WATER AND SANITATION
FOR HEALTH PROJECT

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REPROGRAMMING OF THE RURAL SANITATION PROJECT IN BOLIVIA

WASH FIELD REPORT NO. 47

AUGUST 1982

Prepared For:
USAID Mission to the Republic of Bolivia
Order of Technical Direction No. 93

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August 25, 1982

Mr. Henry Bassford
Mission Director
USAID
La Paz

Attention: Dr. Lee R. Hougen, Chief, Health and Humanitarian Assistance

Dear Mr. Bassford:

On behalf of the WASH Project, I am pleased to provide you with fifteen copies of a report on Reprogramming of the Rural Sanitation Project in Bolivia.

This is the final report by Charles Stevens and is based on his trip to Bolivia from May 16 to June 4, 1982.

This assistance is the result of a request by the Mission on January 31, 1982. The work was undertaken by the WASH Project on May 5, 1982 by means of Order of Technical Direction No.93, authorized by the USAID Office of Health in Washington.

If you have any questions or comments regarding the findings or recommendations contained in this report we will be happy to discuss them.

Sincerely,

Dennis B. Warner

Dennis B. Warner, Ph.D., P.E.
Director
WASH Project

cc: Mr. Victor W.R.Wehman, Jr.
S&T/H/WS

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Prepared for the USAID Mission to the Republic of Bolivia under Order of Technical Direction No. 93

Prepared by:

Charles S. Stevens

August 1982

Water and Sanitation for Health Project
Contract No. AID/DSPE-C-0080, Project No. 931-1176
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Washington, DC 20523

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LIST OF ABBREVIATIONS

AID/W	USAID Washington
DES	Division of Environmental Sanitation (English)
DSA	" " " (Spanish)
GOB	Government of Bolivia
MSW/PH	Ministry of Social Welfare and Public Health
PACD	Project Authorization Completion Date
PIL	Project Implementation Letter
PP	Project Paper

EXECUTIVE SUMMARY

In July 1980 the USAID program and project disbursements were frozen, and related USAID support was discontinued. USAID is now considering reactivating unfinished projects and is conducting a reprogramming review of Rural Sanitation Project Loan 511-U-058 ($4 million) and Grant 511-0458 ($310,000).

The purpose of the Rural Sanitation Project was to reduce the incidence of enteric and parasitic diseases, build institutional capability within the MSW/PH-DES, construct new water supply and latrine facilities, educate participating communities in improved health practices, and collect and evaluate data on the health impact of water-related improvements. During the four and a half year loan disbursement period, the Project expected to help finance 200 water systems and 7,600 latrines in communities from 50 to 800 inhabitants. It also expected to provide health/hygiene education and instruction in systems maintenance to the estimated 76,000 direct beneficiaries (11,000 families). The target communities were to be located in the Departments of Cochabamba and northern Chuquisaca.

From its inception with the signing of the Project Agreement in September 1977, until disbursements were discontinued in July 1980, implementation was generally slow. Only six water systems and 500 latrines, all within the Department of Cochabamba, were completed. The original implementation schedule called for the completion of 100 systems and 3,800 latrines, with 50 percent to be constructed by July 1980.

Joint USAID/DES evaluations subsequent to the July 1980 disbursement freeze identified implementation constraints, which included limitations in DES central office Project support experience, lack of DES administrative capability, and deficiencies in the provision of GOB counterpart funding. PIL No. 8 of October 7, 1980, reflected these findings and requested specific corrective measures. Despite the USAID funding freeze, however, the DES continued to make progress in resolving its internal administrative problems.

However, the lack of funding and the resultant lack of materials limited water system construction. In mid-1981, the USAID recommended, and AID/W approved, an interim loan disbursement of $250,000 for materials purchases ($150,000 from offshore sources and $100,000 for local procurement) to maintain a minimum level of project activity. Based on this procurement, the DES now (May 1982) shows a total of 19 completed systems and projects 43 completions by December 1982.

A review of the available funding shows a loan balance of $3.264 million and a grant balance of $227,000, totalling $3.491 million (original total $4.310). Because of inflation, a reduction in the number of water systems to about 175 (original total 200) is now projected. This reduction would result in a balance of about 130 systems to be constructed with 43 systems projected for December 1982 completion.

To meet this goal, the DES is proposing additional field offices--four in the Department of Cochabamba and one in Chuquisaca. When staffed as planned, each field office will be responsible for the construction of 10 systems annually for a total of 50 water systems per year. A contract extension to June 30, 1985 is indicated in order to construct the remaining 130 systems beginning January 1983.

Suggested conditions for continued USAID financing include the submission of a revised Project Implementation Plan, with the scheduling all major events, procurement of materials and consultant services, arrangements for organizing field offices, the meeting of vehicle/equipment maintenance requirements, and providing adequate materials/equipment warehousing. Equipment and materials would be procured in two phases, one-half of the project needs initially, with the remaining half of the procurement deferred pending a project review and evaluation in early 1983.

Chapter 1

INTRODUCTION

The Water and Sanitation for Health (WASH) Project, Order of Technical Direction (OTD) Number 93, issued by the AID Office of Health, authorized the provision of Technical Assistance to the USAID Mission in Bolivia in a reprogramming review of its Rural Sanitation Project, Loan 511-U-058 and Grant 511-0458.

1.1 Scope of Work

The WASH consultant was requested to assist the Mission in carrying out the list of activities stated in its reprogramming cable, La Paz 0594 of 31 January 1982, Annex I. Specifically, the consultant was to assist the Mission and the Division of Environmental Sanitation (DES) of the Ministry of Social Welfare and Public Health (MSW/PW) in establishing "a simplified information and accounting system that controls and reports project expenditures and includes USAID, counterpart and community contributions." The consultant was to leave requested documentation in draft form before he left Bolivia. Inasmuch as this was to be a reprogramming effort, many of the documents were for the Mission's immediate needs and as such will not be included in the final report.

This report covers the work and findings of the consultant during his stay in Bolivia from May 16 through June 4, 1982. During this period he reviewed the Project with USAID and the Division of Environmental Sanitation both in La Paz and Cochabamba. A two-day (May 26-28) visit to Cochabamba allowed discussions with field personnel from Cochabamba and Sucre, together with a visit to selected completed systems in the Cochabamba area. Originally it had been planned to visit Sucre also, but cancellations of the limited available flights prevented this. The DES Sucre staff engineer and one technician, however, came overland and met with USAID and other DES personnel in Cochabamba.

1.2 Project Background

The purpose of the USAID Rural Sanitation Project is to:

(1) Reduce the incidence of enteric and parasitic diseases among participating villagers;

(2) Build an institutional capability within the Ministry of Social Welfare and Public health (MSW/PH) and the Division of Environmental Sanitation (DES):

(a) to construct new water supply and latrine facilities;
(b) to educate participating communities in improved health practices;
(c) to collect data in order to evaluate the health impact of water-related improvements on participants.

To achieve this purpose, USAID/Bolivia proposed to: 1) assist the DES with the resources (equipment, materials and technical assistance) necessary to strengthen their institutional base; and 2) to demonstrate, through the construction of approximately 200 sanitation systems, the ability to effectively utilize significant amounts of resources.

During the proposed four and a half year loan disbursement period, it is planned that the Project would help to finance a DES program to construct 200 water supply systems and 7,600 latrines, as well as to provide health and hygiene education and instruction in systems maintenance in communities ranging from 50 to 800 inhabitants, with 76,000 direct beneficiaries (11,000 families). The target communities would be located in the Departments of Cochabamba and northern Chuquisaca.

Total financing for the Project amounted to $6,810,000 including USAID loans and grants, Government of Bolivia funds, and community counterpart funds. The breakdown of this funding by category and contribution is shown in Table No. 1 which follows.

In developing the program for the implementation of the Project, a critical performance indicator description was prepared to identify and schedule the critical actions necessary to assure compliance and performance in accordance with the Project goals and objectives. Table No. 2, which follows, shows the projected scheduling of the critical performance actions based on the signing of the Project Agreement on June 30, 1977. The Project Agreement was actually signed on September 16, 1977, and therefore some minor revision to this scheduling would be indicated.

1.3 Project Progress

Reviews conducted by the USAID have shown that, from its inception in 1977 until disbursements were discontinued following the July 17, 1980 coup, implementation progress was unsatisfactory in the MSW/PH-DES central office in La Paz, limited in the DES Cochabamba regional office and practically non-existent in the DES Sucre regional office (see Appendix D, La Paz 0594). For example, within the Department of Sucre, no implementation actions leading to construction activities had been initiated, and only six water systems and 500 latrines had been completed in the Department of Cochabamba whereas, the original implemen

Table No. 1 Planned Financial Inputs*
(thousands of US dollars)

Categories	AID Contribution Loan	Grant	Total	GOB	Communities	Grand Total
1. Technical Assistance	358	278	636	-	-	636
2. Training/Education	175	-	175	-	-	175
3. Systems Construction	2,858	-	2,858	867	750	4,475
a) Equipment	567	-	567	-	-	567
-Vehicles/Drilling	405	-	405	-	-	-
-Engineering/Drafting	142	-	142	-	-	-
-Office Equipment	20	-	20	-	-	-
b) Materials	1,805	-	1,805	379	383	2,567
c) Contracted Labor	486	-	486	-	-	486
d) Skilled Labor	-	-	-	488	-	488
e) Unskilled Labor	-	-	-	-	367	367
4. Support Costs	25	-	25	883	-	908
a) Fuel and Lube	-	-	-	18	-	18
b) Operating Expenses	-	-	-	98	-	98
c) DES Personnel and Per Diem	-	-	-	688	-	688
-Engineering	-	-	-	502	-	502
-Office Support	-	-	-	186	-	186
d) Warehouse Construction	-	-	-	79	-	79
e) Evaluations	25	-	25	-	-	25
SUB-TOTAL	3,416	278	3,694	1,750	750	6,194
Inflation (8%)	270	-	270	-	-	270
Contingencies (10%)	314	32	346	-	-	346
TOTAL	4,000	310	4,310	1,750	750	6,810

* Planned Financial Inputs based on the following documentation:

1) ProAg Amendment No. 1, March 3, 1978;
2) ProAg Amendment No. 2, January 11, 1979;
3) ProAg Amendment No. 3, March 21, 1980; and
4) Project Implementation Letter No. 7, June 27, 1980

Table No. 2. Critical Performance Indicator Description

1. 3/31/77	Project authorized. Action: AID/W.
2. 5/31/77	Initial community survey begins. Action: DSA.
3. 6/30/77	Project agreement between AID and GOB signed. Action: USAID, GOB.
4. 9/30/77	IFB for all project equipment and RFP for long-term administrative advisor issued. Action: USAID, DSA.
5.10/31/77	Initial conditions precedent met. Action: DSA.
6. 1/31/78	Bids awarded and contracts signed and approved for project equipment and long-term administrative advisor. Action: DSA,USAID.
7. 3/3/78	Long-term administrative advisor on board. Action: DSA, USAID, advisor.
8. 4/30/78	Final design and format for project evaluation completed. Action: DSA, Division of Epidemiology.
9. 5/31/78	Analysis of individual subprojects begins. Action: DSA
10. 7/31/78	Education trials completed and an education program begins. Action: DSA
11. 9/30/78	RFP issued for long-term maintenance advisor. Action: DSA, USAID.
12.10/31/78	First annual evaluation of program, concentrating on Management Information System (MIS) and process of project conducted and report written. Action: DSA, USAID.
13.10/31/78	All project equipment arrives in Bolivia. Action: Suppliers.
14.10/31/78	Baseline data collected for impact evaluation. Action: DSA, Division of Epidemiology.
15.11/30/78	Water sytem construction begins. Action: DSA, communities.
16. 3/31/79	Long-term maintenance advisor on board. Action: DSA, USAID, Advisor.
17.10/31/79	Annual project evaluation conducted (See #12). Action: DSA, USAID.
18.11/30/79	At least 60 water systems completed and in operation. Action: DSA.
19.10/31/80	Annual project evaluation conducted (see #12). Action: DSA, USAID.
20.11/30/80	At least 120 water systems completed and in operation. Action: DSA.
21. 1/31/81	First evaluation of project impact completed and report written. Action DSA, USAID, Advisors.
22.10/31/81	Annual project evaluation conducted (see #12). Action: DSA, USAID.
23.11/30/81	At least 180 water systems completed and in operation. Action: DSA.
24. 3/31/82	TDD 200 water systems completed and in operation and second evaluation of project impact completed and report written. Action: DSA, USAID, Advisors.
25.10/31/82	Ex-post evaluation completed. Action: DSA, USAID.

tation plan called for the completion of 100 systems and 3,800 latrines, 50 percent of the construction component of the project by July 1980 (see Table No. 2).

A joint USAID-DES evaluation completed in July 1980 identified constraints to implementation which included:

(1) Limited DES central office experience in supporting the DES regional office technical and construction units;

(2) Lack of DES administrative capability in the performance of loan funded international procurement combined with an inability of DES/Cochabamba to do local procurement;

(3) Lack of initiative of DES in developing programs and schedules for training and technical assistance;

(4) Deficiencies in the timely provision of GOB counterpart funds which affected DES implementation efforts;

(5) A five-month delay in meeting conditions precedent for disbursement and a 28-month delay in project implementation through June 1980.

Project Implementation Letter (PIL) No. 8 dated October 7 (see Appendix E) reflected the findings of the joint evaluation and requested specific corrective actions which included:

(1) the presentation of a series of revised and updated implementation activities and plans including those for the completion of the water systems and latrines to be constructed, technical assistance, training for technical staff and communities, and a proposed monthly information reporting system;

(2) the establishment of a procurement unit within the DES;

(3) the plan for DES reorganization to establish an internal accounting system and to increase regional office capability to design, implement and supervise water system construction.

Although USAID disbursements were frozen following the July 1980 coup, the DES continued to make progress on resolving problems cited in PIL No. 8 and also performed some minimal water system and latrine construction in the Department of Cochabamba using the materials on hand. An April 1981 USAID program review indicated that the Rural Sanitation/DES Project had submitted documentation which addressed three quarters of the earlier problem issues. This review also indicated that

DES/Cochabamba, for lack of materials which reflected very limited future project activity, was in danger of losing its technical staff once work was completed on the remaining water systems then under construction, a loss which would seriously jeopardize the future of the project.

