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TA No. 1775-MAR: Majuro Water Supply

Report of the Financial Analyst

Michael G. Powell & Associates, Ltd.

February 1993

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**REPUBLIC OF THE MARSHALL ISLANDS - MAJURO WATER SUPPLY PROJECT
REPORT ON ORGANIZATION MANAGEMENT AND FINANCIAL ASPECTS**

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**REPUBLIC OF THE MARSHALL ISLANDS - MAJURO WATER SUPPLY PROJECT
REPORT ON ORGANIZATION MANAGEMENT AND FINANCIAL ASPECTS**

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ASIAN DEVELOPMENT BANK - MAJURO WATER SUPPLY PROJECT

REPORT ON ORGANIZATION MANAGEMENT AND FINANCIAL ASPECTS

ORGANIZATION & MANAGEMENT

General

The Majuro Water and Sewerage Company was established by Order in Cabinet in January 1989. The Articles of Incorporation are attached as Annex 1. Its shares, together with those of the Capital Improvement Projects Corporation, were originally held by the Marshall Islands Development Authority, another State Corporation. The management of the Company was contracted to a private company, Pacific Management Services Corporation. The contract, which expired in September 1991, was not renewed and, in July 1992, the shares of the Company were transferred to the Ministry of Public Works. At the present time, the Government is considering the possibility of a merger with, or joint management by, the Marshall Energy Corporation.

Legislation

Water Rights

Under the prevailing land tenure system of the Marshall Islands, land is allotted by clan chiefs to clan members for life. The land, the rights to which extend over the adjacent lagoon and ocean, can be leased but not sold.

It is unclear whether the rights extend below the surface to include groundwater. Conflicts have already arisen over the ownership and control of groundwater on Laura Island, where wells have been developed to supply the rest of the connected atoll; the terms of leases have not been satisfactorily settled; the local water users feel that their water requirements should be fully met (possibly without charge) before water is supplied to the more populated end of the atoll.

These and other issues, including the right to acquire land for catchment areas, reservoirs and ground water development, and the protection of groundwater sources from uncontrolled exploitation, will have to be resolved in the near future, before land becomes more scarce and the present rights even more valuable.

It is recommended that Government draw up appropriate legislation to regulate and control water resources on the Majuro Atoll or, preferably to govern the whole of the Marshall Islands. Failing such legislation the Government should, as a minimum, establish reserves to protect potential reservoir sites or groundwater areas from development for other uses. Advice to Government on immediate action should be given under the Advisory Technical Assistance (ADTA).

Other Legal Matters

In 1992, the Criminal Code was amended to protect water and sewer lines by making unauthorized use or contamination of the system a criminal offence. Although the Code enables MWSC to prosecute for illegal connections, illegal pumping, and other tampering, there is no comprehensive legislation granting the powers that may be required for adequate regulation and practical enforcement.

It is recommended that the Government enact enabling legislation in which the powers, duties and responsibilities of the MWSC are clearly set out and which, in particular, will give the Board of Directors power to make rules and regulations so as to ensure that MWSC can carry out its functions effectively. A suggested form of Enabling Act is attached as Annex 2.

It is further recommended that, failing the provision of enabling legislation, MWSC should ensure that all existing and future consumers enter into a contract of service which clearly define the conditions of service, and which would authorize MWSC, *inter alia*, to install and maintain connections and allow access to premises to inspect pipes and fittings and to carry out necessary repairs.

A system of communal septic tanks and fields was recently installed for the residents of the Laura community for the protection of the Laura lens water, with sewerage connections and toilet houses provided at no charge.

It is recommended that the liability for their future operation and maintenance, and for the provision of additional services to new houses should be clearly established, possibly by amendment to the building code.

Direction of MWSC

Composition of the Board

The Board is made up of four Government appointed directors, all of whom are Ministers, or members of the President's Secretariat. MWSC would benefit from a broader range of business skills and interests in its Directors, particularly in the fields of finance, administration and public health. This has been cited as one of the important elements of the improvement in performance of the Marshall Electric Company (MEC), another corporation of the Government, whose Board includes Directors from the private sector.

In view of the present problems of water supply, the interests of consumers should also be represented on the Board through public election of Directors. While this may be difficult to accomplish, it would effectively reduce the influence and lack of accountability that is occurring as a result of political appointments.

It is recommended that the total number of Directors be increased from four to seven, on the following two considerations:

- (a) the appointment of two Directors from the private sector, to provide stronger background in the above fields and in business management; and
- (b) the election of two Directors from the general public, to improve responsiveness to the water user's needs, and to provide consumers with a means of participation in the policy development of MWSC.

Conduct of the Board

The Board does not meet on a regular basis and clearly misunderstands its role in several areas, making it ineffective in providing direction to the Company, and resulting, on occasions, in detrimental interference (1).

Both the Board and Senior Management require assistance to strengthen understanding of their roles in the following areas:

- policy formation and development;
- planning and budgeting for future services to meet increasing consumer demand.
- long range planning and capital budgeting;
- differentiation between the responsibilities of the Board and those of Management;
- establishment of clear corporate and management objectives and means for evaluating performance;

It is recommended that ADTA should include a component for Board and Senior Management instruction and discussion of the above topics.

Organization and Staffing

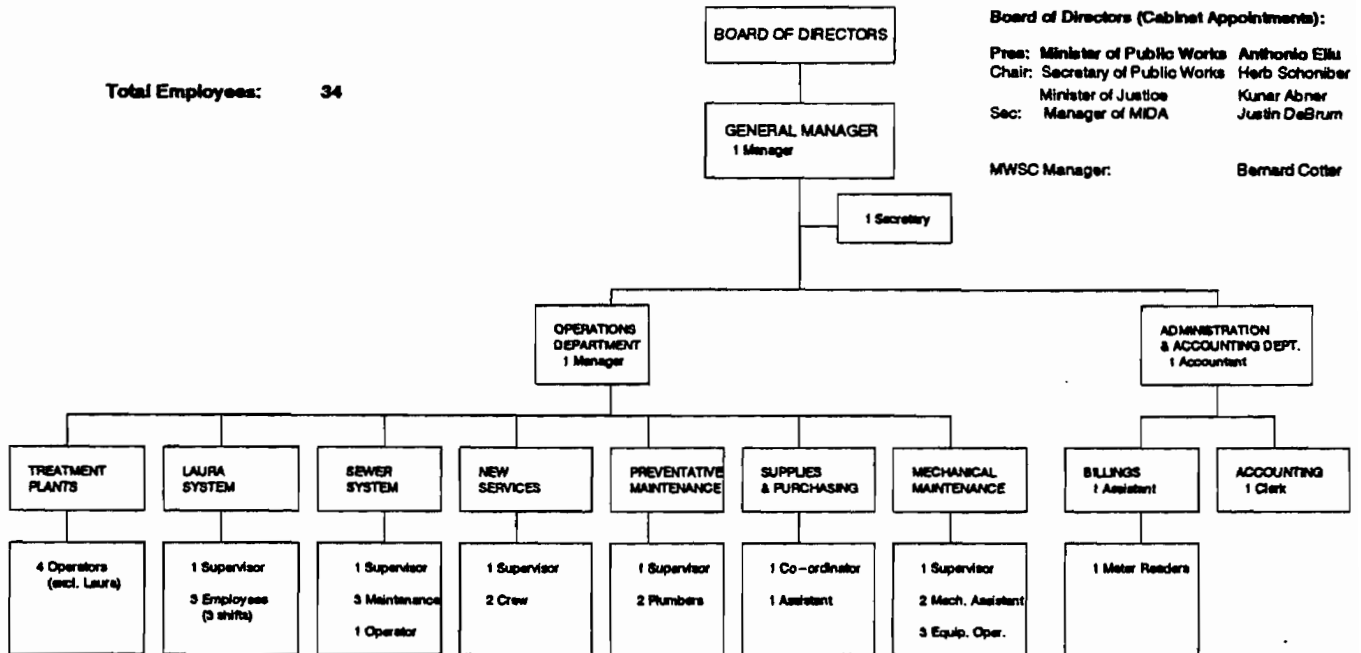
Present situation

A chart describing the current organizational structure, and that proposed by the Consultants, including numbers of employees, can be found on the following page. A schedule of the proposed MWSC staffing and associated costs is set out in Annex 3.

(1) For example, there has been intervention by Directors in hiring employees, and interference in disconnections on overdue accounts.

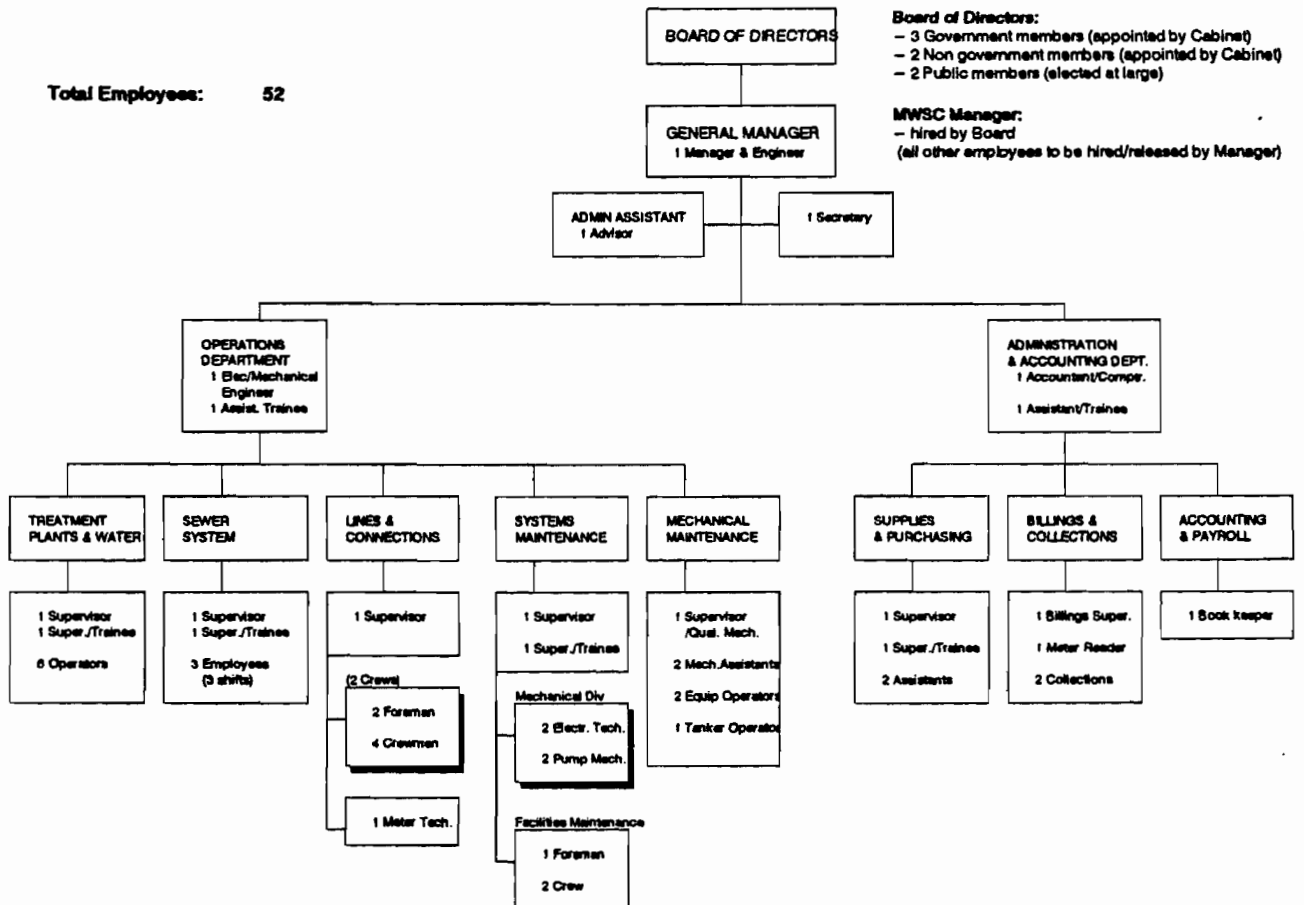
**MAJURO WATER & SEWERAGE COMPANY
ORGANIZATIONAL CHAR- 1992**

Total Employees: 34



**MAJURO WATER & SEWERAGE COMPANY
ORGANIZATIONAL CHART - PROPOSED**

Total Employees: 52



MWSC has been strongly influenced by American expatriate management and influence, as have most Government institutions in the Marshall Islands. Typically, the employment objectives have been to improve the effectiveness of employees and to reduce surplus employment, but it is difficult to retain good, well trained employees with the traditionally low wages. Moreover, the removal of poor employees has been hampered both by the Public Service Commission (PSC) rules and by political influences (1).

The long term objective of MWSC should be to employ Marshalese people in management as well as staff positions, assisted as necessary, by short term expatriates and consultants. To meet this objective, expatriate assistance will be required initially for a number of positions (See Annex 4), in order to provide expertise and training in technical and administrative skills. In general, expatriate contracts of no more than two years should be adequate, subject to extension or renewal according to circumstances.

It is recommended that MWSC seek exclusion from regulation under the PSC, so as to provide the necessary flexibility and independence in their employment practices.

Staffing

MWSC is inadequately staffed in a number of areas, due primarily to cash shortage. As a consequence, it is unable to carry out its functions effectively. A description of the recommended actions is given in Annex 4, together with training requirements. The principal areas in need of additional skills and manpower are as follows:

(a) Technical:

- long range planning and budgeting;
- electrical and mechanical operations and maintenance;
- groundwater development;
- quality control systems for monitoring operations; and
- routine maintenance and repairs.

(b) Financial and Administrative:

- long range planning and capital budgeting.
- general administration including personnel development;
- accounting and reporting;
- billing and collection control; and
- internal controls.

(1). Employees who have little intention of working are periodically forced on MWSC. The Government owned Marshall Electric Company cites its exclusion from regulation by the PSC as an important factor in developing an effective and motivated employee group.

Additional staff are required for system maintenance and repairs, for customer services, and system monitoring.

It is believed that the proposed increases in staff will be adequate to provide the additional expertise and manpower required. This will result in a doubling of the total annual cost for a 60% increase in staffing. This estimate is based on existing MWSC wages and benefits; where new posts are proposed, they are based on those of the Marshall Electric Company, whose payroll costs are generally similar for employees of equivalent status. This differs from the amounts suggested in the MOU.

It is therefore recommended that the number of personnel of the MWSC be increased from the present 34 to 52, at an estimated cost of \$740,000, including temporary additional expatriate management.

It is further recommended that, as an alternative or supplement to the above recommendation, Government consider a twinning arrangement with an overseas water and sewerage authority, to provide some of the expatriate supervision and training requirements.

Accounting

Accounting System

The accounting needs of MWSC are not complex, nor is the volume of transactions large, the total number of fresh water customers being at present approximately 1650. Although the MWSC accountant holds no formal accounting qualification, the basic book keeping has been conscientiously maintained, with accounting adjustments prepared by the auditors, in conjunction with the audits.

Computerization

The accounting and billing for MWSC has, until recently, been prepared by the accountant and two assistants, using elementary accounting software of DacEasy, and an unintegrated, databased billing program. MWSC has recently purchased a more sophisticated US databased accounting program, including a module for utility billing and receivables, and general ledger. The MWSC would benefit from immediate assistance with the installation, set-up, and training in their conversion to this system, the current staff lacking both the time and expertise for the work. Without qualified assistance, there is a high risk of an unsatisfactory result, compounded by the difficulties of transition to metered billings. Unfortunately, the cashflow problems of MWSC indicate that they will not seek such help, and, if included in the ADTA (March 1994), it will be too late.

It is strongly recommended that the Bank arrange for immediate assistance to MWSC through ADTA or other means to advise on the appropriateness of the accounting program selected, its installation and use.

It was not possible, within the scope of the recent Fact Finding Mission, to evaluate the software beyond a cursory review of the features and operations of the program, which appeared adequate. Adoption of inappropriate programs can consume inordinate staff resources, as well as problems of accounting errors and poor customer relations.

It is recommended that a comprehensive review of the accounting program be conducted during the next Mission, or as part of the immediate assistance recommended above.

General Accounting

As noted above, annual accounting entries and adjustments for items such as depreciation, year end accruals, and provision for uncollectible accounts, have been done with the assistance of the auditors. The most recent audit will cover two fiscal years (a cost saving decision). For improved planning and decision making purposes, more timely and accurate accounting is necessary. This could be provided by regular periodic professional assistance being provided by the accounting firm of the auditor, or by the contracting of a qualified accountant once funds are available, as recommended in the Annex 4.

It is recommended that the use of financial data, budgeting, and a basic understanding of financial statements and cash flow projections be included in ADTA institutional strengthening of the Board of Directors, and that additional professional accounting services be engaged to provide advice and review of the accounts on a more timely basis.

It is further recommended that the bank require annual audited statements of MWSC.

Revenue

The chief sources of revenue are potable water sales, which until recently, were charged on a flat monthly fee basis. Charges for sea water and sewerage have been levied as a fixed surcharge on potable water billings.

Neither potable nor fresh water charges have been related to the cost of their provision. These revenues have not been segregated in the accounting, however this will be done as of the 1993 fiscal year. Other revenues come from connection fees, which appear, on average, to have been below the cost of provision, particularly now that meters are also required, and from custom work, and sundry charges.

It is recommended that the adequacy of charges for connections and sundry services be reviewed in further depth during the next bank Mission.

Metering

For many years, customers have been charged a flat monthly fee which entitled them to use as much water as they wanted and was available. This monthly charge has not been increased for many years, and provides enough revenue to meet one third of the operating costs. The Board of Directors and management have recently taken a major step to resolve this problem by installing meters on all connections and adopting a tariff structure to charge for water on the basis of consumption. This will encourage consumers to conserve water, and to pay in accordance with their own usage. The actual effect on consumption will not be known until after February when the first fully metered bill will be issued. The progressive tariff should also be expected to result in an increase in individual connections by households which may previously have shared connections.

Billing and Collection Procedures

Bills are prepared monthly. A notice of their issue is advertised in the newspaper, for those without mailing addresses. No statements of overdue accounts have been prepared in the past, the outstanding balance being carried forward to the following month's bill. As a result of computer problems, regular billing was delayed during the fall of 1992, with a three month back log being billed during January 1993. This delay has further aggravated the severe cashflow and collection problems of MWSC. MWSC should give attention to new methods of payment and collection for the convenience of consumers. Few Marshalese have cars and the consumer population is spread around 33 miles of atoll; arrangements could be made for retail stores or other businesses to receive payments on behalf of MWSC, for a small commission. MWSC could also consider having meter readers deliver overdue notices on their regular rounds, and possibly take payments.

It is recommended that the adequacy of collection procedures be reviewed in further detail on the next bank Mission, and strategies for their improvement included in ADTA.

Delinquent Accounts and Collections

Water revenues are the main source of income, apart from a limited annual government contribution; loss of revenue and cashflow from unpaid bills is therefore very serious. As of January 8, 1993 (subject to audit adjustments for fiscal years 1991 and 1992), \$285,442 or 84% of outstanding accounts have been overdue for over three months, many of those much longer. This represents 70% of the total revenue from water sales for 1992. Attempts to enforce collection have not been successful, primarily due to intervention by Government ministers and the Board of Directors. Furthermore, there are additional problems of disputed billings because MWSC has been unable to provide water on a regular and dependable basis to all parts of the service area.

CAPITAL WORKS**Capital Works - Existing****Ownership of Assets and Recognition of Economic Cost**

The capital assets of MWSC are currently owned by Government. For a period in 1990, the assets were transferred to MWSC at a nominal valuation, as a Government contribution, but were subsequently transferred back to the Government. Assets are leased to the MWSC, the original lease providing for a nominal fee of \$12,000 per annum, but the fee is waived as long as the ownership of MWSC remains with Government. In the event that such fee be charged, the sum is inadequate to be considered as fair economic rent of the assets concerned.

Asset Valuation

Valuation of the capital assets of MWSC is required so that provision can be made in the water charges to recover their cost. As noted as a qualification to the Auditor's opinion on the 1991 Financial Statements, it is not possible to determine the current book value of the capital assets because no inventory has been maintained. Consequently a complete list of the assets of the water and sewerage system is not available.

A preliminary schedule of fixed assets was compiled in consultation with the Mission's Water Supply Expert, the Manager and Accountant of MWSC/CIP, and the Administrator of the CIP. From discussion and review of records, the year of purchase, historic cost, and estimated current replacement costs were obtained. For each asset, or asset group, the current condition was reviewed by MWSC and CIP, who estimated the residual life.

The schedule is presented in Annex 5, together with a description of the methodologies used by the Consultant in determining the valuation adopted for the financial projections. The total value amounts to a little over \$15,000,000.

A more detailed study, including an inventory of assets and method for appropriate accounting in the future, will be carried out as part of ADTA.

It is recommended that the existing capital assets of the water supply and sewerage system be transferred, after revaluation at their current value, to the accounts of the MWSC, to ensure that tariffs are adequate to recover their cost and provide for their future replacement. To account for the transfer, Government may make an equity contribution of equal amount or, alternatively, MWSC may issue additional shares, which could form the basis for later dividend payments.

Insurance

In accordance with the lease agreement with Government, MWSC is required to insure the water supply and sewerage system assets, but the policy has not been renewed for fiscal 1993 because of cash shortage. Failure to adequately insure MWSC's capital works could result in serious losses and possible financial failure, considering risks such as the recent typhoon damage that required significant repairs to the airport catchment system.

It is recommended that all the capital assets of the water and sewerage system which, if damaged, would cause major interruption to or failure of the water supply, or other serious financial risk, be appropriately insured at all times by MWSC.

Capital Works - Future

Project Planning and Implementation

The proposed project is one of rehabilitation, and does not provide significant additional supply of water.

It is recommended that the Board initiate long term planning for the development of new sources as a matter of urgency, and in view of the current cash shortage of MWSC, Government should provide the necessary funds for the purpose.

Under the arrangements proposed in the Memorandum of Understanding, the design and supervision of construction of the proposed project will be undertaken by Consultants under the general guidance of the Project Management Office (PMO) established in the Ministry of Public Works (MPW).

Two individual Consultants will be attached to the PMO on an as needed basis to advise on project design and construction.

Capital works have previously been undertaken by the Capital Improvements Projects Office (CIP) of the MPW who have been responsible for design, contract preparation and construction supervision. The CIP has facilities which MWSC should continue to make use of, rather than setting up their own.

Project Accounting

At present, disbursements for all projects undertaken by the CIP have been accounted for by the CIP. From the files and records reviewed, accounts appear to have been systematically kept, although some improvements could be made if the accountant (shared with MWSC) had more time to devote to the work. This should improve if additional accounting staff is hired by MWSC. CIP is, however, accountable only for project disbursements; Government has failed to adequately reconcile and record additions to the system, or maintain an inventory

of the assets [1]. Under the proposed ADTA, MWSC will receive advice on appropriate accounting for assets and the maintenance of an asset register.

FINANCE

Current Situation

As MWSC has only been incorporated since 1989, and was operated for the first three years under a management contract, there is very little data recorded on a consistent basis with which to determine any meaningful trends or conclusions. Further, at the time of writing, audited statements for fiscal 1991 and 1992 are still not complete. However, the following observations summarize the present situation:

- revenues from sales were sufficient only to cover approximately one third of operating expenses, the balance of income coming from government subsidy;
- even with the maximum government subsidy of \$400,000 per year it has been impossible to perform adequate system repairs and maintenance;
- cashflow shortages have crippled operations, resulting in crisis control rather than planned spending;
- the sea water system has been constructed or installed using materials which have suffered severe corrosion, resulting in premature need for expenditure on major capital replacements.
- the Company is unable to provide a regular supply of potable water to all parts of the service area, resulting in EPA health warnings, abuse of the system, and deteriorating customer relations.

