



Construction of a Weighing Lysimeter on the SUU Green Roof

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Introduction

Green infrastructure is the use of natural processes to manage storm water runoff and has many positive effects on evaporative cooling, building energy demand, and wildlife habitat. Very little green infrastructure research has been conducted in arid environments such as Southern Utah. The scope of this research project is to establish a complete water budget of the green roof using a lysimeter, an acrylic box resting on a high-resolution weighing scale (DiGiovanni et al. 2013).

The SUU Green Roof



The SUU Green Roof resides on the roof of the Garth & Jerri Frehner Museum of Natural History.

Objectives

- Examine how green roofs in semi-arid climates function, as well as the trade-off between water supply costs, storm water management, and other benefits.
- Develop an interactive outdoor exhibit where visitors can learn about water issues in Utah and green infrastructure.

Construction Process

Step 1



Collaborated with Youcan Feng, PhD candidate at University of Utah

Step 2



Assembled the acrylic box

Step 3



Constructed the stand

Step 4



Received and evaluated the components

Step 5



Set up collection of weather data

Step 6



Transported equipment to the green roof

Step 7



Tested for wind safety protocols

Step 8



Calibrated sensors

Step 9



Connected tipping bucket, irrigation, and electrical can

Future Direction

- We will collect and analyze data indefinitely to better understand the water budgets of green roofs in semi-arid climates.
- A manual will be created to streamline the building process of future lysimeters.
- A second lysimeter will be built to establish the feasibility of agriculture as a part of green infrastructure.

The Finished Product



Works Cited

DiGiovanni, K., Montalto, F., Gaffin, S., and Rosenzweig, C. (2013). Applicability of classical predictive equations for the estimation of evapotranspiration from urban green spaces: green roof results. *J. Hydrol. Eng.*, 18(1), 99-107.

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