Based on these findings, USAID recommended, and AID/W approved, the disbursement of $250,000 for materials purchases, $150,000 worth from offshore sources and a value of $100,000 for local procurement, to maintain a minimum level of activity and to keep the project viable. The mid/late 1981 purchase of local materials maintained minimal construction progress in the Department of Cochabamba. The lack of vehicles and equipment, together with the minimal supply of materials, however, still precluded the initiation of construction in the Department of Chuquisaca. The off-shore procurement was awarded in early 1982, and the first shipments are now enroute and expected to arrive at port Matarani, in Peru in late June 1982.

Although the DES has taken a series of necessary corrective actions to respond to the problems delineated in PIL No. 8, a number of key problem areas remain. These include:

(1) the need to compress a DES revised implementation plan which would require a nearly four-year extension to the original March 16, 1982 Project Authorization Completion Date (PACD);

(2) the need to decentralize DES responsibilities and provide logistic support to DES Regional offices in Cochabamba and Sucre;

(3) the need to reorganize the DES personnel and operating structure to improve its technical, financial, and administrative capability to include purchasing and procurement capability;

(4) the need to simplify the DES information and accounting system for reporting project progress and the financial status of systems being constructed;

(5) the need to improve the institutional capacity of DES to expand activities to the northern provinces of the Department of Chuquisaca;

(6) the need to purchase the additional well drilling equipment, vehicles and materials consonant with project implementation;

(7) the need to increase counterpart contributions.

Chapter 2

PROJECT REVIEW

Reviews were conducted by the WASH consultant between May 16 and June 4, 1982 with the USAID alone and with USAID together with DES/La Paz, Cochabamba, and Sucre supervisory staff to determine the current (May 1982) status of the project. The review also provided information and data for addressing the nine issues to be negotiated with the DES during the project reprogramming requested in La Paz cable 0594, paragraph V.B., Basis for Determination, paragraphs 1 through 9, pages 19 through 22 (see Appendix A). The DES is completing its report in response to these issues as a result of guidance and discussion with USAID staff and the consultant.* In addition, the consultant conducted interviews with CORPAGUAS, World Bank financed projects, and CARE (PVO financed by AID) supervisory staff to review their experiences in the planning and construction of community water supply systems in Bolivia.

Initially, a review was made of the financial plan to determine the amount of funding remaining following project disbursements and obligations to date. Table No. 3 which follows presents a breakdown by category of the USAID loan and grant disbursements and obligations, together with the balance remaining as of May 1, 1982.

The major drawdown is that for loan-funded materials (pipe and accessories) in the amount of $638,000 with some loan funds ($83,000) expended for office/engineering equipment and motorbikes and grant funds ($83,000) for technical assistance in the administration area as provided by a third-country Colombian engineer who also assisted in the project development and preparation of the Project Paper (PP). For training/education, a minor amount of $12,000 has been expended for third-country engineering training in community water supply development/operation/ maintenance and in groundwater exploration and development conducted in Peru and Colombia. A total loan/grant balance of nearly $3.5 million remains, and it is presumed that this amount can be redistributed among the various categories as needed to complete the project.

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* It had been planned to attach the DES report as an annex to this report. However, there have been unforseen delays in its reproduction. Therefore, at this time, preliminary summary data from the DES findings and results of conversations with supervisory personnel can only be discussed within the appropriate subject headings.

Table No. 3 Loan/Grant Balance Remaining
($000)

Category	AID Contribution*			Disbursement/ Obligation			Balance Remaining
	Loan	Grant	Total	Loan	Grant	Total	
1.Technical Assistance	358	310	668	0	83	83	585
2.Training/Education	175	-	175	12	-	12	163
3.Systems Construction	3,442	-	3,442	724	-	724	2,718
a)Equipment	683	-	683	83	-	83	600
-Vehicles/Drilling	488	-	488	38	-	38	450
-Engineering/Drafting	171	-	171	36	-	36	135
-Office Equipment	24	-	24	9	-	9	15
b)Materials	2,174	-	2,174	638	-	638	1,536
c)Contracted Labor	585	-	585	3	-	3	582
d)Skilled Labor	-	-	-	-	-	-	-
e)Unskilled Labor	-	-	-	-	-	-	-
4.Support Costs	25	-	25	0	-	0	25
a)Fuel and Lube	-	-	-	-	-	-	-
b)Operating Expense	-	-	-	-	-	-	-
c)DES Personnel and Per Diem	-	-	-	-	-	-	-
-Engineering	-	-	-	-	-	-	-
-Office Support	-	-	-	-	-	-	-
d)Warehouse Construction	-	-	-	-	-	-	-
e)Evaluations	25	-	25	0	-	0	25
TOTAL	4,000	310	4,310	736	83	819	3,491

* Inflation (8%) and Contingencies (10%) per Table No.1, Planned Financial Inputs, have been distributed within Category 3, System Construction.

A preliminary summary of available information in the DES/La Paz central office has indicated that the GOB project disbursements through December 1981 amounted to $961,000. This amount included the following: $585,015 or 100 percent of DES/Cochabamba staff salary and per diem costs chargeable to the project; $184,980 or 60 percent of DES/La Paz staff salary costs chargeable to the project; $15,938 for fuel and lubrication costs; $75,000 for construction of DES/Cochabamba district office and warehouse. Of interest, is the sum of DES/Cochabamba and DES/La Paz personnel costs chargeable to the project totalling $769,995, which exceeds the funding programmed of $688,000. This is a reflection of the lack of materials, vehicles and equipment when salary costs continued but there was minimal progress in construction.

Thus, the total GOB support costs contribution (Item 4 of Table No. 1) may now exceed that originally programmed when all data and information are accumulated. However, it should be recognized as a type of on-going cost which may not always be contributing directly to the construction of water supply systems.

2. Revision of the Implementation Plan

The DES summary report will show a total of 19 completed systems as of May 1982 or about 10 percent of the total originally planned. All are located in the Department of Cochabamba and serve a total population of 7,722 who have constructed 3,158 latrines, roughly 10 percent and 40 percent, respectively, of original project construction objectives. It is further projected that, with materials resulting from the late 1981 local purchase and early 1982 off-shore procurement, 19 additional systems can be constructed in the Department of Cochabamba, and work will be initiated in the Department of Chuquisaca with the completion of five systems. Of the 19 systems to be constructed in the Department of Cochabamba, emphasis in the Chapare province will result in the placing of one-half these systems in this priority area.

On this basis, 43 systems will be completed by the end of 1982, representing an advance of nearly 22 percent in system completion. A population of 16,936 (22 percent of the goal) will be served, and a total of 5,658 latrines (74 percent of the objective) will be completed of the original project goals (200 systems completed and 7,600 latrines to benefit a population of 76,000). One hundred and fifty seven water systems for a population of nearly 60,000 and about 2,000 latrines would remain to be constructed.

The DES summary will also present a listing of 212 potential candidate communities, 151 in the Department of Cochabamba and 61 in the Department of Chuquisaca, representative of a total population of 66,593, for inclusion in future work beginning in

1983. However, it is planned that emphasis will continue to be placed on the 28 listed communities in the newly developing area of the Chapare province of the Department of Cochabamba consonant with AID's focus on the La Paz-Cochabamba-Santa Cruz corridor.

Project delays which have carried the implementation beyond the project of March 16, 1982 will result in increased costs and a reduction in the number of systems to be completed. During 1981 and 1982 inflation has exceeded the eight percent provided in the project financial plan. The Bolivian peso has gone from nearly 25 to the U.S. dollar to nearly 100, a four fold deflation. This will tend to increase local costs for transport, contract and skilled labor, and also for fuel and lubrication expenses. The cost of community labor which in an in-kind contribution is not representative of a direct cost, although inflationary influences could result in a higher assigned monetary value. Off-shore inflationary influences although not as rampant as in the past, will still affect the cost of materials, both for local and for off-shore procurement, resulting in possible reductions in the amounts that may be procured within available funding.

Higher local costs are particularly true of the Chapare region. Because of its isolated location, transport and skilled labor costs are high. With 100 meter property frontages, the population is relatively scattered and dispersed. Also to date the systems with the nearest and most easily developed sources of supply have been executed, and now systems with more costly distant sources will need to be developed. Therefore, to minimize costs, only fully urbanized population concentrations will be considered for water supply systems.

The DES advises that the other GOB agencies are becoming aware of the dispersion problem. Plans are now being considered to develop and encourage population concentration for home sites from which inhabitants would work neighboring farmlands as was done in the AID San Julian project.

Based on the foregoing, it is projected that available funding would complete about 130 of the remaining 157 systems programmed, a reduction of about 17 percent. It is also projected, however, that nearly all the planned 76,000 people will be reached and more than the programmed 7,600 latrines will be constructed. To allow for the maximum procurement of equipment and materials, a surplus, as discussed later for Technical Assistance and Training/Education, of about $360,000 could be transferred to Systems Construction, increasing this category of loan funding now $2.7 million, to about $3.0 million, see Table No. 3 (above).

Considering that the proposed decentralization and reorganization of DES will result in five field offices, four in the Department of Cochabanba and one in the Department of Chuqui-

saca as will be discussed later, it is projected that 50 systems per year can be constructed after the full reorganization takes effect beginning in 1983 This would indicate a revised scheduling of about two and a half years after January 1, 1983 or an extension of the PACD to June 30, 1985. The procurement and related materials, logistics, and funding support needed to meet this schedule is also discussed below under their appropriate headings.

2.2 Completion of DES Reorganization Actions

Three main organization issues are herein discussed.

2.2.1 Procurement

The DES does not propose to staff and organize a purchasing department. It feels that the intermittent procurement necessary to maintain progress can be done through a Ministry coordinating committee. The DES after earlier failures, has completed two successful loan-funded procurement actions, one for local procurement based on calls for quotations and a second for off-shore procurement based on AID formal bidding procedures. The proposed Ministry committee would be comprised of representatives from the offices of the DES, Legal, Administration, Finance and the division of national health (DNH), the office to which DES reports. USAID representation would also be requested.

A review of its latest specifications indicates that the most recent experience has resulted in acceptable standards. The original specifications were prepared in Spanish and these appear more than adequate. However, the English translation appears lacking and is inconsistent with the Spanish version in many places, indicating a need for closer checking and editing. DES advised that the translation is a joint DES/USAID effort, done in haste, and that the editing needed to make the two versions consistent.

The DES has prepared a listing of the materials, equipment, vehicles, and office supplies needed to complete the project. These listings are based on the original project needs from which the procurement to date has been deducted leaving a balance of procurement yet to occur. This balance, namely of pipe and accessories, is further divided into two lists--one for local procurement and one for off-shore purchase. The local procurement comprises materials needed by the project into early 1983 (or until the arrival of the off-shore materials), vehicles and equipment scheduled to arrive in early to mid 1983. This presumes an early AID/W (July 1982) authorization to proceed, and off-shore procurement awards in October 1982. Proposed scheduling is presented below.

The listing for the total procurement for systems construction amounts to over $3.0 million, whereas Table No. 3 shows a balance of $2.7 million for this category. As will be discussed below, an indicated surplus of funding for category one (technical assistance) of nearly $360,000 could be shifted to category three (systems construction) to provide the $3.0 million as now appears needed.

The listing reportedly includes all materials needed to complete the total number of systems as originally planned (200). Bids will be taken for the quantities as shown, and the amounts to be actually procured will depend on the unit prices offered by the bidders and on the amount of funding available. As previously noted, inflationary influences indicate some cutback may be necessary. Bidding documents should allow a 25 percent variation in quantities (up or down) without affecting the unit prices of the bidder to permit changes and to allow for the purchase of the types and quantities of materials that can most effectively respond to the project needs. These listings will be subject to further review and revision at the time of the preparation of the procurement bidding documents.

Two unfavorable aspects which relate to procurement were noted in the field trip to Cochabamba. One concerned types of vehicles (namely, trucks and dumptrucks) and the other concerned the available storage area. GOB counterpart funds of $75,000 financed the construction of the Cochabamba regional facility which included office and laboratory space, warehouse, storage space, and a vehicle repair shop. The warehouse space appears limited and poorly planned for the type and amount of PVC distribution pipe and project-related accessories, such as pumps, motors, cement, reinforcing steel, etc. The property has a very limited open area beyond that occupied by the office building and warehouse. Thus, it would appear that such limited open and warehouse space will not accommodate the materials procurement contemplated, and alternative means for storage and warehousing need to be explored. Normally pipe would be stacked in an open storage area. PVC pipe, however, requires some sort of overhead cover (not totally enclosed) for protection from the sun. Storage of most other system accessories will need a fully enclosed warehouse.

The procurement list now includes three trucks, a reduction from an original listing of five which included two dump trucks. When the need for these was questioned, references were made to the need for transporting materials to building sites and the transport of selected construction materials such as sand, gravel, cement, etc.--in some cases, over long distances. The author noted that these were intermittent and non-continuous needs, and, therefore, contracting as needed would appear to be a more practicable approach. However, the DES feels that, considering the total number of systems contemplated and the isolation of these systems within rural areas with very limited transport facilities, at least three trucks will be needed to maintain progress.

Vehicle maintenance facilities are non-existent at the Cochabamba DES field office. A covered work space has been provided with no flooring, no work benches, and no tools. At present two older vehicles, a 20-year old pick-up, a small jeep transferred from the USAID Montero project, and some motorbikes appear to be serviced as the need arises and as funds can be made available. An unattended damaged motor bike was noted lying in the warehouse.

It is questionable that the capability exists to maintain the light vehicles, such as jeeps and pick-ups, in the numbers proposed for this department, let alone the trucks to be added. It would appear that consideration should be given to contracting all vehicle maintenance to insure reliability and continuity of operation.

Considerable discussion took place on the type and capacity of the well drilling rigs to be procured. From two rotary types capable of drilling to a depth of 1,000 feet, it was decided that one rotary and one percussion rig, each capable of drilling a four-, six-, eight- or 10-inch diameter hole to a depth of 500 feet, would be listed. In addition, the bidding documents would include the services of an experienced well driller for a period of four months, to instruct the local personnel in the use of newly-acquired drilling rigs. If needed this period could be extended, dependent on the outcome of the basic instruction.

