PAPER FOR

WATER AFRICA '96 CONFERENCE

JULY 1996
ACCRA, GHANA

GAP

OPERATION AND MAINTENANCE OF SMALL TOWN WATER SUPPLIES: EXPERIENCES IN THE TRANSITION TO COMMUNITY MANAGEMENT IN NORTHERN GHANA

GWSC Assistance Project
Wardrop Engineering Inc./G. A. S. Development Associates Ltd.
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ABSTRACT

OPERATION AND MAINTENANCE OF SMALL TOWN WATER SUPPLIES: EXPERIENCES IN THE TRANSITION TO COMMUNITY MANAGEMENT IN NORTHERN GHANA

GAP (GWSC Assistance Project) is being carried out in northern Ghana as an experiment in transferring revenue collection and O&M responsibility for small town mechanized water supply systems to the community. To date one year of actual community experience in system operation has been achieved in three communities. Performance of these communities in their first year of operation has been encouraging and plans are in place to transfer as many as 34 water supply systems to community management as part of this project by the year 2000. This paper presents an outline of the project cycle in each community and a description of transition related experiences in the first 3 communities. It also presents a summary of key lessons learned, financial performance of these communities and a listing of emerging issues.

These emerging issues will require further attention in the coming years to maximize the potential for these communities to maintain sustainable operation over the long term, and to break the aid dependency cycle.

Submitted/Presented by:
Dr Sulley Gariba - G A.S. Development Associates
Rudy Derksen - Wardrop Engineering Inc.

OPERATION AND MAINTENANCE OF SMALL TOWN WATER SUPPLIES: EXPERIENCES IN THE TRANSITION TO COMMUNITY MANAGEMENT IN NORTHERN GHANA

Biography - Dr. Sulley Gariba
President
G.A.S. Development Associates Ltd.

Dr. Gariba is President of G.A.S. Development Associates. Both he and his staff have been actively involved in implementing a wide range of community management related assignments. Most recently these activities have centred on community mobilization and training of community based Water and Sanitation Development Boards in preparation for them to operate their own water supply system in northern Ghana.

Biography - Rudy Derksen
Principal
Wardrop Engineering Inc.

Mr. Derksen is a mechanical Engineer and has over 20 years of engineering and project management experience in a broad range of industries and sectors including rural and urban water and sanitation development. For the last two years he has been Canadian Team Leader and counter-part to the Project Manager on GAP (GWSC Assistance Project) in northern Ghana.

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PREAMBLE

"We cannot learn until we really start doing the real thing; and we cannot do the real thing without making mistakes through learning..."

Observations made by a female member of the Water and Sanitation Development Board in Nandom, Upper West Region.

1.0 INTRODUCTION

Throughout Africa and the developing world, major water supply development and rehabilitation of existing water supply schemes are underway. A critical mass of these are small urban towns, which are neither big enough to attract major commercial efforts, nor small enough to be classified as typically rural. The dilemma confronting practitioners in the water supply industry is therefore to plan and implement these projects in a manner that transfers the skills and challenges of managing the operations and maintenance of these schemes before **not** after the schemes have been fully rehabilitated.

Wardrop Engineering, a Canada-based engineering and management firm together with their Ghanaian partner G.A.S. Development Associates, a community management firm, have been trying to respond to this dilemma. This response has been primarily through an innovative methodology of allowing a systematic process of **"Transition"** wherein communities and the water sector agency, in this case Ghana Water and Sewerage Corporation (GWSC), engage in a mutual agreement to experiment with various forms of comunity management of water supply systems. This exercise is being implemented as part of GAP (GWSC Assistance Project) in Northern Ghana.

The statement above aptly describes the major lesson learned from the process of transition management of small towns water supply schemes in the Northern Ghana.

This paper is a rendition of the experiences gained and lessons learned in this unfolding dynamic. The paper contains the following sections:

- a brief description of GAP in Northern Ghana;
- examines the Operation and Maintenance challenges that confronted the project after construction and rehabilitation works had started; and,
- chronicles the experiences of three communities that have initiated the process of transition.

