



**SOPAC**



## **REGIONAL MEETING OF STAKEHOLDERS IN WASTEWATER MANAGEMENT**

**10-15 October 2001  
Majuro, Marshall Islands**

*January 2002*

*SOPAC Miscellaneous Report 451*

*Compilers*  
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## **ACKNOWLEDGEMENT**

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**Internet inquiries for full contents of Appendices C & G, please write to the SOPAC Secretariat.**

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## INTRODUCTION

In the framework of the Global Programme of Action for the protection of the marine environment from land-based activities (GPA), SPREP and SOPAC joined forces in organising a Regional Meeting for Stakeholders in Wastewater Management in the Pacific. The meeting was organised from 10-15 October 2001, in Majuro, Marshalls Islands, with the objective to discuss a draft policy statement on wastewater and to develop a regional framework for action.

The meeting brought together representatives from 15 Pacific Island countries, American Samoa, Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, New Zealand, Niue, Papua New Guinea, Palau, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu, technical experts from in and outside the region, regional and international organisations (SOPAC, SPREP, SPC, PWA, WHO, UNESCO, UNEP/GPA), potential donors and NGO's, to complete the Pacific Wastewater Policy Statement and the Pacific Wastewater Framework for Action. Both documents were submitted to the Governing Council of SOPAC and endorsed by the respective governing council national representatives.

The meeting was made possible through financial assistance provided by GPA/UNEP Co-ordination Office, the governments of Belgium, New Zealand and Taiwan/ROC. The assistance of all countries in facilitating this meeting is gratefully acknowledged.

## RECORD OF PROCEEDINGS

**WEDNESDAY, 10 OCTOBER 2001**

### Opening

Opening speeches were provided by Hon. Tadashi Lometo, the Assistant Minister of Health and Environment from the Republic of the Marshall Islands, Russell Howorth, Programme Manager of SOPAC, and Cees van de Guchte from the UNEP/GPA Coordination Office.

### Session 1 Introduction

*Organisation of the meeting.*

John Bungitak, Director, Republic of the Marshall Islands Environmental Protection Agency (RMIEPA) was elected chairperson of the meeting.

A presentation of the Global Programme of Action for the protection of the Marine Environment from land-based pollution (GPA) was provided by Cees van de Guchte.

An introduction to the Programme of the meeting and the Pacific Strategic Action Plan Background Document was provided by Marc Overmars (SOPAC). A CD Rom was distributed containing all relevant background documents and a database on environmentally sound wastewater technologies.

### Session 2 Case Studies and Gaps Identified

The following presentations were provided in which gaps were identified and the need shown for action on wastewater.

Ed Burke (OPUS)	Overview Wastewater Pacific (Guidelines)
Bill Brewer (AMEC)	Impact on Marine Environment
Leonie Crennan (ANU)	Public Awareness, Social and Gender (slideshow)
David Midmore (CQU)	Wastewater Reuse in the Pacific Islands

### Session 3 Guidance for Decision-Makers

Cees van de Guchte (GPA/UNEP) presented an outline of the Guidance document for decision-makers prepared by GPA/UNEP Coordination Office and how the document links to the objectives of the Regional Wastewater Meeting.

**THURSDAY, 11 OCTOBER 2001**

### Session 4 Draft Policy Statement

An introduction to the draft Pacific Wastewater Policy Statement was provided by Clive Carpenter (SOPAC). The group was split into two Working Groups that discussed and amended the draft Policy Statement. The groups were requested to appoint a chairperson and rapporteur.

The amendments were discussed in a plenary session and presentations were provided by the representatives of American Samoa and SOPAC.

A drafting committee was set up to finalise the amendments suggested in the plenary session.

## **FRIDAY, 12 OCTOBER 2001**

A presentation was provided of the amended version of the Policy Statement, which was adopted by the meeting after final changes had been incorporated.

### **Session 5 Case Studies and Lessons Learned**

Presentations were provided by the following resource persons indicating some of the lessons learned in implementing wastewater projects:

Carol Steinfeld (SustStrat)	Appropriate Technologies (slideshow)
Natasha Stacey (SPREP)	International Waters (Demonstration Projects)
Floyd Robinson (FSP)	Community based intervention (Awareness)
Michele Vanderlanh-Smith (SPC)	Environmental Health Programme
Bill Brewer (SPM)	Financing Options (Public-Private partnerships)
Don Sharp (WHO)	Environmental Health in the Pacific
Cees van de Guchte (GPA)	GPA Review Meeting Montreal

A selection of the presentations is provided in Appendix G.

## **SATURDAY, 13 OCTOBER 2001**

### **Session 6 Actions and Recommendations**

A suggested outline of the Framework for Action was prepared based on the draft Policy Statement following five Guiding Principles. The outline provided a list of the actions and responses from the Background Document under each guiding principle and subsequent policies.

The meeting decided to split up into working groups and using the outline provided as the basis to determine an overall outcome and actions to be taken for each of the five guiding principles on a regional, national and local level.

In the afternoon a field trip was organised by RMIEPA and MWSC to the Laura area of Majuro.

## **SUNDAY 14 OCTOBER 2001**

The five working groups prepared the draft Framework for Action for each Guiding Principle.

**MONDAY, 15 OCTOBER 2001**

**Session 7 Endorsement of Pacific Wastewater Framework for Action**

*Outcomes*

The meeting developed and finalised two documents namely the Pacific Wastewater Policy Statement and the Pacific Wastewater Framework for Action. The Pacific Wastewater Policy Statement sets out a framework of guiding principles and policies to guide future development and co-operation by the Pacific Island Countries (PICs). The Pacific Wastewater Framework for Action comprises a list of proposed actions to be undertaken at national and regional levels to achieve the goals that are laid out in the Pacific Wastewater Policy Statement and which refers to the GPA Strategic Action Plan and Guidance on Wastewater (UNEP/GPA, WHO, UNCHS-Habitat & WSSCC).

The meeting agreed that the Pacific Wastewater Policy Statement and Framework for Action provide valuable tools to develop national policies and strategies to support national sustainable development within the existing framework for the region as well as the GPA framework.

The meeting invited the UNEP/GPA Coordination Office to facilitate the presentation of the Pacific Wastewater Policy Statement and Framework for Action at the First Intergovernmental Review Meeting of the Implementation of the Global Programme of Action (GPA), scheduled for 26-30<sup>th</sup> November 2001, in Montreal. UNEP/GPA Coordination Office was requested to assist PIC representatives to attend the meeting and provide opportunities to interact with donors to secure funding for demonstration projects.

