THE PORTFOLIO OF DEVELOPMENT AND NATURAL RESOURCES

THE WATER AUTHORITY

1987 ANNUAL REPORT

INDEX

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1. General

In simillar vein to last year considerable progress has been made on both the West Bay Beach Sewerage Project and the George Town Water Supply Project. The former, on which work commenced in late 1986, is now nearing completion after contending with very difficult construction problems. It is anticipated that final completion will take place in the first half of 1988, probably some two months behind schedule. However it is anticipated that the majority of the Works will be commissioned by the original Contract date.

The George Town Water supply Project got under way early in the year with the letting of the contract to procure all the plant and materials. The civil engineering contract commenced in August and by the end of the year excellent progress had been made with the contractor being ahead of programme. Central De-Sal took possession of the desalination plant and waste heat boilers in the latter part of the year and anticipated that this plant will be commissioned and producing water by 21st January 1988.

In Cayman Brac several deep well hand pumps were constructed on the fresh water wells which were drilled on the Bluff during 1986. These pumps are operating and producing a limited quantity of water. The water is being utilized by farmers and residents for cattle watering and domestic purposes.

During the year the Water Authority held five full meetings and one extra-ordinary meeting. The members of the Authority are as follows:-

Chairman:	Member, Development and Natural Resources Hon. V G Johnson CBE JP
Members:	Member, Communication, Works and District Administration Hon. C. Kirkconnell
	Deputy Financial Secretary Mr G McCarthy CPA
	Chief Engineer Mr Donovan Ebanks MSc C.Eng MICE
	Chief Environmental Health Officer Mr Peter Foye MSc
	Mr H Chisholm
	Mr R Flowers
	Mr V Jackson JP
	Mr B Watler
Secretary:	Director, Water Authority Mr Richard Beswick C Eng MICE MIWES MASCE

Mr Peter Foye, the Chief Environmental Health Officer, left the Service in August and his position on the Board was not filled during the remainder of 1988.

2.0 Administration.

2.1 Staffing

The Staff complements is now as follows:-

a.	Director	Mr R Beswick CEng MICE MIWES MASCE	SS4
b.	Project Manager	Mr T van Zanten MSc CEng	AP3-4
c.	Operations Engineer	Mr F McTaggart BSc	AP1-2
d.	Water Supply Engineer	Mr A Jones CEng MICE MIWES	AP3-4
e.	Accountant	Mr J Paterson CGA	AP3-4
f.	Senior Superintendant	Mr T Hill Master Plumber	T9
g.	Senior Draughtsman	Mr G Page HND	T7-8
h.	Junior Draughtsman	Mr B Whittaker	T3-4
i.	Junior Draughtsman	Mr G Welcome	T3-4
j.	Laboratory Technician	Ms S Solomon	T3-4
k.	Technician	Mr D Powery	T3-4
l.	Graduate Research Assistant	Mr S Ng BSc MSc	T1
m.	Executive Officer	Ms J Nicholas	E1-2
n.	Clerical Officer	Ms K Syms	C1-4
o.	Associate Expert UN	Mr T Dykstra MSc CEng	No cost
p.	Associate Expert UN	Vacant	
q.	Foreman	Mr C Morgan	
r.	Operator	Mr L Tivy	
s.	Labourer	Mr J Rockett	

The following staff movements took place during the year:-

Mr Loy Tivy joined the Authority in March as a Heavy Equipment Operator.

Mr Fredrick McTaggart joined the Authority in April as Operations Engineer.

Ms Cathy Seymour, left in June to take up a two year Engineering Technicians course at WACO Technical College, Texas. The fellowship is funded by UNDP.

Mr Grant Anderson, Project Manager for the West Bay Beach Sewerage Project, chose not to renew his contract and left in June.

Thomas van Zanten finished his three year tour as UN Associate Expert in June and was immediately promoted to fill the vacant post of Project Manager for the West Bay Beach Sewerage Project.

Mr Gillis Welcome joined the Authority in June as a Engineering Technician in the Drawing Office.

Mr Don Ebanks, Laboratory Technician, left in July to pursue further education in Canada.

Mr Boris Bermes, Hydrogeologist, left at the end of his contract in June The post of Hydrogeologist was abolished and replaced with Water Resources Supervisor.

