

**Scaling-Up On-Site Composting in the Student Union Building ~UBC Vancouver~**

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**Global Resource Systems – Faculty of Land and Food Systems**

**UBC SEEDS – Campus Sustainability**

**University of British Columbia**

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## CONTEXT

This document is a preliminary overview of an on-site composting project that started in May 2011, and continues today. This project was undertaken as a UBC SEEDS Directed Studies, under the supervision of Professor Art Bomke, and SEEDS Coordinator, Liska Richer. Other project stakeholders have included AMS Sustainability, and various AMS/UBC managers (Operations, Food & Beverages, Catering, Custodial, Food Services etc.). The AMS' NEW SUB Committee has also become involved since the proposed set-up will be housed within the NEW Student Union Building. The NEW SUB building is currently under construction, and is scheduled to open in September of 2014.

## PROJECT OBJECTIVE

The original objective of the project was to determine whether on-site composting in the Student Union Building might be feasible to some degree. This earlier phase focused only on worm composting in a barrel-sized bin.

Currently, the objective of the project is to research and implement an on-site composting system for the entirety of the NEW SUB building. This new phase focuses on using a thermo-digester which will significantly increase the capacity for on-site processing of all food scrap materials. A technology review has been completed, and a purchase order is underway. The next phase of the project looks more closely at integrating the new machine into both the building, and operational activities within the building.

While the scale of the project has grown over time, the original goal of implementing on-site composting has remained the same.

## PROJECT DESCRIPTION/EVOLUTION

A necessary part of this project has been to communicate details of the project to various audiences. This has mainly been done through presentation format. Thus, the evolution of the project can be understood through viewing the series of presentations that have been put together to communicate the work that has taken place at certain stages of the project. A brief description of each presentation is provided below.

### **Presentation 1 (January 25 2012) – Worm Bin Success – Proposal for Scale-up**

The earlier objective of this project was to run a trial of a scaled-up version of worm composting in the Student Union Building. This trial considered how a barrel-sized worm bin could be managed within the daily operations of the AMS Prep Kitchen. Various factors were looked at: location, labour requirements, initial cost, maintenance costs, sustainability factors (Eg. benefits of on-site composting), staff engagement, as well as the potential challenges involved in further scaling-up a worm composting system.

This first presentation included an overview of the project's findings, including projected costs for expanding the project. The recommendation that was made: to pursue a large-scale version of worm composting for implementation in the NEW SUB. This proposal was accepted by the stakeholders present, and there was a general consensus to continue moving forward by proposing the idea of large-scale worm composting to AMS building managers, and the NEW SUB Committee.

### **Presentation 2 (February 17 2012) – Sharing the Story at Simon Fraser University**

UBC SEEDS was invited to speak at the Western Canada Sustainable Campuses Conference, and the worm compost project was presented as a *Campus as a Living Lab* case study. Sustainability-minded faculty and students were present. The real opportunity was in sharing the story, listening to feedback, and realizing the incredible desire that exists amongst the faculty and student body for sustainable practices within academic institutions, including the everyday operations of those institutions.

### **Presentation 3 (April 18 2012) – Committee Votes ‘All in Favour’ of Worms!**

The NEW SUB Committee had not previously been engaged with the worm composting project. The purpose of this presentation was to propose the idea of large-scale worm composting to committee members. The NEW SUB Committee is comprised of various AMS building managers, student government members, NEW SUB Sustainability, and others involved in overseeing the building of the NEW SUB. Committee members have a vested interest in the project since on-site composting is considered to be both an opportunity to showcase sustainability, and a necessary building operations/solid waste management element. The AMS is deeply committed to sustainability, but operational concerns and building efficiencies are always a top priority.

After the presentation, the committee voted unanimously ‘all in favour’ of accepting the proposal for large-scale worm composting in the NEW SUB. A motion was carried forward to have the building designer apportion a share of the composting/recycling room to worm composting equipment.

### **Presentation 4 (October 16 2012) – Sharing the Story in Los Angeles at the AASHE Conference**

AMS Sustainability, UBC SEEDS, and the worm compost project were invited to speak at AASHE, an annual conference for the advancement of sustainability in higher education. AASHE has been instrumental in helping to build an incredible resource-based network of sustainability-minded people associated with colleges/universities all across North America. In addition to educators, including faculty members, and a wide assortment of academic researchers, this network also includes sustainability coordinators, operations managers, recycling/solid waste managers, and various other types of staff/management positions involved in “greening” the campus environment.

A real benefit in attending this conference was bearing witness to the common vision, and overwhelming drive for the advancement of sustainability that exists across campuses all over North America. A valuable lesson in “bottom-line” decision making was also learned. While building/operations managers often want to choose the more sustainable options, they have various constraints that prevent them from doing so (Eg. financial budgets, timing, lack of information, lack of convenience, lack of certainty/trust etc.). These lessons inspired the evolution of the project – from large-scale worm composting to building-wide composting of all food scraps materials.

### **Presentation 5 (July 10 2013) – NEW SUB Committee Approves Thermo-Digester Proposal**

Before returning to the NEW SUB Committee with the idea of building-wide composting, it was important to determine the financial feasibility of such a proposal. A business plan was drawn up (as part of Professor Kelleen Wiseman’s FRE 302 class) – the model used for the business plan was very similar to the model being proposed for the NEW SUB. The plan showed that a business-based model would be profitable after 5-10 years. With this information, a technology review was conducted, and a short list of machines, and their distributors was put together.

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This information was presented to the NEW SUB Committee. The group was receptive to the idea, and agreed to continue moving forward with the idea of building-wide composting using a thermo-digester.

### **Presentation 6 (October 30 2013) – Stay Tuned for the Arrival of Big Hanna!**

A follow-up presentation was made to the NEW SUB Committee announcing that a machine called Big Hanna was selected as the composter that would most suitably satisfy the AMS' commitment to sustainability, as well as the composting project's goals. Projected costs were highlighted. Despite other events that have affected the availability of funds for the NEW SUB project, the NEW SUB Committee still remains in support of the composting project moving forward. It was agreed that a concerted effort would be made to secure funding for the purchase of Big Hanna.

### **CURRENT STATE OF THE PROJECT & NEXT STEPS**

Currently, a purchase order is partially underway for the acquisition of a Big Hanna T120 machine. Both a suitable amount of floor space in the loading bay room, and 3-phase electrical hook-up have been secured for her arrival in early 2014. Awaiting attention are the details around installation of the biofilter (and associated venting equipment), and floor drainage. Two UBC engineering professors have been consulted in regards to the installation: Professor Anthony Lau, a Chemical and Biological Engineer with specializations in bio-filters, and composting; and Professor James Atwater, a Civil Engineer with specializations in leachate, and solid waste management.

After Big Hanna's arrival, the next phase of the project will look more closely at integrating her into both the building, and operational activities within the building. This will include staff/student training and engagement, outreach and marketing, the determination of optimal operational parameters, and the measurement of Big Hanna's impacts on waste flows to, from, and within the building. Other campus sustainability initiatives will be able to work in tandem with the Big Hanna installation. A waste weigh scale will soon be arriving in the NEW SUB, a sustainability-focused *Dashboard* program is under consideration for installment on campus, and there will be various food system elements that have potential for alignment (roof top and community gardens, community kitchen, UBC Farm, Compost/Gardening Club etc.). In September of 2014, a 4<sup>th</sup> year Applied Engineering class will design a monitoring and control system that will enable building users to optimize Big Hanna's performance. Considering that this type of composting project is relatively new in North America, there has been, and will continue to be ample opportunities for public engagement, and learning by doing. The work will continue well on into the next semester and beyond.