



Draft Workshop Report



Tutuila Groundwater Sustainability Workshop

The following is a report from a formal workshop, attended by 16 participants and organized by the American Samoa Environmental Protection Agency (AS-EPA) and members of the University of Hawaii Water Resources Research Center (WRRC) at the AS-EPA headquarters in Pago Pago, AS on April 10th 2017. Participants from American Samoa EPA, American Samoa Power Authority, American Samoa Community College, U.S. Marine Sanctuaries and the American Samoa Government were in attendance.

The workshop had the following objectives:

- Inform participants and local water resources stakeholders about the U.S. Environmental Protection Agency Region IX - Making a Visible Difference Program.
- Present outcomes of the AS-EPA Making a Visible Difference Program phase I project: Tutuila Hydrogeologic Exploration: a comprehensive resource consisting of existing hydrogeologic information and new hydrologic monitoring data to support the future development of tools such as water availability models, groundwater flow models, and surface water models.
- Open channels of, and encourage communication between local water resources stakeholders and other supporting agencies such as UH-WRRC.

The workshop commenced with a presentation that was intended to prime attendees on basic hydrogeology in the context of a high Pacific Island.

Presentation Summary

Presenter: Christopher Shuler, University of Hawaii WRRC

On Tutuila, the main island in the territory of American Samoa, contamination of existing aquifers is a primary water resources challenge and has been necessitating a Boil-Water-Advisory for nearly a decade. The development of new groundwater resources is one of the key strategies of addressing this important issue. However, there is a deficiency in hydrological information and hydrogeological models for American Samoa needed to make sound, scientifically-based development decisions to provide safe drinking water for the island. Phase I of this project included compilation of pertinent hydrological, geological, climatological and geographic information for the development of an updated conceptual hydrological model of Tutuila and to recommend priority areas where exploratory drilling could be used to validate conceptual models. Phase II focuses on obtaining new climatological, surface water, and aquifer data. This information is used to support the development and use of a water budget model specifically targeted on assessing water resources availability in new reservoirs of interest.

Water resources issues brainstorming session

Facilitator: Mia Comeros, AS-EPA

Following the presentation, attendees helped to develop a list of water resources issues, solutions, and other related topics of concern in American Samoa. The purpose of this exercise was to gauge current understanding and to summarize the existing knowledge of issues and threats to water resources. Additionally, this session served as a platform to share relevant and on-going water resources initiatives and to provide a means for participants to identify and plan for their respective agency management actions. Participants were asked to bring forward groundwater or water resources concerns that are relevant to their respective organizations. Issues were posted onto a whiteboard and participants were then asked to brainstorm ways to address the issues that they or others posted with possible solutions, or present existing solutions that are already being implemented. The results of this activity are given in Table 1 below.

Table 1: Water resource sustainability challenges, potential solutions, and progress in American Samoa

Groundwater sustainability issues	Possible solutions	Outcomes or activities in progress
Over pumping of production wells.	<ul style="list-style-type: none">- Subsidize alternative sources, e.g. rainwater collection tanks.- Trains of Low Impact Development practices.-Explore viability of using village water systems.	<ul style="list-style-type: none">- Assessment of high-level water sources.- Current drilling in Mountain-Front zones.
Salt water intrusion, and high salinity wells.	<ul style="list-style-type: none">- Pump less from each well.- Decrease demand (conservation).	<ul style="list-style-type: none">- Current development of inland well sites.
Surface water contamination in wells, GUDI wells.	<ul style="list-style-type: none">- Shut down GUDI wells, use as monitoring wells.	<ul style="list-style-type: none">- Currently developing replacement wells.
Leaking water lines (non-revenue water) loss of ≈70%.		<ul style="list-style-type: none">- Ongoing modeling studies.- Active leak detection.
Lack of enforcement for wastewater disposal and water pipe connections.	<ul style="list-style-type: none">- Communication with legislature.	
Land use/ surface source aquifer contamination including: <ul style="list-style-type: none">- Agricultural chemicals- Bacteria- Land-fill leachate- pig waste- pesticides- wastewater- pharmaceuticals- petrochemicals/solvents	<ul style="list-style-type: none">- Banning harmful pesticides.- Additional hydrogeologic study of landfill -> ocean flow paths.- Development of special management areas.- Enforcement of special management areas.	<ul style="list-style-type: none">- Malaeimi Valley Special Management area study and proposal from 2007 (not enacted).- ASPA wastewater programs.

