

WWU Universal Waste Signage: Stop. Think. Sort!

By: Bella Walshe, Gabby Laipenieks, Skylar Magee, and Suleyma Nunez Cordoba

Sponsored By: Lindsey MacDonald, Associate Director of Sustainability at SEI

SUST 471 Fall Quarter 2023

Table of Contents

Executive Summary	3
Introduction	4
Methodology	6
Results	6
Recommendations	10
Monitoring and Evaluation	12
Budget	13
Conclusion	13
Index	15
Works Cited	18

Executive Summary

Every time you throw something away on campus, you interact with a disposal bin that has a landfill, recycling, or compost sign on it (we will refer to this broadly as ‘signage’). Western has had inconsistent and confusing waste disposal signage as acknowledged by students, faculty, and staff since at least 2017 (WWU Office of Sustainability, 2017, p. 75). Each bin sign style is slightly different. The resulting confusion leads to higher contamination rates (the frequency at which items are sorted incorrectly) (Wu et. al., 2018, p. 77). Not only does contamination worsen the quality of Western’s solid waste stream and overall carbon emissions, but it also increases the cost of the institution's disposal bills (Brinton et. al., 2023). The campus waste disposal system is spread amongst several different departments, including the A.S. Recycle Center, Facilities Management, Residence Life, and University Dining Services. Each entity services its own bins and has created its own signage, which creates a visual and practical disconnect between different campus locations. Western’s Sustainability Engagement Institute (SEI) has a vested interest in improvement of this issue, but has a limited capacity to support effective, consistent signage creation efforts. Capacity issues within each campus department have resulted in inconsistent efforts on the problem, despite the WWU Sustainability Action Plan’s stated goal of instituting quarterly meetings to address waste signage (WWU Office of Sustainability, 2017, p. 78).

Our project aims to provide a set of clear steps to move past the bureaucratic hurdles associated with this problem. We conducted individual interviews with all associated stakeholders and created a set of recommendations based on that feedback, other data provided to us by stakeholders, and insights from other university waste systems, especially those from WWU peer institutions. These include short-term recommendations to address capacity issues and long-term recommendations to innovate campus waste signage itself. This process will provide stakeholders with a signage template that is both consistent and customizable. In the long term, we offered recommendations that will ideally decrease the burden of knowledge on users and help educate the campus community on effective recycling practices. This will also decrease contamination and reduce disposal bills. Our project contributes to a long history of innovative recycling and waste practices at Western and helps to move our university to the forefront of sustainable campuses across the country by integrating it into our operations.

Our recommendations include the transfer of ongoing waste signage work to a student employee. This recommendation is grounded in the repeated feedback we heard from many stakeholders that capacity issues within each department present the biggest obstacle preventing progress on universalized waste signage. A student whose scope of work would be solely dedicated to this issue would bring a fresh, energized perspective to the problem. This employee would facilitate waste signage by processing signage update requests, working with stakeholders at different locations to create a list of commonly mis-disposed items, and create location-specific signs using the Sustainable Connections templates as part of our recommendations. Other long-term recommendations include the creation of a campus waste index, a jointly operated campus waste dashboard including waste audit results from different stakeholder groups, and signage improvements in campus research labs and art studios. These recommendations are designed to approach the waste signage issue with special consideration made to Western’s unique waste system and the capacity and needs of each stakeholder.

Introduction



Western prides itself on its environmentally minded campus community, its proximity to iconic natural spaces, and its breadth of sustainability-oriented educational and career opportunities. Our project is part of a broader, often student-led effort to hold Western as an institution accountable for backing up its advertisements with truly sustainable practices. More specifically, the needs for both universal waste signage and functional cross-department management structures are clearly defined in objectives 1.1, 2.1 and 2.2 of Western's Sustainability Action Plan (2017, pp. 75-79).

