

CLASSIFICATION
PROJECT EVALUATION SUMMARY (PES) - PART I

Report Symbol U-447

1. PROJECT TITLE RURAL WATER SUPPLY			2. PROJECT NUMBER 686-0228	3. MISSION/AID/W OFFICE USAID/BURKINA
4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY)			<input checked="" type="checkbox"/> REGULAR EVALUATION <input checked="" type="checkbox"/> SPECIAL EVALUATION	
5. KEY PROJECT IMPLEMENTATION DATES			6. ESTIMATED PROJECT FUNDING	7. PERIOD COVERED BY EVALUATION
A. First PRO-AG or Equivalent FY 80	B. Final Obligation Expected FY 85	C. Final Input Delivery FY 86	A. Total \$ 14,800.00 B. U.S. \$ 13,500.00	From (month/yr.) 9/80 To (month/yr.) 3/84 Date of Evaluation Review

B. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., a/gram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
<u>DECISIONS AND UNRESOLVED ISSUES</u>		
<u>DECISIONS</u>		
1. PACD will be extended from July 25, 1984 to Nov. 30, 1985 (PIL)	DMackenzie:DEO	7/25/84
2. Extension will be financed by approximately \$2.152 million of undisbursed project funds plus \$1.228 million for a total \$3.380 million. (PRO. AG. Amend.)	GThompson:PO	12/84
3. The recommendations for a reorganization of the project management, emphasis on training and improved quality of interventions by WASH consultants has been accepted by USAID and will be negotiated/reviewed with GOUV.	DMackenzie:DEO	7/84
4. A project Paper Supplement (PPS) will be signed and Project extension authorized.	DMackenzie:DEO	7/25/84
5. Mission will designate a technically qualified and experienced Direct Hire Project Officer. (SPAR)	EMelaven:DIR	7/15/84
6. Technical assistance services during PACD extension will be provided by present prime contractor and subcontractors. (PIO/T Amend):	GThompson:PO & SER/CM	12/84
7. Expatriate long and short-term technical assistance during extension period will increase to enable technology transfer to strengthen the two institutional components and increase training and community participation activities. (PIO/T Amend)	N/A	N/A

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS			10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT		
<input checked="" type="checkbox"/> Project Paper	<input checked="" type="checkbox"/> Implementation Plan e.g., CPI Network	<input type="checkbox"/> Other (Specify)	A. <input type="checkbox"/> Continue Project Without Change		
<input checked="" type="checkbox"/> Financial Plan	<input checked="" type="checkbox"/> PIO/T		B. <input checked="" type="checkbox"/> Change Project Design and/or		
<input type="checkbox"/> Logical Framework	<input type="checkbox"/> PIO/C	<input type="checkbox"/> Other (Specify)	<input checked="" type="checkbox"/> Change Implementation Plan		
<input checked="" type="checkbox"/> Project Agreement	<input type="checkbox"/> PIO/P		C. <input type="checkbox"/> Discontinue Project		

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)		12. Mission/AID/W Office Director Approval	
Mr. George R. THOMPSON - Project Officer <i>(no sign required)</i>		Signature	
Mr. Mamadou DIALLO HER Tech DIR <i>no sign required</i>		Typed Name	
Dr. Blaise SONDO MOS Tech DIR (until 10/84) <i>no sign required</i>		Emerson J. Melaven	
Mr. D. Mackenzie <i>DM</i>		Date	
Mr. J. Ford <i>JF</i>		11/2/84	

DECISIONS AND UNRESOLVED ISSUES (CONT'D)

<u>A</u>	<u>B</u>	<u>C</u>
8. Local purchase of non-US made vehicles will be approved subject to waiver approval. (waiver)	GThompson:PO	12/84
9. Limit procurement of commodities during extension and improve efficiency by selecting experienced and efficient procurement contractor or procure directly. (PIO/Cs)	GThompson:PO	On going
10. Establish a small pump pilot as part of an ongoing project evaluation (PIO/T)	AQuattara:ENGR	2/85

UNRESOLVED ISSUES

1. Can present contractors handle the expansion of technical services to be provided under the extension?
2. Can current contract be extended on a non-competitive basis under current OMB rules and regulations?
3. At what point does the project cease acquisition and installation of the Moyno Pump and starts the use of a sturdy, low cost pump made in country?
4. Will the GOUV go along with PEC recommendations?
5. Will GOUV officials at the ministry level in Ouaga support such integration of two Ministerial entities in Bobo?
6. Will the GOUV agree to a more prominent role by USAID and the contractor in the development of peer relations in technical and management matters.