1.1 BACKGROUND

GAP started in 1990 as a major effort to build institutional (ie. GWSC) and community capacity to plan, and eventually to manage some 41 water supply schemes in towns of various sizes, ranging from 2,500 to over 50,000 people in three Northern Regions of Ghana. This project is being funded by the Canadian International Development Agency (CIDA) and the Government of Ghana. The technical and management expertise for executing the Project is being provided by Wardrop Engineering and a local community management firm, G.A.S. Development Associates.

2.0 THE PROJECT CYCLE

This section describes the project cycle, outlining the main steps the project has undergone to arrive at the present "Transition" stage in the operation and maintenance of small towns water supply. It is important to note that each step in this project cycle serves as a critical milestone in the building of capacity for the sustainable management of operation and maintenance of small town water supply in Africa. Therefore the description of each step is followed by a highlight of the main lesson learned by the key stakeholders in that particular process.

The first phase of the Project focused attention on 14 towns, considered as priority schemes because they had the right mix of skills, commitment to managing their water supplies and, in some cases, relevant for GWSC's long-term strategic goals. Once these communities were selected, the Project went through a number of processes, which are described below along with key lessons learned at each stage

2.1 ORGANIZATIONAL DEVELOPMENT AND CAPACITY BUILDING

The first stage in assisting GWSC and communities to work closely together started with a systematic process of Organizational Development of the target communities; and the capacity building of the sector agency (GWSC) to re-orient its conventional project development philosophy towards a "new approach that is sensitive to community needs, expectations and capacity."

At the community level, this organizational development effort assumed various forms, the predominant one being the establishment of a Water and Sanitation Development Board (WSDB) in each participating community in the Project. Board members numbering between 11 and 15, were selected by communities themselves, and represent various sections, interest groups, women and water user groups in the

community. District Assemblies (being the main governing bodies in communities) and traditional leadership are well represented in these Boards.

At the sector agency level, the capacity building efforts focused on training and human resources development, mainly of young engineers who were getting involved in practical water supply planning and design for the first time. The bulk of this training emphasized new concepts which they were not familiar with, such as community involvement in the planning and management of water supply.

Lesson #1:

Building Community and Sector Agency Capacity

Preparing both the community and the sector agency is a necessary step in building the foundation for sustainable operation and maintenance. Often it is assumed that the sector agency is already knowledgeable about everything, yet by raising issues of participation and community involvement, sector agency personnel increased their sensitivity. Organizing the community served a useful purpose, in that, the community was reduced to a manageable group, representative of the entire community and capable of leading their decision making process. The basis for a **Partnership** between the community and water sector agency was established.

2.2 PROCESS OF PARTICIPATORY PLANNING

The process of **Participatory Planning** involves the convergence of community organization (WSDBs) and water sector agency technical capacity. By this is meant GWSC was supported to "go down to the community level" to assist the communities, through their elected representatives (the WSDBs) to plan their desired water supply rehabilitation. This entailed a mutual learning exercise in which:

- GWSC and staff of Wardrop/G.A.S provided training to community members on such issues as water and sanitation planning considerations; community demographics and how to estimate demand for water; technological options and choices for sustainable water supply and the cost implications for various options and service levels of water supply and sanitation.

This effort was essentially a process of transfer of skills, but it also empowered the communities to be better prepared to engage with the sector agency in making informed decisions about their preferences for improved water supply in the community.

- In turn the communities exchange their Traditional Skills and Knowledge (TSK) about prevailing local conditions; existing water supply and utilization patterns; socio-economic dynamics within the communities; and the organizational and decision making context that will permit sustainable management of improved water supply.

These detailed insights gained by the water sector agency (GWSC) and Wardrop/G.A.S. staff later became crucial ingredients that informed the conceptual and detailed design of improved water supply for each of these communities.

