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Drinking Fountain ART Team

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[WATER FOUNTAIN USAGE AT UCLA]

Assessing the use of drinking fountains on the UCLA campus and ways in which usage can be increased through the process of mapping, maintenance, and overall education and awareness



Drinking Fountain ART Team

Education for Sustainable Living Program

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I. Executive Summary

Despite its usefulness, plastics have led to the habit and reliance on one-time use, disposable products including the common usage of plastic water bottles. Derived from petroleum and other chemicals (*Food and Water Watch*), plastics are not easily decomposable or degradable. About 1/3 of US landfills are composed of plastics and these plastics remain there indefinitely because of the inability to break down (*Tapped*). Plastic water bottles are one of the main culprits of plastic pollution, an increasing threat to the earth's environment. A much better and more sustainable alternative to plastic bottles is drinking and refilling at a water fountain with a reusable water bottle, but there is a common misconception that tap water is unhealthy or unclean.

Over the past two quarters, the Drinking Fountain Action Research Team tackled the plastic water bottle issue from a two-pronged approach: first, to increase maintenance efforts on existing water fountains, and second, to educate the UCLA community about the environmental benefits and effects of tap water. The overall objective was to make drinking water habits more sustainable, thus decreasing our dependence on plastic bottles. Our actions and research included surveying the UCLA population, administering a tap water and bottled water taste test, mapping drinking fountains across campus, learning more about LA municipal water quality, and educating other students through the distribution of promotional water canteens and the screening of a documentary.

As a result, we concluded that students would be more willing to use drinking fountains on campus if the students were more informed about the safety and quality of the water and if the fountains were better maintained; there would be less of a stigma surrounding the use of drinking fountains and tap water in general. For the future, several actions can be implemented to improve the drinking fountains on campus including but not limited to the following: maintain a consistent upkeep of drinking fountains to ensure cleanliness and accessibility, post visible signs to point people to where the nearest drinking fountains are, and finally, install more goosenecks in existing water fountains to encourage students to refill reusable water bottles.

II. Overview

There are significant environmental and sustainability issues related to the recent boom in bottled water consumption. This year in the United States alone, more than 25 billion water bottles will be consumed and an estimated 80% of these bottles will end up in landfills, litter our beaches, or pollute our oceans (*Container Recycling Institute*). Additionally, the production of a single water bottle uses more than five times the amount of water contained in the bottle itself (*Food and Water Watch*). The pollution caused by such mass consumption is inevitable and unavoidable. Therefore, drinking bottled water not only creates trash and pollution, but also maintains unsustainable and wasteful practices.

There has long been a stigma attached to the usage of public water fountains and tap water, sparked by rumors of poor water quality (*Tapped*). This fear of tap water extends to UCLA, and plays a large role in the lack of drinking fountains being used on campus. Many members of the UCLA community buy one-time use plastic water bottles instead of using the abundant amount of water fountains throughout campus. Our survey results indicate that 103 out of 378 respondants purchase disposable water bottles due to concerns about the cleanliness of the water and 68 respondants are concerned with the health effects they fear from tap water. Without much information available about the benefits of drinking tap water, informed decisions are difficult to make.

III. Project Goals and Objectives

The Drinking Fountain Action Research Team focused on making drinking water habits at UCLA more sustainable. Plastic is one of the major pollutants related to past, current, and future environmental problems. One-time use plastic water bottles comprise a majority of the plastics being stored in land fills and polluting our oceans (*Tapped*). Drinking fountains on campus do not seem to be widely accepted, so in our goals to promote the use of tap water on campus we realized that a a comprehensive mapping system of the drinking fountains would help us understand how many fountains there are and which fountains are the best for students to utilize. Upon completion of the mapping, we shifted our focus towards an outreach campaign with which we educated students on how to decrease their dependency on single use water bottles, which saves them money and helps the environment. The overall goal of this project was to promote sustainability by building confidence in the water infrastructure system already existing at UCLA. We explored the issues regarding tap water use at UCLA while working to increase student awareness of the environmental, financial, and health benefits obtained from using drinking fountains.