The Economic Cost of Water and Services

In the past, the amount that was charged for water was not related to the costs of obtaining and delivering the water, for example:

- MWSC was not charged for electric power by the government, a cost exceeding \$100,000 per annum;
- no charges were recorded to account for the construction and use of over \$25 million dollars that has been spent to build the system;

(1). Special audits of the disbursements and internal controls of federal financial assistance programs are conducted annually by independent auditors, as required under the 'Single Audit' program (US Act) of the government, the U.S. Department of the Interior designated as the cognizant agency. As terms of this audit may be adequate for Asian Development Bank purposes, it may be economical for the Bank to pursue the inclusion of this project in the engagement terms of the Single Audit, with any special amendments to the scope which the Bank may require.

- insufficient provision has been made for regular system maintenance; extensive replacement of major components will be required soon.

These factors have been incorporated in the financial projections to determine the required revenues, the results of which are discussed below.

Tariffs

In December 1992, effective February 1993, the Board of the MWSC published new tariffs to cover the costs of its services. The structure and application of the tariffs is given in Annex 6 and is summarized as follows:

- (a) for sales of fresh water: a minimum monthly charge plus a progressive quantity charge; separate tariffs apply to residential and business customers;
- (b) for sales of salt water: a minimum monthly charge plus a percentage of the fresh water charge;
- (c) truck deliveries (including deliveries to ships): a minimum delivery charge plus a quantity charge;

Charges and fees are also set out for fresh and salt water service connections and for connection to the main sewer.

At the same time, the Board adopted and published its Rules and Regulations, to apply to all customers, covering application of the tariffs, availability of services, obligations of customers, ownership of facilities, maintenance and repairs, misuse of services and other matters.

The tariff structure is comprehensive, clear and well presented. The rules and regulations appear to cover adequately the principal issues of MWSC and customer rights, obligations and remedies, although minor corrections and improvements should be made.

The legal authority for introducing and enforcing the tariffs and the associated rules and regulations was discussed with the Attorney General who confirmed that the Board had acted within its legal rights; it was also confirmed that the Board has complied with all requirements in regard to notification.

The Attorney General recommended that the Board file the adopted tariff and regulations with the Registrar of Companies.

Financial Projections

Effects of the New Tariff and the Project

The results of the financial projections are presented in Annex 7 for the period 1993 through 2005. The underlying assumptions for the projections are set out in Annex 8 (Notes and Assumptions), Annex 9 (Schedule of Project Capital Costs).

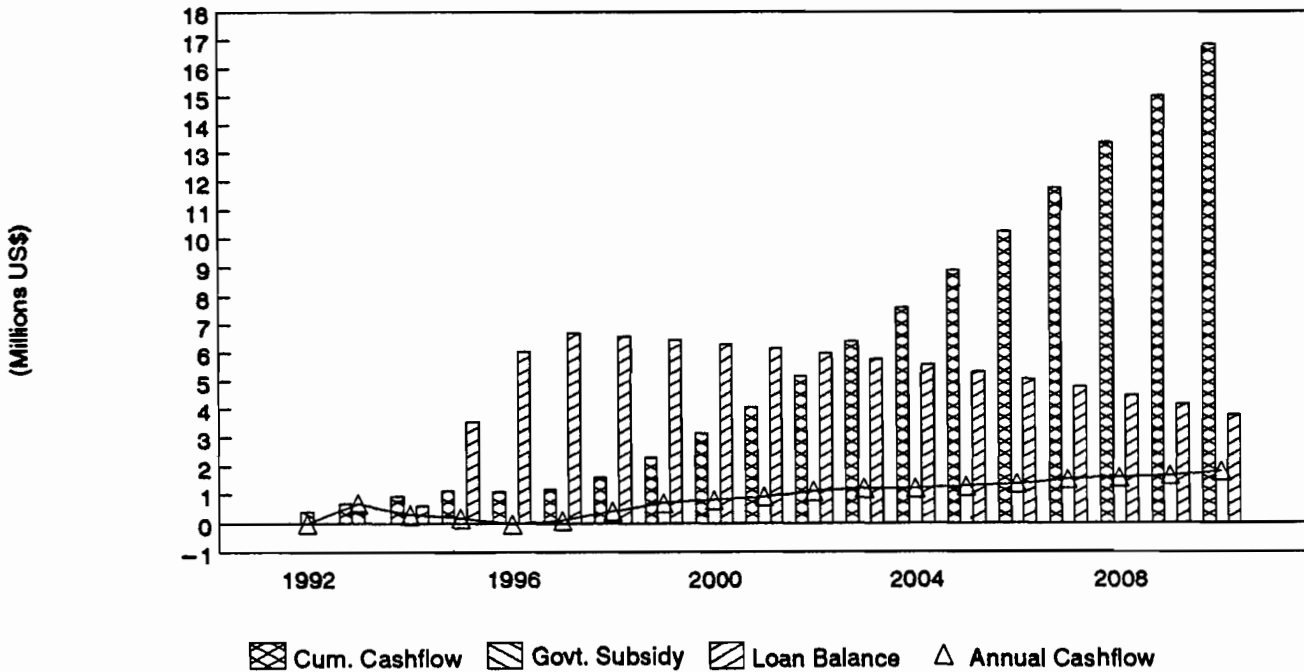
A summary of the financial results is shown in the graph on the following page which shows outstanding debt, annual cash flow and accumulated cash surpluses. The average tariff required and balances of key elements of the financial covenants are summarized in the table below the graph.

The projections indicate that, given satisfactory financial management and strategy, improved financial performance by MWSC will result, with decreasing dependence on government subsidy. The conclusions from the preliminary financial analysis are as follows:

- (i) From fiscal 1994, a government subsidy for MWSC should not be required, given the expected improvement in financial performance and the effectiveness of the new tariffs, discussed below. Nevertheless, a contingency plan for covering any shortfall in cash from revenues should be in place until MWSC's operations have stabilized;
- (ii) The tariffs recently introduced should be adequate to maintain revenues at levels sufficient to meet the Bank's financial covenants until fiscal 1997/98, when increases will probably be necessary. This assumes that the new tariffs will not result in a significant fall in demand; consumer response to the tariff may, however, not be apparent for some time. The tariffs will require review when new works for providing additional supplies of water are developed.
- (iii) Substantial cash surpluses should accumulate since part or all of the cost of the existing assets of the MWSC will, from now on, be recovered through an annual depreciation charge. The amount of the accumulation will depend on the level of the charge; several scenarios are possible. This cash surplus is available and should be retained by MWSC solely for financing future extensions to, and replacement of, the existing works.

The amount and timing of the costs of the future works cannot be determined until a long term capital budget has been prepared, incorporating the results of a long range plan for the provision of water and sewerage to the area. As noted earlier, long range planning is essential for the future stability of MWSC operations and should be given high priority by the Board of Directors.

**MAJURO WATER & SEWER CO.
IMPROVEMENT PROJECT FINANCING**



All figures in US\$ Millions, unless stated otherwise:

FISCAL YEAR ENDING SEPT:	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
AVG. TARIFF REQ'D. (\$/'000g)	1.25	4.27	4.27	4.27	4.27	5.00	5.50	6.75	7.25	7.75	8.50	9.00	9.25	9.75
Tariff in constant dollars	1.25	4.11	3.95	3.80	3.65	4.11	4.35	5.13	5.30	5.45	5.74	5.85	5.76	5.86
AVG. TARIFF REQ'D. (\$/m3)	0.33	1.13	1.13	1.13	1.13	1.32	1.45	1.78	1.92	2.05	2.25	2.38	2.44	2.58
Tariff in constant dollars	0.33	1.09	1.04	1.00	0.98	1.09	1.15	1.36	1.40	1.44	1.52	1.54	1.53	1.55
LOAN BALANCE	0.00	0.00	0.60	3.54	6.01	6.70	6.57	6.44	6.29	6.13	5.95	5.76	5.54	5.31
ANNUAL CASHFLOW	-0.01	0.67	0.29	0.17	-0.03	0.10	0.41	0.71	0.82	0.92	1.12	1.21	1.21	1.29
CUMULATIVE CASHFLOW	-0.01	0.66	0.94	1.12	1.09	1.19	1.60	2.31	3.13	4.05	5.16	6.38	7.58	8.88
NET OPERATING INCOME	-0.34	0.30	0.34	0.41	0.48	0.77	1.08	1.50	1.61	1.71	1.91	2.00	2.00	2.08
DEPRECIATION	0.01	0.00	0.71	0.77	0.84	0.91	0.99	1.36	1.46	1.56	1.16	1.27	1.35	1.45
INTEREST	0.00	0.00	0.03	0.21	0.48	0.64	0.64	0.64	0.62	0.61	0.60	0.58	0.57	0.55
DEBT SERVICING	0.00	0.00	0.03	0.21	0.48	0.64	0.76	0.77	0.77	0.77	0.78	0.78	0.78	0.78
NET INCOME (ACCOUNTING)	0.05	0.70	-0.40	-0.57	-0.84	-0.78	-0.55	-0.50	-0.47	-0.46	0.13	0.16	0.08	0.09
GOVERNMENT SUBSIDY	0.40	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00				

As indicated by the outlined numbers, the objectives in determining the tariff is to generate revenues adequate to:

Year 2 – provide a positive income from operations;

Year 4 – provide a positive income from operations and recover depreciation charges, or debt servicing, whichever is greater; and

Year 8 – fully recover expenses, interest, and depreciation charges, ie. positive net accounting income.

In this analysis, the tariff is determined as remaining at current average rate until an increase is required in 1997.

Thereafter, the tariff is calculated by determining what average rate is required to meet the above conditions.

In actual practice, the tariff is not expected to be adjusted each year.

Financial Rate of Return

The proposed project has a financial rate of return of -6.83% in current terms, (2.72% in constant terms), taken over a period of 50 years. The full calculation is shown in Annex 10.

Average charge for the services

The average charge in the fiscal year 1992 for MWSC services was \$1.25 per 1000 gallons, based on the total quantity of fresh water sold and the revenue received.

On the assumption that 85% of the water consumption in the MWSC supply area will be provided by MWSC, and the balance from roof collection systems or bottled water, it is calculated that the average charge for water under the new tariffs will rise to \$4.27 per 1000 gallons, approximately three and one half times the previous average charge.

The derivation of this figure is based on the following assumptions:

- (a) the quantity of water sold is independent of the price charged;
- (b) the quantities of fresh and salt water sold will be as set out on in the assumptions to the financial statements given in Annex 11.
- (c) the quantities sold to each consumer group will be 80% residential, 20% business and institutional.

Given these assumptions, the average charge for fresh water each year in the period 1993 through 2005 is set out in Annex 12. At the foot of the Annex is given the average charge which will be required to enable MWSC to meet its financial commitments, based on the assumed loan covenants and on-lending terms (See Notes to the Financial Projections, Annex 8).

It will be noted that the present tariff is adequate to meet commitments until 1998, after which an increase will be necessary.

Sensitivity of Revenue to Changes in Charges and Demand.

The demand for water from MWSC, given full supply at the present tariffs, is not known and cannot be established with present data.

The sensitivity analysis has been made at two levels of possible demand, that given by the Mission's Water Supply Consultant figure of 52.5 gallons per head per day (gphd) or 200 lcd. This

This includes a sea water component of 12.5 gpd for toilet flushing purposes supplied to 77% of the population. [1]

The analysis has also been carried out at a lower figure of 40 gpd and the results compared.

A initial fall in consumption per connection and revenue as a result of the increased charges is probable, although it may not result in a reduction in overall sales. Changes in consumption and revenue from the implementation of metering and progressive tariffs may result from several causes:

- (a) individual consumption may decline and conservation measures improve, due to the rates and progressive structure of the tariff;
- (b) the number of consumers sharing connections may decline, resulting in more residential connections and therefore reduced consumption per connection; revenue will then decline since the consumption in the lower end of the tariff will increase;
- (c) water consumed from alternative sources, principally roof catchments and storage, may increase;
- (d) where services are inadequate, there may be a drop in the willingness to pay.

The combined effect of the these and other factors cannot be assessed until some time after the introduction of the new tariff. In all probability, the full effect will not be known for at least a year, although preliminary indications should be evident by the time of the next Mission in April.

In the financial projections it has been assumed that the amount of water consumed from sources other than MWSC -principally roof catchments -is 10% of the total demand. In the analysis, sensitivity to changes in this assumption in the range 10% - 35% is calculated, and the effect on net operating revenue and on financial performance is examined.

[1] There are 820 connections to the salt water system. If the figure of 77% (or 20,000 people) is correct, it implies that there are 24 persons per sea water connection, which seems improbable. Reconciliation is required.]

This effect is measured as the change in the time taken to meet the assumed financial covenants, namely, that net operating revenue must be adequate to meet the following conditions by, and following, the date given:

1. be positive in 1996;
2. equal the greater of depreciation or debt service by 1998;
3. equal depreciation plus interest by 2001.

The results are set out in Annex 13 and are summarized in the following table, results for the 40 gpd level of demand shown in italics:

FINANCIAL CONDITION	Supply from non MWSC sources - %					
	10%	15%	20%	25%	30%	35%
	Condition met by end of fiscal					
Net Operating Income Positive	1994 <i>1994</i>	1994 <i>1994</i>	1994 <i>1994</i>	1994 <i>1994</i>	1995 <i>1995</i>	1995 <i>1996</i>
Cashflow Positive	1997 <i>1994</i>	1997 <i>1997</i>	1998 <i>1998</i>	1998 <i>1998</i>	1998 <i>1999</i>	1998 <i>1999</i>
Net Operating Income less Depreciation >0	1998 <i>2000</i>	1998 <i>2000</i>	1998 <i>2000</i>	1998 <i>2001</i>	1999 <i>2002</i>	2000 <i>2002</i>
Net Operating Income less Debt Service >0	1997 <i>1996</i>	1997 <i>1997</i>	1997 <i>1998</i>	1998 <i>1999</i>	1998 <i>1999</i>	1999 <i>1999</i>
Net Operating Income less Dep'n and Int >0	2002 <i>2002</i>	2002 <i>2002</i>	2002 <i>2002</i>	2002 <i>2002</i>	2002 <i>2002</i>	2002 <i>2002</i>

The above results indicate that an increase in consumption from sources other than MWSC from 10% to 35% of total demand would delay compliance with the assumed financial covenants by one to two years depending on the demand level assumed.

Up to the point at which total sources are greater than demand, MWSC revenues will fall as the percentage taken from other sources is increased; during this period MWSC will have spare capacity. Once the sources are insufficient to meet demand the balance will be met from MWSC sources and revenues will again increase. Without the development of additional sources, full use of MWSC sources would be achieved.

If demand is at the higher level of 52.5 gpd, the available total supply is never adequate, so that all MWSC water would have to be

demand level of 40 gpd, total supply exceeds demand for some years, so that alternative sources are available; in this case MWSC revenues would fall initially and recover as soon as the total sources become inadequate to meet demand.

The two conditions are shown in the graphs and tables on the following page.

An implicit assumption in the analysis is that storage of run-off from roof catchments would be adequate to maintain the supply at the assumed level throughout the year. This may not be correct at present, but it may be possible (and practicable) to develop this source in future, and a study of its potential should form part of the future long term planning for the supply area.

SOCIO-ECONOMIC FACTORS

Population Served

The population estimate and projections, as used in the financial and demand projections, are as provided by the Department of Statistics and Planning. Whether, in fact, Majuro Atoll continues to face a high rate of growth will depend on improved economic activity on other islands which may slow the immigration of people from other atolls to Majuro. Being a large centre with airport, port, schools, and other features, it is expected that the high growth will continue, despite a birth rate of Majuro being lower than the average for the Marshall Islands.

For Majuro atoll, the service area of MWSC is limited to the linked islands, representing 97% of the population. This is distributed over 33 miles (55k), the most densely populated area being Rita island on the southeastern tip, the least densely populated area being the rural community on Laura (the major groundwater source).

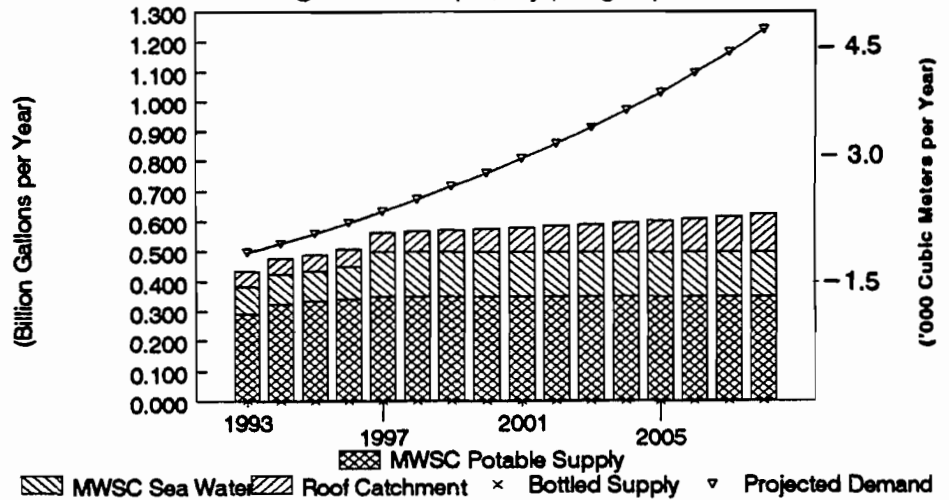
Ability and Willingness to Pay

The average income and number of members per household varies significantly, from extended families of over 20 members sharing a water connection, often without indoor plumbing, to very small households (often expatriate), with full plumbing and conveniences. The average family size is 8.8 people.

Similarly, there are variations in the incidence, size, and quality of roof catchment systems and storage, and of houses with sea water and/or sewerage services.

Consequently, without sufficiently detailed data, it is not possible to analyze demand and predict the effect that the new progressive tariff may have on future behavior and consumption, however, a general assessment of ability to pay was carried out, with the following results.

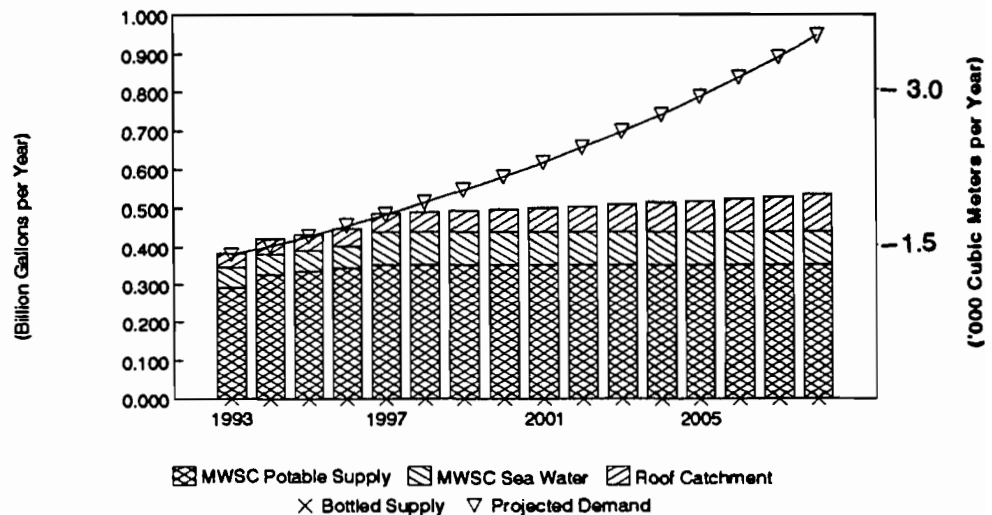
MAJURO WATER DEMAND & SUPPLY
@ 199 Litres/Capita/Day (52.5g/c/d)



ASSUMPTIONS IN METRIC MEASUREMENT
3,7850 Litres = 1 US Gallon

For Fiscal Years Ending Sept 30,		1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
DEMAND (Annual)														
Water Demand @ 199	(M m ³ /y)	1.878	1.966	2.122	2.255	2.366	2.549	2.709	2.860	3.061	3.254	3.459	3.677	3.909
- met by bottled purchases	(M m ³ /y)	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
- met by roof catchment	(M m ³ /y)	0.188	0.200	0.212	0.226	0.240	0.255	0.271	0.288	0.306	0.325	0.346	0.368	0.391
- met by MWSC seawater system	(M m ³ /y)	0.349	0.371	0.379	0.407	0.565	0.565	0.565	0.565	0.565	0.565	0.565	0.565	0.565
- met by MWSC potable water system	(M m ³ /y)	1.101	1.235	1.266	1.297	1.330	1.330	1.330	1.330	1.330	1.330	1.330	1.330	1.330
NET UNMET DEMAND	(M m ³ /y)	0.238	0.188	0.262	0.324	0.280	0.368	0.541	0.694	0.858	1.031	1.216	1.412	1.620
AVERAGE PER CAPITA CONSUMPTION														
TOTAL	(l/c/d)	174	180	174	170	177	168	159	151	143	136	129	122	116

MAJURO WATER DEMAND & SUPPLY
@ 151 Litres/Capita/Day (40g/c/d)



For Fiscal Years Ending Sept 30,		1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
DEMAND (Annual)														
Water Demand @ 151	(M m ³ /y)	1.431	1.521	1.617	1.718	1.827	1.942	2.064	2.194	2.332	2.479	2.636	2.802	2.978
- met by bottled purchases	(M m ³ /y)	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
- met by roof catchment	(M m ³ /y)	0.143	0.152	0.162	0.172	0.183	0.194	0.206	0.219	0.233	0.248	0.264	0.280	0.296
- met by MWSC seawater system	(M m ³ /y)	0.208	0.209	0.212	0.226	0.331	0.331	0.331	0.331	0.331	0.331	0.331	0.331	0.331
- met by MWSC potable water system	(M m ³ /y)	1.101	1.235	1.266	1.297	1.330	1.330	1.330	1.330	1.330	1.330	1.330	1.330	1.330
NET UNMET DEMAND	(M m ³ /y)	-0.021	-0.078	-0.025	0.022	-0.019	0.065	0.195	0.312	0.436	0.568	0.709	0.858	1.017
AVERAGE PER CAPITA CONSUMPTION														
TOTAL	(l/c/d)	154	159	154	149	153	145	137	130	123	117	111	105	100

The new tariffs should allow substantially all households, including those with low income to meet the cost of MWSC services. The results of the analysis show that the cost of these services for such households would probably not exceed about \$25 per month, based on average consumption of 7,500 gallons per month at the new tariffs. The most recent data on household income (1991) indicates that the monthly income of the lowest 10% of households, adjusted for inflation, is about \$485; about 5% of income would therefore be spent on the services. This figure is generally regarded as acceptable.

In this regard, it may be noted that residents of the Laura lens area appear to be less willing to pay for water than residents of the highly populated D.U.D. area. Laura residents consider that the ground water in their area traditionally belongs to them and may consider that they should not have to pay for it. Residents of Rita, at the opposite end of the atoll service area, who have not been receiving a regular supply of potable water, appear highly willing to pay, despite generally lower income levels.

Elasticity of Demand and Alternative Sources

Due to the improved information that will shortly be available with the commencement of metered billings and progressive tariffs, the determination of the elasticity of demand was postponed to a later Mission. Two points can be determined by observing the costs of alternative sources, examined below.

1. Bottled Purified Water

During the Mission, water was unavailable to residents of southeast extremes of the atoll (Rita Island), and EPA tests were warning that water was unsafe to drink in several areas. Water was being purchased by the bottle for meet basic drinking requirements.

