Working Title:

# Assessing the effectiveness of sediment management in a small, tropical watershed, American Samoa

# Outline:

*Goal for the manuscript:*

This manuscript describes the actions taken in the Faga’alu watershed, specifically at the quarry, to reduce sediment discharge to the adjacent coral reef, and provides an analysis of their effectiveness in relation to pre-mitigation (disturbed) and natural background conditions.

## Introduction

**Background of the problem:** In Faga’alu watershed, sediment yield during baseflow and stormflow was significantly increased by the operation of an open aggregate quarry and the more common disturbances associated with village areas. In 2014 a sediment mitigation plan was put into effect to retain sediment yield from the quarry.

**Specific knowledge gap:** How effective was the sediment mitigation plan at reducing SSY during baseflow and stormflow?

**So we did “X” to learn “Y”:** Using in situ measurements of water discharge and suspended sediment concentration, storm event sediment yields were measured above and below the quarry before and after the mitigation to assess it’s effectiveness for a range of storm event sizes.

## Study Area

*Background info on specific study area:*

* Basic background on location, size, climate, land use
* Discussion of USCRTF program and activity timeline
* Description of the mitigation activities, structures, timeline

## Methods

O*utline the methods used - both instruments and specific calculations;*

* Event-based analysis:
  + As opposed to Annual totals or Q-SSC changes
  + quantifying sediment contributions from the quarry and village
  + disturbance ratio
* Comparison of Qmax-SSY models pre- and post-mitigation
* Field data collection
  + Precipitation
  + Water discharge
  + Suspended Sediment Concentration
  + Turbidity

## Results

*Results are the data - not methods. You can compare the results to other studies to put them in context, but don't explain why you think you're seeing the patterns you're seeing - that's for the*

* Changes in SSC of grab/autosamples
  + Mean is lower at FG2 and FG3 but there are still some high values.
* Contributions from Upper, LOWER\_QUARRY, LOWER\_VILLAGE
  + Changes in sSSY from Upper, Lower, Total watersheds
  + Changes in DR
* Qmax-SSY models
  + Lower?

## Discussion

*Wrap it all up with the big take-away message*

* Mitigation fixed baseflow by routing the groundwater around the site and off the haul roads
* Mitigation fixed stormflow by capturing most stormflow in retention ponds
* Introduce sedimentation monitoring in the bay

## Conclusion