Scope of Work
ENVIR 480
Audit/Mapping Team: Terra Miller-Cassman, Gillian Kenagy, Shannon Cloud, and Byron Wenning

Title: Geo Mapping of Compost Bins on UW Campus

Goal:

Our goal is to collect data on current compost and recycling receptacle distribution in priority buildings on campus, which we will incorporate into an interactive map. We then plan to make recommendations to UW recycling on ways to increase accessibility of recycling and compost bins on campus. The data will also be made available to campus organizations like UW Garbology project for further use in their projects and research.

The ultimate goal of our project is to improve the infrastructure for waste diversion on UW campus.

Research Questions:

1. What is the distribution of outside compost receptacles around the core of the University of Washington campus?
2. What is the distribution of compost and recycling receptacles in hallways and common areas within designated top-priority buildings across UW campus?
3. What sort of signage accompanies these receptacles?

Observations by the UW Garbology Project and installations by UW Recycling show a lack of compost receptacles *outside* of buildings across campus. The current locations of compost receptacles tend to be in and around Red Square, The HUB, and around libraries. There are also less accessible large compost bins located at most building loading docks. We will be mapping these in order to improve inventory by UW Recycling, and to hopefully in-turn increase the number of outdoor compost receptacles around campus.

The distribution of compost/recycle receptacles *within* many buildings also seems to be lacking. We are planning on mapping the location of these receptacles that are located in hallways, cafes, and other common areas. Understanding the distribution of compost and recycling bins within buildings will help to increase future implementation of compost and possibly lead to funding. Along with understanding the distribution of these receptacles, documenting the signage accompanying them will improve stakeholder's education and ultimately further help the UW reach a waste diversion rate of 70%.

Kind of Project:
Data collection and analysis displayed through graphs, charts, photos, and maps.

Background/context:

Our University's goal is to divert 70% of our waste by 2020. In 2012, we were diverting only 57%[1]. By providing information to UW staff and facilities, we hope to help them to increase recycling and composting to reach UW's goal of 70% waste reduction. This project will contribute to other projects such as Climate Action Plan, ESS initiatives, and the UW Garbology Project. The UW Garbology Project has already begun work to assess the distribution of compost bins outside campus buildings. They did not complete this assessment, but their knowledge of best practices will be useful for us moving forward with our project. UW Recycling has identified "priority areas" which are buildings that have little to no compost infrastructure in place. We plan to assess the buildings on this list, as well as other buildings that we identify as priority (buildings containing cafeterias or located closest to food sales). Waste reduction is important to UW's commitment to sustainability and our work will provide educational material to students and UW operations about the current waste infrastructure and behavior on campus.

Stakeholder Analysis:
Jack Johnson- Jack will be a valuable resource for preliminary information and data, as well as ideas for the project methods. He will be able to share his experiences and best practices with the UW Garbology Project which will help us to carry out our project efficiently. The data we collect will help him further the UW Garbology project plans for campus.
Emily Newcomer- Emily will be a resource for information from UW Recycling on current known compost infrastructure and proper compost receptacle identification. She will also be able to connect us to custodial staff when we decide to consult with this department. Our work will help them with their future plans and projects to reduce waste on campus.Our recommendation could be helpful in directing future UW Recycling missions to increase the number of recycle and compost bins on campus.
UW Custodial Staff- They will be a resource to information on number and distribution of bins, as well as use of bins, and garbage collection routines. We hope to engage them through working with them to meet their needs and keep their workload easy.
UW Student body- We plan to engage them through surveys and by recommending increased access for students to the proper disposal bins. It is important for the infrastructure to be in place if students want to reduce their waste and compost.

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[1] "SUSTAINABILITY METRIC: Sustainability Grade," *UW Environmental Stewardship and Sustainability*, Last modified Nov 2012, http://f2.washington.edu/oess/profile/sustainability-grade.

Communication with Partners:

Communication is an important aspect of this project, because we will be most successful if we can collaborate well with our partners. Within the team we will be communicating effectively through email, phone, text messages, and in-person meetings. Out of these forms of communication, we will also be employing several of them to communicate with partners and clients. We will be communicating with Emily Newcomer from UW Recycling extensively through email, several in-person meetings, and phone calls if needed. These same communication tools will be used while working with Jack Johnson from the UW Garbology Project. Communication with other stakeholders including students and custodial staff will be based mostly on in-person conversations/surveys and possible emails to custodial/faculty managers.

An air of professionalism will permeate throughout all communication efforts with partners, clients, and stakeholders. In our opinion, communicating professionally includes clear, concise, and polite tones and wording. We will also focus on listening carefully to all input provided; this includes making a conscious effort to consider input thoroughly and if needed to only make constructive criticism.