Lesson #2: **Transparent Planning Centred on the Beneficiary Community**
Technocratic planning gave way to a flexible and transparent planning process which allowed the exchange of skills, between technical knowledge of the water sector agency and traditional knowledge of the community. The mutual learning that resulted provided an enabling environment for GWSC staff to prepare designs that reflected community interests and capacities. In turn the training provided by GWSC technical staff prepared communities to understand the designs that were prepared. In the end, data collected to prepare designs were undertaken with, and by the communities.

2.3 CONCEPTUAL AND DETAILED DESIGNS

This stage of the Project itself represented another innovative step and learning experience for both the water sector agency and the communities. Following training and collaborative data collection at the community level, Wardrop and GWSC staff prepared Conceptual Designs of the desired water supply schemes, drawing on the traditional insights provided by the communities during the Participatory Planning Process. These conceptual designs were then returned to the communities to enable them to decide on the most suitable and affordable option that they felt they could operate, maintain and sustain in the long run. Wardrop/G.A.S. staff and GWSC provided ample information to guide community decision making, but essentially, the communities were left to make these decisions on their own.

Following commitment and agreement to a particular concept, GWSC then proceeded to prepare detailed designs, with the assistance of Wardrop staff.

Lesson #3:

Bringing Engineering Designs Down to Communities

The mystery of design, whereby engineers exclude "laymen" and later struggle to explain these to beneficiary communities (if ever) was broken. The resulting conceptual designs were relatively simple, reflecting choices and preferences made by communities themselves. A unique lesson in this process was also the preparation of design concepts which incorporated mixed technologies (mechanized and non-mechanized systems, such as borehole hand pumps and hand-dug wells). These were innovations suggested by communities, as a means of ensuring reliability of water supply, in case mechanized schemes failed; or as a means of reducing Operation and Maintenance costs.[1]

[1] This latter lesson has implications for the viability of the Transition process, in that water supply could readily be provided through simple hand pump installation, while the major rehabilitation exercise was being implemented.

2.4 MOBILIZING CAPITAL RESERVE FUNDS IN THE COMMUNITY

A critical milestone that reflected the community's commitment to the programme of improved water supply was their acceptance to mobilize funds towards a **Capital Reserve Fund** which they establish and operate. This fund, in the context of the Project was calculated as the equivalent of 6 months O&M required to run the system when fully rehabilitated. The expectation was that, any community capable of mobilizing that size of fund stored away in a Reserve Account, is likely capable of sustaining operation and maintenance in the long run.

The dynamics of mobilizing these funds differed from community to community. The period of mobilizing these funds entailed a long drawn out process which, while frustrating for the communities, resulted in substantial capacity building for them. A number of crucial lessons were learned in this process.

Lesson #4

Sustainable Financing of O&M
The Capital Reserve Fund

The District Assemblies became important stakeholders in the process of mobilizing the Capital Reserve Funds, since they account for about 55% of the total funds mobilized in all the communities. The implication of this is the emergence of a three-way partnership for Operation and Maintenance of Small Town Water Supplies: Community, District Assembly and Sector Agency (GWSC).

Capital Reserve Funds, once mobilized are not required immediately to finance O&M. This meant that they could be invested in high yielding deposits that will secure their value against depreciation and inflation. Water Boards made a decision to pool these funds in a Water Board Association Reserve Fund and to invest them in a foreign currency account, in order that their international purchasing power is secured against inflation. Appendix 1 presents a statement of account for this Common Reserve Fund.

3.0 THE TRANSITION PROCESS

"Transition" means an intermediate step towards transferring full management of operation and maintenance to communities. The conventional wisdom is that water supply schemes that are being rehabilitated for eventual community management will be transferred to these communities when the rehabilitation is completed. A "handing-over" stage is anticipated. In the considered experience of Wardrop and the sector agency, GWSC, it became apparent that communities cannot simply be handed-over a new, refurbished water supply. Rather, they needed to learn gradually, on-the-job, using existing water supply facilities as their starting point. This led to the initiation of the "transition" Process by GAP in 1995.