Mr Vernel Rankine joined the Authority in August as the Water Resources Supervisor.

Mr John Paterson joined the Authority in August as Accountant.

Ms Sharon Solomon joined the Authority in August as a trainee Laboratory Technician.

Mr Junior Rockett joined the Authority in October as a Labourer.

Ms Karen Hill Syms joined the Authority in December as a Clerical Officer.

Mr Daniel Bennet, Labourer, left in December.

Mrs Francine Campbell, Executive Officer, left the service at the end of the year and her position was taken by the Authority's Clerical Officer, Ms Juliette Nicholas.

Mr Geof Page, Senior Draughtsman, contract was renewed for a period of two years in August.

Mr Alan Jones, Water Supply Design Engineer, contract was renewed for a period of two years in March.

2.2 Training

The Authority continues to promote the training of its local staff, both from an in-house perspective and by encouraging overseas full time education and attendance of regional seminars and workshops.

During 1987, Ms Cathy Seymour, an engineering technician, commenced her studies at the Technical College of WACO, Texas. The course she is attending is a two year Engineering Technicians Associate Degree and it is fully funded by UNDP under a Fellowship provided by the Regional Project, 'Water Resources and Management for Smaller Islands.'

Mr Tony Reid, returned from Miami Dade Technical College, where he was attending a similiar course, funded under similiar conditions. In 1988 he will be attending WACO College to continue and complete his studies. This continuation is also to be funded by UNDP.

The Authority completed its first years membership of the Caribbean Basin Water Management Project, a training project funded by CDB and CIDA with each participating utility contributing a sum which is dependent on the size of the utility. The Authority contributed CI$2,000 in 1987. The following participated in the following seminars and workshops:-

Mr Sam Ng and Mr Vernel Rankine	Training of Trainers Workshop held in St Vincent in September.
Ms Gelia Fredrick	Water Quality Control Workshop held in St Lucia in April.
Mr Thomas Hill	Supervisory Management for Water Utilities held in Grenada in May.
Ms Gelia Fredrick	Water Treatment Operations held in St Lucia in July.
Mr Thomas Hill	Six Week Course on Water Works and Sewage Treatment Plant Operations and Maintenance held at CAST, Jamacia during July and August.
Mr Thomas Hill and Mr R McTaggart	Water Waste and Leak Detection Seminar held in Puerto Rico in September.

School leavers engineering orientation.

The Authority fully supported the Chief Engineer's scheme whereby senior students of the local schools were given work experience during their summer vacation. A total of seven students were temporarily employed during the summer and given exposure to the type of employment and career opportunity available with the Water Authority. The Authority wishes to congratulate the Chief Engineer on the far sightedness of his scheme and the succcess it achieved.

2.3 Finance

The following details overleaf show the allocation of funds, the actual expenditure that took place and the revenue earned during 1987:

EXPENDITURE

Recurrent Expenditure

	HEAD	Allocation	Expenditure
01	Personnel Emoluments	350,183	327,586.07
02	Travelling and Subsistence	3,000	3,462.88
03	Supplies and Materials	21,150	18,972.84
04	Rent of Property	5,000	5,000.00
06	Utilities	22,000	19,611.53
07	Other Operating Expenses	15,500	13,569.26
08	Grants, Contributions	7,000	7,000.00
12	Interdepartmental Purchases	40,000	39,594.40
14	Equipment	15,750	14,190.49
	Total Recurrent	**479,583**	**448,987.47**

Capital Expenditure

41-024	Water and Sewerage Development	500,000	474,938.38
42-004	Water and Sewerage Development	6,681,997	6,255,391.82
	Total Capital	**7,181,997**	**6,730,330.20**

Source of 42-004 Capital Funding

Remaining West Bay Beach Sewerage Loan - CDB #2/SFR-OR-CI	3,883,097
George Town Water Supply Loan - CDB#4/SFR-OR-CI	2,312,000
Government Advance	486,900
Total 42-004	**6,681,997**

Revenue

63-005	Licence Fees - Water Resources	12,000	9,687.23
63-011	Licence Fees - Water Industry	5,000	3,015.00
64-040	Sale of Water	100,000	106,887.28
65-014	Inspection Fees - Plumbing	35,000	20,581.00 *1
67-008	Royalty - Water	250,000	181,731.00
70-001	Other Receipts	1,000	4,575.25
	Total Revenue	**403,000**	**326,476.76**

*1 represents the revenue collected upto the 31st August 1987, from then on the Building Control Section of the Planning Department took over this function and collected fees amounting to CI$11,032.