2.2.2 Internal Accounting System

It had been originally proposed to seek technical assistance to provide guidance in establishing a modern system of control and to upgrade the capability of existing personnel. The USAID Controller's office has indicated that it is prepared to assist in resolving this issue, and the type of technical assistance, as heretofore contemplated, was changed with the concurrence of USAID/Bolivia.

A local consultant controller/accountant would be retained throughout at least 30 months of the 36-month implementation period to supplement and assist in implementing the USAID assistance and the administration/operations consultant advice, as discussed later. This will assist and provide continuity to the DES in developing a system of fiscal and procurement accounting and help to eliminate the deficiencies encountered heretofore.

USAID will require, hereafter, that all GOB/USAID project offices of jointly financed projects be staffed with administrator/controller personnel. This has become necessary because of the general deficiencies in fiscal data and information on joint GOB/USAID projects and programs. This requirement will be followed in the staffing of the five new regional DES offices to be organized in the project area.

2.2.3 DES Regional Offices

Present plans call for the opening of four regional offices in the Department of Cochabamba located at Punta, Cochabamba, Villa Tunari, and Aiquile, and one regional office in the Department of Chuquisaca located at Zudanez (see Figures 1 and 2 respectively). The Zudanez office would be supplemented with assistance from the Sucre district office for projects nearer Aiquile and off the Cochabamba road.

The new Department of Cochabamba regional offices would basically promote, plan, design, and construct the water systems and each would be staffed as follows:

1 Engineer, chief
1 Administrator/Controller
1 Technical Supervisor
4 Technicians
1 Surveyor/Draftsman
1 Mason
1 Driver

One pick-up truck and 5 motorbikes would be assigned to each office.

The Department of Sucre regional office would be staffed as follows:

1 Engineer, Chief
1 Administrator/Controller
2 Technical Supervisors
8 Technicians
1 Surveyor/Draftsman
1 Mason
1 Driver

One pick-up truck and 10 motorbikes would be assigned to this office.

Each department would have a supervisory District Engineer located at Cochabamba and Sucre, respectively, and the DES/USAID project coordinator with his staff would be located at La Paz. It is estimated by the DES that about 80 percent of La Paz staff time is devoted to the Rural Sanitation project, together with 100 percent of the Cochabamba district engineer office staff time. To date, Sucre staff with no real progress shows no time on this project.

Figure 1

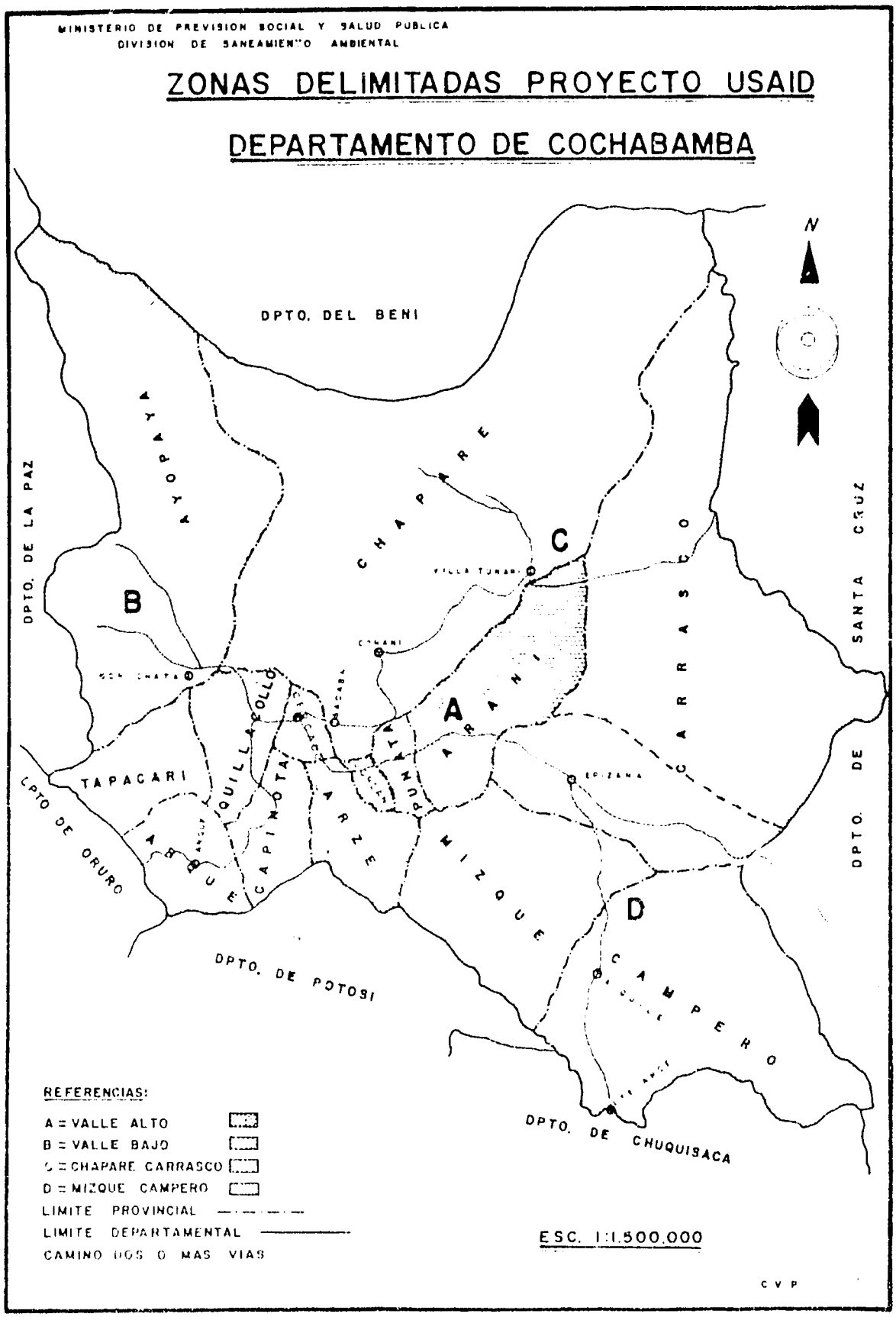
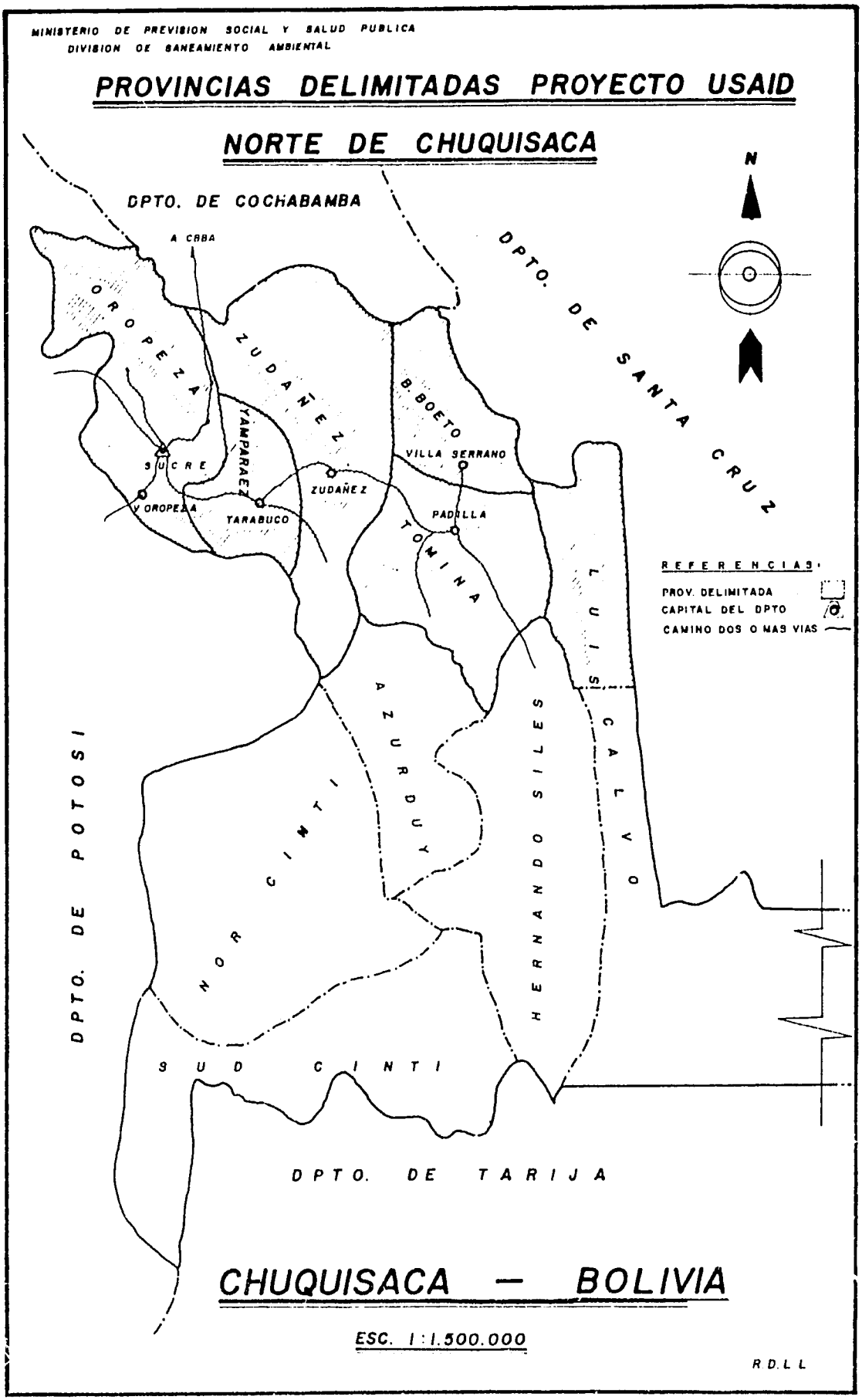

MINISTERIO DE PREVISION SOCIAL Y SALUD PUBLICA
DIVISION DE SANEAMIENTO AMBIENTAL
ZONAS DELIMITADAS PROYECTO USAID
DEPARTAMENTO DE COCHABAMBA
N
DPTO. DEL BENI
DPTO. DE LA PAZ
DPTO. DE SANTA CRUZ
DPTO. DE ORURO
DPTO. DE POTOSI
DPTO. DE CHUQUISACA
AYOPAYA
CHAPARE
CARRASCO
ARANI
TAPACARI
QUILLACOLLO
CAPINOTA
ARQUE
ARZE
MIZQUE
CAMPERO
A
B
C
D
VILLA TUNARI
COHANI
REFERENCIAS:
A = VALLE ALTO
B = VALLE BAJO
C = CHAPARE CARRASCO
D = MIZQUE CAMPERO
LIMITE PROVINCIAL
LIMITE DEPARTAMENTAL
CAMINO DOS O MAS VIAS
ESC. 1:1.500.000
C V P

Figure 2


MINISTERIO DE PREVISION SOCIAL Y SALUD PUBLICA
DIVISION DE SANEAMIENTO AMBIENTAL
PROVINCIAS DELIMITADAS PROYECTO USAID
NORTE DE CHUQUISACA
DPTO. DE COCHABAMBA
A CBBA
DPTO. DE SANTA CRUZ
OROPEZA
ZUDAÑEZ
B. BOETO
YAMPARAEZ
SUCRE
VILLA SERRANO
ZUDAÑEZ
V OROPEZA
TARABUCO
PADILLA
TOMINA
LUIS CALVO
HERNANDO SILES
AZURDUY
NOR CINTI
SUD CINTI
DPTO. DE POTOSI
DPTO. DE TARIJA
N
REFERENCIAS:
PROV. DELIMITADA
CAPITAL DEL DPTO
CAMINO DOS O MAS VIAS
CHUQUISACA — BOLIVIA
ESC. 1:1.500.000
R.D.L.L

Office space, to be rented at each regional office location, will most likely consist of a home with staff dormitories upstairs and office and working space downstairs. In some cases, the participating communities may provide needed office and dormitory space. DES supervisory staff advised that, except for the administrator/controller, a new position, the staff to be assigned and transferred to the regional offices were currently on the DES payroll. Some degree of in-house training, however, would be indicated for the newer technicians who would be assigned to the project.

One potential problem, extremely low salary scales, which has caused much turnover in DES staff, was raised by the Cochabamba engineers. Engineers receive about 12,500 pesos ($125) per month, and it will be extremely difficult to encourage engineers to accept regional office assignments without some additional reward which they feel should be as much as 100 to 150 percent of the low base salary. This will be particularly true of isolated sites like Villa Tunari and also of the administrator/controller position. Other non-professional staff are generally assigned to the field and are accustomed to working under the isolated conditions of the regional field offices. Salaries are frozen, and increases are beyond the control of the DES supervisory staff. Possibilities for added benefits for professional staff, when assigned to regional offices, are being explored with the Ministry and its finance offices.

It was also learned that a new public health school, under the MSW/PH, located adjacent to the DES Cochabamba District Office has offered the District Engineer a higher salary, 16,000 pesos ($160) versus his current 12,500 pesos ($125) per month to join its faculty. Unless something is done to raise DES professional salary scales, staff will continue to be lost, and oddly enough to other divisions of the same ministry.

The administrator/controller is a new position, recommended in order to provide fiscal and materials controls at each regional office, a function which has been neglected to date. The positions for this calendar year within DES have been established and although no new ones appear possible, a mid-year staffing review may result in new positions. The staffing of the Sanitary Unit of the MSW/PH, to which DES reports, will be examined for its potential for providing this service, possibly through the transfer of such positions to the DES. In the next calendar year, beginnning in 1983, however, these positions will be budgeted within the DES.

Another possible constraint is the need to coordinate the planning and design with the construction. The Regional Office Engineer will be responsible for the implementation of both planning and construction. To allow full emphasis on the critical phase of construction, it is proposed to relieve the regional offices of initial planning and design responsibil-

ities. The planning and design for the future systems would be accomplished by two teams of one engineer and one surveyor each which would be either contracted under the Technical Assistance category or provided on a TDY basis from the La Paz staff.

