made from petrochemicals) used to attach the label; and additives and dyes. The polyester is down-cycled into non-recyclable products such as fleece. The other rigid plastics from the bottle have even lower value. The label is printed extensively with ink, reducing its already extremely low value.

Data for plastic bottles purchased Town-wide is not available, nor is the amount of plastic bottles in the garbage stream or otherwise discarded, calculable. Primary research on recycling of plastic bottles can be done via observation however, and statistics on recycling tonnage are available via

Casella, Brookline's contracted hauler. Thus plastic bottle recycling data is used here as a proxy for all plastic bottle consumption, in addition to its original intent; that of indicating what savings the Town may incur as a result of banning bottled water. It is important to note that these data represent only the percentage of plastic bottles that make their way into the recycling stream. The Container Recycling Institute (2013) estimates that 29% of PET plastic bottles are recycled, a rate that is lower than that for other materials such as aluminum and paper.

Casella, was able to provide data on plastic bottles only at the level of their Charlestown facility, which serves the entire Greater Boston area: Plastic bottles amount to 2.5% of the total recycling stream. This accounts for residential, municipal, and commercial recycling. It is based primarily on weight, as plastic bottles are light.

- Based on Casella's figures and the current cost of recycling, banning all types of plastic bottles would have an impact on savings:
    - 2.5% of 5,271 (FY 2015 recycling tonnage in Brookline) = 131.76
    - Recycling processing fee for 1 ton = $230 (cost for Brookline)
    - 131.76 x $230 = $30,305
    - $30,305 annual estimated savings if we completely eliminate the 2.5% from the recycling stream (this includes residential, commercial, and municipal)
- However, this number does not reflect what Brookline would actually save because it is based on the entire facility's tonnages.
    - Visual observations aboard Casella recycling trucks on Brookline's recycling routes found that the amount of plastic bottles in the Town's recycling stream is minimal (less than 1%). The majority of the recycling is either cardboard or paper.
    - "Door to door" inspection of multiple household recycling carts, on various routes within Brookline, certifies these findings. Many carts did not have plastic bottles and if they did, the amount was very low.
    - Based on the small amount of plastic water bottles in Brookline's recycling stream, the cost savings would be minimal, if any.

b. Sustainability

Single-use packaging is generally less sustainable than reusable containers. Sustainable materials are natural and rapidly renewable or recycled content. In particular, plastics such as PETE, polyethylene and polycarbonate are made from oil and natural gas. Fossil fuels need millions of years to create, so turning them into single-use packaging is not sustainable. The amount of fossil fuels is limited. The amount of easily available fossil fuels is even more limited. Today, we rely on hydro-fracked natural gas and oil, and oil from undersea sources, which are more damaging and riskier in terms of accidents and spills. All petrochemicals require pipelines, which add to the fire and spill risk of this class of materials (Hopewell, Dvorak & Kosior, 2009).

2. HEALTH

a. Health Risks of Plastic Bottles

Over 300 million tons of plastic are produced globally, on an annual basis; this includes millions of tons of plastic bottles (Halden, 2010) While some plastic products are a boon to public health (e.g. disposable syringes, intravenous bags), plastics also pose risks to human health (Rustagi, Pradhan, & Singh, 2011)

These threats vary based on the manufacturing methods and the constituents of various plastic products. In the following, we focus on the specific risks posed by plastic bottles.

(i) Bisphenyl (BPA). Bisphenyl (BPA) is a chemical widely used in the production of polycarbonate plastics, including plastic bottles (especially hard bottles). BPA can leach into food/beverages from plastic bottles, and this leaching is accelerated at higher temperatures (Thayer, Heindel, Bucher, & Gallo, 2012), such as when food is heated in a plastic container or when water bottles are left in an automobile.

BPA exhibits hormone-like properties. While the Food and Drug Administration (FDA) has stated that BPA is safe at current levels in foods, both the European Union and Canada have banned BPA use in baby bottles (Edge & Eyles, 2013). A Harvard School of Public Health study (Carwile et al. 2009) found that participants who drank for a week from hard plastic bottles (polycarbonate) showed a two-thirds increase of BPA in their urine. Human exposure to BPA and other endocrine disruptors may result in lowered fertility and increased incidence of endometriosis and some cancers, and may pose the greatest risk during pre-natal and early post-natal development when organ and neural systems are forming (NIEHS, 2016). Some manufacturers are replacing BPA in plastic products with an epoxy containing bisphenyl S (BPS) or other compounds. The risk of these alternatives is currently under review.

(ii) Phthalates. Phthalates are chemicals used in many plastic products, including bottles, to make them soft and flexible. A number of studies have shown that phthalates are hormone disruptors with estrogenic and/or anti-androgenic actions (Hauser & Calafat, 2005). Evidence linking obesity to plastics derived endocrine disruptors such as diethylhexyl phthalate (DEHP) and di-n-butyl phthalate (DBP) (Gray, et al., 2000) has also been found (Manikkam, Tracey, Guerrero-Bosagna, & Skinner, 2013, Heindel, Newbold, & Schug, 2015).

It should be noted that there are numerous other sources of these problematic chemicals in our foods and beverages, cosmetics, and a host of other consumer products. Conversely, although not produced in the US since 1976 – but possibly used in plastic bottles procured from outside the US - flame retardant poly-brominated diphenyl ethers (PBDEs) have been found to leach into liquids from PET plastic bottles at rates that increase over time and with exposure to heat (EPA, 2014), Studies have found that antimony, a regulated heavy metal similar to lead, can leach trace amounts in high heat environments (Fan et al., 2014; Andra, Makris, Shine & Lu, 2012).

(iii) Plastics in the Ocean Food Chain. Another public health concern with the proliferation of plastic, including plastic bottles and plastic bags in the environment, is the potential for broad accumulation up the food chain. Fish and other marine animals can become contaminated by chemicals from plastic, as well as minute plastic particles. Eventually, these contaminants end up in our food supply (Seltenrich, 2015, Andrews, 2015).