The Authority was provided with a Vax-Mate PC computer from Government Computer Services to be used for the computerized billing and accounting system. The billing system was put into use in the latter part of the year.

Bad Debt

A total of CI$139.21 remained outstanding from one trucking company. The supply to this company has been terminated and action is being taken to recover the debt.

2.4 Conferences and Seminars

Caribbean Basin Water Management Project; see Section 2.2 concerning seminars and workshops attended in connection with this project.

The Graduate Research Assistant, Mr S Ng, attended as an invited guest the Seminar on Organic Contaminants in Ground Water. The seminar was sponsored by the Institute for Ground Water Research, Canada, and held in Grand Cayman. Mr Ng gave a presentation on the ground water situation in the Cayman Islands.

2.5 Papers and Reports

The following papers and reports have been prepared during the year:-

a. Report on the 1987 West Bay domestic well monitoring and survey.

b. Report on the1987 Cayman Brac domestic well survey.

c. Report on the 1986 Cayman Brac ground water resources investigation, entitled 'The potential for exploiting the ground water resources of the Bluff formation on Cayman Brac.'

d. Ground water of the Cayman Islands, a contribution to the Tome yet to be published, entitled 'Biogeography and Ecology of the Cayman Islands.'

e. The Cayman Islands Water Authority, in-house training activities.

The following papers have been co-authored with researchers from the University of Alberta:-

f. Evolution of the dedolomites in the Oligocene-Miocene Bluff Formation of Grand Cayman Island, British West Indies: submitted to the Bulletin of Canadian Petroleum Geology for review.

g. Stratigraphy and sedimentology of Upper-Mississippian to Lower Permian strata, Talbot Lake area, Jasper National Park, Alberta: submitted to the Canadian Journal of Earth Sciences for review.

h. Diagenesis of Upper Mississippian carbonate sequences near Jasper, Alberta - Recognition of ancient subaerial exposure, submitted to C dian Journal of Earth Sciences for review.

The Director has been invited by the Institution of Water and Environmental Management, formerly The Institution of Water Engineers and Scientists, to act as their Caribbean corresponding member.

The Director attended the annual management meeting of the Caribbean Basin Water Management Project in Grenada.

The Director visited Israel at the invitation of the Government of Israel to inspect construction and operation of IDE desalination plant.

The Director attended a UNDP Tripartite review of the Cayman Regional Project and produced a review of the project for appraisal.

2.6 Statutory changes

In February 1987 Regulations were promulgated by Council, which changed the duration of certain Licences and Permits issued pursuant to the Law.

In September 1987 the Legislative Assembly passed an amendment to the Water Authority Law (Law 18 of 1982). The amendment dealt with the administrative arrangements of the Authority and brought such procedures more in line with the recently passed Civil Aviation Authority Law and the Financial and Stores Regulations.

3.0 Water Resources

3.1 Monitoring

The comprehensive ground water monitoring programmes established in 1985 remained operational through out the year. There has been no indication of any general deterioration trend of the water resource in either Lower Valley or East End.

A localized problem of resource deterioration has occurred on the East End lens, caused by the abstraction techniques employed by Furtherland Gardens. The operator of the farm is now complying with the abstraction licence consent conditions originally applied to his

licence. The situation is being monitored and further deterioration has not been observed.

During the year routine domestic well monitoring was carried out in Lower Valley, West Bay and Cayman Brac.

3.2 Laboratory

The laboratory has continued to carry out routine water testing for the water produced from the two wellfields, to ensure that they are of an acceptable quality, both chemically and bacteriologically. It has also continued to provide a water testing service to the general public. Routine testing is carried out for several operators of reverse osmosis plants.

The laboratory was also responsible for the domestic well monitoring programmes carried out in the various districts. A water supply survey was included in the West Bay survey, which revealed that 100% of the premises surveyed indicated support for a public piped water supply in their district.

