

INTER OFFICE MEMO

To : Director,
From : Davendra Nath, Water Safety Plans Officer
Date : 11/04/20063
Subject : Tonga Scoping Mission- Water Safety Plans Programme

MISSION REPORT

Subject: Tonga Scoping Mission – Water Safety Plans Programme.

Place visited: Nuku'alofa and Tongatapu Island, Tonga

Dates: 13 – 21 March 2006

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Title of project: Pacific Water Safety Plans Programme
HSE: Healthy settings and environment

Participating agencies: Tonga Water Board,
Ministry of Health, Tonga
World Health Organization

Source of funds: AusAID Extra-budgetary

Key word: Environmental health / water supply / drinking water quality / Tonga

CONTENTS

1. PURPOSE OF MISSION
2. BACKGROUND
3. ACTIVITIES AND FINDINGS
 - 3.1 Activities
 - 3.2 Findings
4. CONCLUSIONS AND RECOMMENDATIONS
 - 4.1 Conclusions
 - 4.2 Recommendations
5. ACKNOWLEDGEMENTS

ANNEXES

- ANNEX 1 - PROGRAMME OF VISIT
- ANNEX 2 - OFFICIALS CONTACTED
- ANNEX 3 - PRESENTATION FROM WRAP-UP MEETING
- ANNEX 4 - LIST OF RELEVANT BOOKS AND DOCUMENTS PROVIDED
- ANNEX 5 - DRAFT MINIMUM STANDARDS FOR RAINWATER TANKS
- ANNEX 6- ROUNDTABLE AND WRAP-UP MEETINGS
- ANNEX 7 - PHOTOS

1. PURPOSE OF MISSION

The mission to Tonga was jointly as fielded by the Director, South Pacific Applied Geoscience Commission (SOPAC) and the WHO Representative, South Pacific following the request from the Tonga Water Board (TWB) through the SOPAC focal point for Tonga, the Ministry of Lands and Natural Resources. The scoping mission was arranged to assess the commitment of Tonga and to identify partners for a possible pilot project to implement Water Safety Plans. The team comprised the writers, Mr Steven Iddings and Mr Mitesh Mudliar of WHO and Mr Davendra Nath, Project Officer and Mr Tasleem Hassan, Laboratory Officer, both of SOPAC. The team's terms of reference were as follows:

2. BACKGROUND

A new risk-assessment / risk-management approach to ensuring safe drinking water was introduced to Pacific island countries in workshop in February 2005 organized by WHO. That gathering of 18 countries in Nadi, Fiji, also completed a 'Pacific Framework on Drinking Water Quality and Health' to guide future activities and gather donor support. The meeting of Pacific Islands Health Ministers endorsed the 'Framework' two months later. Three water quality programmes have since been proposed.

The 'Pacific Water Safety Plans Programme' began in late 2005 under AusAID funding to WHO and SOPAC. This two-year joint programme will pilot Water Safety Plans in at least four Pacific island countries. Tonga is among the four countries selected from ten eligible. The WHO/SOPAC scoping mission was proposed to determine the scope and interest and secure commitment of key counterparts, the Tonga Water Board (TWB) and the Ministry of Health (MoH) and other potential partners. The TWB requested the mission.

Tonga is largely rural with the majority of its 100,000 population living in villages. Tongatapu is the main island and includes the national capital, Nuku'alofa. The Tonga Water Board has responsibility for the piped water supplies in Nukualofa (pop 30,000) and three other island group 'capitals'. The Ministry of Health (MOH) is responsible for systems outside of these urban centers, and for monitoring drinking water quality nationwide. Boreholes with electric or diesel-powered pumps feed untreated water through piped systems in almost all Tongatapu communities. Eighty percent of households use rainwater to supplement their piped supply.

Both SOPAC and WHO have supported drinking water activities in Tonga in recent years. SOPAC with local NGO participation supported rainwater catchment construction on Vavau and developed guidelines and a manual while WHO supported community-based monitoring. The 'Workshop on Introduction of Community-Based Water Quality Assurance' in May 2005 introduced two simple tools: the hydrogen sulfide or 'H2S' bacteria screening test and 'scored sanitary survey' checklists. The experiences have given a running start to the introduction of Water Safety Plans in Tonga.

