

**ON OCT 20 2011
AT O-HILL DINING
UVA STUDENTS
WASTED**

173

**POUNDS
OF EDIBLE FOOD
IN THREE HOURS**

**THIS THANKSGIVING
CONSIDER THOSE
WHO GO WITHOUT**

LOCAL FOOD AND FOOD WASTE

Project Observatory Hill Waste Audit

Global Sustainability, Fall 2011

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A. ABSTRACT

One of the objectives of the Observatory Hill Waste Audit Project was to quantify food waste produced by students in the Observatory Hill Dining Hall at the University of Virginia. The intent of our publicity efforts was to raise awareness among the student body of the collected data and its impact. We also aimed to work as a liaison between UVA Dining and the student body, and to make suggestions to both parties regarding ways to improve sustainable practices at the university through addressing food waste. We hoped that by aiding in the reduction of student food waste, UVA Dining would benefit economically from our project.

To accomplish our first objective of quantifying food waste, we conducted an audit on October 22, 2011 to measure the edible solid food wasted by students during Observatory Hill's lunch hour, from 11am-2pm. We found that in this three-hour period, students at O-Hill wasted 173 pounds of edible solid food. There were a total of 1,314 students that entered the dining hall during this time period, averaging .13 pounds of waste per person. We used this figure and its shock factor to drive our publicity campaign to achieve our second objective. We were able to accomplish our third objective of serving as a liaison between (and its sustainability-minded division Green Dining) and the student body, by constantly coordinating our efforts with the goals of our community partner, Kendall Singleton, the director of sustainability for Green Dining.

By the end of the semester we have successfully conducted a waste audit, launched an awareness campaign and fostered collaboration with Green Dining concerning future improvements and audits. We hope that future Global Sustainability classes will continue to develop this partnership with Green Dining with these objectives in mind.

B. INTRODUCTION

I. Background

Food is a basic necessity for human life, and sufficient access to food has been declared a fundamental human right (Water Culture). Food production and transportation has a profound impact on the environment and accounts for about 17% of the fossil fuel use in the United States (Eshel 3). Yet, about

48.8 million Americans still live in food insecure households (Feeding America). In other words, approximately one in seven US households lacks food security, resulting in an inadequate food intake and disrupted eating patterns, which can lead to malnutrition and other health problems (Hunger in America). According to *The New York Times* article, "One Country's Table Scraps, Another Country's Meal" (Martin), "The Department of Agriculture estimated that recovering just 5 percent of the food that is wasted could feed four million people a day; recovering 25 percent would feed 20 million people" (*The New York Times*). Most Americans waste food without realizing the sheer amount that is wasted every day, and the resource waste and food insecurity that are very real problems in the United States. This reality inspired us to research how much food the students at the University of Virginia are wasting and raise awareness in the University community about the social and environmental implications of what we choose to throw away.

In order to measure this food waste, we partnered with Kendall Singleton, and conducted a waste audit at the Observatory Hill Dining Hall on October 20, 2011. We hope to have a direct impact on students' choices and impressions of sustainability. Kendall asked us to directly help with the collection of raw data as well as publicizing the results. University Dining needs liaisons between the administration and the student community to bridge the gap between abstract concepts of waste and tangible data. While we know food waste is a bigger problem than solely the University of Virginia, we believe that change can start with individual habits.

C. BODY

I. Stakeholders

We think that our project will impact several different people in the greater Charlottesville area. The stakeholders affected by this research include students, the administration, and the local community. The students will have the knowledge to make informed decisions about sustainability at UVA. They will be the force of change in UVA dining, continuing the desire for environmentally friendly actions and awareness. With the data we collect and publicize, UVA students will be able to recognize the issues in their personal eating habits. Hopefully this information will encourage them to be more conscious of their wastefulness.