(iv) Manufacture of Plastic Bottles. Consumers are exposed to these as trace materials but workers are exposed to a wide range of chemicals at much higher levels (Fong, Lee, Lu, Uang, & Lee, 2014). All manufacturing processes involve exposure to dangerous chemicals and other risks, but focusing on the manufacture of plastic bottles, these risks include chemicals, including additives, solvents, lubricants, precursors (such as benzene),

and catalysts (such as antimony). Many of these are found in liquid or gaseous form, which increase exposure risk. Also, accidental releases of these chemicals can occur at fatal levels and petrochemical facilities are subject to higher fire and explosion risk than many other manufacturing processes. Finally, the range of chemicals from petrochemical packaging is much broader than for other forms of beverage containers such as glass or aluminum (ElMasry, Salem, El-Dermadash & Hassan, 2013).

b. Bottled Water Contamination

(i) Commercial Recalls. From 1990 to 2006 there were over 100 contamination recalls and "field corrections" (Gleik, 2010) of bottled water products. Bottled water bottlers who recalled product were located across the US; from California to Maine and from Washington to Florida. Bottlers from Canada, Puerto Rico, the Virgin Islands, Armenia, and Germany were included as well. Reasons for recall were high levels of arsenic, bromate, mold, undefined particulate matter, chlorine, fecal coliform bacteria, and other contaminants, as well as bad odors and tastes and for such mislabeling violations as municipal water being marketed as spring water (Pacific Institute, 2010).

c. Regulation of Bottled Water

(i) FDA Regulation. Bottled water sold in interstate commerce is regulated by the Food and Drug Administration under the Federal Food, Drug, and Cosmetic Act. FDA has established specific regulations for bottled water in Title 21 of the Code of Federal Regulations, including standards of quality regulations (21 CFR §165.110[b]) that establish allowable levels for contaminants (chemical, physical, microbial and radiological) in bottled water and safety regulations that require that bottled water be processed, bottled, held, and transported under sanitary conditions (21 CFR §129). Processing practices addressed in the regulations include protection of the water source from contamination, sanitation at the bottling facility, quality control to assure the bacteriological and chemical safety of the water, and sampling and testing of source water and the final product for microbiological, chemical, and radiological contaminants. Bottlers are required to maintain source approval and testing records to show to government inspectors.

(ii) Massachusetts Regulation. In addition, Massachusetts is one of many states that have developed regulations for bottled water manufactured within the state and bottled water imported from outside the state (105 CMR 570). Bottled water suppliers must apply for a permit to manufacture bottled water (G.L., Ch. 94 §10A) and submit both source water test results and test results from the water as bottled to the Department of Health. Those reports are public records and by statute are available to the public upon request (G.L., Ch. 94, §10D.5) to the Department of Public Health's Food Protection Program. They are not, however, currently available on the Department's website due to limited resources and infrequent use of the information when it was posted online. For discussion of the Massachusetts regulation of source water and finished product, see "Quality Standards for Bottled Water" (MA Dept. of Public Health, Food Protection Program) at Appendix B.

d. Health Issues in Public Water Supply Systems

(i) Brookline's Water Supply. Brookline is fortunate to have an outstanding public water supply from the Massachusetts Water Resources Authority (MWRA). The following details Federal and State testing requirements of the Town of Brookline Department of Public Works:

Under the Massachusetts Department of Environmental Protection's Drinking Water Regulations, each municipality must collect total coliform samples[1] at sites that are representative of water throughout the distribution system. The number of samples taken is relative to the municipality's population. In Brookline's case, a minimum of 60 samples per month, or approximately 17 per week, are taken and delivered to MWRA's lab in Chelsea for testing.

Public water is regulated and inspected under EPA guidelines, which also indirectly regulate bottled water through regulation of the source waters from which bottled water is obtained. Each year MWRA and every fully-supplied community must collect and test tap water in a sample of homes that are likely to have high lead levels. These are usually homes with lead service lines or lead solder. EPA requires that nine out of ten of the sampled homes must have lead levels at or below the Action Level of 15 ppb. Brookline has been below the Action level since 2010 in 24 out of 25 sampling rounds. Over the last five years, 90 out of 92 samples have been below Action Level (97.8%).

Finally, public water supply test results are made available. The MWRA sends each community a "WATER QUALITY UPDATE" each month, which provides information on water quality at four locations in the MWRA transmission system. A sample of the data from a Water Quality Update is attached as Appendix C. Previous Water Quality Updates can be viewed using the following link:

http://www.mwra.com/monthly/wqupdate/qual3wq.htm

In addition to quality, MWRA water is generally free of unpleasant tastes and odors. In June of 2014 MWRA tap water was awarded the title "Best Water in the Country" by the American Water Works Association (AWWA). At the AWWA's Annual Conference and Exhibition, the Boston Water and Sewer Commission (BWSC) won first place in the tenth annual Best of the Best Tap Water Taste Test. Second place in the competition went to MWRA water, which shares its source and treatment facility with BWSC water. Third place was awarded to the City of Kalama WA tap water. The winners edged out competitors from pristine places as far away as Alaska, Utah, and Puerto Rico (Convery, 2014).

[1] Coliforms are a group of related bacteria that are (with few exceptions) not harmful to humans. A variety of bacteria, parasites, and viruses, known as pathogens, can potentially cause health problems if humans ingest them. EPA considers total coliforms a useful indicator of other pathogens for drinking water. Total coliforms are used to determine the adequacy of water treatment and the integrity of the distribution system. See EPA, Revised Total Coliform Rule.