Methods:

1. Obtain data currently available from UW Recycling and the Garbology Project
2. Use GPS to track distribution of compost and recycling receptacles outdoors
3. Meet with Aaron Cheauvront to discuss the use of GIS to create our map, as well as access to floor plans in order to collect the data.
4. Collect data on distribution of bins and the signage present in priority buildings which we will identify from information given by Emily Newcomer of UW Recycling and based on the location of food service buildings.
5. Survey campus population to determine waste behaviors and different perspectives.
6. Collaboration with UW operations, such as custodians.
7. Create map to creatively display data visually

Specific deliverables (and who the audience/recipricants will be):

- Interactive GIS map of compost and recycle bin locations around campus
    - For UW students, staff and visitors
- Charts/tables to display quantitative data
    - Aaron Cheauvront to assist with GIS
- Survey and responses, as well as a synthesized analysis of survey responses
    - Distributed to UW student body and/or custodial staff
    - Responses made available to UW Recycling
- Possible written proposal to UW Recycling for bins and signage

Plan for future use:

The first element of our research was gathering GPS coordinates of all outdoor compost bins on campus including compost totes in loading docks, Big Belly brand composting units, and individual compost bins often found near campus cafes. This information is being directly given to Jack Johnson in order to complete his data set of outdoor compost bin distribution on campus. The data our group collected will contribute to the UW Garbology's garbage audit objectives helping them better understand waste behaviors in different areas of campus. The inventory work our group performed provided desired information to the UW Garbology group and will extend the scope and reach of their research.

Using UW Recycling's suggested 5-10 top priority buildings we will have a pre-assigned number of buildings to inventory and survey. The end goal of the quarter is, at minimum, to have a physical document locating every compost receptacle in the buildings we are analyzing and commenting on the current waste infrastructure in place. This will be in the form of blueprints and tables. In accompaniment to the maps we will produce we will also present a synthesis of qualitative survey data on building users waste behaviors. The surveys will give our team an opportunity to engage the campus community in our project and expand their awareness of waste initiatives on campus. *The grander goal of our research is to compose an interactive GIS map that will allow the university members to access, use, and evolve our data over time*. Implementing our data into a system that will continue to grow and be used as an educational tool on campus will ensure that the information we gathered will continue to be visible. To achieve a successful GIS map of compost bin distribution we will partner with Aaron Cheuvont, a GIS expert on campus. Aaron has created the GIS mapping program that records all campus buildings, including their floor plans. By collecting our data with the end goal of GIS, our data will be available for future GIS analysis, even if our current group runs out of time and resources.

Our group has set achievable goals by determining how many and which buildings we will inventory during this quarter. We believe the amount of work is reasonable and that the products created during that time period will be useful to our clients. The future life of the project will continue through the partners we bring on to this project. Jack Johnson will be able to use the data in future Garbology projects, Aaron Cheuvont will be able to work with our data in his GIS program, and UW Recycling will be able to use our deliverables to apply for more funding to allow implementation of more compost bins in buildings around campus. Furthermore, by creating the structure and connections for this project, future groups of sustainably minded students can complete our data set by creating a waste receptacle inventory for the other buildings on campus we could not review.

Our group has no specific plans to remain on the project. If carried out successfully, our project deliverables will assist with future efforts to apply for funding and/or increase compost bins across campus. The skills, insight, and connections that we make through this experience will inevitably influence our future work.

Division of labor / Individual group member responsibilities:

This will be an entirely collaborative effort. Within the research, design, and implementation stages we will be working as a team. We will work together as a cohesive unit that divides work up evenly between all four members of the team. We have worked together to develop the proposal, to communicate with all partners and clients, and to begin tracking GPS coordinates of composting receptacles outdoors on UW campus. We will continue this true team effort in completing this scope of work assignment, and further collection of the location of compost and recycling receptacles within buildings on UW campus. The group will also work collaboratively when assessing signage at recycling and compost bins and in developing the GIS map as we near the completion of the quarter. Any and all communication to clients, partners, and stakeholders will also be a group effort, as will any surveys that are produced and deployed in our project. The group dynamic will continue as we complete and provide our deliverables. This strategy seems to make the greatest sense to our group.

This process will help to improve many skills for all team members. We will consistently be working on improving each of our individual communication skills along with group communication skills. We will learn tangible skills in using handheld GPS devices, the transfer of this data to an excel document, and finally transfer to a GIS dataset. Our abilities to plan and schedule meetings and to fulfill deadlines will be improved. The ability of each team member to initiate and conduct surveys will also be further developed. GIS skills may also be improved in this process. The skills and knowledge needed to complete this project are many and varied. In order to fulfill the objectives as such an efficient and cohesive unit, will give each and every team member the opportunity to build upon many skills and knowledge bases.

