

US EPA ARCHIVE DOCUMENT

Assessing coastal waters of American Samoa: Territory-wide survey data provide a critical “big-picture view” for this tropical archipelago

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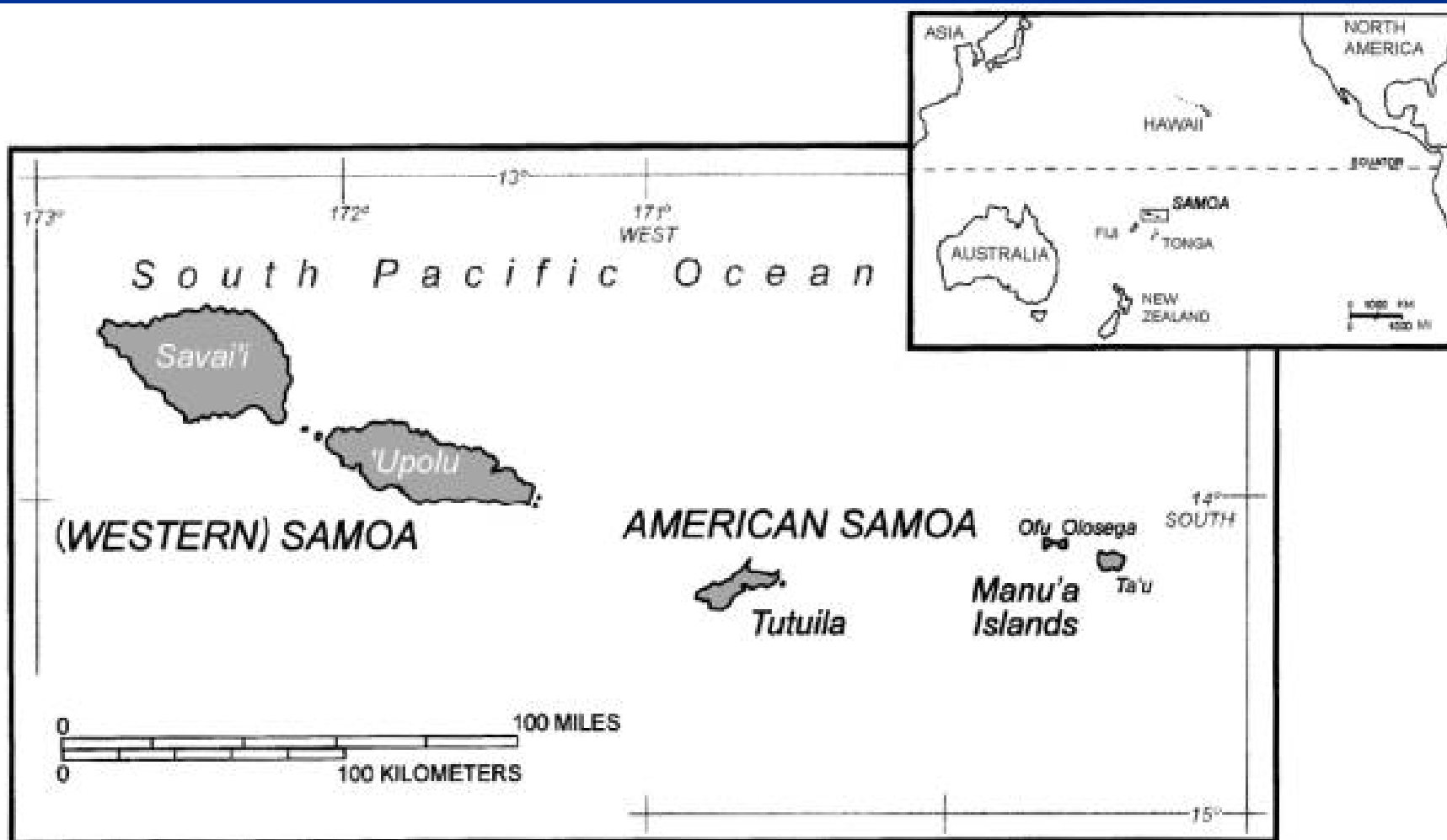
Presentation Outline

- American Samoa—some perspective
- 2004 coastal water quality survey
- Survey results—what we learned, and why it's valuable
- NCA monitoring—pluses and pitfalls

American where?