How water tastes, is largely due to the minerals it contains. MWRA's, and by extension Brookline's, water is soft - having low levels of minerals such as calcium. MWRA's water comes from the Quabbin Reservoir, about 65 miles west of Boston, and the Wachusett Reservoir, about 35 miles west of Boston. The two reservoirs combined supply an average of 200 million gallons per day to consumers. The Quabbin alone can hold a 4-year supply of water.

The reservoirs are filled naturally. Rain and snow fall onto watersheds (protected land around reservoirs) and eventually turn into streams that flow into reservoirs. This water comes into contact with soil, rock, plants and other material as it follows its path. This process helps to clean the water, and it can also dissolve and carry very small amounts of material into the reservoir.

The Quabbin and Wachusett Reservoirs are protected. Over 85% of the watershed lands that surround the reservoirs are covered in forest and wetlands. About 75% of the total watershed land cannot be built on. The natural undeveloped watersheds help to keep MWRA water clean and clear. Also, to ensure safety, the streams and the reservoirs are tested often and patrolled daily by the Massachusetts Department of Conservation and Recreation (DCR). Because they are well-protected, the water in the Quabbin and Wachusett Reservoirs is considered to be of very high quality. MWRA's licensed treatment operators treat drinking water according to strict state and federal regulations.

MWRA's Water Treatment Steps can be viewed at:

http://www.mwra.state.ma.us/04water/html/watsys.htm

(ii) Disruption due to facility failures. In 2010, water service to all MWRA customer communities east of Weston was interrupted by a major water break in Weston. Due to this break, a boil water order was issued for drinking water for all MWRA communities east of Weston. MWRA activated its emergency water supplies such as the Sudbury Aqueduct, Chestnut Hill Reservoir, and Spot Pond Reservoir. This water was not suitable for drinking, but could be used for bathing, flushing and fire protection. The leak was located at the site where the Metrowest Water Supply Tunnel meets the City Tunnel on Recreation Road. This 120-inch diameter pipe transports water to communities east of Weston – as far north as Wilmington and south to Stoughton. Water was leaking into the Charles River at rate of over 8 million gallons an hour.

When the MWRA experienced this major breech discussed above, the Town mobilized its Community Emergency Response Team and the Medical Reserve Corps to distribute thousands of bottles of water supplied by the Massachusetts Emergency Management Agency to Brookline residents.

(iii) Lead and Copper. MWRA reservoirs are lead free, but lead can get into tap water from lead pipes in a home. Lead can also enter tap water from lead solder or brass

fixtures in a home. Corrosion or wearing-away of lead-based materials can add lead to tap water, especially if water sits for a long time in the pipes before use. Lead can also leach into tap water if the service line that connects your home to the water mains in the street is made of lead. This is particularly a problem in older homes (usually built before 1940).

When the Town identified elevated lead levels at the Old Lincoln School (Upper Devotion School), all drinking fountains were removed, and bottled water was deployed for drinking and food preparation. This response continues to this day, until funding becomes available in July for a permanent solution.

(iv) Circumstances Requiring Use of Commercially Sourced Water. Commercially sourced water may be necessary under various circumstances. As indicated above, water disruption is an occasional problem due to many causes. There are also occasional non-emergency situations when commercially sourced water may be necessary.

School field trips and outside work by Town employees in the heat use commercially sourced water for convenience and when there are no other practical alternatives.

In some of these cases, there may be other possible options including water packaged in cans and/or cartons or large bulk water containers. Initial research indicates that these other options are typically impractical or more costly. The added cost would have to be factored into future budget estimates for these activities.

Bulk water containers are often made of plastic materials, but plastic that is thick and durable so they are stronger, longer lasting, and available for reuse multiple times. And there are many situations where bulk water is practical and would be the preferred option.

Other than large plastic containers, the most common means of providing bulk water in emergency situations is the use of water trucks. Commercial water trucks have recently been widely used to deliver water to drought afflicted areas of California (Daniels, 2015) (because this water must be taken from somewhere else, there are opportunities in such situations for unscrupulous private water trucks to load up from hydrants in municipalities with ample water and then resell the water after trucking it to drought afflicted areas).

e. Water Filters

(i) Water Filter Types. Water filters vary widely in quality. Most water filters available at discount retail stores, superstores, pharmacies, or grocery stores use lower quality filter technologies, such as carbon blocks and pour through pitchers that cannot remove many contaminants. When looking for filters, certification by NSF International can provide some quality assurance. Among the services of NSF International for water filters is certifying the

ability of water filters to achieve the results advertised.[2] Searches can be performed by brand or filter type, such as the most commonly used types for residential water filtering:

- Reverse osmosis
- Ceramic filtration
- Carbon filters
- Ultraviolet
- A combination of technologies

The main contaminants that may be found in older buildings in Brookline are lead and copper. Consumers concerned with those contaminants should make sure that their filters in fact filter them out.

(ii) Filter maintenance and concerns. All filters require regular cartridge replacement, cleaning, and/or other maintenance in order to remain effective. Filter contamination is a concern if not maintained properly. In addition, water filters that filter water into holding tanks can develop biofilm[3] if the disinfecting agent used in the water supply is filtered out.

f. Sugary Beverages as Alternatives to Water in Plastic Bottles

(i) Unintended Consequences. Unintended consequences of bans on bottled water could include unnecessary increases in consumption of sugar-sweetened soft drinks, sports drinks,[4] energy drinks and other high calorie beverages. These consequences can occur when consumers are not provided with practical alternatives to the banned bottled water or when such bans or restrictions are not accompanied with useful informational materials or educational programs. The experiences of certain college campuses and national parks are notable examples (Rocheleau, 2012, Berman, & Johnson, 2015, Schatz, 2015).

