Sustainable Stormwater Feasibility @ the ASUW Shell House

March 10, 2023

Dear Campus Sustainability Fund,

The ASUW Shell House is located on the edge of campus along the shores of Lake Washington at the eastern end of the Montlake Cut. The site has always been a gathering space. Within its walls and on the waters of Lake Washington, generations of people gathered to collaborate, celebrate and connect to the water. Generations ago, the Duwamish people would come here to portage across the narrow isthmus that spanned the waters of Lake Washington. The site's Lushootseed name, stəx̌ʷugʷiɬ , translates o the place to "carry a canoe," indicating their reverence for the shores of the lake that supported their livelihood. Today, on the site of the Historic ASUW Shell House, we continue to respect these indigenous traditions of reverence for land and water, and have new histories to add to the narrative. Following its short use as a a seaplane hangar for the U.S. Navy during WWI, it housed the UW rowing team for decades, including George Pocock's shop, the world-renowned boat builder who built rowing shells for teams across the world. It recently has become a legend, thanks to the book (and soon-to-be-movie, "Boys in the Boat") that chronicled UW men's unlikely gold victory at Hitler's 1936 Olympic Games.

As the very first Seattle historic landmark on campus, this building with its glorious location on the shores of lake Washington will soon be renovated into a dynamic space for the campus community, with gathering spaces for students, places for events, and exhibits to illustrate its characteristics of history, sustainability, beauty and community. As the UW Historic Shell House begins to implement designs for building renovation and landscape design, and in concert with the goals the UW established as a certified 'salmon safe' institution, this proposal seeks funding to develop a feasibility study for sustainable onsite stormwater harvesting and treatment at the Shell House site.

Sustainable Impact

The ultimate goal in sustainable water in urban sites is to be like a natural ecological system, balancing intake with outflow of waters of similar or better quality – but that is rarely the case in urban environments. For example, when it rains on campus, the rainwater runs into a network of storm drains that lead directly into local bodies of water. Along the way, rainwater picks up contaminants such as

heavy metals, oil, toxins, pathogens, chemicals and trash, which goes untreated and flows directly into fish and wildlife habitat. This stormwater falls on various surfaces including buildings, roads, parking lots, sidewalks, loading docks, and landscaped areas. While some of the water may be absorbed by the soil, most of it ends up in the nearest storm drain, and ends up in Lake Washington. Additionally, stormwater runoff can cause erosion and sedimentation, which can negatively impact salmon habitat by filling in the spaces between rocks where salmon lay their eggs. This can prevent the eggs from hatching, and reduce the amount of available habitat for juvenile salmon. It can also increase the water temperature of streams and rivers. This can be harmful to salmon, as they require cool water temperatures to survive. Warmer water can reduce the amount of dissolved oxygen in the water, making it more difficult for salmon to breathe and survive. Untreated polluted water can also reduce the amount of available habitat for salmon, and can also make it more difficult for salmon to find food and avoid predators.

With the ultimate goal of treating all onsite water sustainability, we will study the feasibility of how the Shell House site can treat stormwater through:

Constructed wetlands- engineered marshlands that replicate the functions of natural wetlands by filtering pollutants and improving water quality and by the hydrology and vegetation of a natural wetland. They also provide a habitat for diverse plant and animal species while providing ecosystem services such as water purification and flood control.
Bioswales - a landscape element designed to manage and treat stormwater runoff through shallow, vegetated drainage ditches engineered to slow down and filter stormwater as it flows through the landscape. Also designed to mimic the functions of a natural wetland, they are typically located in areas with high levels of stormwater runoff, such as parking lots, roadsides, and other paved areas.
Rainwater collection - a water cistern collection system involves the collection and storage of rainwater for later use by installing a cistern or storage tank, which captures rainwater from the roof of a building, then treated and filtered to remove any debris or contaminants before it is used for non-potable purposes such as irrigation, cleaning or toilet flushing. *Greywater systems*: This is the use of a close-looped water system treating grey water used from sinks, dishwashers, water fountains, etc., for building uses such as toilet flushing. By using a filtration and disinfection process to remove any contaminants and ensure that it is safe for use, reusing greywater to flush toilets can reduce water usage up to 30% in a building.

Student Leadership & Involvement

Our proposal during the feasibility phase for students will include a graduate Master of Landscape hired to assist in project feasibility management, along with the 12 students in Professor Merlinos Spring undergraduate architecture design studio. The studio will be focusing on the adaptive reuse, preservation and landscape design of the Shell House. Students will be presenting at the end of the quarter their projects and proposals to reviewers, stake holders, and the ASUW Shell House board as well as additional outreach presentations.

Education, Outreach, & Behavior Change

With the upcoming renovation of the ASUW Shell House, and its prominent site on campus near the light rail, stadium and shore front, this building will be a destination for both the UW community, locals and visitors for years to come. It will be a dynamic student center, and already gets plenty of traffic both on foot during stadium events and by boat during the spring and summer months. By creating a visible, sustainable onsite water treatment and educational display, we will be showing visitors how both saving

an existing building and treating its onsite water in a way that respects the environment and salmon is the highest level of sustainability.

Feasibility & Accountability

The feasibility study phase. will be led by Faculty member in Architecture and Director of the Center for Preservation and Adaptive Reuse, collaborating with the Green Futures Lab and students of the College of Built Environment. Funds will be used for a Licensed Landscape Architect Consultant (approx. $20,000), a graduate research summer assistant (200 hours/ $8000) and studio supplement ($1000) for a total of $29,000 (est).

Thank you for your consideration,

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