*Recommendations from the Meeting*

The meeting recommended that the text of the Pacific Wastewater Policy Statement and the Pacific Wastewater Framework for Action be submitted to the SOPAC Governing Council for its consideration and endorsement.

The meeting recommended that following the SOPAC Council Meeting, the Secretariat pass the policy and framework for action to other regional organisations and other policy bodies as appropriate for consideration.

The meeting recommended that a Pacific Wastewater Focal Group be established to continue the dialogue on wastewater in the region.

The meeting recommended that Pacific Island Countries develop National Frameworks for Action and establish National Wastewater Focal groups.

*Statements from the Meeting*

The meeting appreciated the financial support of the Government of Belgium, through the UNEP/GPA Coordination Office, and the Government of New Zealand to organise the Regional Wastewater Meeting. The meeting further acknowledged the support of the Republic of the Marshall Islands for hosting the meeting and the support from the Government of Taiwan/ROC.

The meeting acknowledged the support of the CROP organisations, SOPAC and SPREP for organising the meeting, and all member countries and organisations represented who provided resource persons.

## **Session 8 Future scope on Wastewater**

Announcement was made of the UNEP/GPA initiative to try to seek funds (of up to 1,000,000 USD per region) for pilot projects supporting 3-5 different projects that address one or more of the issues relevant to the GPA guidance. An outline was provided with project criteria and how proposals should be submitted to the UNEP/GPA Coordination Office.

## **Closure**

Words of appreciation were expressed by Clive Carpenter on behalf of SPREP and SOPAC. The Government of the Marshall Islands was thanked for hosting the meeting as well as the governments from Belgium, New Zealand and Taiwan/ROC for their financial contribution.

Cees van de Guchte thanked SPREP and SOPAC for their collaborative efforts to facilitate the establishment of the Policy Statement and wished them success in organising further activities within the framework of the Global Programme of Action.

The meeting was closed by the chair John Bungitak at 17:00 on Monday 15 October 2001.



# **APPENDICES**

**A. PROGRAMME**

**B. LIST OF PARTICIPANTS**

**C. BACKGROUND DOCUMENTS (on CD only)**

**D. OPENING SPEECHES**

**E. POLICY STATEMENT**

**F. FRAMEWORK FOR ACTION**

**G. PRESENTATIONS (on CD only)**

**H. FIELD TRIP AGENDA**

## **APPENDIX A: PROGRAMME**



**SOPAC**

*Regional Meeting for Stakeholders in Wastewater  
Management*

**10 – 15 October 2001  
Majuro, Marshall Islands**



## **PROGRAMME**

**WEDNESDAY 10 OCTOBER 2001**

### **Opening**

08:00 – 09:00 Registration  
09:00 – 10:00 Speeches by:

RMI	Hon. Tadashi Lometo, Assistant Minister of Health and Environment
SOPAC	Russell Howorth, Programme Manager
GPA/UNEP	Cees van de Guchte

10:00 – 10:30 Coffee / Tea / Photograph

### **Session 1 Introduction**

10:30 – 11:00 Organisation of the meeting  
11:00 – 13:00 Introduction to the Pacific Wastewater Strategic Action Plan Background Document  
13:00 – 14:00 Lunch

### **Session 2 Case Studies and Gaps Identified**

Presentations by Experts:

14:00 – 14:30	Ed Burke (OPUS)	Waste Management in Pacific SIDS
14:30 – 15:00	Bill Brewer (AMEC)	Wastewater Management and Impact on Environment
15:00 – 15:30	Coffee / Tea	
15:30 – 16:00	Leonie Crennan (ANU)	Public Awareness, Social and Gender Issues
16:00 – 16:45	David Midmore (CQU)	Wastewater Reuse in the Pacific Islands

### **Session 3 Guidance for Decision-Makers**

Guidance for Decision-Makers prepared by GPA/UNEP Coordination Office

16:45 – 17:45 Introduction to GPA and Guidance document by Cees v/d Guchte  
19:00 – 20:00 Cocktails

**THURSDAY 11 OCTOBER 2001****Session 4 Draft Policy Statement**

09:00 – 09:30 Introduction to draft Policy Statement and identification of Working Groups

Working Groups discuss and amend the draft Policy Statement on Wastewater Management

10:30 – 11:00 Coffee / Tea

13:00 – 14:00 Lunch

15:00 – 15:30 Coffee / Tea

15:30 – 18:00 Plenary session and presentations of Working Groups

**FRIDAY 12 OCTOBER 2001****Session 4 Draft Policy Statement Continued**

09:00 – 12:00 Discussion on draft Policy Statement

**Session 5 Case Studies and Lessons Learned**

12:00 – 12:30	Carol Steinfeld (Sust. Strategies)	Alternative Technologies
12:30 – 13:00	Natasha Stacey (SPREP)	International Waters Demonstrations Project
13:00 – 14:00	Lunch	
14:00 – 14:30	Floyd Robinson (FSP)	Community Based Intervention
14:30 – 15:00	Michele Vanderlanh-Smith (SPC)	Environmental Health Programme
15:00 – 15:30	Coffee / Tea	
15:30 – 16:00	Bill Brewer (SPM)	Public Private Partnerships
16:00 – 16:30	Don Sharp (WHO)	Environmental Health in the Pacific
16:30 – 17:00	Cees van de Guchte (UNEP/GPA)	GPA Review meeting Montreal

**SATURDAY 13 OCTOBER 2001****Session 6 Actions and Recommendations**

09:00 – 12:00 Plenary session

Working groups determine overall outcome and actions to be taken for each of the five guiding principles

Guiding Principle 1 (Policies, Regulations and Enforcement)

Guiding Principle 2 (Institutional Arrangements, Infrastructure and Information)

Guiding Principle 3 (Planning and resources)

Guiding Principle 4 (Awareness and social issues)

12:00 – 17:00 Field trip organised by RMIEPA to Laura

**SUNDAY 14 OCTOBER 2001**

Rest day and preparation of the draft Framework for Action by individual Working Groups

**MONDAY 15 OCTOBER 2001**

**Session 7 Endorsement of Pacific Wastewater SAP**

09:00 – 10:30 Working Group Presentations of Framework for Action

10:30 – 11:00 Coffee / Tea

11:00 – 13:00 Discussion on Framework for Action

13:00 – 14:00 Lunch

14:00 – 15:00 Endorsement of the Draft Pacific Wastewater Policy Statement and Framework for Action