Most people drink bottled water as a matter of convenience. Convenience however is a perception created by the bottled water industry. The millions of Americans who consume the billions of water bottles do not always consider the inconveniences associated with purchasing them. Purchasing bottled water on a daily basis can become extremely expensive especially when compared with the free, clean, and sustainable water that is readily available. According to *Food and Water Watch*, the minimum price of bottled water is \$0.89 per gallon while tap water costs nearly 10,000 times less at approximately \$.002 per gallon (*Food and Water Watch*). By rating and mapping the available public water fountains, we moved closer to our goals of shifting this perception of convenience towards a more informed and sustainable mindset. As a result of our group's water fountain mapping and educational efforts, we hope to see future years in which 25 billion less water

bottles are being wasted and instead 25 billion more water fountain visits are made. We hope that our sustainability efforts promoted at UCLA have long-term impacts, not only on individuals' awareness, but also in regards to fostering a more sustainable lifestyle and, by extension, a more sustainable planet.

IV. Significance and Background

Unfortunately, as abovementioned, there has long been a stigma attached to tap water; people view it as dirty and unsafe, while bottled water is thought of as clean, pure and healthy. This trepidation towards tap water made the goals of our group all the more difficult to accomplish, as we had to both educate the campus about the perils of bottled water and convince students that the drinking fountains throughout campus are hygienic. With 86% of plastic water bottles ending up in landfills (*Take Back The Tap Report, p. 3*), the need to educate the UCLA community about the use of tap water became imperative.

Bottled water has always been advertised as "clean and wholesome"—as the healthy option in a world of unhealthy choices (*Tapped*). The bottled water industry has made billions of dollars through strategic ad campaigns, labeling bottled water as "pure", "refreshing", even "smart," (*Tapped*). In comparison, tap water seems unclean and cheap. On a campus as large as UCLA, many drinking fountains are neglected and do not get much use, due in part to the fact that the drinking fountains are dirty and need better upkeep. The apparent main reason that drinking fountains are not used at UCLA, however, is that students do not know where the best fountains are and many do not own reusable canteens (please see key findings and data analysis for further information). When students have no convenient access to free water, they opt instead to pay for water in plastic bottles. The lack of proper drinking fountains on campus maps makes it much more difficult for students to find them when they are in a rush, and so they buy water instead.

V. Initial Conditions

In the larger efforts to make the UCLA campus more sustainable, the initial conditions of our project were rooted in an overall goal to reduce throw-away plastic water bottle consumptions and promote the use of drinking fountains on campus. To do this, we first had to make sure that the fountains were physically and geographically located so that we could direct the proper people where to go to maintain the fountains. Originally, our campus had numerous inoperable or unclean water fountains and no means of locating the functional ones, therefore making maintanence much more difficult. This provided us with an opportunity to locate and map out all of the water fountains on campus such that UCLA Facilities can maintain them.

As our research unfolded we realized how much of an uninformed and biased perspective students upheld. There were very few people who understood the potential health risks associated with plastic bottle use. Additionally, few people considered how many bottles they used, where the bottles were disposed of, and the overall environmental degradation their plastic bottle use caused. We planned to better inform this uninformed population by screening the educational documentary *Tapped*, which divulged the health and environmental risks, as well as the ethical and economical issues, that accompany the bottled water industry (*Tapped*).

Furthermore, although the residence halls have started to give incoming students reusable water bottles, there still appeared to be many students who did not have a reusable water bottle. We planned on distributing reusable bottles to these students to better facilitate the use of our water fountains. Initially, most students were biased towards bottled water thinking it tasted better and that is was more regulated and safer. To change this misconception we planned bottled water vs. tap water taste tests. With access to such a large and intelligent student body, our group had the potential to make a substantial impact on the perspectives and habits of the UCLA community.