The Samoan Archipelago

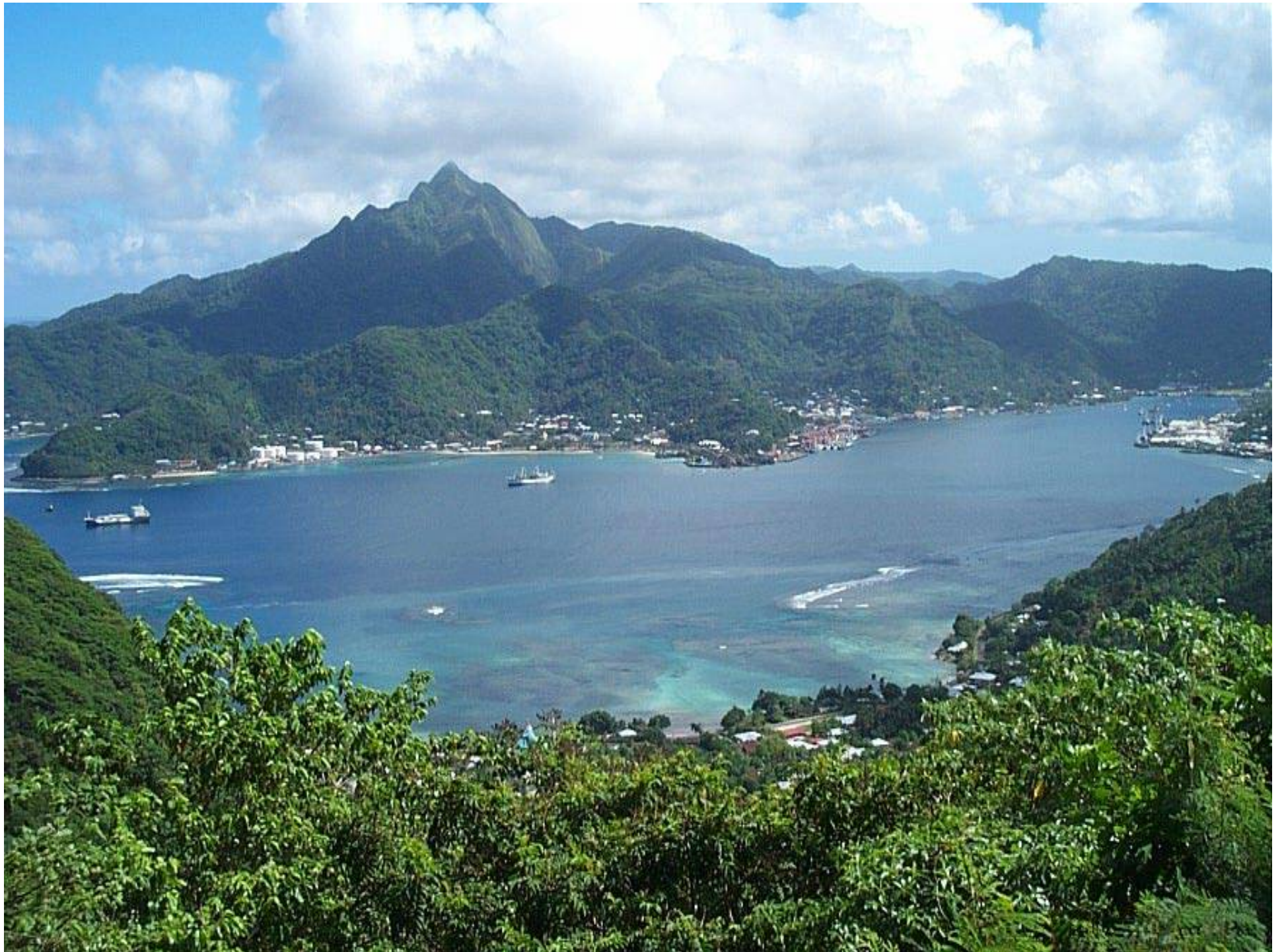




Island Vistas



Photo credits: C. Hawkins, E. DiDonato



When it rains. . .

May, 2003

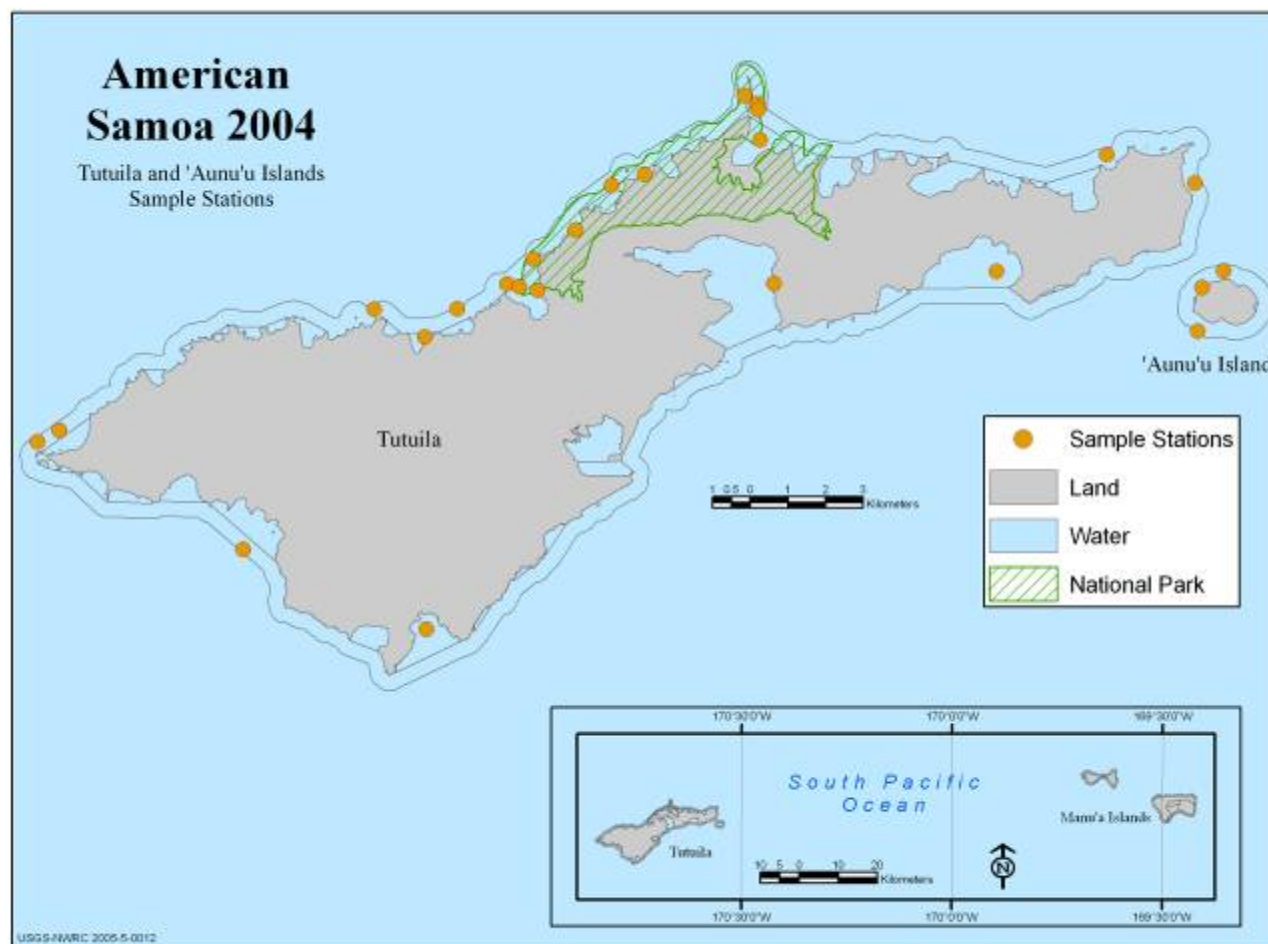
Photo credit: C. Hawkins



Study Objectives

- Using NCA methods, comprehensive water quality survey for Territory's near-coastal habitats
 - Focus on 5 main high islands
 - Near-coastal=major embayments+ $\frac{1}{4}$ mile out
- Provide robust data set for baseline
- Compare NPS with Territorial waters