(ii) Health Impacts of Sugary Drinks. Obesity, adult onset type 2 diabetes, and heart disease have all been linked to high caloric intake (Lavie, McAuley, Church, Milani, & Blair, 2014, Fung et al., 2009; de Koning et al., 2012). In addition, consumption of sugary beverages has been linked to pediatric diabetes (Ludwig, Peterson & Gortmaker, 2001). In fact, people who drink 1-2 servings of soda per day have a 26% higher risk of developing type 2 diabetes than those who rarely consume soda (Malik et al., 2010). According to the National Center for Health Statistics, in 2010 every day at least half the US population consumed at least one sugary drink, 1 in 4 took in 200 calories or more from sugary drinks, and 5% consumed nearly 600 calories per day from soda (Ogden, Kit, Carroll & Park, 2011). This is one fifth to one quarter the USDA recommended daily caloric intake of many adults, and one third to half the calories recommended for children to consume in an entire day (USDA, n.d.). More

[2] The NSF International website has a page where consumers can list the impurities that they are concerned with in their water and be linked to a listing of NSF International certified products that will remove those impurities: http://info.nsf.org/Certified/DWTU/

[3] Biofilm is a layer of bacteria and their secretions and waste products that accumulates on any surface that is exposed to water containing the appropriate nutrients to support bacterial life.

[4] This is not to suggest that there are not situations where certain sports drinks that are inappropriate for casual drinking would have value. Such situations would include long distance running or intense periods of physical activity when one's body loses critical salts and minerals through perspiration.

recent studies have found that while sugar sweetened beverage (SSB) consumption decreased in adolescents significantly and young adults – from 22% to 16% and 29% to 20% respectively, it increased by a small margin of 1% in children aged 2-11. Among Adolescents soda consumption decreased while sports drink consumption tripled. Lower socioeconomic status correlated with higher SSB consumption, as did a lower education level of parents. Overall, prevalence of soda consumption is down, yet beverage companies are successful in replacing soda with nontraditional SSBs, consumption of which is up (Han & Powell, 2013).

Sugar consumption aside, there is also danger of ingesting carcinogens such as dyes (enduropacks, 2016), and benzyne (Ahmad & Bajahlan, 2007). As discussed above, developmental detriments in the form of endocrine disruptors such as BPA (Markey, Rubin, Soto & Sonnenschein, 2002) and phthalates have been found to leach into liquids (Sax, 2010) and have harmful effects on liver and kidneys and been linked to testicular cancer (Astorino, n.d.).

Energy drinks often contain high levels of sugar combined with caffeine and other chemicals (Smith, 2013). Unlike sports drinks these have the effect of dehydrating the user. Heart palpitations, seizures and cardiac arrest have been linked to overdoses of these chemical combinations (Seifert, 2011). Gunja and Brown (2012) found these symptoms in adolescent consumers of energy drinks as well as neurological toxicity, hallucinations, and gastrointestinal upset. The poorly regulated nature of energy drinks and ingredients therein, coupled with their attractiveness to adolescents has led to increased reports of poisoning (Babu, Church & Lewander, 2008).

(iii) Boston Public Schools. Because the consumption of sugary beverages has been strongly linked to obesity and diabetes, the Boston public schools undertook an effort to restrict availability of those products. In 2004 the district enacted a policy banning sugary drinks, which applies not only to school meals programs, but to vending machines, school stores, and a la carte services. The policy restricts beverage sales to only water in elementary schools, but middle and high schoolers have access to 100 percent fruit juice in certain sizes, and milk with fat content and flavoring constraints.

- As a result, only 4% of all Boston students and about 10% of high schoolers have access to sugar sweetened drinks, while nationally, the average is nearly 90%. A national survey in 2013 discovered that, compared to 27% of students nationwide, only 17% of Boston students had one or more servings of sugar sweetened drinks. These results follow a trend that began with the 2004 policy, as a 2006 study found that Boston high school students had reduced sugary beverage consumption, compared to no change nationally.
- To meet the restrictions some schools sell no beverages at all. Compliant schools sell only non-sweetened bottled water, 100% fruit juice and low fat, non-flavored milk. Boston has been able to sustain 90% adherence to the ban through a public health approach. The city provides an educational tool kit with posters and other materials, conducted training events, and mandates refresher training for non-compliant schools (Freyer, 2016).

f. Hydration Options Other than Water.

Good hydration can be obtained from other sources than water or sugary drinks. Fruits and vegetables with high water content can provide hydration on a warm day as well as providing other nutrients and electrolytes that are present in the fruit and get absorbed by the body, thus hydrating and maintaining water balance in cells of the body. Fruits and vegetables that can easily be made available during warm weather events in Town to supplement water for hydration purposes are:

- cucumbers (96% water)
- celery (95% water)
- red tomatoes (94% water)
- watermelon and strawberries (92% water)
- grapefruit (91% water)
- peaches (88% water)
- pineapples and oranges (87% water)
- Plums (85% water)
- pears and apples (84% water) (RRTC, 2011)

3. BROOKLINE WATER SUPPLY AND DEMAND DATA

Water professionals have observed that water fountains in our cities and towns have been disappearing rapidly (Stoner, 2012). Many cities and towns, however, are seeking to reverse that trend, including Brookline. This report is in-part designed to help the Town of Brookline increase the availability of public water, including drinking fountains, for its residents. The following discussion describes where Brookline is in that process and some of what needs to be done to move forward. A copy of the blog entry: *Bring Back the Water Fountain* by Assistant Administrator for the EPA's Office of Water Nancy Stoner is included in Appendix D.

a. Parks and Open Spaces

(i) Capital Expenditures and Infrastructure. The Department maintains over 117 parks, open spaces, school and town grounds, and small green open spaces. Of those, 50 are multi-use parks, open spaces or schools grounds and only 28 have drinking water fountains available for public use. Five of those 28 locations with standard drinking water fountains will have a water bottle refill station installed in 2016-2017.