**Session 8 Future Scope on Wastewater**

15:00 – 16:30 UNEP/GPA initiative on pilot projects supporting issues relevant to Wastewater

**Closure**

16:30 – 17:00 Wrap up and closure of the meeting

## **APPENDIX B: LIST OF PARTICIPANTS**



**SOPAC**

*Regional Meeting for Stakeholders in Wastewater  
Management*

**10 – 15 October 2001  
Majuro, Marshall Islands**



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## **APPENDIX C (on CD only): BACKGROUND DOCUMENTS**

1. Consultation for Stakeholders In Sewage Management New Zealand (SOPAC MR0425)
2. Consultation Meeting for Stakeholders In Sewage Management Samoa (SOPAC MR 426)
3. Announcement Montreal GPA Review Meeting: First Announcement: 1/12/01 First Intergovernmental Review Meeting on the Implementation of the Global Programme of Action for the Protection of the Marine Environment from Land Based Activities. Montreal Canada 26-30 November 2001.
4. IGR-GPA 1-4 SAP Sewage Progress Report: GPA Strategic Action Plan to Address Municipal Wastewater as a Major Land Based Pollutant Affecting Coastal Zones and Marine Eco-Systems.
5. IGR-GPA 1-5 Process Approach Recommendations: First Intergovernmental Review Meeting on the implementation of the Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities. Montreal, Canada. 26-30 November 2001. Item 5 of Provisional Agenda. Process and Approach to Develop Recommendations for Decision-Making on Municipal Wastewater.
6. Partners in Implementing the GPA Regional Seas. Issue 1.2.
7. Revised Guidance on Municipal Wastewater Version 1-1: Guidance on Municipal Wastewater (Draft Working Document). Practical Guidance for Implementing the Global Programme of Action for the Protection of the Marine Environment from Land Based Activities GPA on Sewage.

## **APPENDIX D: OPENING SPEECHES**

1. Statement by the Acting Minister of Health and Environment (Hon. Tadashi Lometo) on the Regional Meeting for Stakeholders in Wastewater Management, Majuro, Republic of the Marshall Islands.
2. Statement of Russell Howorth, Programme Manager of SOPAC on Regional Meeting for Stakeholders on Wastewater Management.

**STATEMENT BY THE ACTING MINISTER OF HEALTH AND ENVIRONMENT ON  
THE REGIONAL MEETING FOR STAKEHOLDERS IN WASTEWATER MANAGEMENT**

MAJURO, MARSHALL ISLANDS, OCTOBER 10, 2001

Distinguished delegates; Ladies and gentlemen

It is an honor for me to open the "Regional Meeting for Stakeholders in Wastewater Management". The Marshall Islands government is proud to host this important meeting

Wastewater management is one of the more pressing concerns of each of our countries as we are faced with the challenge of meeting the demands of a wide variety of economic and development activities, while at the same time, taking into careful consideration the potential adverse effects of such activities on the well being of our people and environment.

The Pacific Islands share a special commonality, we share environmental issues that are very similar because we come from islands that are not only similar in culture, but are small and vulnerable to environmental degradation. In our small region, the well-being of our people is directly linked to the health of the marine environment. The oceans play an important role in global climate regulation, through moderating temperatures by absorbing heat in tropical areas and releasing it in temperate zones through the action of currents. Pollution, habitat destruction, and depletion of marine life are sapping the ability of the marine environment to sustain human needs.

Ladies and gentlemen, a very important issue that the Marshall Islands constantly battles is sewage problems. It has been indicated in studies that sewage is a major source of pollution in almost every country in the Pacific, affecting the marine, coastal and freshwater environments. And this serious matter has "pooled" us together in cooperation with our regional organizations such as SOPAC and SPREP, as well as international initiatives like the Global Program of Action, to find ways to improve and enhance the situation. Our difficulties in dealing with the issue arise from problems such as economies shaped by distance and isolation, a shortage of fresh water, cultural sensitivities and financial issues. But, we always look at what is necessary to the survival and the betterment of our people.

In this regard, wastewater management is an essential issue that needs decisive steps for improvements. We need to develop or strengthen policies and measures that will stimulate further improvements and understanding.

In addition, the health of our people is considerably dependent on the issue at hand. Poor wastewater disposal contributes to both water resource pollution and seafood contamination. Therefore, new initiatives must be taken in addition to institutions already in place. Long term national and regional policy framework to move towards zero sewage problems must be created to achieve sustainable development.

This meeting will bring us together to discuss and exchange experiences on our wastewater management systems, and will ultimately result in the formulation of a Regional Wastewater Action Plan.

Before I declare the Regional Meeting on Wastewater open it would be remiss of me if I did not acknowledge the donors who have provided the resources for you all to be here in Majuro. In particular, I would like to thank the Government of Belgium through the United Nations Environmental Program, Global Program of Action Coordination Office, and the Government of New Zealand. I would like to acknowledge also Republic of China for its support to the Government of the Marshall Islands, which has enabled us to host this meeting and the SOPAC Governing Council to follow.

Our goal is to work together to ensure a speedy process that will produce a Regional Wastewater Action Plan that is tailored to the special needs of each of our countries, while at the same time reflecting our unique ability to come together as one "Pacific Family" in the spirit of promoting regional coordination and cooperation.

Ladies and gentlemen, I am privileged once again to welcome you to the beautiful Marshall Islands. I hope that your travel has been pleasant and that during your stay, you may take time to enjoy our islands and the warm hospitality of the Marshallese people. And, without further delay, on behalf of the government and people of the Republic of the Marshall Islands it is my great honor and pleasure to declare this Regional Meeting for Stakeholders in Wastewater Management officially open.

I wish you all the very best in your deliberations throughout the workshop. God Bless.

Hon. Tadashi Lometo  
Acting Ministry of Health and Environment

**STATEMENT OF RUSSELL HOWORTH, PROGRAM MANAGER, SOUTH  
PACIFIC APPLIED GEOSCIENCE COMMISSION (SOPAC) ON THE REGIONAL  
MEETING FOR STAKEHOLDERS IN WASTEWATER MANAGEMENT**

Honourable Minister, Delegates, Ladies and Gentlemen,

I would like to share this opening statement with all the meeting organisations from off island.

I thank the Honourable Minister for his kind wishes for this regional consultation meeting.