13. SUMMARY

13.1 Current project situation and progress to date:

July 84*	(296 new dug wells	130 without pumps by PACD 84
July 84	(320 drilled wells	33 without pumps installed by PACD 8
	<u>5</u> deepenings	
May 84	50 Itinerant agents trained	
July 84	200 village health workers trained	
Nov 84	170 village health committees organized, 80	
	working well,	
Mar 84	100 demonstration latrines built	
Mar 84	(1 drilling rig Ingersol Rand	
	Mack trucks, jeeps, pickups, Land Cruisers	
	10 compressors	
	Furniture for project offices and IHW training	
	rig, vehicles, pumps, spare parts	

13.2 Prospects of achieving purpose and goal

These prospects are limited which is why PACD is being extended and additional funds being requested. However, by PACD 1985 (with the actions to be undertaken) the project will contribute measurably to the improvement of the quality of life of rural people in southwestern Upper Volta by providing them with water which is safer than current sources meeting their minimal daily requirements emphasizing quantity and quality consistent with long standing GOUV priorities:

* July 84 is the estimated date of expected outputs, others are most recent data available

13.3 Major problems encountered

1. Insufficient mission management and support of project.
2. Weak overall technical project management both from a technical and operational point of view.
3. Lack of a technically and operationally qualified COP on the contractor side working with two technical directors on a peer technical management basis.
4. Expatriate specialists now substitute for Voltaique skilled labor instead of advising, training, organizing, managing, planning and transferring technology. GOUV organization charts equate Masters level experienced expats on the same level with Peace Corps Volunteers and Sanitary Assistants with the equivalent of high school plus 3 years special training.
5. Dug wells are not deep enough to provide a permanent and sufficient source of water, and are not properly developed and pump tested. Community participation levels are too low, health and socio-economic impact probably very low and too early to measure.
6. Drilled wells are not drilled deep enough, insufficiently developed and pump tested with emphasis on making the number.

wells at the expense of maximizing quantity of water and efficiency of investment, community participation almost non-existent.

7. Pumps continue to provide problems. Nickel plating substituted with chromium however, there are still low pump volume flow and mechanical advantage problems.

8. Training activities over all inconsequential and need rapid strengthening in each and every area of the project.

13.4 Overall progress

1. The project has undoubtedly increased the amount of water available to the villagers where the water points have been established; however, it is difficult to determine reliably how much recharge is being produced and what the per capita consumption is in absence of further study.

2. The project staff has a high level of energy and motivation with two new technical directors who seem willing to face challenges and take risks in initiating changes. There is more potential to make improvements now than there ever was since the start of the project.

3. After extensive delays and difficulties the physical facilities are by and large in place and so is much of the equipment needed.

4. Within a year's extension most, if not all, the original EOPS will be met with a few exceptions and this project has the potential of providing one of the best models of improving rural health and socio-economic well being through improved water supply developed in the Africa region.

14. Evaluation methodology

1. The assessment undertaken by the WASH team in February-March 1984 was not an evaluation exercise in the true sense of the word. It was an assessment requested by the Mission through AID/S&T/H/WS to assist the Mission in reviewing progress and problems to date and extension possibilities and alternatives to achieve original goal, purpose and EOPS of project without any other material changes in the project. The WASH Project Coordination and Information Center provided one of its employees Ray Isely MD.MPH, specialist in health education and community participation, Charles Pineo, Sanitary engineer and rural water resources expert, and Rifat Barokas, PhD, President, International Phoenix Corporation under subcontract with WASH, team leader and project development specialist. This assessment was undertaken in view of the fact that by PACD 1984 there would be a number of unfinished project activities and undisbursed funds due to the delays experienced in the start up stages of the project.
2. This assessment was undertaken to improve implementation during the extension stage, clarify project design and redirect resources to increase the cost effectiveness and quality of the investments and prepare estimated budgets, a management reorganization, an implementation plan and scopes of work for needed TA resources.
3. The PP states that a number of committees would be set up to evaluate this project. "The overall administration of the project will be the responsibility of a National Supervisory Committee which will include high level representatives of MORD and MPH and will meet at least twice a year to evaluate project

implementation. This committee was never formed and never took any action; neither were any meetings between AID Mission Director and Minister or subminister level officials of the two ministries in Ouaga to discuss substantive issues about the project. The coordinating committees on a departmental level have been organized but they meet only once a year to select the villages which are to benefit from the project. "The coordinating committee will be more involved in day-to-day project management as they will supervise the animatrices who are primarily responsible for implementing the village health education program."