It is understood that this latter TDY alternative has not always worked out for lack of close coordination during the work in that the TDY engineers would collect basic data in the field and do the design in La Paz. Inconsistencies requiring field checks by Cochabamba area engineers seemed to increase rather than to reduce area personnel work loads. Thus, it would appear that the contract route may be the more cost-effective and productive for the project.

The four regional offices in the Department of Cochabamba, once staffed and provided with equipment, vehicles and construction materials, should be capable of implementing and completing 30 to 35 systems per year, presuming that each technician oversees two systems per year. Within the Department of Chuquisaca, the net projected result would be 15 to 20 systems per year. The DES personnel advise that such scheduling is within its capacity, if logistic support in funding, vehicles, equipment and materials is forthcoming. They report that under such conditions the construction of systems for 500 to 700 people have been completed in one to two months.

2.3 Revision of Information System

Simplified tabulations have been prepared by USAID, and these, with some modifications, will be incorporated into the future reporting of the water supply systems. Two suggested forms have been developed, one to follow the progress of construction and the second to summarize the cost data. Once completed, they will be incorporated into the DES report now in preparation.

In the construction report the proposed tabulation identifies the community and presents its population; shows the source and type of system (gravity or pump); status of planning and design (promotion, feasibility review, and final plans); construction progress in terms of percent by system element (date agreement signed, date construction initiated, source, storage tank, distribution, overall); date completed; number of house connections and/or public taps (programmed and installed); number of latrines (programmed and installed). In this way a glance at this one table, to be updated quarterly, will state progress for each Department (Cochabamba and Chuquisaca).

A second table will identify the distribution of construction costs, to be delineated by amount and percent of the total for each participant, AID, GOB and community. Similar data will be prepared to show progress and identify current status for the training, technical assistance, and procurement components of the project.

2.4 Inclusion of Larger Sites

The current project limits itself to rural communities ranging from 50 to 800 inhabitants. Generally, the size of community for which systems have been completed has averaged about 500 inhabitants.

To overcome the inflationary impact on project resources and to help reduce the cost of delivering project services, an increase in the size of communities to as much as 1,500 inhabitants was initially considered. It was not expected that such increase in community size would affect or reduce the number of beneficiaries (76,000) to be reached.

However, a review of the GOB summary data for the 1976 census shows a limited number of communities in the 1,000 to 1,999 range, seven in all the Department of Chuquisaca (project is concentrated in northern provinces only) and 22 in the Department of Cochabamba. Therefore, in view of this limited number of such communities, some of which already have water supply systems, it has been determined that the project should proceed as planned with no particular concerted effort to concentrate on the larger sites. However, as the opportunity arises such large sites will be incorporated in the project to take advantage of potential cost reductions.

2.5 Design of Baseline Data Surveys

Water and sanitation projects are justified most frequently as public health improvements. However, changes in public health statistics which may be directly attributable to the implementation of a rural water supply and sanitation project are most difficult to measure and have rarely, if ever, been observed. Therefore, although a comparison of public health statistics before and after project implementation is desirable, water and sanitation projects cannot be evaluated solely on this basis.

The evaluation of the project impacts should include an assessment of the immediately quantifiable and identifiable changes in institutional and community behavior most directly attributable to the water supply and sanitation project. These project performance indicators may vary, but the evaluator should consider the changes and effects of the following:

- the distance water is carried
- the quality of water delivered
- the consumption of water
- the number of users
- the percentage and number of successfully operating systems one, three and five years after project completion

- the financial costs to the user
- the financial condition of the utility after project completion
- observations of water and sanitation practices before and after the project
- observations of institutional performance.

To assist in establishing the procedures and formats for collecting, compiling, and evaluating, the baseline data, short-term, loan-funded technical assistance will be contracted. This technical support will also be used to assist the DES in conducting and performing the evaluations. The technical assistance will be provided over a two-month period at the begininng of the reprogrammed implementation to develop the baseline data and over a two-month period after completing of the project in order to measure and evaluate its impact.

2.6 Increase in Community Contributions

The planned financial inputs, Table No. 1 above, included a community input valued at $750,000 including labor, local construction materials, and rights-of-way which represents 15 percent and 11 percent respectively of the construction cost and the total project cost. The DES Cochabamba office advises that it has been assigning a 30 percent/70 percent community/DES contribution to the 19 systems completed to date. The in-kind community contribution has varied from 10 percent to 20 percent of the system cost, and the balance of the community participation, another 10 percent to 20 percent of the system cost, has been charged against the community as a no-interest loan. No particular repayment schedule is followed other than to insist on some amount of repayment, say 2,000 to 3,000 pesos monthly. When communities fall two months behind in making payments, an engineer visits the site to press for some repayment. This appears to have worked so far.

An incomplete tabulation, prepared by DES Cochabamba, shows a current community indebtedness of nearly $25,000 for the 19 completed systems. Loan repayments, together with community monetary contributions at initiation of the construction of the system, are combined with other DES funds and are used as a petty cash account to purchase fuel, perform vehicle repairs, etc. The funds are project funds, and hereafter, they shall be so identified, segregated and retained in a separate rural sanitation project account to be maintained by the DES for use in procuring local project materials.

Based on this experience, DES/Cochabamba feels that as much as a 50 percent contribution may be expected from participating communities. A proposal presented by the DES suggests a 25 percent minimum contribution with no established upper limit and an expectation of an average community participation of 35 percent. The exact percentage to be assigned to each community will depend upon the results of the socioeconomic analysis which is part of the DES community exploratory examiniation (see Appendix F). Some of this additional contribution will also be obtained from money obtained from property owners for house connections consisting of up to two six-meter pipe sections and a tap for each owner, a service which previously was a part of the system cost.

Presuming an average 35 percent participation for the remaining systems, as based on the construction cost, the community contribution could reach $1,000,000 in comparison with the $750,000 now shown, an increase of over 33 percent. Since the funding contribution would be treated as a loan to be repaid over a three to five year period, the financial benefits to the current project would be limited, with the later work to be performed after completion of this project receiving the major portion of the benefits of this added funding from the loan repayments.

2.7 Systems Maintenance and Community Participation

It is expected that the respective communities will administer and be responsible for the operation and maintenance of the water supply and sanitation facilities. A structure of rates and charges would be established by the communities to at least pay for the routine operation and maintenance costs. The regional DES offices would provide technical assistance and financial support, together with some community contribution, for major repairs.

The community operating staff needs to be trained to do routine maintenance and to keep operating records such as hours of operation of the overall system and its major components, estimates of daily quantities of water delivered, maintenance and repair operations. This staff would also be trained in rudimentary cost accounting and financial records (collections, expenditures, operating budget). Simple systems of records/accounts and reporting should be developed so that suitable information is available for monitoring and evaluating performance and operations. The community can be responsible only to the extent of its capacity and capability, and systems need to be planned and designed accordingly.

The routine maintenance activities for which the community is responsible will include equipment maintenance; monitoring of water use; elimination of waste and leakage; monitoring of materials, supplies and energy usage; record-keeping; budget-

ing; and financial accounting. Major repair and operational problems, beyond community capability, would be coordinated with a central regional monitoring, maintenance, and repair unit.

A trained and staffed maintenance unit should be established and organized within the DES/Cochabamba district office and should have adequate funding and mechanical capability and should be supplied with spare and replacement parts and transport. This unit would schedule and conduct periodic site visits and inspections to all community water system facilities. It would be equipped to perform routine and major maintenance and repair activities to maintain and keep the water systems operating. A maintenance/repair vehicle is included in the proposed well drilling procurement listing. In addition, 30 months of technical assistance is contemplated to assist the DES in establishing the norms and procedures for organizing this unit.

2.8 Counterpart Contribution

To date, the major portion of the counterpart contribution has been the salaries and per diem of the DES personnel. No GOB funding has been disbursed for the purchase of materials although $379,000 has been programmed and $638,000 of $2,174,000 of loan funds for materials procurement has been disbursed or obligated to date.

The USAID Mission has been exchanging views with the GOB Finance Ministry concerning a pari-passu basis of disbursements for joint GOB/USAID projects to ensure the timely availability of countrepart funding. In the case of the Rural Sanitation Project, the GOB materials contribution can be in the form of cement, lumber, bricks, corrugated metal and other needed local materials.

Hereafter, project financing would be advanced on a quarterly basis with the amount to be determined from a budget prepared and submitted by the recipient joint GOB/USAID administering agency. Joint GOB/USAID quarterly financing would be advanced on a pari-passu basis in accordance with the respective funding rations of the joint project financing plan. The failure of the GOB to comply with its programmed quarterly counterpart advance would negate any future USAID contribution. Similarly, the failure of the receiving agency to provide disbursement justification for expenditures, against which additional advance requests are made, may delay the processing of such subsequent funding advances.

2.9 Technical Assistance/Training

Most technical assistance can be funded from the grant balance of $227,000 remaining (see Table No. 3). The DES with USAID has prepared a list as follows:

1	Long-term Administration/Operation/Maintenance Advisor (Grant) 30 months	$ 180,000
1	Short-term Promotion Consultant (Grant) 2 months	15,000
1	Short-term Impact Evaluation Consultant (Grant) 2 months at start	15,000
	2 months on completion	15,000
1	Long term - Administration/Finance/Controller Advisor (Loan) 30 months	45,000
	Total	$ 270,000
	Loan funded	$ 45,000
	Grant funded	$ 225,000

The long-term administration/operation/maintenance advisor should be a sanitary engineer with extensive experience in all phases of rural water supply planning, development, operation and maintenance, particularly in south american countries. Two advisors had been contemplated, but one broad-based engineer should be able to perform both the administration and operation functions. A third-country national advisor would be the most appropriate, similar to the previously contracted Colombian engineer who had also helped in the preparation of the PP. He would be stationed in Cochabamba nearest the sites of the proposed water supply systems development.

The two short-term consultants, one in community promotion of the project and the other in impact evaluation of the project, would assist and guide the DES in developing and establishing norms for these two aspects of water supply planning, construction, and operation. They would most probably be from the United States with the former a sociologist/anthropologist and the latter an epidemiologist/public health professional.

The long-term administration/finance/controller advisor would be a Bolivian accountant to assist and establish norms and procedures in accounting, budgeting and inventory control. He would be assigned to the La Paz office.

All consultancies should be of the personal services type. Otherwise, contracting through a consulting firm will more than double the projected budget as a result of the allowances needed to meet the firm's overhead operation requirements.

As previously noted, after deducting the cost ($45,000) of the loan funded local finance/controller, $313,000 will remain. These funds could be shifted to systems construction for materials purchase to provide added funds as necessary due to the inflationary influences of increasing costs.

As noted in the PP, loan funds will also be used to support a program of upgrading DES sanitation technicians through a series of in-service courses. The DES, together with the Division of Human Resources of the MSW/PH, feels confident and capable of performing this function and has done so in the past.

In turn, the DES will also provide participating communities with health/hygiene/nutrition instruction and water systems operation, maintenance and accounting. In addition, the loan will finance long- and short-term third country and U.S. training in various phases of the promotion, planning, design, construction, operation, and maintenance of rural community water supply systems and in the screening, planning, and development of surface and ground water supply sources.

The remaining balance for training is $193,000 and the breakdown of its disbursement by identified training will be presented in the soon to be submitted DES report.

Chapter 3

COMMUNITY SITE VISITS

During the Cochabamba field trip, field visits were made on May 28 to three sites in the vicinity in order to observe and discuss the benefits and the operation of the systems with the community.

The first site visited was Melga 20 km east of Cochabamba along the Chapare road. About 200 families (1,000 population) are connected to the gravity system. The source is an uphill spring which feeds a ground water storage tank on a hill side above the town, thus serving as an elevated tank. The first families contributed 200 pesos per family to initiate construction (exact amount and number unknown) and the last 35 families to connect to the system contributed a 1,000 pesos each. The community is pleased with the system, and feels that child morbidity has decreased. While sanitation was being carried forward in this village, it was noted that doors have yet to be installed on the latrine housing. Although the construction agreement with DES calls for establishing a water-use charge, to date none has been assessed. The community does now talk of a 20 peso ($0.20) monthly charge with a greater charge against local "chicha" (local grain based brew sold commercially) manufacturers. DES reports that construction was completed in one month.

At Chillimarca and Cuatro Esquinas no committee member were available with whom we could exchange information. We did talk to some users, and they expressed satisfaction with the system. Both systems collect user fees of 30 pesos ($0.30) per month. For Cuatro Esquinas, this is required since pumping to an elevated tank from an artesian well results in power costs which must be paid. Chillimarca is a gravity supply and has no operating costs other than those for distribution maintenance.

All systems are relatively new and there are no operation or maintenance problems. However, DES engineers do visit the sites quarterly to insure that the systems are functioning as planned and as designed. Due to budget limitations, however, we were told that the usual training course, a three-day formal course in operation, management, and accounting offered locally for the committees of the completed systems, has yet to be conducted.

Chapter 4

CONCLUSIONS

Effective and controlled joint GOB/USAID implementation of the reprogramming of the Rural Sanitation Project will require a series of actions consonant with the objectives and goals. A new PACD of June 30, 1985 is proposed in accordance with the following schedule.

4.1 Schedule of Major Events

1. AID/W go ahead July 31, 1982

2. Sign amended loan/grant agreement August 31, 1982. This will require an extension of current PACD of June 16, 1982.

3. IFB for local and off-shore materials purchases issued August 31, 1982 for approximately one-half of materials and sufficient vehicles/equipment as needed to operate two regional field offices.

4. Two regional field offices organized and staffed in the Department of Cochabamba (possibly Villa Tunari/Punata but exact sites subject of further review) and one field office as planned in Department of Chuquisaca (Zudanez) between August 31 and December 31, 1982.

5. Receive quotes and make awards for local purchases September 15, 1982

6. Receive bids and make awards for off-shore procurement October 31, 1982.

7. Contract two short-term consultants October 31, 1982.

8. Contract two long-term consultants December 31, 1982.

9. Complete 24 new water supply systems December 31, 1982.

10. Review warehouse needs and make arrangements for additional materials storage at Cochabamba district office area December 31, 1982.

