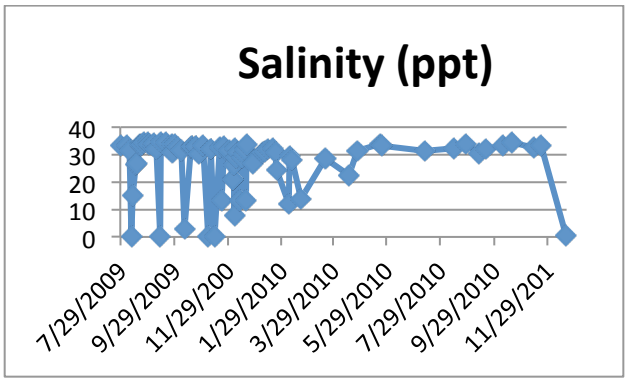
Watershed/Mauka Watch

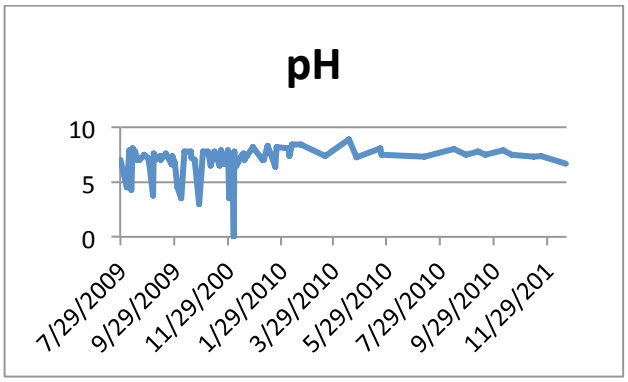
Report 1/18/2011

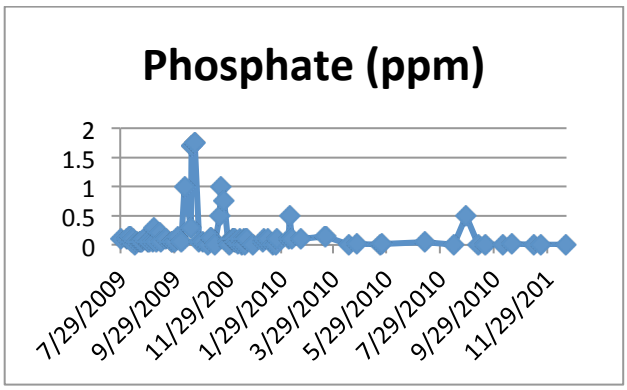
Mauka Watch

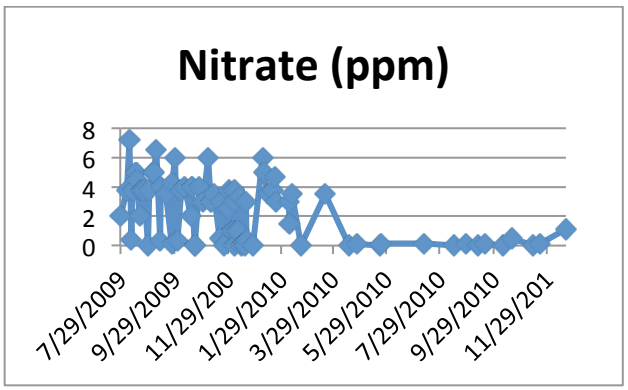
Water Quality Monitoring:

Volunteers have been monitoring at five sites since April 2010 (Wailupe, Kuliouou, Niu, & Both Marina outlets). Currently, each site is sampled around 3 times per month. Prior to adding the three new sites last year each site was being sampled around 3 times per week. The result is that we appear to be missing a lot of information, particularly the highs and lows that are of interest. Examples from Kuli`ou`ou:



