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ARCHY 499 Final Paper  
Waste Analysis Proposal  
15 June 2013

## Education, Evaluation, and Efficiency of Dorm Housing

### Background

Over the last year the UW Garbology Project has been focusing on the University of Washington's waste disposal efficiency. Over this time we have found that there is a lot of confusion about where waste goes, especially compost. The most recent study revealed that 72% of the average trash bin and 36% of the average recycling bin are compostable. This shows us that there is confusion around what *is* and *is not* compostable. This confusion results in the University unnecessarily spending approximately \$900,000 on extra waste-related fees each year. This also results in us sending roughly 4,900 tons of waste to the landfill every year. Even though we are diverting about 6,500 tons a year, this is still a lot of waste.

Over the last year we have begun to examine why this confusion might be occurring, primarily by investigating the role of waste infrastructure – such as bin locations and labeling – in determining efficiency. To date, however, we have not fully addressed the lack of education, or understanding, about waste disposal practices. We have begun outreach programs that allow us to focus on educating the public about waste disposal practices, but we have still yet to identify why the public is confused. To solve this problem we have decided to evaluate the efficacy of individuals living in dorms and compare this to their perceptions of their own waste behavior. In order for this to work we would have to analyze the trash of the individuals living in the dorms, and then administer a variety of surveys questioning their knowledge of the waste system and how well they believe they perform the task of waste sorting. This allows us to create a set of unbiased data of students' actual waste behavior and compare this against a qualitative analysis of their perceptions. In short, this allows us to identify where the confusion exists. Would the dorms' waste stream be different than the rest of campus? Do these individuals feel that they have a comprehensive understanding of where items go and why? By evaluating the dorms' waste stream we would be focusing on our primary demographic and then be able to ask individuals living in these spaces about their waste practices.

### Project Overview

In order to answer these questions, the project has been designed to collect data about the contamination levels of two different floors within one dorm. By tracking the contamination level of all three types of waste this allows us to track the actual behavior of the students. Along with this, several surveys will be administered to individuals living on these floors asking them about their waste practices. Questionnaires allow for us to explore a variety of topics that we think may be inhibiting individuals from properly allocating their waste. These questionnaires will also allow us to establish the student's perceived behavior of themselves. Again, this is the

most pivotal point of the project because it will allow for us to show individuals their perceived behavior versus their actual behavior. By providing these students with statistics reflecting how well they dispose of their in-home waste, it will allow them to see their own waste behavior and provide a more intimate reality.

Though we have found a sizeable prevalence of contamination in bins across campus, many can compartmentalize this because they are just one person in the big scheme of things. However, making it personally identifiable to their home life can allow them to perceive their behavioral impacts on the environment.

With this analysis we will be able to expand outreach by focusing the information directly at the areas that appear to be most problematic. Overall, this allows us to address the issues of contamination and confusion with waste practices, which in turn allows us to create a better method for educating this demographic about how to properly dispose of their waste. The result will help decrease the overall waste that goes to the landfill along with the amount of money the UW spends on waste disposal.

## **Methods**

### *Phase I: Waste Analysis*

Waste from both floors in Poplar Hall will be sampled during this phase. Poplar Hall was selected as the building to evaluate because of its Sustainable Living Floor (Floor 3). In order to live on the Sustainable Living Floor, individuals must sign a pledge in which they promise to live a more sustainable life which focuses primarily on reduction of energy usage and recycling. By evaluating this floor it allows us to see the impact of waste education on the waste stream. This allows for us to evaluate a population that is dedicated to being environmentally conscientious. In theory, these individuals should be well educated about waste disposal practices. The fifth floor of Poplar was selected as a comparison to the Sustainable Living Floor because it's spatially similar, has an equal number of residents, has the same geographic location of waste bins, and the same bin type. It will also allow for a comparison of a floor that is highly educated about waste practices against a floor that is a random compilation of individuals. This will help to identify if education is an issue along with identifying any other issues. The locations of the bins have been chosen, which means now the focus can be on the waste stream.