Your CROP regional organisations, SOPAC, SPREP and SPC, and the utilities group PWA all provide regional technical support and advice on wastewater and waste to Pacific Island Countries. The UNEP Global Programme for Action for the Protection of the Marine Environment from Land-Based Activities, GPA for short, has provided the framework for strategic action plans to be developed on regional level.

This meeting represents the latest chapter in the regional consultation process involving the Pacific Island member countries of both SOPAC and SPREP, resource persons from Fiji, Australia, New Zealand and the USA, and the technical staff of both agencies.

Preliminary consultations in New Zealand and Samoa earlier this year have developed the groundwork upon which this meeting is based. Working groups consisting of Pacific Island delegates in conjunction with SOPAC, SPREP and a wide variety of resource persons have identified the constraints facing sustainable wastewater management and developed initial responses.

It is now the responsibility of the delegates here in Majuro, to finalise and endorse a regional policy on wastewater management and develop a strategic action plan to focus regional, national and local activities.

In making these points I wish to highlight firstly the many hours that many of the delegates here in the room have spent on the task of developing the draft texts before you during the past 10 months and secondly that all of the Pacific Island Countries and Organisations represented today have given of your free time to be here. Your governments and organisations have therefore expressed their commitment to the task before the meeting by directly contributing to the total funding of the process. Thereby supporting the generous direct financial support shared by Belgium, New Zealand and Taiwan ROC.

I am confident that the meeting will facilitate a regional approach towards the sustainable management of wastewater through an appropriate set of recommendations and actions. The draft policy document will be forwarded to SOPAC's Council for endorsement by the National Representatives who will convene immediately after this meeting.

Honourable Minister, through you, I would like to express my gratitude towards the local organising committee for facilitating this meeting. Finally I would like to ask the Global Programme of Action Coordination Office representative Cees van de Guchte, to say a few words.

I wish all participants a successful meeting and fruitful deliberations.

Majuro, 10/10/2001

## **APPENDIX E: PACIFIC WASTEWATER POLICY STATEMENT**

Majuro, 15 October 2001



## VISION

Protect the health of the people and safeguard our fragile environment through improved, effective and efficient management of wastewater.

## INTRODUCTION

The Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA) identifies the priority for action on sewage. In the Pacific region, a consultation process was facilitated by SOPAC, SPREP, PWA and the UNEP/GPA Coordination Office on wastewater management. A Regional Wastewater Management Meeting was held 10-15 October 2001 in Majuro, Republic of Marshall Islands and was the latest in the consultation process, which included preliminary sessions in February and March 2001 in Auckland and Apia. The Majuro meeting was sponsored by the Governments of Belgium, New Zealand and Taiwan/ROC.

The meeting brought together representatives from 15 Pacific Island countries (American Samoa, Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, New Zealand, Niue, Papua New Guinea, Palau, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu), technical experts from in and outside the region, regional and international organisations (SOPAC, SPREP, SPC, PWA, WHO, UNESCO, UNEP/GPA), potential donors and NGO's, to complete the Pacific Wastewater Policy Statement and the Pacific Wastewater Framework for Action.

The development of the PICs has traditionally been hampered by their dispersed populations, small size and vast ocean distances separating them. These circumstances impose large costs on service provision in education, economic development, social welfare, health, travel and communication and have limited the growth of important industries such as fisheries, agriculture and tourism.

Improvements in wastewater management are essential to improve population health and standard of living, thereby increasing economic productivity and education attendance, and reduce the pollution to coastal fisheries and the coastal tourist industry.

***Definition of Wastewater***

It is recognised that different countries and stakeholders have different interpretations of the terms *wastewater* and *sanitation*.

For the purpose of the Pacific Wastewater Framework for Action the terms *sanitation*, *public health and environment* refer to only those aspects of sanitation, public health and environment, which are directly linked to wastewater.

The term wastewater is defined as:

Any combination of discharge (liquor/effluent, sludge/biosolids) into the environment, with or without treatment, is defined as: human excrement (including zero waste discharge systems), effluent, flushing water, industrial water and stormwater (run-off caused by rain).

**GUIDING PRINCIPLE 1:****NATIONAL WASTEWATER MANAGEMENT POLICIES AND REGULATIONS WILL BE APPROPRIATE AND ACCEPTABLE TO THE PEOPLE AND CULTURES OF THE PACIFIC ISLANDS.**

National PIC governments are required to place high priority on wastewater and sanitation issues in order to direct sufficient attention and resources to these areas in national development plans. Regional and national policies should define responsibilities leading to better co-operation between agencies and increased recognition of the linkages between good sanitation, improved public health, economic development, and a cleaner environment. An updated and consistent regulatory framework, combined with effective enforcement, will result in compliance with good practices, reduced pollution, equitable allocation of resources, and increased investment.

**Policy 1.1:** Governments will consider the wastewater and sanitation sector as a priority for improvement and investment.

**Policy 1.2:** Governments will develop national wastewater and sanitation policies and regulations that are consistent with international and national laws, regulations, technical standards, and obligations.

**Policy 1.3:** Governments will develop and implement appropriate wastewater - and associated - regulatory frameworks, compliance and enforcement requirements that benefit the specific cultures, customs, economies and environment of the people of the Pacific.

**Policy 1.4:** Government regulations will require regular system performance reporting.

**Policy 1.5:** Governments and regional organisations will co-operate to develop and sustain regional and national capacities in compliance monitoring, including technical and financial resources and data acquisition.

**Policy 1.6:** Government and service provider decisions on wastewater management will be transparent to improve accountability, donor and investor acceptance.

**Policy 1.7:** Governments and regional organisations, the private sector and NGOs will actively co-operate to ensure that wastewater management policies and plans are integrated into the national development policies and plans and other cross-sectoral initiatives.

**GUIDING PRINCIPLE 2:****APPROPRIATE NATIONAL INSTITUTIONS, INFRASTRUCTURE AND INFORMATION WILL SUPPORT SUSTAINABLE WASTEWATER MANAGEMENT.**

Clearly defined responsibilities for all stakeholder organisations in wastewater management can prevent fragmented and uncoordinated plans and actions and improve linkages to other sectors. A specific national agency responsible for wastewater management can be considered to enhance performance. Strengthened institutional capacities and the collection and dissemination of data and information will support appropriate technology selection, increase system performance, increase the understanding of subsequent environmental and public health impacts, and demonstrate the need for water conservation and natural disaster preparedness.