A small private desalination and purification plant produces and sells bottled water in Majuro. In the dry season, in January, the plant was producing at its full capacity of 1,500 gallons per day, and selling all of its production, which retails at approximately \$1.75 per gallon. At this rate, if current health problems in the drinking water of Rita and the D.U.D. area continue, or MWSC is unable to meet basic consumption requirements, it is estimated that .5 million gallons may be purchased annually, at a cost of almost \$1 million. This converts to an average monthly household expenditure of almost \$6 per MWSC connection.

2. Roof Water Catchment and Private Storage

The cost of roof catchment can be used as a proxy for the maximum price consumers will pay. Tank storage costs about \$1.00 per gallon and new systems were being installed during the Mission.

Other factors which will influence the installation of private systems

are:

- (i) size and suitability of roof
- (ii) size of household and resultant cost of MWSC water
- (iii) income level and ability to finance the capital cost.

The financial projections assume 10% of water needs are currently met by roof catchment, based on the estimate, as provided by the Mission's Water Supply Consultant, of an annual supply of 45 Mg/y. Further research is required to establish a reliable figure on the amount of roof catchment in use, the annual yield, health considerations, and the economics of this source of supply. [1]

It is recommended that further work be undertaken during the next Mission to estimate elasticity of demand once preliminary data from metered billings is available.

Further Information: Pending EPA Survey

The Environmental Protection Agency, under the Ministry of Health, is currently organizing an extensive UNDP funded survey to determine the water usage and facilities of all Marshall Island residents. The survey will include description of roof catchment and storage systems, and evaluation and measurement of the building to determine potential for such systems. The survey will also include inspection of facilities and has been expanded, in co-operation with needs of MWSC, to include physical inspection to determine the condition of plumbing (for sea water corrosion and malfunction) and to note the nature of the connection (metered vs. illegal), and incidence of pumping to boost pressure.

The results of the survey are not expected to be available before August of 1993 at the earliest.

It is recommended that information being collected in the EPA survey be included in future economic and tariff studies of the Bank, and that related work be scheduled accordingly. If further information is required that might be incorporated in the survey, the co-operation of the EPA should be sought immediately for its inclusion.

FACTORS AFFECTING FUTURE PERFORMANCE

The Memorandum of Understanding at paragraph 28 sets out guidelines for financial management and strategy, including accounts receivable and treatment of delinquent accounts. The guidelines are endorsed.

[1. Interest rates for consumer loans are about 18% vs commercial prime rate of 6.5%. If roof catchment and private storage is found to be economic, consideration should be given to MWSC acting as a financing agent, the repayment of loans recovered through monthly billings.]

It was apparent to the Mission, from observations and discussions with management, that the management of MWSC is taking whatever action it can, within its capacity, to improve matters. Notable examples of this are found in:

- (i) the procurement and expedited installation of meters since the last Mission in August 1992, the program being over 95% complete in January; and
- (ii) a comprehensive policy of regulations and tariffs has been prepared and adopted by the Board, effective February 1993.

It should be noted, however, that without assistance in some areas, the MOU guidelines may be unattainable, or unrealistic in their timing, unless the following can be provided:

- (i) immediate ADTA (as described in the attached Terms of Reference 'Phase I');
- (ii) additional interim funds, or loan, from government for additional staff and maintenance materials, until such time as cashflow improves; and
- (iii) solid policy support from the Board and Government for enforcing regulations.

REQUIREMENTS FOR FURTHER WORK ON THE NEXT MISSION

Work to be undertaken by ADTA is detailed in the attached Terms of Reference, Annex 14. It should be noted that immediate consideration should be given to urgent items which may be critical in MWSC meeting the conditions precedent to loan negotiations. These might normally come under ADTA and are included in the Terms of Reference in 'Phase I', but could, in the interests of time, be substantially accomplished by the Financial Consultants during the next Mission, scheduled for April 1993. These items are identified with an asterisk, below. Currently, ADTA is not scheduled before April 1994.

Some areas of work undertaken require follow up, or completion, where work was postponed pending availability of more reliable data. Also, new issues requiring further work were identified during the Mission. These are include:

Legal/Institutional

- * Conduct detailed review on legislative requirements, including Water Rights Act and Enabling legislation, or individual contracts, if required.

Organization/Management

- * Review appropriateness of new computer accounting program for the needs and abilities of MWSC.

Obtain further detail on employment and training requirements, particularly for personnel for the Operations Department.

Financial

Examine adequacy of charges for connections and other services, and consult with MWSC on minor discrepancies and improvements to be made in Tariff Schedule and Regulations as adopted.

Update financial projections with:

- adjustments to 1991 and 1992 resulting from completion of audit and receipt of statements by the Bank; and
- incorporate changes in the capital costs of the project which have occurred since those provided for the purposes of the projection;
- any revisions of basic assumptions and estimates to be used, or changes in the financing or covenants to be met.

Socio-Economic

Estimate elasticity of demand once required consumption data from metered billings is available; conduct further survey work, as necessary.

Determine initial response of consumers to the increase in tariff and reassess the implications for future revenue as projected.

ARTICLES OF INCORPORATION
OF THE
MAJURO WATER AND SEWER COMPANY, INC.

The undersigned do hereby mutually agree upon and enter into the following articles of incorporation.

ARTICLE I -- Name

The name of this corporation shall be the Majuro Water and Sewer Company, Inc.

ARTICLE II -- Place of Business

The principal place of business shall be located at Majuro, Marshall Islands, and the mailing address of the initial office shall be P.O. Box 2, Majuro, Marshall Islands 96960, Attention Chairman of the Board of Directors.

ARTICLE III -- Duration

The period of existence and duration of the life of this corporation shall be perpetual.

ARTICLE IV -- Purpose and Powers

Section 1. The purposes for which this corporation is organized are the following:

(a) to own, by purchase or otherwise, lease, rent or in any other manner lawfully acquire from, and to sell, rent, lease, or assign to, any other person, firm, corporation, or governmental entity, pipelines and mains for the transportation, delivery, and sale of water; to construct, build, maintain, and operate the same; to buy and sell water and water rights from and to individuals, firms, corporations, governments; to own, operate, maintain, and control such meters and other appliances as may be necessary in conducting its business; and to buy, own, sell, lease, or rent all such property, real, personal, or mixed, if any be necessary in the conduct of its business aforesaid, and not contrary to law;

(b) to own, by purchase or otherwise, lease, rent or in any other manner lawfully acquire from, and to sell, rent, lease, or assign to, any other person, firm, corporation, or governmental entity, pipelines and mains for the transportation and disposal of sewage; to construct, build, maintain, and operate the same; to own, operate, maintain, and control such appliances as may be necessary in conducting its business; and to buy, own, sell, lease, or rent all such property, real, personal, or mixed, if any be necessary in the conduct of its business aforesaid, and not contrary to law; and

(c) to engage in any and all other businesses which may be lawfully conducted by a profit corporation.

Section 2. In furtherance of said purposes, this corporation shall have all powers, rights, privileges and immunities, and shall be subject to all of the liabilities conferred or imposed by law upon corporations of this nature, and shall be subject to and have all the benefits of general law with respect to corporations.

ARTICLE V -- Stock

The initial authorized capital stock of this corporation shall be in the aggregate amount of \$100,000 divided into 100,000 shares of common stock, of the par value of \$1.00 per share.

ARTICLE VI -- Incorporators

The names, street or mailing addresses, and citizenries of each of the incorporators of this corporation are as follows:

<u>Name</u>	<u>Mailing Address</u>	<u>Citizenship</u>
Amsa Jonathan Minister of Public Works	P.O. Box 2 Majuro, MH 96960	RMI
Luckner K. Abner Minister of Interior and Outer Island Affairs	P.O. Box 2 Majuro, MH 96960	RMI
Jewon Lemari Chief Planner	P.O. Box 15 Majuro, MH 96960	RMI

ARTICLE VII -- Officers and Directors Generally

Section 1. The officers of the corporation shall be a president, one or more vice-presidents, a secretary, and a treasurer. The same person may not hold the position of president and secretary at the same time.

Section 2. The number of the directors of the corporation, not less than three nor greater than seven, shall be fixed from time to time by the bylaws and the number may be altered as therein provided. In case of any increase in the number of directors, the additional directors shall be elected as provided by the bylaws, by the directors or the shareholders, at any annual or special meeting. In case of any vacancy in the board of directors, the remaining directors, in accordance with the provisions of the bylaws, may elect a successor to hold office for the unexpired portion of the term of the director whose place is vacant and until his successor shall be duly elected and qualified.

Section 3. All the powers and authority of this corporation shall be vested in and may be exercised by the board of directors except as otherwise provided by law, these articles of incorporation or the bylaws of the corporation.

ARTICLE VIII -- Initial Directors

The names, mailing addresses, and citizenries of the first directors, who shall serve until their successors are chosen and qualified are as follows:

<u>Name</u>	<u>Mailing Address</u>	<u>Citizenship</u>
Amsa Jonathan--Chairman Minister of Public Works	P.O. Box 2 Majuro, MH 96960	RMI
Luckner K. Abner Minister of Interior and Outer Island Affairs	P.O. Box 2 Majuro, MH 96960	RMI
Jewon Lemari Chief Planner	P.O. Box 15 Majuro, MH 96960	RMI

ARTICLE IX -- Initial Officers

The names, mailing addresses, and citizenries of the initial officers who will serve until their successors are chosen and qualified are as follows:

<u>Name</u>	<u>Mailing Address</u>	<u>Citizenship</u>
President Michael Capelle Secretary of Public Works	P.O. Box 507 Majuro, MH 96960	RMI
Vice-President Whitten Philipo Secretary of IQIA	P.O. Box 18 Majuro, MH 96960	RMI
Secretary/Treasurer Danny Wase Deputy Manager MIDA	P.O. Box 15 Majuro, MH 96960	RMI

ARTICLE X -- Limited Liability

No shareholder shall be liable for the debts of this corporation beyond the amount which may be due or unpaid upon any share or shares of stock of this corporation owned by him.

ARTICLE XI -- Voting

Each share of stock of the corporation shall be entitled to one vote in any shareholder election for any purpose.

ARTICLE XII -- Dividends

The board of directors of the corporation may pay dividends on its outstanding shares in cash, property, or its own shares, only from the profits and earned surplus of the corporation as is provided by law, but only when the corporation does not have a loss and the payment of a dividend would not create a capital deficit.

ARTICLE XIII -- Dissolution

The corporation may be dissolved in the manner prescribed by law; and in the event of any liquidation, dissolution or winding up of the affairs of the corporation, its assets shall first be used in the payment of all its debts and claims against it, and those remaining shall then be distributed among the shareholders in proportion to the number of shares held by them.

ARTICLE XIV -- Service of Process

Service of legal process may be made upon the corporation in the manner provided by law.

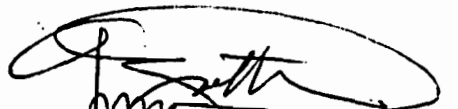
ARTICLE XV -- Amendment

These articles of incorporation may be amended by the vote of the holders of not less than two-thirds of all of its stock issued and outstanding and having voting power.

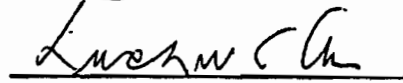
ARTICLE XVI -- Limitation on Stock Ownership

The ownership of the shares of stock is not to be limited to citizens of the Marshall Islands; however, not less than 50% of the shares of stock shall be owned by citizens of the Marshall Islands.

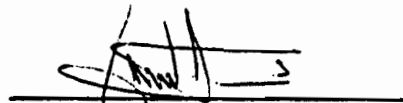
IN WITNESS WHEREOF, the incorporator hereinbefore named have hereunto set their hands this 10th day of January, 1989.



Amsa Jonathan



Luckner Abner



Jewon Lemari

Republic of the)
) s.s.
Marshall Islands)

On this 10th day of January, 1989 before me personally appeared the above incorporators, known to me to be the person described in and who executed the foregoing instrument, and acknowledged that they executed the same as their free act and deed.



Notary Public

My commission expires on February 11, 1990.

REPUBLIC OF THE MARSHALL ISLANDS

MAJURO WATER AND SERWERAGE COMPANY ACT

(DRAFT)

PART I - COMMENCEMENT

1. This Act may be cited as the Majuro Water and Sewerage Company Act ("Act") of (date) and shall come into operation on such date as the Government of Republic of the Marshall Islands (hereinafter referred to as "Government") may appoint, of which date notification shall be made in the

PART II - ESTABLISHMENT AND MANAGEMENT

- 2.(1) There shall be established a Company which shall be called the Majuro Water and Sewerage Company (hereinafter referred to as "the Company") which shall be a body corporate with a perpetual succession and a common seal and which may sue and be sued in that name.
 - (2) The Company shall have the power for the discharge of its functions conferred by or under this Act to acquire and hold movable or immovable property and to sell, lease, mortgage or otherwise alienate or dispose of such property.
 - (3) The jurisdiction of the Company shall extend over such area or areas as may from time to time be determined by Government and which shall be published in the
- 3.(1) The objects of the Company shall be:
 - (a) the provision and distribution of potable water for public, domestic, industrial and commercial purposes but which shall not include irrigation;
 - (b) the provision and operation of a public sewer system including the supply and distribution of saline water to the system and the treatment and disposal of sewage.
 - (2) Without prejudice to the generality of subsection (1) the powers and duties of the Company shall include, in relation to the aforesaid objects:
 - (a) the preparation of long term plans in consultation with Government or with any coordinating body established by Government;
 - (b) the conduct of research;

- (c) the making of engineering surveys and designs;
 - (d) the construction and operation of works;
 - (e) the setting and enforcement of standards, criteria and conditions as may be approved by Government;
 - (f) the prevention of waste of water;
 - (g) the provision of connections from the water system to any premises and to disconnect such premises;
 - (h) the provision of connections to the sewerage system from any premises including the power to require owners and occupiers to make connections to the system;
 - (i) the emptying of latrines and septic tanks and the transport and disposal of wastes therefrom;
 - (j) the determination of adequate rates, charges and fees for the provision of water and sewerage services and effective methods for the collection thereof;
 - (k) the delegation of any of its powers and functions to any statutory or any other body or person on such terms and conditions as the Government may approve;
 - (l) the provision of training facilities for persons required to carry out the work of the Company;
 - (m) the procurement of materials and supplies and the letting of contracts in connection therewith; and,
 - (n) the conduct of any related or incidental activities.
- 4.(1) The governing body of the Company shall be a Board.
- (2) The Board shall consist of the following members:
- (a) three persons who shall be appointed by Government representing the ministries or departments most directly concerned with water supply and sewerage services;
 - (b) two persons who shall be appointed by Government from the public or private sector who have shown capacity and experience in engineering, finance, law and public health; and,
 - (c) two persons elected from a group recognized by the Board as representing the interests of consumers in the Company's area of jurisdiction.

- (3) The Chairman of the Board shall be appointed by Government.
 - (4) Subject to the other provisions of this Act the members of the Board shall hold office for a period of three years but the appointment of members may be reviewed from time to time by Government.
 - (5) The Board may pay to its members subsistence travelling and other allowances at such rates as the Government may determine.
 - (6) The appointment of any member of the Board may be terminated at any time by Government if in the opinion of Government it is in the interest of Government to do so.
 - (7) A member may at any time resign his appointment by notice in writing to Government.
5. The Board shall be responsible for the execution of its functions in accordance with the provisions of this Act and subject to such directions upon general policy as Government may make from time to time in accordance with this Act.
- 6.(1) The Board shall meet for the despatch of its business at such time and at such places as the Chairman may appoint; the Board shall however meet at least once in every month.
- (2) At every meeting at which he is present the Chairman shall preside or in his absence a member appointed by the members present shall preside.
 - (3) Every question which comes up for consideration at a meeting of the Board shall be determined by a simple majority of the members present and voting and in the event of an equality of votes the person presiding shall have a second or casting vote.
 - (4) The quorum at any meeting shall be five.
 - (5) The Board may make rules and regulations or other instruments, not inconsistent with this Act, for the regulation of its business or any other matter falling within the scope of its functions.
 - (6) The Board may, at any time, co-opt any person or persons to act as advisor or advisors to the Board at any of its meetings, provided that no person or persons so appointed shall be entitled to vote at any meeting on any matter for decision by the Board.

(7) The validity of any proceedings of the Board shall not be affected by any vacancy among its members or any defect in the appointment in any one of them.

- 7.(1) The Staff of the Company shall consist of the following:
- (a) a General Manager who shall be appointed by the Board;
 - (b) such other staff as the Board may deem necessary for the proper and efficient conduct of the business of the Company.
- (2) The General Manager shall be the chief executive officer of the Company and shall be responsible for the conduct of its business, its organization and its operations, subject only to such directions as may be given by the Board on matters of general policy.
- (3) The General Manager may appoint, dismiss and exercise disciplinary control over the staff of the Company.
- (4) The Board shall fix the wages salaries allowances and other remuneration of the staff and may:
- (a) establish and regulate provident and pension or other funds for the benefit of such staff and make contribution to such funds;
 - (b) introduce bonus or other incentive schemes where, in the view of the Board, such schemes will increase the efficiency of the operation of the Company.

PART III - FINANCE ACCOUNTS AND AUDIT

- 10.(1) The Board shall cause the affairs of the Company to be managed so as to ensure that, taking one year with another, receipts shall be sufficient to cover disbursements including, *inter alia*, the repayment of debt and the maintenance of adequate working capital.
- (2) The Company shall establish rates fees and other charges for the provision of water supply and sewerage services and such rates, fees and charges shall be such as to provide sufficient revenue:
- (a) to cover all operating and maintenance expenses, interest on debt and depreciation;
 - (b) to meet the repayment of long term debt to the extent that such repayment exceeds the provision for depreciation;

- (c) to finance so far as possible the costs of normal extension and upgrading of the services together with contributions towards future capital works.
 - (2) The Company shall levy rates fees and charges and may vary these from time to time in order to meet the provisions of the preceding sub-clause.
 - (3) The Company shall recover all rates fees and charges from those who benefit from the services whether such benefit is direct or indirect.
- 11.(1) The Company may obtain loans or other credit facilities from Government or on the guarantee of Government from such sources as Government may approve provided that the indebtedness of the Company shall not exceed such limit as Government may from time to time specify.
- (2) The Company may receive grants in the form of equity from Government both as contribution towards the costs of capital work and as working capital.
 - (3) The Company may retain any surplus revenue and may utilize such surplus or accumulated surpluses to finance future works or to reduce current indebtedness.
 - (4) For the purpose of the preceding sub-clause surplus revenue shall be defined as the Company's total revenues from all sources less:
 - (a) operating and maintenance expenses, interest on debt and depreciation;
 - (b) appropriations for such purposes as the Board shall consider necessary and the Government shall approve.
 - (5) If the Company incurs operating deficits which it cannot meet from its own sources, Government shall provide such sum or sums for such period as may be required to ensure that the Company is able to meet its fixed or contractual obligations and to maintain efficient performance of its functions.
12. The Company may invest funds which are surplus to its immediate needs in such manner as the Board may determine and the Government shall approve.
- 13.(1) The Company shall keep proper books of account and shall maintain complete records in relation thereto.
- (2) Subject to any directions as to form which the Government may give, the Company shall prepare in respect of each financial year, statements of account which shall include:

- (a) a balance sheet, a statement of income and expenditure and a statement of sources and application of funds; and,
 - (b) such other information in respect of the financial affairs of the Company as the Government may require.
- (3) The Company shall as soon as possible after the end of the financial year and in any case within three months thereof, submit a report to Government which shall include the statements of account referred to in the preceding sub-section.
- (4) The Company shall submit to Government such other reports upon the financial affairs of the Company as Government may from time to time require.
- 14.(1) The accounts of the Company shall be audited each year by an independent auditor appointed by the Board and approved by Government.
- (2) The auditor so appointed shall have access to all such books, deeds, contracts, accounts, vouchers and other documents of the Company as the auditor may consider necessary for the purposes of such audit and shall be furnished by the Company or its staff with such information within their knowledge as may be required by the auditor for such purposes.
- (3) The auditor shall, not later than six months after the end of the financial year, forward to Government a copy of the audited accounts of the Company for the financial year immediately preceding and shall furnish a report stating whether, in the auditor's opinion:
- (a) proper books of account have been kept by the Company; and,
 - (b) the financial statements of the Company referred to in Section 13(2)(a) above:
 - (i) were prepared on a basis consistent with that of the preceding year and are in agreement with the books of account;
 - (ii) give, in the case of the balance sheet, a true and fair view of the financial position of the Company at the end of the financial year; and
 - (iii) give, in the case of the statement of revenue and expenditure a true and fair view of the surplus or deficit incurred by the Company during the financial year.

- (4) The auditor shall call the attention of Government to any other matter falling within the scope of his audit which, in the auditor's opinion, should be the subject of further enquiry.

PART V - MISCELLANEOUS

15. The Company shall have the power to make regulations in respect of all matters as are required under this Act to be prescribed or undertaken, which regulations shall have effect throughout the area of jurisdiction of the Company and which shall include but shall not be limited to:
- (a) the establishment and collection of rates fees and charges necessary for giving effect to any matter contained or specified in this Act;
 - (b) the prevention of waste of water;
 - (c) the prevention of pollution to any existing or potential source of water supply for potable purposes;
 - (d) the suspension of supply;
 - (e) the establishment of standards;
 - (f) the inspection, repair, maintenance and replacement of any fittings and appliances;
 - (g) the establishment of penalties for violation of any of the provisions of this Act or of any regulation made in accordance herewith; and,
 - (h) any other matter connected with the objects and provisions of this Act.
16. No person, private or statutory body shall be entitled to receive payment for the supply of water or to provide a supply of water in areas designated under Section 2.(3) of this Act as being within the jurisdiction of the Company except:
- (a) vendors of water licensed by the Company under such terms and conditions as the Company may determine;
 - (b) other persons, private or statutory bodies who may be exempted from the provisions of this section on such terms and conditions as the Company may determine.