3.3 Research

The doctorate research being carried out by Mr Sam Ng is progressing well. Identification of the present day hydrogeological regime has been completed. This step provides the fundamental framework on which the research project is based.

During Mr Ng's leave in June and July, he returned to the University of Alberta to carry out various laboratory work. Petrographic studies of the thin sections of rock samples were largely completed. Geochemical simulation and complex ions analysis were carried out utilizing the PHREEQUE program. Representative water samples were sent to a commercial laboratory for stable isotope analysis, which was funded by a grant from the Canadian Sciences and Engineering Research Council (NSERC).

In collaboration with the thesis supervisor, Dr Brian Jones, two research papers submitted in 1986 were accepted for publication. One of them is due to appear in December 1987 issue of the Bulletin of Canadian Petroleum Geology while the other is to appear in March 1988 issue of the Journal of Sedimentary Petrology, USA. Both papers were prepared from materials collected from Cayman Brac. Two other papers were written on materials sampled in the Jasper National Park, Alberta. They were submitted in September 1987 to the Canadian Journal of Earth Sciences for review. The study was funded by NSERC (to Jones) and the Boreal Institute for Northern Research (to Ng).

3.4 Water Resource Licencing

In compliance with its statutory obligation the Water Authority has approved and granted the following licences and permits:-

Discharge Permits	220 No
Ground water abstraction Licences	3 No
Canal Permits	1 No
Quarry Permits	3 No

In February 1987 an amendment was made to the Water Authority Regulations which allows the above Licences and Permits to be issued for an indefinite period.

Control continued to be exercised on the construction of deep wells and monitoring was carried out on commercial abstraction licences which had been issued for large abstractions.

3.5 Rainfall distribution

The following summarizes the rainfall figures for 1986 and 1987 and annual averages over the indicated period.

Station	Annual Average		Annual Total	
	period	mm	1986 mm	1987 mm
Driftwood Village	84-86	1021	982	1050
Tortuga Club	67-86	1138	934	938
Furtherland Farms	84-86	1029	969	827
East End Village	85-86	828	803	913
Frank Sound	84-86	901	838	888
Bodden Town	67-86	1091	1062	1159
Lower Valley	84-86	975	1038	1261
Savannah	84-86	985	1026	1392
Prospect Park	84-86	1034	963	1444
South Sound	84-86	1048	1054	1698
Airport	67-86	1496	933	1541
West Bay	73-86	1336	638	1039
Island Wide Average		**1074**	**937**	**1179**

The island wide average in Grand Cayman was 1179mm (46.4 inches), but the distribution throughout the island was somewhat irregular, the Eastern Districts being significantly drier than the Western Districts. All rain stations except Furtherland Farms showed an increase in rainfall, rainfall in the western part of the island exceeded the annual average.

4.0 Water Supply

4.1 Lower Valley wellfield facility

The Lower Valley wellfield has completed its fourth full year of production. The wellfield has been pumping for 96% of the year, the pumps only stopping for routine maintenance and for short periods during the wet season.

Rationing of the supply has been necessary on various occasions during the year, most notably during the dry season, although the demand has not fluctuated greatly from season to season.

The following table indicates various performance criteria of the wellfield and compares them to the previous year. There has been a 4% increase in sales over the previous year at this facility. The average output of the wellfield has been reduced to ensure that the resource is protected against over-abstraction in relation to the low rainfall experienced during 1986, although the demand on the facility has been greater than the water available.

Lower Valley wellfield performance

Year	Hours Run	Average Pumping Rate Cub m/hour	Quantity Produced Cub m	Power KWH per Cub m	%age Loss	Month Production		Total Sold Cub m
						Max Cub m	Min Cub m	
1986	6,810.1	8.68	59,146.24	2.03	7.94	7,033.1	2,385.8	55,716
1987	8,420.6	7.15	60,158.74	2.28	4.94	5,459.3	3,964.8	57,744

The water quality remains within the World Health Organization's standards, with a total dissolved solids ranging between 1000 ppm to 1400ppm, depending on the time of the year and position of the tide.

The total quantity of water produced since commencement of the wellfield operation is 231,245.9 Cub m (61,048,912 Gallons).