Reliable on-site drinking water fountains or hydration stations need to meet ADA requirements. The effort to meet those accommodations will vary from site to site due to terrain, funding, and water source. The cost of a standard accessible drinking water fountain installed under contract is approximately $4300. The cost of a hydration station with water bottle refill and an accessible water bubbler costs approximately $3200 for the unit and $3800 for installation based upon recent contract bid prices for a total of $7000. The cost for a new water bottle refill station with installation under contract includes the drain line, stone drainage, water line and concrete apron. The Department of Public Works would be able to complete the installation portion of the work at a location with an existing water fountain for approximately $1200, reducing the overall cost to $4400.

Replacement- Drinking Water Fountain Installed by Contractor $4300

Replacement Water Bottle Refill Station Installed by Contractor	$7000
Replacement Water Bottle Refill Station Installed by Town	$4400
New Water Bottle Refill Station Installed by Town or Contractor	Varies

The cost to install a water bottle refill station as described above in a park with access to a water source within 50 feet completed by in-house staffing would be approximately $3000 for Town labor and supplies plus the cost of the unit ($3200) for a total of $6200. A contractor's price would likely be closer to $10,000 total. The cost to install the same in an area where there is a greater distance to a water source would vary significantly depending upon the distance, disturbance to public way/park and utility infrastructure needed to provide water service. Replacement of approximately 28 drinking water fountains with water bottle refill stations at an average of $7000 will cost an estimated $196,000. The addition of drinking water fountains at new locations would vary greatly depending upon conditions.

Active Recreation Parks and Open Spaces with Drinking Water Fountains

Amory Playground	Driscoll Playground	Reservoir Park
Baker School Grounds	Emerson Garden*	Robinson Playground
Boylston Playground	Fisher Hill Reservoir Park*	Schick Park
Billy Ward Playground	Griggs Park	Soule Recreation Center
Brookline Avenue Playground*	Harry Downes Field	Skyline Park
Clark Playground	Larz Anderson Park	Waldstein Playground
Coolidge Playground	Lawrence Playground	Eliot Playground
Corey Hill Playground*	Lawton Playground	Winthrop Square
Cypress Playground	Murphy Playground	
Devotion School Grounds	Pierce Playground*	

*Parks that will have a water bottle refill station in 2016-2017.

Active Recreation Parks and Open Spaces without Drinking Water Fountain

Olmsted Park	Lincoln School Playground	Monmouth Street Playground
Juniper Street Playground	Runkle School Playground	Riverway Park
Heath School Playground		Baldwin School Grounds

(ii) Impact to User Groups. It should be noted that the location of a drinking water fountain within a park may or may not be located close to where a permitted event is scheduled. Nor do all parks or playgrounds have access to water bottle refill units. The High School, Youth and Adult recreational leagues, school grounds, neighborhood groups, and community programs must be sure that participants and spectators are well-hydrated. Access to a sufficient and convenient water supply is critical. It is also important to note that during late fall and early spring (when athletic teams are using the outdoor facilities) the water supplies are shut off to prevent water breaks due to evening freezing temperatures/fluctuations.

(iii) Damage, Repair and Maintenance. Drinking water fountains are closed for service several times throughout each season due to clogged drains, malfunctioning hardware or tampering. The time required to complete repairs depends upon availability of repair parts and staff scheduling. There must be reasonable expectations that water may not always be available on site.

b. Public Works Employees

Remote Worksites. Employees often refill water bottles in the mornings and at lunch during their regular shift. However, during emergency events there are unusual shifts, extremely long hours, and designated rest or eating times with over a hundred employees trying to recharge at the same time. During these events it is important that we are able to provide water to many people at the facilities at the same time, as water is critical to their well-being. Water is not available off site during all hours of the evening and it is inefficient to expect crews to come across town to refill at odd hours of the evening during, for example, snow emergency events. There are no supplies available in the parks during these times and public buildings are often closed.

A GIS display of drinking water fountain locations at public parks and school grounds in Brookline is included in Appendix E.

c. Public Buildings

Requirements. All public buildings, pursuant to the Massachusetts State Plumbing Code are required to have a water fountain/bubbler for public use. The number of fountains varies on the size of the building's occupant load. As all public buildings in Brookline have water fountains already, there would be no need to add anymore at this time, incurring no costs.

Two years ago, Public Buildings began a pilot study to install water container fillers at each of its buildings that would be part of an existing water fountain installation already in place. A number of pilot modifications were done at selected sights. These automatic bottle fillers were part of a modification kit from the water fountain manufacturer. The cost to install these fillers ranged from $800 to $1200 depending on the type of pre-existing water fountain and if the labor was performed by outside contractors or Town staff. These costs were covered either through donations of materials by the Parent Teacher Organization at a few schools or as part of a larger renovation project. Four sites were completed.

Town employees have devised an effective option that would allow simple installation of bottle fillers at water fountain locations (approximately one hour of installation time) at a substantially reduced material costs ($50-$150).

The result of these specific pilots led to a program/policy to install container fillers at all public buildings at locations where their use would be warranted – auditoriums, cafeterias, gymnasiums, and in hallways near these locations. If the using agency requested an additional location(s) this was addressed as needed. Approximately 90% of these fillers have been installed to date. The remainder will be installed in the next 2-3 months, depending on existing workloads.

As these simple installations were included as part of the Town plumber's work orders, costs were relatively low. Future installation cost estimates are not in excess of $75/fountain, including labor and materials. Maintenance costs are generally low as the fillers require no preventative maintenance. In the event of failure, one would be replaced, not repaired.

