

THE PORTFOLIO OF DEVELOPMENT AND NATURAL RESOURCES.

THE WATER AUTHORITY

1984 ANNUAL REPORT

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1. GENERAL.

1984 was the first full year of operation for the Authority. A total of four full Authority meetings were held.

In November the original Board came to the end of its term and a new Board was appointed. The members are now as follows:-

Chairman	Member Development & Natural Resources Hon. Vassel Johnson OBE JP
Members	Member Communications Works & District Administration Hon. Charles Kirkconnel
"	Financial Secretary Hon. T. Jefferson
"	Chief Engineer Mr. D. Ebanks
"	Chief Environmental Health Officer Mr. P. Foye
"	Mr. Richard Flowers
"	Mr. Vernon Jackson
"	Mr. Brainard Watler

In October the department moved from the temporary accommodation on Maple Road to a suite of offices in the Tower Building. The new offices were purposed designed to accommodate expansion in staff.

2. ADMINISTRATION.

2.1 Staffing

The staff compliment is now as follows.

- | | |
|----------------------------|-------|
| a) Director | S3 |
| b) Senior Project Engineer | AP3-4 |

c)	Project Manager	AP3-4
d)	Senior Engineer Technician	T8
e)	Senior Draftsman	T8
f)	Executive Officer	E1-4
g)	Clerical Officer	C1-4
h)	Hydrogeologist	AP3-4
i)	Hydrogeological Assistant	T1-2
j)	Laboratory Technician	T3-4
k)	Trainee Draftsman	T3-4
l)	Graduate Research Assistant	T1.
m)	UN Associate Expert (Sewerage)	No cost
n)	UN Associate Expert (Water)	No cost
o)	1 Plumber	D2
p)	1 Mason	C2
q)	2 Labourers	A2.

Posts c), d), and e) were approved late in the year and by year end were still vacant, although recruitment was in progress.

Posts h) and l) are both vacant. It is expected that both will be filled in the first part of 1985.

Post k) was vacant from December 1983 until September 1984, when it was then filled by Tom van Zanten a Dutch Engineer.

Post j) was filled by a young Caymanian Sean Bodden in October. The Laboratory Technician preceding him, Mrs. W. Dewar, left in December. The two months take-over period was intentional.

Posts i) and k) were vacant towards the end of the year, but two young Caymanians have been recruited and will commence their duties in January 1985.

The contract of post holder l), Mr. Peter Ravenscroft was terminated in November.

2.2 Finance

Expenditure:

1984 Recurrent Allocation	-	306,474.00.
1984 Recurrent Expenditure	-	292,123.49.
1984 Capital Allocation	-	186,000.00.
1984 Capital Expenditure	-	184,342.00

The 1984 estimate only allowed CI\$40,000 for water and sewerage development. Mid 1984 the Government agreed to fund CI\$150,000 for the initial wellfield development and reservoir at East End. This funding was made available by utilizing \$10,000 of the original \$40,000, viring \$50,000 from an allocation for a water truck and providing a supplementary \$90,000.

Revenue:

1984 Revenue was CI\$62,949.15, mainly attribitable to Lower Valley water sales.

Total quantity of water sold in the year was 48,992.23 cubic metres, realizing an income of CI\$61,080.60 of this CI\$1800 was for meter rental.

External services realised CI\$1,868.55.

No detailed costing exercise has been carried out to determine the economics of operating Lower Valley wellfield and reservoir, however it appears that the sales of water is meeting the direct operational costs with an annual profit of approximately CI\$35,000.

2.3 Conferences and visits

The Authority was represented by D. W. Brown at the International conference on Geomembranes, held in Colorado U.S.A.

Mr. Peter Ravenscroft represented the Authority and gave a paper at the First Caribbean Water Engineers conference held in U.S. Virgin Islands.

Mr. D. W. Brown accompanied the Chairman and Financial Secretary on a site visit to Louisiana to inspect waste stabalisation ponds. This was arranged by the Meyer group of companies.

The Director was on a long leave during February through April.

2.4 Reports:

The following reports have been prepared during the year:-

1) Design, Construction and Initial Performance of the Lower Valley wellfield - March 1984.