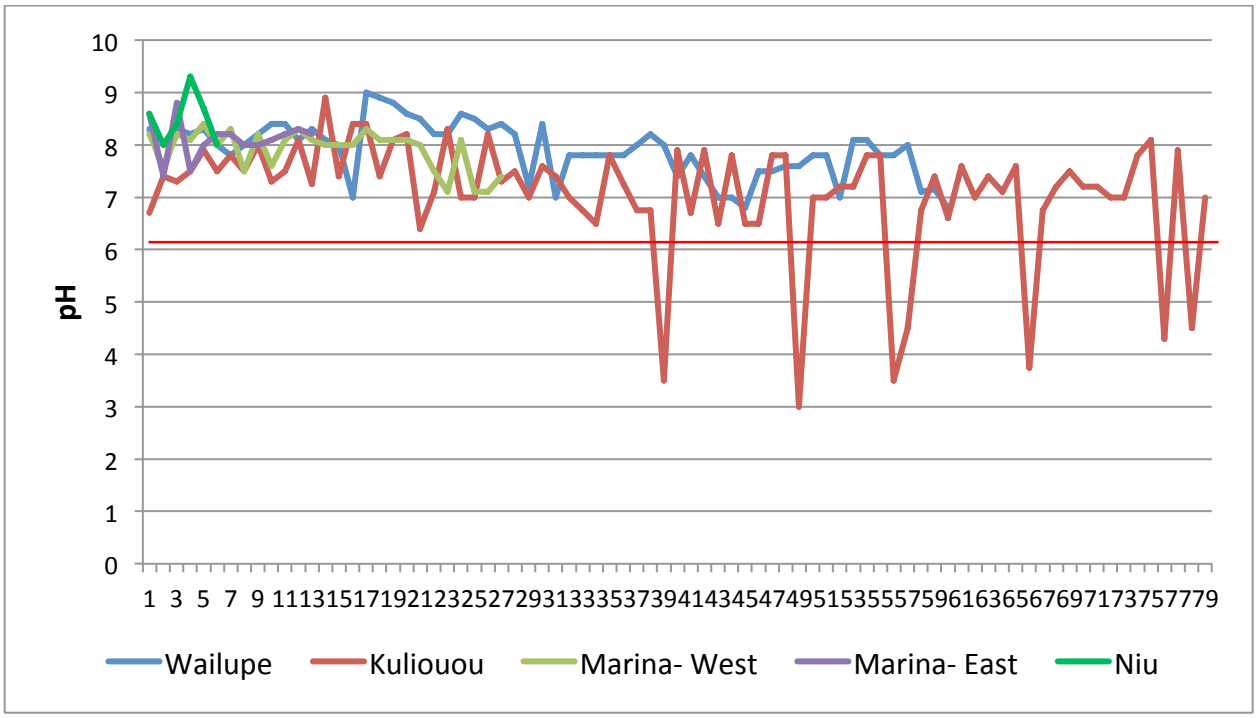




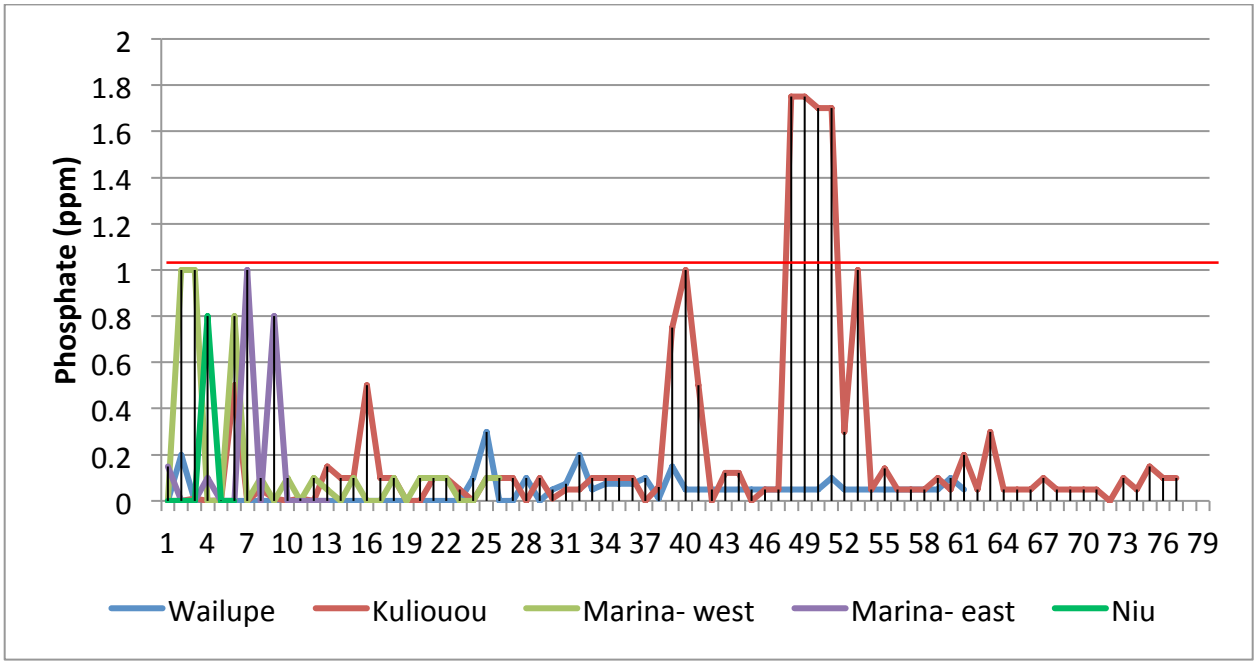


Considering that, if we are to continue the volunteer monitoring program I would recommend that we increase the sampling frequency by either recruiting and training more volunteers or by reducing the number of sites. I would suggest eliminating one Marina