



OFFICE OF THE PUBLIC AUDITOR
REPUBLIC OF PALAU

PERFORMANCE AUDIT REPORT
ON
ACCESS TO SAFE DRINKING WATER



KOROR-AIRAI PUBLIC WATER SYSTEM

BUREAU OF PUBLIC WORKS
MINISTRY OF PUBLIC INFRASTRUCTURE, INDUSTRY AND COMMERCE
REPUBLIC OF PALAU

FOR THE PERIOD OF OCTOBER 1, 2008 THROUGH SEPTEMBER 30, 2010

MPHC-ASDW10P



REPUBLIC of PALAU

Office of the Public Auditor

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October 12, 2011
Serial#: opa12-009au

Honorable Jackson Ngiraingas
Minister
Ministry of Public Infrastructure, Industry, and Commerce
Koror, Republic of Palau 96940

Subject: Final Audit Report on Cooperative Performance Audit on Access to Safe Drinking Water for period of October 1, 2008 through September 30, 2010

Dear Minister Ngiraingas:

This report presents the results of our audit on Access to Safe Drinking Water for the period from October 1, 2008 through September 30, 2010. The audit involved three agencies primarily responsible for the Republic's drinking water: Division of Water Utility of the Bureau of Public Works, Division of Water Utility of the Bureau of Revenue, Customs and Taxation, and the Environmental Quality Protection Board.

The Draft Report on Access to Safe Drinking Water was issued on July 1, 2011. Although it would have been more appropriate for the Director of Bureau of Public Works to respond to the Draft Report, the responsibility for responding was assigned to the National Water Safety Plan Steering Committee (NWSPSC), an informal working group. The OPA received NWSPSC's response on September 7, 2011, but even then the response was incomplete, apparently the Steering Committee did not respond to some of the major findings in the report. From reading the Steering Committee's response, it appears the Committee was responding to the Executive Summary of the report rather than the detailed findings contained in the main body of the report.

Notwithstanding, the NWSPSC's and EQPB's responses are published verbatim in the final report.

The OPA has established an Audit Recommendation Tracking System (ARTS) to keep track of the status of recommendations issued in this report. Accordingly, the OPA will conduct follow up inspections on your responses and corrective action measures to assess their implementation and operation. On a semi-annual basis, June 30 and December 31 each year, the OPA will report

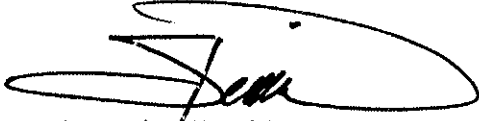
Office of the Public Auditor

Minister Jackson Ngiraingas
October 12, 2011
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the status of the recommendations to the Office of the President and Presiding Officers of the Olbiil Era Kelulau for their information and disposition.

If you have any questions regarding matters of audit findings and recommendations, the OPA will be available to discuss such matters at your request.

Sincerely,



Satruning Tewid
Acting Public Auditor
Republic of Palau

ACCESS TO SAFE DRINKING WATER
Bureau of Public Works
Ministry of Public Infrastructure, Industry and Commerce
Republic of Palau

For the Period from October 1, 2008 to September 30, 2010

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1.0 Executive Summary

October 12, 2011

Honorable Jackson Ngiraingas
Minister
Ministry of Public Infrastructure, Industries and Commerce
Koror, Republic of Palau 96940

Subject: Final Report on Cooperative Performance Audit on Access to Safe Drinking Water for the period from October 1, 2008 to September 30, 2010

Dear Minister Ngiraingas:

This audit report presents the result of our audit on Access to Safe Drinking Water for the two (2) year period ended September 30, 2010. Specifically, the audit covered the period from October 1, 2008 through September 30, 2010.

The objective of the audit is to assess the effectiveness of the Water Utility Division, Bureau of Public Works, in providing access to safe drinking water within the Republic of Palau; in particular, the Koror-Airai Public Water Supply System by auditing (1) the existence of a legal and policy framework for access to safe drinking water; (2) the process by which the legal and policy framework is implemented, including whether risks to implementation have been considered; and (3) compliance with the legal and policy framework, including monitoring arrangements.

In the audit of access to safe drinking water, the Office of the Public Auditor (OPA) selected the Koror-Airai public water supply system because it is the biggest water supply system in Palau and provides water to a majority (80%) of Palau's population and commercial district.

As a result of the review, the Office of the Public Auditor (OPA) found that the Division of Water Utility of the Bureau of Public Works, Ministry of Public Infrastructure, Industries and Commerce, provided access to safe drinking water for both the residents of Koror and Airai in fiscal years 2009 and 2010. And although the Water Utility agency's operations met the standards (water quality) in providing access to safe drinking water, there were a number of problems and deficiencies noted relating to access to safe drinking water which we believe should be brought to the attention of

management for appropriate corrective action. We also propose recommendations, which we believe, if implemented, will correct these problems/deficiencies.

FINDINGS AND RECOMMENDATIONS

Existence of a Legal and Policy Framework

First, there is no legal and policy framework to guide the work of Government Agencies responsible for operating and delivering a supply of safe drinking water to the people of Palau.

We recommend the management of Water Utility Division, in coordination with the Minister of Public Infrastructure, Industries and Commerce, discuss with the President of the Republic and the National Congress the urgency of passing the proposed Water and Sewer Corporation Act Bill (Senate Bill No. 8-153) so that a policy framework can be created.

Second, there exists a proposed National Water Safety Plan for Palau but it is still in “Draft” form pending finalization and implementation.

We recommend that upon the proposed Water and Sewer Corporation Act Bill becoming a law and the National Water Safety Plan is finalized and approved, then the Steering Committee, or its successor, be given the legal authority to implement the National Plan.

Third, there exists a Drinking Water Safety Plan for the Koror-Airai public water supply system but the Plan has not been transmitted to the President for his review and approval and therefore the Plan has not been implemented.

We recommend that the Koror-Airai Drinking Water Safety Plan be transmitted to the President of the Republic for his review and approval so that the Plan can be formally adopted and implemented.

Fourth, the Water Utility has not identified risks associated with drought conditions, increased development, and wasted water the impact of which can affect the supply and quality of water.

We recommend the Water Utility identify risks associated with drought conditions, increased development, and wasted water, and develop strategies to mitigate the risks in anticipation of their occurrence in the future.

Fifth, while there are Public Water Supply System Regulations in place, the Regulations need to be reviewed and updated on a regular basis.

We recommend the Environmental Quality Protection Board review and update the Public Water Supply System Regulations on a regular basis to ensure that the Republic’s regulations conform to international standards.

Sixth, recent developments took place on March 22, 2011, World Water Day. The Environmental Quality Protection Board (EQPB) organized and hosted the 1st Palau National Water Summit. The goal of the summit was to create a water policy framework. The EQPB is responsible for this ongoing activity.

We commend the EQPB for its initiative and leadership in organizing the 1st Palau National Water Summit which brought to the forefront water issues and agencies and stakeholders to discuss the issues and challenges.

Process by which the Legal and Policy Framework is Implemented

First, presently, water operators at the Water Utility Division are not certified. The EQPB performs analysis of water quality on behalf of the Division.

We recommend the Water Utility Division water operators obtain the required certification in order to take over the functions of water testing and the roles of the EQPB laboratory technicians be separately and distinctly assigned to monitoring and enforcement.

Second, the Water Utility Division does not have a scheduled maintenance program for its water treatment and distribution infrastructure, including, for example, pipe replacements, leakage repair, main flushing programs, etc.

We recommend the Division prepare a scheduled maintenance program to include, but not limited, to pipe replacements, leakage detection and repair procedures, main flushing, and request funding from the National Congress for the maintenance program.

Third, the positions of Chief of Division of Water Utility and Manager of Water Connection and Repair remain vacant and the Divisions lack the proper equipment to perform their duties and responsibilities.

We recommend the Water Utility Division be provided sufficient financial resources to facilitate filling of vacant management positions and to purchase essential equipment, which are critical to the operation of the agency.

Fourth, Water Utility rates and fees are not regularly reviewed and updated and water users were charged different rates, fees.

We recommend that water rates and fees be regularly reviewed and updated and water users be charged uniform rates and fees.

Fifth, EQPB's roles and responsibilities include full chemical screening of the public water supply system, which last full chemical screening for the Koror-Airai public water supply system was done in 2000.

We recommend the EQPB seeks technical assistance from experts and necessary funding to enable the agency to undertake full chemical analysis of the Koror-Airai public water supply system as required by the Public Water Supply System Regulations.

Sixth, Water Utility and EQPB have a system in place to warn consumers when water is not safe for consumption but have not devised a counterpart process to advice consumers when water is safe for drinking.

We recommend the EQPB and Water Utility not only issue boiling-water notices when the water is not safe to drink but also issue notices when the water is safe for drinking.

Compliance with the Legal and Policy Framework Including Monitoring Arrangements

First, Water Utility Division does not have performance indicators in place that set the type and frequency of tests required so it is difficult to determine if agency is in compliance with Public Water Supply System Regulations.

We recommend a performance management system be established to record and document performance indicators such as the type and frequency of tests to be conducted to facilitate monitoring and analysis of test results the outcome of which leads to improving the quality of water.

Second, the audit revealed that there have been no documented water-borne diseases from users of the Koror-Airai public water system in 2009 to 2010. The Water Utility agency provided clean and safe drinking water and the EQPB regularly monitored the agency and the public water system to ensure that water is safe for public consumption.