**Policy 2.1:** Governments will review and specify roles of, and facilitate coordination between existing agencies, and where appropriate, create specific responsible agencies for wastewater management.

**Policy 2.2:** Governments will ensure that wastewater technologies and related infrastructure are appropriate to meet national and local priorities and needs, within the constraints of available finance and other resources, while recognising the need for protection of human health and the environment.

**Policy 2.3:** Governments, service providers, institutions and regional organisations will collaborate throughout the region to improve timely access to and sharing of available data and research on appropriate wastewater technologies and the dissemination and implementation of wise practice guidelines.

**Policy 2.4:** Wastewater reduction (water demand management and conservation, zero discharge toilets) and reuse strategies will be developed and adopted by governments without compromising public health.

**Policy 2.5:** Governments and regional organisations will co-operate to develop and sustain regional and national water quality monitoring programmes and the use of this information (e.g. benchmarking) to improve wastewater management and environmental protection.

**Policy 2.6:** Governments, regional organisations and other stakeholders will cooperate to develop integrated wastewater management plans to effectively address the impacts of contingencies, emergencies and disasters.

**GUIDING PRINCIPLE 3:****BETTER ACCESS TO FUNDING WILL IMPROVE SERVICE DELIVERY, AND DEVELOP THE PRIVATE SECTOR.**

Adequate government financial support, alternative financing mechanisms and improved internal cost-recovery are prerequisites to sustain maintenance and attract external investment.

**Policy 3.1:** Governments, regional organisations, donors, the private sector and NGOs will co-operate to develop innovative approaches to existing funding structures and establish mechanisms to improve cost-recovery.

**Policy 3.2:** Where appropriate, governments, regional organisations and NGOs will co-operate to attract the private sector to invest in wastewater management through private-public partnership and other mechanisms.

**Policy 3.3:** Governments, donors and regional organisations will co-operate to develop appropriate service delivery and funding mechanisms to equitably address the wastewater management needs of both the urban and rural community.

**GUIDING PRINCIPLE 4:****COMMUNITY PARTICIPATION IN WASTEWATER MANAGEMENT AND SANITATION, WILL ENSURE EQUITABLE BENEFIT WITH RECOGNITION OF SOCIO-CULTURAL SENSITIVITIES.**

Wastewater management and sanitation issues should receive a higher public profile. Public awareness by the community of socio-cultural, economic, environmental and public health impacts on wastewater management will ensure ownership.

**Policy 4.1:** Governments, regional organisations and NGO's will co-operate to promote and develop education and awareness of wastewater and sanitation issues within national and local government, while incorporating existing social and cultural values.

**Policy 4.2:** Governments, regional organisations and NGO's will co-operate to promote and develop community education and awareness of public health and environmental issues as related to wastewater while incorporating existing social and cultural values.

**Policy 4.3:** Governments, service providers and NGO's will in partnership with community agencies determine their respective roles and responsibilities, and will develop and implement culturally appropriate strategies and activities to ensure the implementation of wastewater programmes.

**Policy 4.4:** Governments, service providers and NGO's will ensure rural and urban communities will be given opportunities for active participation in the choice, development and implementation of wastewater and sanitation projects and on-going operation and maintenance of its facilities.

**Policy 4.5:** Planning of wastewater facilities will ensure acceptable access for all, with special regard to women, the disadvantaged, the disabled and those in rural and remote communities.

**Policy 4.6:** Service providers will take into account traditional knowledge and practices complemented by new approaches to wastewater management.

**GUIDING PRINCIPLE 5:**

**VIABLE AND SUSTAINABLE LEVELS OF SKILLED AND KNOWLEDGEABLE PEOPLE WITHIN THE WASTEWATER SECTOR AND COMMUNITIES WILL IMPROVE WASTEWATER MANAGEMENT**

Appropriately trained and experienced urban and rural wastewater professionals are needed to develop projects and operate facilities, at both the technical, managerial and community participation levels. Increased training enables communities and individuals to take responsibility for operating and maintaining their systems.

**Policy 5.1:** Governments, regional and international organisations will cooperate to develop and implement effective human resource development programmes for wastewater management and related personnel (including planners, management and enforcement professional) with particular attention to up-skilling the local workforce.

**Policy 5.2:** Governments, local institutions, regional and international organisations will work together in the development of regional and national training courses in support of human resource development programmes.

**Policy 5.3:** Governments, regional organisations and NGOs will promote and facilitate the development and training of communities and individuals to strengthen and assist their participation in wastewater management.

**Policy 5.4:** Governments, regional organisations, donors, the private sector and NGOs will work together to secure funding in support of human resource development policies and training programmes.

## **APPENDIX F: PACIFIC WASTEWATER FRAMEWORK FOR ACTION**

**Majuro, 15 October 2001**



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## I. VISION

Protect the health of the people and safeguard our fragile environment through improved, effective and efficient management of wastewater.

## II. INTRODUCTION

The Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA) identifies the priority for action on sewage. In the Pacific region, a consultation process was facilitated by SOPAC, SPREP, PWA and the UNEP/GPA Coordination Office on wastewater management. A Regional Wastewater Management Meeting was held 10-15 October 2001 in Majuro, Republic of Marshall Islands and was the latest in the consultation process, which included preliminary sessions in February and March 2001 in Auckland and Apia. The Majuro meeting was sponsored by the Governments of Belgium, New Zealand and Taiwan/ROC.

The meeting brought together representatives from 15 Pacific Island countries (American Samoa, Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, New Zealand, Niue, Papua New Guinea, Palau, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu), technical experts from in and outside the region, regional and international organisations (SOPAC, SPREP, SPC, PWA, WHO, UNESCO, UNEP/GPA), potential donors and NGO's, to complete the Pacific Wastewater Policy Statement and the Pacific Wastewater Framework for Action. Both documents will be submitted to governing bodies of regional organisations for their endorsement by the respective governing council national representatives.

The Pacific Wastewater Policy Statement sets out a framework of guiding principles and policies to guide future development and co-operation by the Pacific Island Countries (PICs). The Pacific Wastewater Framework for Action comprises a list of proposed actions to be undertaken at national and regional levels to achieve the goals that are laid out in the Pacific Wastewater Policy Statement and which refers to the GPA Strategic Action Plan and Guidance Document on Wastewater (UNEP/GPA, WHO, UNCHS-Habitat & WSSCC).