site and Niu for now. I would also recommend hold a “re-certification” calibration session to ensure the best possible quality control. I also recommend finding funds to allow periodic lab testing for quality control and to test for other parameters (heavy metals, pesticides, etc.).

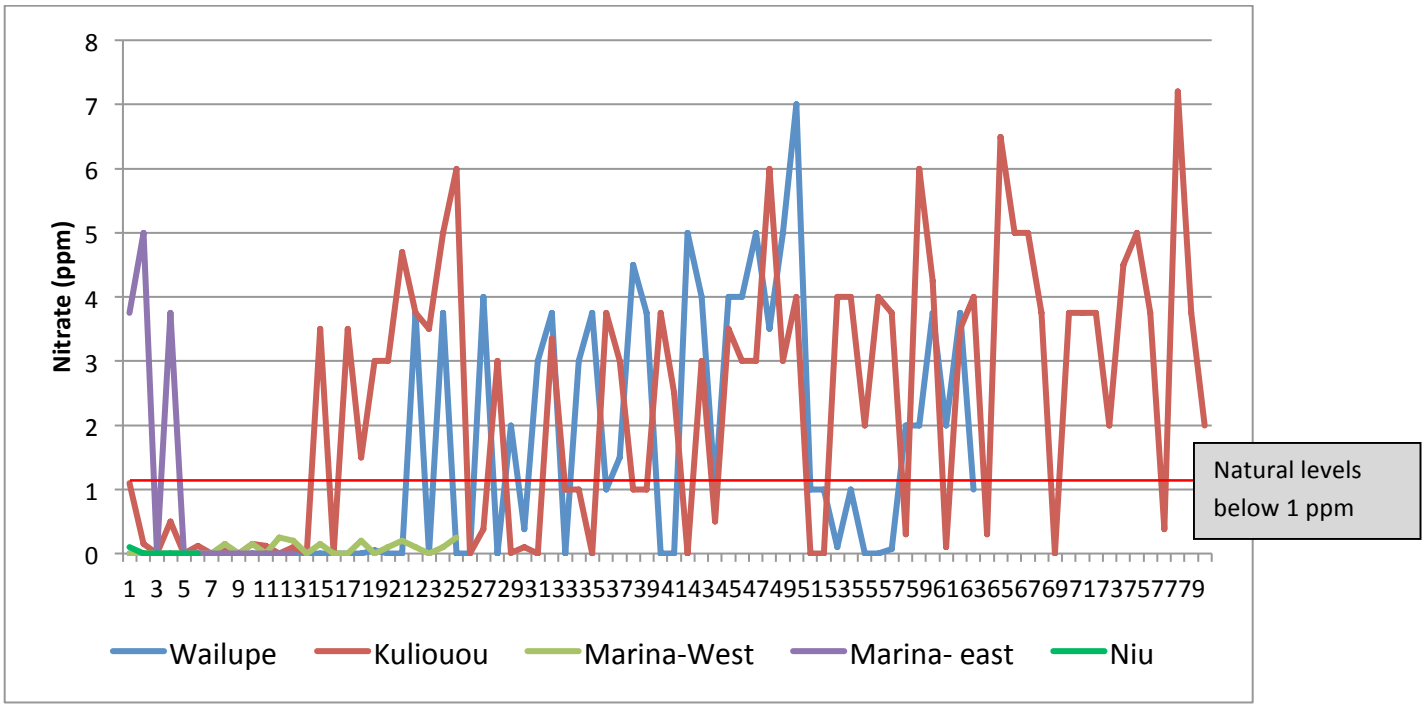
Summary of data:



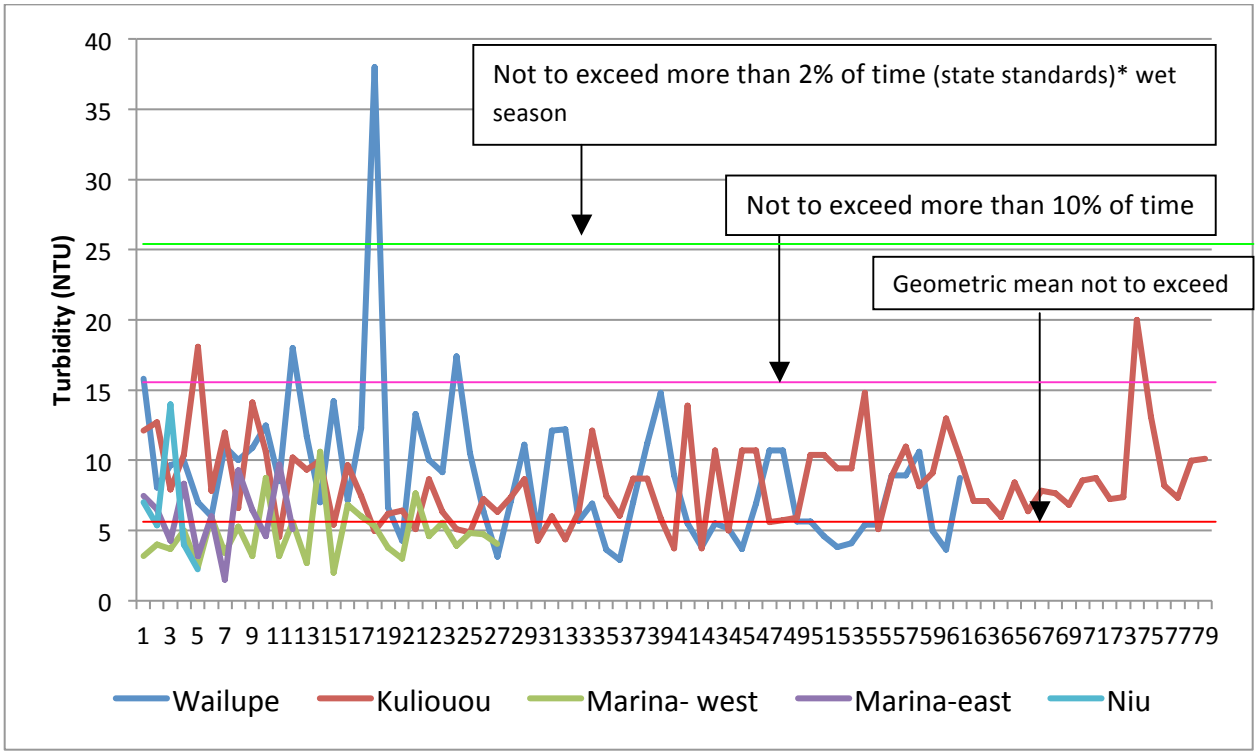
Kuli`ou`ou shows dangerously low dips in pH (begining with rainy season 2009)