17. It shall be the duty of the Company and the Company shall have the power to supervise and control the design construction and operation of any water works or any works for the collection treatment or disposal of sewage undertaken by any person, private or statutory body so as to ensure that such design construction and operation conforms to the standards of the Company prescribed in accordance with this Act.
18. Subject to the approval of Government the Company shall have the power to prohibit, modify, alter, amend or delay the carrying out of any act or undertaking whatsoever by any person, private or statutory body if in the opinion of the Company such act or undertaking would be prejudicial to the objects of the Company under the provisions of this Act.
19. (1) The Company may acquire land or enter upon land situated anywhere within the area of its jurisdiction for the purpose of carrying out any survey of any kind, for the construction of works or for the maintenance of such works and may enter into any building for the purpose of installing pipes, fittings and appliances or for the inspection repair and maintenance thereof.
 - (2) The Company may;
 - (i) obtain easements through or over any property within the area of its jurisdiction giving it the right of entry at any time for the purposes of constructing repairing maintaining and operating any works for water supply or sewerage, or for obtaining access to any area for the emptying of latrines and septic tanks and for the disposal of sludge.
 - (ii) in any public street or thoroughfare construct repair maintain and operate any works for water supply or sewerage, provided that the Company shall first have notified the municipal or other Company concerned and that the works are carried out in consultation with such authority.
 - (2) The Company may enter upon land wherever situated for the purpose of carrying out its duties under Section 17 hereof. Provided however that the Company shall first have notified the concerned person, private or statutory body of its intention to enter upon such land.
20. (1) The Company shall be exempt from all taxes, including customs duties, relating to the following:
 - (a) all equipment and materials to be used in the construction of works related to the provision and supply of water and sewerage services;

- (b) all materials including chemicals;
 - (c) all mechanical, electrical or other equipment installed in or used in connection with the maintenance of water and sewage works including spare parts and replacements.
- (2) The Company shall be exempt from payment of taxes on its profits.
- 21.(1) The Company shall have the power to enter into contracts with any private organization, institution, firm or individual to carry out any of the functions of the Company on such terms and conditions as the Board may determine and the Government shall approve.
- (2) Without prejudice to the generality of the preceding subsection the Company may enter into contracts to carry out any of the following functions:
- (a) the planning, design and construction of water and sewerage works including the supervision of such construction;
 - (b) the provision of services in connection with the operation, maintenance, replacement or repair of any part of the water and sewerage works;
 - (c) the reading of meters, the preparation of bills and the collection of rates fees and other charges;
 - (d) the collection of water and sewage samples and the carrying out of laboratory and other tests for the purpose of controlling quality and maintaining prescribed standards;
 - (e) the emptying of latrines and septic tanks and the transport and disposal of sludge therefrom;
 - (f) the collection of technical, economic or social data of any kind required for the purpose of planning design construction and operation of its water and sewerage systems.
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MAJURO WATER & SEWERAGE COMPANY

ANNEX 3

Page 1

ESTIMATE OF PROPOSED PAYROLL COSTS

#	POSITION	SALARY	BENEFITS	OVERTIME	OTHER	TOTAL	TOTAL
1	(1) Manager & Engineer	45.0	15%		20%	60.8	61
1	(2) Assistant Manager/ Advisor	35.0	15%		20%	47.3	47
1	Secretary	6.6	15%			7.6	8
1	(2) Accountant/Comptroller	30.0	15%		20%	40.5	41
1	Assistant Accountant	20.0	15%			23.0	23
1	Book keeper	55	15%			63.3	63
1	Billings Supervisor	7.5	15%			8.6	9
1	Meter Reader	5.5	15%			6.3	6
1	Collections Senior	6	15%			6.9	7
1	Collections Assistant	5	15%			5.8	6
1	(3) Purchasing Supervisor	20	15%			23.0	23
1	Purchasing Trainee	7	15%			8.1	8
2	Supplies Assistants	5	15%			5.8	12
1	(2) Electrical/Mechanical Engineer	40	15%		20%	54.0	54
1	Operations Assistant/Trainee	15	15%			17.3	17
1	(3) Water & Treatment Supervisor	20	15%			23.0	23
1	Water & Treatment Supervisor/Trainee	12	15%	15%		15.6	16
6	Water & Treatment Operators	6	15%	15%		7.8	47
1	(3) Sewer Supervisor	20	15%			23.0	23
1	Sewer Super/Trainee	12	15%	15%		15.6	16
3	Sewer Operators	6	15%	15%		7.8	23
1	Lines & Connections Supervisor	12	15%			13.8	14
2	Lines & Connections Foreman	7	15%	10%		8.8	18
4	Lines & Connections Crewmen	5	15%	10%		6.3	25
1	Meter Technician	7	15%			8.1	8
1	(3) Systems Maintenance Supervisor	20	15%			23.0	23
1	Systems Maintenance Super/Trainee	12	15%	10%		15.0	15
2	Systems Maint. Electrical Technician	6	15%	10%		7.5	15
2	Systems Maint. Pump Technician	6	15%			6.9	14
1	Facilities Maintenance Foreman	7	15%			8.1	8
2	Facilities Maintenance Crew	6	15%			6.9	14
1	Mechanical Maintenance Chief Mechanic	15	15%			17.3	17
2	Mechanical Maintenance Mechanic Assistants	5	15%	10%		6.3	13
2	Equipment Operator	7	15%	10%		8.8	18
1	Tanker Operator/Driver	7	15%	10%		8.8	9
52						TOTAL COSTS ('000 US\$)	740

(1) Expatriate, long term of employment expected

(2) Expatriate on renewable short term contracts (not exceeding two years).

The Advisory/Assistant Manager position could be filled by the current manager with additional training and assistance

(3) Positions require experienced and well trained local employees or else interim training and supervision by experienced and qualified expatriates or consultants, contracted for initial training and procedural strengthening, with periodic review and follow-up as necessary.

Management - Employment and Training Requirements

General Manager

The growth in population and complexity of the water and sewerage systems impose additional requirements on the position and work load of the manager. These demand additional expertise in long range planning and system development, engineering, administrative experience, and public relation skills, a position requiring expatriate hiring.

The current manager has demonstrated good knowledge of the system and future operational requirements. His experience would be more effectively utilized if not responsible for all of the administrative problems.

It is recommended that MWSC contract a qualified expatriate engineer with appropriate management experience, the work to include:

- development and board approval of a long range development plan, procedures for annual board/management monitoring of results, and review and revision of the plan. Further, that the Board and Staff be trained in the planning process;
- development and implementation of a personnel plan, including personnel development programs to supplement employee skills and monitor performance.

Assistant Manager

MWSC is not large enough to warrant a full time internal controller position, nor a full time assistant manager, although the function of both is advisable, particularly for the development of improved quality control, system monitoring, and development of standard procedures. With the projected water supply inadequate to meet projected demand beyond 1996, the systematic collection of key data and system information is most important to expedite further development planning.

It is recommended that a combination assistant manager/system specialist position be created, accountable to the manager and Board of Directors directly, including responsibilities to:

- determine management information requirements and develop and maintain adequate systems for the collection and maintenance of relevant data;
- develop, implement, and monitor a rationing system;

- develop standards and procedures for all aspects of the system operations and maintenance;
- develop and conduct tests and controls to monitor performance, and advise the Board of Directors on serious problems arising.

Administration and Accounting: Employment and Training Requirements

Accountant

It is recommended that MWSC contract, on an interim or temporary basis, a qualified accountant with a recognized designation, to:

- ensure a long range capital budget is developed and adopted by the board, in conjunction with the long range plan, and a corresponding annual capital budget prepared and adopted by the board;
- develop and implement internal controls, as necessary;
- provide further training and support to the current accountant, with the objective of him completing further courses and continuing with MWSC; and
- ensure the conversion to new computer programs is accurate and staff are adequately trained in their use;

Accountant/Trainee

The current accountant is overworked, being the accountant for both MWSC and CIP, and having insufficient assistance. It is recommended that he continue with MWSC as accountant/trainee, under the interim supervision of a qualified accountant, and, with assistance and further training, be encouraged to complete an accounting designation, partially through correspondence. Financial assistance would be necessary for out-of-country coursework.

Accounting & Payroll Clerk

This position is currently filled, but should be further reviewed for suitability.

It is recommended that this position be filled by an employee with suitable, with further training and supervision, provide back-up as assistant accountant, and possible succession. Further training and development of the position could be conducted by expatriate contract accountant.

Billings & Collections - Supervisor

This position is currently adequately filled. Further training and development of the employee could be conducted by expatriate contract accountant. The responsibility of the position should be expanded to include planning and supervision of meter reading and also collections.

Billings & Collections - Meter Readers

MWSC has one employee currently assigned to meter reading. With other labour requirements, MWSC plans to train a new employee, along with several existing employees, to do meter reading. This will allow rotation of routes, backup, and full alternate employment when not required for meter reading.

Billings & Collections - Collectors

The clearing of a back log of overdue accounts, and the co-ordination of disconnection or other necessary procedures is urgent.

It is recommended that these positions be established as soon as possible by local Marshalese on a contract basis, and paid by commission on overdue accounts collected. This will reduce susceptibility to influence, and enable MWSC to employ additional services despite the current cash flow problems.

It is further recommended that the area of collections policy and development of effective procedures be reviewed in further detail during the Appraisal Mission.

Supplies & Purchasing

This division is included under Administration and Accounting rather than Operations as responsibilities include co-ordination with capital and operational budgeting, accounts payable, cashflow planning, and internal accounting and physical inventory controls.

Supervisor

It is recommended that expatriate assistance be contracted to reorganize procurement systems, develop and implement an appropriate system of inventory control, and train MWSC staff for the ongoing procedures in this department.

Although a computerized inventory control system would be of value to MWSC, if installed correctly and kept current, the

likelihood of this happening is low, as can be seen from previous attempts by government to implement computerized inventory systems and fixed asset registers. Other projects should be given priority. A simple manual system which is properly maintained is recommended for reasons of cost, ease of use, and relative dependability.

Supplies & Purchasing - Supervisor/Trainee

This position is currently filled, but should be further reviewed for suitability of additional responsibilities which will include planning and co-ordination with accounting and administration, and maintenance of inventory system.

Supplies and Purchasing - Assistants

One of these positions is currently filled; further assistance should be hired with potential for training in procurement and inventory control, for back up to the supervisor.

Operations - Employment and Training Requirements

Employment and Training Requirements of the Operations Department were reviewed by the Water Engineering Consultant. Specific recommendations are to be found in his report.

Fixed Asset Valuation and Methodology

Neither MWSC nor the Government accounts for the Republic of the Marshall Islands have maintained adequate records of the historic cost of the assets of the water and sewerage systems, although the computerization of these records was attempted in 1989. This weakness has been the cause of a recurring qualification to the audited financial statements of the Government.

Records of contracts for individual projects completed by the Capital Improvements Project offices of the Department of Public Works provide evidence of some of the original costs, but no accounting summary is maintained for any given sector of the Government or State Corporation.

In the absence of reliable data, a valuation of the assets was determined using recent insurance listings and other sources. This was then reviewed and amended in joint consultation with the Consulting Water Engineer and managers and accountants of MWSC and CIP, specifically to determine, for each item:

- asset classification, for approximation of normal expected life;
- year of purchase or installation;
- historic cost, supported where possible, by contract source documents;
- estimated current replacement cost; and
- estimate of actual residual life, based on current condition.

From this information current valuations were calculated using two approaches, both of which determine estimated costs of the system assets in current dollars, which are then adjusted to reflect the current condition, or depreciated state, of the assets:

1. Adjusted Historic Cost

The objective of this method is to determine the current value by adjusting the original (historic) cost for inflation which has occurred since purchase to arrive at an estimated cost of that asset today.

The advantage of this approach is that the actual costs can usually be substantiated, or are already recorded in the accounts, avoiding the problems of estimation.

A weakness of this approach is that applying a general inflation rate to specific assets of a specific sector can result in considerable distortion. Further, as the objective in determining a current valuation is to determine what annual provision should be made for the eventual replacement of that asset, the historic cost may have been for materials or technology that is obsolete and that a different cost would apply for the same functional asset today.

2. Current Replacement Cost

The objective of this method is to determine the current value by estimating what it would cost to replace the asset today. This can be done assuming replacement of the same asset, or preferably, where

significant changes in materials or technology have occurred, for the asset that would be purchased or built today.

The advantage of this approach is that it provides a more realistic and current basis to determine an annual provision for their replacement.

The disadvantage is that it is developed on estimates, not known costs.

There are several methods of adjusting both of the above method of valuation for the depreciation that has occurred, relative to the adjusted cost of acquisition. For the purpose of this valuation, a preliminary determination of the expected residual life was determined by subtracting the years since acquisition from the expected normal life, as estimated for the asset category. Due to the accelerated depreciation which has occurred for some assets, or where the asset has no further functional value to the system, the estimated residual life was reviewed for each item, and adjusted where necessary.

Results

The results, as shown in the following schedules, were higher for the historic cost basis than for the replacement cost basis. In the consultant's judgement, replacement cost provided a better basis of valuation and was therefore used in the financial projections and tariff determination because:

- application of the general inflation rate to historic cost appeared to result in unrealistically high value; a specific inflation rate for the construction sector was not available;
- current replacement cost is more realistic where technology has changed (eg. asbestos cement pipe is no longer generally available; future replacements would be of PVC or similar material); and
- where, for some projects, historic costs could only be determined by a contract price which included a large group of assets, the allocation of the costs to specific assets categories was not possible, with inexact assignment of a depreciation category for the group as a whole.

**MAJURO WATER AND SEWERAGE
SCHEDULE OF CAPITAL ASSETS
As at September 30, 1992.**

Location	Description	'93 Uni. Cost (\$'000)	Year Instal.	Normal of Exp. Life	Adj. Resid. Life	Adj. Resid. Life	Original Cost (\$'000)	Historic Cost in Value at (1993 \$)	Residual Value at Adj. Hist. Cost	1993 Est. Repl. Cost (\$'000)	Residual Value at '93 Repl. Cost
SALT WATER AND SEWERAGE SYSTEM - DUD:											
WPS #1	CENTRIFUGAL PUMPS 20HP	50	1986	15	8	5				150	50
	COMMINUTOR	10	1986	10	3	3	300	395	118	10	3
	VALVES & ELECTRICAL	50	1986	10	3	3				50	15
	BUILDING	50	1986	40	33	25				50	31
WPS #2	CENTRIFUGAL PUMPS 25HP	60	1986	15	8	5				120	40
	VALVES & ELECTRICAL	50	1986	10	3	3	250	329	99	50	15
	BUILDING	50	1986	40	33	25				50	31
WPS #3	CENTRIFUGAL PUMPS 20HP	50	1986	15	8	5				100	33
	VALVES & ELECTRICAL	50	1986	10	3	3	200	263	79	50	15
	BUILDING	50	1986	40	33	25				50	31
WPS #4	SUBMERSIBLE PUMPS 10 HP	25	1986	5	-2	0				75	0
	HYPOCHLORITE FEEDER	15	1986	10	3	0				15	0
	VALVES & ELECTRICAL	100	1986	10	3	3	400	526	158	100	30
	BUILDING	50	1986	40	33	25				50	31
WPS #5	SUBMERSIBLE PUMPS 10HP	25	1986	5	-2	2				50	20
	COMMINUTOR	10	1986	15	8	2	300	395	53	10	1
	VALVES & ELECTRICAL	50	1986	10	3	3				50	15
	BUILDING	50	1986	40	33	25				50	31
WPS #6	SUBMERSIBLE PUMPS 10HP	25	1986	5	-2	0				50	0
	COMMINUTOR	10	1986	15	8	2				10	1
	VALVES & ELECTRICAL	100	1986	10	3	3	300	395	118	100	30
	BUILDING	50	1986	40	33	25				50	31
WPS #7	SUBMERSIBLE PUMPS 10HP	25	1986	5	-2	0				50	0
	COMMINUTOR	10	1986	15	8	2				10	1
	VALVES & ELECTRICAL	100	1986	10	3	3	250	329	99	100	30
	BUILDING	50	1986	40	33	25				50	31
	CHLORINATOR	80	1991	10	8	8	80	87	69	80	64
WPS #5A	VERTICAL TURBINE PUMPS	20	1991	15	13	8	20	22	12	20	11
	COMMINUTOR	10	1991	10	8	8	10	11	9	10	8
	WELL	22	1991	40	38	38	22	24	23	22	21
	BUILDING	20	1991	40	38	33	20	22	18	20	17
	VALVES & ELECTRICAL	8	1991	10	8	8	8	9	7	8	6
	ELEVATED SALT W. TOWER	500	1986	20	13	0	500	658	0	750	0
WASTEWATER TREATMENT FAC	1500	1986	40	33	33	1,500	1,974	1,628	1,500	1,238	
OPS BLDG	HYPOCHLORITE FEEDER	15	1986	10	3	3	15	20	8	15	5
	VERT. TURBINE PUMPS 30HP	70	1986	15	8	3	250	329	66	210	42
	BUILDING	80	1986	40	33	28	70	92	64	80	58
	SALTWATER INTAKE	70	1986	15	8	8	70	92	49	70	37
	ELECTRICAL	70	1986	10	3	3				70	21
	FIREHYDRANTS	2	1986	15	8	8	180	237	126	140	75
	MANHOLES	2	1986	15	8	8	780	1,026	547	520	277
	VALVES & MISC	500	1986	15	8	8				500	267
S/W	PIPE 3/4" TO 12" ('000 FT)	22	1986	40	33	33	2,000	2,632	2,171	2,684	2,214
SEWER	PIPE 4" TO 21" ('000 FT)	27	1986	40	33	33	2,500	3,290	2,714	3,240	2,673
	SEWER COLLECTION										
SEWER	PIPE 4" TO 12" ('000 FT)	30	1986	40	33	33	250	329	271	960	792
	SEWER FORCE MAIN										
SEWER	PIPE 18" ('000 FT)	700	1986	40	33	10	650	855	214	434	109
	OCEAN OUT FALL										
	SEWERAGE & SW CONNECTIONS	0.35	1986	40	33	33				210	173
							10,925	14,339	8,719	13,043	6,624

**MAJURO WATER AND SEWERAGE
SCHEDULE OF CAPITAL ASSETS
As at September 30, 1992.**

Location	Description	'93 Uni Cost (\$'000)	Year Instal.	Normal of Exp. Life	Resid. Life	Adj. Resid. Life	Original Cost (\$'000)	Historic Cost in (1993 \$)	Residual Value at Adj. Hist. Cost	1993 Est. Repl. Cost (\$'000)	Residual Value at '93 Repl. Cost
DUD Lens Protection Project (142 connections):											
SS	SEWER LINE 4" ('000 FT)	3	1992	40	39	39	16	17	16	16	15
	SEWERAGE & SW CONNECTIONS	0.25	1992	40	39	39	21	22	21	36	35
							37	38	38	51	50
Laura Sewerage System (176 connections):											
SL	SEPTIC SYSTEMS		1991	40	38	38	152	164	158	152	144
	WATER SERVICE		1991	40	38	38	90	97	92	90	86
	CONNECTIONS	0.25	1991	40	38	38	508	549	522	44	42
							750	811	771	286	272
TOTAL SALTWATER & SEWERAGE							11,712	15,189	9,527	13,380	8,945

POTABLE WATER SYSTEM: AIRPORT & DUD

APCP #4	TURBINE PUMPS 7.5 HP	5	1972	15	-6	10				20	13
	ELECTRICAL & VLAVES	20	1972	10	-11	3				20	6
	CATCHMENT (ACRES)	10	1982	30	19	19				785	497
	WELL 8000 GAL	10	1972	30	9	9				10	3
	PIPE 8" - 18" ('000 FT)	10	1972	40	19	30				200	150
	RIISING MAIN 10" AC	25	1972	40	19	30				120	90
	BUILDING	50	1972	40	19	14				50	18
			1972	30	9	10	2,000	4,558	1,519		
T/P 'C'	SAND FILTERS 226 GPM	75	1972	15	-6	0				150	0
	CENTRIFUGAL PUMPS 5 HP	5	1972	15	-6	5	3,500	7,976	2,659	20	7
			1987	15	9	9				5	3
	TURBINE PUMPS (FIN.W.) 5 HP	10	1972	15	-6	5				20	7
	TURBINE PUMPS(SUPPLY)40HP	20	1972	15	-6	5				60	20
			1972	10	-11	0				3	0
	HYPOCHLORITE FEEDERS	3	1988	10	5	5				3	2
	UT RESERVOIRS EARTH (M GAL)	50	1972	40	19	19				750	356
	- HYPERLINING	75	1981	20	8	8				450	180
	RESERVOIR EXPANSION UPGRAD	45	1988	40	35	20	200	243	122	225	113
	(JICA) - HYPERLINING	35	1988	20	15	15	155	189	141	175	131
	TW COV.RESERVOIR (M GAL)	100	1972	40	19	19				200	95
	- HYPERLINING	75	1981	20	8	8				150	60
	VALVES ETC	30	1988	15	10	10				30	20
	BUILDING	50	1972	40	19	14				50	18
T/P 'B'	FILTER 57 GPM	35	1965	15	-13	0				35	0
	CHLORINATOR	1.5	1985	10	2	2				2	0
	CENTRIFUGAL PUMPS 7.5 HP	6.5	1965	15	-13	0				17	0
	RETIC PUMPS	8.5	1992	15	14	14				17	16
	RESERVOIR (M GAL)	300	1965	40	12	10				150	38
	CONCRETE, COVERED										
	MÉCH & ELEC	10	1983	15	5	5	600	888	296	10	3
	BUILDINGS & WELL	30	1965	40	12	20				30	15
T/P 'A'	FILTER 57 GPM	35	1972	15	-6	0				35	0
	CENTRIFUGAL PUMPS	2	1986	10	3	5				4	2
	CENTRIFUGAL PUMPS 7.5 HP	8.5	1986	15	8	8				17	9
	GENERATOR	15	1986	15	8	8				15	8
	CHLORINATOR	1.5	1972	10	-11	0				2	0
			1972	40	19	19				100	48
	RESERVOIR NOT COV. (M GAL)	200	1972	40	19	19				10	5
	MÉCH & ELEC	10	1986	15	8	8	250	329	175	10	5
	BUILDINGS	30	1972	40	19	19				30	14

**MAJURO WATER AND SEWERAGE
SCHEDULE OF CAPITAL ASSETS
As at September 30, 1992.**

Location	Description	'93 Uni Cost (\$'000)	Year of Instal.	Normal Exp. Life	Resid. Life	Adj. Resid. Life	Original Cost (\$'000)	Historic Cost in Value at (1993 \$)	Residual Value at Adj. Hist. Cost	1993 Est. Repl. Cost (\$'000)	Residual Value at '93 Repl. Cost
POTABLE WATER SYSTEM CONTINUED..											
RES	RIT ELEVATED TANK 100,000 GAL		1972	20	-1	0	400	912	0		
RES	ULI ELEVATED TANK 100,000 GAL		1972	20	-1	0	400	912	0		
DISTR	MAINS 6" TO 12" AC ('000 FT)		1972	40	19	19	2,000	4,558	2,165		
	12"	25	1972	40	19	19				900	428
	10"	20	1972	40	19	19				148	70
	8"	16	1972	40	19	19				181	86
	6"	12	1972	40	19	19				122	58
RETIC	PIPE 1/2" TO 2" PVC ('000 FT)		1972	40	19	19	600	1,367	649		
	2" (AVG DATE OF INSTALL)	3	1986	40	33	33				210	173
	3/4"	1.75	1986	40	33	33				53	43
	1/2"	1.5	1986	40	33	33				17	14
	METERS	0.12	1992	10	9	9				198	178
	CONNECTIONS	0.25	1986	40	33	33				425	351
RETIC	RITA/DELAP EXTENSIONS		1991	40	38	38					
	6" PVC	12	1991	40	38	38				48	46
RETIC	4" PVC	9	1991	40	38	38				90	86
							10,105	21,930	7,727	6,360	3,477
POTABLE WATER SYSTEM: LAURA LENS											
WELL	WELLS & FIELDS	23.5	1990	40	37	37	147	165	153	165	152
	PUMPS	3.4	1990	15	12	12	21	24	19	24	19
	VALVES & ELECTRICAL	13	1990	15	12	12	12	13	11	13	10
T/P	LAU FILTER	38	1990	10	7	7	35	39	28	38	27
	CENTRIFUGAL PUMPS	22	1990	15	12	12	20	22	18	22	18
	CHLORINATOR	22	1990	10	7	7	20	22	16	22	15
	RESERVOIR ('000 GAL)	1.2	1990	40	37	37	30	34	31	36	33
DISTR	MAINS 4" TO 12" ('000 FT)	19	1989	40	36	36	130	152	137	152	137
RETIC	PIPE 1/2" - 2" ('000 FT)	2.5	1989	40	36	36	62	73	65	75	68
	BUILDINGS	35	1989	40	36	36	60	70	63	70	63
TRANS	LAURA - AIRPORT PIPE ('000 FT)		1990	40	37	37					
	14" DI	35	1990	40	37	37	1300	1,462	1,353	1,295	1,198
	12" PVC	25	1990	40	37	37	1314	1,478	1,367	1,320	1,221
	8" COLLECTION	16	1990	40	37	37				144	133
	VALVES & ELECT	12	1990	15	12	12	10	11	9	12	10
	PUMPS	45	1990	15	12	12	40	45	36	45	36
							3,201	3,612	3,305	3,432	3,139
	OFFICE BUILDING	80	1989	40	36	35	80	94	82	80	70
TOTAL CAPITAL COSTS - WATER & SEWERAGE							25,098	40,824	20,641	23,253	15,632

MAJURO WATER AND SEWERAGE COMPANY

SUMMARY OF NEW TARIFFS

A. RESIDENTIAL SERVICE

1. POTABLE WATER

Quantity supplied (gallons per month)	\$ per 1000 gallons
00000 - 05000	10.00*
05001 - 07500	5.00
07501 - 10000	6.00
10001 - 12500	7.50
12501 - 15000	8.75
15001 - 17500	10.25
17501 - 20000	12.00
20000 - up	15.00

* minimum charge

2. SALT WATER AND SEWER SERVICE

00000 - 05000	7.50
05001 - up	60% of potable water charge

3. SALT WATER SERVICE ONLY

00000 - 05000	4.00
05001 - up	30% of potable water charge

4. Application fees

Potable water service	\$75.00 - \$100.00
Saltwater service	\$50.00
Wastewater collection service	\$75.00 - \$100.00

5. Connection fees

Potable water service	\$2.00 - \$2.50 per foot
Saltwater service	\$1.50 per foot
Wastewater collection service	\$4.50 - \$6.00 per foot

B. BUSINESS SERVICE

1. POTABLE WATER

Quantity supplied (gallons per month)	\$ per 1000 gallons
00000 - 10000	25.00*
10001 - 15000	6.50
15001 - 20000	7.50
20001 - 25000	8.00
25001 - 30000	8.75
30001 - 35000	9.75
35001 - 40000	11.00
40001 - 45000	12.50
45001 - 50000	14.25
50001 - up	16.25

* minimum charge

2. SALT WATER AND SEWER SERVICE

00000 - 10000	20.00
10001 - up	75% of potable water charge

3. SALT WATER SERVICE ONLY

00000 - 10000	12.50
10001 - up	40% of potable water charge

4. Application fees

Potable water service	\$100.00 - \$350.00
Saltwater service	\$150.00 - \$250.00
Wastewater collection service	\$100.00 - \$150.00

5. Connection fees

Potable water service	\$2.25 - \$3.75 per foot
Saltwater service	\$1.75 - \$3.75 per foot
Wastewater collection service	\$5.00 - \$6.50 per foot

C. INDUSTRIAL AND COMMERCIAL SERVICES

The charges for the provision of services to the commercial and industrial sectors are determined on the basis of individual customer requirements.