II. Economic Impact

This data has the opportunity to economically impact several of these stakeholders. UVA Dining is conscious of the University's impact on local businesses and supports Panorama Farm as the site for its compost disposal. Panorama Farm then sells their compost back to the Charlottesville community. The data we collect will allow us to quantify the economic impact we have at Panorama Farm, and in turn the economic impact we have on the greater Charlottesville area. Conversely, if University students are producing less waste, Panorama will receive less material for composting. However, these small steps towards decreased food waste can only benefit the Charlottesville community. Additionally, if students are able to decrease their personal waste, they may be able to help Observatory Hill reduce production costs and overproduction of food. Though this may have a small monetary impact on University Dining, it carries with it a larger ideal of sustainable awareness. That ideal is to waste less and ultimately increase food resources to feed more people.

III. Alternatives Considered

In order to quantify students' food waste production, we considered many options. While our community partner ultimately decided our path of execution, we could have gone in many directions. An additional strategy of quantifying food waste would be to use the "LeanPath" scale. This type of scale is able

to decipher between what is unavoidable waste versus what is surplus food. The ability to differentiate between these two types of food wastes would help UVA dining to establish a realistic goal. This goal would take into account waste that is simply unavoidable, such as ends of tomatoes or banana peels. Unfortunately, due to a limited budget, UVA dining lacks this type of advanced equipment. We hope that one day UVA may be able to implement this technology in future waste audits.

Another option for reforming the personal habits of UVA students would be to simply criticize their actions by way of verbal protest. In this method, we would go around from table to table scolding students for their personal wasteful tendencies. While this method might make a statement, fear does not equate motivation. By presenting concrete facts to students, we hope to spur an optimistic opportunity for change.

Our community partner, Kendall Singleton, had conducted waste audits during her time at UVA. Because of this, she felt that she had an efficient system to model our waste audit after. With minor improvements on her technique, we were able to gain accurate data during our audit. In addition to this previously implemented method, Kendall stressed the need for us to publicize our findings. Our publicity efforts will be discussed later on in the report.

IV. Logistics

On Thursday, October 20th, 2011 we conducted an audit of student food waste at Observatory Hill Dining Hall from 11am until 2pm. The lunchtime rush falls within this timeframe so we believe this provided an accurate reading of food waste produced on a typical day. During this time period 1,314 students came to the dining hall for lunch; this number does not include students taking to-go boxed lunches. We arrived at Observatory Hill at 10:30am to set up with a table, trays, gloves, and a scale to collect uneaten food from the students. Sam, Meredith, and Wilson were able to be at the audit for the entire time. We separated solid waste from liquid waste (which we did not audit), by straining cereal and soup to remove the liquid. Non-edible food waste (such as banana peels and apple cores) was also excluded from the audit. We placed students' uneaten food on trays, which we then weighed. We then placed the trays on the conveyor belt, which took them into the kitchen, and the food waste was placed into the pulper (the composting machine in place at O-Hill). Due to the frantic and messy nature of the audit, we used paper and pen to record our data, which we then transferred into an excel sheet (Table 1).

Throughout the entire waste audit, the O-Hill staff members were interested, encouraging, and welcoming. Most students understood our project and were cooperative and appreciative, however we encountered some confusion. Class transitions were apparent through sudden increases in traffic. Overall the waste audit was relatively easy to conduct, however during these peak times, measuring the waste with only three people became difficult. Despite this difficulty, we were still successful in collecting the total amount of edible waste of students passing through the main tray return.

V. Logistical Errors

Throughout the process of conducting our audit, we encountered several errors with our logistics. One main error was the lack of consideration of the upstairs tray return. Observatory Hill has one main floor tray return, where we conducted our audit. However, neither Kendall nor we took into account that there is a smaller, though sizeable, area where food waste is collected on the upper level. A waste audit that considered this additional tray return could have collected an estimated 20-30% more food waste. When we meet with Kendall on November 10, we discussed this error and whether or not an additional waste audit should be conducted.

There are also several ways that waste audit techniques could be improved in the future. This includes quantifying liquid waste (such as ice cream, soda, soup broth, milk), which contributes to wasted dollars for UVA Dining, and took energy and resources to produce. Our method could have been changed to accommodate liquid waste by using containers rather than trays to collect and measure the food waste.