The Pacific Ocean covers some 18 million km<sup>2</sup> or about 36% of the earth's surface. Scattered throughout the Pacific are over 30,000 small islands and a number of larger islands (each over 2000 km<sup>2</sup> in area) that emerge from the sea floor of which about 1,000 islands are inhabited.

The natural environment throughout the Pacific Island Countries is extremely fragile and is highly vulnerable to both natural and human impacts. Natural hazards like cyclones, droughts, earthquakes and tsunamis may strike at any time and at most places within the Pacific Region. Human impacts include rapid urbanisation and waste and wastewater generation.

***Definition of Wastewater***

It is recognised that different countries and stakeholders have different interpretations of the terms *wastewater* and *sanitation*.

For the purpose of the Pacific Wastewater Framework for Action the terms *sanitation*, *public health and environment* refer to only those aspects of sanitation, public health and environment, which are directly linked to wastewater.

The term wastewater is defined as:

Any combination of discharge (liquor/effluent, sludge/biosolids) into the environment, with or without treatment, is defined as: human excrement (including zero waste discharge systems), effluent, flushing water, industrial water and stormwater (run-off caused by rain).

### III. OVERVIEW OF THE GUIDING PRINCIPLES

(as stated in the Pacific Wastewater Policy Statement)

#### **GUIDING PRINCIPLE 1:**

**NATIONAL WASTEWATER MANAGEMENT POLICIES AND REGULATIONS WILL BE APPROPRIATE AND ACCEPTABLE TO THE PEOPLE AND CULTURES OF THE PACIFIC ISLANDS.**

National PIC governments are required to place high priority on wastewater and sanitation issues in order to direct sufficient attention and resources to these areas in national development plans. Regional and national policies should define responsibilities leading to better co-operation between agencies and increased recognition of the linkages between good sanitation, improved public health, economic development, and a cleaner environment. An updated and consistent regulatory framework, combined with effective enforcement, will result in compliance with good practices, reduced pollution, equitable allocation of resources, and increased investment.

#### **GUIDING PRINCIPLE 2:**

**APPROPRIATE NATIONAL INSTITUTIONS, INFRASTRUCTURE AND INFORMATION WILL SUPPORT SUSTAINABLE WASTEWATER MANAGEMENT.**

Clearly defined responsibilities for all stakeholder organisations in wastewater management can prevent fragmented and uncoordinated plans and actions and improve linkages to other sectors. A specific national agency responsible for wastewater management can be considered to enhance performance. Strengthened institutional capacities and the collection and dissemination of data and information will support appropriate technology selection, increase system performance, increase the understanding of subsequent environmental and public health impacts, and demonstrate the need for water conservation and natural disaster preparedness.

#### **GUIDING PRINCIPLE 3:**

**BETTER ACCESS TO FUNDING WILL IMPROVE SERVICE DELIVERY, AND DEVELOP THE PRIVATE SECTOR.**

Adequate government financial support, alternative financing mechanisms and improved internal cost-recovery are prerequisites to sustain maintenance and attract external investment.

#### **GUIDING PRINCIPLE 4:**

**COMMUNITY PARTICIPATION IN WASTEWATER MANAGEMENT AND SANITATION, WILL ENSURE EQUITABLE BENEFIT WITH RECOGNITION OF SOCIO-CULTURAL SENSITIVITIES.**

Wastewater management and sanitation issues should receive a higher public profile. Public awareness by the community of socio-cultural, economic, environmental and public health impacts on wastewater management will ensure ownership.

#### **GUIDING PRINCIPLE 5:**

**VIALE AND SUSTAINABLE LEVELS OF SKILLED AND KNOWLEDGEABLE PEOPLE WITHIN THE WASTEWATER SECTOR AND COMMUNITIES WILL IMPROVE WASTEWATER MANAGEMENT.**

Appropriately trained and experienced urban and rural wastewater professionals are needed to develop projects and operate facilities, at both the technical, managerial and community participation levels. Increased training enables communities and individuals to take responsibility for operating and maintaining their systems.

## IV. STRATEGIC ACTIONS

### **GUIDING PRINCIPLE 1:**

**NATIONAL WASTEWATER MANAGEMENT POLICIES AND REGULATIONS WILL BE APPROPRIATE AND ACCEPTABLE TO THE PEOPLE AND CULTURES OF THE PACIFIC ISLANDS.**

**Policy 1.1:** Governments will consider the wastewater and sanitation sector as a priority for improvement and investment.

**Policy 1.2:** Governments will develop national wastewater and sanitation policies and regulations that are consistent with international and national laws, regulations, technical standards, and obligations.

**Policy 1.3:** Governments will develop and implement appropriate wastewater - and associated - regulatory frameworks, compliance and enforcement requirements that benefit the specific cultures, customs, economies and environment of the people of the Pacific.

**Policy 1.4:** Government regulations will require regular system performance reporting.

**Policy 1.5:** Governments and regional organisations will co-operate to develop and sustain regional and national capacities in compliance monitoring, including technical and financial resources and data acquisition.

**Policy 1.6:** Government and service provider decisions on wastewater management will be transparent to improve accountability, donor and investor acceptance.

**Policy 1.7:** Governments and regional organisations, the private sector and NGOs will actively co-operate to ensure that wastewater management policies and plans are integrated into the national development policies and plans and other cross-sectoral initiatives.

### **OVERALL OUTCOME:**

**Appropriate and acceptable integrated national wastewater management policies and regulations in place.**

<b>Proposed Actions</b>	<b>Responsibility</b>
1. Prepare policy or issues paper on the need for prioritising wastewater and sanitation sector for improvements, cross -sectoral actions and integration into national development plans.	Government departments Service providers
2. Education and awareness on policies and regulations across all sectors with special focus on decision makers.	Governments
3. Identify and review policies and regulations on regional and national level and involve stakeholders and regional organizations	Regional organizations Governments
4. Review regulations from other countries and identify those suitable as models for Pacific Island Countries.	Regional organizations
5. Organise a review meeting involving all sectors, to agree on the need or otherwise, for national regulations and to recommend appropriate actions.	Governments
6. Implement recommendations.	Governments
7. Establish appropriate guidelines and systems for reporting on service delivery, and enforcement of regulations.	Governments

**GUIDING PRINCIPLE 2:****APPROPRIATE NATIONAL INSTITUTIONS, INFRASTRUCTURE AND INFORMATION WILL SUPPORT SUSTAINABLE WASTEWATER MANAGEMENT.**

**Policy 2.1:** Governments will review and specify roles of, and facilitate coordination between existing agencies, and where appropriate, create specific responsible agencies for wastewater management.