Currently, Western's STARS (Sustainability Tracking, Assessment, and Rating System, distributed by the Association for the Advancement of Sustainability in Higher Education or AASHE) score for waste sustainability is only 1.94/10 possible points (2019). In contrast, several universities identified as WWU peer institutions for their similar demographics and academic standards have significantly higher waste scores, including California Polytechnic State University-San Luis Obispo (5.85/10 points) and the University of Colorado at Colorado Springs (6.03/10 points) (AASHE, 2023; AASHE, 2021). Clearly, there is room for improvement in Western's overall waste sustainability, and it can be done in conditions like the ones we experience here. Beyond university conditions like Western, many universities ranking highest on waste sustainability practice single-stream recycling entirely through campus facilities, which is in stark contrast to Western's multi-stream, multi-stakeholder system. Perhaps streamlining Western's waste system to fall under one administrative body could be a long-term consideration on the horizon. Overall, waste reduction efforts on Western's campus reflect larger priorities as seen in the climate action plans of the City of Bellingham and Whatcom County, which both cite waste reduction as major objectives toward reducing carbon emissions in our area (City of Bellingham, 2018, p. 66; Whatcom County, 2021, pp. 66-72). On a larger scale, our project aligns with several of the United Nations Sustainable Development Goals, including #4: Quality Education, #9: Industry, Innovation, and Infrastructure, and #11: Sustainable Cities and Communities (2015). Our project addresses an issue that is present at every level of community, from our campus to our region to faraway places around the world.

Our project has two main goals. The first is to steer waste signage stakeholders from problem definition and planning stages to implementation by offering a clear plan of action. This goal addresses the capacity and structural problems surrounding Western's waste management system as mentioned previously. The second goal is to create campus waste signage that supports sustainable infrastructure and a sustainable community. To do this, we will create signage that is easy to use and that uses the same basic framework across all parts of campus so that all users can contribute to lower contamination rates and better waste minimization.



Similar initiatives addressing universal waste signage have been planned and implemented to completion at other universities around the United States, including the University of Texas at Austin (UT Austin). At UT Austin, a working group uniting a very similar group of campus stakeholders convened regularly over the course of a year and a half; their work resulted in the creation and distribution of universal signage, as well as a comprehensive waste database for bin users. Distribution of the new signage resulted in a significant increase in correctly sorted recyclables and large decreases in recycling and composting contamination rates.



The working group’s efforts were funded by a grant from a student-sourced Campus Green Fund (Duran, 2022). California Polytechnic State University (San Luis Obispo), which has been identified as a WWU peer institution because of its similar demographics and academic standards, has a 76% diversion rate across all waste types (AASHE, 2023). During fiscal year 2021-22, the Facilities Operations team, which handles all types of campus waste, received a \$225,000 grant from the California State Department of Resources Recycling and Recovery to implement consistent signage

across campus (AASHE, 2023). Overall, these examples present similar conditions to Western, and they constitute excellent templates for finding success in waste signage at Western.

Methodology

Our initial step for data collection involved conducting individual interviews with relevant stakeholders including:

Stakeholder Name	Stakeholder Title and Contact Information
Amanda Cambre	Facilities Management Director Email: cambrea@wwu.edu Phone: (360)-650-2412
Wayne Galloway	Facilities Management Assistant Director Email: galloww@wwu.edu Phone: (360)-650-3932
Terence Symonds	Associate Director of Facilities in Residence Life Email: symondt@wwu.edu Phone: (360)-650-7322
Natalia Chambard	Sustainable Housing Facilities Assistant Email: chamban@wwu.edu
Darrin Gordon	Chartwells Sustainability Manager (University Dining Services) Email: darrin.gordon@compass-usa.com Phone: (425)-697-0350
Rich Neyer	A.S. Recycle Center Manager Email: richard.neyer@wwu.edu Phone: (360)-650-3088