A complete inventory of drinking fountains appears in Appendix F. Photos of drinking fountain replacements and upgrades in Brookline Town buildings appear in Appendix G. An inventory of bottle filling stations appears in Appendix H.

d. New Town Regulations for Restaurants

Drinking Water Access. On January 1, 2016 Bylaw Article 8.35, Drinking Water Access, took effect. This bylaw requires Common Victuallers (commonly defined as restaurants with seating) doing business in Brookline to provide access to water from the tap. On July 1, 2016, a Public Health Regulation will expand this requirement to Food Vendors, which are largely take-out providers lacking seating in their establishments. Neither regulation stipulates that purveyors provide cups free of charge, nor does either state what amount may be charged.

e. Public Events

Events Requiring Water Supply and/or Other Forms of Hydration. There are numerous public events on Town property where access to hydration is important. A partial list of these events appears in Appendix I. Any restriction on the availability of bottled water, especially at locations where there are no alternative sources of water, would have to be carefully considered and accompanied by measures that ensure the availability of water for participants.

f. Relative Costs

Bottled Water versus Tap Water. Although public water treatment plants, pipes and reservoir maintenance are not free, the consumer does not pay for the water at the point it is used. Rather, taxes, water and sewer payments, and other state and municipal monies pay for the services and product provided by the MWRA and Brookline's delivery system. While public water is estimated to cost less than 1 cent per gallon, bottled water can cost many times more (Boesler, nd; Diffen, nd).

4. EXPERIENCES OF OTHER GOVERNMENTAL AND PRIVATE ENTITIES

The Committee researched the approaches that other North American municipalities and private entities have taken concerning the reduction in use of bottled water in plastic bottles. The following are the results of that research.

a. Governmental Bodies and Agencies

(i) Concord, Massachusetts. Concord passed a bylaw on April 25, 2012 concerning the "Sale of Drinking Water in Single-Serve PET Bottles." This made it "unlawful to sell non-sparkling, unflavored drinking water in single-serving polyethylene terephthalate (PET) bottles of 1 liter (34 ounces) or less in the Town of Concord…" The bylaw was put into effect on January 1, 2013. The bylaw lists exemptions (emergency circumstances) and the enforcement process (Town Manager). The penalties are a warning, a $25 fine, and a $50 fine, in the order of offense. Lastly, there is a provision in the bylaw for a suspension of the bylaw if the costs become too high.

A conversation with Susan Rask, Concord's Public Health Director clarified how the bylaw has affected the Town.

- The bylaw states that no business can sell one liter or smaller bottles of water. Due to this restriction, retailers have started selling 1.5 liter and larger bottles. Ms. Rask explained that when the shelves were emptied of 1 liter and smaller bottles, the retailers found other drinks in those sizes to substitute.
- Enforcement has been consistent and it is now primarily complaint driven. There have not been many issues and businesses know one liter or less goes against the language in the bylaw.
- According to Ms. Rask, one thing that Concord did that has been a success has been providing more hydration stations. However, this has not affected the average consumer and does not affect how local businesses stock their shelves.
- Rod Robison, Concord's Recycling & Disposal Program Coordinator, reported that DPW did not see a significant change in recycling tonnage and there was no cost saving to the Town.

(ii) San Francisco, California. San Francisco passed an ordinance on March 3, 2014 to amend the City Environment Code to ban "the sale or distribution on City property of drinking water in plastic bottles of 21 ounces or less, set City policy to increase the availability of drinking water in public areas, and bar the use of City funds to purchase bottled water…" This ordinance was put into effect on October 1, 2014. There are multiple exceptions: any City officer, department, or agency having the ability to waive the requirements if the requirement would not be feasible; waiving restrictions when they conflict with a state or federal grant; when water is necessary to protect public health when no reasonable alternative is available. Penalties for violations are $500, $750, and $1,000, in the order of offense. There is also a strong emphasis on increasing the City's commitment to providing public water (Timm, 2014).

(iii) Montreal, Quebec. The Mayor of Montreal has announced that the City is looking into banning plastic water bottles (after passage of a plastic bag ban that will go into effect in 2018). They are looking at a total prohibition, similar to Concord (Banerjee, 2016).

(iv) Department of the Interior – National Park Service. The National Park Service issued Policy Memorandum 11-03 on December 14, 2011 regarding the reduction of disposable plastic water bottles in parks. This memo gave regional directors the ability to review and approve "a disposable plastic water bottle recycling and reduction policy, with an option to eliminate sales

on a park-by-park basis." To date, there are at least 18 national parks that have already banned, or plan to ban, the sale of bottled water. Some of the parks that have already banned bottled water sales are Arches, Bryce Canyon, Grand Canyon, Mount Rushmore, and Zion. Soda, sports drinks, and fruit juices are still sold. To augment the lack of bottled water, parks have increased water filling stations (Grand Canyon installed ten for $289,000 and Zion installed three for $447,000) (US Department of the Interior, 2011; Schatz, 2015).

(v) Toronto, Ontario. Toronto banned the sale and distribution of bottled water in all Civic Centers, City facilities and parks. The 2008 Parks Waste Audit indicated that recyclables composed approximately 14% of the litter stream, making the disposal of waste difficult and potentially costly Plastic materials comprised the largest amount of recyclables at roughly 7%. The Audit concluded that reduction of plastic bottles in Toronto's parks would reduce contamination of the litter stream, and reduce the cost of dealing with contaminated loads that are not accepted at transfer stations (City of Toronto, n.d.).

(vi) University of Vermont. A report in the American Journal of Public Health (Berman & Johnson, 2015) described the effect of banning plastics water bottles at the University of Vermont:

- With shipment data as a proxy, the researchers "estimated bottle beverage consumption over three consecutive semesters: baseline (spring 2012), when a 30% healthy beverage ratio was enacted (fall 2012), and when bottled water was removed (spring 2013) at the University of Vermont. They assessed changes in the number and type of beverages and per capita calories, total sugars, and added sugars shipped" (Berman & Johnson, 2015).
- *The Results*: "Per capita shipments of bottles, calories, sugars, and added sugars increased significantly when bottled water was removed. Shipments of healthy beverages declined significantly, whereas shipments of less healthy beverages increased significantly. As bottled water sales dropped to zero, sales of sugar-free beverages and sugar-sweetened beverages increased" (Berman & Johnson, 2015).
- *Reverse Effect*: "The bottled water ban did not reduce the number of bottles entering the waste stream from the university campus, the ultimate goal of the ban. With the removal of bottled water, consumers increased their consumption of less healthy bottled beverages" (Berman & Johnson, 2015).