**Policy 2.2:** Governments will ensure that wastewater technologies and related infrastructure are appropriate to meet national and local priorities and needs, within the constraints of available finance and other resources, while recognising the need for protection of human health and the environment.

**Policy 2.3:** Governments, service providers, institutions and regional organisations will collaborate throughout the region to improve timely access to and sharing of available data and research on appropriate wastewater technologies and the dissemination and implementation of wise practice guidelines.

**Policy 2.4:** Wastewater reduction (water demand management and conservation, zero discharge toilets) and reuse strategies will be developed and adopted by governments without compromising public health.

**Policy 2.5:** Governments and regional organisations will co-operate to develop and sustain regional and national water quality monitoring programmes and the use of this information (e.g. benchmarking) to improve wastewater management and environmental protection.

**Policy 2.6:** Governments, regional organisations and other stakeholders will cooperate to develop integrated wastewater management plans to effectively address the impacts of contingencies, emergencies and disasters.

**OVERALL OUTCOME:**

**Sustainable wastewater management through the use of appropriate institutions, infrastructure and information.**

<b>Proposed Actions</b>	<b>Responsibility</b>
1. Identify: – the key agencies /stakeholders involved with the management of wastewater, and environmental health – their roles and responsibilities – activities they undertake in wastewater and environmental health – lead agencies for specific national activities.	Governments
2. Establish mechanism for maintenance of data collection, on wastewater management (standards, regulations, and monitoring) and environmental health impacts.	Governments Regional organizations UN and donor agencies NGO's
3. Develop national guidelines on wise practice approaches to assessing and managing wastewater system requirements, that incorporate sound environmental health principles.	Governments Regional organizations
4. Review existing wastewater technologies and infrastructure and recommend strategies for improvement.	Governments Service providers NGOs Regional organisations
5. Develop a national monitoring capacity, building on existing and new resources, to provide initial baseline data, and long-term quality assurance.	Governments NGOs Regional organisations
6. Promote awareness of links between and means of integration of, wastewater management plans to effectively address contingencies, emergencies, and disasters.	Governments NGOs Regional organisations

**GUIDING PRINCIPLE 3:****BETTER ACCESS TO FUNDING WILL IMPROVE SERVICE DELIVERY, AND DEVELOP THE PRIVATE SECTOR.**

**Policy 3.1:** Governments, regional organisations, donors, the private sector and NGOs will co-operate to develop innovative approaches to existing funding structures and establish mechanisms to improve cost-recovery.

**Policy 3.2:** Where appropriate, governments, regional organisations and NGOs will co-operate to attract the private sector to invest in wastewater management through private-public partnership and other mechanisms.

**Policy 3.3:** Governments, donors and regional organisations will co-operate to develop appropriate service delivery and funding mechanisms to equitably address the wastewater management needs of both the urban and rural community.

**OVERALL OUTCOME:**

**Improved service delivery through increased access to funding and involvement of the private sector.**

<b>Proposed Actions</b>	<b>Responsibility</b>
1. Carry out a review of systems currently used throughout the region and internationally, for funding wastewater services. Report findings in a form suitable for use by government decision makers.	Governments Regional organisations
2. Develop and implement awareness raising programmes across all levels, on the need for funding mechanisms.	Governments
3. Choose and adopt the most appropriate mechanisms (from above review).	Governments
4. Identify stakeholders, and especially possible private sector partners and establish a national working party (or similar) for discussions/decision making over privatisation of wastewater systems.	Governments
5. Review current wastewater systems and identify areas/aspects that could be improved through the involvement of the private sector.	Governments
6. Invite proposals from the private sector, review and implement.	Governments
7. Establish appropriate guidelines and reporting systems for monitoring service delivery, including financial efficiency, service quality, and service distribution across different sectors of the community (e.g. urban vs. rural).	Governments Regional organisations

**GUIDING PRINCIPLE 4:**  
**COMMUNITY PARTICIPATION IN WASTEWATER MANAGEMENT AND SANITATION, WILL ENSURE EQUITABLE BENEFIT WITH RECOGNITION OF SOCIO-CULTURAL SENSITIVITIES.**

**Policy 4.1:** Governments, regional organisations and NGO's will co-operate to promote and develop education and awareness of wastewater and sanitation issues within national and local government, while incorporating existing social and cultural values.

**Policy 4.2:** Governments, regional organisations and NGO's will co-operate to promote and develop community education and awareness of public health and environmental issues as related to wastewater while incorporating existing social and cultural values.

**Policy 4.3:** Governments, service providers and NGO's will in partnership with community agencies determine their respective roles and responsibilities, and will develop and implement culturally appropriate strategies and activities to ensure the implementation of wastewater programmes.

**Policy 4.4:** Governments, service providers and NGO's will ensure rural and urban communities will be given opportunities for active participation in the choice, development and implementation of wastewater and sanitation projects and on-going operation and maintenance of its facilities.

**Policy 4.5:** Planning of wastewater facilities will ensure acceptable access for all, with special regard to women, the disadvantaged, the disabled and those in rural and remote communities.

**Policy 4.6:** Service providers will take into account traditional knowledge and practices complemented by new approaches to wastewater management.

**OVERALL OUTCOME:**  
**Equitable benefit to the entire community that incorporates social and cultural values through active community participation.**

<b>Proposed Actions</b>	<b>Responsibility</b>
1. Conduct survey and collect information / data on the social and cultural aspects / characteristics of the community population.	Regional organizations National government Local government Community
2. Develop and implement national and local public awareness and education campaigns.	Regional organizations National government Local government Community
3. Use local theatre groups and media in raising awareness programmes. Regional organizations	National government Local government Community
4. Identify key stakeholders to determine their roles and responsibilities within the community.	Governments Service providers NGOs Community / Women
5. Create a task force that has representation of all stakeholders that will facilitate the development and implementation of culturally appropriate strategies and activities of wastewater management programmes. The taskforce will have a fair representation that will include women, disabled and disadvantaged.	All key stakeholders



6. Enhance or improve participation of community in the development and implementation of community-based strategies and activities through / by: – holding regular meetings/seminars/workshops – identifying and reviewing existing systems – developing where appropriate wise alternatives – establishing community capacity building programmes – identifying and securing assistance and funding for community involvement.	Community Governments NGOs Regional organisations
7. Include public information components in costing for all development programmes.	Governments
8. Promote the use of community consultative committees in development programmes.	Community
9. Perform gender assessment studies in wastewater management and where appropriate stress the need for gender issues to be included into project planning.	Governments Regional organisations
10. Conduct research into the traditional practices and determine whether or not these can be adapted to suit the present situation and new development programmes.	Governments Regional organizations NGOs

**GUIDING PRINCIPLE 5:****VIALE AND SUSTAINABLE LEVELS OF SKILLED AND KNOWLEDGEABLE PEOPLE WITHIN THE WASTEWATER SECTOR AND COMMUNITIES WILL IMPROVE WASTEWATER MANAGEMENT**

**Policy 5.1:** Governments, regional and international organisations will cooperate to develop and implement effective human resource development programmes for wastewater management and related personnel (including planners, management and enforcement professional) with particular attention to up-skilling the local workforce.