We commend the Water Utility for its unrelenting pursuit to provide safe drinking water to the public and, similarly, the EQPB's relentless efforts in monitoring and regulating water quality.

Third, Water Utility should be able to demonstrate improvements in the effectiveness of its operations by setting benchmarks (goals or desired results) and evaluating and comparing results of operations to those benchmarks.

We recommend the Water Utility set benchmarks or goals for specific activities (i.e. chlorine residual levels or turbidity levels, etc.) with which the agency can establish strategies for achieving over a set time period.

Fourth, EQPB performed more than the regulated number of tests for bacterial and turbidity but testing for chlorine residual was less than the regulated number.

We recommend that the EQPB Executive Officer coordinates with the laboratory technicians to ensure that the regulated number of test for chlorine residuals for the Koror-Airai public water system are performed.

Fifth, Water Utility agency and EQPB did not submit their performance reports for fiscal year 2009 as required by Republic of Palau Public Law No. 6-11.

We recommend that the EQPB Executive Officer as well as the Director of Bureau of Public Works submit to the President, the Olbiil era Kelulau and the Public Auditor their annual performance reports in accordance with RPPL No. 6-11 and related amendments.

Sixth, the EQPB has a complaints section that registers all complaints received; however, the Water Utility Division has not established a similar system to record and keep track of customer complaints.

We recommend that the Division of Water Utility establishes a complaints section that registers customer complaints, inform customers of the system, and monitors the system to ensure that corrective actions are taken to address those complaints.

Seventh, Water Utility agency does not have a strategic plan in place to forecast the quantity water supply that may be affected by climate change, population growth, and development (household/hotel construction).

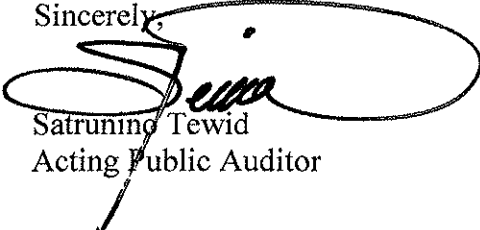
We recommend the management of Water Utility agency prepares a strategic plan that forecasts future demand of water supply based on estimated growth of population, household and commercial development, and hydrological effects of climate change affecting water supply.

The Office of the Public Auditor (OPA) has established an audit recommendation tracking system. All audit recommendations contained herein will be included in the tracking system as *open*, *resolved*, or *closed*. An *open* recommendation is one where no action or plan of action has been made by the client (state, department or agency). A *resolved* recommendation is one which OPA is satisfied that the client cannot take immediate action, but has established a reasonable plan and time frame of action. A *closed* recommendation is one which the client has taken sufficient action to meet the intent of the recommendation or OPA has withdrawn it.

Please provide us the status of each recommendation within 30 days along with documentation showing the specific actions taken. If corrective action will take longer than 30 days, please provide us additional information every 60 days until we notify you that the recommendation has been closed.

Finally, we would like to extend our appreciation to the management and staff of the Division of Water Utility of the Bureau of Public Works, Division of Water Utility of the Bureau of Revenue, Customs and Taxation, and the Environmental Quality Protection Board for their cooperation and professional courtesy extended to us during the audit.

Sincerely,



Satruning Tewid
Acting Public Auditor

2.0 INTRODUCTION

The Republic of Palau is comprised of 350 island archipelago of the South-Western Pacific Ocean with a population of approximately 20,000, according to 2005 census. The State of Koror is the most populated state with a population of 13,000 (65 %) followed by its neighboring State of Airai with approximately 3,000 (15%). The combined population of Koror and Airai State, 16,000, represents about 80% of Palau's population while the remaining 4,000 (20%) is dispersed amongst the remaining 14 States.

The largest island in Palau is Babeldaob containing 153 square miles of land, and which hosts ten (10) of the Republic's 16 States and is connected to Koror (the main commercial district and most populated area) by bridge.



Why Audit Access to Safe Drinking Water

The Office of the Public Auditor's duties and responsibilities also include the assessment of public funds expenditures to ensure that funds are expended in accordance to their intended purpose. The primary reason for selecting the topic "Access to Safe Drinking Water" is to ensure that public funds appropriated to those government agencies responsible for the operation of the primary public water supply system are expended to provide safe and sufficient water supply to the public. These government agencies include the Water Utility Division of the Bureau of Public Works, Water Utility Division, Bureau of Revenue, Customs and Taxation, and the Environmental Quality Protection Board.

The Pacific Association of Supreme Audit Institute (PASAI) at its 13th Congress held in Kiribati in 2010 agreed and endorsed the second regional cooperative performance audit on access to safe drinking water. This was part of the initiative developed by the PASAI with the support of the Asian Development Bank (ADB) and International Organization of Supreme Audit Institutions (INTOSAI) Development Initiative (IDI). Ten PASAI member countries in the Pacific, including the Republic of Palau, participated in the cooperative performance audit. Other participating audit offices include: Cook Islands, Yap State (FSM), Kosrae State (FSM), Fiji, Papua New Guinea, Tonga, Kiribati, Samoa, and Tuvalu.

Palau's Progress Against Millennium Development Goals

The Initial Status Report of the Millennium Development Goals for the Republic of Palau for 2008 commissioned by the United Nations Development Program stated that the target for the millennium goal 7, target 7C: "Halve the proportion of people without sustainable access to improved drinking water and basic sanitation" has been achieved.

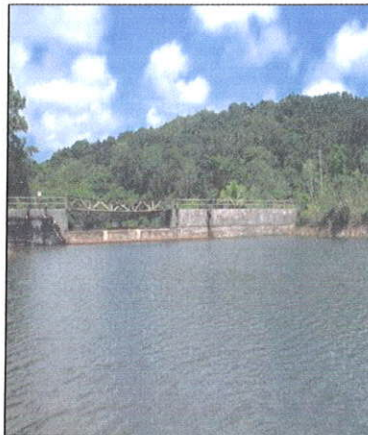
Rainfall is Palau's primary source of fresh drinking water producing an estimated 410 billion gallons per year.

The main source of drinking water in the Republic of Palau is the Koror-Airai water supply system. Other sources include rainwater catchments tanks, local and imported bottled water, and other public water supply systems operated by other states. The major public water supply system is the one supplying drinking water to majority of Palau's population residing in Koror and Airai State, servicing approximately 16,000 customers.

The Koror-Airai public water system's primary source of water is the Ngerikiil River and the Ngerimel Dam. The Ngerimel Dam has an estimated storage capacity of 20 million gallons of water. The Water Treatment Plant has a production capacity of 4 million gallons per day (drawing 3 million gallons from Ngerikiil River and 1 million gallons from Ngerimel Dam).



Ngerikiil River



Ngerimel Dam as of May 10, 2010
Source: Bureau of Public Works



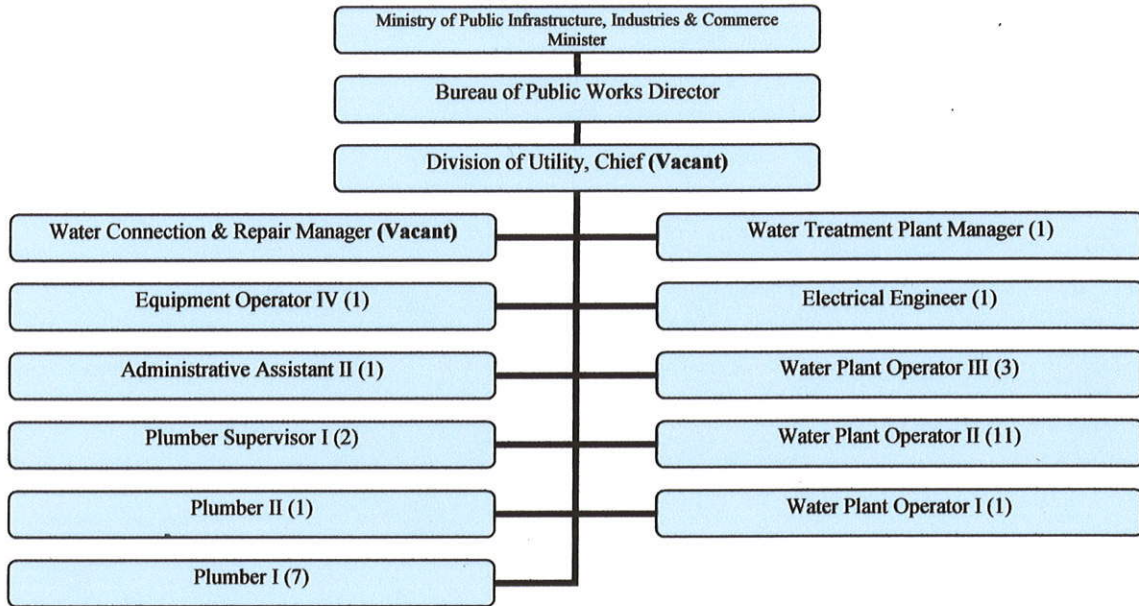
Ngerimel Dam as of May 14, 2010
Source: Bureau of Public Works

In the audit of Access to Safe Drinking, the OPA selected the Koror-Airai public water supply system because it is the biggest and services a majority (80%) of Palau's population and main commercial district in Koror.