In the project paper the first evaluation exercise was planned for midway through the project towards the end of 1981, but took place in mid 1982 and the report was made available to the Mission and GOUV in 1983. Most of its recommendations were not implemented by March 1984. The second evaluation in the PP was previewed fifteen months prior to the end of LOP, i.e. early 1983 and it took place in the form of a project assessment in March 1984.

4. The evaluation methodology consisted of the three person team working initially and then joined Victor Wehman AID/W/S&T/H/WS in the last two weeks. The team conducted in-depth investigative interviews with a large number of individuals in the Mission, GOUV expat project contractor staff, members of other organizations which have been involved or may be involved in the future with the project. The team conducted visits to 22 villages and three towns where long conversations were held, questions posed, observations recorded and data recovered to relate to project impact.

The team focused on three project areas; a) around Bobo and areas adjacent to the Mali and Ivory Coast border b) the area near and around Dano c) the area near and around Gaoua.

15.1 External factors

1. There was a change of government on August 4, 1983 and a new non-elected administration is in place at the present time. It seems that this administration is still in a transitional phase after being in government for almost eight months. This government has expressed its dislike for large projects defined as high levels of funding with large expatriate staffs. It has also expressed desires for high level professionally qualified personnel versus lower level voluntary type of expatriate assistance. This however has contrasted with the low levels of authority responsibility and work activities for which highly educated expatriates have been relegated. This appears to result from a strong nationalist need or feeling to be in tight control of all decision making. One way these external factors can effect this project is the government's reluctance to expand the quantity and improve the quality of expatriates, reduce hardware input, increase resources for soft areas such as health education and community participation and human resources development. The GOUV may not like a more prominent role for USAID and the contractor.

This project has great visibility and the government has been getting as much public relations capital out of it as possible. So while the wells have some water and the pumps are sort of working it will be referred to as an HER or Ministry of Rural Development project. As the wells dry and the pumps break down without

repair or replacement, the project will likely be referred to as a USAID project.

16. INPUTS

1. There have been substantial delays in procurement due to inefficiency of the procurement contractor and unrealistic and unfulfilled expectations of the various previous AID project officers. All ordered commodities during LOP have arrived and are in place. AAPC has not performed well at all.
2. The contractors have not been allowed to play a technical assistance (expert) role in the true technical management of the project and bring in sufficient long- and short-term technical assistant resources to affect technology transfer and behavioral change conducive to institutional building and economic development. Contractors have been used as a body shop to provide a minimum of technical resources consistent with the limited development ability and philosophy of the previous USAID project officer.
3. Training inputs and activities with three exceptions have been highly de-emphasized. The exceptions are AID inputs into the training of itinerant health agents which was highly beneficial but insufficient and too late to ensure the output consistent with PACD 1984EOPS. The second exception is AID inputs into village health worker training and the third is the participant training which although beneficial took five years to arrange and candidates still have not left at the time this PES draft is being written late March, 1984.
4. AID needs a technically qualified and experienced Project officer ASAP.

5. A limited number of locally purchased vehicles, materials and supplies; US origin spare parts and equipment will be procured. Inputs will be provided to rehabilitate wells built during 1980-1984 to bring them to their true potential.

6. The only change in the type of inputs is heavier emphasis on community participation, expert technical assistance and training with a view of the villages participating first in a limited and eventually in a major way to picking up recurrent costs in repair and maintenance of water points. There is also heavier emphasis on improved management, technology transfer across-the-board training and human resource development as well as improved well drilling and digging techniques with the emphasis on proper well siting development and pump testing.