**Policy 5.2:** Governments, local institutions, regional and international organisations will work together in the development of regional and national training courses in support of human resource development programmes.

**Policy 5.3:** Governments, regional organisations and NGOs will promote and facilitate the development and training of communities and individuals to strengthen and assist their participation in wastewater management.

**Policy 5.4:** Governments, regional organisations, donors, the private sector and NGOs will work together to secure funding in support of human resource development policies and training programmes.

**OVERALL OUTCOME:**

**Wastewater management has improved, as a result of a viable and sustained level of skilled and knowledgeable people within the wastewater sector and communities.**

<b>Proposed Actions</b>	<b>Responsibility</b>
1. Review the need for increased capacity and management training in human resources development and planning.	Governments Service providers Regional organizations Co-operating agencies International counterparts
2. Carry out training needs analysis (TNA) for workforce and community groups to identify gaps in existing training, including communities and individuals. This should include reviews of current programmes, who needs training, the type of training required, and resources needed.	Governments Service providers Regional organizations Co-operating agencies International counterparts
3. Identify funding sources for training programme development.	Governments Service providers Regional organizations Co-operating agencies
4. Develop island specific training programmes and pilot projects, identify resources for delivery (e.g. staffing, equipment etc.), secure funding and implement them.	Governments Service providers Regional organizations Co-operating agencies NGOs
5. Evaluate performance of human resource development planning based on improved wastewater management.	Governments Service providers Regional organizations Co-operating agencies International counterparts
6. Periodically go back to Actions 1 and 2 to assure sustainability.	Governments Service providers Regional organizations Co-operating agencies International counterparts

## **V. CONCLUDING STATEMENTS**

The meeting appreciated the financial support of the Government of Belgium, through the UNEP/GPA Coordination Office, and the Government of New Zealand to organise the Regional Wastewater Meeting. The meeting further acknowledged the support of the Republic of the Marshall Islands for hosting the meeting and the support from the Government of Taiwan/ROC.

The meeting acknowledged the support of the CROP organisations, SOPAC and SPREP for organising the meeting, and all member countries and organisations represented who provided resource persons.

The meeting agreed that the Pacific Wastewater Policy Statement and Framework for Action provide valuable tools to develop national policies and strategies to support national sustainable development within the existing framework for the region as well as the GPA framework.

The meeting recommended that the text of the Pacific Wastewater Policy Statement and the Pacific Wastewater Framework for Action be submitted to the SOPAC Governing Council for its consideration and endorsement.

The meeting recommended that following the SOPAC Council Meeting, the Secretariat pass the policy and framework for action to other regional organisations and other policy bodies as appropriate for consideration.

The meeting invited the UNEP/GPA Coordination Office to facilitate the presentation of the Pacific Wastewater Policy Statement and Framework for Action at the First Intergovernmental Review Meeting of the Implementation of the Global Programme of Action (GPA), scheduled for 26-30<sup>th</sup> November 2001, in Montreal. UNEP/GPA Coordination Office was requested to assist PIC representatives to attend the meeting and provide opportunities to interact with donors to secure funding for demonstration projects.

The meeting recommended that a Pacific Wastewater Focal Group be established to continue the dialogue on wastewater in the region.

The meeting recommended that Pacific Island Countries develop National Frameworks for Action and establish National Wastewater Focal groups.

## **APPENDIX G (on CD only): LIST OF PRESENTATIONS**

1. Waste Management in Pacific SIDS, Ed Burke (OPUS).
2. Wastewater Management and Environmental Impact in the Pacific Basin: A Perspective, Bill Brewer (AMEC)
3. Public Awareness, Social Issues, Gender, Leonie Crennan (ANU).
4. Sustainable Strategies Appropriate Technologies (Alternatives), Carol Steinfeld. (Sustainable Strategies).
5. Strategic Action Programme for the International Waters for the Pacific SIDS, Natasha Stacey (SPREP).
6. Promoting a Healthy Environment. A case Study of the Wai Bulabula and Coral Gardens Initiative. Cuvu District, Nadroga, Fiji, Floyd Robinson (Foundation for the People's of the South Pacific, Fiji).
7. Environmental Health in Micronesia, Michele Vanderlanh Smith (SPC).
8. Financing Options, Mixed Capital-Public-Private Partnerships, Bill Brewer (Sustainable Project Management).
9. Environmental Health In the Pacific, Don Sharp (WHO).
10. An option for Wastewater Re-use in the Pacific Islands, David Midmore (Central Queensland University, Australia).
11. Guidance Document for Municipal Wastewater, Cees van de Gutche (GPA/UNEP).
12. Global Programme of Action for the Protection of the Marine Environment from Land Based Activities (GPA) General, Cees van de Gutche (GPA/UNEP).
13. Basis for Action on Sewage, Cees van de Gutche (GPA/UNEP).

## APPENDIX H: FIELD TRIP AGENDA

### Timetable for Field Trip, Saturday 13<sup>th</sup> October 2001

12.00	Depart Hotel
12.00 – 13.00	Trip to Laura
13.00 – 14.00	Lunch at Laura Beach
14.00 – 14.15	Laura lens Pump station # 7 (Kejner – MWSC)
14.15 – 14.30	Taiwan Farm
15.00 – 15.30	Majuro Water Reservoirs (MWSC – Kejner/Abe)
15.30 – 15.45	MEC Coolant Water
	Delap Dock
15.45 – 16.00	MWSC Sewage Outfall Discharge (Kejner/Abe)
16.00 – 16.15	Road Discharge Outlets
	Outrigger (outside/lagoon side)
16.15 – 16.30	End of Tour