Additional skills needed:

The majority of the project is to compile research and data. A portion of the project require using GPS to record data points, we have already been in contact Jay Flaming in the archeology department to acquire the GPS units. Ideally we would like to be able to input all of the collected data into GIS, so we have been in contact with Aaron Cheuvront who is an expert in GIS and is willing to give us floor plans to help collect data and then transfer it into a usable source.

Accountability:

As a group we have agreed to remain in constant contact, both through electronic communication (emailing and texting) as well as weekly meetings, at least

every Tuesday and possibly more as needed. Thus far we have been in email contact with several clients and have meetings schedule to check in a further make arrangements to make sure that the clients remain in the loop.

Timeline:

Week 4 (Jan. 28- Feb. 1):

This week we are laying down the foundation for the rest of our project. By the end of the week we hope to have completed initial correspondence with Emily Newcomer, Jack Johnson, Jessica Lisiewski, and Aaron Cheuvont. From communication with Emily we have gained her list of top priority buildings and visual documentation of waste receptacles (indoor and outdoor). We will schedule a meeting date to further discuss the specifics of an audit. By the end of this week we would like to supply Jack Johnson with the GPS coordinates for the outdoor compost bins on campus in both paper and electronic form. We will also send him the proposal of our project to promote on his Garbology website. Preparing for a meeting with Jessica Lisiewski in the next week will reveal if there is an opportunity for collaboration in the project we are planning. We also hope to set a meeting date with Mr. Cheuvont for next week so that we can begin to familiarize ourselves with his GPS program, system, and data sets. The sooner we can gain access to the blueprints the sooner we can begin the field work.

Week 5 (Feb. 4- Feb. 8):

- Meet with Mr. Cheuvont and print off floor plans for each of the selected buildings and become familiar with the GPS plans for the project.
- Meet with Ms. Lisiewski for further feedback and potential additions or alterations to our project.
-Create a table to organize the information we will gather will auditing each building.
- Create a survey, review the survey, finalize the survey and determine when, where, and how many should be administered.
- Meet with Megan to review the Scopes of Work.

Week 6 (Feb. 11- Feb. 15):

- Administer finalized surveys (50?).
- Audit buildings (2 buildings) and record all information on the data sheets and blueprints prepared earlier. Take pictures of signs on the waste receptacles and of the group members in action.

Week 7 (Feb. 18– Feb. 22):

- Audit buildings (4 buildings) and record all information on the data sheets and blueprints prepared earlier.
- Synthesize survey data into a write up.

- Enter the data into a digital database and begin entering the data points into the GIS maps created by Mr. Cheuvont.

Week 8 (Feb.25 – March 1):
- Mid-way critique in class. Present the blueprints, tables, and survey analyses that have been completed. Record feedback from students and integrate it into our project.
- Begin work on final presentation slides. Decide on the format of final deliverables.
- Continue entering data into the GIS maps.

Week 9 (March 4- March 8):
- Complete presentation slides.
- Finish entering data into GIS maps.
- Complete deliverables.
- Presentation practice both formal and informal.
- Final presentation.

Week 10 (March 11-March 15):
- Present final deliverables to clients. Submit any write ups for publication in local news sources.

We will meet with Megan on an additional basis if we have any pressing questions about the content, direction, or progress of our work. It may also be beneficial to schedule a meeting to receive private feedback on our presentation and deliverables in the final few weeks.

To communicate the progress of our project with the rest of the class we will present them with our information at the midway critique. During that class period we will request feedback and then incorporate it into our final products. If any individual or group is specifically interested we can show them how we employed their feedback and can give them more frequent updates. Our classmates feedback is valuable and we believe that the midway critique is a perfect opportunity to utilize the expertise of our classmates.

Criteria by which you believe your team should be evaluated (rubric):

	Excellent (4)	Good (3)	Fair (2)	Bad (1)
Effective Communication: *Group member was actively participating in conversations*				

with other group members as well as with the clients and instructor.				
Research Proposal: *Group member contributed ideas to project and initiated work to be done.*				
Research and participation: *Group member was present at all meetings and actively contributed research and data.*				
Final Product: *The final product was within the scope of the initial proposal and met the requirements that were set by the instructor as well as the clients.*				
Clients Satisfaction: *The clients were pleased with the end result and their expectations were met or exceeded.*				