VI. Research Methodology

We spent most of winter quarter using a Google Android participatory smartphone to map water fountains on campus through the WeTAP application. Each fountain submitted to the WeTAP database included questions on taste, appearance, accessibility, and location; we also took pictures of each individual water fountain we visited. Our group divided the UCLA campus into 3 sections—north, south, and central—and mapped buildings that fell within each member's respective area. In addition to the WeTAP phone application, our team also manually wrote down the details of the drinking fountains due to technical difficulties with the phone and inconsistency of the GPS system. We were not able to get the accurate latitude and longitude coordinates of each water fountain on campus. Some data for the fountains overlapped, and others were placed at the wrong location altogether. Therefore we could not really use the data that was only collected from the phone.

As we moved into Spring Quarter, we branched off into individual projects; we still attempted to use the data we had collected to help us place water fountains on the maps of buildings on campus. We swept through campus looking for broken water fountains, so we could report them to facilities. We found that there were 26 broken water fountains on campus and we made sure to forward the list of these fountains to the Facilities department.

For the most part, we focused on more education-based projects during Spring Quarter. Our research consisted of conducting a survey we created to get a sense of the water usage practices on campus as well as a campus-wide blind taste test of bottled water versus tap water. The blind taste test implemented in the beginning of the quarter by USAC's General Representative 3 committee resulted in favor of tap water (out of 269 participants, 151 properly identified and preferred tap over bottled water). With these results, along with the results of our survey, we decided that the best way to reach students and educate them on the importance of tap water use would be to provide

them with complimentary reusable canteens and a map that locates several of the best, most accessible fountains on campus. This education campaign does not fall under the realm of research methodology, but our previous research methodologies led us to conclude that a methodology based in education was the best route to follow.

VII. Data Analysis and Key Findings

Survey Results

The purpose of our survey was to gage the stigma and reasons behind the infrequent use of drinking fountains on campus. Out of a total of 378 responses, our research findings dictate that a significant proportion of students surveyed would increase their drinking fountain use based on certain factors. These factors and the proportions of responses are listed below.

•	More accessible/increased # of fountains	57.4% (217/378)
•	Chilled water	60.1% (227/378)
•	Filtered water	69.6% (263/378)
•	Gooseneck attachments	57.1% (216/378)
•	Cleanliness of fountains	72.8% (275/378)
•	Map/better signage of fountain locations on campus	23.7% (90/378)
•	Increased information about tap water	21.7% (82/3678)

From the 378 survey responses received, it can be observed that 73% of the responses claimed cleanliness of a fountain as the top reason in which students would choose to use a fountain. In addition, students would also like to see filtered water fountains with goose necks that would allow for easier refilling of water bottles. We found that UCLA students and faculty are still relatively uninformed about the quality of tap water, as 44.7% of responses stated that "compared to bottled water, drinking fountain water is of lower quality", when in fact, most bottled water sources come from municipal sources. Overall, the survey showed that there is an interest among the UCLA campus to reduce the use of plastic water bottles, but the convenience of purchasing one-time use water bottles and the nuisance of carrying a heavier reusable water bottle still deter many people

from using water fountains. Given these circumstances, major upgrades to campus water fountains and increased education among the student and faculty population can make frequent use of water fountains possible.

One major upgrade to the fountains would be the installment of gooseneck attachments, which appeared to be an overwhelming incentive for people to drink tap water on campus. Accordingly, we looked into data on goosenecks and how much they would cost. After talking to the Haws Corporation, the major supplier of our water fountains on campus, we found that the cost of a gooseneck is \$110 (HawsCo Faucet Valves). We also looked into hydration stations, which are handsfree water stations that could be either free-standing or surface-mounted to a wall; there is currently one in the John Wooden Center. The pricing for these hydration stations, also from Haws, is \$1900-\$2000 (HawsCo Hydration Station). It would be beneficial to sustainability of the UCLA campus to add goosenecks to at least one water fountain in the approximately 40-50 buildings on campus.