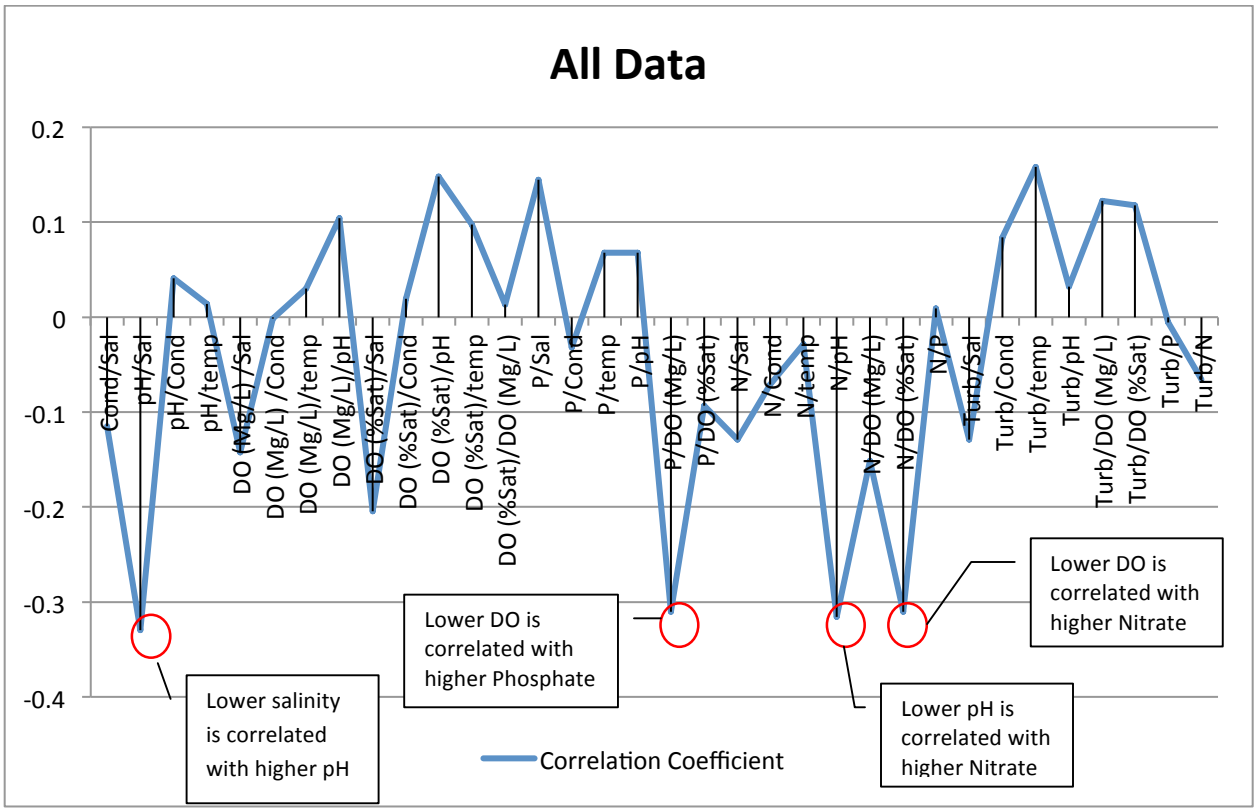
The highest phosphate levels were detected in Kuli`ou`ou and the Marina with one high reading from Niu.



The highest Nitrate levels were detected in the Marina, Kuli`ou`ou, and Wailupe.



Wailupe and Kuli`ou`ou show the highest levels of turbidity



Primary correlations based on analysis of all sites and all parameters.