3. ACTIVITIES AND FINDINGS

3.1 Activities

The team visited Nuku'alofa, Tonga from 14-21 March 2006, plus villages on the main island of Tongatapu in connection with the five-day scoping mission for the potential Water Safety Plans pilot project in Tonga. The mission was hosted by the Tonga Water Board. Relevant government and development partners and NGO's were consulted in a series of meetings, including The Tonga Community Development Trust and TANGO, both likely partners for the possible introduction to Tonga of 'Water Safety Plans'. The programme of the mission and the full list of officials contacted appear in annexes 1 and 2, respectively. A number of relevant books and documents were provided to key partner agencies, Annex 4.

3.2 Findings

Tuesday 14th March 2006

2.00pm

The Team met with Laboratory Personnel at the Tonga Water Board Water Quality Laboratory. The team was informed that some new analytical equipment was acquired through capacity building assistance from the Institute Pasteur and Secretariat of the Pacific Community. The main tests conducted at the laboratory include residual chlorine (once a month), microbiological tests (??), physical tests such as pH and Electrical Conductivity.

3.00pm

The Team met with the scoping mission coordinating officer Mr. Linisi Lavemai at the Tonga Water Board conference room to discuss the programme for the mission. Mr. Lavemai re-assured that the mission had full support of the Tonga Water Board. He described the proposed programme, which was accepted by the Team with a few minor changes such as the inclusion of meetings with TANGO and the NZAID consultants.

Wednesday 15 March 2006

9.30am

The team met with Mr. Linisi Lavemai (Coordinating Officer), Mr. Ofa Mafua (Acting Chief Engineer), Mr. Taniela Kailahi (Project Engineering Officer) and Mr. Timote Fakatava (Head Chemist) at the Tonga Water Board conference room at 0900 am. The meeting started with a general introduction of the Pacific Water Safety Plans (WSP) Programme which included a briefing on the background of the programme. It was explained that the WSP programme was a result of the SOPAC Regional Action Plan, the Nadi Framework and the Samoa commitment. The New Zealand PHRM video was screened to introduce the practical aspects of the WSP concept. This was followed by a discussion on the WSP approach and how it could be adapted for Nukualofa (or Tongatapu), considering the unique water supply systems that exist. All Tonga Water Board representatives indicated their support for the programme. It was suggested that the representatives report the proceedings back to the Chief Executive Officer, Mr. Saimone Helu for his blessings. It was agreed that the representatives (and Mr. Helu) would join the multi-stakeholder meeting planned for Monday 20th March 2006.

11.00am

The team met with Dr. Liliti Ofanoa (Director of Health), Dr. Malakai Ake (Chief Medical Officer), and Mr. Niu Faikakerikaetau (Acting Supervisory Public Health Inspector) at the Ministry of Health conference room at 1100 am. The meeting started with a general introduction of the Pacific Water Safety Plans (WSP) Programme which included a briefing on the background of the programme. It was explained that the WSP programme was a result of the SOPAC Regional Action Plan, the Nadi Framework and the Samoa commitment. This was followed by a discussion on the WSP approach and how it could be adapted for Nuku'alofa (or Tongatapu), considering the unique water supply systems and health issues that exist. The Director of Health indicated his full support for the programme. It was agreed that the representatives would join the multi-stakeholder meeting planned for Monday 20th March 2006.

02.00pm

The team met with Ms. Lupe Matoto (Senior Environment Officer) and Mr. Sione Faka'osi (IWP National Coordinator), at the Department of Environment conference room at 0200 pm. The meeting started with a general introduction of the Pacific Water Safety Plans (WSP) Programme which included a briefing on the background of the programme. It was explained that the WSP programme was a result of the SOPAC Regional Action Plan, the Nadi Framework and the Samoa commitment. This was followed by a discussion on the WSP approach and how it could be adapted for Nukualofa (or Tongatapu), considering the unique water supply systems and environmental issues that exist. Both Department of Environment

representatives indicated their support for the programme. It was suggested that the representatives report the proceedings back to the Director of Environment, for his/her blessings. It was agreed that the representatives would join the multi-stakeholder meeting planned for Monday 20th March 2006.