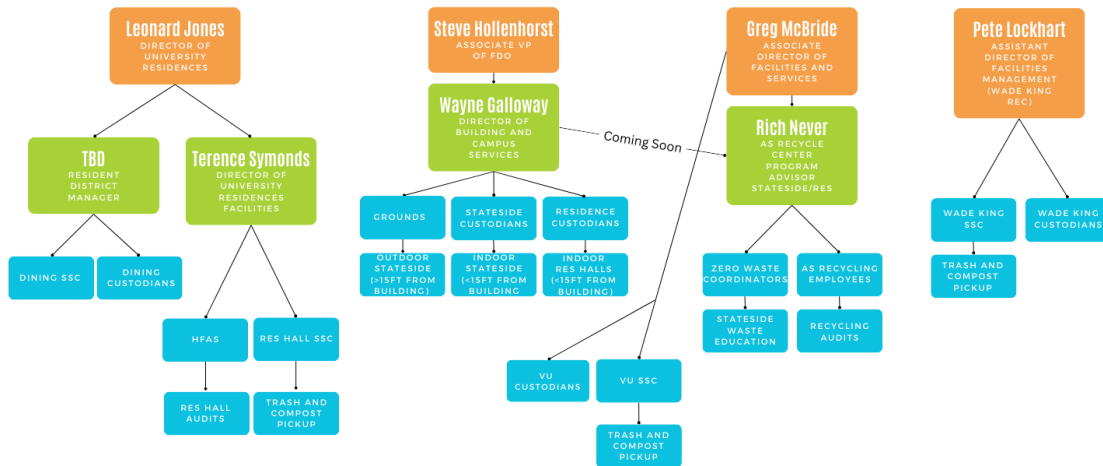
We believe that this method of data collection would provide more in-depth feedback from all stakeholders individually. Our interview questions are designed to assess each stakeholder's role in the campus waste disposal system, their individual needs for signage, their capacity to tackle this problem, and their ideal vision for waste signage in the future (see index). After meeting with stakeholders, our group was charged with compiling their responses and various sets of data charts provided to us.

Results

Our first challenge with waste signage on campus was identifying all stakeholders and their roles in the campus waste system. The structure we have identified is as follows: the A.S. Recycle Center collects all recycling materials in university buildings and exterior spaces, including dorms. The Facilities Department collects all trash and compost in university buildings and exterior spaces and has a contract with the Sanitary Service Company (SSC) for hauling that waste off campus. The Office of Residence Life Facilities Division collects trash and compost from dorms and has its own contract with SSC. Finally, University Dining Services handles its own internal trash and compost in dining halls and campus eateries. To help future students, staff, and faculty who are interested in waste on campus, we have made a flowchart of all

involved parties currently at Western with the help of Cole Burk, the SEI Student Ambassador.

WWU WASTE

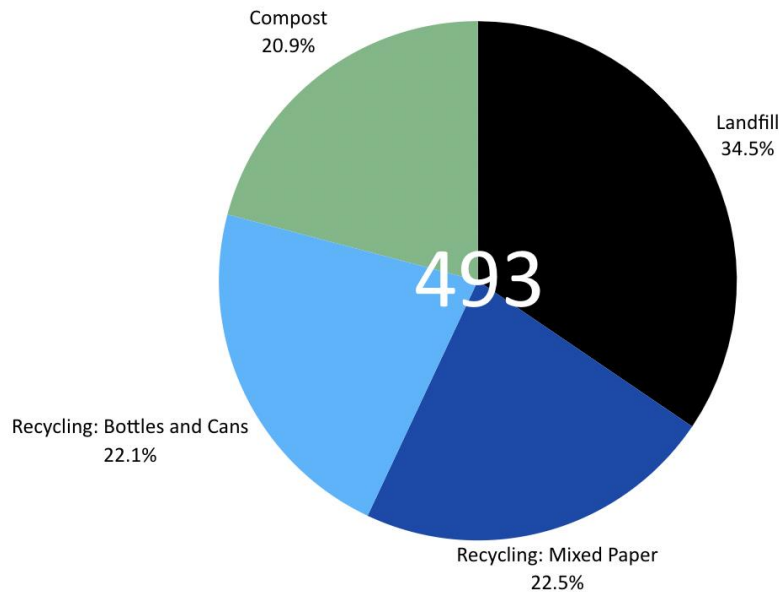


We then asked our key stakeholders (see methodology section) the same list of questions (see index for the full list). Through this interview process, we were able to get a general understanding of the previous work done regarding this project, what the main obstacles are, and the scope of our project considering our time restraint. From our stakeholders we were able to get auditing data from residence halls and academic buildings; this data helps provide an estimate for how much signage is needed around campus. We also got the understanding that our primary obstacle is the disconnect between different parties involved on waste signage on campus, the communication of waste signage has been little to none between these individuals. The 2017 Sustainability Action Plan called for quarterly meetings to address the universalization of waste signage, and these have not occurred as regularly as initially proposed (WWU Office of Sustainability, 2017, p. 75). Multiple stakeholders expressed that the demands of their separate roles, which all encompass many other factors outside of signage, prevent them from dedicating the time to collaborate effectively with other departments. In addition to the lack of communication, all who are involved have different opinions on how to approach this issue and what is most important when thinking about signage based on their role in the system. For example, different stakeholders have different preferences for bin types and what the main issue is—some expressed that funding was the main problem, while others cited a structural lack of accountability in making progress on updating signage.

