

Mission Report for CRCP project #917:

Baseline Assessment of Contamination in Faga'alu Bay: January 17th to January 24th, 2014

Background

Faga'alu watershed and Bay, located on the south shore of American Samoa near Pago Pago Harbor, was designated in 2012 by the US Coral Reef Task Force (USCRTF) as a priority watershed for the USCRTF Watershed Partnership Initiative. Significant scientific and management resources are being focused on this system. Part of this management process includes being able to measure ecological change in the system, including potential improvements in coral reef condition and reductions in land based sources of pollution (LBSP).

The watershed has one likely primary source of LBSP stress (a rock quarry generating sediment runoff), but also has several minor potential pollution sources including runoff from roads, poorly functioning septic systems/cesspools, a hospital, a history of piggeries and low intensity agriculture (e.g. bananas), and a now closed bay-side landfill.

In order to measure change, a starting point or "baseline" must be quantified. This study is part of a larger baseline characterization effort, which includes quantification of watershed fluxes of sediments and nutrients, sedimentation rates on corals in the Bay and an assessment of coral reef biological status.

This portion of the study complements these efforts with a quantitative assessment of the pollution present in the Bay.

Project Objectives

- Quantify the magnitude and distribution of sediment contamination in Faga'alu Bay
- Evaluate ambient sediment concentrations as they relate to established sediment quality guidelines (for toxicity to benthic infauna) and national historic levels.
- Compare stream bed sediments from various section of the watershed to observed levels in the Bay in order to determine possible sources.
- Determine the potential of groundwater seepage on the north side of the Bay as a possible source of nutrients and/or contaminants originating from a historic landfill site.
- Integrate contaminant/nutrient data with other ongoing scientific efforts in Faga'alu including: sediment loading, watershed nutrients and transport of sediment in the Bay (San Diego State University and USGS) and biological assessments of the coral reef ecosystem (NOAA-NMFS-CRED).

Accomplishments

Using a stratified random sampling design, 12 sediment sites were sampled in the Bay. Nutrient samples were co-located at the 9 near shore sites. Samples were collected using standard NS&T protocols with a combination of sampling methods, including: wading, snorkeling, SCUBA and sea kayak. Additionally, a targeted site was sampled for sediment contaminants near the elementary school, which was built on an old landfill site. Finally, 4 targeted sites were sampled in the watershed (above the quarry, below the quarry, in an agricultural sub-drainage, and below the hospital). Samples were stored frozen and transported via commercial airline to Hawaii where they were re-frozen and shipped overnight to the NS&T contract lab in Galveston, Texas (TDI Brooks, International). Sediment samples will be analyzed for the standard suite of NS&T analytes including: PAHs, PCBs, chlorinated pesticides, butyltins and heavy metals. Nutrient samples will be analyzed for nitrate, nitrite, ammonium, urea, total nitrogen, orthophosphorus and total phosphorus. Additionally, NOAA personnel assisted USGS with water quality sampling related to measuring terrigenous inputs to reefs.

Additional Activities

Several coordination meetings were held during this visit to American Samoa, including:

- Meeting with Mayor Uso of Faga'alu to discuss future projects that will help to implement the village's watershed management and conservation plan – i.e. rain garden installation
- Informal meeting with George Poysky, Samoa Maritime quarry owner, to discuss the engineering design plan for the quarry site, needed permits, location for transporting excess fill material during installation of retention ponds from the plan, administrative needs for NFWF to disburse funds to implement mitigation activities
- Round table discussion with local and federal partners to share information about projects currently happening in and around Faga'alu. NOAA, USGS, SDSU, DMWR, ASEPA, NMSAS, CRAG present.
- Meetings with local partners to discuss how the CRCP-funded work in Faga'alu can best meet needs of the jurisdiction and coordinate with existing efforts – DMWR Director, Ruth Matiga; Domingo Ochovilla, Alica Lawrence;; ASEPA – Christianera Tuitele and Jewel Potoae; CRAG – Kristine Bucchianeri

Next Steps

Sediment samples will be analyzed for the standard suite of NS&T analytes including: PAHs, PCBs, chlorinated pesticides, butyltins and heavy metals. Nutrient samples will be analyzed for nitrate, nitrite, ammonium, urea, total nitrogen, orthophosphorus and total phosphorus. Data will be available before the end of FY14. Data products will include an integrated technical memorandum, possible peer reviewed journal articles and scientific presentations.

Field Personnel:

David Whittall, NOAA-NOS-NCCOS

Susie Holst, NOAA-NOS-OCRM

Wendy Cover, NOAA-NOS-NMS

For more information please contact: Dave Whittall, dave.whittall@noaa.gov, 301-713-3028x138 or Susie Holst, Susie.holst@noaa.gov, 603-862-1205.