4.2 East End Wellfield facility.

The East End wellfield has completed its second full year of production. The wellfield has been pumping for 31% of the year, the wellfield only being required to meet local requirements and peak demands when sufficient water is not available from Lower Valley.

It has not been necessary to ration water from this facility.

The following table indicates the various performance criteria of the wellfield and compares them to the previous year.

East End wellfield performance

Year	Hours Run	Average Pumping Rate Cub m/hour	Quantity Produced Cub m	Power KWH per Cub m	%age Loss	Month Production		Total Sold Cub m
						Max Cub m	Min Cub m	
1986	602.9	14.72	8,877.28	0.46	1.03	1,759.5	339.2	4,191
1987	2,712.3	14.00	37,972.64	0.47	1.37	6,400.6	1,243.8	29,263

The water remains within the World Health Organization's standards, with a total dissolved solids ranging between 650 ppm to 700 ppm, the water being higher quality than Lower Valley because of the larger lens.

The quantity of water used from the public stand pipe was 82.39 Cub m (21,767 US Gallons).

The demand for East End water has increased by 600% relative to the 1986 figures. Such increase was mainly attributable to the greater island wide demand for water and partly due to the reduced monthly production of Lower Valley wellfield.

The total quantity of water produced since commencement of the wellfield operation is 55,287 Cub m (14,595,768 Gallons).

4.3 Cayman Water Company.

Water sales of the Cayman Water Company continue to increase, albeit somewhat less dramatically than in 1986. The 1987 total sales was 154,243,033 US Gallons 3% higher than the 1986 sales of 149,849,589 US Gallons.

The annual production was 169,245,798 US Gallons, allowing for storage of 1.8 Million US Gallons, unaccounted for water was 8% of the production.

The water sales are separated into two groups, the pipeline sales was 127,464,319 US Gallons, 1% higher than 1986. The trucker sales was 26,779,714, 12% higher than 1986. The trucked water sales was 17% of the total sales, a 1% increase over 1986.

The maximum monthly sales occurred in May and was 15,338,680 US Gallons, this was some 1.5 Million Gallons less than the 1986 highest monthly sales. In May the trucker sales was a record 4,083,400 US Gallons, 27% of the total monthly sales. The minimum monthly sales occurred in September and was 9,958,110 US Gallons, the truckers share of this amount was 12%.

The average monthly sales was 12,853,669 US Gallons or 419,707 US Gallons per day, a marginal increase over 1986. This average figure represents 63% of the plants rated capacity.

The maximum fuel adjustment factor was CI$1.80 per 1000 US Gallons, the minimum was CI$1.07 with an annual average of CI$1.29. The fuel adjustment factor reimbursed the Company CI$196,118.67.

The average cost of water to the pipeline customer was CI$18.74 per 1000 US Gallons, the truckers average cost was CI$16.29.

The average conversion rate was 257.22 US Gallons of water per Imperial Gallon of fuel, 89 US Gallons less than the Franchise agreement conversion rate of 346 US Gallons per Imperial Gallon of fuel. This reduced plant efficiency is carried by the fuel adjustment factor and in this respect the Company was reimbursed CI$67,576.25.

4.4 Water Truckers

The water truckers continued to provide a much needed and good service. 1987 saw one trucker cease to operate and a new one start up in business. The year also saw the introduction of larger trucks, the largest now of 9,000 US Gallon capacity.

The following companies are providing a trucking service:-

H.A. Bodden
Dee's Water Service
Eden's Water Service
C.L. Flowers and Sons
Wilford Ryan
Thompson Water Service

Four of the companies drew water from East End, all six from Lower Valley and the Water Company and one from two private wells situated on Walkers Road.

The total quantity of water drawn by the trucker was as follows:-

Water Company	26,779,714
Lower Valley	15,244,416
East End	7,725,432
Walkers Road	1,632,485
Total	**51,382,047 US Gallons**

This equates to an average daily trucked demand of 140,773 US Gallons, representing a 20% increase over 1986.