After speaking to all stakeholders, we took away three key lessons: 1) the biggest obstacle for standardized signage is the involved departments have capacity issues, 2) there is already plenty of waste auditing data that provides how many waste bins are on campus as well as their locations, 3) there is funding ready to be spent towards this issue. Using this feedback, we concluded that the most beneficial thing we can do to progress in this project was to compile all the auditing data, find signage templates, and provide the university with a waste signage toolkit for creating standardized signage across campus. Below are these three key results to move forward with implementing universal signage.

Auditing data

By analyzing the auditing data of the residence hall auditing done by Natalia Chambard, and the academic building auditing data we received from Terence Symonds, we were able to deduct that across campus residence halls and academic buildings there is need for about 393 paper towel composting signs and 493 sorting station signs (about 170 waste, 111 mixed paper recycling, 109 bottle and can recycling, and 103 composting). Due to AS Recycling being a separate party, we also pulled together the number of blue barrels on the auditing for when AS Recycling does fall under Facilities Management, we calculated 265 mixed paper blue barrels and 132 bottles and cans blue barrels.



Template

The template we have decided to use is from Sustainable Connections, a sustainable consulting non-profit organization in Bellingham; they provide blank waste signage templates on their website. Due to this company working with the City of Bellingham on their waste signage, we thought this would be a great way to connect our campus to the standards of the regional community. This way, community members visiting campus will already be comfortable with interacting with the same waste disposal signage as is used in the rest of town.

A couple of changes need to be made to these templates before the waste icons can be added and the signage can be printed. The creation of a mixed paper recycling sign needs to be made, all logos except the Sustainable Connections one need to be removed, and the Western Washington University logo needs to be added.

The templates can be found here: <https://sustainableconnections.org/programs/toward-zero-waste/resources/>

Here are what the templates look like:



The measurements we would need the three sorting station signs to be in order to fit on all sorting stations is a 10” by 15.45” (ratio locked measurements). These would be applied to all general sorting stations around campus, including Big Bellies. This size matters because we would be able to apply it to all sorting stations without needing multiple printing sizes, adding to the standardization factor we are aiming for. We recommend the size for the paper towel compost sign to be 12” by 7.76” (ratio locked measurements). We determined these measurements by visiting several bin locations on campus, measuring them, and found dimensions that will fit the most bins.

Waste Signage Toolkit

(This toolkit is meant to be used by the student employee filling the position that we describe in the recommendations below.)

1. Locate where waste signage is needed based on a stakeholder request.
2. Determine what type of signage is needed (landfill, recycling, compost, or paper towel compost) based on the location—ex. an academic building hallway, residence hall disposal depot, or campus eatery may have different signage needs.
3. Run waste audit to determine what items should appear on each sign, including the most commonly disposed and mis-disposed items.
4. Edit Template: add icons of common items as determined by audit, remove all logos minus Sustainable Connections, add Western logo (example below).



5. Send signage templates to Copy Print Center for printing.
6. Deliver to stakeholder to implement signage. Stakeholders would be billed for signage costs.

Recommendations

Short Term Recommendation

Student Job

Based on the feedback we collected from stakeholders, specifically the capacity issues that all the departments face, our primary short-term recommendation is the creation of a student job. We believe the delegation of this work to a student would provide the sole focus and energy that this project needs. The position, likely a one-year position, 4-5 hours/week, within the Sustainability Engagement Institute (SEI), would work with all associated stakeholders to universalize waste signage. The student would use the waste toolkit steps outlined above to move through this process. Job responsibilities would include regularly working with University Communications and the Print and Copy Center to get signage updated, organizing routine meetings between stakeholders, and conducting campus-wide waste audits. Data gathered from waste audits may be used in the future to update signage images and make it more relevant to specific campus zones (ex. residence halls, dining halls, campus eateries, classrooms). Some skills needed for this job include effective communication skills and proficiency in Photoshop, excel, and photography. We believe a job like this should be paid as a level 2 or 3 student employee because the position would require experience and technological background knowledge, although the final level determination would be made by the supervisor.