Random Sampling Sites



Data Collected

- **Water Quality Parameters**
 - Hydrography, Nutrients, Chl *a*, TSS, Clarity, *Enterococcus*
- **Sediment Contaminants**
 - TOC, PAHs, PCBs, Pesticides, Metals
- **Fish Whole-body Contaminants**
 - PAHs, PCBs, Pesticides, Metals

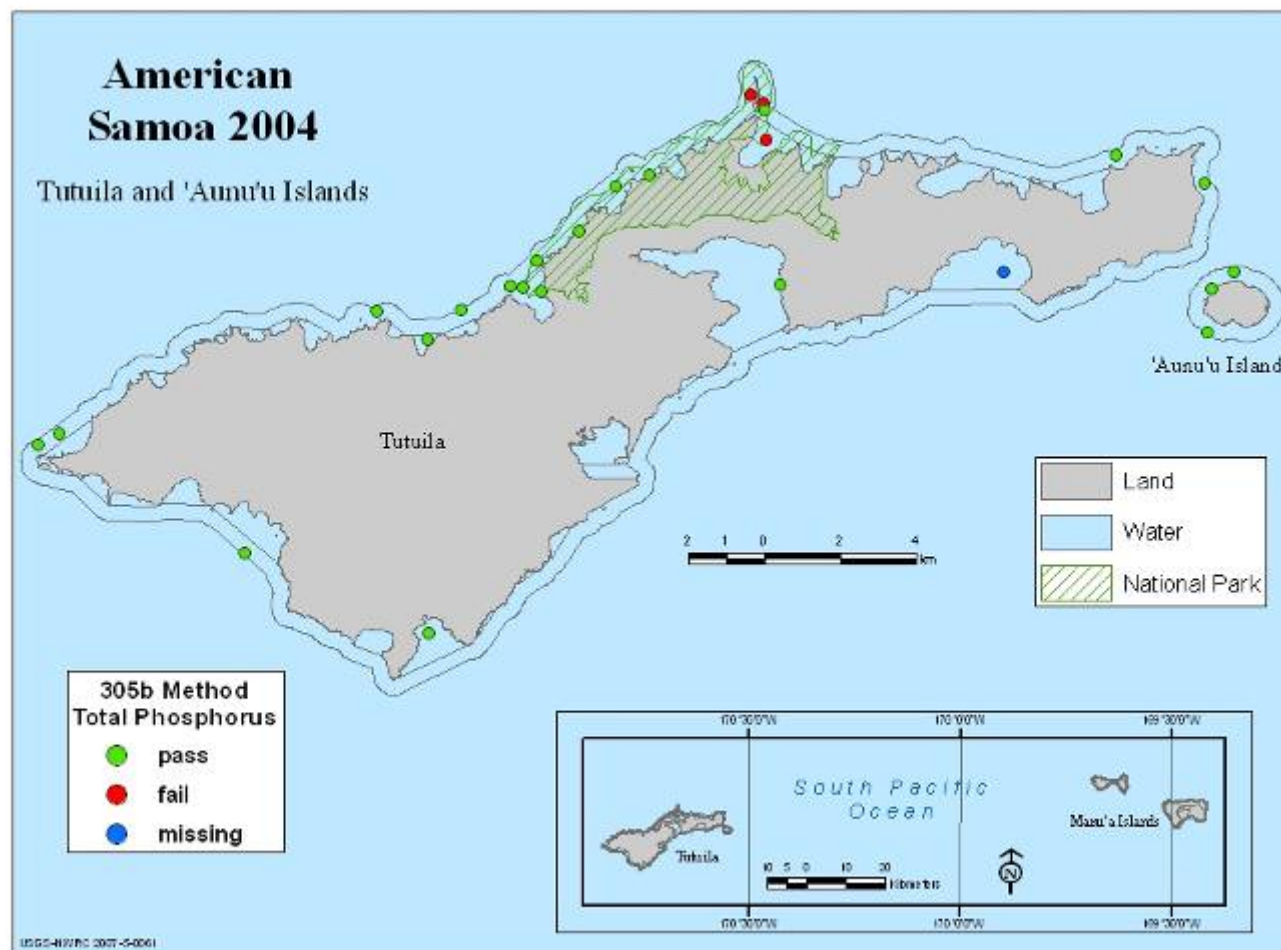
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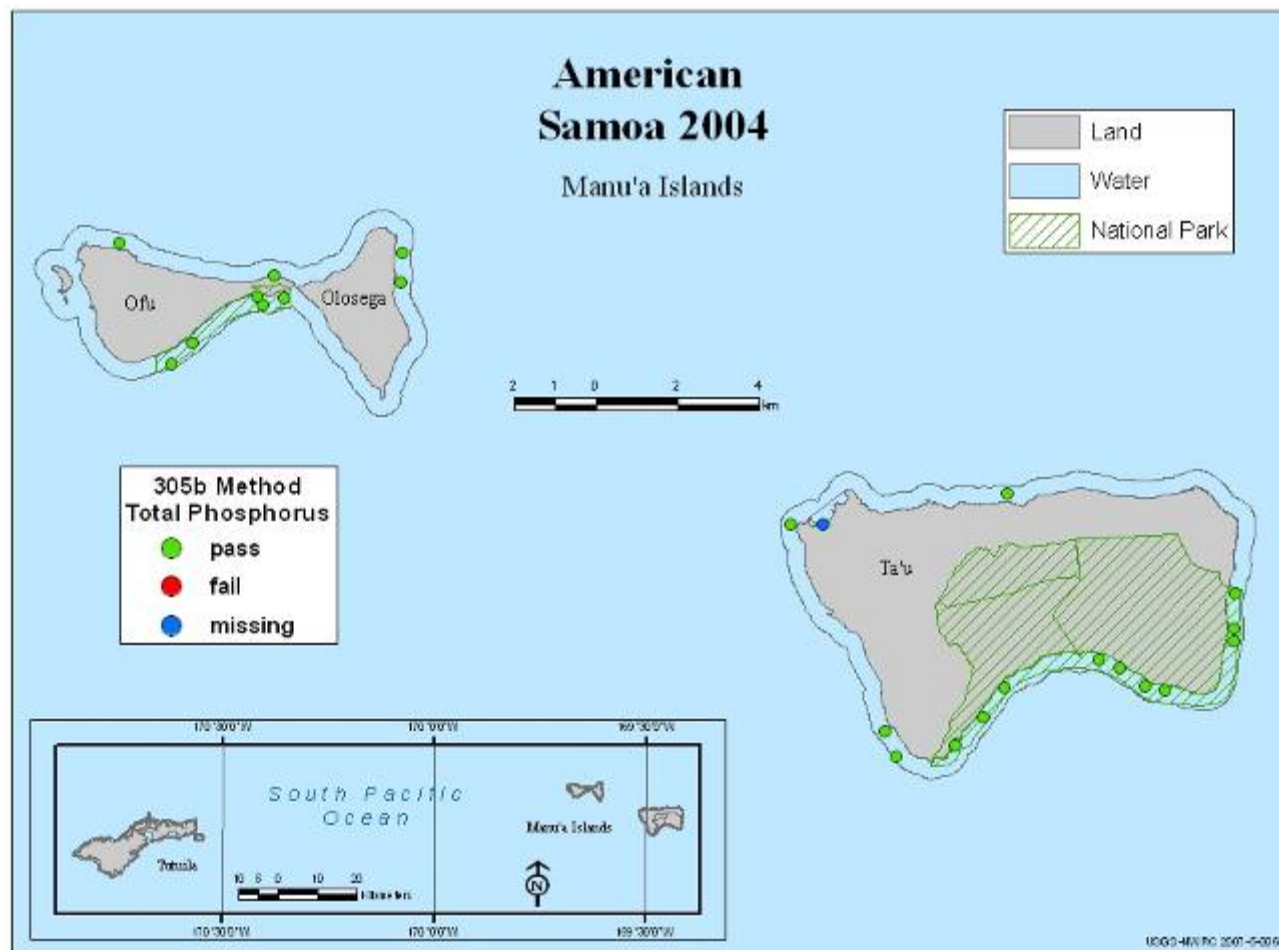
AS Water Quality Standards