Another way a waste audit could be improved would be to conduct the audit from the “back of the house”, so that students would not change their consumption patterns upon hearing that a waste audit is occurring. However, by making this change, an important aspect of the project’s mission to raise awareness would be lost. By conducting the waste audit visibly, we visually confronted the students with the image of the gross amount of waste created by their fellow students. In fact, we received verbal apologies from many students for the amount of wasted food and many who had no food waste expressed their pride. We feel that by showing the students the physical waste, we will have a greater impact on students’ thinking in the long term.

VI. Schedule

Logistics of a campaign do not solely lie within the time period of the day of one specific event, but rather a string of collective efforts to achieve our mission. While the audit itself only took three hours, our community partnership has spanned more than three months. Throughout this project, we have aimed to adhere to a structured schedule in order to communicate and work effectively with our community partner, group members and other stakeholders. This schedule entailed several meetings with Kendall and each other as well as staying on point with publicity deadlines and efforts. Below we have included key dates in our waste audit process, such as class designated deadlines as well as individually set goals.

October 3, 2011: Met with community partner Kendall Singleton at Observatory Hill to discuss plans and logistics for the waste audit. At this time, we established the date for our waste audit.

October 5, 2011: Met to write our project’s conceptual design.

October 20, 2011: Conducted our waste audit from 11am until 2pm.

October 31, 2011: Met to write our project’s preliminary report and plan publicity.

November 8, 2011: Meredith presented to the group her graphic created for our publicity efforts.

November 10, 2011: Met with Kendall Singleton about obtaining data from previous waste audits at O-Hill, our publicity ideas, and a possible second waste audit.

November 10, 2011: Compared data and coordinated publicity efforts with waste audit groups from the other dining halls.

November 17, 2011: Created a Facebook event asking our fellow students in lecture to change their Facebook profile pictures on the following Monday to an image to graphically represent our findings and help us raise awareness about everyday food waste.

November 21, 2011: Emailed the aforementioned image to the class and other listservs, and publicized our results throughout O-Hill.

November 21, 2011: Changed Facebook profile pictures to campaign graphic.

December 1, 2011: Met with Kendall Singleton to discuss the impact of our audit and publicity and obtain photos taken during the audit.

December 2, 2011: Met to begin writing our Final Report.

December 7, 2011: Met to finalize Final Report.

December 10, 2011: Final Report due.

December 11, 2011: Meet to discuss and put together our final presentation.

December 12, 2011: Final presentation of our project.

December 13, 2011: Individual reflections due.

VII. Budget and Funding

As seen in the schedule of events, none of the steps undergone in our project timeline have had significant monetary costs. Fortunately, UVA Dining provided us with the resources required to conduct the waste audit itself. This included rubber gloves, aprons, a scale, and other logistical materials, which we used the day of the audit. All of the materials we needed were supplied by UVA dining, and there was no cost to group members other than the time spent conducting the audit.

In terms of our budget and funding for the publicity of our data, we needed to be creative considering we were allotted no money to utilize. By using mostly electronic methods of publication of our data, we reduced both monetary and environmental costs of our project. UVA Dining is willing to cover the costs of the additional, more permanent signage that we intend to put in the dining halls as a continuation of our publicity campaign (See "Future Work"). Additional publicity (if funds become available in the future) could include t-shirts with our graphic. Further description of our publicity efforts will be discussed in the following section.

VIII. Dissemination

We realized early on in our process that a main contributor to food waste is the lack of awareness of the magnitude of the issue. For this reason, it is essential that we make our data visible in order to encourage individuals to make a difference. Meredith has created a graphic to visualize our findings in an eye-catching way (Graphic 1). We feel that the most effective way of getting attention and changing the way people think about their food consumption and waste is by using a shock factor. To do this, we emphasized the total number of pounds of food wasted during our food audit and released our publicity around Thanksgiving, a time when food is a major focus and the idea is to give thanks for what we have. While our budget is slim to none, we have creative ideas of how to communicate this information. Being the ever-so-environmentally-aware students that we are, we have used the web to publicize our findings instead of making paper signs and flyers. As previously mentioned in our timeline, we asked our classmates to change their Facebook profile pictures to the graphic for the Monday leading up to Thanksgiving break. We also created a Facebook event (Photo 1) and sent out emails to students from our extracurricular activities to spread our campaign throughout the student body.