Statement of actual progress versus project output targets

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Actual Progress	Date	Project output targets by July 1984	Remarks	
Dug wells 296	7/84	300	All dug and drilled wells scheduled for completion by July 1983 in the Project Paper.	
Drilled wells 320	7/84	320		
Pumps 157	7/84	620		
Demonstration latrines 100+	7/84	550	Moyno pump has had many field problems during project. Pump able to produce only 1.5-2.0 gallons per minute (measured in 4 villages). Pump should be reducing more than 5 gpm to reduce frustration of villagers and avoid long lines that cause villagers to use alternative, unsafe sources. Pump mechanic advantage not good. It is very hard for one small girl or woman to operate pump by herself.	
ASVs trained 200	7/84	550		
VHCs organized 170	11/83	550		
AISs trained 50	5/84	110		
Drilling Brigade 1	3/84	1		
Digging Brigade 2	3/84	2		
Pump, installation and repair teams 2	3/84	4		
Well development and pump testing team 1	3/84	4		
Recharge Drilled wells: 69% 0.5-2 m ³ /hr 31% 2 or+ m ³ /hr 4% 5 or + m ³ /hr	3/84	5m ³ /ave/hr		Dug wells: Data not available, recharge tests not performed
Drilling rigs 2	3/84	2		One furnished by project One furnished by HER and maintained by Project Some purchased by project others furnished by HER to project but maintained by project
Vehicles 50+	3/84	44		
Spare parts Ordered and received	3/84	not specified		
Materials and supplies-received as required		not specified		
Mobylettes and motorcycles-received as required		138		
Project offices 2	3/84	1		
Garage 1	3/84	1		
Warehouses 3	3/84	1		
Procurement-last shipment in/out customs	3/84	timely shipments	Procurement essentially complete	
Management-limited by AID/GOUV	3/84	USAID direct hire project manager and administrator	"To be aided by contractor team member as assistant project manager" P.27 PP.	

Actual Progress	Date	Project output targets by July 1984	Remarks
Coordination-daily by project facilitator	3/84	not specified in PP	USAID national field facilitator given extensive responsibility but no authority. He has worked hard and diligently and performed as well as could be expected without technical academic qualifications and significant professional experience in water supply and sanitation.
Tech transfer-620 pumps imported	3/84	620	Moyno pumps unsatisfactory
Health education-coverage in 200 villages.	3/84	Increase village awareness on the meaning, ways of travel, and prevention of disease in 550 villages	Inadequate technical assistance, training, promotion, materials development and villagers decision making involvement in this critical but de-emphasized element
Community participation-functioning well in 80 villages	3/84	Operational in 550 villages	
Disinfection of all wells -none	3/84	All wells to be disinfected	Absence of disinfection is against USAID policy
Well sanitation and maintenance-sanitary design not provided on all wells, inadequate drainage and structures, no disinfection	3/84	Sanitary protection and disinfection of all 620 wells. Appropriate siting and drainage for 620 wells. Latrines to be built downhill and minimum 50 meters from a well.	

PURPOSE

E.O. P.S.

VERIFICATION

To provide rural people of southwest Upper Volta with a) a potable water supply system which will meet their minimal daily requirements and b) an effective community health education program

- For 550 villages:
1. Quantity of water: 10 liters per day per person
 2. Quality of water: organic content, taste, color, smell
 3. Convenience :
 - a) time spent fetching water
 - b) distance transported
 4. Use of well water:
 - a) drinking
 - b) bathing
 - c) food preparation
 - d) laundry
 - e) livestock
 - f) gardening
 5. Health education:
 - a) awareness of villagers concerning
 - 1) What is disease?
 - 2) How does disease travel?
 - 3) What can individuals and villages do to prevent disease?

Project evaluation
 Production reports
 Sanitarians' reports
 Village survey
 Animatrices' reports

1. Quantity of water was established as a minimal of 10 liters per capita per day in 1978. The GOUV at the time had stated that it would move to 25 liters per capita per day minimum within five years (1983). The WASH team recommended a minimum of 20 liters per capita as an acceptable minimum at this time. The problem is, without a baseline study in 1978 and a followup study in 1985, there is no way to find out the minimum, average or maximum daily consumption in the project area villages and also to determine what impact has occurred due to increases in water supply and water use.

2. Quality of water was not considered a priority by the GOUV in 1978. The GOUV was much more concerned about quantity, permanency and the avoidance of wholesale migration from rural to urban areas due to lack of water during the foreseeable future.
3. In terms of convenience had the site selection of the water points had much more community participation than it has had, it would have increased by a measurable amount the convenience in time savings allowing other productive activities and leisure time.
4. The water from project wells is being used for all the items mentioned in PP EOPS plus also for brick making, construction and making dolo, a local beer, for individual and commercial purposes.