Parameter	Pago Pago Harbor	Open Coastal
Total P (mg/L)	0.03	0.015
Total N (mg/L)	0.2	0.13
Chlorophyll ($\mu\text{g/L}$)	1	0.25
Light Penetration (ft)	65	130
DO (% sat, mg/L)	>70%, 5.0	>80%, 5.5
pH	6.5 – 8.6	6.5 – 8.6
<i>Enterococcus</i> (CFU/100 mL)	104	124

Total Phosphorus

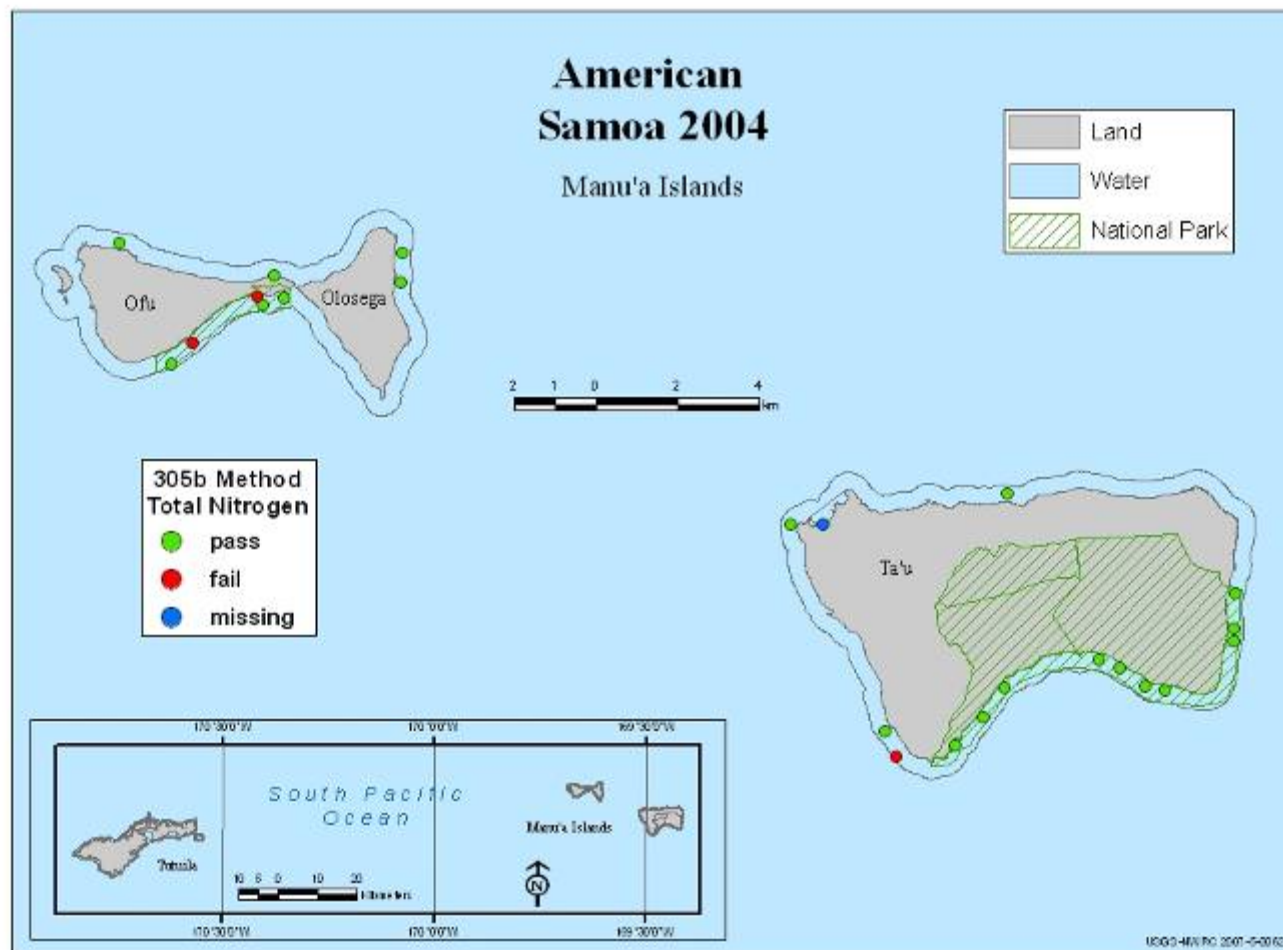


Total Phosphorus

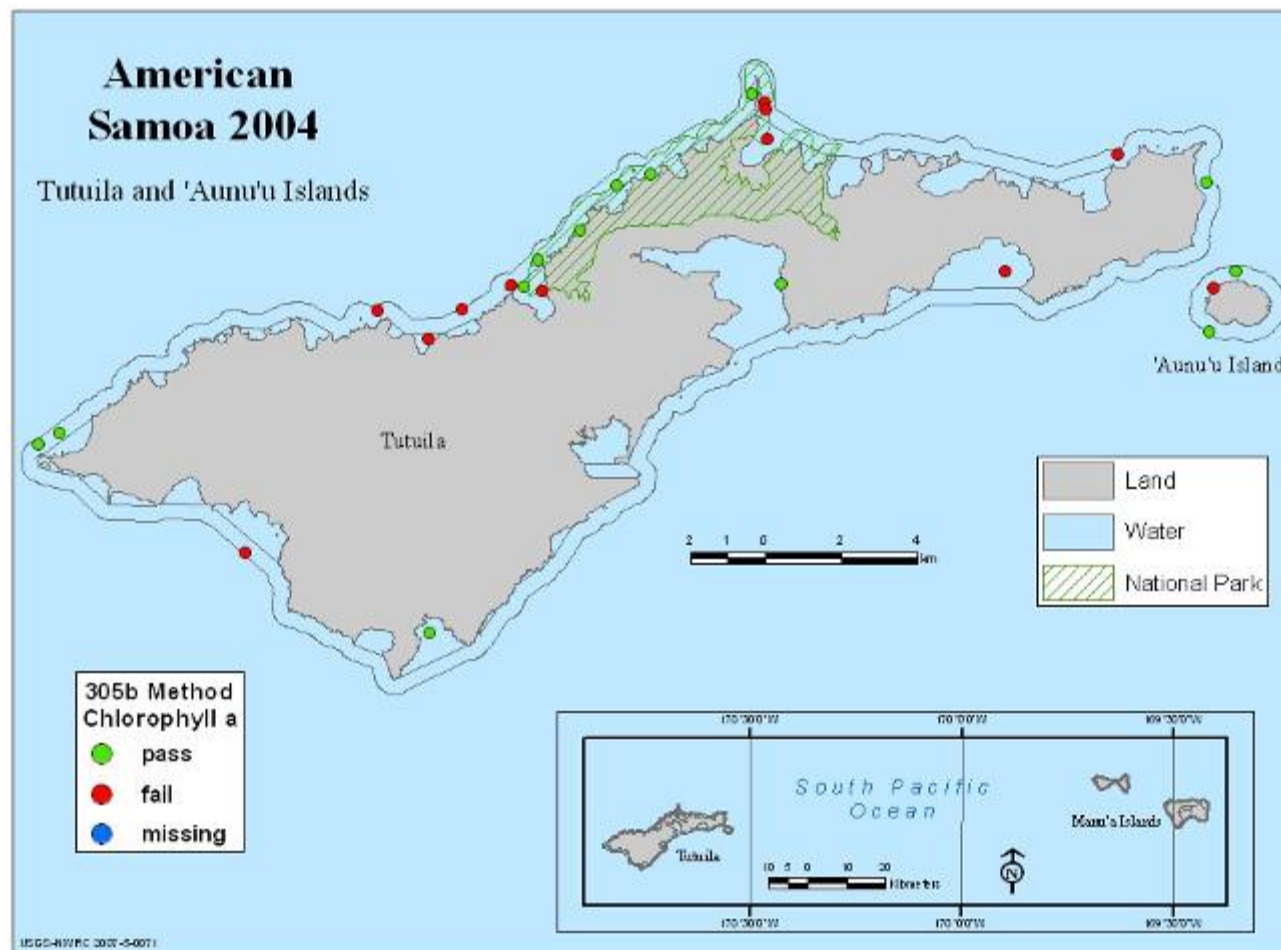