The Koror-Airai public water supply system is managed and operated by the Division of Water Utility of the Bureau of Public Works, Ministry of Public Infrastructure, Industries and Commerce. In addition, the Division of Utility Collection of the Ministry of Finance is responsible for billings and collections of water usage fees. On the regulatory and enforcement side, the Environmental Quality Protection Board regulates, monitors, and enforces the quality of water to ensure that it meets standards and is safe for drinking.

Bureau of Public Works

Illustrated below is the Organizational Chart for the Utility Division of the Bureau of Public Works, Ministry of Public Infrastructure, Industries and Commerce:

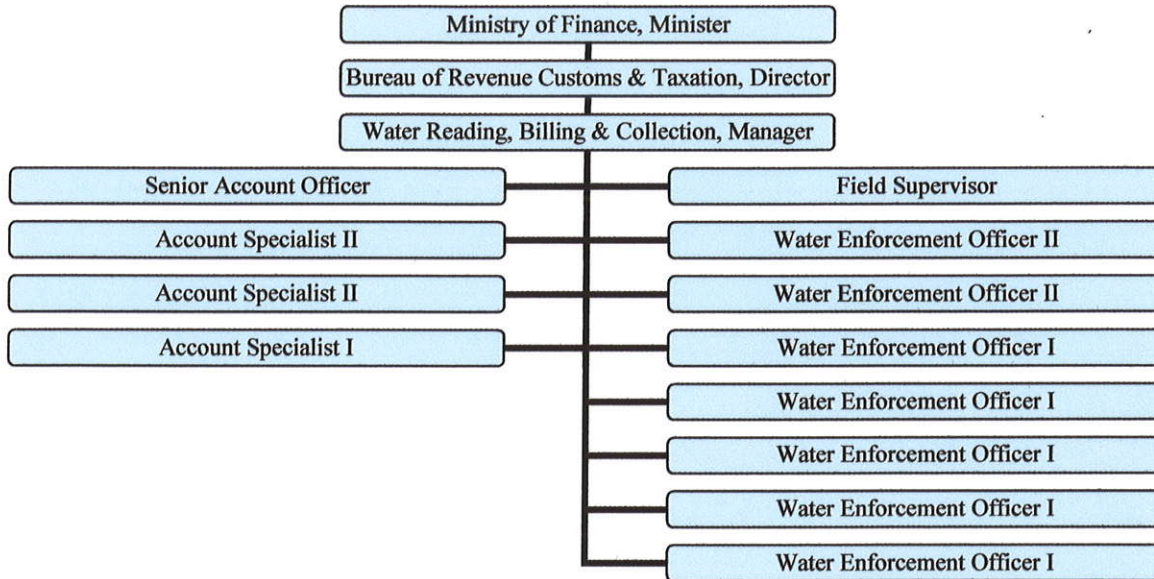


The Bureau of Public Works is headed by a Director who is responsible for the maintenance, operation, engineering and design of government-owned facilities, roads and equipment, including public utilities and related infrastructures. The Director also serves as the Procurement Officer for procurements involving construction, architectural, and engineering services. The Director is also responsible for overseeing the operations of various divisions under the Bureau of Public Works, including Division of Utilities.

The Division of Utilities is headed by a Chief who is responsible for the Water Treatment Plant and Pumps Stations, Water Distribution System, Sewer Treatment Plant and Lift Stations, Sewer Collection System and Sewer Connections, and outer state water and sewer operations and maintenance (*Executive Order 203*).

Bureau of Revenue, Customs and Taxation

Shown below is the Organizational Chart for the Water Billing and Collection Division of the Bureau of Revenue, Customs & Taxation, Ministry of Finance:



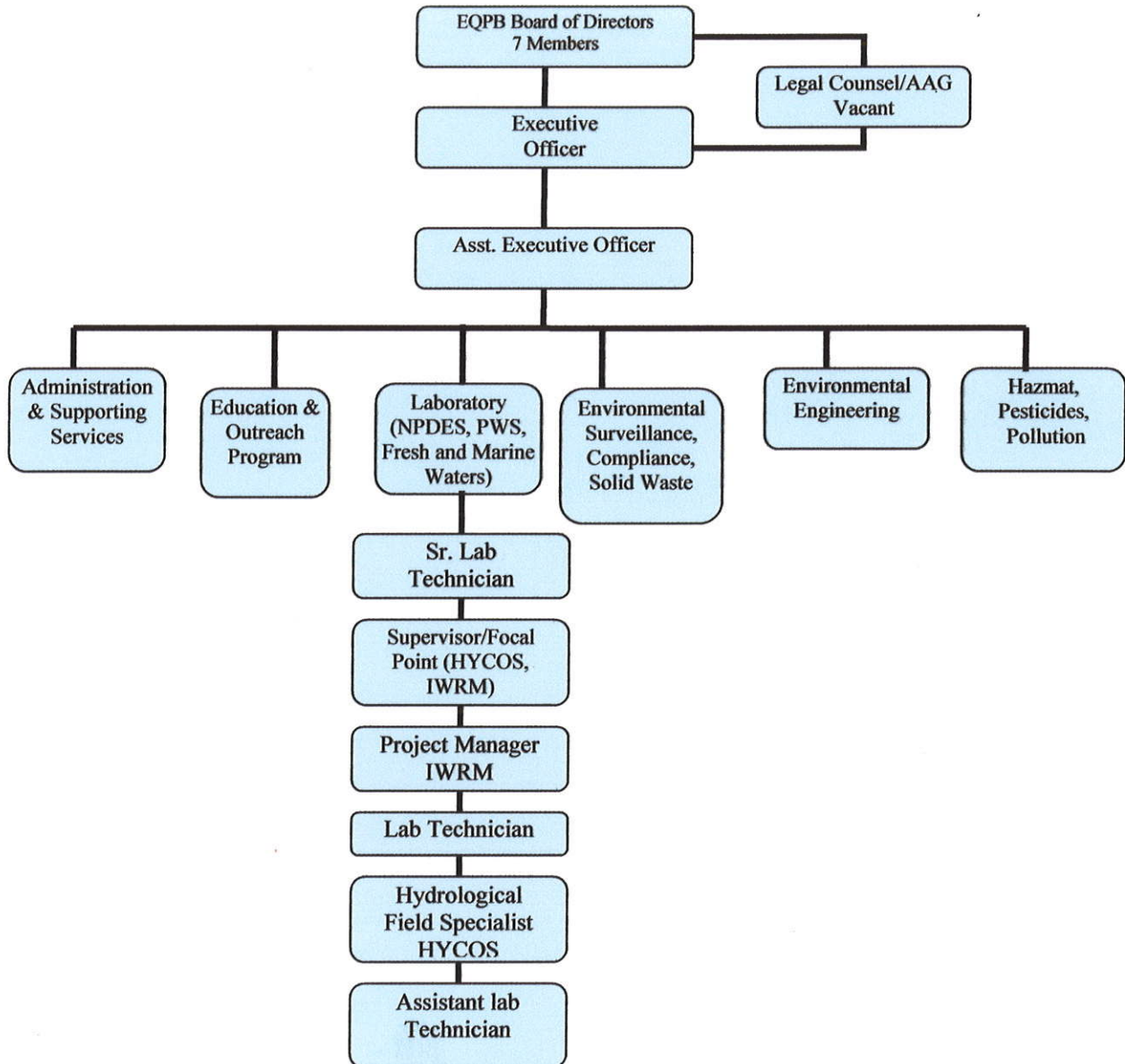
The Bureau of Revenue, Customs and Taxation is headed by a Director who, with the assistance of staff, is responsible for the day-to-day management of programs and activities involving imposition of customs and duties; assessment and collection of taxes; promulgation and enforcement of tax laws and regulations; collection and compilation of trade data statistics; and administration of utility billings and collections. The Director shall be responsible for overseeing the performance of several divisions under his/her Bureau, including Division of Utility Collection (*Executive Order 203*).

The Division of Utility Collection is headed by a Chief/Manager who, with the assistance of staff, performs duties and responsibilities as follows:

1. Conducting monthly reading of water utility meters of all public utility customers;
2. Keeping up-to-date records and conducting ongoing reviews of each individual customer account for billings, payments, and delinquencies;
3. Keeping track of all delinquent accounts and reviewing overdue installment payments and taking necessary actions to receive payments and/or terminate services;
4. Installing, testing, repairing or replacing any malfunctioning water meters, in coordination with the Bureau of Public Works, whenever requested and required; and
5. Enforcing the Utilities Rules and Regulations.

Environmental Quality Protection Board

Illustrated below is the Organizational Chart for the Environmental Quality Protection Board.



The Environmental Quality Protection Board (EQPB) is headed by a seven (7)-member Board of Directors appointed by the President of the Republic of Palau with the advice and consent of the Senate (Palau National Congress). The Board appoints an Executive Officer who shall work for the Board and whose authority derives from the same.

The EQPB regulates and monitors the quality of water supply by conducting the following tests and analysis:

Conduct water sampling, testing, recording and reporting in accordance with the approved analytical and quality control procedures to ensure adherence to all Laboratory Certifications criteria.

1. Assist in public education, notification and awareness programs related to water quality.
2. Maintain and organize water quality data base system.