11. Establish and demonstrate arrangements for vehicle/equipment maintenance December 31, 1982.

12. Review regional field office experience and determine whether two additional sites recommended for Department of Cochabamba or whether expansion of existing locations can respond to project needs January 31, 1983 through June 30, 1983.

13. June 30, 1983 Twenty-five additional systems completed for total of 68.

14. Conduct a progress review to determine scope and limits of final local and off-shore materials purchase to be initiated March 31, 1983.

15. Complete 175 systems by June 30, 1985 at rate of 50 systems per year.

4.2 Suggested Conditions for Financing

The fulfillment of all the foregoing major implementation actions will be dependent on continuous progress reviews and coordination between the DES and USAID.

1. Initially, the purchase of all materials/equipment to complete the program had been contemplated. However, doing this would result in loss of control of future project implementation in that the major portion of the AID funding finances the materials/equipment procurement. Therefore, to maintain as much control as practicable, it is now proposed to make the purchases in two steps, one immediately and the second some nine months later, following a joint DES/USAID progress review to determine whether or not sufficient progress has been made to justify additional purchases.

   In the case of well drilling rigs, it is suggested that one rig be procured initially, a combination rotary and percussion rig capable of drilling up to 10-inch holes to a depth of 500 ft. Then during the second stage purchase, a second rig may be procured, with the type to be determined from the experience of the first purchase. The contracting of a well driller to train DES personnel in operation and maintenance should be included in the procurement specifications.

   The go-ahead on the second stage of materials/equipment purchase should also be contingent upon the demonstration of adequate arrangements, whether in-house or by contract (the latter to be preferred), for vehicle/equipment maintenance. Also adequate facilities for new materials storage will need to be demonstrated.

2. In measuring progress, the experience in the organization of the new regional field offices needs to be reviewed, together with what measures are being considered for further expansions, whether two additional offices are to be opened or existing offices to be expanded.

3. A special project account needs to be established to receive all community contributions. These funds to be used only for the purchase of project materials per Table No. 1, Planned Financial Inputs.

4. A pari-passu arrangement should be incorporated for the purchase of materials which are financed by the loan and by GOB counterpart. The GOB counterpart ($379,000) may be in the form of funding or an in-kind contribution of local materials, such as cement, lumber, bricks, corrugated metal (latrine roofing), etc.

5. Technical assistance as programmed needs to be contracted according to the schedule shown if the project is to succeed. A review of progress should be made on December 31, 1982 to determine remedial measures, and the March 31, 1983 review should establish whether or not satisfactory progress is being achieved to warrant continued financing.

In view of the past unsatisfactory performance, some sort of conditions for continued financing should be incorporated including the points raised above. In this way, control over disbursements consonant with project progress can be maintained. With no progress, consideration for project termination should be discussed, but with satisfactory progress, release of funding can be forthcoming.

A P P E N D I C E S

APPENDIX A

WATER AND SANITATION FOR HEALTH (WASH) PROJECT
ORDER OF TECHNICAL DIRECTION (OTD) NUMBER 93
May 5, 1982

TO: Dennis Warner, Ph.D., P.E.
WASH Contract Project Director

FROM: Victor W.R. Wehman, Jr., P.E., R.S.
A.I.D. WASH Project Manager
A.I.D./S&T/H/WS

SUBJECT: Provision of Technical Assistance Under WASH Project Scope of Work for U.S. A.I.D./Bolivia (La Paz)

REF:
A) Memo Feeney/Wehman dated 26 April 82
B) La Paz 594 dated 3 January 82
C) Quarterly Report-Rural Sanitation Project, July-September 81
D) Quarterly Report-Rural Sanitation Project, April-June 81
E) Quarterly Report-Rural Sanitation Project, January-March 81
F) Telecon Arribe (U.S. A.I.D./Bolivia-Wehman (ST/H), May 4, 82

1. WASH contractor requested to provide technical assistance to U.S. A.I.D./Bolivia as per Reference A scope of work and time frame sections; Reference B, page 7 (paragraphs 2 and 3) and as per Reference F.

2. WASH contractor/subcontractor/consultants authorized to expend up to 45 (forty-five) person days of effort over a 3 (three) month period to accomplish this technical assistance effort.

3. Contractor authorized up to 32 (thirty-two) person days of international per diem to accomplish this effort.

4. Contractor to coordinate with LAC/DR/HN (P. Feeney), LAC/DR/ENGR, (C. Mathews) and Bolivia Desk Officer and should provide copies of this OTD along with periodic progress reports and ETA information as requested by S&T/H and LAC offices.

5. Contractor authorized to provide up to 1 (one) international round trip from consultants' home base to Bolivia and return to consultant's home base during life of this OTD.

6. Contractor authorized local travel within Bolivia as necessary to accomplish mission. This may involve taxis, airlines, rental cars, animal power, etc. Local travel NTE $1,200 (one thousand two hundred) without written approval of A.I.D. WASH Project Manager.

7. Contractor authorized to obtain local secretarial, graphics or reproduction services in Bolivia as necessary to accomplish tasks. Contractor authorized to utilize local Bolivian professional to assist U.S. consultant if need arises in accomplishing this technical assistance effort. Local professional authorized up to 15 (fifteen) person days of effort within the total person days described in paragraph 2 above.

8. Contractor authorized to provide for car rental if necessary to facilitate effort. Mission is encouraged to provide Mission vehicles, if available.

9. WASH contractor will adhere to normal established administrative and financial controls as established for WASH mechanism in WASH contract.

10. WASH contractor should definitely be prepared to administratively or technically backstop field consultants and subcontractors on this effort.

11. Contractor responsible to leave Mission requested documentation in draft form with Mission before the team leaves Bolivia or stops work on this scope of work in Bolivia. In as much as this is a reprogramming effort, documents produced should meet Mission's needs and need not be reproduced for WASH final report. Indeed some of the documents produced may be "restricted", not classified, and programmatically sensitive. Mission will provide guidance to contractor representative on what can be and should not be put in contractor's report. Final report to Mission is due within 30 (thirty) days of reentry of WASH consultant into the U.S.

12. Mission should be contacted <u>immediately</u> and technical assistance initiated before 10 May 82.

13. Appreciate your prompt attention to this matter. Good luck!

APPENDIX B

Itinerary

Washington, D.C. to La Paz, Bolivia	May 15, 1982
La Paz to Lima, Peru	June 4, 1982
Lima to Washington, D.C.	June 12, 1982

APPENDIX C

OFFICIALS VISITED

MSW/PH - DES

La Paz - Tomas Navia, Chief, DES
Jose Zuleta, Chief, DES Technical Section
Freddy Gonzalez, Administrator

Cochabamba - Juan Carlos Ricaldez, District Chief, DES
Jorge Marco Quiroga, Engineer
Hugo Guzman, Engineer
Teresa de Polo, Administrator

Sucre - Carlos Calderon, District Chief, DES
Nestor Perez, Technical Supervisor

USAID Project Team

Lee R. Hougen, Chief, Health & Humanitarian Assistance Div.
William G. Kaschak, Project Development & Implementation Div.
Robert Leon de Vivero, Chief, Program Office
* Gerardo Arabe, Health & Humanitarian Assistance Div.
* Rene Pena y Lillo, Project Development & Implementation Div.
* Raul Pinto, Controller's Office

* Participants in joint review and planning meetings with DES in La Paz and Cochabamba.

INTERVIEWS

CORPAGUAS La Paz - Augusto Arce, Director
Guido Ramirez, Engineer

CARE La Paz - Emil G. Steinkraus, Director

APPENDIX D

0594

TELEGRAM

INDICATE
☐ COLLECT
☒ CHARGE TO (USAID)

FROM	CLASSIFICATION
LA PAZ	UNCLASSIFIED

E.O. 12356
TAGS:
SUBJECT:

ACTION:

INFO:

L/A
E/A
Review of Category III Project - Rural Sanitation (Loan 511-U-098; Grant 511-0458)

SECRETE WASHDC PRIORITY

UNCLASSIFIED LA PAZ 0594

AIDAC

FOR: Acting Assistant Administrator, LAC

REFERENCES: A) 81 State 316307, B) 81 State 330031

As part of its assessment of suspended Category III projects and as requested in reftel A), USAID/Bolivia has reviewed the performance of the Rural Sanitation (RS) loan/grant project to determine its current viability in light of the original objectives and implementation plan, the capability of the Government of Bolivia (GOB) to financially support and implement the project, and the desireability of reprogramming project activities in support of USAID/Bolivia's short and long-term strategies. A summary of the USAID/Bolivia review highlighting existing constraints, project potential and reprogramming actions necessary to reactivate the project, follow:

DRAFTED BY / APPROVED BY	DRAFTING DATE	TEL. EXT.	CONTENTS AND CLASSIFICATION APPROVED BY
[illegible]	1/29/82	[illegible]	AID [illegible]

UNCLASSIFIED
CLASSIFICATION

OPTIONAL FORM [illegible]
(Formerly [illegible])
[illegible]

A. Background

B. Project Data

Date Signed: 9/16/77 (L,G) PACD : 3/16/82 (L,G)

LOP Value : dols 4,000,000 (L)
310,000 (G)

Amt. Auth. : dols 4,000,000 (L)
310,000 (G)

Pipeline (12/31/81) : dols 3,456,756 (L)
226,935 (G)

C. The Setting

The project was originally designed to support the overall goal of improving health among the rural population, specifically by reducing the incidence of gastroenteric and parasitic diseases. The project responded directly to the USAID/Bolivia Health Sector Assessment completed in 1975, which concluded that dysentery, gastroenteritis and other water borne digestive ailments ranked second among the nineteen principal causes of morbidity in Bolivia, representing 33 percent of total reported deaths. The Assessment attributed the prevalent high death rates, particularly in rural communities of less than 1,000 inhabitants, to a lack of access to preventive health services, and most importantly potable water supplies and sanitary waste disposal facilities.

D. Purpose and Objectives

1.

The specific purpose of the PI project was to create within the Ministry of Social Welfare and Public Health (MSPH) and particularly, its Division of Environmental Sanitation (DES), the institutional capability to enable it to carry out rural sanitation activities on a scale that would significantly meet the demands for potable water in Bolivia. The project was to concentrate on the Department of Cochabamba and the two contiguous provinces of Chuquisaca -- two geographic areas identified by the Health Sector Assessment as having rural farm population with median annual per-farm incomes of approximately dollars 32-300 and average land holdings of 5.0-7.0 hectares; high incidences of mortality among children, particularly the less than one year to four year age group; and existing, albeit limited, DES local institutional and administrative support upon which to direct a comprehensive rural sanitation program.

The activities to be carried out under the PI project, with DES as the executing agency, included:

- the design, installation and maintenance of approximately 500 potable water systems in rural villages ranging in size from [illegible] inhabitants in the Departments of Cochabamba and Chuquisaca [illegible] relocations, latrines, and water system installations on

health practices related to potable water usage and on systems maintenance and operation; 3) evaluation of the health impact of the program by measuring changes in the rate of infant mortality, incidence of diarrheal disease in the 0-5 year age group, and water use attitudes and practices; and 4) institutional strengthening through technical assistance to assure that DES developed the capability to carry out the aforementioned activities. It was estimated that 15,200 rural farm families would be provided potable water and latrines during the four year life-of-project, and that an equal number of families would benefit from additional systems constructed before the equipment procured under the project was fully depreciated.

Total financing for the RS project amounted to dols 6,810,000 including AID, DES and community contributions. Financing was programmed as follows: AID loan funds (dols 4,000,000 or 60 percent) to cover the procurement of drilling equipment, related potable water system materials, the hiring of engineering services and contract skilled labor, and short-term technical assistance and training to assist in the establishment of permanent DES-community management and maintenance systems; AID grant funds (dols 310,000 or 5 percent) to finance short and long-term technical services to assist in overall planning and

administration; DES counterpart funds (dols 1,750,000 or 20 percent) for salaries, well and warehouse construction, materials and operating expenses; and local communities contribution (dols 750,000 or 11 percent) to cover operation costs, as well as materials and unskilled labor costs primarily related to the construction of water systems and installation of latrines.

II. Pre-Suspension Period

A. Progress and Problem Constraints

From its inception in 1977 until disbursements were discontinued following the July 17, 1980 coup, implementation progress was unsatisfactory in the MSW/PH-DES central office in La Paz, limited in the DES Cochabamba regional office, and non-existent in the DES Sucre regional office.

Regarding the MSW/PH-DES central office, the required reorganization which called for the inclusion of a technical unit capable of designing rural sanitation projects for the DES regional offices did not take place; required training programs and short-term technical assistance to address institutional administrative and financial deficiencies were not carried out; international IFBs for the procurement of construction equipment and materials, vehicles and tools were not completed; and only dols 68,000 of dols 550,000 available to the project for technical services to improve project

administration and management capability was utilized.

Regarding the DES Cochabamba regional office, institutional capability and staff administrative and managerial skills were not improved due to the lack of provision of technical assistance services and training by MSH/PH-DES; water system construction was limited to the installation of simple gravity and surface water systems due to the inability of MSH/PH-DES to procure the required well drilling equipment, and community baseline studies necessary to permit the evaluation of the health impact of the program by means measuring changes in the rate of infant mortality, incidence of diarrheal disease, and water use attitudes and practices were not carried out due to the lack of short-term technical assistance. On the other hand, thirty five new positions required by the Project Agreement were established, primarily for technicians who would be responsible for the construction of water systems and the organization of communities; and basic administrative and management support was provided to the project by on-board personnel trained under the recently terminated dols 1.0 million CARE/CARE rural sanitation grant. Regarding the DES Santa Cruz regional office, no implementation actions leading to construction activities were taken due to the lack of construction equipment and materials.

Because of these deficiencies and delays, as of July 1980, only six potable water systems and 500 latrines had been built in the Department of Cochabamba compared to the 122 and 4,683, respectively, called for by the implementation plan; and none had been built in the Department of Chuquisaca.