- 2) Further Report on the performance of the Lower Valley wellfield and re-design of the pumping regime - June 1984.
- 3) Status Report on the Monitoring of the Lower Valley Lens - November 1984.
- 4) The Problems of Monitoring Fresh Water lenses in the Cayman Islands - June 1984. (Presented at the First Caribbean Water Engineers Conference).
- 5) Rainfall Analysis for Grand Cayman - September 1984.
- 6) Application of Numerical Modelling on Microcomputers with Special Reference to the Canalization of Lens Margins - November 1984.
- 7) Interim Report on investigation of the East End lens - November 1984.
- 8) George Town well monitoring II - January to April 1984.
- 9) East End well monitoring programme June 1984.
- 10) Data Comparison for George Town well monitoring programme, summer 1983, winter 1984, Summer 1984.

2.5 Administration Change

In November the Water Authority was moved from the Portfolio of Communications and Works and placed with the Portfolio of Development and Natural Resources.

3. WATER RESOURCES.

3.1 Investigation

Further boreholes were drilled on the East End lens, primarily along the new agricultural road and several on the High Rock road, to further investigate the ground water resources of the eastern lens. Previously only geophysical information was available to determine lens parameters. The data obtained using these boreholes showed the lens to be deeper in parts than previously thought, and produced a different aerial configuraton.

Pumping tests showed that production wells are likely to be easier to develop than those situated on the Lower Valley lens.

A limited amount of further investigation was carried out on the Lower Valley lens, in an attempt to determine better methods of development.

The water resource in the School House road area was investigated in order to provide a supply for the low-income housing project. A small scheme was designed to provide non-potable water. This however was not carried out and the one house that was constructed had an individual well and small cistern. The Authority provide a properly constructed disposal well and hand pump for the cistern.

3.2 Monitoring and control.

Monitoring ground water, using open boreholes to determine conductivity profiles has its limitation, tidal mixing of water within the borehole gives results that do not necessarily reflect the status within the formation.

This year a system of piezometers, which will better monitor the status within the formation, have been established on the Lower Valley and East End lens.

The Authority continued to obtain water level records from its six stations and rainfall records from its eight stations.

The possible problems of salt water intrusion, as a result of canalization of lens margins was further addressed and data has continued to be obtained in order to resolve this issue.

Mr. Boris Bermes, produced a report, detailing a hydrogeologic monitoring plan for Grand Cayman. This report was funded by the United Nations .

The abstraction from the Walkers Road Commercial wells, has been closely monitored during the latter part of the year. Restrictions have been placed on their use, these have largely been ignored.

4. WATER SUPPLY.

4.1 Lower Valley.

The wellfield operated for the full twelve months period. As expected several of the wells had to be closed down due to local geological conditions. Twenty one wells are now pumping, three of these have been modified to increase their productivity.

The daily output of the wellfield is now approximately 60,000 gallons.

The salinity of the product water is now averaging at 340 mg/lit., still well within the W.H.O. limits. The anticipated upward trend in salinity has now levelled off.

The demand for water in November and December was more than the wellfield could produce. A rationing system was instigated in December to allow for fair distribution to all trucking customers. The system was based on truckers average demand before the ration.

The annual water sales were 48,992.23 cubic metres, (13 Million gallons).

During the year one trucker was cut off for bad debt, this debt has since been paid and the supply reconnected.

4.2 East End.

Work on the construction of the initial wellfield and reservoir development commenced in June. Ten production wells have been completed and approximately 1 1/2 miles of pipeline laid. The site for the reservoir (Government land) has been cleared and filled. The project was not completed by year end, due to inavailability of the Cable and Wireless trenching machine.

The cost of the scheme was initially estimated at CI\$150,000 it has since be re-estimated at CI\$65,000. Completion is expected in the early part of 1985.

The scheme will then provide upto 150,000 gallons of potable water per day. Initially this will be to truckers, but it is planned in 1985 to lay a main and distribution to East End village.

4.3 Cayman Water Company.

Although no record has been kept of the Water Company's operation, it is worth comment that several problems have been experienced, causing a number of interruptions in supply.