18.2 Significant Management Experiences

The project has evolved on two separate but parallel tracks with the health and wells component having minimum contact, cooperation, coordination or communication and working from two separate physical locations. The inherent need for the staff of these two components to work closely to bring about the expected results was totally ignored by the previous two GOUV Voltaique technical directors (e.g. Kagone refusing to move into an HER facility) and the USAID Project Officer when the project was getting started. The expat administrator position was created and approved both by USAID and GOUV when the technical directors realized they had no resources to respond to AID accounting and financial management information requirements.

operational level, operating as Votaique accountant. When the previous hydrogeologist could not function as a Chief of Party, this title was given to the expat administrator in the absence of anyone else to give it to. There currently is no Chief of Party that has the authority or qualifications needed for supervision of contract personnel operating in the project.

18.3 Causes of outputs not being on target

The project paper in its implementation plainly stated procurement procedures would be completed in a month, equipment would arrive in three to four months and a whole list of unrealistic outputs which have not materialized due to the usual delays in awarding both technical assistance and procurement contracts as well as substantial delays in the arrival of commodities. In brief the implementation assumptions were substantially off-base, but much in tradition of many USAID implementation plans whose primary purpose is to fulfill the need to have implementation plan and to make it look real good though hardly anybody in Washington or in the Mission believe it, if they ever read it.

5. In terms of health education there is progress through the training of itinerant health workers, and village health workers but much more remains to be done.

6. The means of verification in the logical frame work does not provide sufficiently detailed information to verify the status indicated.

18.4 Linkage between outputs, purpose and external factors

The major shortfall between the purpose and the outputs has been in the area of wells performance. Some of the wells have not been dug or drilled deep enough, have not been developed or tested adequately resulting in an unreliable water supply in terms of permanency, especially in the driest months of the year between February and May. Another area in which a major shortfall between purpose and outputs has occurred is in the timely supply of the pumps, the quality control problems with the nickel plating in the rotors, lack of spare parts and responsiveness to project needs by the manufacturer on a timely basis. The external factors of the GOUV officials wanting to keep maximum control on the management of the project viz "a Voltaique project" has slowed down the institutional improvements and tech transfer aspects. Furthermore, the mistaken insistence on purely having a demonstration latrine has not led to the expected spread effect on villagers building and paying for their own latrines. This was due to the high cost and design of the demonstration latrine. The WASH team has made recommendations to switch to a lower cost, more easily constructed latrine, built with local materials and made an integral part of community health education, participation and sanitation activities.

19. GOAL/SUBGOAL

Approved Project Goal: "To improve the quality of life of rural people in southwestern Upper Volta." No subgoal mentioned in PP. This project has contributed to the improvement of quality of life in the villages. It has been implemented in the following ways:

1. The increase of water quantity supplied and consumed has probably had an impact on improved village health. There is no way to tell for sure with current project status.
2. This increase has probably slowed down migration to other rural areas or urban areas. However, there are no hard data to prove this.
3. The increase of water in certain villages has spurred brick production and construction activities as well as dolo production which may have improved the assets and income situation of the village as a whole as well as individual villagers. The WASH team have noted this phenomenon as one of the positive results of the project.

The project is being extended in order to strengthen the goal to purpose linkages in terms of rehabilitating the water supply points, providing them with adequate sanitation and encouraging the spread of latrines not just through demonstration latrines but by directly motivating villagers to build their own latrine with low cost materials

20. Beneficiary

Villagers residing in 550 villages with an estimated population between 300 and 500 thousand are by and large the target group as defined by FAA 1964 and USAID and situated at the lower income strata of the population with significant ethnic, tribal, and linguistic differences. The

settlement pattern also varies greatly from highly dispersed villages with several kilometers between houses or small groups of houses to extremely crowded hamlets with narrow alleys running in mazes around residences. There is a definite benefit accruing to the beneficiaries in terms of a substantial increase in the marginal water supply and use made possible by the project, although it is not possible to quantify this marginal increase over the pre-project water supplies. The problem is the variation in the marginal quantity between the driest point in time of the dry season compared with the period immediately after the rains stopped and that of before the real hard rains start. The training of Itinerant Health Workers and village health workers has started to make an impact on village health though not measured at this time.

21. UNPLANNED EFFECTS

Some of the unplanned effects of the project are given below:

Due to the lack of attention given to the sanitary design and construction of the area around the wells the probability of contamination from animal feces, foraging by pigs, and puddles of grimy sludge which are foci of diseases and may eventually contaminate the water source. There is a need to make changes in the design of the structures in the project to remedy this. Project staff have to reorient their attention to the importance of providing a sanitary design and not leave a well site until it is really completed. This means until the sanitary protection requirements have been met.