To date, there are 6 out of 14 project communities in the three Northern regions of Ghana involved in this process. The major steps in supporting a community to go from Planning stage to Transition stage entails the following:

A. Preparing a Transition Plan.
B. Stabilizing the Community's water supply.
C. Assessing Transition Training Needs.
D. Conducting Training for Transition Management.
E. Involving the Private Sector in supporting Transition Communities.
F. Monitoring the Transition Process.

3.1 PRACTICAL EXPERIENCES IN TRANSITION

This section describes the practical experiences of three of the six communities currently undergoing the Transition process. Each of these communities is peculiar in one respect or the other; therefore the critical lesson in each will be highlighted.

3.1.1 GWSC-inspired Transition in Saboba

The community of Saboba has a population of some 6,000 residents, with a water supply system based on surface water and a package treatment plan. While the production and treatment of water is relatively complex in terms of community management, the distribution is considerably simpler, with a few house connections and public stand pipes.

The frequent requirement of expensive chemicals, coupled with the remote location of Saboba away from the main traffic routes makes the Saboba water supply an expensive operation, with limited commercial viability. This handicap is however adequately compensated for by a vibrant, committed and highly organized community prepared to assume the challenge of managing their water supplies. In addition to this community commitment, the District Assembly in Saboba has been equally enthusiastic in supporting rehabilitation efforts, including the provision of about 50% of the 6 million cedis required for the **Capital Reserve Fund** deposit towards the rehabilitation Project. Thus, the community of Saboba was poised for a successful commencement of its Transition Process with the following key factors in place:

- GWSC readiness to provide consistent support;
- Community willingness and capacity to assume management of the water supply; and
- Strong District Assembly backing.

The transition process, once initiated, proceeded in the following manner:

1. GWSC station operator supported the WSDB to identify and to recruit two technical operators from within the community.

2. GWSC operator in Saboba then provided an on-the-job training effort to these two new recruits, for about 2 months, providing them with basic and routine O&M training on the current water supply system.

3. Upon completing this training, the station operator was withdrawn to Yendi, to allow the WSDB-appointed operators to assume effective responsibilities for the O&M.

4. Soon after, one of the two WSDB-appointed operators was assigned to undertake a three-month internship in the Yendi Water Supply, which is a much larger operation, in terms of scale and complexity. Meanwhile the second operator is presently running the water supply system.

5. It is planned that upon the return of the first operator, the second operator will also proceed to Yendi for a three month internship as well.

6. Throughout this process, GWSC commercial and finance sections, with the active support and assistance from Wardrop/G.A.S. staff, are providing on-the-job training to assist the WSDBs revenue collection process in Saboba.

Lesson #5:

GWSC is committed to a Process of Decentralizing Management of Operation and Maintenance

The process adopted in Saboba is a carefully crafted transition process, in which GWSC and the community planned incremental steps towards realizing community management goals. In this process:

- GWSC has been engaged systematically in building community capacity;
- the community has been consolidating its experience, without altogether assuming direct operational responsibilities immediately;
- the door is open for on-going relationships with GWSC, through the Yendi Water Supply, which will continue to provide technical support back-up, training opportunities and procurement support for Saboba.

In the long-run, this relationship may well provide an opportunity for GWSC to commercialize technical support and procurement services to Saboba and other neighbouring schemes, such as Zabzugu and Cheriponi for a fee: Another opportunity for the Commercial Optimization of GWSC.

3.1.2 Consolidating Community Management of O&M in Zebilla

The Zebilla water supply has never been managed by Ghana Water and Sewerage Corporation. Although it has been functioning sub-optimally for several years, it was non-the-less managed by the community, through the District Assembly. The system is based on several mechanized boreholes. In initiating the transition process, Zebilla went through a different dynamic from that of Saboba. The process in Zebilla entailed the following steps.