4.5 George Town Water Supply Project

The year saw good progress on this project. The contract to procure the plant and materials for the initial first phase which went to tender late in 1986, was let on 27th February to Propax Industrial Exports of UK. The Civil Engineering contract was let on 1st June to Petroservicios of Colombia. The initial materials supply contract was completed by the end of July and work commenced on the civil engineering contract in the early part of July. By the end of the year progress was made on the pipeline and the reservoir was 80% complete. The contractor was ahead of his schedule.

Following heavy support for the project from the public and after evaluating the final contract prices the Authority and Government decided to increase the scope of the project and extend the supply area to Walkers Road, South Church Street, Smith Road, Crewe Road and Tropical Gardens. This decision was made in May and Government sought additional funding from the CDB to fund the additional cost. In September the CDB approved an additional Loan, and an amending loan agreement was signed in October. The Government has since sought further additional funding locally, from Barclays Bank, negotiations commenced in December. In addition a second contract was let to Propax to supply the additional materials to enable the extended area to be serviced.

The project has now increased from a distribution of approximately 5 Miles of pipeline to one of approximately 17.5 Miles. The number of connections has increased from 550 connections to 1200 connections.

During the year applications for a supply continue to be submitted and it appears that the 1200 connections proposed will not satisfy the demand.

The following table indicates the funding arrangements:-

Original CDB Loan	CI$1,479,000
Additional CDB Loan	CI$833,000
Government Contribution	CI$368,149
Barclays Bank	CI$1,776,851
Total	**CI$4,457,000**

The following table indicates details of the contracts let:

Date	Contractor	Type	Value
27/2/87	Propax Industrial	Supply Plant & Materials/1	CI$853,613
1/6/87	Petroservicios	Civil Engineering	CI$2,689,768
3/11/87	Propax Industrial	Supply Plant & Materials/2	CI$157,654

The contract for the procurement of plant and materials was let at a fixed exchange rate between £s and CI$s, during the period between tender and execution the CI$ has lost value against the £ and has meant a large loss of up to CI$100,000 on this fluctuation.

The extension of the project area and the additional civil works cost will be carried out by Petroservicios at the rates given in their contract.

The following table indicates the Project expenditure during the year which is the total expenditure on the project.

Element	Expenditure CI$s
Land Aquisition	160,000
Civil Works Procurement	739,684
Civil Works Construction	1,039,846
Mechanical Plant Procurement	228,164
Mechanical Plant Installation	0
Engineering Services	62,695
Preparation and Appraisal Fee	17,396
Loan Costs	35,948
Total	**2,283,733**

Financing of 1987 expenditure

Government Funds	261,624
CDB Funds	2,022,109
Total	**2,283,733**

At the end of the year CI$289,891 of the CDB loan remained undrawn. Part of the Government funding is made available from recurrent expenditure.

The revised first phase of the project is expected to be completed by the end of August 1988. There have been several appeals from various districts to further extend the supply area. A number of developers have offered to meet the capital cost of the Works to provide a supply to the Red Bay area, but at year end no decision on this matter had been made.

Central-DeSal have progressed well with the provision and construction of their plant to produce the water. The five waste heat boilers were delivered in the latter quarter of the year and their erection commenced in November. The civil works for the desalination plant was completed in December and the plant arrived in late December. It is anticipated that final erection of the plant will be completed by mid January 1988 in time for commissioning by the end of January 1988.

5.0 Sewerage

5.1 West Bay Beach Sewerage Project

1987 was a very difficult year for this project. The contractor has experienced great problems in the construction of the Works, particularly with respect to the water handling. His progress has fallen behind schedule and it is estimated that at the end of the year he was 12 weeks behind his programme.

However despite the difficult problems progress has been made and at the end of the year a significant amount of the main line had been laid. The sewage treatment works was complete and five of the pumping stations had been commissioned.

The water handling problems caused the contractor to modify his method of construction and a large part of the southern pipeline had been laid using a diving technique. This variation in his method has resulted in a serious contractual dispute, the contractor claiming that his tender qualification protected him from extra costs associated with ground water handling problems. The Engineer, based on his interpretation of what was agreed and legal advice, takes the view that the contractor is responsible for the cost of carrying out the works, and as at the time of tender the contractor knew of the water problems he is not entitled to any additional costs.