Long-term recommendations

Waste Dashboard

To further bolster the impact of this project, we recommend the creation of a waste dashboard maintained jointly by the SEI, AS Recycle Center, Residence Life, Chartwells, and Facilities. We believe there should be regular updates with diversion rates, contamination rates, and tonnages of landfill, recycled, and composted materials (this will have to be done with the collaboration of SSC).

Waste Database

We also recommend the creation of a waste database that compiles all materials being thrown away on campus with directions for the proper disposal of each one. We were inspired by the Zero Waste Sorting Database from UT Austin, which allows users to determine exactly how to dispose of a wide variety of items on campus (UT Austin Resource Recovery, 2023). This resource would hopefully work as another way for students to have their questions about proper waste disposal answered and feel more confident in their decisions.

Signage Request Form

Once there is a student position to create signage, we believe that a signage request form could be created and placed on the SEI website for stakeholders to easily request signage. An online processing form would make communications easier and clearer, creating a space specific for this need and doing away with long email chains.

A signage request form would include questions that provide the person creating these signs with better information on specific signage needs. Information on the signage location (indoor, outdoor, residence hall, food market etc.) and the type of bin/s needing signage (big belly, sorting station, blue bins etc.) can help the student figure out which template to use, and look at the data collected to see if there is signage already created for that need or if adjustments need to be made to better suits the requested needs.

More Specialized Signage

While much of our focus for this project has been centered on universal signage for sorting stations commonly found throughout campus, we believe that further work could be done to make waste disposal even more comprehensive. By analyzing the needs of specific classrooms that deal with several types of waste, such as science labs and art studios on campus, signage could also be created to help students make informed decisions and make our efforts for a sustainable campus more thorough.

Visual Waste Boards

Lastly, a simple and effective way for students to better understand how to properly dispose of their waste can be done through the creation of visual waste boards. Visual waste boards are another form of signage that uses physical objects glued onto existing templates that can be tailored to meet the needs of specific locations. Currently a few areas across campus, such as Zoe's Bagels, have these visual boards but we believe more boards should be crafted.



Monitoring and Evaluation

Waste Audit Comparison

The success of this project will be monitored using routine waste audits. These audits will help analyze the level of contamination at each waste station. The responsibilities of routine waste audits could potentially create an opportunity for student employment. This position would encompass the implementation of new waste signage, routine waste audits, and analysis of new waste audit data compared to previous waste audits. Continual waste audit data will illustrate how successful new waste signage is in reducing contamination rates. This data would be most effective if it were available for public perusal via a waste dashboard, as referenced in the long-term recommendations. Embedded accountability to the campus and broader regional communities is essential for moving toward action on this problem and many other sustainability issues at Western.

Routine Meetings and Evaluation

The second measure of success entails routine meetings with the stakeholders involved. Western's Sustainable Action Plan mentions that there will be quarterly meetings between stakeholders to address sustainability issues including universal waste signage. The upholding of routine meetings will help both stakeholders and waste auditors track and retrofit the methods needed to successfully implement and monitor waste signage and waste audits. The task of scheduling and maintaining accountability for these meetings' occurrence could potentially be part of the student employee position. However, a fundamental limitation of the current waste disposal structure at Western is that there is no overarching decision-making or authoritative body that can compel all stakeholders to act within a timely manner; we recommend that future project teams explore larger bureaucratic structures in more depth.

Budget

Short-Term Recommendation Budgets:

Item	Description	Up-front cost	Yearly projection	5-year projection
Signage printing costs	Determined by the most recent Print and Copy Center rates. We estimate that signage may need a complete overhaul 2-3 times in a 5-year period, with individual signs needing replacements based on wear.	Roughly \$1,400 for all sorting station signs and roughly \$900 for paper towel signage: \$2300 total.	\$500 allocated for signage replacements due to wear.	\$6900 for 3 signage overhauls in 5 years, additional \$500 allocated for replacements as needed.
Wages for student employee	Determined by 2024 wage schedule (WWU Office of Financial Aid, 2023); subject to change in future years. This is a wage range for either a level 2 or level 3 student employee; the final wage determination should be made by the supervisor.	N/A	\$3,544.20 to \$4,563.90 over the 2024-25 academic year	Would need to be redetermined by supervisor, hours dependent on stakeholder need.
Total	Both the signage printing costs and the wages for the student employee together.	\$2,300	\$4,044.20-5,063.90	>\$7,400

Long-term recommendation costs we are unable to estimate include the cost of creating and adding a signage request form to the SEI website, as well as the cost of labor to replace all the current signs on campus with new ones. It is difficult to foresee the added hours that Facilities and A.S. Recycle Center staff would have to add to finish this project — it depends on staffing capacity, the time period over which signs would be replaced, and the other projects the stakeholders are handling at the time of replacement.