IWP draft Bill for Water Resource Management – with Ministry of Lands and Survey for enactment
Waste Management drafted and enacted in 2005
H2S test

3.00pm

The team met with Mr. Lopeti Senituli (Executive Director) and Mr. Ofa Fakalata (Organics Scientific Officer) at the Tonga Community Development Trust Office (TCDT) at 0300 pm. The meeting started with a general introduction of the Pacific Water Safety Plans (WSP) Programme which included a briefing on the background of the programme. It was explained that the WSP programme was a result of the SOPAC Regional Action Plan, the Nadi Framework and the Samoa commitment. This was followed by a discussion on the WSP approach and how it could be adapted for Nuku'alofa (or Tongatapu), considering the unique water supply systems and community issues that exist. Both Tonga Trust representatives indicated their support for the programme. It was agreed that the representatives would join the multi-stakeholder meeting planned for Monday 20th March 2006.

Thursday 16 March 2006

9.30am

The team met with Mr. Foto Mausia (Project Manager-Tonga Village Water Supply Project), Ms. Marion Ferguson (NZ AID consultant), Mr. Tan Phan (NZ AID Consultant), Mr. Saimone Helu (C.E.O. Tonga Water Board), Mr. Niu Faikakerikaetau (Acting Supervisory Public Health Inspector), Mr. Mosese Fifita (Health Inspector, Ministry of Health) and Mr. Molisi Potasaino (District Officer, Eastern) at the Tonga Water Board conference room. The Water Safety Plans Programme was introduced and information on the Water Safety Plans and the NZ AID Village Water Supply Project (VWSP) were exchanged. The NZ AID consultants indicated that the WSP project would complement the VWSP by filling the gaps that the VWSP could not fill due to the project design. There was strong approval and support for WSP and the NZ AID consultants indicated that they would assist and support WSP pilot project implementation.

11.00am

Met with the Principal of Beulah College. The Water Safety Plan concept was described and the potential involvement and support of schools in community education and awareness component of the pilot project was discussed. It was informed by the principal that the school also supplied the water to the nearby community. Secondly the principal was also interested with the H2S test as the school lab and students can be used in the monitoring of the water quality at the school.

2.00pm

The Team met with Town officers from the Eastern District. Village issues in relation to drinking water quality were discussed. Each officer described the problems faced by their villages. Rainwater tank maintenance and cleaning was indicated to be the major problem that was common across majority of villages represented. The impact of the H2S kits were also discussed.

Friday 17 March 2006

9.00am

The Team met with Town officers from the Western District. Village issues in relation to drinking water quality were discussed. Each officer described the problems faced by their villages. Rainwater tank maintenance and cleaning was indicated to be the major problem that was common across majority of villages represented. The impacts of the H2S kits were also discussed.

11.00am

The team visited the Nuku'alofa water supply as and three village water supply systems in the western Tongatapu.

Monday 20 March 2006

9.00am

Met with Ms. Vao Langi from Tonga Association of NGOs and Mr. Ofa Fakalata from Tonga Trust at the Tonga Water Board conference room. TANGO is the umbrella organization for national NGOs in Tonga. Ms. Langi indicated the support of TANGO for national WSP activities. Mr. Ofa Fakalata expressed that although TANGO is an association of NGOs, it is operated as an NGO as well. TANGO has been actively involved with a number of village water supply improvement projects including the recent Canada funded rainwater tank establishment in some local villages.

10.30am Roundtable meeting

The Team met with Mr. Saimone Helu, Mr. Linisi Lavemai, Mr. Taniela Kailahi, Mr. Moses Latu, Mr. Timote Fakatava (from Tonga Water Board), Mr. Niklas Danielson (WHO CLO Tonga), Mr. Tevita Fatai (from Ministry of Lands and Survey), Mr. Niu Fakakerikaetau (from Ministry of Health), Ms. Vao Langi (TANGO), Ms. Barbara Tuiputotu (AUSIAD), Mr. Sione Faka'osi (from Department of Environment) and Mr. Ofa Fakalata (Tonga Trust) for a roundtable discussion on Tonga's participation in the Water Safety Plans Programme. Mr. Helu, General Manager of the Tonga Water Board indicated strong support and commitment to host WSP project and coordinate WSP national activities. The representatives of other agencies and stakeholders represented at the meeting indicated (by general consensus) their support in assisting the Tonga Water Board implement national pilot projects. This was followed by a discussion on the 'next steps'. It was decided that the Tonga Water Board will submit (to Director, SOPAC) a 'letter of request' to participate in the WSP Programme. The Tonga Water Board will also initiate national activities by forming a national steering committee, selecting pilot sites (for both urban and rural settings) and establish links with other related projects. The project structure was also discussed and there was a general consensus that TWB would continue to be the main focal point for the WSP project as well as the lead implementing agency. It was also agreed that Ministry of Health will play a major role in implementation of pilots mainly in rural settings. The other agencies and stakeholders represented at the meeting would support national activities as key technical partners for the two implementing agencies.