Taste Test

In junction with USAC General Representative 3 Committee, the taste test between bottled water vs. tap water proved to be successful in the sense that a majority of the participants could not distinctly identify as to which sample was bottled water and which was tap water. In the initial taste test event, 151 participants preferred tap water over the 118 participants who chose bottled, resulting in 56% of total participants, making it a majority choice. This shows that without the packaging and marketing of bottled water, people would not necessarily prefer bottled over tap and would not discredit tap water as low-quality or unpleasant.

Mapping of Water Fountains

From the WeTAP Google phone mapping project during winter quarter, our team collectively mapped 285 distinct water fountains around the UCLA campus (not including the dorm

area). Overall, we concluded that there is a reasonable quantity of water fountains located in each building proportional to the building size. Each floor of a building at least had 1 drinking fountain, if not two. Although majority of the fountains mapped were working, some had low trickle or had hidden locations within the building, resulting in lower accessibility. Furthermore, we also found 26 individual fountains that were broken and needed repair. These inoperable fountains make up around 9.1% of total fountains mapped.

In our analysis of our mapping data, we found that outdoor fountains are limited—only 7 fountains were located outside, 3 near LATC and 4 in Drake Stadium, 2 of which were broken. At the time of mapping, the 3 near LATC were inoperable due to the blockage of leaves over the drain. There were no visible drinking fountains near Bruinwalk, or in Bruin Plaza, areas that withstand heavy foot traffic every day. If more visible fountains were installed in central outdoor locations, this would deter some people from buying plastic water bottles within Ackerman union and other campus stores.

We also found that there are very few water bottle refilling stations on campus. Currently, there are 5 locations that have water stations to refill bottles: Ackerman Union A-level, Kerchkoff Hall, the North Campus Student Center, LuValle Commons, and the Wooden Center. The normal water fountains on campus do not have goosenecks, which makes refilling water bottles more convenient. Currently, On-Campus Housing has already retrofitted many drinking fountains on "the hill" with goosenecks. After some research on pricing (\$110 for the most basic model) and installation techniques, we found it to be feasible for the campus to adopt the use of goosenecks as well.

VIII. Recommendations

We have several recommendations, explained below, for future projects surrounding tap water use on campus:

Continuing Recommendations

• Complete/Accurate Mapping System:

- The drinking fountain data collected shows that UCLA's drinking fountains are lacking necessary maintenance procedures. With this in mind, it is imperative that Facilities takes the time to clean and improve the fountains on campus so that people are more inclined to drink tap water as opposed to water from onetime use plastic bottles.
- With a more complete mapping and tracking system of the campus drinking fountains, Facilities will have clearly marked locations of drinking fountains and therefore they will more easily be able to access and maintain them for general

WeTAP Phone Application:

- WeTAP only operates on Google Android phones. Work with the WeTAP developers (Betta Dawson, Debra Estrin, Joey Degges, Evelyn Wendell) to make the application available to any and all smartphone brands.
- O Use Wi-Fi phone connections to map the fountains instead of GPS since Wi-Fi is more reliable indoors and will therefore produce more accurate results.

• Tap Water Education:

- A big concern regarding the use of drinking fountains on campus is whether or not the water is safe to drink. It therefore seems essential to continue to educate the UCLA community on the quality of the water on campus and show that tap water is safe to drink.
- O Put facts up around campus in heavily trafficked areas so that people can learn about the benefits of tap water and reusable canteens while they are walking to their destinations. A strong tool would be to emphasize the economic gains from drinking tap instead of purchasing bottled water.

Short-term recommendations

• Report-to-Facilities Stickers:

- o Place Facilities maintenance stickers near drinking fountains that provide the information on what to do if a fountain is broken
- Such stickers can be found in many campus bathrooms informing people of how to contact Facilities to report a leak or a problem with the sinks. With these stickers placed on drinking fountains, people will more easily realize that they can report a problem with a fountain and have it fixed.