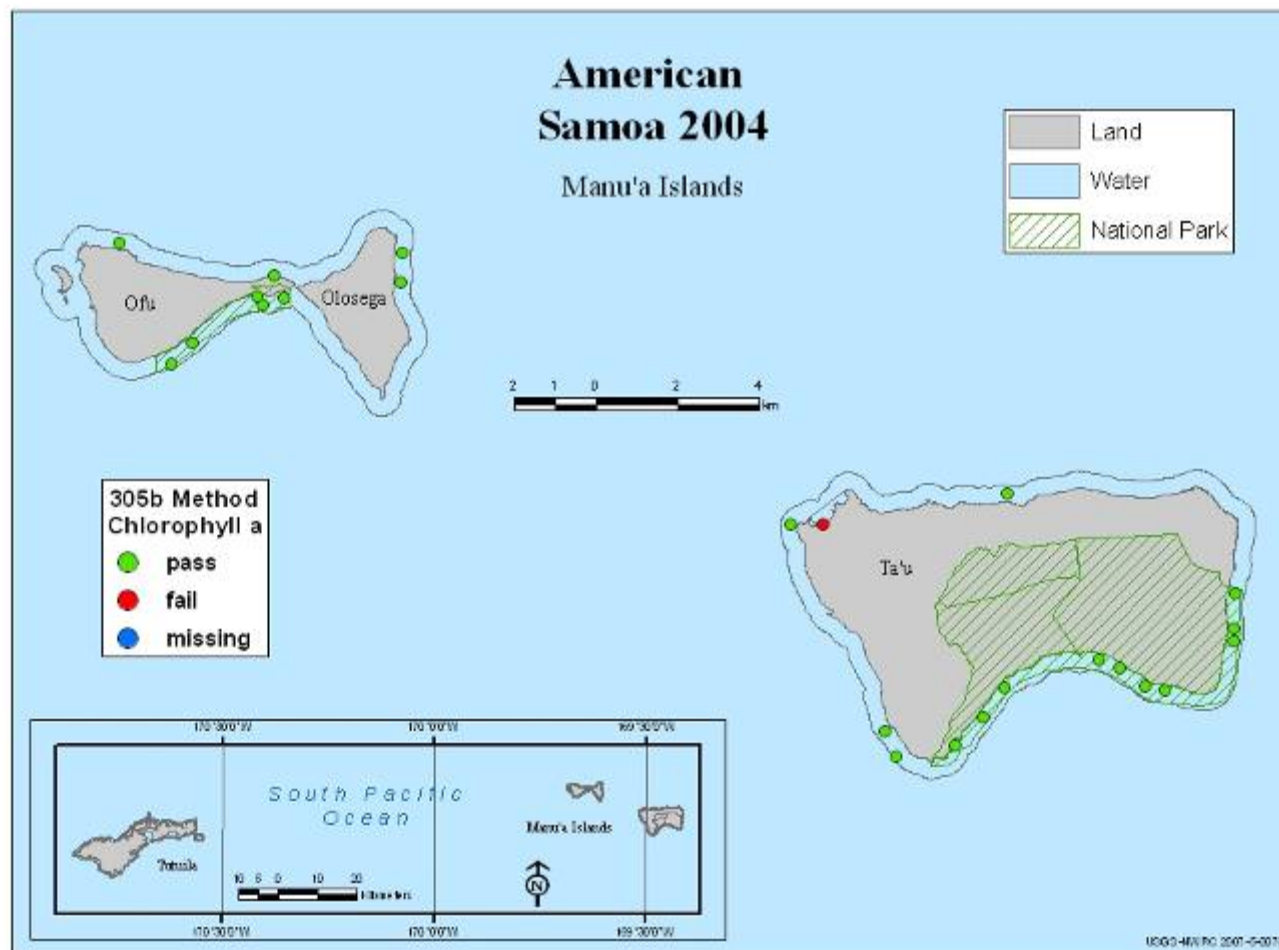
Total Nitrogen



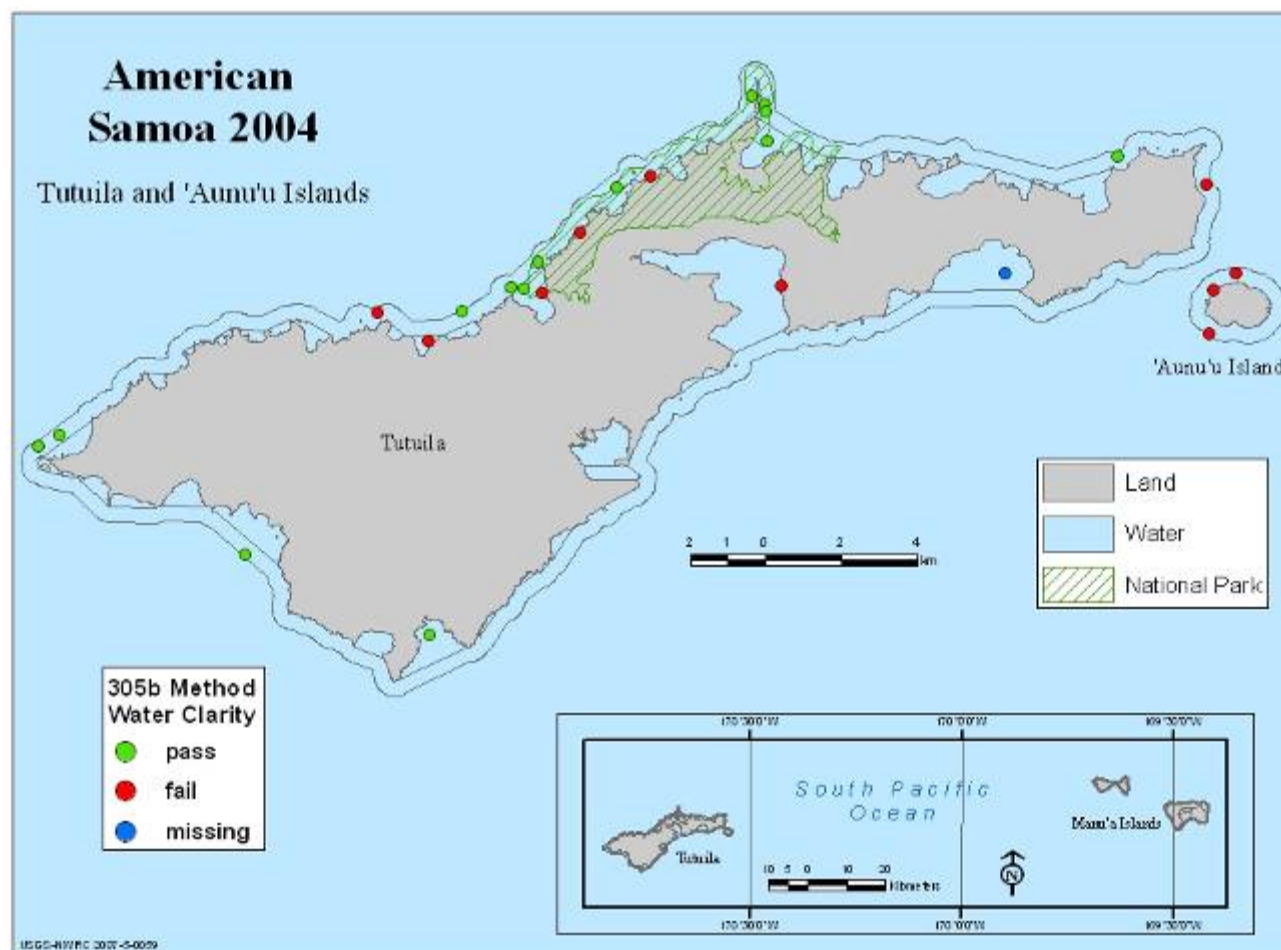
Chlorophyll a



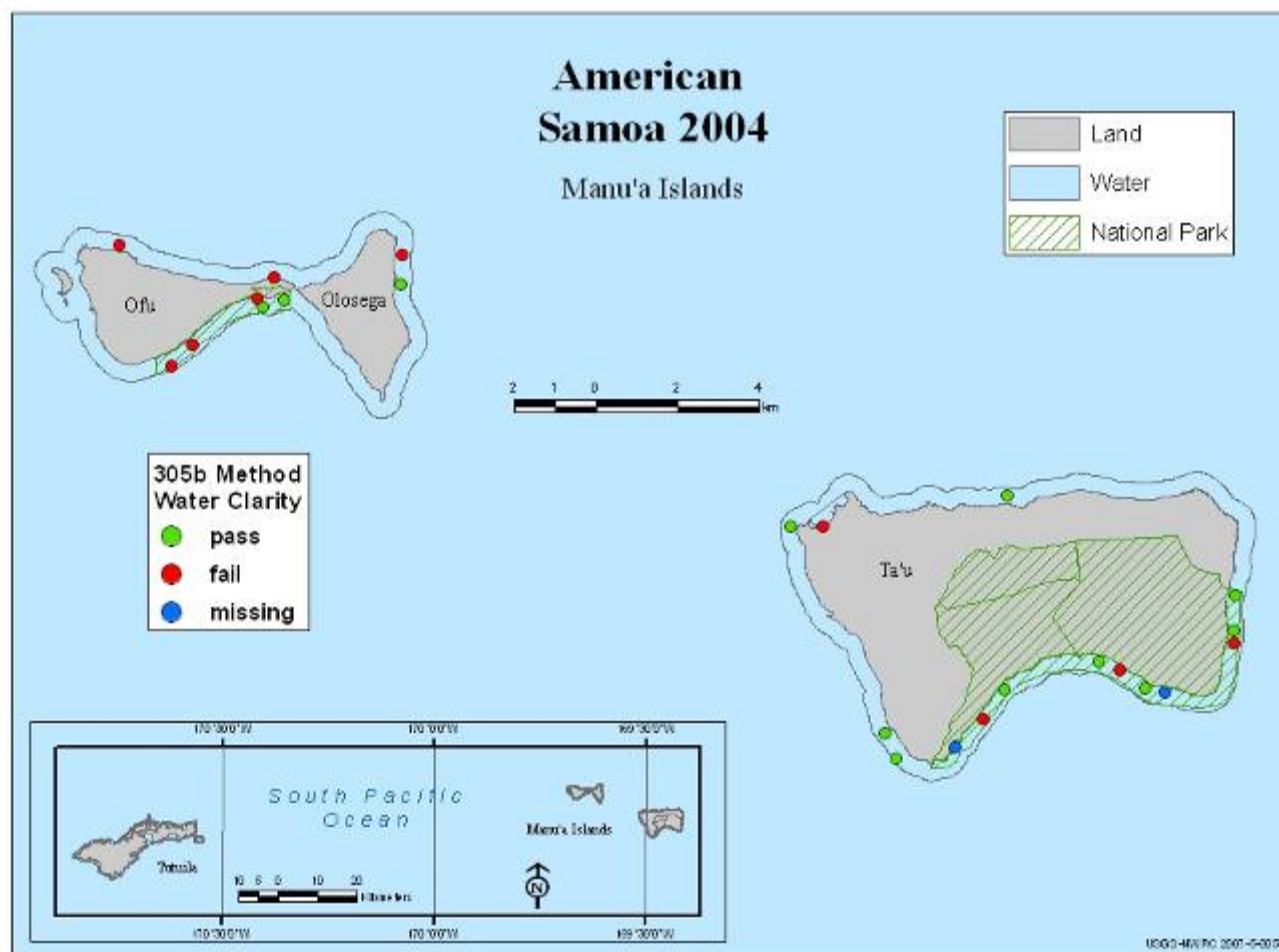
Chlorophyll a



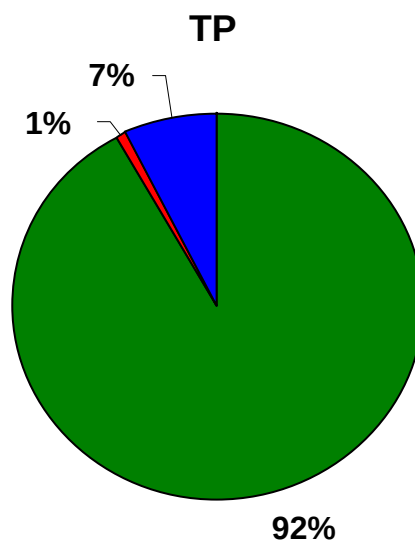
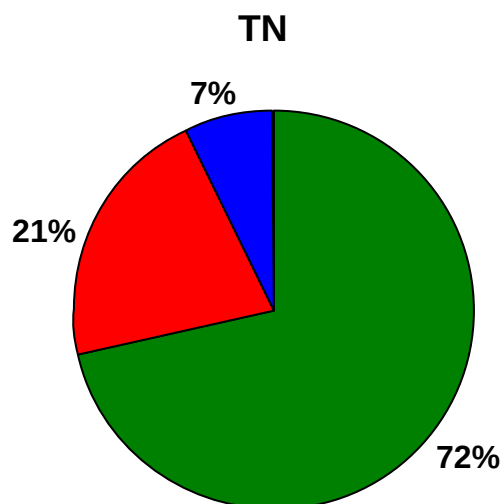
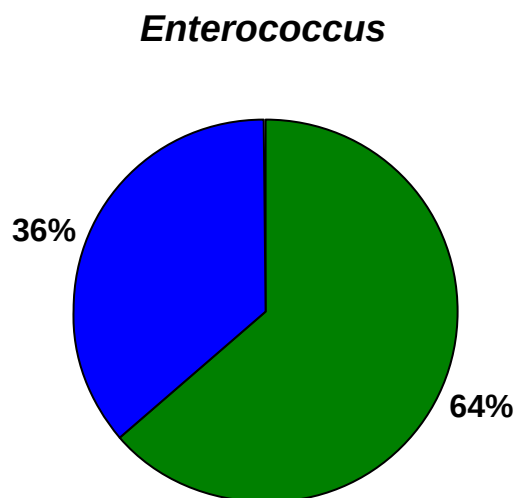
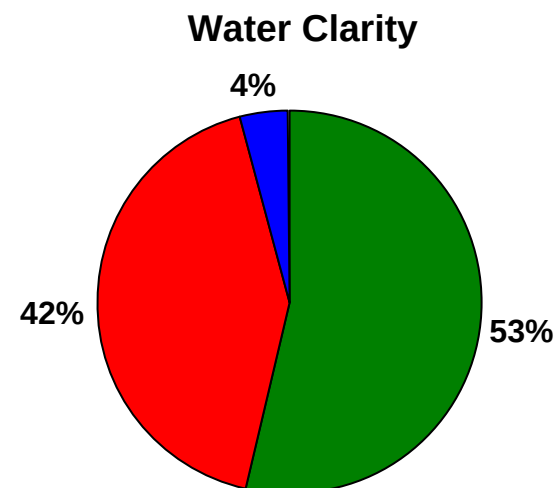
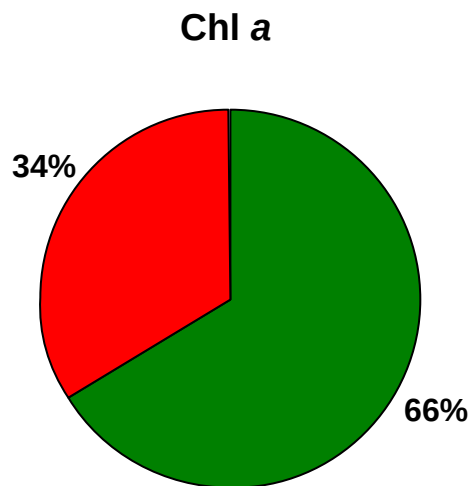