b. Private Businesses

(i) Trader Joes and Whole Foods, San Francisco, California. Although the San Francisco ban would not apply to the sale by private businesses, local food stores are adjusting to a civic mood that wants to reduce the use of plastic water bottles. In informal and unscientific surveys of Trader Joes and Whole Foods stores in San Francisco, a member of the Committee called the stores to ask about their experience with the single serving plastic water bottle ban. Store sales would not be impacted until October 2018 when the ban will fully take effect and will affect only bottles under 21 ounces. Trader Joe's currently carries a 16.9 ounce size which was described as "a very popular item." A manager at a Trader Joes store opined that even if they "take a hit" and lose sales, he expects they'll sell the larger size with a net effect of "probably no impact." A

Whole Foods store manager commented that at this time the store is still exploring the possible impacts of the ban. In the meantime, their vendors have started to use other, "sustainable packaging" in the form of boxes, which he said "are selling well" (J. Gilman, personal communication, April 2016).

5. NON PLASTIC WATER BOTTLE OPTIONS

a. Community Distribution of Reusable Bottles

Increasing the availability of reusable water bottles could decrease the demand for single-use bottled water. People could then bring water when leaving home or fill them at public fountains and water stations. Such bottles would include glass and metal bottles or sustainable non-toxic plastic containers

(i) Bottle Types. Plastic bottles are lightweight and the least expensive option. Glass is an option but can be heavier and can break. Stainless steel should literally last a lifetime, and is recyclable if damaged. These come standard with a polypropylene top, but bamboo is a more sustainable option, although more expensive. Many companies have bulk buying-programs that include a custom logo as part of the price.

(ii) Community Distribution. Reusable bottles are already available in Brookline at places such as Whole Foods (metal and glass) and Stop & Shop (plastic for $7-9). Concord did not distribute free bottles as part of their ban. They did sell logo bottles at a local store. Originally steel and plastic were offered, now only plastic is.

http://concordontap.org/take-action/purchase

Sample retail prices for the plastic bottles were $15.99 for smaller 0.6 liters and $16.99 for 0.75l liters.

In addition to making bottles available at retail locations, they could be distributed to low-income populations. This has been done in other communities with reusable bags in the context of bag bans. Newburyport distributed 7 thousand plastic reusable bags that were donated by a retailer that were surplus from a promotion. The City also bought some bags with a logo from a public contest. These were distributed to a dozen sites such as schools, public housing, food pantries and other non-profits. Cambridge is distributing 10 thousand bags in similar fashion. (They are even collecting surplus reusable bags, cleaning them and re-distributing them).

b. Bulk Water and Water Carts

As previously mentioned, bulk water containers are often made of thick and durable plastic so they are strong, long lasting, and reusable. Bulk water may be the best solution for emergency preparedness storage and other situations where portability and volume are of equal importance. Other than large plastic containers, the most common means of providing bulk water in emergency situations is the use of water carts or trucks. Often these trucks are filled from hydrants or other access points to public water.

6. COMMUNITY AND BUSINESS VIEWS

a. Website Survey

The Plastic Bottle Ban in Brookline survey asked respondents nine questions about plastic bottled beverages and tap water. Questions inquired about how many and what type of drinks were consumed, where plastic bottled beverages were purchased and how they were disposed of, if respondents drank or would be willing to drink tap water, and if they would be in favor of a Town-wide ban on plastic bottles. This survey should not be considered scientific or comprehensive, as it represents a convenience sample.

Approximately 550 people responded to the survey. Ninety percent of respondents said that they drink tap water. If there were more filling stations, 52% replied that they would not buy a reusable bottle whereas 48% would. More than half replied "No" that they would not support a ban on plastic bottles in Brookline. Almost 40% would, and the remainder was indifferent.

Approximately 80% replied that they drank beverages out of plastic bottles. As to what type and how many, the largest category chosen was water, followed by juice/sports drinks and soda, both at around half that of water. Dairy products and iced coffee/tea were consumed at around one quarter the rate of bottled water. The "Other (please specify)" option generated 83 comments, many of which mentioned seltzer or sparkling water. Several other comments were to the effect of "none at all". Most consumed one or zero plastic bottles per day. The majority of respondents who purchase plastic bottled beverages did so from grocery and smaller stores. A small minority (10%) obtained them from their employer, delivered from Poland Springs, or at events and while traveling. Nearly all respondents either recycle or reuse plastic bottles.

The final question solicited comments. A total of 260 were logged. The anecdotal message derived from them is that many Brookline residents support a ban for its public health benefits. More respondents however, feel that such a measure takes "Nanny State" actions too far, and that Brookline has bigger issues to tackle, such as obesity. Some supportive comments spoke to the relative success of the Concord MA ban. Many comments pointed out that there was no option to choose fewer than one plastic bottled beverage consumed per day in question 3 (E. Gilbert, personal communication. April 2016).The complete web-site survey results may be found in Appendix J.

b. Business Survey

Beginning on March 18, an online survey was distributed to non-food establishment businesses. To date, the survey has only yielded 15 responses, not a large enough sample size to support any conclusions that might be drawn from the data. In addition to asking businesses about their willingness to provide free or low cost tap water to customers and to estimate the percentage of customers that request a drink of water, the survey also included a comments section.

A majority of the respondents indicated that they would be willing to offer free or low cost tap water to customers and that less than 25% of customers ask for a drink of water while shopping. In the open comments section of the survey, several respondents suggested that providing access to tap water would be impractical and may present some public health and safety concerns with respect to

how the water would be accessed. For some businesses, customers would only be able to access tap water via the basement employee bathroom.