Additionally, Kendall aided our efforts through resources available to her through Green Dining. Our graphic was included on the Observatory Hill slideshow monitor at the entrance stairwell (Graphic 2). This hopefully catches students' eyes and encourages them preemptively to consider the quantity of food they take. Our graphic was also included on paper table tents distributed throughout the dining hall (Photo 2). These table tents are updated every week, and are read by students.

Unfortunately, our budget did not facilitate more permanent modes of dissemination. We would love to create signs for the dining halls giving students a perpetual visual reminder to be more conscious about their eating habits; however, our current publicity efforts will have to suffice for now.

CONCLUSION

IX. Future Work

Our audit cannot stand alone in measuring waste in UVA dining halls. There must be some action taken to measure the impact of our audit and subsequent publicity campaign on the amount of food wasted by students. A survey is one way that reactions of students could be measured. However, we believe that it is not feasible to conduct a survey on whether or not students have gained awareness on food waste due to our audit findings. We do not think we would be able to survey an accurate cross-section of the student body for this to be relevant. Verbal reactions to our audit immediately assured us that we had impacted the students.

One way we do hope to measure our success in the long run is by future audits conducted by the Global Sustainability. Future groups could observe if our audit and publicity campaign increased awareness by comparing future data to that of our audit. A reduction in the amount of food wasted per capita between the two audits would indicate that our project has been successful in achieving its goals. We have aided our community partner by giving her accurate data that she and Green Dining can use to provide to future audits that may be conducted.

UVA Dining is already attempting to reduce waste by fostering dialog between Dining and the students. They ask for feedback on their services, and have even implemented a texting program through which students can voice likes and dislikes about daily meal options. Our observations made it clear that there are still improvements to be made in this regard. During our audit, we noticed that many entire grilled cheese sandwiches were discarded after one or two bites, a clear indication that the students did not like this product. By looking at what food is being wasted in large amounts, changes can be made in the kitchen to improve student satisfaction and decrease waste, both in the tray return and leftover food. In addition, more efforts could be made in taking student comments into account; more extensive surveys could be distributed in dining halls or via email to students with meal plans, asking for feedback on recent meals served in each dining hall. The information collected through examining which foods are wasted and these surveys could be used to possibly reduce waste in the future. In light of the fact that we were not allowed in the back of the house, it is difficult for us to make more suggestions to UVA Dining of ways to improve upon their current methods. If we were able to conduct a waste audit at the back of the house, we could more accurately assess the primary sources of waste (overproduction, unpopular foods, etc). We suggest that UVA Dining make it possible for future waste audit groups to examine the waste from the kitchen in order to receive more accurate and useful data regarding the total amount of food wasted in dining halls.

Our follow up meeting with Kendall Singleton gave us insight into what actions UVA dining plans to take to reduce waste as a result of our audit. UVA Dining would like for waste audits to be conducted at least once each semester, and has listed changes to be made to make the next audit more successful. These proposed changes include: incorporating data collected from the upstairs tray return, recruiting more volunteers to make the audit run more smoothly, more visible and eye-catching signage advertising the purpose of the audit, extending audits from the lunch hour to a full day, and conducting an audit during Earth Week. In order to measure the food wasted from the back of the house Kendall proposes a Waste Logger to be instated. The Waste Logger would be a day in and day out survey of food that is wasted due to mistakes in the kitchen such as burned or undercooked food. Kendall also expressed interest in making our publicity

efforts more permanent, and would like to include a slide with our findings to rotate continuously on the O-Hill electronic message boards, advertise UVA Green Dining initiatives such as waste audits and Meat Free Monday in the weekly Connections email sent to all members of the UVA community, and ask professors of related classes to encourage students to participate in future audits. One such professor might be Paul Freedman of the department of Politics at UVA, who is involved in the UVA Food Collaborative, an organization which focuses on engaging UVA with the local community in order to promote sustainable food systems.