3.0 AUDIT OBJECTIVE AND SCOPE

The Audit objective is to assess the effectiveness of access to safe drinking water within the Republic of Palau, in particular, the Koror-Airai public water supply system by auditing (1) existence of a legal and policy framework for access to safe drinking water; (2) the process by which the legal and policy framework is implemented, including whether risks to implementation have been considered; and (3) compliance with the legal and policy framework, including monitoring arrangements.

The audit scope for the performance audit of access to safe drinking water covered the period from October 1, 2008 through September 30, 2010. The audit focused on the Koror-Airai public water supply system and those agencies responsible for operating and regulating the system; in particular, the Water Utility Division, Bureau of Public Works; the Division Water Reading, Billing and Collection, Bureau of Revenue, Customs and Taxation; and the Environmental Quality Protection Board.

4.0 AUDIT METHODOLOGY

We conducted the performance audit in accordance with Generally Accepted Government Auditing Standards (GAGAS). Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

The Public Auditing Act of 1985 empowers the Office of the Public Auditor to specially act to prevent fraud, waste and abuse in the collection and expenditures of public funds. The Public Auditor may make recommendations on the prevention and/or detection of fraud, waste and abuse of public funds.

To accomplish our audit objective, we reviewed files and records at the Water Utility Division of the Bureau of Public Works, Water Utility Division of the Ministry of Finance, Environmental Quality Protection Board, and other agencies as appropriate. In addition, we also conducted interviews with key management and relevant staff and conducted site visits to the water sources as well as the Water Treatment Plant.

5.0 FINDINGS & RECOMMENDATIONS

5.1 Existence of a Legal and Policy Framework

Finding 5.1.1 Lack of Legal and Policy Framework

The Republic of Palau should have a legal and policy framework in place to direct the provision of safe drinking water to its citizens.

During the audit, we found that the Republic of Palau does not have a legal and policy framework in place to direct the provision of safe drinking water; however, a Bill (Senate Bill No. 8-153) has been introduced in the Senate to establish and empower the Palau Water and Sewer Corporation as an independent, government-owned utility agency with the functions of managing, operating and providing water and sewer services; and for other related purposes. The Bill has passed first reading by both houses of the Olbiil Era Kelulau (Palau National Congress) and, upon passing third and final reading and signed by the President of the Republic, the Bill will become public law establishing a policy framework for the Republic of Palau.

In the absence of a legal and policy framework for safe drinking water, there are no set guidelines for the provision of safe drinking water to Palau's population. As such, for the Koror-Airai public water supply system, water users who are not connected to the system or who are using another system remote to it may not consistently have access to safe drinking water.

Recommendation

We recommend the Ministry of Public Infrastructure, Industries and Commerce, management of Water Utility Division, and Water Steering Committee discuss with the President of the Republic and Palau National Congress the urgency of passing the proposed Water and Sewer Corporation Act of 2010.

***EQPB's Response:** We agree that the necessary legislation contained in the Water and Sewer Corporation Act is still pending before the OEK and, when passed, will substantively provide a legal and policy framework along with the National Water safety Plan and Drinking water Safety Plan, both of which also need to be approved and implemented.*

***National Water Safety Plan Steering Committee (NWSPSC) Response:** No response*

Finding 5.1.2 National Plan Not Supported by Legal Framework

The implementation of the Draft National Water Safety Plan for safe drinking water is contingent upon the passage of the proposed Water and Sewer Corporation Act Bill for its authority.

The National Water Safety Plan for safe drinking water exists and contains strategies for implementation. Based on the Plan's background information, the Plan was funded by AUSAID in response to a regionally endorsed Framework for Action on Drinking Water Quality and Health to be implemented over the period 2006-2007. Nearly four (4) years have lapsed, however, and the

plan is still in a draft form and the Steering Committee which developed the National Plan may not have the legal authority to implement it.

In the absence of a legal framework and lack of authority appointed to the Steering Committee, the plan has not been implemented.

As a result, the National Water Safety Plan which was developed in 2007 has not yet been implemented.

Recommendation

We recommend that upon the proposed Water and Sewer Corporation Act Bill becoming a law, the Steering Committee transmits the National Water Safety Plan to the management of the Palau Water and Sewer Corporation for adoption and implementation. If the proposed Bill is not enacted into law, then the Steering Committee should transmit the National Plan to the Office of the President for guidance as to the legal authority to implement the Plan.

***EQPB's Response:** We agree that the necessary legislation contained in the Water and Sewer Corporation Act is still pending before the OEK and, when passed, will substantively provide a legal and policy framework along with the National Water safety Plan and Drinking water Safety Plan, both of which also need to be approved and implemented.*

***NWSPSC's Response:** The National Water Safety Plan has not been formally endorsed. However, due to its recognized importance, ongoing work and support is provided by the members of the WSP Steering Committee.*

Finding 5.1.3 Koror-Airai Drinking Water Safety Plan

Koror-Airai Drinking Water Safety Plan should be formally approved, adopted, and implemented.

The Plan's first draft was in 2007 and identifies the risks related to water catchments and intake, treatment & storage, and distribution. Based on these risks, an annual improvement schedule was developed and prioritized. The National Steering Committee monitors the improvement schedule.

The Plan has not been transmitted to the President of the Republic for his review and approval.

As a result, the Plan has not been adopted and implemented.

Recommendation

We recommend the Koror-Airai Drinking Water Safety Plan be transmitted to the President of the Republic for his approval and eventual implementation thereafter.

***EQPB's Response:** We agree that the necessary legislation contained in the Water and Sewer Corporation Act is still pending before the OEK and, when passed, will substantively provide a*

legal and policy framework along with the National Water safety Plan and Drinking water Safety Plan, both of which also need to be approved and implemented.

NWSPSC's Response: *The Drinking Water Safety Plan will be transmitted to the Minister of Public Infrastructure, Industries and Commerce for submittal to the President.*

Although the committee has not been formalized, the importance of the work has garnered support from all committee members to implant the improvement schedule. A copy of the improvement schedules for 2008, 2009, and 2010 are attached for your reference. As it is noted in the schedules, modifications are made on an annual basis to determined areas which have had improvements or which need more time. The WSP committee will work in the future to ensure that all these corrective measures are accurately documented for future reference. Therefore, to state that the National Water Safety Plan has not been implemented is not entirely accurate.

Finding 5.1.4 Water Utility has not Identified Risks Associated with Drought Conditions, Increased Development, and Wasted Water

The Water Utility should identify risks associated with drought conditions, increased development, and wasted water, the impact of which can affect the supply and quality of water, and identify countermeasures to mitigate those risks.

The Water Utility has not identified risks associated with drought conditions, increased development, and wasted water, the impact of which can affect the supply and quality of water, and strategies to counter those risks in anticipation of their eventual occurrence in the future, as further discussed below:

Water Supply – Drought

The Water Utility has not identified risk associated with water supply in the event of drought conditions and specific mitigation measures to counter them.



*Ngerimel Dam as of January to April 2010
Source: Bureau of Public Works*

It appears the Water Utility is depending on the Koror-Airai Drinking Water Safety Plan to be approved, which Plan identifies risk associated with drought conditions and proposed mitigation measures. The Plan; however, has been in draft form since 2007 and has not been transmitted to the President of the Republic for review and approval.

As a result, in the early part of 2010, Palau experienced severe drought conditions that drastically reduced water supply in Ngerimel Dam without alternative mode to re-supply water into the Dam, as illustrated above.

Water Supply – Development

The Water Utility agency has not identified risks associated with development (residential and commercial structures construction) and the impact growth will have on future demand for clean and safe drinking water. This issue surfaced as we found that development/construction projects are increasing. For example, Koror and Airai State have issued a total of ninety six (96) building permits in fiscal year 2009 and one hundred ten (110) in fiscal year 2010. These permits are for single family dwellings (68%), commercial structures (30%), and the remaining permits are for other purposes such as churches.

We were unable to determine why Water Utility has not identified development as a risk factor the impact of which can affect future supply of clean and safe drinking water. Development and population growth also are not identified as risk factors in the Koror-Airai Drinking Water Safety Plan.

Wasted Water

The Water Utility agency has identified risks associated with loss of water due to leaking pipes; however, due to lack of funding and equipment, the problem continues to erode the public water supply resulting in huge loss of water. Based on the Initial Report of the Millennium Development Goals for the Republic of Palau for 2008, it has been estimated that 35% to 45% of water produced is lost during transmission.

The Water Utility agency has proposed a leak detection program in the improvement schedule for the Koror-Airai Drinking Water Safety Plan but the program has not been implemented due to lack of funding.

Quality of Water

The Water Utility agency should identify risks associated with quality of water (i.e. high turbidity) and take corrective action to mitigate those risks instead of relying on the EQPB, whose responsibility is monitoring and enforcing water quality standards.

Water Utility agency has proposed in the Koror-Airai Improvement Schedule for 2010 the purchase of monitoring equipment and related training; however, the proposed improvements have not been implemented due to lack of funding.

Recommendation

We recommend that:

- The Water Utility agency formulate specific plans to mitigate drought conditions including detailed costs to implement the plans
- The Water Utility agency identifies risks associated with development and how growth will impact future demand on the Republic's water supply, in particular, the Koror-Airai Water System.
- The Water Utility agency formulate a detailed leak detection program, to include equipment and related costs, to identify and repair damaged and leaking pipes
- The Water Utility agency formulate an in-house plan, including equipments costs and related training, for monitoring and testing the quality of water so as to reduce its dependence on EQPB for performing these functions and eventually take over the responsibility as it should.
- The Koror-Airai Drinking Water Safety Plan to be transmitted to the President of the Republic for his review and approval so that the strategies contained in the Plan can be implemented.