A joint USAID/Bolivia - MSW/PH project evaluation, completed on June 20, 1980, identified a number of constraints hindering project implementation. These constraints included: the limited MSW/PH-DES experience in supporting the DES regional office technical and construction units; the lack of MSW/PH-DES administrative capability in carrying out international procurement actions, as well as the inability of DES Cochabamba to effectively carry out local procurement actions; the lack of initiative of MSW/PH-DES in establishing required training schedules and in obtaining necessary technical assistance; and overall financial deficiencies (e.g. inefficiency in administering financial resources) which affected MSW/PH-DES and DES Cochabamba implementation efforts. The joint USAID/Bolivia - MSW/PH evaluation also noted that these constraints were further affected by the inadequate leadership of the MSW/PH-DES project director, whose negligence resulted in a delay of five months in [illegible] conditions precedent for disbursement and a delay

of twenty-eight months in overall project implementation from the project's inception until June 1980.

b. The Suspension

Following the July 17, 1980 coup, AID project disbursements were discontinued for the institutional, administrative and financial deficiencies described above, as well as for political considerations. A formal letter (PIL No. 8) informing HSH/PH of USAID/Bolivia's decision, based on the findings of the joint evaluation, was transmitted on on October 7, 1980. Because of the importance of the rural health sanitation program, PIL No. 8, unlike the other suspension letters, did not include a standard clause stating that quote if the causes for the discontinuation of disbursements were not corrected in a sixty day period USAID/Bolivia had the option of cancelling the project pursuant to conditions established by the Agreement end quote. The specific corrective actions required by PIL No. 8 included: 1) the presentation of a series of updated plans essential for the good management of the project (e.g. alternative implementation plans projecting water systems and latrines to be constructed; technical assistance plan; a training plan delineating training requirements for technical staff and communities, [illegible] reporting system; and the establishment of a procurement unit within the SNAS;

and 3) the presentation of a MSH/PH-DES reorganization plan for establishing an internal accounting system, and for increasing DES regional office capability to design, implement, and supervise water systems.

III. Post-Suspension Period: Progress and Constraints

A. Progress

Although political, administrative and economic stability significantly deteriorated following the Garcia Meza coup of July 1980, and USAID/Bolivia disbursements were frozen, the MSH/PH-DES continued to make progress on resolving problems cited by USAID/Bolivia in PIL No. 8, as well as continuing minimal water system and latrine construction in the Department of Cochabamba, using only materials on hand. In April 1981 USAID/Bolivia review of Category III projects (La Paz 2625 dated May 11, 1981) indicated that MSH/PH-DES had submitted documentation to satisfy roughly three quarters of the issues. The review also indicated that DES Cochabamba was in danger of loosing its technical staff once the work for the [redacted] remaining water system installations (e.g. surface water, spring or shallow well systems not requiring additional equipment) were completed, which would seriously jeopardize the future of the project. Based on these findings USAID/Bolivia recommended and AID/W approved a minimum level of activity to keep the project viable

(State 129581 dated May 19, 1981); specifically, the issuance of ten percent or dols 150,000 of the original IFB for the purchase of pumps and pipe, and the local procurement of equipment, pipe and materials up to dols 100,000.

From the July 1980 coup to December 31, [illegible], AID/Washington continued to address the issues delineated in FY [illegible]. Construction activities, however, continued only in the Department of Coclesana because the lack of equipment, vehicles and construction materials precluded initiation of any activities in the Department of Chiriqui. Specific progress to improve institutional, administrative and technical deficiencies included: the formation of a number of ineffective leaders at the [illegible] level, and the retaining of capable leadership at the [illegible] Cocleseña regional office; and the provision of a series of three month on-the-job training courses in environmental sanitation, permitting DOS technicians in Cocleseña to better design and develop technical specifications and equipment lists for water systems throughout Panama. In procurement, [illegible] on IFB of dols 150,000 for pumps and pipe was successfully prepared and issued in Dec 1980 dated January 6, 1981 and the local procurements of dols 100,000 are [illegible] carried out [illegible] materials, evidencing considerable

[illegible] OSC and DSS Technicians [illegible] area. [illegible] consideration, a field project inspection trip which was made [illegible] and USAID/[illegible] personnel [illegible] 1981, indicates that [illegible] water [illegible] 1,[illegible] [illegible] have been completed [illegible] September 1981 [illegible] bringing the total number completed [illegible] respectively. Finally [illegible] interest and [illegible] community [illegible] Community Development [illegible] as community development [illegible] teachers, agriculture extension [illegible] health [illegible] are [illegible] objective of the project. [illegible] not only in permitting [illegible] of water system construction and [illegible] courses, but has created a demand [illegible] beyond DSS [illegible] capabilities. It should be noted [illegible] communities have offered [illegible] cost of a system and/or [illegible] the prerequisite requirements of installing [illegible].

[illegible]

[illegible] the GOE [illegible] other [illegible]/of necessary,

corrective actions to address the constraints delineated in PAR No. 8, a number of key problem areas remain: 1) the need to revise and compress the implementation plan presented by NSW/RH-DLS, which would require three years to complete for extension of the project beyond the current PACD; 2) the need to further delineate NSW/RH-DLS responsibilities and provide necessary logistic and management support to DLS Headquarters; 3) the need to reorganize the NSW/RH-DLS office to improve its technical, financial and administrative capability, including the establishment of a procedure to permit streamlined procurement actions; 4) the need to simplify the information and accounting systems developed by the NSW/RH-DLS for repository project progress and the financial status of water systems being constructed; 5) the need to improve the institutional capability of NSW/RH and DLS to expand activities to the northern provinces of the Department of Ghanzi; 6) the need to purchase additional drilling equipment, vehicles and materials commensurate with this effort; and 7) the need to increase GOB counterpart contributions.

Another major constraint has been the 50 percent increase in project costs during the 1977-1978 period, based on the original project design, this inflation, affecting both NSW/RH-DLS and the DLS regional offices from

[illegible] the [illegible] of water systems and latrines in the [illegible] USAID/Bolivia equipment [illegible] and communities [illegible] costs for materials, [illegible] labor and equipment operators, and maintenance and operation costs.

Considering the above related problems, the recent USAID/Bolivia evaluation (Informe Sobre [illegible] de los [illegible] de Ingeniería de Proyectos Financiados por USAID, November 19[illegible]) recommended that in the absence of additional funding, the overall scope of the [illegible] project be reduced ([illegible] equipment and materials to be procured, water systems and latrines to be installed), [illegible] the USAID/Bolivia technical review findings recommend increasing the size of the communities served from 500 to 1,000 inhabitants, which would not affect the number of beneficiaries reached, but would serve to reduce the cost of delivering services to them. The findings of the USAID/Bolivia technical review go one step further, however, [illegible] recommending that the project be reprogrammed, [illegible], to build on the [illegible]/[illegible]-DES and [illegible] regional [illegible] capability and infrastructure [illegible], in [illegible] the Department of [illegible], and subsequently expand [illegible] of the northern provinces of the Department of [illegible], concentrating [illegible] [illegible].

in creating the necessary DES/Sucre capacity to plan, install and maintain water systems. This approach, in turn would permit the reprogrammed project to respond in an important way to USAID/Bolivia's FY 1982-1983 Short-Term and FY 1984-1988 Long-Term Strategies, described below.

IV. USAID/Bolivia Strategy

A. FY 1982-1983 Short-Term Strategy

As requested in para 5 reftel A), USAID/Bolivia has reviewed the RD project to determine its viability of placing greater emphasis to the Chapare so that it will more closely complement USAID/Bolivia's Short-Term Strategy (La Paz 6375 dated November 26, 1981).

USAID/Bolivia's review findings, based on current DES institutional capability criteria as well as existing infrastructure, support the concentration of the project in the Department of Cochabamba, which includes the geographic area identified as the major illegal coca producing area in Bolivia -- the Chapare, which is the focus of the Mission's FY 1982-1983 Short-Term Strategy. Other factors also support increased concentration in the Chapare. For example, the original development rationale of reducing GI gastroenteric and parasitic diseases is particularly relevant to a vast tropical rainforest portion of the Chapare Province which predisposes to water borne diseases. In addition, and

...ically regarding the Short-Term Strategy, the General ...ers' Corporation's April 1980 "Report on the Develop-...t of the Chapare Region" notes the importance of income ...ement through area development, and emphasizes the ...ortance of smaller public services (e.g. potable ...r and waste disposal systems) at locations in coca ...crop substitution efforts leading to eventual loans of farm ...ds. As with the RD project, the new planning exercise ...ill also review other active and programmed projects and interrelationships to determine what additional activities can be refocused to provide the strongest incentives for coca crop substitution in the Chapare.

...ased on these considerations, revised project activities ...ld, to the degree possible, be actively promoted in the ...ochabamba region and the Chapare. However, because of the ...terest expressed by the authorities in the Department of ...ochabamba and the project's original intent, the initiation ...f activities in this region is also desirable. A final ...cision regarding the initiation and extent of activities ...n Cochabamba will be based, first, on the findings regarding ...ia Paz's economic, financial, and institutional capability ...ring the region planning exercise, and second, the success ...d cost by which these are ... It is determined that DAI will ...ve the institutional capability in the ...partment of Cochabamba within a reasonable period, all

remaining project resources will be directed to the Department of Cochabamba where there is an ample need for water systems and where the institutional capability of DEB Cochabamba is already established.

B. FY 1983-1988 Long-Term Strategy

USAID/Bolivia's FY 1984 CDSS, to be submitted in the third quarter of CY 1982, will represent a significant change in direction from the Mission's previous nationwide strategy, to a more focussed effort designed to accelerate the growth and development in a specific geographically defined region -- the La Paz-Cochabamba-Santa Cruz corridor, which includes the Chapare. The region was selected, in part, for its growth pole and high value agricultural and agro-industrial production potentials, which compared to other regions in Bolivia, can be more easily developed due to the existence of a marketing and infrastructure base. It was also selected because of the greater institutional and technical capability of public services organizations operating in the three Departments, (e.g. MSW/PH-DEB in potable water and waste disposal system installation; National Roads Service - SNC in rural access road construction and maintenance; MCDS in economic and social infrastructure through community action). These organizations are essential elements in support of the long-term strategy's integrated development approach.

IV.A.,
As noted in Section [illegible] the USAID/Bolivia technical review findings recommended concentrating the RS project activities in the Department of Cochabamba and subsequently on a limited scale in the northern provinces of Chuquisaca. The findings also indicated that the existing project resources, which have been affected by the sixty percent increase in project costs during 1977-1981, are insufficient to justify the reprogramming of RS activities to the remaining areas of the corridor, e.g.: the Departments of Santa Cruz and La Paz. In fact, the findings indicate that the reprogramming exercise should explore linkages to [illegible] other active and suspended USAID/Bolivia projects and [illegible] other GOB implementing institutions, particularly in the Departments of Cochabamba and Chuquisaca, as a means of eliminating present duplicative efforts and consequently maximizing outputs with existing resources. For example, in the Department of Cochabamba, linkages could be developed with the Village Development project, (511-T-062, 511-0499) whereby NCDS would assist DES Cochabamba in promoting and organizing communities to receive RS services, and DES Cochabamba would assist NCDS with technical aspects and supervision of smaller scale water systems to be carried out under that project. A second linkage could be developed with the Departmental Development Corporations project, (511-T-065, 511-W-065) whereby the EDC would establish the

priority areas where sanitation systems should be put into place to best reinforce other income producing or employment generating sub-projects in the agricultural and agro-industrial sectors sponsored by the DDC. A third linkage could be with the P.L. 480 Title II programs, whereby the food-for-work program could be used to facilitate the installation of sanitation systems in the smaller communities, and food commodities could be used to offset the cost of training community representatives in water system operation and maintenance.

V. Reprogramming

A. USAID/Bolivia Determination

Based on the findings of the review, particularly evident improvements in institutional capability, the commitment of MSV/PH and DES to continue the project, and the importance of the effort to both the Mission's short and long-term strategies, USAID/Bolivia has determined that the reactivation of the Rural Sanitation project is both desireable and feasible.

B. Basis for Determination

The review findings indicate that the reactivation of the project would not require a major refocussing of activities, thereby altering the goal and objectives as contained in the original project Agreement. Reactivation of the project,

however, will require the resolution of the following issues which will have to be negotiated with the GOB during the reprogramming exercise,

1. Revision of the Implementation Plan: The implementation plan presented on January 16, 1981, by MSW/PH-DES in response to PIL No. 8 called for the carrying out of the project as originally contemplated with a four year PACD extension. This plan will be revised and modified to reflect the initial emphasis of the project in the Department of Cochabamba and the Chapare, the effect of inflation on construction and equipment during CY 1981, and the recommendations of the USAID/Bolivia review to complete the project no later than December 31, 1984.

2. Completion of MSW/PH and DES Reorganization Actions: Three main reorganization issues will be addressed. The first relates to the establishment of the purchasing department within MSW/PH for carrying out international procurement of equipment and materials, which is currently ineffective and improperly staffed. A GOB commitment to properly staff the purchasing department will be required and a training plan to upgrade existing personnel will be formulated. The second issue relates to MSW/PH's ineffective internal accounting system. To this effect, technical assistance requirements to modernize the system and upgrade

the capability of existing personnel will be defined. The third issue relates to the need to decentralize administrative and technical responsibilities to the DES regional offices in accordance with the recommendations of the 1981 USAID/Bolivia evaluation (Informe Sobre Estado de los Componentes de Ingeniería de Proyectos Financiados por USAID, November 1981). To this effect, an analysis will be carried out which will make specific recommendations for decentralizing present MSH/PH-DES responsibilities to the DES regional offices.

2. Revision of Information System: The information system developed by MSH/PH-DES in response to PIL No. 3 will be revised, simplifying the proposed reporting mechanism for construction, and including procedures for training, technical assistance and procurement.

4. Inclusion of Larger Entities: The size of the communities reached will be increased from 500 to 1,000-1,500 inhabitants to allow the RE project to assist communities which are considered potential development growth poles in the Department of Cochabamba and the Chapare. The increase in community size will not affect the number of beneficiaries reached, but will help to reduce the cost of delivering project services, especially taking into account the inflationary impact on project resources, particularly

[illegible] the last year and a half.