Related to the access issues mentioned above, Economic Development Staff is expressed their concerns that an effort to mandate offering free or low cost tap water by non-food businesses to customers in a clean and sanitary manner would result in infrastructure requirements and associated costs that would be overly burdensome. Costly new infrastructure would likely displace merchandise to make way for access to a resource that is already abundantly available via the town's 147 restaurants that are required to make tap water available to customers (Bylaw Article 8.35). Thus the Economic Development staff strongly recommended against imposing additional requirements on non-food businesses because of the financial impact on those businesses.

The complete business survey results may be found in Appendix K.

Maps showing food service permit holders by commercial area may be found in Appendix L. (residential food permit holders are not required to make tap water available to their residents).

(c) Bottled Water Industry

On May 24, 2015, the International Bottled Water Association (IBWA), a trade association for the bottled water industry, circulated a letter to Town Meeting in opposition to WA14. The IBWA argued that WA14 was not in the public interest because (1) efforts to restrict access to bottled water hinder individuals searching for a healthier beverage alternative, (2) bottled water has the lowest environmental footprint of any packaged beverage, and (3) bottled water is strictly regulated by the U.S. Food and Drug Administration as a food product, which makes bottled water a safe choice for consumers.

The letter made a number of specific statements that speak to some of the concerns of this Committee. They stated that since 1998, approximately 73% of the growth in bottled water consumption has come from people switching from carbonated soft drinks, juices, and milk to bottled water. They also stated that most of what people drink comes in convenient packaging and that if bottled water wasn't available 52% of people would choose soda or another sugared drink in convenient packaging – not tap water. Of course, the goal of this Committee is to reduce that percentage by providing greater access to public water. The letter also argued that bottled water has the lowest environmental footprint of any packaged drinks, citing a study by the environmental consulting firm Quantis[5] and that bottled water is regulated strictly by the FDA. The letter is attached to this Report at Appendix M.

[5] Quantis is an international environmental consulting firm. Their website says that they use a Life Cycle Assessment approach to understanding the environmental impact of their clients' operations, products, services, or technology.

IV. ACTION STEPS

Relatively Easy Steps - Requiring Minimal Approval; Low to No Cost

1) Appoint a task force to develop an education campaign to encourage people to decrease use of bottled water and increase use of public water; task force to partner with Department of Public Health, Department of Public Works, Planning and Community Development Department, Brookline Public Schools, and private agencies.

2) Design a promotion with Chamber of Commerce for a bottle give-away.

3) Communicate (from Dr. Balsam or other Town official) with the MA Department of Public Health on whether it would be feasible for laboratory results of testing of source water and bottled water of private bottlers to be posted on the department's website.

4) Organize a task force (possibly composed of high school students concerned with environmental issues) to plan fun promotional events at town events to distribute reusable water bottles partnering with radio stations or other entities.

5) Engage elementary, secondary, and college students to devise initiatives to reduce the use of bottled water among their peers and others.

6) Develop a "Youth Water Challenge" – in collaboration with schools and PTOs – to educate and engage youth and their parents.

7) Register all public drinking water sources on Blue W, a free website platform.

8) Develop map of local food establishments with drinking water availability.

9) Prohibit plastic bottles in Town beverage machines (cans and cartons are acceptable? AF), food trucks, restaurants or other businesses on Town property.

10) Continue with drinking fountain retrofits in all public buildings.

11) Borrow water station cart from MWRA for use at town events and consider purchasing a Town water station cart.

12) Research and consider endorsing select "bottle bills" currently pending in MA legislation (e.g. H.2875 "An Act to increase recycling in the Commonwealth" and S.1223 "An Act prohibiting the use of bisphenol-A in consumer products," etc.).

13) Urge schools and event sponsors to make available high water-content fruits and vegetables and promote their hydration benefits.

14) Discuss with food stores the possibility of making water available for people to fill their reusable bottles.

15) Discuss with food stores stocking water in cardboard containers and other sustainable materials *Note: At least one Committee member disagrees with this suggestion.

16) Discuss with food stores whether they would be willing to sell reusable water bottles at cost as a civic gesture; figure out how to incentivize such a gesture.

17) Sponsor public showings of the movie "Tapped".

18) Submit op-ed to Tab with overview of Report & guidance re: safety of Quabbin water; SSBs; bottled water, hydration stations, etc.

19) Reach out to elementary schools' Green Teams to educate on the importance of avoiding plastic water bottles & to promote water fountain use.

<u>Steps Requiring Approval or Other Action by Town departments</u>

1) Impose reasonable restrictions on sale of plastic beverage containers at Town-sponsored events and large events on Town property.

2) Deploy public water hydration options at such Town-sponsored events.

3) Use CIP funds to purchase water station cart(s) or water truck(s) to have available at town events; allocate money and staff resources to maintain it.

4) Use CIP funds to put water fountain in parks where there are nearby water lines; dedicate money to maintain the fountains.

5) Use CIP funds or other appropriated money to install service lines from nearby water mains where needed.

6) Use CIP funds or other moneys to provide hydration options for Brookline portions of Muddy River paths used by runners and cyclists.

7) Use CIP funds to purchase water trucks or bulk water hydration facilities for use by Town workers at job sites where such facilities are practical and convenient.

8) Work with School Committee to enact a policy restricting sugary drinks at school meals and vending machines and investigate providing 100 percent fruit juice in certain sizes and healthy milk products. (See Boston Public School policy).

Steps Requiring Action by Town Meeting

1) Appropriate money to fund a task force and private consultants to perform detailed study of infrastructure needs and costs of improvements to make public water available widely.

2) Appoint a task force to submit warrant article for appropriation of funds to complete the infrastructure improvements.

NOTE – Appendices are not attached to this document. Appendices including a Transcript from the Public Hearing on Bottled Drinking Water are available for review at http://www.brooklinema.gov/1310/Bottled-Water-Study-Committee.

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