***NWSPSC's Response:** Risk assessment was done with the Water Safety Plan, as can be noted in the Koror/Airai Drinking Water Safety Plan document.*

Finding 5.1.5 Standards for Drinking Water Should be Reviewed and Updated

Environmental Quality Protection Board should review and update the drinking water standards for the Republic.

Conformance with United States Environmental Protection Act (USEPA)

The Palau Environmental Quality Protection Board (EQPB) adopted standards for safe drinking water from the United States Environmental Protection Act (USEPA), 42 USC Section 300f et seq., the Safe Drinking Water Act (Public Law 93-523). This law was enacted in 1996.

The EQPB regulations were adopted in 1996 and, since then, the regulations for safe drinking water have not been reviewed and updated. The EQPB's legal counsel should advise the Board on any changes to the United States Environmental Protection Act (USEPA), in particular, the Safe Drinking Water Act, so that the Board can review and update the Public Water Supply System Regulations accordingly.

We found that the EQPB's legal counsel position has been vacant for two years. As a result, the EQPB has not had access to a legal counsel to provide legal advice to the Board concerning changes to USEPA, advice which would move the Board to propose revisions to the Public Water Supply System Regulations.

Recommendation

We recommend the Board of Directors of the Environmental Quality Protection Board discuss this vacancy (legal counsel) with the Attorney General with the urgency of the need to review and update the Republic's Public Water System Regulations, which requires legal expertise to review changes to the U.S. EPA regulations and to advise the Board members accordingly.

***EQPB's Response:** It is the responsibility of the supplier to assure water quality that equals or exceeds the standards set forth in Chapter 2401-51 of the EQPB Regulations which establish certain minimum standards necessary for the public health and safety to insure that public water supply systems are protected against contamination and do not constitute a health hazard. These regulations conform to World Health Organization Standards and, in some cases, exceed those standards, but within limited parameters. EQPB is committed to regular review and update of its regulations as circumstances dictate necessary change. It should also be noted that the Legal Counsel position has been filled as of March 15, 2011.*

Conformance with International Obligations

The Environmental Quality Protection Board should review and update the drinking water standards to insure that the Republic conforms to its international obligations.

The Republic of Palau is a signatory to the Pacific Regional Action Plan on Sustainable Water Management. A key feature of the plan is the development of individual countries abilities to cope with increased climate variability (flood and drought management).

The Koror-Airai Drinking Water Safety Plan has identified the risks of unforeseen or out of the ordinary events and suggests that the response to this should be monitored and managed by National Emergency Management Office (NEMO), Environmental Quality Protection Board (EQPB) and Bureau of Public Works (PW).

In this context, it is important that EQPB regularly review and update the Public Water Supply System Regulations to ensure that the people of the Republic continue to have access to a supply of safe drinking water in times of climate variability.

The EQPB, NEMO, and PW have not identified or defined their monitoring and management responsibilities to minimize the impact of unforeseen or out of ordinary events on the supply of public water to the people of the Republic.

Recommendation

We recommend that the EQPB, NEMO, and PW identify and define their monitoring and management responsibilities to minimize the impact of unforeseen or out of ordinary events on the supply of public water to the people. In addition, the Environmental Quality Protection Board should review and update the drinking water standards to ensure that the Republic conforms to its international obligations.

***EQPB's Response:** It is the responsibility of the supplier to assure water quality that equals or exceeds the standards set forth in Chapter 2401-51 of the EQPB Regulations which establish certain minimum standards necessary for the public health and safety to insure that public water supply systems are protected against contamination and do not constitute a health hazard. These regulations conform to World Health Organization Standards and, in some cases, exceed those standards, but within limited parameters. EQPB is committed to regular review and update of its regulations as circumstances dictate necessary change. It should also be noted that the Legal Counsel position has been filled as of March 15, 2011.*

***NWSPSC's Response:** No response*

5.1.6 Recent Development by Environmental Quality Protection Board (EQPB)

On March 22, 2011, World Water Day, the Environmental Quality Protection Board (EQPB) organized and held a 1st Palau National Water Summit. The goal of the summit was to create a water policy framework. The summit provided presentations and discussions on the following areas:

- Overview of water resources
- Water and climate change
- Water, Agriculture, and Communities
- Current cost of providing piped water
- State of water/Water Policy

Following the conclusion of the presentations, summit's participants were divided into five groups and worked on five thematic areas, namely:

- **Security of Supply:** Addressed issues on water resources, water use, and water supply.
- **Health:** Addressed issues on sanitation and human health.
- **Environment:** Addressed issues on water-dependent ecosystems and pollution sources and impacts.
- **Governance:** Addressed issues on whole of Government approach, leadership, community participation, legislative and policy framework, institutional capacity, information and data management, communication and finance.
- **Resilience:** Addressed issues on climate variability and climate change.

The EQPB compiled the results of the presentations as guidance for creating the water policy framework.

Recommendation

We commend the EQPB for its initiative and leadership in organizing Palau's first National Water Summit where subject-matter issues and challenges were presented and discussed.

5.2 Process by which Legal & Policy Framework is Implemented

Finding 5.2.1 Water Operators Roles and Responsibilities should be Clearly Defined

The roles and responsibilities of Water Operators should be clearly defined in the Koror-Airai Water Treatment Plant's Operations and Maintenance Manual and should include the requirement that water operators be certified, as decreed in the Public Water Supply System Regulations.

The Koror-Airai Water Treatment Plant's Operations and Maintenance Manual outlines the duties and responsibilities of Water Operators to include the following:

- Collecting and entering data and readings, at required time intervals, to the Water Treatment Plant Operations log sheet;
- preparing the chlorine solutions;
- monitor and maintain chlorine solution feed;
- adjust chlorine solution feed to maintain required finish-water chlorine residual; and
- add and maintain supply of chemicals in chemical hoppers.

The Public Water Supply System Regulations requires that Water Operators be certified. The regulations state in part: "Two years after the establishment of a training and certification program, each public water supply system shall be under the technical supervision of a certified operator, certification to be granted by the Board or by another agency recognized by the Board."

During the audit we found that, at present, there are no certified water operators at the Water Treatment Plant. The Water Utility Water Operators at the Treatment Plant cannot perform microbiological contaminant testing required by the regulations. This function is being performed by the Environmental Quality Protection Board (EQPB) laboratory technicians. This scenario; however, presents conflicting roles for the EQPB, one to conduct the required water testing and the other to monitor and regulate the quality of water. In essence, EQPB would be monitoring and regulating its own work.

Recommendation

We recommend that the roles and responsibilities of Water Utility's Water Operators be clearly defined in the Koror-Airai Water Treatment Plant's Operations and Maintenance Manual and that Water Operators become certified and eventually take over the responsibilities for water testing and related roles as required by the Public Water Supply System Regulations. The EQPB, as an independent regulatory agency, should limit its role to monitoring and enforcing the quality of water.

***EQPB's Response:** EQPB is not responsible, nor should it be, for creating or implementing a Water System Operator Certification Program. This should be the responsibility of the Water Utility Division (operator) in conjunction with PCC or other educational source, with developmental guidance from other jurisdictions. The role of EQPB should be that of issuing "certified operator" certification upon proof that an individual has completed a passed a certification program. In addition, the Water Utility Division (operator) is responsible for all*

routine water testing as outlined in Chapter 2401-51-13 thru 2401-51-35, including routine microbiological sampling, turbidity testing, inorganic and organic chemical samplings, radionuclides, sodium and corrosivity monitoring of the water supply. EQPB has been providing testing to the operator since they do not currently have the resources to do so, but you are correct in identifying the conflict this presents and it is important that the Water Utility be adequately funded in order to maintain their responsibilities under the regulations. It should be noted that EQPB Laboratory is certified for bacteriological analysis under the US FAS Water Quality Laboratory Certification Program and provides testing to the Ministry of Health as well.

OPA Comments: *We agree the EQPB's Public Water Supply System Regulations does not require the EQPB to establish a program for certification of water operators; however, they do require that each public water system shall be under the technical supervision of a certified operator, which technically the Water Treatment Plant has been in violation of for quite some time and the EQPB has not issued it a notice of violation over the same period of time. At some point, the EQPB needs to bring this matter to the forefront to compel the proper authorities to identify or establish a certification program to get the employees of the Water Treatment Plant certified. Otherwise, status quo only prolongs the violation and, technically, the appearance of the quality of public water supply system is jeopardized.*

NWSPSC's Response: *No Response*

5.2.2 Water Utility does not have a Maintenance Program

The Division of Water Utility should have a maintenance program in place to repair and clean water pipes, equipment, and other implements which are part of the water treatment and distribution system. In addition, the Public Water Supply System Regulations require that the Water Utility have such a program in place.

We found that the Water Utility does not have a maintenance program in place for the repair and maintenance of its water pipes, equipment, and other implements which are part of the water treatment and distribution system. Basic maintenance programs such as leak detection and repair procedures and main flushing were not carried out. Leaking pipes are mostly reported by the water users. Water Utility repaired 95 leaking pipes in 2009 and 164 in 2010.