Together with the Newcomb waste audit group, we submitted templates for permanent signs to be hung in all three dining halls (Runk, O-Hill, and Newcomb) in various places such as above the salad bar, to-go boxes, and tray returns. These designs (Templates 1, 2, 3, 4), were rejected by Nicole Jackson, the UVA Dining Publicity Coordinator. We hope that future audits will have more success with coordinating their publicity efforts with the administration and promoting conscious eating habits in UVA dining halls.

X. Lessons Learned

Throughout the process of carrying out our goals for the semester, we wished that we had more detailed data from past audits with which to compare the data we collected and believe that this would have made our initiative more effective. When compared to the data from the 2010 O-Hill waste audit (Table 2), our findings show that there was a significant decrease in the overall amount of food wasted during one meal period. However, the 2010 audit occurred during the dinner period, a much busier mealtime, and included no outside information about how the audit was conducted. As discussed in our Future Work section, UVA Dining is eager to make waste audits a regular occurrence at campus dining halls and to use the information collected from these audits to make changes that will reduce the waste created. This will mean that the groups conducting these audits will need detailed information on how all past audits have been organized in order to be consistent and accurately measure change over time. This will also aid in examining the processes of past groups and making changes to make each audit more effective.

Through our community partnership we became aware of the various levels of red tape that exist and must be overcome in order to achieve Green Dining's goals and enact change in UVA Dining. For example, the permanent sign templates that we submitted with the Newcomb audit group for approval from UVA Dining's Publicity Coordinator were rejected. Even though students' reduction of their food waste would be in UVA Dining's best economic interest, many administrators do not feel comfortable advising students on food consumption when a student meal plan is advertised as "all-you-can-eat". As an Aramark-contracted employee, Kendall Singleton faces many administrative restrictions beyond those from UVA itself. Approval from several people is necessary before a Waste Logger can be put in place or significant changes can be made to UVA Dining's way of operating. However, through these setbacks, we have learned from Kendall the importance of persistence and patience in achieving one's goals. With consistent, thorough, and detailed data collection, as well as continued publicity efforts, we feel that we can aid Kendall in combating the red tape and making changes to UVA Dining's operations.

Although we could only accomplish so much in one semester, we feel that we have taken strides towards helping Green Dining achieve its goals in reducing food waste in the UVA dining halls. Through comparing the data collected in the 2010 waste audit to the data from our audit, we can see an overall reduction in food wasted over time. We feel that our publicity efforts can further reduce student food waste, and thus the unnecessary costs and environmental impacts of UVA Dining.

APPENDIX

Table 1

O-Hill Waste Audit	10/20/11
Time Frame	Weight in Pounds
11:00-12:00	
	5.3
	4.3
	5.3
	4.6
	4.4
	5.4
Hour Total	29.3
12:00-1:00	
	4.6
	5.5
	3.2
	5
	4.9
	5.3
	5.1
	6.5
	6.1
	5
	7.1
	6.9
	4.9
	6.6
Hour Total	76.7
1:00-2:00	
	6.7
	6.3
	4.5
	5.8
	5.8
	5.3
	4.6
	6.4
	7.7
	5.3
	4.8
	3.7
Hour Total	66.9
Day Total	172.9

Graphic 1



Photo 1

facebook Search

This Thanksgiving, Consider Those Who Go Without

Public Event · By Wilson Hammett, Marina Freckmann and 3 others

Monday 1:00am until 11:30pm

In October, a group of students from the Global Sustainability class conducted waste audits at Runk, O-Hill, and Newcomb Dining Halls. In a typical three-hour lunch period, over 173 pounds of edible food were wasted at O-Hill.