• Floor Plan Labels:

- o Add labels to floor plan placards located on each floor of every building
- People can walk into a building in search of a fountain, look on the map, and head in the right direction

• Eliminating/Replacing Cups at Water Stations:

- The water stations located on the first level in Ackerman, outside of Kerchkoff Coffee Shop, and in the North Campus Student Center all provide plastic or waxpaper cups for use at the drinking fountains
- Through collaboration with ASUCLA, work to eliminate these cups or substitute them with more sustainable products such as plant-based, compostable, biodegradable cups and/or cups made of recycled material

Long-term recommendations

• Goosenecks on campus:

- With gooseneck attachments, students, faculty and staff can more easily refill their water bottles on campus, which would deter them from purchasing onetime use plastic bottles.
- With our research into goosenecks, we have found that the cheapest pricing for this product is \$110 from the Haws Corporation.
- Once the goosenecks are purchased, the next step is to contract the Facilities department to install them on at least one fountain per building on campus.

• Water Quality Testing:

Testing the water quality on campus is a very risky project and may be larger than the scope of a 2-quarter action research project, but it should still be considered as an important goal in achieving overall tap water usage. It will certainly lead to improvements in the water infrastructure, which would thereby demonstrate the safety of the water and encourage members of the UCLA community to use the campus drinking fountains.

• Plastic Water Bottle Elimination:

• Washington University in St. Louis was the first university to ban bottled water sales in most of the campus (*Washington University in...*). With a lot of work, UCLA should be able to achieve this as well. Talks with the ASUCLA sales department can help with research into how to eliminate or fundamentally reduce the sales of plastic water bottles on campus.

o If an agreement can be made with student representatives as well as with campus officials to provide reusable, BPA free bottles to the UCLA community, the incentive to use tap water will increase.

¹ Using the Haws pricing, installing goosenecks in 40-50 buildings would result in a cost range from \$4400 to \$5500. Based on these estimates, it may be best to research cheaper goosenecks if the aim is to install at least one in all buildings. To help subsidize these costs, it may be appropriate to apply for funding from UCLA's TGIF fund and/or any other grants available on campus.

IX. Conclusion

Convenient one-time use plastic water bottles are a relatively new commodity (citation-TAPPED?), but through vigorous advertising campaigns and promotions, water bottle companies have made them a ubiquitous product in Western culture, and particularly in America. According to Food and Water Watch, "About 86 percent of the empty plastic water bottles in the United States land in the garbage instead of being recycled," (Food and Water Watch). According to the Clean Air Council, "Americans throw away 2.5 million plastic bottles every hour" (Clean Air Council). These statistics unsurprisingly indicate that "Single Use plastics and disposable plastics are the main source of plastic pollution," (Plastic Pollution Coalition). Given this information, it is clear that the consumption of packaged water is a significant contributor to environmental degradation caused by plastic products. The simplest solution to this problem is to stop purchasing plastic bottles and mobilize people to reclaim tap water. To make UCLA more sustainable in regards to plastic pollution, our research suggests that cleaning and maintaining the campus water fountains, as well as providing easily accessible water bottle refill options, will significantly increase tap water use and reduce the purchase of throw-away plastic water bottles. Since the dependence on plastic water bottles has emerged from fabricated notions that tap water is unsafe, it will take time for society to "unlearn" this discourse on water. In taking the initial actions to rewrite this discourse within the UCLA community, we hope that our research will contribute to drastic changes in disposable plastic consumption on campus, and that these changes will then be diffuses throughout society to ultimately curb the pollution caused by plastic water bottles.

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XI. Appendix

a. Drinking Fountain Survey as it appeared on SurveyMonkey

Drinking Fountains and Tap Water

We are conducting a survey to understand the water bottle practices of UCLA's community. We appreciate your time for this survey.

When completing this survey, please take into account both your experiences at UCLA and your experiences outside of UCLA.

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7	What	V/D2r	2 r D	WALL	ın	conno	١Ľ
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- Freshman
- Sophomore
- o Junior
- o Senior
- o 5th Year Senior
- Faculty
- o Staff

2. What is your gender?

- o Male
- o Female
- 3. Please rate the following questions based on your view of water quality.