The Water Utility agency may not have sufficient funding to undertake essential maintenance programs. In addition, the position of Chief of the Utility Division has been vacant and, as such, the agency is operating without a manager to establish a maintenance program and seek related funding.

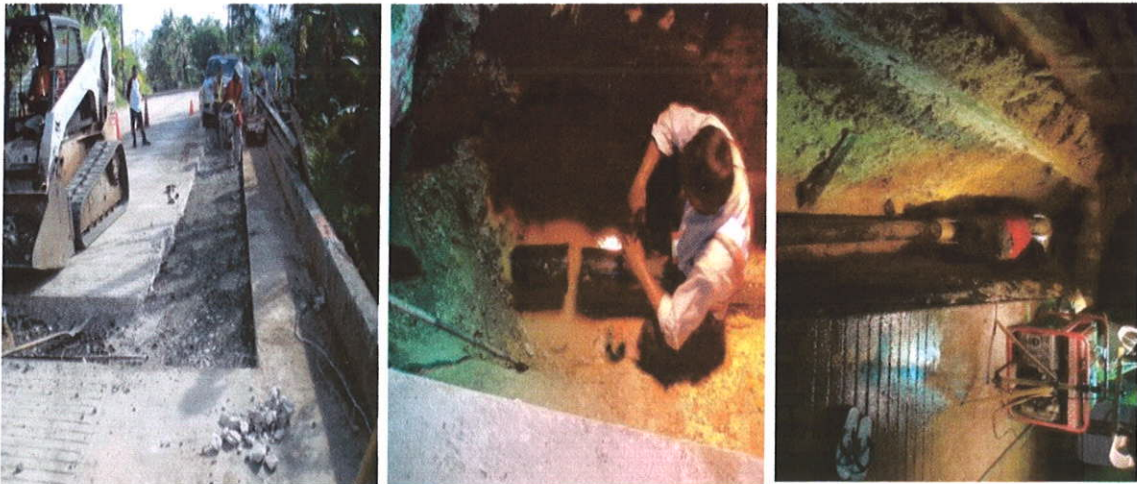
As a result, repair of leaking pipes has increased over the years due to aging pipes and lack of a maintenance program. This has caused interruptions to some area residents' access to safe drinking water. Deferred maintenance has also resulted in increased costs to repair damaged or leaking pipes. The illustration below shows some of the repair work done in the previous years:

Example I: One of the major distribution line, a 6-inch main water pipe at the front of Bank of Hawaii, after more than 60 years of service, ruptured resulting in stoppage of water service for some Koror residence from March 14 to March 22, 2010. According to the Water Utility agency, the total cost of repair was \$9,349.



Source: Bureau of Public Works

Example II: Another major water line in Airai ruptured in January 2011, causing about one third of the population (1,000 residents) to go without access to water for about two and half days. The cost of the repair totaled \$10,539.37 and took 5 days to complete.



Recommendation

We recommend the Water Utility Division establish a maintenance program for its water treatment and distribution system. Considering the funding constraints weighing in on the Division, it should prioritize the maintenance programs to ensure that the most critical components of water treatment and distribution infrastructure are attended to first and on down to the least critical. In addition, the agency should prepare a detailed schedule of its maintenance programs to include the description,

equipment and materials requirements, cost, and related information. When this information is compiled and completed, it should be submitted together with the annual operations budget of the Water Utility Division to the Olbiil Era Kelulau for its consideration and action.

NWSPSC's Response: No response

Finding 5.2.3 Water Utility Does Not Have Sufficient Human and Financial Resources

Sufficient human and financial resources should be provided to the Water Utility to ensure that an effective water treatment program is in place, including monitoring and testing to insure water quality is safe for drinking.

According to the Public Water Supply System Regulations, "it is the responsibility of the supplier of water to assure a quality of water supply that equals or exceeds the standards of the Public Water Supply System Regulations".

During the audit we found that although the quality of water is safe for drinking, critical positions such as Chief of Division of Utility and Manager for Water Connection and Repair were vacant. In addition, the Utility Division lacked equipment to perform tests for microbiological contaminants.

It appears the above conditions exist due to insufficient funding for the Water Utility Division.

As a result, given that the Utility Division and Water Connection and Repair are operating without managers, the Divisions lack a structured line of authority essential for effective and efficient decision-making, planning, setting goals and objectives, and directing operations.

Recommendation

We recommend the Minister of Public Infrastructure, Industries and Commerce, together with the Director of Bureau of Public Works, discuss with the President of the Republic the urgency to provide sufficient financial resources to the Utility Division to support and sustain the provision of safe drinking water to consumers.

NWSPSC's Response: No response

Finding 5.2.4(a) Water Utility Rates and Fees Should be Reviewed and Updated

Water Utility rates and fees should be reviewed and updated on a regular basis to reflect actual cost of operations.

The audit revealed that the last time water rates and fees were updated was in 1992. The rates remained dormant for eighteen (18) years until February 2011 when new rates and fees took effect; however, the new rates include charges for sewer services. The basic rate prior to February 2011 was \$.85 per 1,000 gallons and the rates were progressive depending on the volume of consumption per month. In addition, we found that many customers were charged a variable flat rate, especially in Airai State, depending on the size and type of the household or commercial establishment. For

example, in 2010 there were 496 customers (393 in Airai) charged a flat rate (not metered) and 554 (401 in Airai) in 2009. The residents of Airai were granted a reprieve back in 1992 via a policy issued by then Minister of Administration granting a flat rate of \$5 for each household per month. According to a letter from the Utility agency, the primary reason for un-metered customers is due to lack of meters and parts. We found, however, that as many as 122 customers in Airai are connected to water meters but are being charged a flat rate. In addition, we also found that commercial establishments were also charged a flat rate, a decision not authorized in the 1992 letter from the Minister of Administration. Moreover, customers who are not connected to the treated water, and charged a flat rate, were paying the same flat rate as those customers connected to treated water.

We were unable to determine the reason behind the prolonged period without a review and update of water rates and fees. In addition, due to the vacancy in the Chief of Utility Division, this may have overshadowed the need to revisit the policy granting reprieve to the residents of Airai and the decision to apply flat rate to commercial establishments in that state.

As a result, the production cost of water borne by the Utility Division exceeds the revenue it collects from service users, not including the critical depreciation expenses that the Utility agency should be building up a reserve for for scheduled maintenance and capital acquisitions, in the event of catastrophic equipment breakdown.

Recommendation

We recommend that management of the Utility agency together with the Director of Public Works discuss with the Minister of Infrastructure, Industries and Commerce, and eventually with the President of the Republic, the need to review and update utility rates and fees to reflect actual cost of production. In addition, the Director of Public Works should bring up the issue of the vacancy existing in the position of Chief of Utility Division and the need to fill the position to ensure a structured line of authority within the Division. Finally, the Director should also bring to discussion the need to revisit the policy of granting flat rate status to residents of Airai, the reason for granting the status, and setting a policy that provides equal status to all water users.

NWSPSC's Response: No response

Finding 5.2.4(b) Costs Recovery via User Fees

Government-owned and -operated Utilities Corporations are not in the business to make a profit but to provide services to the public and recovers its costs through user fees. As such, service rates and fee structures should be such that the corporation is able to recover its costs and sustain operations. During the audit we found that the Utility agency was charging water rates and fees at a level significantly less than reasonably necessary to recover operating costs and fund critical infrastructure improvements. And despite the significant increase in the number of customers, from 1,945 users in 1992 to 3,576 in 2010, an 84% increase, which puts a lot of stress on the aging equipment, water rates remained the same. The increase in demand and use means that the Utility agency's production cost had to increase to meet demand, and which without corresponding increase in rates and fees, means the government had to subsidize the increase in costs. The table

below contrasts the revenues derived from Water Utility collections against expenditures for water treatment and distribution:

	FY 2009	FY 2010
Expenditures	\$ 1,205,762	\$ 1,753,671
Water Fees Collected	\$ 652,008	\$ 666,809
Variance	(\$ 553,754)	(\$1,086,862)

*Note: expenditures relate to water connection & repair, water treatment plant and water reading billing & collection.
Source: Division of Finance and Accounting, Bureau of National Treasury*

Since 1992, the last time water rates and fees increased, to February 2011, water rates remained dormant while customer demand and production costs have steadily increased. As a result, the National Government has had to subsidize the shortfall between the amount of revenues collected and expenditures to produce and distribute the water to consumers.

Furthermore, local water bottling companies process bottled water from the same water system, and pay minimum rate at \$.85 per 1,000 gal. of water, and sell it to their customers, including the government, at significantly higher prices the cost of which is being subsidized by the government.

It appears the Water Utility agency is not monitoring and keeping track of costs of water production and the need to review water rates and related fees to justify rate and fee increase to meet production costs. In addition, the Water Utility should not charge commercial bottling companies the minimum rate (\$.85 per 1,000gal.) as they are profiting from water drawn from the public water supply system, the cost of which is being subsidized by the government.

Recommendation

We recommend that:

- The cost of production and water rates and fees be reviewed and updated on a regular basis to enable the Utility agency to recover costs of operations.
- The Water Utility agency together with the Director of Public Works discuss with the Minister of Public Infrastructure, Industries and Commerce of the need to commission a utility rate study to determine the actual cost of water production and how much the government is subsidizing its operations.
- Water rates for commercial water bottling companies be reviewed and adjusted in order for the government to recover the cost of water treatment and distribution from the companies, which presently are being subsidized by the government.