1. A Transition Plan was prepared

2. The water supply situation was improved as an interim measure. This involved the installation of about 7 new hand pumps on various boreholes which are to be mechanized as part of the full-scale rehabilitation that is underway. Two existing hand pumps were also transferred to the Water Board, bringing the total water points in the community to 9. Prior to this interim effort, there were only 2 reliable hand pumps in the community, and the mechanized water supply functioned poorly, with many leaks and a very old pumping machine.

Once additional hand pumps were installed, the Water Board decided to discontinue the operation of the old mechanized supply, as this was expensive and produced very little water at any rate.

3. A practical and innovative tariff collection method, based on the use of tokens was developed and implemented. Under this system water can be fetched at any of the hand pump sites only after the surrender of a token to designated hand pump agents. The token would have previously been purchased from a token seller. At the end of each day, a Token Coordinator retrieves surrendered tokens from pump agents and issues each agent with a receipt. These are sent back to the Token Seller and the cycle continues day-in-day-out. In Zebilla, a Token sells for 10 Cedis. No cash is collected at pump sites. Only tokens are collected as follows:

- for one 34 size bucket ..... 1 token
- For a Basin ..... 2 tokens
- For a drum ..... 12 tokens

A commission of 10% of total value of tokens sold is paid to the token seller as commission. Similarly 10% of the total value of tokens collected from the

Pump Agents is paid as commission whilst the Token Co-ordinator collects an allowance of 8000 Cedis per month.

During the period March 1995 to December 1995 a total of 1,505,890 Cedis was collected from water sales. Between January and March 1996, a total of 800,500 Cedis was collected. This higher average collection rate is due mainly to the dry season, during which time clean alternate sources are less readily available. Appendix 2 presents a summary 1995 income/expense statement for Zebilla.

3. Training of community members including women, in the operation and maintenance of the hand pumps was provided.

4. Selective reliance on GWSC and the private sector to provide technical services, when required (on a fee for service basis).

Lesson #6: **Innovative Approaches to Tariff Collection are Devised by Communities to Sustain their O&M**
By focusing their attention on the long-term sustainability of their water supply, the Water Board in Zebilla has instituted this innovative system, which is now being replicated in 4 other communities under transition, namely: Binaba-Kusanaba, Nandom, Tinga, Jirapa (being the latest convert after trying GWSC system of tariff collection through regular billing).

3.1.3 The Role of Community Commitment in Jirapa

Jirapa a community with a population of about 6,000 has a water supply system consisting of handpumps and a diesel powered mechanised system. Having completed this first year of operating an old inefficient diesel which is powering only one borehole, they have been working very hard to keep costs down, collect arrears and

maximize revenues. Their income/expense statement for *1995* is presented in Appendix 3.

This income/expense statement indicated that in comparison to GWSC, they were able to increase revenue substantially over 1994 and therefore were able to apply this revenue to increased pumping hours and improved service to the community.

Other examples of the impact of the commitment of key community personnel to sustainability, include the following:

- Salaries of staff have initially been kept much lower than corresponding GWSC rates;

- Tariffs higher than those charged by GWSC were successfully implemented and collected from the start;

- As service improved, the price for house connections was increased;

- The Board is dealing with uncooperative customers forcefully and shutting off their water supply where appropriate.

- A request for water meters from the project was initiated to ensure commercial users are paying their fair share as are those with house connections who are reselling the water supplied to them;

- Their District Assembly was the first to support the Water Board's Reserve Fund. This helped Jirapa become one of the first to receive responsibility for O&M and revenue collection.

- The Chief was instrumental in selecting a Water Board leadership which was committed. For example the Chairperson is illiterate but deeply committed. She takes time regularly from her market business to attend endless meetings and solve problems.

Lesson # 7:
Commitment Causes Innovative on the Ground Solutions to Management Issues, Keeping Costs Down and Revenues up.
Start-up situations along with total transfer of revenue collection and O&M responsibility of a mechanized system requires drastic action and commitment from all sectors of the community. With experience, come refinements and easing of pressure on those in charge as uncertainties are clarified, removed or just understood.