5. Design of Baseline Data Surveys: A design for carrying out baseline health and nutrition data surveys in communities to receive water and sanitary disposal systems will be formulated. This will permit a subsequent evaluation of the health impact of the provision of water related facilities to participating community residents, one of the objectives of the project which is currently being neglected.

6. Increase in Community Contributions. An analysis will be carried out to determine the feasibility of increasing in-kind and financial community contributions as a means of installing the greatest number of water systems and latrines with existing project resources. The approach merits consideration based on DES Cochabamba records which indicate that numerous communities are willing to provide more than this by percent of the water system cost currently being required in order to be included under the project. In addition, incentives to increase community participation will be explored, such as the P.L. 480 Title II food-for-work mechanism described in Section IV.B., above.

7. Systems Maintenance and Community Participation: The operation of DES-community maintenance systems established by the completed sub-projects will be examined, and a plan formulated to correct identified deficiencies.

...

8. Institutional Coordination: A detailed analysis will be carried out to identify linkages between the RS project and other active and suspended USAID/Bolivia projects and GOB implementing agencies, as a means of assuring a more efficient and effective utilization of resources in the Chapare and the Department of Cochabamba, especially in view of the country's serious economic crisis. Examples of possible linkages were noted in Section IV.B., above.

9. Counterpart Contribution: The counterpart contribution will be redefined to meet the real and inflationary needs of the reprogrammed project, while still remaining within the percentages of the original Agreement, i.e. USAID/Bolivia-sixty-three percent, counterpart contribution-thirty-seven percent (GOB twenty-six and community eleven percent). A provision in the amended project Agreement will establish a procedure whereby project loan/grant disbursements would be made on a pari passu basis to ensure the timely disbursement of counterpart contributions.

10. PACD Extension: The PACD will initially be extended to o/a June 16, 1982 to keep the project alive, to permit the completion of the recently initiated bids 150,000 IFB, and to permit the carrying out of the reprogramming exercise. It is estimated that an additional extension through December 1982 will be required to allow for the completion of RS

activities defined in the reprogramming exercise.

3. Technical, Social, Economic, Financial and Institutional Feasibility

USAID/Bolivia's determination that the project, with appropriate modifications, remains feasible and should be reactivated, is partially based on its initial findings from the review of the project paper's analyses. To this effect, a summary of USAID/Bolivia's findings follows:

1. Technical and Engineering Feasibility

The technical and engineering analysis of the project paper remains valid. In fact, USAID/Bolivia considers the project's approach of installing latrines prior to the construction of water systems, and training community members in the operation and maintenance of the systems, together with programmed health education activities, as one of the most comprehensive and effective of those used in Bolivia today. Nevertheless, the analysis requires minor modifications.

-- Increased equipment and construction costs remain as the main area of concern. The analysis update must address these constraints, in terms of the project's reduced objectives, the increase in village size from 500 to 1,000-1,500 inhabitants, and the greater concentration of project activities in the Department of Cochabamba and the Chapare.

-- The project Agreement's special covenants, Section 6.2 (Budgetary Support for Continued Project Activity) and Section 6.3 (Utilization of Equipment and Materials), required the GOB to continue the construction and maintenance of rural water systems in the original target area of the project for a minimum of five years after project completion. To this effect, the analysis update will determine the feasibility of directing these covenants to apply to specific areas of the La Paz-Cochabamba-Santa Cruz corridor as a means of supporting USAID/Bolivia's FY 1984-1988 Long-Term Strategy.

7. Social Feasibility

The project paper's social analysis needs to be updated and expanded.

-- The analysis update must determine the feasibility of implementing water systems in larger communities of 1,000 or even 1,500 inhabitants to support integrated development in the Department of Cochabamba and the Chapare, an approach which would also help to reach approximately the same number of beneficiaries contemplated in the original project Agreement.

-- Annex I Section A.4. of the project Agreement required that SEU/PI-DES establish an evaluation procedure to measure the health impact of the program, based on changes in the rate of infant mortality, incidence of diarrheal

disease and water use attitudes and practices. This requirement has not been complied with to date. To assure compliance, the analysis update will define the procedures and the evaluation design for determining the nutrition and health impact upon completion of the project. The procedures and the baseline study design would be formally incorporated into the amended project Agreement.

3. Economic Feasibility

The economic analysis of the project needs to be updated.

-- A cost benefit analysis of the project's approved water system models must be carried out for communities of 1,000-1,500 inhabitants, which was not included in the existing analysis.

Financial Feasibility

The financial feasibility of the project has to be ~~xxxxx~~ revised.

-- The counterpart contribution problems and inflationary effect on project costs directly affect the selection of RS activities and the degree to which the project may subsequently be implemented in the Department of Chuquisaca. To this effect, the analysis must review present and projected recurrent budgets of the implementing agencies (MSV/F, DES Cochabamba, DES Sucre) to determine additional counterpart contribution requirements. Finally, a revised financial plan will be required to include a disbursement procedure for loan/grant

Reimbursements to be made on a pari passu basis to ensure the timely provision of GOB counterpart.

-- The apparent feasibility of increasing in-kind and financial community contributions based on DES Cochabamba records also requires further analysis, as such an approach could ensure a greater coverage with existing project resources.

5. Institutional Feasibility

The institutional analysis of the PS project needs to be updated for the DES Sucre regional office.

-- Although the DES Cochabamba regional office is fully staffed and operational, the MSW/GH-DES capability to provide necessary administrative and technical personnel and financial support to make the DES Sucre regional office operational and functional must be determined. The findings, in part, will determine the extent to which project activities could be carried out in the northern provinces of the Department of Chuquisaca.

D. Reprogramming Schedule

1. 3/7/82 : USAID/Bolivia to submit a formal request for a three month extension of the March 16, 1982 PACD to permit completion of the international IFB in process, and to maintain the flexibility to reprogram and reactivate the project

should conditions so warrant.

4. 2/15/82 : AID/W-LAC approval received for PACD extension (step 1).

5. 3/1/82 - 3/31/82 : Amembassy La Paz to complete its evaluation of actions taken by Torrelio government in coca eradication and narcotics control.

6. 3/31/82 : Subject to satisfactory GOB progress (step 3), AID/W-LAC approval to initiate reprogramming exercise.

7. 4/1 - 4/10/82 : USAID/Bolivia and NAU/NI-DEA to define plan of action and responsibilities for reprogramming exercise.

8. 4/10 - 4/30/82 USAID/Bolivia and NAU/NI-DEA to complete 1) outstanding actions requested in PIL No. 8 (e.g. establishment of information and internal costing system, a purchasing department, revised technical assistance and training plans, modified implementation plan), and 2) analyses, updates and expansions delineated in Section V.B. and C., above. The assignments will specifically address the feasibility and/or the degree to which the project should be implemented in the Department of Chuquisaca. To this effect, USAID/Bolivia will require

AID/W or contract services to carry out the financial and economic analyses work (economics/business administration - two weeks).

7. 5/1 - 5/8/82 : USAID/Bolivia and GOB to discuss findings and agree to content of reprogrammed project and levels of counterpart.

8. 5/25/82 : USAID/Bolivia to submit reprogramming plan to AID/W-LAC for approval.

9. 5/29 - 6/6/82 : AID/W-LAC review and approval of revised Annex I and budget.

VI. Requested AID/W-LAC Action

1. As presented above, the Rural Sanitation project remains viable and is particularly important to USAID/Bolivia's short-term strategy in the Chapare. Economically, the GOB and the communities are expected to provide contributions at the required level. Socially, the project fills an important health and development role by providing potable water to the target population within the Mission's redefined geographic area of concentration. Structurally, the reprogramming of the PI project will involve only minor changes in the project.

2. Based on the findings of USAID/Bolivia's technical review,

[illegible] as well as the desirability to be in a position to reinitiate this project when conditions are propitious, the Ambassador supports USAID/Bolivia's reprogramming plan to be initiated upon Amembassy La Paz and [illegible] determination that satisfactory progress by GOB [illegible] eradication and narcotics control has been made (Section V.D., Step 3). USAID/Bolivia, therefore requests prompt AID/W [illegible] concurrence [illegible] month PACD extension request to be submitted February 7, 1982 (Section V.D., Step 1) enabling the [illegible] of the international IIT currently in process and to allow the flexibility to carry out the reprogramming actions described in Section V., above.

[illegible] Providing the Torrelio government continues to consolidate itself and to make progress in those areas of concern to the U.S. Government, we will once more be in a position to reprogram and subsequently reactivate this project. Final approval will, of course, depend on the Torrelio government performance (Section V.D., Step [illegible]) and Washington approval, as well as success in the [illegible] effort.

CORR
[illegible]

APPENDIX E

UNITED STATES AID MISSION to BOLIVIA
c/o American Embassy
La Paz, Bolivia

USAID - BOLIVIA
APO MIAMI [illegible]

Telephones: 350120, 350251
Casilla 673
La Paz, Bolivia

7 de octubre de 1980

Capitán de Fragata Avelino Rivero
Ministro de Previsión Social y
Salud Pública
La Paz

Señor Ministro:

Ref: Préstamo AID No. 511-U-058
Donación AID No. 511-U-0458
Saneamiento Rural
Carta de Implementación No. 8

Durante los últimos meses, nuestro personal ha revisado y analizado intensamente la implementación del Proyecto de Saneamiento Rural hasta la fecha. La mayor parte de la revisión que se efectuó se basó en una evaluación conjunta efectuada durante los meses de junio y julio de 1980. Este análisis ha revelado una cantidad de problemas que causan serios atrasos en la implementación del proyecto que deben corregirse antes de la continuación de desembolso de fondos del Préstamo y de la Donación de AID para las actividades del proyecto. Las siguientes medidas se requieren para corregir estos problemas:

1. Presentar a USAID los siguientes planes actualizados que son esenciales para la buena administración del proyecto:

   a) Un plan de implementación proyectando la cantidad de sistemas de agua y letrinas que pueden construirse con el material

October 7, 1980

Frigate Captain Avelino Rivero
Minister of Social Welfare and
Public Health
La Paz

Dear Sir:

Ref: AID Loan No. 511-U-058
AID Grant No. 511-U-0458
Rural Sanitation
Implementation Letter No. 8

During the past months, our staff has intensively reviewed and analyzed the implementation of the Rural Sanitation Project to date. Much of the review that was conducted was based on the joint evaluation conducted during the months of June and July, 1980. This analysis has revealed a number of problems causing serious delays in project implementation that must be corrected prior to the continuation of disbursement of AID Loan and Grant funds for project activities. The following actions are required to correct these problems:

1. Present to USAID the following up-dated plans which are essential for the good management of the project:

   a) An implementation plan projecting the number of water systems and latrines that can be built with the exist-

existente hasta la terminación del proyecto (16 de marzo de 1982).

b) Un plan alternativo de implementación que programe el tiempo necesario para construir todos los sistemas propuestos en el convenio. Este plan supone que los materiales y equipo adquiridos mediante licitación internacional llegarán aproximadamente dentro de 9 meses (junio de 1981) para complementar las adquisiciones locales ya efectuadas.

c) Un plan de asistencia técnica describiendo cómo será utilizada la asistencia técnica disponible a través del financiamiento del proyecto durante el resto del período de duración del proyecto.

d) Un plan de capacitación describiendo la capacitación de las diferentes categorias del personal técnico y los participantes a nivel comunitario durante el resto del período de duración del proyecto. Cada plan de capacitación deberá estar acompañado por su correspondiente presupuesto. El plan de capacitación deberá incluir también el diseño final del programa de capacitación propuesto para los técnicos sanitarios a efectuarse en Cochabamba.

e) Un sistema de información para proporcionar, en base mensual, informes de progreso sobre to-

ing material by the end of the project (March 16, 1982).

b) An alternative implementation plan that projects the time needed to construct all the systems proposed in the agreement. This plan assumes that the materials and equipment in the international procurement will arrive in approximately 9 months (June, 1981) to supplement the local purchases already made.

c) A technical assistance plan describing how the technical assistance available through project financing will be utilized during the remaining life of the project.

d) A training plan describing the training of the different categories of technical staff and community level participants during the remaining life of the project. Each training plan should be accompanied by its corresponding budget. The training plan should also include the final design of the proposed training program for sanitary technicians to be held in Cochabamba.

e) An information system to provide, on a monthly basis, progress reports on all pro-

das las actividades del proyecto incluyendo: estado de las construcciones, capacitación, adquisiciones y asistencia técnica.

2. Establecer un departamento de adquisiciones dentro del Ministerio a fin de iniciar la licitación internacional pendiente de equipos y materiales para este proyecto.

3. Presentar un plan de reorganización del Departamento de Saneamiento Ambiental que implemente las recomendaciones conjuntas que se encuentran en la reciente evaluación y que identifica especificamente la necesidad de establecer:

   a) Un sistema interno de contabilidad para registrar los gastos incurridos por el Ministerio, USAID, y comunidades en las actividades de cada proyecto:

   b) la capacidad regional para diseñar, implementar y supervisar los sistemas de agua con las oficinas a nivel central desempeñando un rol normativo que programe la supervisión técnica de campo, y

   c) diseñar e implementar un sistema de información descrito en el párrafo 1,e. líneas arriba.

El Ministerio de Finanzas debe reembolsar a USAID todos los pagos de impuestos nacionales por con-

ject activities to include: status of construction, training, procurement and technical assistance.

2. Establish a purchasing department within the Ministry in order to initiate the pending international procurement of equipment and materials for this project.

3. Present a reorganization plan of the Department of Environmental Sanitation that implements the joint recommendations found in the recent evaluation and which specifically identifies the need to establish:

   a) An internal accounting system to record the expenditures made by the Ministry, USAID, and the community on each project activity;

   b) regional capacity to design, implement and supervise water systems with the Central level offices performing a normative role with scheduled technical supervision to the field, and

   c) design and implement an information system described in paragraph 1,e. above.

4. The Ministry of Finance must reimburse USAID for all payments of national taxes for

pras locales pagadas con fondos del Préstamo.

Estas medidas deben estar concluídas lo antes posible a fin de asegurar la implementación total y oportuna del proyecto en compatibilidad con el propósito del convenio de referencia.