2.00pm Wrap-up meeting with TWB

The Team met with Mr. Saimone Helu and key TWB officers at the TWB conference room. The following were discussed and agreed upon:

- **TWB Personnel:** It was decided that Mr. Linisi Lavemai will continue to be the WSP Project Coordinator and liaison officer.
- **Commitment: it was agreed that a** Letter of request to participate in WSP programme from TWB should be addressed to Cristelle Pratt (Director, SOPAC), and be cleared through the TWB Board of Directors.
- **Steering Committee:** there was a general consensus for the structure proposed by WHO/SOPAC Team at the roundtable meeting
- **Pilot sites:** Nuku'alofa is ideal for an urban pilot (and will apply to other island systems as well), rural pilots could be finalised after training workshop
- **Risk assessment/management training Workshop:** It was agreed that TWB will prepare a budget for the workshop;

Programme: the proposed draft programme is as follows

General training(1 day) for representatives from all partner agencies;
Technical training (2-3 days), for officers from implementing agencies;
Planning day for officers from implementing agencies.

Participants: around 6-12 participants maybe invited including mainly TWB & MoH (also environment and some NGOs + community development people);

Timing: It was suggested that the workshop be for 1 week (Mon to Fri) and be organized in July in Tonga.

4. CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

The WHO/SOPAC team was afforded a full programme during the five-day scoping mission. Useful consultations with stakeholders and potential partners including government, NGO's and community leaders were well-managed by Mr Linisi Lavemai, TWB Co-ordinating Officer.

There is very good potential for synergies with development partners such as NZAID, AusAID and Japanese supported water and sanitation projects, for the proposed WSP pilots in the rural sector.

Field visits revealed the potential for a risk assessment/ risk management approach to be applied in both the urban (Nuku'alofa) and smaller piped systems of rural Tongatapu. Mr Tasleem Hassan also visited Vavau Island piped supply.

The TWB laboratory exhibited new equipment received with support from Pasteur Institute, Noumea, however lab staff were not entirely clear on the use of equipment. The stated number and frequency of water analysis were both far short of WHO guidelines for the population served.

The Director of Health, Dr Litili Ofanoa expressed full support for the proposed WSP project in Tonga under TWB leadership. Health inspectors Mr Niu Fakakovikaetau and Mr Mosese Fifita were helpful during the mission and clearly interested in the potential activities and support, though their inspectorate was understood to be already over-stretched and under-resourced.

Meetings with community representatives and potential partners revealed persistent shortcomings in even the newest household rain catchment systems such as the lack of tank access, inlet/overflow screens and washout plugs. Very practical tools like checklists and minimum standards for project managers were suggested by these simple but recurring problems.

TWB's capacity for towards implementing WSP pilots in Tonga with partners appeared adequate though the mission did not explore the TWB capacity in terms of staffing or resources to any depth. The potential for the urban pilot in Nuku'alofa was agreed among the TWB, MOH and others during the roundtable and wrap-up meeting.

The roundtable meeting shared lively discussion on the entire meeting agenda (Annex 3) and the proposed project management structure in particular. There was good consensus on TWB's lead in implementing the entire project, but strong concern for the proposed steering committee to be an effective and meaningful body, especially to ensure resources reach the majority communities outside of TWB's mandate.

4.2 Recommendations

The Water Board (lead agency) should formally request to be included in the Pacific Water Safety Plans Programme with a letter to the SOPAC Director through the SOPAC representative in Tonga. The request would ideally follow the endorsement by the next TWB Board of Directors meeting.

The Water Board should pursue the 'next steps' discussed in the wrap-up meeting including planning for the WSP training and planning workshop for key TWB and MOH personnel and partners suggested for July 2006.

Due to the clear need expressed during subsequent consultations, the WHO/SOPAC team provided first draft guidelines for rainwater storage tanks for MOH consideration and use in proposing Tonga tank standards. This document and the 'Harvesting the Heavens' Guidelines should be used by MOH in developing minimum standards for donors and contractors who supply tanks to Tongan communities.