MVD workshop summary conclusions and recommended future actions

The remainder of the workshop consisted of discussion of the topics that are listed above. Outcomes and conclusions are listed below.

- Connect with local lawmakers to enhance enforcement abilities of regulatory agencies.
- More research and information is needed for assessment of village water system viability.
- Contamination concerns necessitate exploration for new water resources.
- There is a strong need for special management areas to protect sensitive water resource production zones.
- The economic viability of developing high-level water is unknown, due to low certainty in extents and magnitudes of reservoirs.

Participant List:

Name	Organization	Email
Mia Comeros (facilitator)	American Samoa Environmental Protection Agency	mia.comeros@epa.as.gov
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Workshop photos:



Photo 1: Participants brainstorming water resources issues

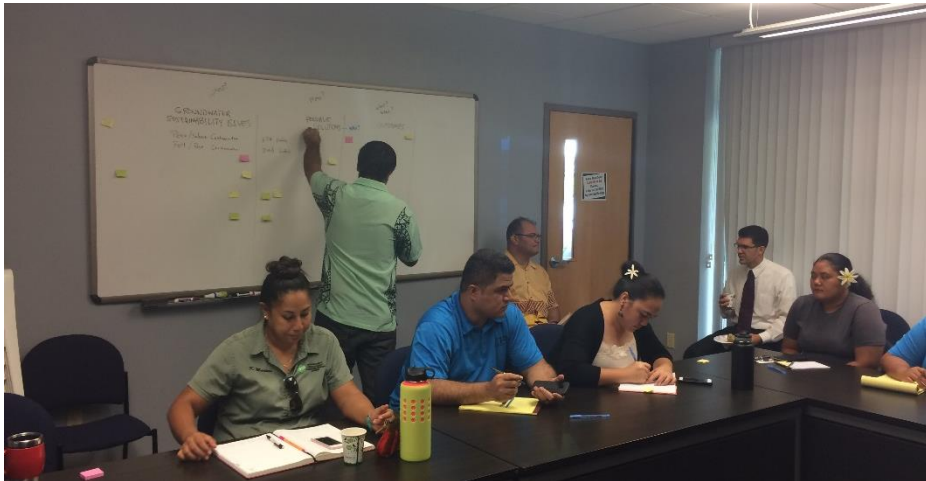


Photo 2: Posting issues and solutions for group discussion

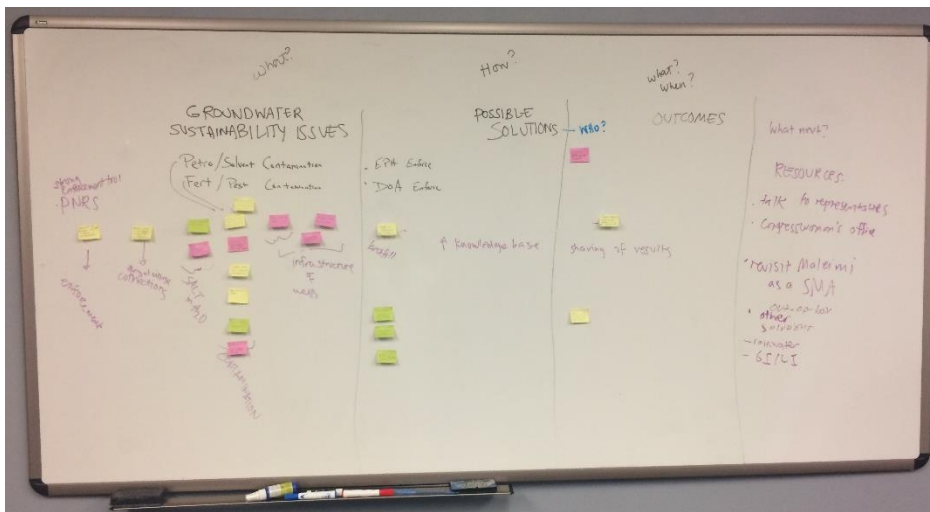


Photo 3: In progress compilation of issues, solutions, and outcomes.