EPA P3 Project Meeting
August 20, 2007

Background

Introduction

The Environmental Protection Agency (EPA) sponsors a student sustainability design competition under its People, Prosperity, Planet (P3) program. We submitted a proposal for a Phase I award to design a constructed wetland to treat urban stormwater runoff from an area at the mauka end of campus and encompassing Noelani School. We were awarded $10,000 to develop the design. A copy of the research plan is here (project plan.pdf).

Student Involvement

This is intended to be a student-led project, with appropriate faculty advising and leadership. As you can see below, we already have a number of students and faculty committed to participating, but there is room for additional students in particular areas. We are offering students credit for their work on this project in a number of ways.

1. NREM 399/499: Directed Study (var cr).
This provides students opportunities to learn by doing. Students must have a faculty sponsor in NREM.

2. NREM 494: Environmental Problem-Solving.
This is the senior capstone course in NREM. Carol Ferguson, who has been the instructor for the course during the past 2 years, will allow students to use their involvement with the P3 project as a substitute for the regular requirements of NREM 494.

3. BE 481/482: Senior Engineering Design I/II.
This is the senior design course for Bioengineering students. The instructor, Dr. Loren Gautz, is encouraging students to participate in the P3 project to meet the course requirements.

4. Class projects (various).
There are several other NREM courses in which a class project is part of the course requirements. We will be encouraging instructors to either adopt the P3 project as the designated class project topic or allow students to choose to work on the P3 project to meet the course project requirements (see list below).

Partners

We have several important partners inside and outside of the university. The NREM and MBBE departments in our college have faculty and students committed to participating in the project. Dr. Eric DeCarlo in Oceanography has agreed to train students on how to conduct water quality testing and make his laboratory facilities available for analysis of pollutant levels in storm water runoff. Roxanne Adams, the head of landscaping on campus, has been involved with selection and propagation of native plants for use in the wetland. Dr. Pauline Chinn in the College of Education and Dr. John Cusick at the Environmental Center, have agreed to work with us on educational outreach activities. Rochelle Mahoe, principal of Noelani Elementary School, will work with her teachers and students to help us collect weather data important for determining potential runoff rates into the storm drain. Derek Chow of the Army Corps of Engineers, has

agreed to work with us to identify the most serious pollutants, develop effluent standards, and work with the City and County on planning and permitting requirements.

Project Outline

Water Quantity

Faculty Advisors:
Loren Gautz, MBBE
Travis Idol, NREM

Students:
Kaori Caraway, NREM

Activities:
Develop digital elevation model of drainage area
Collect weather data (primary and secondary)
Measure drain flow rates
Determine runoff potential

Water Quality

Faculty Advisors:
Travis Idol
Eric DeCarlo, Oceanography
Loren Gautz

Students:
Becky Mitschele, NREM
Vera Corte Real de Oliveira, NREM

Activities:
Collect water samples
Water quality training
Laboratory analysis
Determine effluent standards

Plants and Substrate

Faculty/Staff Advisors:
Travis Idol
Roxanne Adams, Landscaping

Students:
Cynthia Nazario-Leary, NREM
Alyssa Cho, NREM

Considerations:
Plant density
Plant species composition
Appropriate rooting substrate
Water regime and flooding tolerance
Pollutant tolerance and potential for decontamination or sequestration

Wetland Design

Faculty Advisor:
Loren Gautz

Students:

Considerations:

Water cycle	Size
Depth	Type
Retention time	Number of cells
Inflow/outflow rates	Pollutants of interest

Economics

Faculty Advisors:
Loren Gautz
Carol Ferguson, NREM

Students:

Considerations:
Cost of construction
Benefits of treatment
Analysis of alternative treatments

Planning and Permitting

Faculty Advisor:
Carol Ferguson

Students:

Considerations:
Official permits needed or recommended
Community standards, preferences, and concerns

Educational Outreach

Faculty Advisor:
Pauline Chinn, School of Education

Students:
Cynthia Nazario-Leary

Major Duties:
Develop educational program and materials for the following groups:
1. k-12 students
2. k-12 teachers
3. UH students
4. Manoa community members and leaders (Neighborhood Board)

Activities for Phase I should seek to involve the identified groups in the planning process, as appropriate.
Activities for Phase II should focus on:
1. developing plans to involve the identified groups in the implementation process
2. educational presentations, tours, etc. about the finished wetland

Class Partners

There are several courses in NREM and CTAHR that may want to involve their students as part of a class project. Courses and instructors are listed below. Dr. Idol will contact the instructors.

Course	*Instructor*
NREM 477: GIS for Resource Managers	Tomoaki Miura
NREM 494: Environmental Problem-Solving	Carol Ferguson
BE 481/482: Senior Engineering Design I/II	Loren Gautz
NREM 600: Evaluation of Natural Resource Management	Ali Fares/Travis Idol
NREM 665: Coastal and Wetland Ecology and Management	Greg Bruland