Conclusion

As discussed previously, Western has an established problem with inconsistent signage across campus. Creating clear, universal waste signage is an essential step in decreasing waste contamination rates and generally improving Western’s campus waste stream. We hope the signage provided will allow stakeholders to customize information as needed while still creating a holistic look for all signage on campus. We also hope the signage will be well-received and

educational for all students, staff, faculty, and visitors to Western's campus. Implementation of this change as we have shown is feasible, requiring little monetary investment, and it will yield critical, long-term returns for Western's waste sustainability status.

Bureaucratic hurdles and unclear allocation of responsibility have prevented progress on universalizing waste signage in the past. Almost all stakeholders we interviewed cited capacity and organizational issues as reasons preventing solution implementation. We hope to provide a clear pathway out and toward effective action by synthesizing the immense amounts of data compiled on this issue and recommending the usage of student energy to move this project forward. By doing this, we move Western closer to achieving our goal of integrating sustainability into all our institutional practices.

Index

Interview Questions:

1. Tell us more about your role at Western and how your position intersects with waste disposal on campus.
2. Tell us a little about the history of the effort to universalize signage from your perspective; we know this initiative to universalize campus waste signage goes back to at least 2017.
3. What do you perceive to be the biggest obstacle in the way of a streamlined universal signage and waste disposal system at Western?
4. What would be your ideal vision for waste signage and disposal at Western?
5. Are there existing systems that you think could be used to solve this issue and implement a solution?
6. In the 2017 Sustainability Action Plan, Goal 2 is to “Institutionalize management practices and policies for waste collection”, how has that goal been going for implementation? Unrealistic goal?
7. We want to propose Sustainable Connections signage templates as base signage? Yay or nay? Keeping in mind location specific icons.
8. Is there anything else you would like us to know that has not come up so far? (additional notes)

In-Depth Auditing numbers

PTC = Paper Towel Composting

SS = Sorting Stations

BB = Blue Barrells

Residence Halls:

Building	Abbr.	Bathroom PTC	SS Total	BB Total
Birnam Wood Commons	BC	3		
Buchanan Towers	BT	4		
Alma Clark Glass	CG	23	8	
Edens Hall	EH	3		
Edens North	EN	11		
Fairhaven Commons	FC	5		
Fairhaven Dorms	FX	21		
Higginson Hall	HH	1		
Mathes Hall	MA	11		

Nash Hall	NA	14		
Ridgeway Alpha	RA	7		
Ridgeway Beta	RB	2		
Ridgeway Commons	RC	5		
Ridgeway Delta	RD	8		
Ridgeway Gamma	RG	1		
Ridgeway Kappa	RK	16		
Ridgeway Omega	RO	7		
Ridgeway Sigma	RS	8		

Academic Buildings:

Building	Abbr.	Bathroom PTC	SS Total	BB Total
Art Annex	AA	2	3	0
Arntzen Hall	AH	8	26	24
Academic East	AI	12	6	15
Academic West	AW	6	26	9
Bond Hall	BH	13	25	36
Biology Building	BI	8	4	15
Canada House	CA	N/A	N/A	N/A
Morse Hall	CB	6	15	13
Communications	CF	10	32	28
College Hall	CH	4	10	5
Carver Gym	CV	6	20	8
ENVS Building	ES	11	21	31
Fine Arts	FA	4	3	17
Fraser Hall	FR	2	4	2
Haggard Hall	HH	4	22	26
Humanities Building	HU	6	18	9
Interdisciplinary Science	IS	21	16	10
Miller Hall	MH	10	57	40
Old Main	OM	30	32	43
Performing Arts Center	PA	14	15	11
Parks Hall	PH	8	8	25
Red Square	RS	0	1	0

Ross Engineering Building	ET	6	15	25
SMATE	SL	4	4	3
Wade King Rec Center	SV	4	4	5
Viking Union	VU	12	43	2
Wilson Library	WL	11	24	5

Total Signage Needed:

- Bathroom PT Composting: 393
- Sorting Stations total: 493
 - Interior: 465
 - Waste: 163
 - Recycling (Mixed paper): 104
 - Recycling (Bottles and Cans): 102
 - Compost: 96
 - Exterior: 28
 - Waste: 7
 - Recycling (Mixed paper): 7
 - Recycling (Bottles and Cans): 7
 - Compost: 7
- Blue Barrels: 397
 - Mixed Paper: 265
 - Bottles and Cans: 132

Works Cited

- Association for the Advancement of Sustainability in Higher Education. (2023). *STARS Report: Western Washington University*. The Sustainability Tracking, Assessment, and Rating System. <https://reports.aashe.org/institutions/western-washington-university-wa/report/2023-06-06/>
- Association for the Advancement of Sustainability in Higher Education. (2023). *2023 sustainable campus index*. <https://www.aashe.org/wp-content/uploads/2023/09/SCI-2023-1.pdf>
- Association for the Advancement of Sustainability in Higher Education. (2023). *STARS Report: California Polytechnic State University-San Luis Obispo*. The Sustainability Tracking, Assessment, and Rating System. <https://reports.aashe.org/institutions/california-polytechnic-state-university-ca/report/2023-07-10/OP/waste/OP-18/>
- Association for the Advancement of Sustainability in Higher Education. (2021). *STARS Report: University of Colorado at Colorado Springs*. The Sustainability Tracking, Assessment, and Rating System. <https://reports.aashe.org/institutions/university-of-colorado-at-colorado-springs-co/report/2021-02-15/OP/waste/OP-18/>
- Brinton, A., Warner, L.A. and Townsend, T.G. (2023). At the moment of disposal: How messaging techniques at university public outdoor waste receptacles can improve the solid waste stream. *International Journal of Sustainability in Higher Education*, 24(5), 1024-1038. <https://doi.org/10.1108/IJSHE-03-2022-0069>
- City of Bellingham. (2018). *Climate protection action plan: Greenhouse gas monitoring report*. <https://cob.org/wp-content/uploads/Climate-Protection-Action-Plan-2018-Update.pdf>
- Duran, B. (2022). *Creating effective waste bin signage: University of Texas at Austin*. Association for the Advancement of Sustainability in Higher Education. <https://hub.aashe.org/browse/casestudy/25750/Creating-Effective-Waste-Bin-Signage>
- Sustainable Connections. (2023). *Toward zero waste: Resources*. <https://sustainableconnections.org/programs/toward-zero-waste/resources/>
- The University of Texas at Austin Resource Recovery. (2023). *What do I do with this?: Zero waste sorting database*. https://iq-analytics.austin.utexas.edu/views/DisposalSortingSearchTool/Dashboard1?%3AshowAppBanner=false&%3Adisplay_count=n&%3AshowVizHome=n&%3Aorigin=viz_share_link&%3AisGuestRedirectFromVizportal=y&%3Aembed=y&_ga=2.259616650.182735640.1700512711-1458325281.1700512710
- United Nations Development Programme. (2015). *Sustainable development goals*. <https://www.undp.org/sustainable-development-goals>
- Western Washington University Board of Trustees. (2004). *WWU board-approved peer list and global challenge states peer list*. https://bpb-us-e1.wpmucdn.com/wp.wvu.edu/dist/d/676/files/2016/03/WWU_Peer_List_2008-2lliww2.pdf

Western Washington University Office of Financial Aid. (2023). *Current wage schedule*. Student Employment Center.

<https://www.finaid.wvu.edu/studentjobs/employers/resources/wage-schedule/current-wage-schedule.php>

Western Washington University Office of Sustainability. (2017). *Sustainability action plan*.

<https://sustain.wvu.edu/files/2021-03/Sustainability%20Action%20Plan%202017%20-%20FINAL.update02.06.2019.pdf>

Whatcom County. (2021). *Climate action plan*.

<https://www.whatcomcounty.us/DocumentCenter/View/69472/WC-2021-Climate-Action-Plan---pages>

Wu, D. W. L., Lenkic, P. J., DiGiacomo, A., Cech, P., Zhao, J., Kingstone, A (2018). How does the design of waste disposal signage influence waste disposal behavior?. *Journal of Environmental Psychology*, Vol. 58, 77-85. <https://doi.org/10.1016/j.jenvp.2018.07.009>.