4.0 EMERGING ISSUES

Actual experience with transition communities has provided valuable information for further work planning which will strengthen the ability of the communities to achieve sustainability. Through a combination of not just planning but doing, hidden constraints are uncovered. This is permitting the communities, GAP and GWSC to adjust their planning and resources to deal with constraints and continue the process of establishing truly sustainable community operated water supply systems.

Some of the emerging issues identified after the first year of having some communities operating their own system, include the following.

- After years of voluntary service, Board members need some form of recognition and reimbursement. Perhaps some new blood should be added as well.

- Board members should not be involved in day-to-day operational and financial issues. They should monitor paid staff who do the day-to-day work.

- Improved communication and financial reporting by the Water Board to the community and District Assembly is becoming critical to build the Water Board's accountability and credibility.

- A long term business plan for the community is essential to permit realistic tariff setting and to ensure major repairs required in 5, 10 or 15 years do not financially cripple the system. A sample business plan summary sheet for Jirapa is attached in Appendix 4.

- If a sincere commitment/will to make community management work is not present with the key players in a given community, it will not work.

- Communities taking responsibility for their own water supply systems should not also be burdened with old debt or a run down water supply system. Communities are already taking on an enormous learning challenge and full responsibility for the future. Perhaps the best way for government to support the transfer of the water supply system is by minimizing the initial financial burden on the community. This could be done by transferring the system at no cost, and not transferring old debt or initial rehabilitation costs to them.

- Regular deposits into a well invested reserve fund must be maintained to deal with long term depreciation/rehabilitation cost issues as per the community's business plan. Without this commitment the aid dependency chain cannot be broken, particularly in a high inflation economy.

- How will the water supply agency (GWSC) staff displaced by community management be dealt with?

- Community links to the private sector must be strengthened from both ends.

- Tariffs must increase to reflect inflationary cost increases.

APPENDICES

ASSOCIATION OF WATER BOARDS -
RESERVE FUND ACCOUNT

APPENDIX 1

ASSOCIATION OF WATER AND SANITATION BOARDS
RESERVE FUND REPORT TO MARCH 31, 1996

Appendix 1
March 1996

Region	Community	Deposits in Cedis	Deposits Equivalent in US$	Deposits Interest & Other	Withdrawals and Expenses	Balance in US$
Northern	Yendi	4,000,000	$2,759	$0	$0	$2,759
	Damongo	2,000,000	1,389	0	0	1,389
	Saboba	4,000,000	2,778	0	0	2,778
	Bole	3,000,000	2,065	0	0	2,065
	Tinga	2,000,000	1,307	0	0	1,307
	Zabzugu	3,000,000	1,961	0	0	1,961
Upper West	Jirapa	5,000,000	3,378	0	0	3,378
	Nandom	6,700,000	4,379	0	0	4,379
	Lawra	12,000,000	7,909	0	0	7,909
	Tumu	0	0	0	0	0
Upper East	Zebilla	5,000,000	3,378	0	0	3,378
	Navrongo	5,000,000	3,268	0	0	3,268
	Sandema	0	0	0	0	0
	Binaba-Kusinaba	0	0	0	0	0
	Total	51,700,000	$34,571	$0	$0	$34,571

Notes
1. Interest on account will be paid in April, 1996. Bank Charges are presently being paid by GAP.

Summary

Total in Account in US$	34,571
Exchange Rate to Sell US$	1,575
Equivalent Cedis in Account	54,449,970
Amount Invested to Date	51,700,000
Net Gain to Date - in Cedis	2,749,970

ZEBILLA WATER BOARD -
INCOME/EXPENSE STATEMENT FOR 1995

APPENDIX 2

ZEBILLA WATER AND SANITATION DEVELOPMENT BOARD **Appendix 2**
REVENUE AND EXPENSE STATEMENT FOR 1995 (1)