Rain Gage network:

Has not been an easy task to install 18 RGs over such a large area and with multiple land-owners. There have been significant issues with volunteer attrition and the project has proven too complicated for me and volunteer manpower alone.

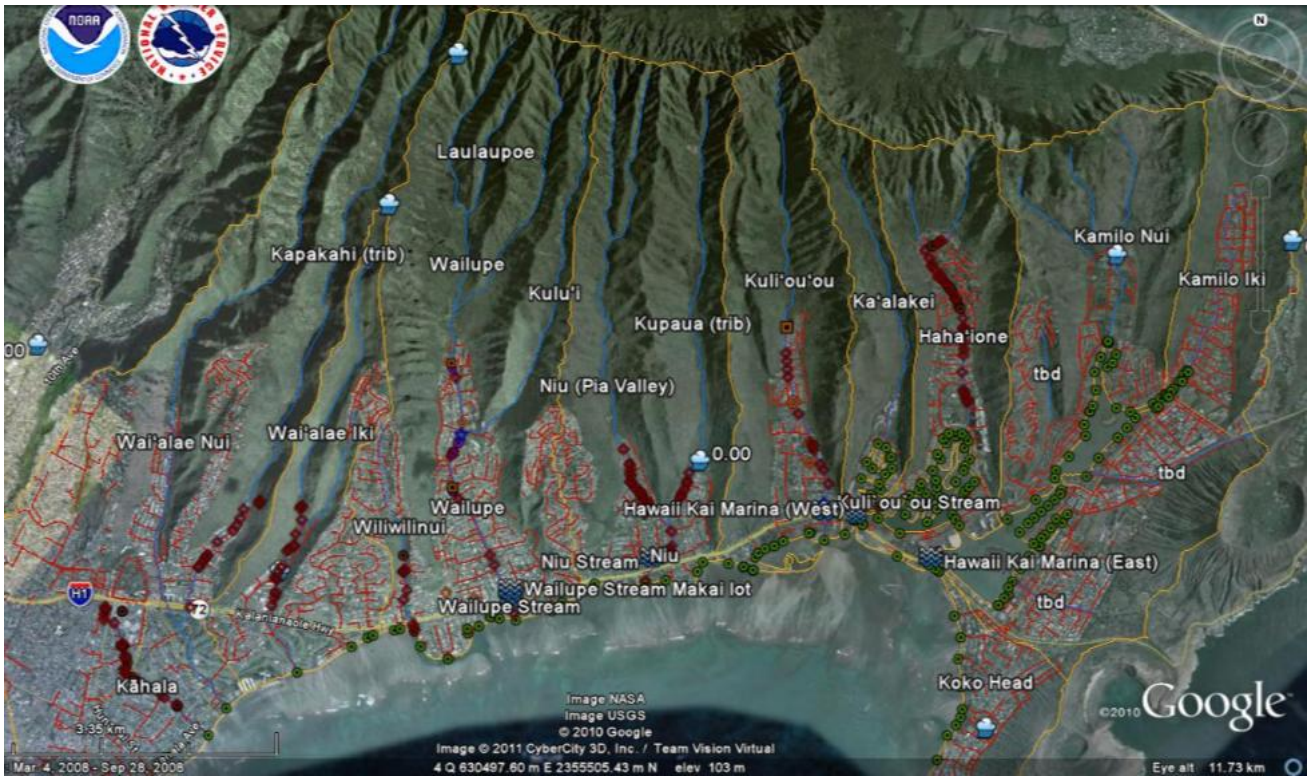
As of 1/18/2011:

- 5 gages installed (2 along wiliwilinui trail in upper Wailupe watershed, 1 at Kalani H.S., 1 at residence in Portlock, and 1 in Kamilonui valley. Had to take 2 down at BWS sites.
- Still need help scouting and installing additional gages and the ongoing tasks of maintenance & downloading data.
- Recommendation: Would have been better to buy fewer but get units with telemetry to allow for remote access to real time data.

