**Storm Water Research and Education**

Rebecca Haertling

Molecular, Cellular, Developmental Biology

Junior/Senior

rhaertli@ucsc.edu

PSI Program

Mentor: Courtney Trask

trask@ucsc.edu

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Abstract:

The goal of the project was to increase education and outreach to the UCSC community on storm water practices and knowledge. Pollution of storm water is widespread, occurring all over the world. The UCSC campus mission states that we have an environmental responsibility, which our project hoped to fulfill by educating the community on how their actions can directly influence or reduce contamination to the storm drains on campus (1). In order to achieve this, we increased our distribution of materials by outreach to various departments and staff members, provided resources in case of storm water concerns, made the information easy to read and easily available, while we covered both general and specific storm water issues. At the end of the year we measured our success by the completion of a comprehensive handbook, that will guide future outreaching efforts, and also by our accomplishments in preparation of future outreaching.

Problem Definition, Context and Background:

The 2013-2014 Annual Storm Water Survey revealed that 81.6% of the campus community had never heard of the UCSC’s Storm Water Management Program. This means that the majority of the campus was unaware that there is a specific department in charge of storm water, and that it provides resources to get informed, or should be contacted in case of a storm water safety concern. The survey also showed that a majority of people on campus were educated about storm water, but that a number of people had incorrect knowledge or misconceptions about it. The campus is currently trying to fulfill permit requirements on education and outreach of storm water practices, which includes using the knowledge from last three years’ surveys to improve and base a strategy on.

Storm water contamination is a problem throughout the United States. Pollution can include sediment, excess nutrients for algae to thrive in, bacteria and other pathogens, debris, and household hazardous waste (2). The effects of pollution to storm water can harm plants, fish, and people. At UCSC the storm water goes back into the environment, where it provides water for native and planted vegetation, ephemeral streams, and groundwater recharge (3). The majority of campus, however, replied that they thought the water goes to the ocean.

Rain that falls on hard surfaces flows to the lowest point on the ground and into storm drains, taking with it any contaminants in its path. The storm water runoff brings pollution to the UCSC environment, which can be prevented. We wanted to educate the community on how to prevent pollution, how to report any storm water concerns or spills, and to be aware of their actions.

The UCSC Campus Sustainability Plan hopes to manage the land, habitat, and watershed by increasing student, faculty, and staff engagement on campus. This can be achieved using informational and formal learning, and environmental education projects. The Storm Water Management Plan hopes to “broaden awareness of impacts to campus lands” (4), by informing the community about how their interactions with the natural environment at UCSC can impact storm water quality. Two topics we addressed related to this was the contamination to storm water created by unofficial pathways across campus and the use of pesticides in getting rid of ants at faculty housing facilities.

Project Description:

The project’s goal for the year was to develop a strategy for the next three years for educating and outreaching to the UCSC community, and to start the implementation of outreach. The objectives for this goal were to update and create brochures, to get the brochures distributed by various methods, and to develop handbooks that outline and explain outreach techniques for future interns. We also hoped to attend events during winter and spring quarter, which we could replicate in future years. We needed to find creative ways of outreaching that would be easy to replicate, and also develop relationships with contacts that would help facilitate outreach in future years.

The impact of the education and outreach was to increase the UCSC community’s knowledge of storm water, and how it impacts the environment here at UCSC. The campus will be positively influenced, as outreach will help decrease contamination to the storm water flowing back into the
environment. The strategy needed to be replicable for future years, which was kept in mind as it was created and implemented.

To accomplish the brochures for students, staff, and faculty, we edited and created PDFs, and we distributed them by contacting the departments and proper persons responsible. We developed a pesticides brochure for the staff and faculty that live on campus, to address ant removal. Our outreaching and distribution efforts will be recorded throughout the next few years in a google document specifying who we contacted, what was done for outreach, and the link to the brochure.

The student outreach handbook for interns was modified at the beginning of the year, and was updated at the end of the year with details on how to replicate the outreach. During spring quarter, we worked on furthering the influence of the handbook by including more resources and information vital to the internship. The purpose of this was so that we would have a google folder containing all of the resources an intern might need to pursue their projects. We included past surveys and analyses, ideas, outreaching activities we have done with advice for reimplementation, resources, and any other relevant information we thought would be useful.

The community outreaching handbook was created and has been submitted as a draft for further review. It currently has sections explaining our strategy, past surveys, what each brochure’s function and distribution plans are, and how we plan to implement outreach to the students, staff, and faculty individually. The handbook is feasible for future years, and outlines what we need to do on a yearly basis.

**Project Timeline:**

The overall project was completed by the end of the year. The main goal of fall quarter was to update the informational brochures and work on getting them distributed by contacting staff that has the authorization. The brochures were not finished by the end of the fall quarter due to a computer problem that has been resolved. During winter quarter, we worked on finishing our edits to the brochures, created and submitted a community outreaching handbook, and attended Earth Summit. In spring quarter, we created the pesticides brochure on ants, finished turning the intern handbook into a more developed orientation handbook, added the edited brochures to the cleanwater.ucsc.edu website, updated the website, and attended SpringFest.

**Project Stakeholders, Student and Mentor Roles:**

Courtney Trask was the mentor of the project. She is responsible for fulfilling the permit over the next few years, with interns to assist in helping with outreach. The community outreach handbook was developed to be doable by her each year, whether or not she has the help of an intern. The following department’s employees will receive biennial training: Transportation and Parking Services (TAPS); Physical Plant: Grounds, Work Management, Facilities, and Custodial Services; Physical Plant Planning and Construction; Housing Facilities; and Dining Services.

This year, I was responsible for helping develop a strategy, distributing information, contacting the correct people, and finding ways to increase our future outreach. Brochures needed to be updated, reviewed, and revised by me, but with final review by Courtney. I helped create the community outreach handbook and was responsible for working on an orientation handbook for interns.

**Measurable Results:**

What was measured was that all the brochures have been edited, and the number of sources used to distribute the information has increased. We also measured if the community outreach handbook and intern handbook were completed. The main goal of this project was to create an outreaching strategy for future years, but we also measured additional outreaching projects, such as tabling and updating the website.

**Evaluation:**
I demonstrated that all my objectives were achieved by finishing the community outreaching handbook, the intern orientation handbook, by posting the brochures online, and by the creation of the pesticides brochure. Overall, my job was to help develop a strategy and plan, so most of my accomplishments were measured by Courtney Trask.

**Results:**

Over the course of this year, we finished a comprehensive community outreach handbook draft. In it, we have 15 brochures that we included, and have discussed in detail how we plan to utilize them. We developed a google folder containing all of the brochures to be used as a resource for future interns. Of the brochures needing to be updated, we have modified 100% of them. We also created a pesticides brochure for removing ants. The Storm Water Management Program’s Facebook was used to provide brochures to the public, promoted two events on campus, and was updated with the spring intern hike, Earth Summit, and SpringFest. In compliance with the storm water permit, the website cleanwater.ucsc.edu, was updated during spring quarter. We modified the homepage, background page, internship page, FAQ page, and added a brochure page. We also created a “10 Tips” section from scratch, as part of the FAQ tab. Besides for making the brochures available online, we also distributed the “Runoff and Management” brochure to the 10 colleges on campus at the Residential Life Offices and Program’s Offices. We tabled at Earth Summit 2014 and displayed a poster at SpringFest. To further our future outreaching efforts, we have added a section to the Intern Handbook which gives tips and suggestions for repeating the events/distribution in the future.

**References:**