In Winter quarter 2011, I completed a stormwater project on campus made possible by the Cargill Sustainability Fellowship. In designing my contract, I tried to make the project interdisciplinary, to align with my studies in the MES program. I ambitiously set my goals high and happily dealt with those who were surprised by the amount of work I wanted to accomplish in one quarter.

The first part of my project used Geographical Information System (GIS) software to map the stormwater system at Evergreen. I relied on as-builts of the system from facilities, informal interviews with campus staff and field verification to complete a map. This map also designated areas that contribute to runoff, marked outfalls and labeled receiving waters. The layers of data that I created are now available on a public server at Evergreen. The final map I created also will become part of the Evergreen Stormwater Management Plan, the stormwater website, and completes a requirement of Evergreen’s stormwater permit.

I also performed water quality monitoring at the two major stormwater outfalls on campus. After multiple tests and attempts I finally found equipment that would work for my desired testing. For this, I did extensive background reading on which tests to perform, and had to learn and closely follow the standard methods for measuring fecal coliform (FC) from water samples. My technique improved with each weekly test, and I was able to amass eight weeks of solid data on FC levels and other background parameters.

The third part of my project involved outreach on campus. I provided input to Robyn Herring, my field supervisor, about which informational brochures would be distributed to students living on campus. I also went through the process of presenting to the Campus Land Use Committee (CLUC) about installing pet waste control signs at campus trailheads in an attempt to limit pet waste contamination of campus streams. The signs will be erected in the coming months.

The final stated aspect of my project was a literature review of how campuses and municipalities check their stormwater systems for illicit connections. Evergreen is required to develop a Illicit Discharge Detection and Elimination (IDDE) program, and I completed the background research to begin the process. My GIS maps also accomplished the first step of the IDDE program. I researched high FC levels effects and source species of FC contamination. I found that testing stormwater effluent for ammonia is a simple and cheap way to eliminate humans as source. I implemented ammonia tests into the final four weeks of my FC testing, and all tests were negative, eliminating humans as a source. This of course was a relief to Robyn and facilities, since an illegal cross connection with a sewer pipe would be a costly fix.

On top of my stated goals, I took on extra lab work related to FC remediation. I worked with Tim Benedict, a cohort, and Fungi Perfecti to test the ability of fungi mycelium to remove FC from water. We completed three tests of passing sample water though woodchips inoculated with oyster mushroom spores and compared the results to base levels of FC from one of the stormwater outfalls and a control of plain wood chips. The results were indeed promising, and Fungi Perfecti was very happy that we were able to complete tests of their technology in a lab environment that they have not been able to complete.