The proposed Tonga WSP Project 'Steering Committee' should be activated as soon as practical based upon the draft membership and TOR developed during consultations, Annex 3. The TWB should strive to ensure strong representation from women, rural communities and NGO's to ensure there is no risk or appearance of imbalance towards the urban water supply districts.

MOH health inspectors should review WHO report recommendations following the 2005 community based management training with scaling-up the H2S test and sanitary survey in mind. Translation of sanitary survey sheets and cartoon materials into Tongan, arranging for re-supply and recycling of H2S bottles and cooperation with existing rural water projects might be included.

5. ACKNOWLEDGEMENTS

The kind cooperation of the staff of the Tonga Water Board and the Ministry of Health is greatly appreciated. In particular the WHO/SOPAC team wishes to thank Mr Saimone Helu, Water Board General Manager, and Mr Linisi Lavamai Coordinator for their support during the mission. The strong encouragement of Dr Liliti Ofanoa, the Director of Health and kind support from Mr Niu Fakatovikaetau and Mr Mosese Fifita are also gratefully acknowledged.

PROGRAMME OF VISIT

Tuesday 14 / 03 / 06	PM	Team briefs	Black Pearl Hotel
	PM	Visited the Tonga Water Board Laboratory and met with laboratory personnel	Tonga Water Board Laboratory
	PM	Met with mission coordinating personnel from Tonga Water Board	Tonga Water Board conference room
Wednesday 15 / 03 / 06	AM	Meeting with key officer from Tonga Water Board	Tonga Water Board conference room
	AM	Met with Director of Health and key officers from the Ministry of Health	MoH conference room
	PM	Met with Key officer from Department of Environment	DoE conference room
	PM	Met with Executive Director of Tonga Trust (NGO)	Tonga Trust conference room
Thursday 16 / 03 / 06	AM	Met with NZAID consultants, Project Manager of NZAID funded Tonga Village Water Supply Project, and Public Health Inspectors	Tonga Water Board conference room
	AM	Met with Principal of Beulah College	Tonga Water Board conference room
	PM	Met with Town officers from the Western District	Tonga Water Board conference room
Friday 17 / 03 / 06	AM	Met with Town officers from the Eastern District	Tonga Water Board conference room
	AM	Field Trip to Nuku' alofa water supply	
	PM	Field trip to three (3) village water supplies in the Western District	
Monday 20 / 03 / 06	AM	Meeting with Tonga Trust and Tango	Tonga Water Board conference room
	AM	Roundtable / wrap-up meeting	Tonga Water Board conference room
	PM	Final wrap-up meeting with TWB	Tonga Water Board conference room
	PM	Debrief with WHO CLO Visit to MOH microbiology laboratory	CLO's office, Vaiola Hospital

OFFICIALS CONTACTEDTonga Water Board

Mr. Saimone Helu	Chief Executive Officer
Mr. Linisi Lavemai	Coordinating Officer
Mr. Timote Fakatava	Head Chemist
Mr. Timothy	Technician
Mr. Ofa Mafua	Acting Chief Engineer
Mr. Taniela Kailahi	Project Engineering Officer
Mr. Moses Latu	Chief Administration Officer
Mr. Malakai Vakasiuka	Chief Engineer

Ministry of Health

Dr. Liliti Ofanoa	Director of Health
Dr. Malakai Ake	Chief Medical Officer
Mr. Niu Fakakerikaetau	Acting Supervisory Public Health Officer
Mr. Mosese Fifita	Public Health Inspector

NZAID Tonga Village Water Supply Project

Mr. Tan Pham	NZAID Consultant
Ms. Marion Ferguson	NZAID Consultant
Mr. Foto Mausia	Project Manager

Department of Environment

Ms. Lupe Matoto	Senior Environment Officer
Mr. Sione Faka'osi	IWP National Coordinator

Tonga Community Development Trust

Mr. Lopeti Senituli	Executive Director
Mr. Ofa Fakalata	Organics Scientific Officer

District Town Officers (Eastern)

Mr. Molisi Potasiano	Town Officer – Nakolo
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Mr. Losimani Langi	Town Officer – Lananiga’Tonga
Mr. Toni Taufa	Town Officer – Ha’asini
Mr. Sanaila Kaufusi	Town Officer - Hoi
Mr. Motekiai Aso	Town Officer - Pelehake

District Town Officers (Western)