MAJURO WATER AND SEWERAGE COMPANY

PROJECTION OF BALANCE SHEETS – FULL COST RECOVERY BASIS

For Fiscal Years Ending Sept 30,
(US\$ '000)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
	- Audited -	- Preliminary -	-	-	Projected	-	-	-	-	-	-	-	-	-	-	-
FIXED ASSETS																
Fixed assets at cost	49	49	61	15,093	16,348	17,030	17,739	18,478	25,941	27,006	28,069	29,176	28,560	27,637	28,758	29,923
Less: Acc. Depreciation	8	16	29	29	740	1,515	2,356	3,289	4,257	5,814	7,034	8,558	8,827	8,056	9,373	10,782
Net fixed assets	41	33	32	15,064	15,608	15,515	15,382	15,206	21,683	21,391	21,035	20,618	19,733	19,581	19,385	19,141
Works in progress				0	599	3,543	6,010	6,698	0	0	0	0	0	0	0	0
Total fixed assets	41	33	32	15,064	16,207	19,058	21,392	21,905	21,683	21,391	21,035	20,618	19,733	19,581	19,385	19,141
CURRENT ASSETS																
Inventories	26	25	98	98	98	98	98	98	98	98	98	98	98	98	98	98
Net accounts receivable	60	66	45	45	45	45	45	45	45	45	45	45	45	45	45	45
Other receivables & prepaids	60	2	54	54	54	54	54	54	54	54	54	54	54	54	54	54
Cash	12	1	(11)	659	944	1,119	1,088	1,190	1,601	2,307	3,125	4,048	5,164	6,377	7,584	8,675
Total current assets	158	94	186	856	1,141	1,316	1,285	1,387	1,798	2,504	3,322	4,245	5,361	6,574	7,761	9,072
TOTAL ASSETS	199	127	218	16,520	17,348	20,374	22,677	23,291	23,481	23,895	24,358	24,862	25,094	26,155	27,166	28,213
LIABILITIES & EQUITY																
EQUITY																
Government & other contr.	100	100	100	15,732	15,732	15,732	15,732	15,732	15,732	15,732	15,732	15,732	15,732	15,732	15,732	15,732
Retained earnings	42	(15)	30	728	332	(238)	(1,080)	(1,862)	(2,408)	(2,905)	(3,378)	(3,837)	(3,711)	(3,555)	(3,476)	(3,388)
Revaluation surplus				0	625	1,277	1,958	2,663	3,399	4,434	5,504	6,617	8,684	7,968	9,095	10,287
Total equity	142	85	130	16,460	16,689	16,770	16,607	16,533	16,723	17,261	17,858	18,512	18,908	20,145	21,351	22,611
LONG & MEDIUM TERM DEBT																
Long term debt	0			0	599	3,543	6,010	6,698	6,575	6,439	6,291	6,128	5,950	5,755	5,542	5,308
Medium term debt	0			0	0	0	0	0	0	0	0	0	0	0	0	0
Total debt outstanding	0	0	0	0	599	3,543	6,010	6,698	6,575	6,439	6,291	6,128	5,950	5,755	5,542	5,308
CURRENT LIABILITIES																
Accounts payable	57	42	88	60	60	60	60	60	60	60	60	60	60	60	60	60
Debt due in one year				0	0	0	0	0	124	138	148	162	178	195	213	234
Total current liabilities	57	42	88	60	60	60	60	60	184	198	208	222	238	255	273	294
TOTAL LIABILITIES & EQUITY	199	127	218	16,520	17,348	20,374	22,677	23,291	23,481	23,895	24,358	24,862	25,094	26,155	27,166	28,213

MAJURO WATER AND SEWERAGE COMPANY
STATEMENT OF CHANGES IN FUNDS - FULL COST RECOVERY BASIS

For Fiscal Years Ending Sept 30, (US\$ '000)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
	- Audited -	- Preliminary -		Projected												
SOURCES OF FUNDS																
Net operating revenue	(448)	(342)	298	344	411	477	767	1,078	1,496	1,608	1,713	1,907	2,008	1,998	2,060	
Other income	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	
Interest on surplus	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Loan withdrawals	0	0	0	500	2,944	2,467	688	0	0	0	0	0	0	0	0	
Government operating subsidies	398	399	400	0	0	0	0	0	0	0	0	0	0	0	0	
Capital grants, government contributions	0	0	15,632	0	0	0	0	0	0	0	0	0	0	0	0	
Net change in WC (excluding cash)	38	(56)	(26)	0	0	0	0	124	12	13	14	15	17	19	20	
TOTAL SOURCES	(11)	0	16,302	943	3,355	2,944	1,455	1,202	1,506	1,621	1,727	1,922	2,020	2,016	2,101	
USES OF FUNDS																
Project & construction costs	0	0	0	500	2,944	2,467	688	0	0	0	0	0	0	0	0	
Other capital purchases	0	12	15,632	30	30	30	30	30	30	30	30	30	30	30	30	
Interest during construction	0	0	0	30	207	478	635	0	0	0	0	0	0	0	0	
Interest on deficit	0	0	0	(1)	0	0	0	0	0	0	0	0	0	0	0	
Debt service: principal	0	0	0	0	0	0	0	124	136	148	162	178	195	213	234	
Debt service: interest	0	0	0	0	0	0	0	636	636	625	612	596	582	565	547	
TOTAL USES	0	12	15,632	658	3,181	2,975	1,354	790	802	803	804	806	807	809	810	
Opening cash balance	12	1	(11)	650	944	1,119	1,068	1,190	1,601	2,307	3,125	4,048	5,165	6,377	7,585	
Cash surplus(deficit) for year	(11)	(12)	670	285	174	(30)	102	412	706	816	923	1,117	1,213	1,207	1,200	
Cash balance at end of year	1	(11)	659	944	1,119	1,068	1,190	1,601	2,307	3,125	4,048	5,165	6,377	7,585	8,875	

MAJURO WATER AND SEWERAGE COMPANY
STATEMENT OF INCOME AND EXPENSES - FULL COST RECOVERY BASIS

For Fiscal Years Ending Sept 30, (US\$ '000)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
	- Audited -	- Preliminary -	-	-	- Projected -	-	-	-	-	-	-	-	-	-	-	-
INCOME																
Potable Water sales	230	301	312	1,050	1,394	1,429	1,464	1,757	1,933	2,372	2,548	2,724	2,988	3,163	3,251	3,427
Sea Water sales				193	368	300	309	527	545	626	635	637	654	655	634	627
New connection charges	41	59	73	52	65	26	44	113	31	31	37	38	38	46	47	49
Other operating revenue	47	49	6	15	16	16	17	18	18	19	20	21	21	22	23	24
	327	409	391	1,310	1,843	1,834	1,894	2,415	2,527	3,049	3,239	3,420	3,702	3,896	3,956	4,127
Less: uncollectable accounts	88	100	75	262	295	220	152	242	253	305	324	342	370	389	398	413
Gross Revenue from Operations	239	309	316	1,048	1,548	1,614	1,743	2,174	2,275	2,744	2,915	3,078	3,331	3,407	3,558	3,714
EXPENSE																
Labour	263	279	308	343	657	683	710	739	568	591	615	639	665	691	719	748
Chemicals	24	49	45	80	83	87	90	94	97	101	105	109	114	118	123	128
Fuel and power	22	26	24	25	134	139	145	166	172	179	186	194	202	210	218	227
Maintenance and supplies	142	142	59	80	83	87	90	111	115	120	124	129	135	140	146	151
Administration	130	219	197	117	122	127	132	137	142	148	154	160	167	173	180	187
New connection costs				50	94	48	65	128	65	71	83	91	101	118	130	145
Other	38	42	34	55	31	32	34	35	36	38	39	41	43	44	46	48
Total Operating Expense	619	757	658	750	1,204	1,202	1,265	1,407	1,197	1,248	1,307	1,364	1,425	1,485	1,563	1,634
Net Revenue from Operations	(380)	(446)	(342)	298	344	411	477	767	1,078	1,496	1,608	1,713	1,907	2,003	1,998	2,080
Depreciation	8	8	13	0	711	775	842	913	988	1,357	1,456	1,561	1,183	1,265	1,353	1,446
Net Income before interest and taxes	(388)	(450)	(355)	298	(367)	(363)	(364)	(146)	90	139	152	152	724	737	645	635
Other income	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Operating subsidies	398	398	399	400	0	0	0	0	0	0	0	0	0	0	0	0
Interest—Surplus at: 0.0%				0	0	0	0	0	0	0	0	0	0	0	0	0
Interest on long term debt	11	(57)	45	698	(367)	(363)	(364)	(146)	90	139	152	152	724	737	645	635
Interest—Deficit at rate of: 9.0%				0	30	207	478	835	636	636	625	612	598	582	565	547
				0	-1	0	0	0	0	0	0	0	0	0	0	0
NET INCOME (DEFICIT)	11	(57)	45	698	(396)	(570)	(842)	(781)	(547)	(497)	(472)	(459)	127	155	79	88
CUMULATIVE SURPLUS (DEFICIT)	42	(15)	30	728	332	(236)	(1,080)	(1,862)	(2,408)	(2,905)	(3,378)	(3,837)	(3,711)	(3,555)	(3,476)	(3,388)

NOTES TO THE FINANCIAL PROJECTIONS

It should be noted that this projection is based on assumptions, information, and conditions at the time of the projection, and as provided to the Consultant. It has been prepared only for purposes of illustrating possible financial outcomes the proposed project under certain conditions. Actual results may vary significantly.

Apart from annual maintenance and equipment purchases, no provision has been included for replacement of major system components or other developments which will be required during the period of the projection, therefore cash surpluses will be reduced to the extent required to finance such assets.

In preparing the estimates, historical information was used as a guideline, the most recent audited financial statements being available for the 1990 fiscal year. The 1991 and 1992 balances are adjusted to estimate, pending completion of the audits. All estimates are based on the fiscal year, ending in September of the year shown, i.e. '1993' covers the 12 month period ending on September 30, 1993.

ASSUMPTIONS AND KEY INDICATORS OF THE PROJECTION

Except as described below, fundamental assumptions and financial indicators are presented on the following Schedule to the Financial Projections.

Inflation Rate

Foreign inflation is assumed at 3.4% per annum, local at 5%, weighted average at 4%.

Population Served

Projected Majuro Population is reduced by latest census ratio of population on unattached islands of the Majuro Atoll.

Average Number of Users/Connections

It is assumed that, as a result of metering and tariff increases, the average number of users per connection will decline by a further 10% per household in 1994, thereafter decline at 2% per year towards the average family size of 8.8 people per dwelling.

Number of Fresh Water Connections

The installation of meters in the fall of 1992 resulted in 58 'new' connections recorded. It is assumed that there will be a further decrease in shared connections as a result of the incremental tariff, effective February 1993.

Users on Sea Water System

As the projection is limited to the existing capacity, and increases specific to the project, it is assumed that the percentage of the population on the service will decline within a maximum available service.

Number of Sea Water Connections

New connections will decline, based on limited service capacity.

Potable Water Production

Water production and sales are based on estimated production from current MWSC system, plus additional production available from the project, and limited by demand.

Leakage and Unmetered Losses

Determination of physical leakage problems will improve with bulk flow metering and metered consumption; current rate is assumed to be 15% with a further allowance of 10% for unauthorized connections. This is assumed to be improved to combined losses of 15% by 1997, compared to the current estimate of 25%.

Required Average Potable Water Tariff

The average tariff is calculated on the total water sold, divided by charges, for 1991 through 1993. For the balance of the projection, this figure is the estimated average tariff required to meet expected loan covenants and provide revenues adequate to meet annual cash requirements, and elimination of subsidies if possible.

Sea Water Tariff

The rate for 1993 is in accordance with tariff surcharge on fresh water consumption. For the purposes of establishing the required average tariff required for all water sales, it is assumed, for projection purposes only, at 60% of the average potable water tariff.

REVENUE AND EXPENSE ITEMSREVENUESPotable Water Sales

Billings for 1993 will include 6 months charged at the new tariffs. As there is, as yet, insufficient data on the consumption patterns which will result, the revenue is calculated for this period at the average residential rate, prorated for 6 month's estimated water sold and the average number of connections. Thereafter, the average tariff is calculated as required to meet requirements.

Sea Water Sales

Prior to 1993, sea water revenue has not been accounted separately. For 1993 it is calculated for the 6 months of the new tariff, as 60% of potable water revenues multiplied by the ratio of S/W connections to total connections. Thereafter, the revenue is calculated at the average required tariff rate.

New Connection Charges - Water and Sewerage

be noted that, under the new tariff structure and the implementation of metering, charges for new connections are not adequate to recover the costs. No deposit is required for meter installations.

Other Operating Revenue

Other income is earned on related services and are assumed to increase with inflation.

Uncollectible Accounts

It is assumed that average collections will improve from the current 75% to at least than 90% by 1996. This assumes both the provision of better services, and increased and consistent enforcement of Board policies for disconnections and other collection procedures can be achieved.

Operating Subsidies

Current annual government subsidies, as provided under the terms of payment to MWSC are assumed to cease as of 1994.

EXPENSES

Operating expenses are assumed to increase with inflation.

Labour

Labour costs are assumed increase by at least \$300,000 by 1994, based on estimated cost for a total payroll of 54 employees and management personnel, including a modest provision for expatriate services. In 1995, the estimate is reduced by \$150,000 assuming adequate training and transition to local employees.

Fuel & Power

Power costs of MWSC have previously been paid by government. As of 1994, it is assumed that MWSC will be charged for projected power consumption. Power costs are increased in 1997 in conjunction with project requirements.

Other Expense

For the years 1990 to 1992, this comprises mainly insurance paid on leased assets. For 1993, this comprises a provision of \$50,000 for extraordinary expense for materials and replacements. Years after 1993 include insurance.

Depreciation

Capital Assets are depreciated on a straight line basis assuming that the gross value of the assets is revalued annually with the inflation rate. Depreciation rates are as follows:

Civil works and pipelines	30 to 40 years
Reservoir linings and tanks	20 years
Pumps and Mechanical	15 years
Valves and Electrical	10 years
Intangible project costs	5 years

Interest

It is assumed that cash surpluses will be used to finance future projects and capital expenditures, therefore interest earned on investments will not be material. Cash deficits requiring short term borrowings, are charged interest at 9%. Interest on long term project loan is assumed at 9.5%, but will vary, depending on terms agreed. Interest during construction is expensed.

BALANCE SHEET ITEMSCapital Assets

Capital Assets comprise physical assets of MWSC, water and sewerage assets presently leased to MWSC by the Marshalese government, and assets of the project. Assets are revalued annually, as described under Depreciation, above.

Accounts Receivable

As of January, 1993, over 50% of billings were over 90 days in arrears. It is assumed that by September 1994 improvements can be achieved, decreasing total receivables to not more than four month's billings, and collections at not less than 90%.

Other Receivables

For the years 1990 to 1991, this includes a amount of \$45,000 for an alleged overpayment of management contract fees. At the time of review, certainty of collection is unknown; the balance is excluded as a loss.

Inventories

Inventory figures are preliminary, pending completion of 1992 audit.

Cash

Cash is determined, for the projection, as the surplus or deficit of funds from the statement of funds flow, Schedule 3. This will be reduced by requirements for future capital expenditures for new projects and replacements in excess of the annual provision of \$30,000.

Government & other contributions

Water and sewerage system assets leased to MWSC are reflected in the accounts as of 1993/94, as a government contribution, recorded at estimated current value.

Revaluation Surplus

This is the cumulative balance resulting from annual revaluation of fixed assets at the projected weighted average inflation. It includes both the existing system assets, as valued at 1993 adjusted replacement cost, and assets resulting from the project.

Long Term Debt

Long term debt consists of a loan payable to the government for funds on-lent according to the Asian Development Bank prescribed terms, assuming repayment over 24 years, with no principal repayments in the first four years. The project is assumed to be fully financed by borrowings, with funds in addition to the ADB loan borrowed from the government on equivalent terms.

**MAJURO WATER AND SEWERAGE COMPANY
ASSUMPTIONS AND KEY INDICATORS TO THE FINANCIAL PROJECTIONS**

			1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
			- Audited	-- Preliminary	---	----- Projected												
ASSUMPTIONS IN METRIC MEASUREMENT																		
3.7850 Litres = 1 US Gallon																		
Inflation Rate						4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Inflation Factor						104.0%	108.2%	112.5%	117.0%	121.7%	126.5%	131.6%	136.9%	142.3%	148.0%	153.9%	160.1%	166.5%
Growth Rate																		
Population	19664	20903	22220	23620	25108	26689	28371	30158	32058	34078	36225	38507	40933	43512	46253	49167	52284	55557
Population Served @	97%		21553	22911	24354	25889	27520	29253	31006	33055	35138	37352	39705	42206	44865	47692	50696	53890
PRODUCTION - MWSC POTABLE (Gross)																		
- D.U.D. Wells	(M m3/y)					0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
- Airport Catchment	(M m3/y)					0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
- Laura Wells	(M m3/y)					0.45	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
- Airport Reservoir Expansion	(M m3/y)					0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
- Laura Wellfield Expansion	(M m3/y)					0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GROSS PRODUCTION - MWSC	(M m3/y)		0.81	0.91	0.95	1.47	1.54	1.54	1.54	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57
Leakage and unaccounted losses	% of gross		0% ?	?		25%	20%	18%	16%	15%	15%	15%	15%	15%	15%	15%	15%	15%
NET POTABLE WATER SALES	(M m3/y)		0.79	0.91	0.95	1.10	1.24	1.27	1.30	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33
DEMAND (Annual)																		
Water Demand @ 1/c/d of:	199	(M m3/y)	1,563	1,662	1,766	1,878	1,996	2,122	2,255	2,398	2,549	2,709	2,880	3,061	3,254	3,459	3,677	3,909
- met by bottled purchases		(M m3/y)				0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
- met by roof catchment		(M m3/y)				0.168	0.200	0.212	0.226	0.240	0.255	0.271	0.288	0.306	0.325	0.346	0.368	0.391
- met by MWSC sewerage system		(M m3/y)	0.298	0.314	0.317	0.349	0.371	0.379	0.407	0.565	0.565	0.565	0.565	0.565	0.565	0.565	0.565	0.565
- met by MWSC potable water system		(M m3/y)	0.767	0.908	0.946	1.101	1.235	1.266	1.297	1.330	1.330	1.330	1.330	1.330	1.330	1.330	1.330	1.330
NET UNMET DEMAND		(M m3/y)				0.236	0.188	0.262	0.324	0.260	0.398	0.541	0.694	0.658	1.031	1.216	1.412	1.620
DEMAND (Daily)																		
Water Demand @ 1/c/d of:	189	(m3/d)	4,293	4,553	4,940	5,144	5,469	5,813	6,179	6,569	6,962	7,422	7,990	8,367	8,915	9,477	10,074	10,709
- met by bottled purchases		(m3/d)				5	5	5	5	5	5	5	5	5	5	5	5	5
- met by roof catchment		(m3/d)				514	547	561	616	657	698	742	789	839	892	948	1,007	1,071
- met by MWSC sewerage system		(m3/d)	816	860	870	955	1,015	1,040	1,115	1,548	1,548	1,548	1,548	1,548	1,548	1,548	1,548	1,548
- met by MWSC potable water system		(m3/d)	2,157	2,489	2,592	3,018	3,385	3,489	3,554	3,845	3,845	3,845	3,845	3,845	3,845	3,845	3,845	3,845
NET UNMET DEMAND (Surplus)		(m3/d)				652	518	718	667	713	1,066	1,482	1,903	2,350	2,828	3,331	3,868	4,440
AVERAGE AVAILABLE FOR CONSUMPTION																		
MWSC Potable Water		(l/c/d)				117	123	119	114	110	104	98	92	86	81	76	72	68
MWSC Sewerage		(l/c/d)				37	37	36	36	47	44	41	39	37	35	32	31	29
Roof Catchment, Other		(l/c/d)				20	20	20	20	20	20	20	20	20	20	20	20	20
TOTAL		(l/c/d)				174	180	174	170	177	168	159	151	143	136	129	122	116
CONNECTION STATISTICS																		
Average Number of Users/Connection			15.4	15.9	15.3	14.4	12.9	12.7	12.4	12.2	11.9	11.7	11.5	11.2	11.0	10.8	10.6	10.4
No. of Fresh Water Connects	1319	0	1397	1444	1590	1800	2126	2308	2501	2713	2943	3192	3463	3756	4074	4419	4793	5199
New Fresh Water Connections in the Year			78	47	146	210	328	160	195	212	230	249	270	293	318	345	374	406
Percentage of Connections on Salt Water System			0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
Number of S/W & Sewerage Connections			678	703	726	628	935	969	1051	1357	1383	1405	1437	1465	1487	1525	1558	1586
New S/W & Sewerage Connections in the Yr			678	25	23	102	107	33	62	306	27	21	32	28	22	38	33	28
TARIFFS AND FEES																		
Average Potable Water Tariff		(\$/m3)	4.35	4.75	4.72	16.17	16.17	16.17	16.17	18.93	20.82	25.55	27.44	29.33	32.17	34.07	35.01	36.90
Sea Water Tariff		(%P/W Rate)				60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%
Connection Fee - Water		(\$/Appl.)				100	100	100	100	100	100	100	100	100	100	100	100	100
Connection Fee - Salt/Sewer		(\$/Appl.)				150	150	150	150	150	150	150	150	150	150	150	150	150
Uncollectable Accounts		(% Rev)	27%	24%	19%	20%	16%	12%	8%	10%	10%	10%	10%	10%	10%	10%	10%	10%
FINANCIAL INDICATORS																		
Working capital			101	52	98	796	1081	1256	1225	1327	1615	2309	3114	4022	5123	6319	7508	8778
Debt to debt+equity			0.00	0.00	0.00	0.00	0.03	0.17	0.27	0.29	0.28	0.27	0.28	0.25	0.24	0.22	0.21	0.19
Operating expense to revenue			1.89	1.85	1.66	0.57	0.65	0.68	0.67	0.58	0.47	0.41	0.40	0.40	0.38	0.38	0.40	0.40
Cash to construction expense							0.48	0.06	-0.01	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Operating revenue to debt service							0.00	0.00	0.00	0.00	1.42	1.94	2.06	2.21	2.48	2.58	2.57	2.67
Income before interest to net assets			-9.46	-13.62	-11.09	0.02	-0.02	-0.02	-0.02	-0.01	0.00	0.01	0.01	0.01	0.04	0.04	0.03	0.03