	AMOUNT	SUBTOTAL
REVENUE		
Water Sales	1,505,890	
Investment Income	339,487	
Bank Interest	5,540	
TOTAL REVENUE		1,850,917
EXPENSES		
. Direct		
Labour	70,000	
Repair and Maintenance	141,447	
. Administration		
Sales Commission	313,911	
Labour	97,000	
Travel and Transport	90,700	
Stationary	120,100	
Board Expenses	115,650	
Bank Charges	1,250	
Locks and Chains	5,400	
TOTAL EXPENSES		955,458
NET INCOME		895,459

NOTES:

1. WSDB began selling water on April 1, 1995.

JIRAPA WATER BOARD -

IN COME/EXPENSE STATEMENT FOR 1995

APPENDIX 3

JIRAPA WATER AND SANITATION DEVELOPMENT BOARD
REVENUE AND EXPENSE STATEMENT FOR 1995 (1)

Appendix 3

	AMOUNT	SUBTOTAL
REVENUE		
Water Sales	3,015,740	
Donations	158,700	
Connection Fees	20,000	
Bank Interest	963	
TOTAL REVENUE		3,195,403
EXPENSES		
Direct		
Labour		
- Pump Attendant	260,000	
- Watchman	220,900	
- Casual Labour	100,000	
Fuel and Lubricants	1,530,200	
Supplies and Maintenance	316,963	
Transport	11,000	
Administration		
Sales Commission	242,000	
Cashier Salary	136,100	
Communication and Postage	7,000	
Board Expenses	445,800	
Transport and Travel	33,900	
Bank Charges	10,350	
TOTAL EXPENSES		3,314,213
NET INCOME (2)		(118,810)

NOTES:
1. The WSDB began operation of the water supply system on May 1, 1995.
2. A loan from the Reserve Fund was used to provide operating capital for this initial period.
3. Water sales do not include accumulated arrears of 483, 900 cedis.

JIRAPA BUSINESS PLAN -
SUMMARY REPORT

APPENDIX 4

JIRAPA WATER SUPPLY SYSTEM

Appendix 4

BUSINESS PLAN - 1996

SUMMARY REPORT

APRIL, 1996

(ALL FIGURES IN JANUARY 1996 CEDIS)

DESCRIPTION	AMOUNT IN MILLIONS of CEDIS 1995	1996	1997	2000	2005	2 010
Revenue	4.3	5.8	14.3	19.6	22.8	25.3
Expenses	4.5	5.5	10.8	11.4	11.2	11.3
Net Cash Income (Before Depreciation)	-0.2	0.3	3.5	8.2	11.6	14.0
Transfer to Reserve Fund (50% of Net Cash Income)	0	0.16	1.7	4.1	5.8	7.0
Capital Rehabilitation (3) (Actual Depreciation Related Costs Incurred)	0	0	0	0	85.5	16.9
Cumulative Cash (Less Reserves)	-0.2	0	1.7	11.3	38.0	-31.6
Reserve Fund in Cedis	5.0	5.3	7.3	18.1	50.9	97.2
Cumulative Cash (Including Reserves)	4.8	5.3	9.0	29.4	88.9	65.9

NOTES:
1. All figures in January 1996 CEDIS.
2. 1995 figures are based on 8 months actual operating data projected out to a full year.
3. The borehole rehabilitation costs of 85.5 million cedis are shown in 2005 for clarity, but actually occurs in 2007. The borehole pump replacements are budgeted for 16.9 million cedis.

Jirapa Water Supply System Revenue and Expense Summary	GWSC 1994 (direct)	WSDB 1995 (annualized)	WSDB 1996 Budget
Revenue	1,650,305	4,303,500	5,825,000
Personnel	2,309,523	1,234,000	1,554,000
Fuel and Lubricants, Stationary Plant	944,750	2,295,000	2,912,500
Maintenance	0	329,000	425,500
Vehicles and Transport	42,900	77,000	163,000
Office, administration, & other	0	554,000	440,000
Total Expenditure	3,297,173	4,489,000	5,495,000
Net Income	(1,646,868)	(185,500)	330,000