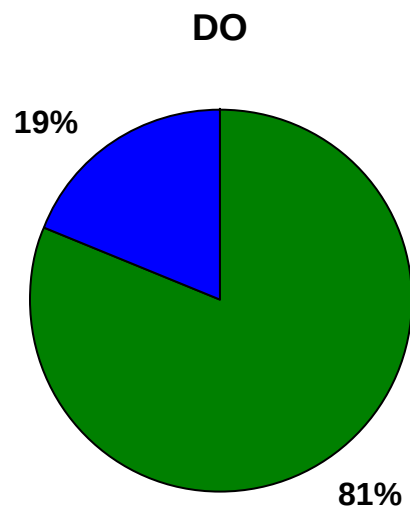
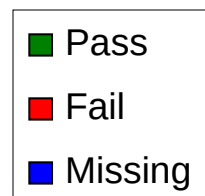
Water Clarity



Water Clarity



All Parameters



Territory Wide WQ

- These data provide the first Territory-wide assessment of coastal water quality
- Stations that failed for 2 or more parameters:
~23% of the Territory's coastal waters
 - Water clarity, Chl a, TN--most common offenders
- Valuable for 305(b) reporting requirements

Benefits of NCA design

- **Robust estimate at the Territory-level**
 - NCA design is ideal for territory-wide resource
 - Provides “baseline” for future work
- **Standard indicators/field methods**
- **Comparability**
 - ASEPA standards used here, but NCA criteria for tropical estuaries could be applied as well

Challenges and Pitfalls

- Remote location
 - NEVER underestimate the challenges of a remote location!!
- Inappropriate indicators and/or field methods
 - Sediment contaminants in a hardbottom envt
 - Benthos???
 - Hook and line fishing
- Cost



Acknowledgements

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 - Fale Tuilagi, NPSA
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Thank you