This year, 48.8 million Americans don't have consistent access to adequate food.

We have established Monday, November 21 as a day of raising awareness. Join your fellow students in changing your profile picture to the event logo, inviting friends to the event, or just by thinking about what you waste.

This Thanksgiving, consider those who go without and appreciate what you have.

Share: Post Link Photo Video

Write something...

Sam Taggart
Thanks for joining the group everyone! Now if you really would like to go the extra step in getting this message out, please change your profile pics to the event image today! :)
Like · Comment · Monday at 8:55am

Moira Cronin
Please support our cause and be thoughtful of what you put on your plate this Thanksgiving!!
Like · Comment · November 20 at 9:55pm

Going (78)

- Wilson Hammett (Host)
- Paula Turcotte
- Rachael Hanna
- Elise Guessford
- Kasey Knoell
- Fernando Mercado Violand

Maybe (4)

Photo 2

**ON OCT 20 2011
AT O-HILL DINING
UVA STUDENTS
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173
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OF EDIBLE FOOD
IN THREE HOURS**

According to a waste audit performed by the Global Sustainability class taught by Phoebe Crisman.

Interested in joining a sorority? Recruitment registration is now open and will close on Dec 2. Register online at virginiasoc.com. Contact ljendelajant@gmail.com with questions.

Agape Christian Fellowship: join us for large group worship every Thursday, at 8:00 pm, in the Chapel.

PHOFEST: FALL 2011. VSA's largest service event of the year! Help raise money for charity! Nov 18, 5-8 p.m.; St Mark Lutheran Church (100 Alderman Rd). Rides from O-Hill parking lot.

Ed Temperlake's talk: "Deferring the Dragon without Hugging the Panda". Ed Temperlake, Editor, Second Line of Defense Forum www.slforum.com will be sharing elements of his recent testimony to the House Committee on Foreign Affairs Oversight and Investigations Subcommittee on Nov 18 in Monroe Hall #130. Sponsored by Brown Residential College and is open to all.

Free screening of "Inside Job" with a discussion led by AJ Boston, Professor of Corporate Finance at UVA. Join us November 30th at 7pm in Monroe 110. Sponsored by College Council.

Become a Peer Advisor! Want to make an impact in the lives of incoming first years and Transfer Students? Applications are available from Nov 18th on <http://www.virginia.edu/aaal/paprogram> Deadline: January 27th 2012. For more info come out to the Peer Advisor information session, Nov 28th 7pm Clark 101.

ReMIX Presents: Bad is Back- UVA's only hip-hop and R&B a capella group is hosting their fall concert Saturday November 19th in the Chemistry Auditorium. Tickets will be sold through November 18th at the amphitheater bus stop. \$5 in advance \$7 at the door! Wheelchel (hw3h@virginia.edu) for more information!

GET THE LATEST NEWS FROM UVA DINING!

facebook.com/uva/dining
facebook.com/ksquaredining
facebook.com/ksquaredining

twitter.com/uva/dining
twitter.com/ksquaredining
twitter.com/ksquaredining

Graphic 2

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According to a waste audit performed by the Global Sustainability class taught by Phoebe Crisman.

UVa Dining teamed up with Fall 2011 Global Sustainability class to bridge the gap between students and administration and support their class projects.

The members of that class performed waste audits at all three dining rooms.

UVa Dining mitigates waste currently by:

- Composting at Panorama Farm
- Purchasing local and seasonal products
- Providing organic selections
- Providing products derived from humanely raised animals
- Supporting fairly traded labor

Template 1



Template 2



Template 3

WHERE DO YOU THROW AWAY YOUR TRASH?

REDUCE. RECYCLE.



Template 4

GOT TRASH?

"ON A GIVEN DAY MORE THAN 100 LBS OF WASTE IS
PROCESSED THROUGH NEWCOMB DURING A MEAL
PERIOD"



Table 2

Time Frame:	5:00-8:00 PM
Weight in Pounds	347.56

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