22. LESSONS LEARNED

Economic development depends directly on people. Commodities

or policies by themselves do not provide sustained development. People that carry out policies and activities make development possible. Although a plethora of drilling rigs, vehicles, buildings, garages and a large payroll gives the impression of development occurring, the name of the game is can the institution carry on after all the expats have left. In terms of water supply and sanitation the work done by USAID and its predecessors have accomplished this in many Latin American countries with very substantial success. In this project there is a tremendous potential to evolve what may be one of the few recent working models of rural water supply and sanitation project conducive to improving health in Africa. It would be a real pity if it were missed due to insufficient resources and lack of interest or dedication to improve the project.

2 3. SPECIAL COMMENTS AND REMARKS

The WASH team recommended that during the extension period of the project the Mission consider the designing of a follow on project to start in 1985 with a LOP of six to seven years covering an additional five to six hundred villages building on the experience and resources generated in the current project. The PID for this project should be undertaken NLT June 1, 1984 and the PP be completed by November 1984 in order to allow sufficient time for appropriate reviews in the Mission, with GOUV and in Washington prior to funds obligation. A substantial amount of spread effects and installed capacity in the existing project will allow for a highly cost effective investment in the follow on project.

ANNEX D - LOGICAL FRAMEWORK

GOAL	Objectively verifiable indicators	Means of verification	Important Assumptions
<p>To improve the quality of life of rural people in Southwestern Upper Volta</p>	<ol style="list-style-type: none"> 1. Health Improvement <ol style="list-style-type: none"> a. decreased incidence of water related diseases such as : <ol style="list-style-type: none"> 1) shigellosis 2) amoebiasis 3) intestinal worms, etc b. decreased incidence of conditions related to dehydration c. decreased mortality <ol style="list-style-type: none"> 1) current rate overall 49.5/1000 2) current rate infants 185/1000 d. cleanliness <ol style="list-style-type: none"> 1) personal 2) environmental e. more time for educational, economic, leisure activities 	<p>Project Evaluation Health Survey MOH Statistics</p>	

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Best Available Document

PURPOSE	P.O.P.S.	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>To provide rural people of southwestern Upper Volta with a) a potable water supply system which will meet their minimal daily requirements and b) an effective community health education program</p>	<p>For 550 villages:</p> <ol style="list-style-type: none"> 1. Quantity of water: 10 liters per day per person 2. Quality of water: organic content, taste, color, smell 3. Convenience: <ol style="list-style-type: none"> a) time spent fetching water b) distance transported 4. Use of well water: <ol style="list-style-type: none"> a) drinking b) bathing c) food preparation d) laundry e) livestock f) gardening 5. Health education: <ol style="list-style-type: none"> a) awareness of villagers concerning <ol style="list-style-type: none"> 1) What is disease? 2) How does disease travel? 3) What can individuals and villages do to prevent disease? 	<p>Project evaluation Production reports Sanitarians' reports Village survey Animatrices' reports</p>	<ol style="list-style-type: none"> 1. Health benefits of project are not negated by infections of people via non-well water sources such as animals, lack of food preservation and proper food handling. 2. Health education measures will be effective in maintaining high water quality after it is drawn from the well until it is used (proper carrying and storage of water).
<p>OUTPUTS</p> <ol style="list-style-type: none"> 1. Villages selected and involved 2. Wells constructed 3. Well performance 4. Pumps/Maintenance 	<p>OUTPUT INDICATORS</p> <ol style="list-style-type: none"> 1. 550 villages 2. a) 300 hand dug wells (new wells/deepenings) b) 320 drilled wells 3. a) Well capacity b) recharge characteristics c) dependability during dry season d) \uparrow go dry 4. a) type b) yield c) \downarrow down at any given time 	<p>MEANS OF VERIFICATION</p> <p>Project evaluation Production reports Maintenance reports Training reports Construction reports Water quality reports GNES reports</p>	<p>IMPORTANT ASSUMPTIONS</p> <ol style="list-style-type: none"> 1. Villagers motivated <ol style="list-style-type: none"> a. drink well water b. bathe with well water c. use 10 liters per day per person 2. Suitable well sites be found in 550 intended villages (hydrology, social acceptability, sanitary conditions) 3. Pumps used will be appropriate and maintainable by GNS

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