Stream Reconnaissance & interactive map:

Thanks to the summer interns we were able to complete the stream reconnaissance of all Maunalua watershed streams/drainage canals. *Take home message from data: There are a lot of pipes connecting directly to streams.*

All of the stream recon. data as well as water quality data (and hopefully at some point, rain gage data) has been incorporated into the interactive online google map and we are just waiting for the new website for that to become available. As in GIS, it will be possible to turn on and off layers if someone wants to see the SMUs or CCH conveyances, etc. Any of our GIS data can be brought into this map. Here is a screen shot of what that map will look like:



◈Points of Concern Outlets WQ Monitoring Site Malama Maunalua Rain Gage

<u>School Outreach Program</u>:

I have compiled and adapted activities for schools (from Project WET and other sources) that illustrate the main watershed concepts of 1) point/non-point source pollution; 2) every drop counts/ each of us can make a difference; 3) role of vegetative cover in slowing down and retaining runoff; 4) what is runoff and how do we measure it from a site; 5) watersheds- what is it and where is your's?; 6) Build a watershed model and see how impervious cover impacts flow of water; 7) watershed maps and how development can affect a watershed.

We are scheduling visits to local schools using trained volunteers throughout the Spring semester and perhaps beyond to deliver an outreach program with 4 components:
1) Intro to Mālama Maunalua.
2) What is a watershed (short activity) and where does your water go (using big MM map)
3) Hand-on activity (from one of the above)
4) Homework assignment: "Home assessment" worksheet to do with parents and write up things they can do to improve. Teachers would agree to share this information with us.

First visit is scheduled for Jan 28th at Kamiloiki School. Followed by Hahaione School on Feb. 17th. Other schools that I am talking to but have not yet scheduled include Waialae Charter, Niu Intermediate and Aina Haina.

Volunteer training is scheduled for Jan. 29th with 5 volunteers signed up.

In addition we have Punahou, Hahaione and Holy Nativity who are scheduled or interested in coming for an education/ service learning program at the Bay.

*To help support the desire from the community, groups and schools to continue these events, I recommend applying for the NOAA Marine Education and Training Mini Grant Program (RFP just announced on Friday). Funds could go towards supporting salaries, supplies and possibly busses for public schools to make these events more accessible for public schools. Funding level: $15,000

NEMO workshop: Rain Garden Training with Oregon Sea Grant:

As part of the CZM award, I will be hosting colleagues from Oregon Sea Grant March 22-26 to deliver a rain garden training workshop and installing two demonstration rain gardens (wet/dry) to help Hawaii develop its own rain garden program. Additional partners on this workshop will be CTAHR (Land grant/Master Gardener program), Hui O Ko`olaupoko, Hui Ku Maoli Ola and hopefully NRCS. This workshop will be training people to design and install rain gardens with particular consideration to Hawaii-specific engineering, soil and plant selection. Participants will come from watershed groups, agencies, LICH, ASLA among others.

Workshop program:
Day 1-2: Site assessments and workshop planning
Day 3: Training workshop (8 hr)
Day 4-5: Rain garden demonstration installation (1 leeward, 1 windward)

Rain Barrel workshop:

I have compiled training materials and defined a training program but am having difficulty finding enough rain barrels (50) to hold the workshop(s). I would like to approach Costco to see if they would be willing to bring in a shipment of barrels (we can commit to purchase at least 50) and we can do a promotional event to educate people on how to use, install and maintain them at the store.

Need: Set up a meeting with Costco
Deadline for workshop deliverable: June

Homeowner's Handbook:

Working on draft of handbook incorporating a lot of the information Andrew drafted for EDC and some additional Tier II action items. Asked PBR Hawaii to assist with some of the technical guidance as well as graphic support (diagrams).

Alternate TMDL- Impervious Cover:

Alyssa and I are exploring the feasibility of developing an alternative TMDL for Maunalua Bay using impervious cover as a surrogate for multiple contributing pollutants and biological indicator(s) of health.