Compared w/HOME TAP water (from your sink/filtered water pitcher), drinking fountain water is:

higher	equal	lower	no	unsure
quality	quality	quality	opinion	ulisule

Compared w/BOTTLED water, drinking fountain water is:

higher	equal	lower	no	unguro
quality	quality	quality	opinion	unsure

4. How frequently do you purchase bottled water?

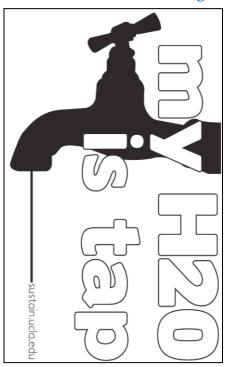
- o every day
- o a few times a week
- o several times a month
- o when no other options are available
- o never

5. If yo	u purchase water bottles, what factors contribute? (Check all that apply)
	Convenience Water cleanliness concerns Health (biological/chemical) concerns Taste No other options are available I don't purchase water bottles
	u don't purchase water bottles, or purchase them infrequently, what factors oute? (check all that apply)
	Plastic water bottles are expensive Chemical leaching from plastic bottles Environmental concerns (plastic pollution, sustainability, shipment/energy fuel usage, etc)
	No particular reason, I just don't I'm aware that bottled water is sometimes just packaged tap water I don't drink tap and only purchase water bottles
7. How	frequently do you drink UCLA tap water?
0 0 0	Every day Several times a week A few times a month Only at a campus eatery (Ackerman, LuValle, Northern Lights, Kerchkoff) Never
8. W ha	at factors would increase your drinking fountain use? (Check all that apply)
	increased number of fountains (more accessible) chilled water filtered water goose-necks (to easily refill water bottles) cleanliness of fountains a map/better signage of fountain location on campus increased information about tap water Other (please specify)
9. (Plea	ase check all that apply) In terms of reusable water bottles
	I just don't use one I don't use them because of BPA concern. (BPA is a harmful chemical found in certain plastics)
	I forget to bring it with me to campus I don't have one due to cost concerns I would use one if UCLA provided one for free or at a reduced cost I use one all the time

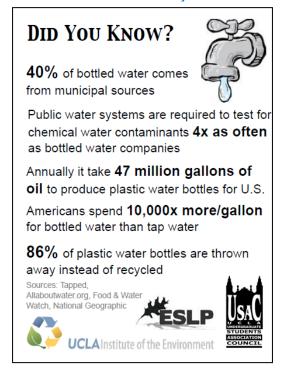
- 10. Were you aware that tap water is regulated by the EPA and government institutions while bottled water is only monitored by the Food and Drug Administration, that it takes more water to produce plastic water bottles than it does to fill the water bottles, and that plastic bottles can leach chemicals into the water?
 - o yes; but it won't change my plastic bottle usage
 - o yes; that's why I drink tap water
 - o no; but it doesn't change my opinion on purchasing plastic bottles
 - o no; now that I do, I will probably drink more tap water

Please leave any other comments/suggestions you may have about the topic of Tap vs. Bottled Water

b. Water Bottle Canteen Logo

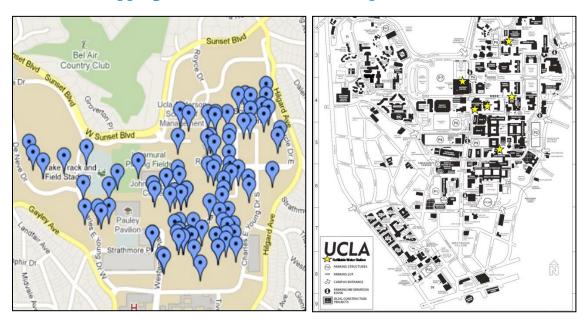


c. Taste Test Flyer



d. WeTAP Mapping data

e. Map of Accessible Fountains



f. Tapped Screening Flyer