**MAJURO WATER AND SEWERAGE COMPANY
ASSUMPTIONS AND KEY INDICATORS TO THE FINANCIAL PROJECTIONS**

For Fiscal Years Ending Sept 30, (US\$ '000)	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	
	- Audited -	- Preliminary -		- Projected -													
ASSUMPTIONS (US gallons, unless otherwise specified)																	
Inflation Rate				4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	
Inflation Factor				104.0%	108.2%	112.5%	117.0%	121.7%	126.5%	131.6%	136.9%	142.3%	148.0%	153.9%	160.1%	166.5%	
Growth Rate				6.3%	6.3%	6.3%	6.3%	6.3%	6.3%	6.3%	6.3%	6.3%	6.3%	6.3%	6.3%	6.3%	
Population		22220	23620	25108	26680	28371	30158	32058	34078	36225	38507	40933	43512	46253	49167	52204	55557
Population Served @	97%	21553	22911	24354	25800	27520	29253	31066	33055	35138	37352	39705	42206	44865	47692	50696	53890
PRODUCTION - MWSC POTABLE (Gross)																	
- D.U.D. Wells (M g/y)				18	18	18	18	18	18	18	18	18	18	18	18	18	
- Airport Catchment (M g/y)				252	252	252	252	252	252	252	252	252	252	252	252	252	
- Laura Wells (M g/y)				118	138	138	138	138	138	138	138	138	138	138	138	138	
- Airport Reservoir Expansion (M g/y)							8	8	8	8	8	8	8	8	8	8	
- Laura Wellfield Expansion (M g/y)							0	0	0	0	0	0	0	0	0	0	
GROSS PRODUCTION - MWSC (M g/y)		215	240	250	388	408	408	414	414	414	414	414	414	414	414	414	
Leakage and unaccounted losses % of gross			?	?	25%	20%	18%	16%	15%	15%	15%	15%	15%	15%	15%	15%	
NET POTABLE WATER SALES (M g/y)		208	240	250	291	328	335	343	351	351	351	351	351	351	351	351	
DEMAND																	
Water Demand at: 52.5 (M g/y)		413	430	467	496	527	561	596	633	673	716	761	800	800	914	971	1033
- met by bottled purchases (M g/y)					0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
- met by roof catchment (M g/y)					50	53	56	60	63	67	72	76	81	86	91	97	
- met by MWSC seawater system (M g/y)	79	63	64	92	98	100	108	149	149	149	149	149	149	149	149	149	
- met by MWSC potable water system (M g/y)	208	240	250	291	328	335	343	351	351	351	351	351	351	351	351	351	
NET UNMET DEMAND (M g/y)				63	50	69	66	69	105	143	183	227	272	321	373	428	
AVERAGE AVAILABLE FOR CONSUMPTION																	
MWSC Potable Water (g/c/d)				31	32	31	30	29	27	26	24	23	21	20	19	18	
MWSC Seawater (g/c/d)				10	10	9	9	12	12	11	10	10	9	9	8	8	
Roof Catchment, Other (g/c/d)				5	5	5	5	5	5	6	5	5	5	5	5		
TOTAL (g/c/d)				46	48	46	45	47	44	42	40	38	36	34	32	31	
CONNECTION STATISTICS																	
Average Number of Users/Connection		15.4	15.9	15.3	14.4	12.9	12.7	12.4	12.2	11.9	11.7	11.5	11.2	11.0	10.6	10.4	
No. of Fresh Water Connects		1397	1444	1590	1800	2126	2306	2501	2713	2943	3192	3463	3756	4074	4419	4793	5199
New Fresh Water Connections in the Year		78	47	146	210	326	180	195	212	230	249	270	293	316	345	374	406
Percentage of Connections on Salt Water System		49%	49%	46%	46%	44%	42%	42%	50%	47%	44%	42%	39%	37%	35%	33%	31%
Number of S/W & Sewerage Connections		678	703	726	828	935	969	1051	1357	1363	1405	1437	1465	1487	1525	1558	1586
New S/W & Sewerage Connections in the Yr		678	25	23	102	107	33	82	306	27	21	32	28	22	38	33	28
TARIFFS AND FEES																	
Average Potable Water Tariff (\$/'000g)		1.15	1.25	1.25	4.27	4.27	4.27	4.27	5.00	5.50	6.75	7.25	7.75	8.50	9.00	9.25	9.75
Sea Water Tariff (%/PW Rate)					60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	60%	
Connection Fee - Water (\$/Appl.)					100	100	100	100	100	100	100	100	100	100	100	100	
Connection Fee - Salt, Sewer (\$/Appl.)					150	150	150	150	150	150	150	150	150	150	150	150	
Uncollectable Accounts (% Rev)		27%	24%	19%	20%	16%	12%	8%	10%	10%	10%	10%	10%	10%	10%	10%	
FINANCIAL INDICATORS																	
Working capital (excluding cash surplus)		101	52	96	137	137	137	137	13	1	-11	-25	-41	-58	-76	-97	
Debt to debt+equity		0.00	0.00	0.00	0.00	0.03	0.17	0.27	0.29	0.28	0.27	0.26	0.25	0.24	0.22	0.19	
Operating expense to revenue		1.89	1.85	1.68	0.57	0.65	0.66	0.67	0.58	0.47	0.41	0.40	0.40	0.38	0.38	0.40	
Cash to construction expense		0.00	0.00	0.00	0.00	0.48	0.06	-0.01	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Operating revenue to debt service		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.42	1.94	2.06	2.21	2.48	2.58	2.87	
Income before interest to net assets		-9.46	-13.82	-11.09	0.02	-0.02	-0.02	-0.02	-0.01	0.00	0.01	0.01	0.01	0.04	0.04	0.03	

SCHEDULE OF PROJECT CAPITAL COSTS AND INCREMENTAL WATER AVAILABLE

PROJECT:	Expected Life (Years)	Capital Cost (\$2) ('000 US\$)	Physical Conting & Design (%)	Engineer (%)	Conting Other (%)	Foreign Comp. (%)	Local Comp. (%)	TOTAL PROJECT COST								Tot:	FOREIGN COMPONENT								Tot:	LOCAL COMPONENT								Tot:								
								1993	1994	1995	1996	1997	1998	1999	1993		1994	1995	1996	1997	1998	1999	1993	1994		1995	1996	1997	1998	1999												
Estimated Inflation:								3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%											
Foreign %																																										
Local %																																										
Freshwater Systems Rehabilitation																																										
% of Completion								-	10%	60%	20%	10%	-	-	0%	-	10.0%	60.0%	20.0%	10.0%	-	-	-	-	-	-	-	-	-	-	-	-	10.0%	60.0%	20.0%	10.0%	-	-				
CAPITAL WORKS																																										
Pumps, Filters & Equipment	15	500	10%	15%	10%	60%	20%	-	75	468	181	84	-	-	785	-	60	368	127	66	-	-	-	-	-	-	-	-	-	-	-	-	-	15	87	34	18	-	-	-		
Buildings	30	58	10%	15%	10%	50%	50%	-	8	55	19	10	-	-	93	-	4	27	9	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	28	10	5	-	-	-	
Hyperion lining	20	628	10%	15%	10%	60%	20%	-	94	585	202	105	-	-	986	-	75	464	160	83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	18	121	42	22	-	-	-
Retreatment & Piping	40	100	10%	15%	10%	60%	40%	-	15	94	33	17	-	-	159	-	8	55	19	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	39	14	7	-	-	-	
								-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
TOTAL Base		1286						-	193	1,300	415	215	-	-	2,023	-	147	915	315	163	-	-	-	-	-	-	-	-	-	-	-	-	-	45	285	100	52	-	-	-		
WATER PRODUCED (M g/y)	-							-	128.6	771.6	257.2	128.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
WATER CONSERVED (M g/y)	-							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Increased Airport Reservoir Storage																																										
% of Completion								-	10%	60%	20%	10%	-	-	0%	-	10.0%	60.0%	20.0%	10.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	10.0%	60.0%	20.0%	10.0%	-	-			
CAPITAL WORKS																																										
Additional Storage	40	300	10%	15%	10%	30%	70%	-	42	263	92	48	-	-	445	-	12	77	28	14	-	-	-	-	-	-	-	-	-	-	-	-	-	30	187	65	34	-	-	-		
								-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
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TOTAL Base		300						-	42	263	92	48	-	-	445	-	12	77	28	14	-	-	-	-	-	-	-	-	-	-	-	-	-	30	187	65	34	-	-	-		
WATER PRODUCED (M g/y)	30							-	30	180	60	30	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
WATER CONSERVED (M g/y)	-							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Transmission Main																																										
% of Completion								-	10%	30%	50%	10%	-	-	0%	-	10.0%	30.0%	50.0%	10.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	10.0%	30.0%	50.0%	10.0%	-	-			
CAPITAL WORKS																																										
Transmission main	40	1500	10%	15%	10%	60%	40%	-	208	850	1,128	234	-	-	2,219	-	123	383	608	136	-	-	-	-	-	-	-	-	-	-	-	-	-	85	287	467	98	-	-	-		
Pumping Station - Civil	30	50	10%	15%	10%	50%	50%	-	7	22	38	9	-	-	74	-	3	11	18	4	-	-	-	-	-	-	-	-	-	-	-	-	-	4	11	18	4	-	-	-		
Pumps and equipment	15	150	10%	15%	10%	60%	20%	-	21	64	111	23	-	-	219	-	18	51	98	18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	13	23	5	-	-	-	
Piping	40	25	10%	15%	10%	60%	40%	-	3	11	19	4	-	-	37	-	2	9	11	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	4	8	2	-	-	-	
								-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
TOTAL Base		1725						-	239	746	1,294	269	-	-	2,548	-	148	451	778	161	-	-	-	-	-	-	-	-	-	-	-	-	-	94	296	518	109	-	-	-		
WATER PRODUCED (M g/y)	-							-	172.5	517.5	662.5	172.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
WATER CONSERVED (M g/y)	-							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Laura Filtration Plant																																										
% of Completion								-	10%	60%	20%	10%	-	-	0%	-	10.0%	60.0%	20.0%	10.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	10.0%	60.0%	20.0%	10.0%	-	-			
CAPITAL WORKS																																										
Pumps / Filters	15	180	10%	15%	10%	60%	20%	-	25	154	53	28	-	-	260	-	20	122	42	22	-	-	-	-	-	-	-	-	-	-	-	-	-	5	32	11	8	-	-	-		
Pumping Station - Civil	30	30	10%	15%	10%	50%	50%	-	4	26	9	5	-	-	44	-	2	13	4	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	13	5	2	-	-	-	
Piping	40	10	10%	15%	10%	60%	40%	-	1	9	3	2	-	-	15	-	1	5	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	4	1	1	-	-	-	
								-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
TOTAL Base		220						-	30	189	65	34	-	-	318	-	23	140	48	25	-	-	-	-	-	-	-	-	-	-	-	-	-	8	48	17	9	-	-	-		
WATER PRODUCED (M g/y)	-							-	22	132	44	22	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
WATER CONSERVED (M g/y)	-							-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Laura Wetland Extension																																										
% of Completion								-	10%	60%	10%	-	-	-	0%	-	-	10.0%	60.0%	10.0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10.0%	60.0%	10.0%	-	-			
CAPITAL WORKS																																										
Pumps and Piping	15	100	10%	15%	10%	60%	20%	-	-	14	118	15	-	-	148	-	-	11	94	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	25	3	-	-	-		
								-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
TOTAL Base		100						-	-	14	118	15	-	-	148	-	-	11	94	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	25	3	-	-	-		
WATER PRODUCED (M g/y)	-																																									

PROJECT:	Expected Life (Years)	Capital Cost (\$2,000 US\$)	Physical Conting. (%)	Engineer & Design (%)	Conting. Other (%)	Foreign Comp. (%)	Local Comp. (%)	TOTAL PROJECT COST							Tot:
								1993	1994	1995	1996	1997	1998	1999	
Estimated Inflation:	Foreign %							3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	
	Local %							5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	
Seawater Systems - Long Island	% of Completion	6						Project Costs: TOTAL							0%
								10%	60%	30%	10%	-	-	-	
CAPITAL WORKS								1993	1994	1995	1996	1997	1998	1999	Tot:
Pumps & Equipment	15	100	10%	15%	10%	60%	20%	-	14	66	30	15	-	-	145
Pumping Station - Civil	30	5	10%	15%	10%	50%	20%	-	1	4	2	1	-	-	7
Piping	40	300	10%	15%	10%	60%	40%	-	42	200	90	47	-	-	438
								-	-	-	-	-	-	-	-
								-	-	-	-	-	-	-	-
TOTAL Base		405						-	56	350	121	63	-	-	590
								-	40.5	243	61	40.5	-	-	-
WATER PRODUCED (M g/y)	-														
WATER CONSERVED (M g/y)	12														
Seawater Systems Rehabilitation	% of Completion							Project Costs: TOTAL							0%
								-	-	10.0%	90%	-	-	-	
CAPITAL WORKS								1993	1994	1995	1996	1997	1998	1999	Tot:
Valves	15	35	10%	15%	10%	60%	40%	-	-	5	47	-	-	-	52
								-	-	-	-	-	-	-	-
								-	-	-	-	-	-	-	-
								-	-	-	-	-	-	-	-
TOTAL Base		35						-	-	5	47	-	-	-	52
								-	-	3.5	31.5	-	-	-	-
WATER PRODUCED (M g/y)	-														
WATER CONSERVED (M g/y)	-														
New Tide Pump Station	% of Completion	6						Project Costs: TOTAL							0%
								-	-	10%	90%	-	-	-	
CAPITAL WORKS								1993	1994	1995	1996	1997	1998	1999	Tot:
Pumps & Equipment	40	110	10%	15%	10%	60%	20%	-	-	16	147	-	-	-	163
								-	-	-	-	-	-	-	-
								-	-	-	-	-	-	-	-
								-	-	-	-	-	-	-	-
TOTAL Base		110						-	-	16	147	-	-	-	163
								-	-	11	90	-	-	-	-
WATER PRODUCED (M g/y)	-														
WATER CONSERVED (M g/y)	-														
Sewerage Systems Rehabilitation	% of Completion	9						Project Costs: TOTAL							0%
								-	10%	40%	40%	10%	-	-	
CAPITAL WORKS								1993	1994	1995	1996	1997	1998	1999	Tot:
Pumping Equipment	15	150	10%	15%	10%	60%	20%	-	21	66	69	23	-	-	219
Manholes	40	60	10%	15%	10%	60%	40%	-	1	6	8	2	-	-	15
Comminutors	15	120	10%	15%	10%	60%	20%	-	17	60	71	18	-	-	175
								-	-	-	-	-	-	-	-
								-	-	-	-	-	-	-	-
TOTAL Base		280						-	39	130	146	43	-	-	408
								-	29	112	112	28	-	-	-
WATER PRODUCED (M g/y)	-														
WATER CONSERVED (M g/y)	-														
Technical Assistance	% of Completion							Project Costs: TOTAL							0%
								-	10.0%	80.0%	10.0%	-	-	-	
								1993	1994	1995	1996	1997	1998	1999	Tot:
Technical assistance	5							-	-	-	-	-	-	-	-

FOREIGN COMPONENT								Tot:
1993	1994	1995	1996	1997	1998	1999		
3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%		
5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%		
FOREIGN								
-	10.0%	60.0%	20.0%	10.0%	-	-		
1993	1994	1995	1996	1997	1998	1999	Tot:	
-	11	66	23	12	-	-	115	
-	0	2	1	0	-	-	4	
-	25	153	53	27	-	-	258	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	36	223	77	40	-	-	376	
FOREIGN								
-	-	10%	90%	-	-	-		
1993	1994	1995	1996	1997	1998	1999	Tot:	
-	-	3	26	-	-	-	31	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	3	26	-	-	-	31	
FOREIGN								
-	-	10%	90%	-	-	-		
1993	1994	1995	1996	1997	1998	1999	Tot:	
-	-	12	118	-	-	-	128	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	12	118	-	-	-	128	
FOREIGN								
-	10%	40%	40%	10%	-	-		
1993	1994	1995	1996	1997	1998	1999	Tot:	
-	16	66	70	16	-	-	173	
-	1	3	4	1	-	-	9	
-	13	54	56	15	-	-	138	
-	-	-	-	-	-	-	-	
-	30	128	130	34	-	-	322	
FOREIGN								
-	10.0%	80.0%	10.0%	-	-	-		
1993	1994	1995	1996	1997	1998	1999	Tot:	
-	-	-	-	-	-	-	-	

LOCAL COMPONENT								Tot:
1993	1994	1995	1996	1997	1998	1999		
5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%		
LOCAL								
-	10.0%	60.0%	20.0%	10.0%	-	-		
1993	1994	1995	1996	1997	1998	1999	Tot:	
-	3	18	6	3	-	-	30	
-	0	2	1	0	-	-	4	
-	17	107	37	20	-	-	181	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	30	127	44	23	-	-	224	
LOCAL								
-	-	10%	90%	-	-	-		
1993	1994	1995	1996	1997	1998	1999	Tot:	
-	-	2	20	-	-	-	22	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	2	20	-	-	-	22	
LOCAL								
-	-	10%	90%	-	-	-		
1993	1994	1995	1996	1997	1998	1999	Tot:	
-	-	3	31	-	-	-	34	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	-	-	-	-	-	-	
-	-	3	31	-	-	-	34	
LOCAL								
-	10.0%	80.0%	10.0%	-	-	-		
1993	1994	1995	1996	1997	1998	1999	Tot:	
-	-	-	-	-	-	-	-	

SCHEDULE OF PROJECT CAPITAL COSTS AND INCREMENTAL WATER AVAILABLE

PROJECT:	Expected Life (Years)	Capital Cost (\$2) ('000 US\$)	Physical Conting & Design (%)	Engineer Conting (%)	Foreign Other (%)	Foreign Comp. (%)	Local Comp. (%)	TOTAL PROJECT COST								Tot:			
								1993	1994	1995	1996	1997	1998	1999	2000				
Estimated Inflation:	Foreign %							3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%				
	Local %							5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%				
TOTAL ALL PROJECTS:	CAPITAL EXPENDITURE BY PROJECT							1993	1994	1995	1996	1997	1998	1999	2000	Tot:			
	Freshwater System Rehabilitation							-	103	1200	415	215	-	-	-	-	2023	-	-
	Increased Airport Reservoir Storage							-	42	263	92	48	-	-	-	-	445	-	-
	Transmission Main							-	239	746	1204	308	-	-	-	-	2540	-	-
	Laura Filtration Plant							-	30	169	65	34	-	-	-	310	-	-	
	Laura Wellfield Extension							-	-	14	119	15	-	-	-	148	-	-	
	Sewerage System - Long Island							-	58	350	121	63	-	-	-	590	-	-	
	Sewerage System Rehabilitation							-	-	5	47	-	-	-	-	52	-	-	
	New Filtration Plant							-	-	18	147	-	-	-	-	165	-	-	
	Sewerage System Rehabilitation							-	36	160	166	43	-	-	-	406	-	-	
	Technical Assistance							-	-	-	-	-	-	-	-	-	-	-	
	TOTAL							-	509	2944	2467	698	-	-	-	6608	-	-	

		FOREIGN COMPONENT								Tot:
		1993	1994	1995	1996	1997	1998	1999	2000	Tot:
		3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	
		-	147	915	315	163	-	-	-	1541
		-	12	77	28	14	-	-	-	129
		-	145	451	776	181	-	-	-	1553
		-	23	140	48	25	-	-	-	236
		-	-	11	94	12	-	-	-	117
		-	36	223	77	40	-	-	-	376
		-	-	3	28	-	-	-	-	31
		-	-	12	116	-	-	-	-	128
		-	30	128	130	34	-	-	-	320
		-	-	-	-	-	-	-	-	-
		-	394	1058	1611	448	-	-	-	4411

		LOCAL COMPONENT								Tot:
		1993	1994	1995	1996	1997	1998	1999	2000	Tot:
		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	
		-	45	285	100	52	-	-	-	482
		-	30	187	85	34	-	-	-	336
		-	94	298	518	109	-	-	-	1017
		-	8	46	17	9	-	-	-	89
		-	-	3	25	3	-	-	-	31
		-	20	127	44	23	-	-	-	215
		-	-	2	30	-	-	-	-	32
		-	-	3	31	-	-	-	-	34
		-	8	34	36	9	-	-	-	88
		-	-	-	-	-	-	-	-	-
		-	205	988	858	240	-	-	-	2290

SUMMARY	CAPITAL EXPENDITURE BY PROJECT (US \$M)	1993	1994	1995	1996	1997	1998	1999	2000	Tot:
	Freshwater System Rehabilitation	-	129	772	257	129	-	-	-	1,286
	Increased Airport Reservoir Storage	-	30	180	80	30	-	-	-	300
	Transmission Main	-	173	518	863	173	-	-	-	1,725
	Laura Filtration Plant	-	22	132	44	22	-	-	-	220
	Laura Wellfield Extension	-	-	10	80	10	-	-	-	100
	Sewerage System - Long Island	-	41	243	81	41	-	-	-	405
	Sewerage System Rehabilitation	-	-	4	32	-	-	-	-	36
	New Filtration Plant	-	-	11	99	-	-	-	-	110
	Sewerage System Rehabilitation	-	28	112	112	28	-	-	-	280
	Technical Assistance	-	-	-	-	-	-	-	-	-
	TOTAL ALL PROJECTS	-	422	1,981	1,627	432	-	-	-	4,461
	Physical contingencies 10.00%	-	42	198	163	43	-	-	-	446
		-	464	2,179	1,790	475	-	-	-	4,907
	Engineering 18.50%	-	77	359	295	78	-	-	-	810
		-	540	2,538	2,085	553	-	-	-	5,717
	Price contingencies	-	59	408	362	135	-	-	-	962
	TOTAL ALL PROJECTS	-	599	2,944	2,467	698	-	-	-	6,668