NWSPSC's Response: No response

Finding 5.2.5 EQPB's Roles and Responsibilities are not Fully Performed

The Environmental Quality Protection Board should have qualified laboratory technicians and equipment to undertake all tests required by the Public Water Supply System Regulations.

One of the roles and responsibilities of the EQPB is to monitor and regulate the quality of water produced and distributed by the Water Utility agency, including a full chemical analysis. The monitoring and enforcement functions include, but not limited, to the following tests:

- Conduct water sampling, testing, recording and reporting in accordance to the approved analytical and quality control procedures to ensure adherence to all Laboratory Certification criteria (i.e. daily chlorine residual testing for Koror-Airai Public Water System, and monthly bacteriological testing for all Public Water Supply Systems and marine waters).
- Properly use and maintain specialized equipment
- Synthesize, computerize, and analyze data collected and generate reports for submission to EQPB Executive Officer and other designated supervisors and related project managers.

During the audit it was determined that the last full chemical analysis conducted for the Koror-Airai Public Water System was in 2000. Since then, there has not been another full chemical analysis due to lack of funding. Hence, capabilities of the EQPB Laboratory Technicians are limited to testing for microbiological contaminants, turbidity, and disinfectant residuals.

Apart from the lack of funding, a full chemical analysis is too complex and EQPB does not have the expertise and equipment to conduct the analysis.

As a result, it could not be established that the water is free from the chemicals that it has not been screened for in the absence of a full chemical screening.

Recommendation

We recommend the Environmental Quality Protection Board and the Laboratory Section seek technical advice from experts and funding to assist the agency to acquire the necessary equipment and trainings for the laboratory technicians in order to conduct a full chemical analysis of the Public Water Supply System as required by the Public Water Supply System Regulations.

***EQPB's Response:** EQPB testing is supposed to be limited to chemical screening and testing to determine compliance and aid in enforcement of the regulations. Full chemical analysis requires very specialized equipment and training beyond our capabilities. We, as well as most regional laboratories rely on overseas labs to conduct such analysis. The report accurately identifies that the last full chemical screening was performed by EQPB in 2000 because all budget requests for 2005 thru 2011 to provide this screening were never approved.*

Finding 5.2.6 EQPB and Water Utility Does Not Inform Users that Water is Safe for Drinking

The EQPB and Water Utility have a social responsibility to inform the Koror and Airai communities whether water is safe for drinking.

The Public Water Supply System Regulations only requires the Water Utility and EQPB to issue notices to inform water users when the water quality is contaminated, and these notices were promptly issued.

The Office of the Public Auditor surveyed one hundred (100) Koror-Airai residents. The results indicated that 76 respondents drink the water from Koror-Airai water system and 72 of them do not boil the water before drinking. Forty five (45) learned that the water (Public Water System) is safe for drinking from friends and relatives.

It appears the cause for the varying levels of awareness among water users with respect to water quality is because the information does not come from the Water Utility (water provider) or EQPB (the monitoring agency).

As a result, not all water users are aware that water from the Public Water System is safe for drinking; however, many become aware when water is unsafe for use when warning notice is issued by the EQPB.

Recommendation

We recommend that EQPB and Water Utility not only issue boiling water notices when the Public Water System is not safe for drinking but also issue notices when the water is safe for public drinking.

***EQPB's Response:** It is the legal responsibility of the operator, not EQPB, to issue public notices regarding safe drinking water per Chapter 2401-51-42 thru 2401-51-51.*

***NWSPSC's Response:** No response*

5.3 Compliance with the Legal and Policy Framework Including Monitoring Arrangements

Finding 5.3.1 Performance Management System

Water Utility should establish a performance management system that sets performance indicators (i.e. type and frequency of tests to be conducted) to enable the agency to monitor performance and analyze test results the outcome of which leads to effective performance management and improved water quality.

During the audit, we found that Water Utility has not established a performance management system with performance indicators directing, for example, the type and frequency of tests required to be conducted, to enhance monitoring of performance and analysis of test results to achieve compliance with the Public Water Supply System Regulations

It appears the vacancy in the position of Chief of Utility Division is fostering operations without proper planning, setting goals and performance indicators with respect to the type and frequency of tests that need to be performed, performance monitoring, and analysis of test results to determine improvements in operations (i.e. quality of water).

As a result, the Water Utility can demonstrate that it carries out testing of water supply on a regular basis, however; the system does not allow the agency to monitor performance indicators on a real

time basis and conduct performance evaluations to gauge the effectiveness of operations as they relate to water quality.

Recommendation

We recommend that the vacancy in the position of Chief of Utility Division be filled to provide a structure of authority and a clear line of duties and responsibilities within the Division. In this context, we recommend that management of Water Utility establish a performance management system with performance indicators (i.e. type and frequency of test required to be performed) to facilitate monitoring of performance and analysis of tests results the outcome of which leads to effective performance management and improved water quality.

NWSPSC's Response: No response

5.3.2 Population Health

The Republic of Palau National Water Safety Plan requires the Ministry of Health to protect the health of the people in the Republic by ensuring clean, safe and healthy living environments.

The Ministry of Health maintains a Reportable Disease Surveillance System (RDSS) one of the objectives of which is to register data on gastroenteritis infections from food-borne and waterborne diseases.

The audit found that there have been no documented water-borne diseases in 2009 to 2010 from people using the Koror-Airai Public Water System as shown below.

	2009	2010
Water Borne Disease		
Outpatient Encounters		
Diarrhea/Gastroenteritis	0	0
Parasitism	0	0
Total Outpatient	0	0
Inpatient Admissions		
Diarrhea/Gastroenteritis	0	0
Parasitism	0	0
Total Inpatient	0	0
Total	0	0

Source: Bureau of Public Health

The Water Utility agency provided clean and safe drinking water and the Environmental Quality Protection Board regularly monitored the agency to ensure that water is safe for drinking, which resulted in no reportable waterborne diseases in the two years under review.

Recommendation

We commend the Water Utility for its unrelenting pursuit to provide safe drinking water to the public and, similarly, the EQPB's relentless efforts in monitoring and regulating water quality.

NWSPSC's Response: *The Ministry of Health Division of Environmental Health mandate is to protect the people of the Republic by ensuring clean, safe and healthy living environments. The National Water Safety Plan supports this mandates.*

Finding 5.3.3 Water Utility Lacks Benchmarks to Demonstrate Improvements in Operations

Water Utility should be able to demonstrate improvements in the effectiveness of its operations by setting benchmarks (goals or desired results) and evaluating and comparing results of operations to those benchmarks. In addition, the agency should design a system to use the data and information it generates from operations into a format that can be analyzed to support operations and decision making.

The benchmarks that we examined are the level of chlorine residuals and turbidity in the water supply. However, we were unable to make any conclusive determinations regarding chlorine residuals or turbidity levels as the Water Utility had not established any benchmarks to which chlorine residuals and turbidity levels were aimed to achieve. In addition, the method used by the Utility Division to record and capture data is tedious and cumbersome (manual daily log sheets) and are not synthesized into a useful format for conducting comparative analysis or other evaluations.

It appears the Water Utility agency did not establish benchmarks with which operations were aimed to achieve. In addition, the agency is generating a bulk of data and information the usefulness of which have not been put into a format or synthesized to support program evaluations and monitoring.

As a result, it would be difficult for the Utility agency to demonstrate improvements in the effectiveness of operations without benchmarks or goals with which to strive for. In addition, without a system to record and capture data, it would be difficult for the agency to substantiate measurements to effectiveness of operations.

Recommendation

We recommend the Water Utility set benchmarks or goals for specific activities (i.e. chlorine residual levels or turbidity levels, etc.) with which the agency can establish strategies for achieving over a set time period. In addition, a system should be established to record and capture data and information to support measurements or evaluation of results of those activities.

NWSPSC's Response: *No response*

Finding 5.3.4 EQPB not Conducting the Regulated Number of Tests for Contaminants

The EQPB should be conducting the regulated number of tests for chlorine residuals, turbidity levels, and coliform bacteria on a yearly basis.

The Environmental Quality Protection Board conducts tests on chlorine residuals, turbidity levels, and coliform bacteria at different locations within the Koror-Airai public water supply system and

the hospital. There are regulated numbers of tests that must be conducted for each of the above yields on a yearly basis. Results for the 2009 and 2010 tests are presented in the table below.

		Regulated # of tests	# of tests in FY 2009	Variance	# of tests in FY 2010	Variance
Koror	Chlorine testing	3500	2863	(637)	2415	(1085)
	Turbidity testing	644	793	149	667	23
	Bacteria testing	168	169	1	171	3
Hospital	Chlorine testing	250	221	(29)	189	(61)
	Turbidity testing	250	218	(32)	178	(72)
	Bacteria testing	12	16	4	12	0

Source: EQPB Laboratory Section

The audit revealed that although water was safe for drinking in fiscal year 2009 and 2010, the EQPB did not conduct the required number of tests for chlorine residuals (637 less in FY 2009 and 1,085 less in FY 2010) in the Koror-Airai Public Water Supply System for those fiscal years. Similarly, the EQPB did not conduct the required number of tests for chlorine residual and turbidity levels at the hospital for the same fiscal years as well, as the above Table shows. The agency did, however, conduct the required number of tests (and exceeded) for turbidity and bacterial levels in the Koror-Airai Public Water System in FY 2009 and 2010.