Mr. Rocky Fotu	Town Officer – Fo’ui
Mr. Kamoto	Town Officer – ‘Ahau
Mr. Siaki Ika	Town Officer – Ha’akame
Mr. Inoke Masila	Town Officer – Fahefa
Mr. Cole Motuapuaka	Town Officer – Teeki

AUSAID

Ms. Barbara Tuiputotu	Project Manager
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Lands and Survey Department (SOPAC National Rep)

Mr. Tevita M Fatai	Geologist (Representing SOPAC National Rep)
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Tonga Association of NGOs (TANGO)

Ms. Vao Langi	Secretary
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LIST OF SUPPLIES, EQUIPMENT AND DOCUMENTS PROVIDED

Field monitoring and sampling equipment

Presence-Absence (H2S) test	
Pre-prepared H2S test bottles (from USP, Suva)	50 bottles
H2S Test Guidelines (draft by Live & Learn)	25 copies

Technical documents provided at the meetings

Water Quality Monitoring Using Low-Cost Methods: The Hydrogen Sulphide (H2S) Paper-Strip Test (6pgs); Don Sharp, 2001

'Waterlines' Appropriate Technologies for Water Supply & Sanitation; April 2005 issue on Water Safety Plans
Guidelines for Drinking Water Quality, 2nd Edition, Volume 3; (Annex 2, 3 & 4 only)

WSH Electronic Library (CD); WHO 2004; (1 copy each to Vaiola Hospital Lab, Ministry of Environment)

Harvesting the Heavens (3 Publications from SOPAC, UNEP, TCDT, SIDA):

A Manual for Participatory Training in Rainwater Harvesting
Guidelines for Rainwater Harvesting in Pacific Island Countries
DVD Video (20 min)

Water Safety Plans – Planning water safety management for urban water supplies in developing countries (Book 1 & Book 2) by Guy Howard and Sam Godfrey

Water Safety Plans Draft Brochure

SOPAC/ADB Regional Action Plan (Sigatoka, 2002)

WHO Action Framework on Drinking Water Quality (Nadi, 2005)

Samoa Commitment (Apia, 2005)

Recommended publications and technical documents

Water Safety Plans; (just published) Davison, A., Howard, G. , et al; 2004

Guidelines on Drinking Water Quality: Volume 1, 3rd Edition (new in 2004)

Volume 3, 2nd Edition (on backorder from WHO/HQ)

Proposed Minimum Standards for Tonga: Household Rainwater Storage Tanks

Tanks shall be of a suitable material (galvanized steel, fiberglass, HDPE plastic, ferrocement or reinforced concrete) ('Liner tanks' - those that hold water only with benefit of a plastic liner - are not suitable for permanent installations) fully-enclosed (i.e. with roof – no open tops) and include all of the following as normally are found to be applicable for above ground or elevated water storage tanks:

Roof manhole for access for cleaning, inspection or maintenance; including a tight-fitting cover or lid so as to prevent mosquito entry and entry of debris and sheet flow surface water. This will normally entail a raised manhole rim and a fitted cover with skirt (diagram).

Access point for downpipe (or other filling pipe) to enter, with consideration for the size and secure fit of the downpipe, and located on or near to the tank roofline;

Base or stand suitable for the tank(s) it supports and the tap(s), washouts and other outlet pipes. Tanks resting at ground level may require extraordinary provisions for the tap/outlet and washout, and drainage provisions;

Tap for drawing water for use, or the discharge pipe to a remote tap or location shall be located a distance above the tank floor so as to prevent drawing accumulations of tank floor sediment;

Washout pipe and plug, located at the lowest point possible in the tank floor positioned to facilitate easy washout of all water, sediment and debris and also as accessible as possible from exterior;

Overflow pipe to direct overflow away from the tank walls in a way that water can be easily collected, directed to a second tank or channeled to waste drain, etc;

Mesh covered openings or other accommodation (e.g. gravel filter box) for preventing entry of birds, cockroaches, mosquitoes and debris for the inlet, overflow and any other inspection or opening;

Drainage apron, slab and channel or other adequate provision to prevent puddling and muddy conditions at tap(s) or overflow points;

Tie-downs cables or metal straps or frames for tanks subject to shifting in wind or cyclones, especially the lighter tanks made from fiberglass or HDPE and in particular those tanks mounted on elevated platforms;

(Illustrative diagram suggested)