FINANCIAL RATE OF RETURN

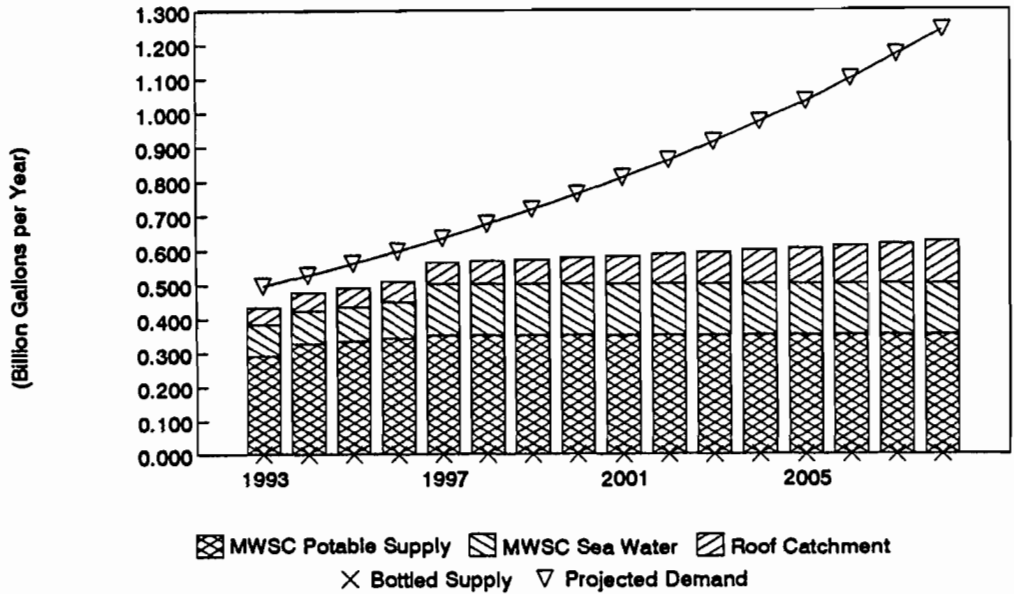
Annex 10

Fiscal year ending		1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Capital expenditures on project	\$1000			0	0	0	-599	-2944	-2467	-688	0	0	0	0	0	0
Incremental fresh water sales *	mg/y									6	6	6	6	6	6	6
										5.00	5.50	6.75	7.25	7.75	8.50	9.00
Incremental sea water sales	mg/y									15	15	15	15	15	15	15
										3.00	3.30	4.05	4.35	4.65	5.10	5.40
Incremental revenue from project	\$1000									73	80	98	105	112	123	131
Incremental cash flow (current)	\$1000						-599	-2944	-2467	-616	80	98	105	112	123	131
Internal financial rate of return ** (50 years) (current)	2.99%															
Inflation factor							1	1.04	1.08	1.12	1.17	1.22	1.27	1.32	1.37	1.42
Incremental cash flow (constant)	\$1000						-599	-2831	-2281	-547	68	80	83	85	90	92
Internal financial rate of return (50 years) (constant)	-0.97%															

**Based on 15% of water consumption being supplied from sources other than the MWSC

** Assumes that incremental cash flow increases at 4% per year from year 2013 through 2043 (Year 50).

Year 1 of investment is 1994 (first withdrawal)



For Fiscal Years Ending Sept 30,

1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005
----- Projected -----

ASSUMPTIONS IN METRIC MEASUREMENT
3.7850 Litres = 1 US Gallon

Population	19684	20903	26,689	28,371	30,158	32,058	34,078	36,225	38,507	40,933	43,512	46,253	49,167	52,264	55,557
Population Served @	97%		25,889	27,520	29,253	31,098	33,055	35,138	37,352	39,705	42,208	44,865	47,682	50,698	53,860

PRODUCTION -- MWSC POTABLE (Gross)

- D.U.D. Wells (M m3/y)	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
- Airport Catchment (M m3/y)	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
- Laura Wells (M m3/y)	0.45	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52	0.52
- Airport Reservoir Expansion (M m3/y)	0.00	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
- Laura Wellfield Expansion (M m3/y)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GROSS PRODUCTION -- MWSC (M m3/y)	1.47	1.54	1.54	1.54	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57	1.57

Leakage and unaccounted losses % of gross	25%	20%	18%	16%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
NET POTABLE WATER SALES (M m3/y)	1.10	1.24	1.27	1.30	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33	1.33

DEMAND (Annual)

Water Demand @ 1/c/d (M m3/y)	199	1,678	1,898	2,122	2,255	2,388	2,549	2,709	2,880	3,061	3,254	3,459	3,677	3,909
- met by bottled purchases (M m3/y)		0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002
- met by roof catchment (M m3/y)		0.188	0.200	0.212	0.226	0.240	0.255	0.271	0.288	0.306	0.325	0.346	0.368	0.391
- met by MWSC seawater system (M m3/y)		0.349	0.371	0.379	0.407	0.565	0.565	0.565	0.565	0.565	0.565	0.565	0.565	0.565
- met by MWSC potable water system (M m3/y)		1.101	1.235	1.266	1.297	1.330	1.330	1.330	1.330	1.330	1.330	1.330	1.330	1.330
NET UNMET DEMAND (M m3/y)		0.238	0.188	0.262	0.324	0.260	0.396	0.541	0.694	0.858	1.031	1.216	1.412	1.620

DEMAND (Daily)

Water Demand @ 1/c/d (m3/d)	5,144	5,469	5,813	6,179	6,569	6,982	7,422	7,890	8,387	8,915	9,477	10,074	10,709
- met by bottled purchases (m3/d)	5	5	5	5	5	5	5	5	5	5	5	5	5
- met by roof catchment (m3/d)	514	547	581	618	657	698	742	789	839	892	948	1,007	1,071
- met by MWSC seawater system (m3/d)	965	1,015	1,040	1,115	1,548	1,548	1,548	1,548	1,548	1,548	1,548	1,548	1,548
- met by MWSC potable water system (m3/d)	3,018	3,385	3,469	3,554	3,645	3,645	3,645	3,645	3,645	3,645	3,645	3,645	3,645
NET UNMET DEMAND (Surplus) (m3/d)	652	516	718	887	713	1,086	1,482	1,903	2,350	2,826	3,331	3,868	4,440

AVERAGE AVAILABLE FOR CONSUMPTION

MWSC Potable Water (l/c/d)	117	123	119	114	110	104	98	92	88	81	78	72	68
MWSC Seawater (l/c/d)	37	37	36	36	47	44	41	39	37	35	32	31	29
Roof Catchment, Other (l/c/d)	20	20	20	20	20	20	20	20	20	20	20	20	20
TOTAL (l/c/d)	174	180	174	170	177	168	159	151	143	136	129	122	116

MAJURO WATER SUPPLY PROJECT

CALCULATION OF AVERAGE PRICE OF WATER FROM CURRENT TARIFF

ANNEX 12

Fiscal year ending		1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Total fresh consumption (mg/y)		291	326	335	343	351	351	351	351	351	351	351	351	351
Total salt consumption (mg/y)		54	55	56	60	75	75	75	75	75	75	75	75	75
Total consumption		345	382	391	402	427	427	426	427	427	426	427	427	426
Residential fresh	80%	233	261	266	274	281	281	281	281	281	281	281	281	281
Residential salt	60%	43	44	45	48	60	60	60	60	60	60	60	60	60
Total Residential		276	305	312	322	342	341	341	341	341	341	341	341	341
Business fresh	10%	29	33	33	34	35	35	35	35	35	35	35	35	35
Business salt	10%	5	6	6	8	8	8	7	8	8	7	8	8	7
Total Business		35	38	39	40	43	43	43	43	43	43	43	43	43
Industrial fresh	10%	29	33	33	34	35	35	35	35	35	35	35	35	35
Industrial salt	10%	5	6	6	8	8	8	7	8	8	7	8	8	7
Total Industrial		35	38	39	40	43	43	43	43	43	43	43	43	43

REVENUES FROM NEW TARIFF

RESIDENTIAL

Residential connections (fresh)	60.00%	1800	2126	2306	2501	2713	2943	3192	3463	3756	4074	4419	4793	5199
Annual Consumption band 1	5000	108	126	138	150	163	177	192	208	225	244	265	288	312
Revenue @ \$10/month (000)	10.00	216	255	277	300	326	353	383	416	451	489	530	575	624
Max consumption band 2	2500	54	64	69	75	81	88	96	104	113	122	133	144	156
Annual Consumption band 2	54	64	69	75	81	88	90	73	56	37	16	0	0	0
Revenue @ \$5/1000g (000)	5.00	270	319	346	375	407	441	448	387	279	164	80	0	0
Max consumption band 3	2500	54	64	69	75	81	88	96	104	113	122	133	144	156
Annual Consumption band 3	54	64	60	49	37	18	0	0	0	0	0	0	0	0
Revenue @ \$6/1000g (000)	6.00	324	383	381	294	222	98	0	0	0	0	0	0	0
Max consumption band 4	2500	54	64	69	75	81	88	96	104	113	122	133	144	156
Annual Consumption band 4	17	6	0	0	0	0	0	0	0	0	0	0	0	0
Revenue @ \$7.5/1000g (000)	7.50	126	45	0	0	0	0	0	0	0	0	0	0	0
Max consumption band 5	2500	54	51	55	60	65	71	77	83	90	96	106	115	125
Annual Consumption band 5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Revenue @ \$8.75/1000g (000)	8.75	0	2	0	0	37	0	0	0	0	0	0	0	0
Total revenue from fresh water sales		936	1004	983	970	991	892	631	783	730	673	610	575	624

RESIDENTIAL (SW)

TOTAL MG/Y

Residential connections (salt)		626	935	969	1051	1357	1363	1405	1437	1465	1487	1525	1558	1588
Annual consumption band 1	5000	50	56	58	63	61	63	64	66	66	69	91	93	95
Revenue @ \$7.5/connection (000)	7.50	75	84	87	95	122	124	126	129	132	134	137	140	143
Max consumption band 2	2500	54	28	29	32	41	41	42	43	44	45	46	47	48
Annual consumption band 2	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Revenue @ \$3/1000g (000)	3.00	0	0	0	0	0	0	0	0	0	0	0	0	0
Total revenue from salt water sales		75	84	87	95	122	124	126	129	132	134	137	140	143
TOTAL RESIDENTIAL SALES	\$'000	1011	1088	1070	1064	1113	1017	958	912	862	806	748	715	767
TOTAL RESIDENTIAL SALES	MGD/year	276	305	312	322	342	341	341	341	341	341	341	341	341
AVERAGE PRICE	\$/1000g	3.68	3.56	3.43	3.31	3.26	2.96	2.81	2.67	2.52	2.37	2.19	2.10	2.25

BUSINESS

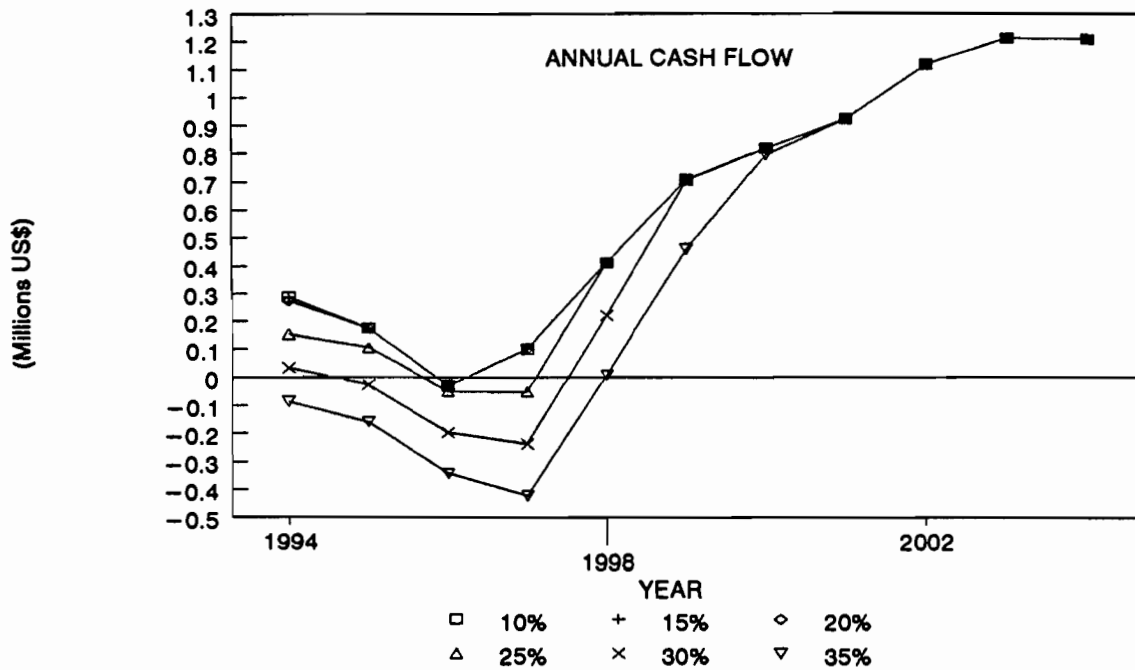
Business sales of fresh water		29	33	33	34	35	35	35	35	35	35	35	35	35
Revenue @ AVG \$9 / 1000g		263	295	303	310	318	318	318	318	318	318	318	318	318
Business sales of salt water		5	6	6	6	6	6	7	6	6	7	6	6	7
Revenue @AVG \$6.75 / 1000g		37	37	38	40	51	51	51	51	51	50	51	51	51
TOT BUSINESS SALES	\$'000	300	333	340	350	369	369	369	369	369	366	369	369	369
TOT BUSINESS SALES	MGD/year	35	38	39	40	43	43	43	43	43	43	43	43	43
AVERAGE PRICE	\$/1000g	6.68	6.71	6.72	6.71	6.64	6.64	6.64	6.64	6.64	6.64	6.64	6.64	6.64

INDUSTRIAL

Assume as for Business

TOT INDUSTRIAL SALES	\$'000	300	333	340	350	369	369	369	369	369	366	369	369	369
TOT INDUSTRIAL SALES	MGD/year	35	38	39	40	43	43	43	43	43	43	43	43	43
AVERAGE PRICE	\$/1000g	6.68	6.71	6.72	6.71	6.64	6.64	6.64	6.64	6.64	6.64	6.64	6.64	6.64
TOTAL SALES	\$'000	1610	1666	1666	1692	2473	2393	2304	2213	2152	2085	2014	1951	1895
TOTAL SALES	MGD/year	345	374	383	395	469	468	468	468	468	468	468	468	468
AVERAGE PRICE	\$/1000g	4.66	5.04	4.93	4.79	5.06	4.90	4.72	4.53	4.41	4.27	4.13	4.00	3.86
AVERAGE PRICE REQUIRED		4.27	4.27	4.27	4.27	5.00	5.50	6.75	7.25	7.75	8.50	9.00	9.25	9.75
DIFFERENCE		0.39	0.70	0.59	0.45	0.06	-0.10	-1.28	-2.07	-2.69	-3.73	-4.12	-5.00	-5.37

SENSITIVITY TO TARIFF CHANGES

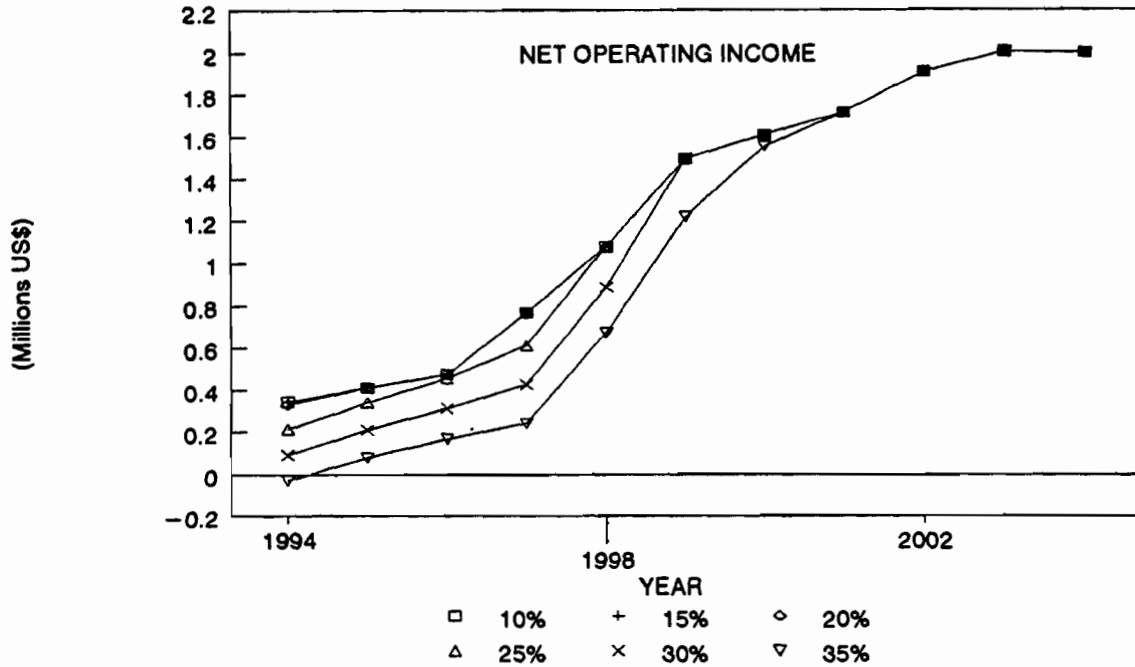


SUPPLY MET FROM SOURCES OTHER THAN MWSC

	10.00%	15.00%	20.00%	25.00%	30.00%	35.00%
ANNUAL CASH FLOW (\$ MILLIONS)						
1994	0.29	0.29	0.27	0.15	0.03	-0.09
1995	0.17	0.17	0.17	0.10	-0.03	-0.16
1996	-0.03	-0.03	-0.03	-0.05	-0.20	-0.34
1997	0.10	0.10	0.10	-0.05	-0.24	-0.42
1998	0.41	0.41	0.41	0.41	0.22	0.01
1999	0.71	0.71	0.71	0.71	0.70	0.46
2000	0.82	0.82	0.82	0.82	0.82	0.79
2001	0.92	0.92	0.92	0.92	0.92	0.92
2002	1.12	1.12	1.12	1.12	1.12	1.12
2003	1.21	1.21	1.21	1.21	1.21	1.21
2004	1.21	1.21	1.21	1.21	1.21	1.21

Figures in bold in the above table show the first positive value of the indicator and the year in which it occurs.

SENSITIVITY TO TARIFF CHANGES

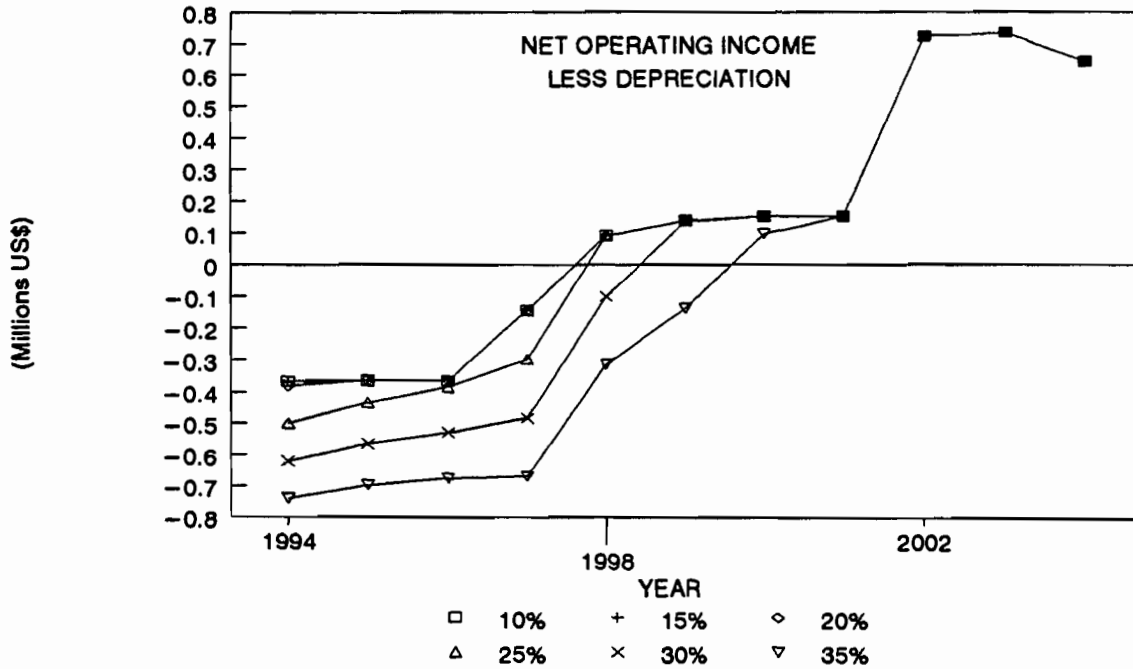


SUPPLY MET FROM SOURCES OTHER THAN MWSC

	10.00%	15.00%	20.00%	25.00%	30.00%	35.00%
NET OPERATING INCOME (\$MILLIONS)						
1994	0.34	0.34	0.33	0.21	0.09	-0.03
1995	0.41	0.41	0.41	0.34	0.21	0.08
1996	0.48	0.48	0.48	0.46	0.31	0.17
1997	0.77	0.77	0.77	0.61	0.43	0.24
1998	1.08	1.08	1.08	1.08	0.89	0.67
1999	1.50	1.50	1.50	1.50	1.49	1.22
2000	1.61	1.61	1.61	1.61	1.61	1.55
2001	1.71	1.71	1.71	1.71	1.71	1.71
2002	1.91	1.91	1.91	1.91	1.91	1.91
2003	2.00	2.00	2.00	2.00	2.00	2.00
2004	2.00	2.00	2.00	2.00	2.00	2.00

Figures in bold in the above table show the first positive value of the indicator and the year in which it occurs.