The amount of waste that we sample will be based upon the amount of volunteers available for participation in the project. We will evaluate recycling, trash, and compost from both floors over a six week period. Should we have a large volunteer scale, then we may sample all three forms of waste twice a week. If it ends up just being one individual, then it may be two samples per week from both floors. Either way that the project is carried out, it allows for a sufficient compilation of data and flexibility around the number of volunteers involved. This data is important because it allows for us to see any waste inefficiency that is present in the dorm's waste stream. It also will permit us to have a realistic comparison to the students' perceptions. We have previously partnered with UW Recycling as a location for sorting waste and intend to do the same for this project as well. The janitorial staff of the dorms, or a volunteer, will collect trash one day a week

and it will be transferred to UW Recycling center to be sorted. Each bag will be labeled with an appropriate label that will signify the type of waste and what floor it came from.

Each bag of waste will be further sorted into trash, recycling, and compost. Participants of the sort will also be encouraged to document any patterns they may see in the waste stream. By observing commonly misplaced items, or commonly disposed of items, such as coffee cups and candy wrappers we can create further projects, focus educational outreach to address these items, and quiz individuals about these items in the surveys.

After each bag has been reallocated into their appropriate categories, each category will then be weighed out. This allows us to document the level of contamination that exists within each bag of waste for each floor as well as how to calculate an overall average contamination rate for each bin. All waste will then be disposed of properly.

### *Phase II: Questionnaires*

Questioning the residents about their waste knowledge and perceptions will allow for us to identify where the participants are lacking educationally. Cross comparing this with our contamination data creates a refined approach that will help increase the University of Washington's diversion rate, educate our demographic, and save the University money while reducing our carbon footprint.

At the end of the six week sort, we will administer one or two surveys that address their perception of their waste practices, confusion about the system, and actually test their knowledge about commonly misplaced items. The surveys will be administered to the residents living on floors three and five of Poplar. The surveys will be administered through Catalyst or the Resident Advisor of each floor. The questionnaires themselves will address the following topics: the individual's perception of their waste behavior, the infrastructure of the waste system, and commonly misplaced items. By addressing these three topics we can begin to clearly identify what is a problem and what isn't. We also allow our participants to identify their confusion and voice other concerns that we may not be seeing.

This portion of the research is designed to get a sense of what our demographic knows and how they feel about their waste disposal patterns. Having questions that directly ask the participants to identify parts of the waste system that they find confusing will allow for some of our previous hypotheses about waste confusion to be tested qualitatively. Possible topics that could be addressed are: product type, product labeling, bin labeling, bin types, geographic location, prevalence of particular bins on campus, inconsistencies between the city of Seattle's and UW waste processes, lack of waste education, or simply no desire to participate in advanced waste disposal.

Asking a variety of questions that require the participant to identify where a particular item should be located allows us to further build our perception vs. reality case as well as utilize observational data from previous sorts. In the end, this will allow for feedback from our main demographic to help meet the needs that they feel are being neglected and create a campaign that they may actually be willing to participate in.

### *Phase III: Outreach*

Through the cross comparison of the survey data and waste contamination data we will be able to identify the main issue with contamination. This evaluation of the data will address the areas that may be lacking. This in turn helps create an effective outreach plan that will be used to educate the public at local events, campus events, and events at The Burke. It will also be shared with the public on The UW Garbology Project's website, twitter account, and Facebook page.

By ending the project with an introduction of the findings to the individuals in the dorms, it will allow for education to begin and, therefore, provide an opportunity to connect the disconnected between what behavior someone *believes* they exhibit and what behavior they *really* exhibit. This education may allow for a further reduction in the University's landfill bound waste.

### **Conclusion**

This is an all-encompassing approach that incorporates some of the long standing hypotheses that we have had regarding contamination. It also addresses some of the previous results that we have obtained and builds further on that data. The information that is compiled will have broad reaching impacts for the students, but will also be shared with our fellow collaborators: UW Recycling and the facility coordinator of Poplar Hall. This is being done in order to create a large social initiative that will hopefully allow for a dramatic impact on waste disposal practices on the University of Washington's campus. It is an impact that allows us to decrease the amount of waste that we send to the landfill every year, save money, and reduce our carbon footprint.