Of the Variation Orders issued three are of significance, one changes the mainline clay pipe to uPVC, the second affects the bedding material and the third modifies the design of the manholes. The clay pipe were changed to uPVC as the Contractor was of the opinion that they could be laid quicker and with less trouble utilizing the diving technique, the additional bedding material and manhole redesign was to facilitate the diving technique, a variation for these was necessary as the Engineer varied the diving proposal put forward by the contractor.

During the latter part of the year a small contract was let to Ramsen Engineering to procure mechanical plant required to operate the Works. This plant was not order with the original procurement contract as the type was contingent on the construction of the works. The value of this contract was CI$68,663.

The following table indicates the funding arrangements

Government Funds	1,284,588
CDB Funds	5,833,333
Barclays Bank Funds	2,137,113
Total	**9,255,034**

The following table indicates the expenditure on the project up to the end of the year and details total expenditure on the project.

Element	**Total Expenditure up to 31 Dec 1987**	**Expenditure in 1987**
Land Aquistion	240,000	0
Civil Works, Procurement	929,450	211,225
Civil Works, Construction	5,263,810	3,963,516
Mechanical Plant, Procurement	158,330	143,690
Mechanical Plant, Installation	1,570	1,572
Engineering Services	184,300	133,904
Project Management	394,110	73,192
Loan Costs	296,540	240,046
Total	**7,468,110**	**4,767,145**

Financing of 1987 expenditure

Government Funds	533,862
Advance on Barclays Loan	350,186
CDB Funds	3,883,097
Total	**4,767,145**

The CDB loan was fully expended by the end of the year and Government sought local funding from Barclays Bank to meet the Government commitment. Prior to this funding becoming available Government provided an advance of CI$486,900 to meet contractual payments. CI$350,186.24 was drawn from this advance. Part of the Government funding is made available from recurrent sources.

6.0 Water and Sanitation Operators

During the year the following new Licences were approved by the Plumber's Examination Board:-

Apprentice	2No
Journeyman	5 No

These additional Licences bring the total number of Licenced plumbers up to the following:-

Apprentices	18No
Journeyman	75No
Master	17No

The Plumber's Examination Board met on 8 occasions and comprises:-

Chairman	Senior Superintendent Water Authority Mr Thomas Hill
Members	Mr Kenny Ryan Mr Delano Hislop
	Chief Plumbing Inspector Mr James Merren
	Chief Building Control Officer Mr Roger Gough

7.0 Development Control

A total number of 261 applications were made for plumbing approval up to the end of August when the Water Authority handed this function over to the Building Control Section.

The Authority continues to provide updated information to the Advisor working on the Economic Development Plan.

8.0 United Nations.

The Authority continues to benefit from being a part of the United Nations Smaller Islands Water Resources and Management Project.

a Tripartite review of the local project was held mid year in Cayman which was positive and agreement was reached to extend the project for a further two years.

Ms Cathy Seymour, Engineering Technician, received a UN Fellowship to attend a two year Engineering Technicians Associate Degree Course at the WACO Technical College, Texas. She commenced her studies in the summer.

Mr Tony Reid returned from Miami-Dade Technical College where he was studying on a similiar course. He will be re-continuing his studies at WACO in mid 1988. This study is also funded by UN out of Project funds.

The computerized billing system and accounting system is being designed by a UN short term consultant, funded out of project funds. The Billing system has been completed and operational during the latter part of the year. It is anticipated that the accounting system will be completed towards the middle of 1988.

The Authority continue to be provided with the services of Associate Experts, Mr Tjeerd Dykstra extended his contract with the UN by a further year in order to enable him to continue work on the George Town water supply project until early 1988, when he will leave on a UN assignment in other parts of the World.

Mr Thomas van Zanten completed 3 years as Associate Expert working on the West Bay Beach sewerage project and he was immediately taken on staff as project manager. The UN are actively seeking a replacement for Mr van Zanten, it is anticipated that the replacement will be available early in 1988.

Further funds have been made available to provide Mr Bunyan Whittaker with a two year fellowship to enable him to complete an Associate Degree course at WACO Technical College. Arrangements are being made for him to commence his studies in mid 1988.

The UN are considering part funding a regional conference to be held in Cayman late in 1988 to deal with water and sanitation matters. It is intended that the theme of the conference will be based on the local experiences in the sector.