SENSITIVITY TO TARIFF CHANGES



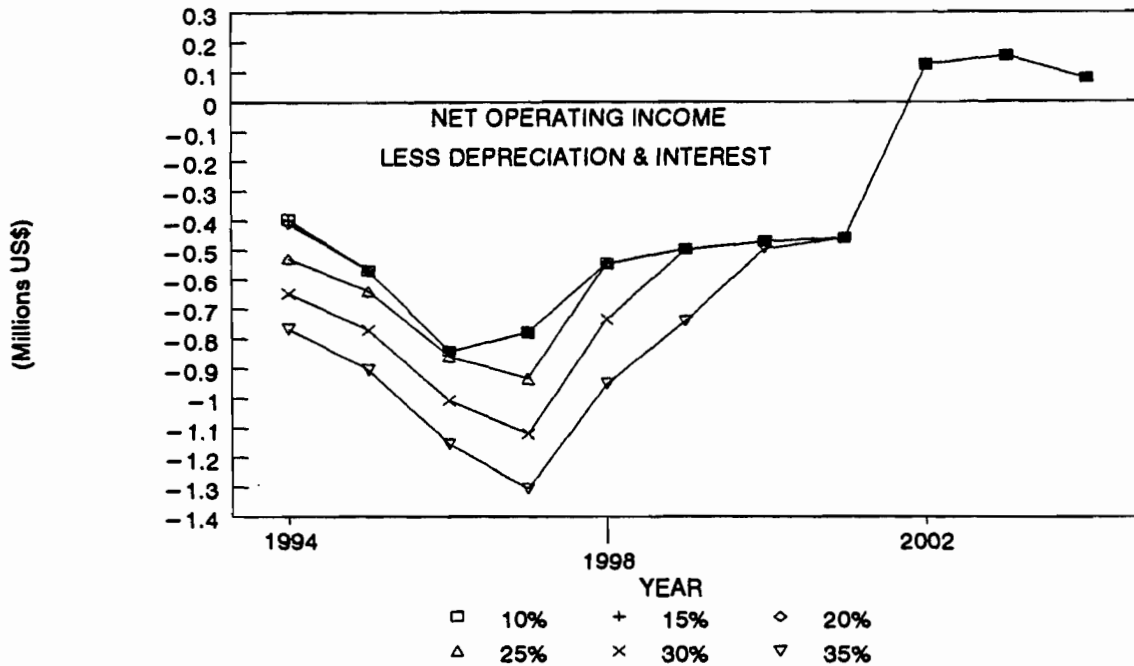
SUPPLY MET FROM SOURCES OTHER THAN MWSC

10.00% 15.00% 20.00% 25.00% 30.00% 35.00%

NET OPERATING INCOME LESS DEPRECIATION (\$MILLIONS)

1994	-0.37	-0.37	-0.38	-0.50	-0.62	-0.74
1995	-0.36	-0.36	-0.36	-0.43	-0.57	-0.70
1996	-0.36	-0.36	-0.36	-0.38	-0.53	-0.68
1997	-0.15	-0.15	-0.15	-0.30	-0.48	-0.67
1998	0.09	0.09	0.09	0.09	-0.10	-0.31
1999	0.14	0.14	0.14	0.14	0.14	-0.14
2000	0.15	0.15	0.15	0.15	0.15	0.10
2001	0.15	0.15	0.15	0.15	0.15	0.15
2002	0.72	0.72	0.72	0.72	0.72	0.72
2003	0.74	0.74	0.74	0.74	0.74	0.74
2004	0.64	0.64	0.64	0.64	0.64	0.64

SENSITIVITY TO TARIFF CHANGES

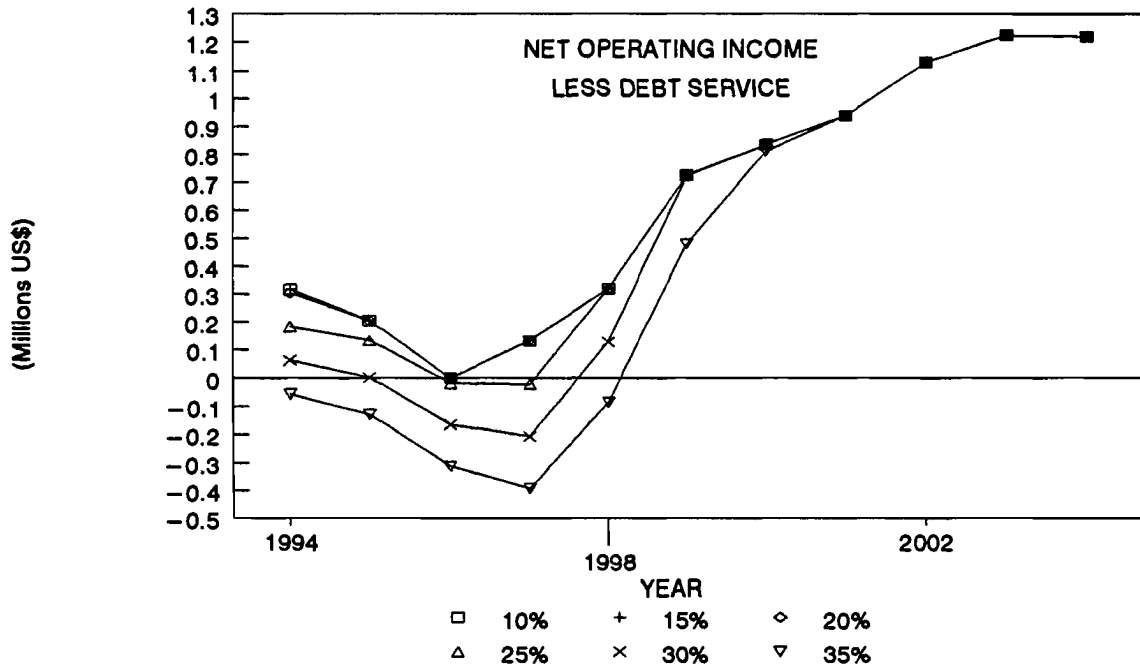


SUPPLY MET FROM SOURCES OTHER THAN MWSC

	10.00%	15.00%	20.00%	25.00%	30.00%	35.00%
NET OPERATING INCOME LESS DEPRECIATION AND INTEREST (\$MILLIONS)						
1994	-0.40	-0.40	-0.41	-0.53	-0.65	-0.77
1995	-0.57	-0.57	-0.57	-0.64	-0.77	-0.90
1996	-0.84	-0.84	-0.84	-0.86	-1.01	-1.15
1997	-0.78	-0.78	-0.78	-0.93	-1.12	-1.31
1998	-0.55	-0.55	-0.55	-0.55	-0.74	-0.95
1999	-0.50	-0.50	-0.50	-0.50	-0.50	-0.74
2000	-0.47	-0.47	-0.47	-0.47	-0.47	-0.50
2001	-0.46	-0.46	-0.46	-0.46	-0.46	-0.46
2002	0.13	0.13	0.13	0.13	0.13	0.13
2003	0.15	0.15	0.15	0.15	0.15	0.15
2004	0.08	0.08	0.08	0.08	0.08	0.08

Figures in bold in the above table show the first positive value of the indicator and the year in which it occurs.

MWSC FINANCIAL PROJECTIONS
 SENSITIVITY TO TARIFF CHANGES



SUPPLY MET FROM SOURCES OTHER THAN MWSC

	10.00%	15.00%	20.00%	25.00%	30.00%	35.00%
NET OPERATING INCOME LESS DEBT SERVICING (\$MILLIONS)						
1994	0.32	0.32	0.30	0.18	0.06	-0.06
1995	0.20	0.20	0.20	0.13	0.00	-0.13
1996	-0.00	-0.00	-0.00	-0.02	-0.17	-0.31
1997	0.13	0.13	0.13	-0.02	-0.21	-0.39
1998	0.32	0.32	0.32	0.32	0.13	-0.09
1999	0.72	0.72	0.72	0.72	0.72	0.48
2000	0.83	0.83	0.83	0.83	0.83	0.81
2001	0.94	0.94	0.94	0.94	0.94	0.94
2002	1.13	1.13	1.13	1.13	1.13	1.13
2003	1.23	1.23	1.23	1.23	1.23	1.23
2004	1.22	1.22	1.22	1.22	1.22	1.22

Figures in bold in the above table show the first positive value of the indicator and the year in which it occurs.

REPUBLIC OF THE MARSHALL ISLANDS

MAJURO WATER AND SEWERAGE PROJECT

TERMS OF REFERENCE FOR INSTITUTIONAL, ORGANIZATIONAL, TARIFF,
AND FINANCIAL ADVISORY TECHNICAL ASSISTANCE

I. Introduction

1. The Government of the Republic of the Marshall Islands (the Government) has requested a loan from the Asian Development Bank (ADB) for rehabilitation of the existing water supply and sewerage system in Majuro, together with expansion of reservoir storage, and extensions to the sea water supply system, which reduces some of the demand for potable water for toilet flushing.
2. The Majuro Water Supply and Sewerage Company (MWSC) is responsible for operating and maintaining the water supply and sewerage system. The shares of MWSC, which was incorporated in 1989, are owned by Government, who also appoint the Board of Directors. The management of MWSC was contracted to an US management Group; the contract expired in 1991 but was not renewed. The Group's manager has however remained with MWSC as its General Manager. The water and sewerage system assets are owned by Government and leased to MWSC at no charge.
3. As a condition of the loan, ADB will require improvement in the financial management of MWSC particularly in regard to tariffs, staffing, billing and collection procedures, and the reduction of receivables and delinquent accounts. MWSC took a major initiative towards this in late 1992 by installing meters on all connections, and by introducing a progressive tariff. The tariff is intended to recover full capital and operating costs of the system, and to reduce dependence on Government subsidization.
4. The operations of MWSC have been severely hampered by cashflow problems. The cashflow problems cannot be resolved unless operational efficiency is itself improved. Institutional strengthening is urgently needed to break this downward spiral. If not, the necessary improvement in financial performance, as projected for the repayment of the loan, will not be achieved.
5. The Articles of Incorporation of MWSC do not provide adequate powers for MWSC to enable it to establish clear policies and objectives with any degree of confidence. This is exacerbated by the absence of any water rights legislation defining ownership of, and rights to, the very limited sources of fresh water in the Majuro Atoll. Appropriate legislation, both in regard to water resources, and to the powers, duties, and responsibilities of MWSC is required.

II. Objective

6. The objective of Advisory Technical Assistance (ADTA) is to assist MWSC in its transition to a financially independent utility, able to meet its commitments without dependence on Government subsidy, and responsible for system development and recovery of its investment and operating costs. The assistance is designed to:

- (i) provide the legal and institutional framework to ensure that MWSC can undertake effective planning and have power to enforce its decisions;
- (ii) identify the legal issues relating to water rights and determine workable immediate and long term strategies for securing the sources of water for public supply purposes;
- (iii) ensure that the process and responsibility for the direction of MWSC are well defined and understood by Government, Board, Management;
- (iv) assist in the development of appropriate systems and controls to improve planning and decision making;
- (v) assist MWSC in the development of a suitable organizational structure, adequate management skills, and adequate numbers of staff, to ensure efficient and effective operation;
- (vi) identify strategies for the improvement of financial performance including appropriate pricing and cost recovery policies; and,
- (vii) identify the key performance indicators to be monitored, and develop procedures for their periodic measurement and review

III. Scope of Work.

7. The Advisory Technical Assistance (ADTA) will be undertaken in two stages which will address the following matters:

- (i) Phase 1: legal, institutional, and financial issues requiring immediate attention, and initiation of data collection by MWSC, or Government, in preparation for the work required in the second phase;
- (ii) Phase 2: legal, institutional, and financial issues requiring long term consideration including appropriate legislation, tariff and charging policies, staffing requirements, asset valuation and revaluation, and financial and management information systems.

8. The time required for the legal, institutional, and financial work under the ADTA is estimated as 2 man months for Phase 1, and 6 man months for Phase 2.

9. The Consultants will review the operations of MWSC, which should include information or discussions with people in related Government Ministries, and, develop practical strategies for improvements, provide direct advisory assistance to the Board of Directors and Management of MWSC, prepare reports, and discuss the findings, as necessary, with MWSC, Government, and the ADB.

IV Terms of Reference

10. The work to be undertaken is as follows:

PHASE I

A. Legislative Issues

- (i) Review the present legal status of water rights in the Majuro Atoll including the rights to use or prevent use of groundwater and the right to refuse or restrict access to land needed for the construction of water or sewage works; discuss with Government and MWSC the immediate legislative measures necessary to secure and maintain a public potable water supply and prepare, if necessary, an outline of the legislation.
- (ii) Review the present legal status of MWSC and identify areas where inadequacy (or absence) of powers prejudices operations; discuss with Government and MWSC the immediate legislative measures which can be taken to correct the inadequacies and prepare if required, an outline of the legislation.
- (iii) Review alternative methods of merger, joint management or other corporate arrangement of MWSC with another utility, and their respective legal and financial effects.
- (iv) Review alternative methods of transacting the transfer of the water and sewerage system assets to MWSC by the Government, and advise on the respective legal, financial, and equity effects.

B. Institutional Development: Board and Management

- (i) Prepare and conduct a two to three day development session with the Board of Directors and Management of MWSC, and necessary follow up sessions, to introduce and discuss at a basic level:
 - (a) the respective roles and responsibilities of the Board and the Management, problems that arise, and appropriate methods for their resolution;
 - (b) the objectives and procedures for developing, adopting, and

periodically reviewing and revising long range financial plans for MWSC;

- (c) procedures for improved direction through effective meetings, decisions, and subsequent support of agreed policy;
- (d) information required by the Board, including timing, quantity, and content of reporting;
- (e) basic understanding of financial statements and projections;
- (f) effective methods of monitoring and evaluating financial and operating performance.

C. Organization and Management: Accounting System

- (i) Assess the suitability of the new computer accounting program for the requirements of MWSC's accounting and billing system.
- (ii) Review the installation, set-up, and conversion of data from the previous systems, and report on any major problems, including recommendations for their resolution and further training requirements for proper use of the program.
- (iii) Review accounting procedures and internal controls, particularly for meter billing system, receivables, and collections, and advise on improvements in procedures.

D. Data Requirements for Phase 2

- (i) Assess the data needed for Phase 2 of ADTA, and define formats for collection, and prepare suitable schedules for completion by Government and/or by MWSC.
- (ii) Review the requirements and process of capital budget development with the Management of MWSC, and define the preparatory work to be completed by MWSC for Phase 2.

PHASE 2

A. Institutional and Legislative Issues

- (i) Review the effectiveness of actions taken by Government following the recommendations made in Phase 1, and identify problems for resolution; in discussion with Government assess the need for comprehensive water resources legislation and prepare an outline for, or amendments to, such legislation, if in place;
- (ii) Review the present legal status of MWSC and the adequacy of its powers; recommend the legislative actions which should be taken by Government in the long term and, prepare draft enabling

legislation to provide the necessary powers, duties, and responsibilities and objectives of MWSC.

- (iii) Review the adequacy of rules and regulations of MWSC for the conduct of its business, and provide an outline of their extent and of additional matters to be covered; these areas should include but not be limited to; establishment of charges and collection, prevention of waste, suspension of supply, standards, inspection and repair of facilities, and establishment of penalties for violation.
- (iv) Review and assess the advantages and disadvantages for MWSC of the jurisdiction of the Public Services Commission over MWSC's employment practices;
- (v) Conduct follow-up development session with Management and the Board of Directors, reviewing progress and problems, and concentrating on the processes of long range planning; working with the Board and Management, develop or define the necessary work to be done to prepare a long range plan for MWSC and short term and long term capital budgets, identify further work required of MWSC for completion of a long range plan, and recommended policy for its adoption and regular revision by the Board.
- (vi) Identify any further Board and Management development or training that is advisable, including recommended means of its delivery.

B. Organization and Management:

Accounting Systems and Controls

- (i) Review the accounting system and internal controls, particularly for meter billing system, receivables, and collections, including manual as well as computer procedures, advise on improvements and further training that may be necessary, and report on any major problems, including recommendations for their resolution;
- (ii) Review the accounts and monthly entries, specifically to ensure correct adjustments in agreement with previous audited statements, and that regular monthly adjusting entries are correct and adequate;
- (iii) Review the timing and suitability of financial and other reports prepared for Management and for Board information; make recommendations on improvements in content, format, and timing.
- (iv) Review the accounting systems and controls (accounting and physical) for fixed assets and for supplies inventory; develop and assist with the implementation of a fixed asset register and reconciliation procedures, to ensure that all existing fixed assets and those of future projects are correctly recorded; develop and assist with the implementation of a manual inventory

system, including the procedures, and internal controls necessary for inventory maintenance and purchasing information. Assess the suitability of the working environment for implementation of a computerized system.

- (v) Review the information requirements and records maintenance of customers and connection information; make recommendations on improvements required.

Staffing and Organizational Structure

- (vi) Prepare a detailed review of the organizational structure, personnel requirements, assessment of current staff, further positions and training that may be required, and the most suitable methods of conducting training; assist MWSC in developing a personnel plan, and personnel policies, if necessary.
- (vii) Assess the wage and benefits levels and their adequacy or appropriateness for the type of work required.

C. Financial Planning and Management

- (i) Prepare an inventory of the fixed assets of the water and sewerage system, and of the operating assets of MWSC. This should be prepared in conjunction with a detailed engineering review of the system, if undertaken.
- (ii) Prepare a valuation of the assets using current replacement cost, adjusted for depreciation and taking specific account of the expected residual life of the assets; other methods should be considered, if appropriate for the circumstances. Prepare recommendations on the use of the valuation for purposes of accounting and determination of appropriate tariff.
- (iii) In consultation with the ADTA for Operations and Maintenance, and MWSC Management, review the Capital Budget, as prepared by MWSC, make revisions and additions, as necessary, incorporating any further capital projects as may be identified.
- (iv) Prepare, or update existing financial projections, based on:
 - (a) actual accounting results, as available;
 - (b) interim revisions of the currently proposed project, expected future projects, and the Capital Budget;
 - (c) revised estimates of operating costs, and other assumptions;
 - (d) revalued assets; and
 - (e) results of the Tariff Study.

Advise on the results, and any major variances in the results from previous projections, or the expected outcome.

- (v) Evaluate the financial requirements of the projections, and prepare a financial strategy, including:
- (a) the proportions in which it would be appropriate to apply cash surpluses to:
 - debt service on borrowed funds;
 - contributions to MWSC's current or future capital expenditures;
 - (b) the proportions in which funds provided to MWSC by Government (if any) should be divided between capital contributions and loans;
 - (c) the appropriate terms (interest, maturity and grace periods) for any loan funds so provided; and,
 - (d) appropriate amounts and methods of provision for future capital replacements.
- (vi) Review the financial performance in general, and the trends resulting from changes in direction, management, and operations; review previous problems and identify new situations which may detrimentally effect future financial performance, and make recommendations on remedial action, as necessary.

D. Tariff Study

- (i) Review the existing tariff structure and to assess its impact on consumption since its introduction in February 1993.
- (ii) Develop forecasts of consumer use of the fresh water, salt water and sewerage services ("the services") in terms of numbers of connections, category of use, volume of water sold, numbers of households sharing connections, numbers of persons per household, and any other measures and statistics considered relevant.
- (iii) Review and revise, as necessary, the budgeted operating costs of the services, if not already completed under Financial C.(iii) above, taking account of the proposals made in the organization and staffing plan, and including depreciation of fixed assets, valued on the basis proposed in the asset valuation study.
- (iv) Develop proposals for, or improvement to, the tariff structure and rates.
- (v) Evaluate the economic efficiency of the proposed tariffs, based on their reflection of the long run marginal cost or average incremental cost of the services;

- (vi) Evaluate the effect, if any, of the proposed tariffs on the forecast water sales and the adequacy of the resultant total revenues to cover costs defined in paragraph (iii) above.
- (vii) Review the extent to which identifiable groups or classes of consumers impose special costs on the systems, and which should be reflected in special charges to those consumers.
- (viii) Examine the possibility and justification for charging commerce or industries rates which would take into account the quality of liquid wastes discharged by those industries.
- (ix) Determine whether the proposed levels of charges are within the reasonable ability to pay of all consumer groups, and whether a case exists on these or any other grounds for concessionary rates to be applied to particular groups or levels of consumption.
- (x) From a review of the billing history since the implementation of the new tariffs, and of the results of the EPA survey, and other information as available, estimate the effectiveness of the proposed water rates in discouraging waste and inessential use of water.
- (xi) Review any changes in the recommended tariff for consistency with the procedures in place or recommended for meter reading billing and collection, including the use of computerized accounting.
- (xii) Review the cost of providing other services associated with the provision of water by MWSC, including fees for meter rental and maintenance, new connections, special fees for reading and billing of individual meters and other services; provide MWSC with proposals for:
 - (a) methods of establishing the fees;
 - (b) the calculation of new connection cost, shut-off and reconnection fees; and,
 - (c) program for the regular review and updating of the cost of services and fees.
- (xiii) In carrying out the Tariff Study, it is expected that the Consultant will wish to examine a number of alternatives. In the event that he wishes to submit alternative schemes for consideration, financial projections should be completed for each alternative.

11. Schedule

	<u>ADTA #1</u>	<u>ADTA #2</u>
Phase 1		
8 weeks total:	April 1993 or ASAP	April 1993 or ASAP
Phase 2		
20 weeks total:	March 1994	March 1994

12. Budget

Phase 1

Consultant Services - 8 manweeks @ \$3,850	\$ 30,800
International Travel - 2 trips @ \$4,000	8,000
Per diem - 8 weeks @ \$ 910	7,280
	<u>\$ 46,080</u>

Phase 2

Consultant Services - 20 manweeks @ \$3,850	\$ 77,000
International Travel - 2 trips @ \$4,000	8,000
Per diem - 20 weeks @ \$ 910	18,200
	<u>\$103,200</u>

Incidental expense & communications	<u>5,720</u>
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Total	\$ 155,000
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Contingencies	<u>5,000</u>
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Total for budget purposes	<u>\$ 160,000</u>
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MAJURO WATER AND SEWERAGE PROJECT

List of Persons Met by Mission Staff Consultant

Mrs. Seiko Sphoniber, Acting Secretary of Finance
Mr. Herb Sphoniber, Secretary of Public Works
Mr. H.M. Gunasekera, A.D.B. Consultant, Planning & Statistics
Mr. Bernard Cotter, Manager, Majuro Water & Sewer Company
Mr. Oscar Mendoza, Accountant, Majuro Water & Sewer Company
Mr. Jim Abernathy, Administrator, Capital Improvements Proj.
Mr. Robert Eelkema, Attorney General
Mrs. ^{Jean Marie Tonyokwe} Gean Marie, Acting Auditor General
Mr. Peter Oliver, Undersecretary of Foreign Affairs
Mr. William Roberts, Manager, Marshall Energy Company
Mr. Chris Woolsley, Auditor, Deloitte & Touche
Mr. Patrick D. Morrissey, Internal Auditor, US D. of Interior Mr.
Mr. Lawrence Kuntac, Department of Procurement & Supply
Mrs. Barbara Barber, Environmental Protection Agency, Min. of Health
Commercial Loans Officer, Bank of Marshall Islands
Commercial Loans Officer, Bank of Hawaii
Commercial Loans Officer, Bank of Guam
Dr. R. Teasdale, Manager, Pacific Pure Water Inc.

MAJURO WATER AND SEWERAGE PROJECT

List of Documents Collected for ADB Files by Mission Staff Consultant

1. Majuro Water and Sewer Company - General Services Tariff (as adopted by the Board in December 1992)
2. Majuro Water & Sewer Company - 1990 Audit Report
3. Majuro Water & Sewer Company - 1990 Audit Report on Internal Controls
4. Republic of the Marshall Islands - 1991 Audit Report
5. Republic of the Marshall Islands - 1991 Audit Report on Internal Controls
6. Republic of the Marshall Islands - 1991 Single Audit Reports
7. Republic of the Marshall Islands - Statistical Abstract 1989/1990
8. Republic of the Marshall Islands - Tax and Revenue Laws
9. National Nutrition Survey - 1991 (RepMar Min of Health): selected extracts on household income and expenditure.
10. Report to the Nitijela on the Minimum Wage: selected statistical extracts on income, employment, household expenditure.
11. E.P.A. Survey - Draft of Information to be collected
12. Majuro Water & Sewer Company - Articles of Incorporation
 - Stock Affidavit
 - Funding Agreement
 - Asset Lease Agreement
 - PMC contract extracts
 - Cabinet order for transfer of MWSC to Ministry of Public Works from MIDA
13. Majuro Water & Sewer Company - 1991 Draft Financial Statements
 - 1992 Draft Financial Statement
 - 1993 Budget
 - List of Employees and Salaries
14. Marshall Energy Corporation - organizational structure
 - * Confidential* - List of Employees and Salaries
15. Republic of the Marshall Islands - Criminal Code Bill #1, 1992 for an Act to protect water and sewer lines from unauthorized use or abuse.

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List of Documents Collected for ADB Files by Mission Staff Consultant

16. Majuro Water & Sewer Company - Easement Agreement for Connections
 - sample billing invoice
 - sample overdue notice (new as of Jan)
17. Majuro Water & Sewer Company - October 1992 Accounts Receivable
 - November 1992 Accounts Receivable
- 18, (File Folder) Sundry:
 - Power costs of MWSC for 1992 and 1992 as compiled from MEC billings history by Consultant (bills were paid by government)
 - Majuro Water & Sewer Company Activity Report Sept/92, numbers of connections, etc. (sundry notes are unrelated phone conversation)
 - Consumer Survey - Rev Enja Eros (Goh Gin Han)
 - Laura (Goh Gin Han)
 - Receivables analysis (Goh Gin Han)
 - other information received, costing information, etc.