Chlorine Residuals

Fiscal Year	Total Number of Test Done	Below Recommended dose	Percentage
2009	2,863	229	8
2010	2,415	196	8.1

Turbidity

Fiscal Year	Total Number of Test Done	Registered Violations	Percentage
2009	793	236	29.8
2010	667	35	5.2

Coliform Bacteria

Fiscal Year	Total Number of Test Done	Registered Violations	Percentage
2009	169	1	.6
2010	171	1	.6

According to the EQPB, the recommended dosage of Chlorine concentration in order to destroy bacteria and keep the water safe for drinking is between the range of .2 - .8 mg/l. Based on the above Table of Chlorine Residual tests results in 2009, of the 2,863 locations tested within the Koror-Airai public water system, 229, or 8%, were found to have chlorine concentration below the recommended dosage. Similarly, in 2010, 196 (8.1%) of the 2,415 locations tested were found to contain chlorine concentration below the recommended dosage.

According to EQPB, the maximum contaminant level for Turbidity is not more than one (1) Turbidity Units. Based on the above Table of Turbidity test results, of the 793 tests conducted in

2009, 236 (29.8%) registered violations_ meaning Turbidity levels were higher than 1 Turbidity Units. Similarly, 35 (5.2%) violations were cited out of the 667 tests conducted in 2010.

The maximum contaminant level for Coliform Bacteria is zero (0), according to EQPB. The above Table shows that in 2009, of the 169 tests conducted, there was only 1 registered violation. The Table shows similar results for 2010.

The EQPB management did not ensure that laboratory technicians performed the required number of tests for chlorine residuals for the Koror-Airai public water supply system and for chlorine residuals and turbidity levels at the hospital. In addition, the EQPB may not be applying more stringent measures on Water Utility when test results show chlorine concentration below the recommended dosage and turbidity levels exceed maximum contaminant levels to ensure that corrective action is taken.

Recommendation

We recommend the EQPB management monitors and coordinates with the laboratory technicians to ensure that the regulated number of tests for chlorine residuals, turbidity, and bacterial levels are conducted for the Koror-Airai public water supply system and the hospital. In addition, the EQPB should apply more stringent measures upon Water Utility to ensure that appropriate measures are taken when tests results reveal violations for Chlorine Residual, Turbidity, and Coliform Bacteria to maintain the quality of the drinking water in the public water supply system.

EQPB's Response: No response

Finding 5.3.5 Water Utility and EQPB Does Not Regularly Report Performance to Government and Stakeholders

The Republic of Palau Public Law No. 6-11 states in part: Every agency shall prepare a performance report for the programs and services it administers or provides... Each agency shall submit its report to the President, the Olbiil Era Kelulau, and the Public Auditor.

During the audit, we found that the Water Utility and EQPB did not submit their performance reports for 2009 to the Public Auditor as required by law. The EQPB subsequently provided its performance report for 2009 only upon request of the Office of the Public Auditor during the field work for this audit.

We were unable to determine the reason for EQPB's and Water Utility's failure to submit the Performance Reports for 2009 as required by law.

As a result, the Water Utility and EQPB did not comply with RPPL No. 6-11 with respect to submission of performance reports for 2009.

Recommendation

We recommend the management of Water Utility Agency and EQPB monitor their respective operations to ensure that future performance reports are submitted to the President, Olbiil Era Kelualu, and Public Auditor in accordance with RPPL No. 6-11.

***EQPB's Response:** EQPB's 2009 and 2010 Performance Reports were provided to the OEK and the Office of the President by both email and CD.*

***OPA's Comments:** A copy of EQPB's Performance Report was not provided to the OPA as required by law so we had to request a copy.*

***NWSPSC's Response:** No response*

Finding 5.3.6 Complaints

In the provision of the most essential service (water) to the public, the Water Utility, the provider, and the EQPB, regulator of water quality, should have a process in place for registering customer complaints.

We found that the EQPB has a complaints section that registers all complaints, including those relating to safe drinking water. We reviewed the complaints log book and found that there were no complaints pertaining to safe drinking water. We also found; however, that the Water Utility does not have a process for registering customer complaints. For example, we found reports of leaking pipes but these reports were not registered.

Without a mechanism for registering customer complaints, the Water Utility can easily lose track of complaints and therefore lessen the effectiveness of follow up on those complaints. In addition, without recorded history of complaints, the Utility agency may not be able to capture critical statistical data and information on customer complaints, which may be essential for planning and decision making purposes.

Recommendation

We recommend the Division of Water Utility establishes a process for registering and keeping track of customer complaints. This process will enable the agency to act on customer complaints more responsively and effectively and thereby improve its services to the public it serves.

***NWSPSC's Response:** No response*

Finding 5.3.7 Water Utility Does Not Have a Plan in Place to Manage Increased Population and Effects of Climate Change

Water Utility should have a plan in place to forecast future demand for water and the supply of water that may be affected by climate change, development, and population growth.

The audit revealed that Water Utility does not have any plans in place to forecast future demand for water and supply of water that may be affected by climate change, development, and population growth. For example, the Utility agency connected 54 new water customers in 2009 and 48 in 2010 without estimating the impact these new connections will have on water supply.

As reported in Finding 5.2.3, the Water Utility has been operating without a Chief, a management position, responsible for planning, supervision, and executing operations of the Division. It appears this may be one of the reasons for the lack of planning and forecasting for future demand for water and what the agency is doing to meet those demands.

As a result, the Water Utility lacks any plans or forecasts on how continued development (construction of residential and commercial structures), population growth, and effects of climate change will impact future demand for water and the supply of water to meet the demand.

Recommendation

We recommend the Minister of Public Infrastructure, Industries and Commerce direct the Director of Bureau of Public Works to work with the Water Utility Division to seek expert advice and funding to conduct a study on the impact continued development, population growth, climate change, and other factors will present on future demand for water and the supply of water to meet the demand. The Bureau of Public Works and the Water Utility should use the results of the study to formulate detailed plans and forecasts to prepare for future operations.

NWSPSC's Response: No response

6.0 Conclusion

In conclusion, we commend the Water Utility agency of the Bureau of Public Works for providing access to safe drinking water via the Koror-Airai Public Water Supply System in fiscal years 2009 and 2010. In doing so, we also commend the Environmental Quality Protection Board and its personnel for the efficiency and effectiveness of operations in monitoring and enforcing water quality to ensure that it is safe for public consumption. In this context, we also observed during the review funding limitations (budget constraints) faced by these two agencies in carrying out their duties and responsibilities_ the former to purify the water and distribute it to the public and the latter to monitor and regulate the quality of water.

And although the audit revealed that water (Koror-Airai Public Water Supply System) was safe for drinking in fiscal year 2009 and 2010, and majority of the people in Koror and Airai were provided access to the water, the audit nonetheless found several areas requiring further actions by the responsible agencies in order to improve access to safe drinking water. We propose recommendations in the following areas:

Existence of a Legal and Policy Framework

- There is no legal and policy framework to guide the work of Government Agencies responsible for the supply and delivery of safe drinking water to the people of Palau.

- There exists a National Water Safety Plan for Palau but it is still in draft form.
- There exists a Drinking Water Safety Plan for Koror and Airai but it is also in draft form.
- Water Utility has not identified risks associated with drought conditions, increased development, and wasted water the impact of which can affect the supply and quality of water.
- Public Water Supply System Regulations are in place; however, these regulations need to be reviewed and updated on a regular basis.
- Recent developments took place on March 22, 2011, World Water Day. The Environmental Quality Protection Board (EQPB) organized and held the 1st Palau National Water Summit. The goal of the summit was to create a water policy framework and the EQPB is responsible for this ongoing activity.

Process by which the Legal and Policy Framework is Implemented

- Water operators at the Water Utility are not certified. The EQPB therefore performs tests and analysis on the water quality on behalf of the Water Utility.
- The Water Utility does not have a proper maintenance system for the water treatment and distribution infrastructure including appropriate pipe replacements, repair procedures, and main flushing programs, etc.
- The positions of Chief of Division of Water Utility and Manager of Water Connection and Repair remain vacant and the Divisions lack the proper equipment to execute their duties and responsibilities.
- Water Utility rates and fees are not regularly reviewed and updated and water users are charged different rates, fees.
- EQPB's roles and responsibilities include full chemical screening of the water supply, which the last full chemical screening was conducted in 2000.
- The Water Utility and EQPB do not inform users that water is safe for drinking.

Compliance with the Legal and Policy Framework Including Monitoring Arrangements

- Water Utility does not have performance indicators in place.
- The Ministry of Health reported that there were no water-borne diseases from 2009 to 2010.
- Water Utility should be able to demonstrate improvements in the effectiveness of its operations by setting benchmarks (goals or desired results) and evaluating and comparing results of operations to those benchmarks.
- The EQPB performed more than the regulated number of tests for bacteria and turbidity but the testing for chlorine residual was less than the regulated number.
- Water Utility and EQPB did not submit their performance reports for fiscal year 2009 as required by Republic of Palau Public Law No. 6-11.
- The EQPB maintains a system to register customer complaints; however, the Water Utility has not established a similar system.
- Water Utility does not have a plan in place to forecast the quantity of water supply that may be impacted by climate change, increased development (commercial and household construction), and population growth.