The company has now adopted a preventative maintenance programme which it is hoped can be fully established once the additional

800,000 gallons storage is on line and the new 175,000 gallon/day unit is commissioned early in 1985.

The additional works will increase the total capacity to 675,000 gallons/day with a storage 1.8 million gallons.

Annual water sales were 100,622,656 gallons, of this 14,087,171 gallons was sold to the truckers.

Water produced was 113,047,700 gallons, water loss was therefore 12,425,044 gallons or 11% of the total produced.

Government revenue from royalty was CI\$ 117,133.31.

Fuel adjustment factor varied from a maximum of CI\$2.267 to a minimum of CI\$1.530, the average for the year was CI\$1.926.

4.4 Water Truckers.

Seven companies are now operating a water trucking service. Six of these obtain water only from the Water Company and Lower Valley reservoir, whilst the seventh abstracts from two private wells on Walkers Road. (see section 3.2).

4.5 Water Awareness programme.

An initial programme to inform residents and tourists of the importance of water and its conservation was commenced. Assistance in designing the programme was obtained from P.A.H.O. through its office in Jamaica, Mrs. Ena Walters visited on two occasions.

This programme was implemented in conjunction with the Environmental Health department.

It is planned that in 1985 it will be fully implemented.

4.6 Water Quality Monitoring Programmes.

The ongoing programmes monitoring domestic well water in George Town, East End and Cayman Brac continued. All three areas were fully sampled on two occasions throughout the year.

The survey showed that in 1984:-

George Town, 46% of all wells sampled were contaminated with fecal

coliform bacteria.

East End, 75% of all wells sampled were contaminated with fecal coliform bacteria.

4.7 Water Shortage.

During the latter part of the year, demand for trucked water has been greater than available supply. Although this is not quantifiable, it is a serious situation that is to be more fully addressed in 1985. Part of the problem has been caused by the inability of the Cayman Water Company to supply the truckers with their normal allocation, the new Golf Course requiring upto 300,000 gallons/day for irrigation and other tourist related accommodation outside the Water Company franchise area requiring large quantities of water. The problem is compounded by a general increase in the quantity of water used by any individual.

This shortage has resulted in large quantities of non-potable water being taken in an uncontrolled fashion from private wells and sold to meet the demand.

5. SEWERAGE.

Much preparatory work has been carried out for the West Bay Road sewerage and sewage treatment works.

The site on which to construct the sewage treatment works was purchased in June, only then was it possible to formulate meaningful plans.

The collection and analysis of demographic data has been a mammoth task. This data has been computerized on the Authority's computer.

Preliminary designs have been formulated and an initial estimate of US\$10 Million was presented to the Caribbean Development Bank. The Bank is considering a loan to the extent of US\$7.0 million.

A programme of works has been drawn up showing a completion date of December 1987. Government has insisted on this completion date, although achieving this goal will be difficult. The present state of project preparation dictates that if this time frame is to be met then design and contract document preparation will be on-going during procurement and initial construction, resulting in approximately nineteen contracts.

Government approved the provision of three staff members late in the year, to assist with the design and contract preparation. A senior Engineering Technician, Senior Draughtsman and Project Manager. Until this time only one person has been available to work on the project, with a UN Associated Expert arriving late in the year.

The CDB required that supervision of the construction is carried out by independent consultants, who will be appointed early in 1985.

Sewage effluent - reuse

An assessment of the predicted sewage effluent was carried out. This showed that the salinity of this effluent would be sufficiently low for it to be considered for irrigation. The new Golf Course has intimated it would be interested in using the effluent for this purpose.

6. UNITED NATIONS.

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

The Authority participated on a 100% cost sharing basis, the 1984 cost was CI\$12,000.

The United Nations provided the full time service of two Associate Experts, Mr. Leo de Waal and Mr. Tom van Zanten

Two short term consultancies were provided:-

One by Watson Desalination, Sea Water desalination options for Grand Cayman.

The other by Boris Bermes, Hydrogeologist Monitoring plan for the Island of Grand Cayman.

Various equipment ordered in 1983 was delivered.

Mr. Peter Hadwen the Project Manager, visited the Authority on two occasions and Mr. Uri Golani the Senior Technical Advisor visited once.