Saludo a usted atentamente.

local purchases paid for with Loan funds.

These actions must be completed as soon as possible in order to insure full and timely implementation of the project consistent with the intent of the subject agreement.

Sincerely,

Malcolm H. Butler
Director a.i.

APPENDIX F

MINISTERIO DE PREVISION SOCIAL Y SALUD PUBLICA
DIVISION DE SANEAMIENTO AMBIENTAL
LA PAZ - BOLIVIA

ESQUEMA PARA ESTUDIO EXPLORATORIO DE LA COMUNIDAD

La División de Saneamiento Ambiental del Ministerio de Previsión Social y Salud Pública para poner en ejecución el Plan Nacional de Agua Potable Rural y Disposición Sanitaria de Excretas, requiere de la participación activa de los comunarios. Pero antes de iniciar la acción directa sobre la comunidad le es indispensable contar con cierta información acerca de las comunidades con las que se piensa trabajar.

Para tal efecto el Técnico en Saneamiento será el encargado de realizar un estudio exploratorio en las comunidades que se cree que puedan beneficiarse con los programas de Saneamiento Básico de la División de Saneamiento Ambiental.

La información recogida será utilizada posteriormente por el Ingeniero Distrital ó los ingenieros encargados de realizar el estudio de campo correspondiente, ó programar actividades de Saneamiento Ambiental, y por el mismo técnico en Saneamiento en su labor de organización y promoción de la comunidad, de ahí que los datos recogidos deben gozar de veracidad y la mayor objetividad posible.

I N S T R U C C I O N E S

El Técnico en Saneamiento como encargado de realizar - el presente estudio exploratorio de la comunidad, debe tomar debida nota de las siguientes instrucciones. Las mismas se limitan a las preguntas que se considera que puedan tener alguna dificultad en su comprensión acerca de lo que se quiere averiguar o de la forma como se puede conseguir la información.

INFORMACION REQUERIDA

1. DATOS GENERALES:

1.- Ubicación Geográfica

1.1. Localidad .....

1.2. Cantón .....

1.3. Provincia .....

1.4. Departamento .....

2. Altitud sobre el nivel del mar .....

3. Clima .....

4. Servicios Públicos con que cuenta actualmente

a) Agua Potable .....

b) Luz eléctrica

c) Telégrafo, radio comunicaciones, teléfonos .....

d) Otros .....

5. Instituciones existentes .....

.....

5.1. En que institución confia más la comunidad .....

.....

6. Autoridades existentes .....

.....

II. DATOS DEMOGRAFICOS:

1. Población actual .....

2. Grupo étnico dominante .....

3. Distribución de la población.....

3.1. Por su ubicación en el terreno .....

a) Concentrada.....b).Dispersa.....

3.2. Por edades(porcentajes)

.....

a) Niños .....

b) Jóvenes .....

c) Adultos .....

d) Ancianos .....

// ..

I. DATOS GENERALES:

5. Se quiere saber que instituciones existen en la comunidad o que tienen algún programa o acción, como por ejemplo: Alcaldía, Suprefectura, Iglesia Católica, Iglesia Protestante, Coorporación de Desarrollo u otra Institución Pública ó privada; con el objeto de determinar posibles vínculos de coordinación en diferentes acciones.

5.1. A través de charlas con los comunarios el Técnico debe detectar cuál es la institución que cuenta - con mayor apoyo y confianza por parte de la comunidad.

6. Que autoridades existen en la comunidad, como por ejemplo, Alcalde, Corregidor, Parroco, Juez etc.

II DATOS DEMOGRAFICOS:

3.2. La distribución por edades se la realiza de la siguiente forma:

Niños 0 - 13 años
Jovenes 14 - 25 años
Adultos 26 - 60 años
Arcianos 61 adelante

4. Se quiere saber si la residencia de los pobladores es permanente en el lugar, o si un cierto porcentaje de la población en determinada época del año se ausenta del lugar por motivos de trabajo ó algún otro motivo se debe indicar cuál es el período en que se ausentan o sea, en que mes o meses.

5.1. La tasa de crecimiento puede ser obtenida de la Alcaldía, Puesto Sanitario o Parroquia.

5.2. Para determinar si el ritmo de crecimiento de la población es lento, normal o acelerado se debe tomar en cuenta que la tasa de crecimiento en el área rural en Bolivia es del 2%, si la tasa de crecimiento de la comunidad estudiada esta por debajo del - 2%, entonces el crecimiento puede ser calificado de lento y si se encuentra por encima puede ser calificado de acelerado, si el crecimiento es calificado como lento o acelerado se debe determinar la causa.

//

3.3. Por sexo

a) Varones .....

b) Mujeres .....

4. Residencia

a) Permanente (%) .....

b) Temporal (%) ..... Motivo por el que se ausenta del lugar .....

Tiempo ó período por el que se ausenta .....

.....

5. Crecimiento de la Población

5.1. Tasa de crecimiento

a) Lento..... Por qué .....

b) Normal .....

c) Acelerado .....Por qué.....

III. DATOS SOCIO -ECONOMICOS

1. Estado económico de la comunidad

a) Alto .....

b) Regular .....

c) Bajo .....

2. Principal actividad de la comunidad

a) Agricultura ..... Principales cultivos .....

.....

b) Ganadería .....Crianza de .....

.....

c) Artesanía .....Productos .....

3. Otras Actividades .....

4. Donde comercializan sus productos .....

5. Regimén de propiedad de la tierra (existencia ó no de títulos)

.....

6. Vías de comunicación

// ..

III. DATOS SOCIOECONOMICOS:

1. El estado económico de la comunidad es calificado de alto, cuando la mayoría de la población cuenta con un ingreso que le permite satisfacer olgadamente sus necesidades de alimento, vivienda, vestido, salud, educación y aún le queda un sobrante para invertirlo ó ahorrarlo. Es calificado de regular cuando la mayor parte de la población tiene un ingreso que le alcanza para satisfacer sus necesidades de alimento vivienda, vestido, salud y Educación, pero no tiene un sobrante. Y es calificado de bajo cuando ni siquiera le alcanza para satisfacer sus necesidades más primordiales.

   5.1. Es muy importante conocer cuál es el regimen de propiedad de la tierra, si existen ó no títulos de - propiedad, por que se puede dar el caso que en algunos lugares a pesar de haber tenido incidencia la Reforma Agraria, los campesinos aún no poseen títulos de propiedad, o que estos aún estén en trámite.

6. Lo que se quiere saber es que si la comunidad tiene disponibilidad de aporte, no sólo que cuente con los medios, sino si esta dispuesta a aportar voluntariamente en efectivo, mano de obra y materiales locales.

   7.1. Es necesario conocer si la comunidad tiene algún compromiso de aporte, con el objeto de construir una Escuela, Puesto Sanitario,estc., etc., esto con el objeto de no recargar demasiado a la comunidad en cuestión de aportes.

9. Es de mucha utilidad conocer cuales son las personas que tienen de alguna manera influencia sobre el comportamiento de los comunarios, estas personas son lo líderes, y entre estos hay que distinguir a los líderes visibles, o sea, aquellas personas que son dirigentes en cualquier tipo de grupo o son autoridades y los líderes latentes que son aquellas personas que por poseer un status destacado, o sea algún tipo de prestigio,en virtud del cuál influyen de manera determinante en la comunidad.

   Indicar con nombre y apellido tanto a los líderes visibles como también a las personas con "status" destacado. La mejor manera de conseguir esta información es a través de charlas informales con los comunarios,

// ..

// ..

a) Caminos carreteros .....

b) Ferrocarril .....

c) Comunicación fluvial .....

6.1. Distancia a la capital de la provincia ..... Kms.

6.2. Distancia a la capital del Departamento .....Kms.

6.3. Distancia a otros centros importantes.....Kms.

a .....

6.4. Costo de transporte de carga por qq.

a) A la capital de la provincia .....$b

b) A la capital del departamento .....$b

c) A otros centros .....$b. a .....

7. Existe en el momento disponibilidad de aporte por parte de la comunidad.

a) En efectivo .....

b) En materiales de la zona .....

c) En mano de obra.....

7.1. En la actualidad la comunidad tiene algún compromiso de aporte en efectivo, materiales ó mano de obra.....

con que objeto ..... Por que

tiempo .....

8. Grupos sociales existentes en la comunidad

a) Juntas vecinales ..... Organizadas por .....

b) Clubes de madres ..... Organizadas por .....

c) Clubes juveniles ..... Organizados por .....

d) Clubes deportivos ..... Organizados por .....

e) Asociaciones ..... Organizados por .....

f) Otros grupos ..... Organizados por .....

9. Líderes

9.1. Líderes visibles .....

.....

9.2. Personas con 'Estatus' destacado .....

.....

// ..

en estas charlas es conveniente que el técnico realice preguntas indirectas, como por ejemplo: ¿A que persona de la comunidad elegiría usted para que recaude dinero de la comunidad?, ¿Que pobladores merecerían ser declarados hijos predilectos de la población , - ¿a criterio suyo que personas merecerían ser las futuras autoridades de la comunidad . etc, etc.

10.2. La información sobre el porcentaje de analfabetismo, el técnico puede recavar al mismo tiempo que realiza el censo de la población.

11.2. El dato sobre enfermedades más comunes en la zona, debe ser proporcionado por el Médico o enfermera del puesto sanitario, como también preguntando a los comunarios.

11.4. Esta pregunta se refiere a que si en la comunidad esta en marcha algún programa sanitario, - como por ejemplo, erradicación de la malaria, etc. etc.

IV DATOS HABITACIONALES:

2.1. Tipo de vivienda se refiere a que si es construcción de adobe, ladrillo, etc.

2.4. En el croquis se debe colocar la distribución de viviendas y la distancia que existe entre unas y otras.

2.5. Se quiere si existealguna posibilidad de que la comunidad se expanda, ésto se puede saber a través de charlas con las autoridades y los comunarios. Los motivos por los que podría hacerlo son, por ejemplo, introducción de un nuevo cultivo en la región, dotación de tierras, instalación de una industria, construcción de un camino carretero troncal, etc. etc.

2.6. Si existe algún estudio de urbanización por parte de la Alcaldía o alguna otra institución. Si existe es importante señalar cual es la Institución que realizó dicho estudio (si es posible recavar planos).

// ..

10. Grado de instrucción.

10.1 Centros educativos existentes

a) Escuela ..... N°de Alumnos .....

b) Colegio ..... N°de Alumnos .....

c) Centros de educación de adultos .....

N°de alumnos. .....

d) Otros .....

10.2 Porcentaje de analfabetismo .....

11. Estado de Salud

11.1 Condiciones sanitarias de la comunidad .....

11.2 Enfermedades más comunes de la zona .....

11.3 Centros de atención y servicios.....

.....

11.4 Programas sanitarios existentes en la comunidad.....

.....

IV DATOS HABITACIONALES·

Breve descripción de la zona donde está asentada la comunidad

.....

.....

.....

2. Viviendas.

2.1. Tipo de viviendas .....

2.2. Condiciones de la salubridad de las viviendas.....

.....

2.3. Número de viviendas .....

2.4. Tenencia de la vivienda .....

a) Propietarios (%) .....

b) Inquilinos (%) .....

c) Ocupantes (%) .....

2.5. Croqúis de la distribución de viviendas ★

2.6. Existen posibilidades de expansión futura.....

// ..

(Si la respuesta es afirmativa) porqué .....

.....

2.7. Estudios de urbanización .....

.....

V. DATOS SOBRE FUENTES DE AGUA:

1. Fuentes posibles y aforos

a) Vertiente .....Caudal .....Fecha de aforo.....

b) Rio ..... Caudal .....Fecha de aforo .....

c) Pozo perforado ..... Caudal .....Fecha de aforo .....

d) Pozo excavado ..... Caudal ..... Fecha de aforo .....

1.1. Métodos y datos de aforo .....

.....

.....

1.2. Características de la fuente .....

.....

1.3. Distancia dela fuente a la población .....

.....

1.4. Existe algún estudio anterior para la dotación de agua potable

.....

2. Fuente que actualmente utiliza la población .....

.....

3. Calidad del agua (toma de muestras para análisis bacteriológico y Físico-Químico).

4. Datos sobre derechos del uso del agua.....

.....

5. Propiedad de los terrenos donde se ubicaran estructuras.....

.....

6. Sugerencias de la comunidad sobre el sistema de abastecimiento de agua potable a programarse.

.....

.....

// ..

V DATOS SOBRE FUENTES DE AGUA·

1. Un aforo se refiere a medir el caudal o cantidad de agua que proporciona una fuente de agua en un tiempo dado. - Los datos que se obtengan son de fundamental importancia para el diseño de un sistema de abastecimiento, por tanto, un aforo debe realizarse siempre en la época de estiaje a fín de que los resultados se ajusten a la realidad (Septiembre, Octubre, Noviembre). Existen diferentes formas de realizar un aforo este de acuerdo al tipo de fuente.

1.4. Es importante conocer si existe algún estudio realizado, por alguna otra institución.

6. La comunidad generalmente tiene una idea sobre el tipo de sistema de agua potable que quiere; cuando las condiciones técnicas lo permiten, hay que complacer los deseos de la comunidad.

Cualquier otro dato que el técnico considere que debe ser tomado en cuenta, y no esta incerto en el presente formulario, debe ser anotado en las observaciones.

/rbc.

7. Sugerencias del Técnico en Saneamiento sobre el sistema de abastecimiento de agua potable a programarse.

.....

VI DATOS SOBRE MATERIALES Y MANO DE OBRA:

1. Disponibilidad de mano de obra calificada en la localidad

.....

2, Costo de jornales usuales en la zona.

a) Peones ..... $b.

b) Albañiles ..... $b.

c) Plomeros .....$b.

d) Otros .....$b.

3. Materiales existentes en el lugar.

a) Piedra ..... Precio por camionada ..... $b.

b) Grava .....Precio por camionada .....$b.

c) Arena .....Precio por camionada .....$b.

d) Otros .....

.....

VII. DISPOSICION DE EXCRETAS·

1. Existencia de algún sistema de disposición sanitaria de excretas

a) No existe ninguno .....

b) Letrinas que no reunen condiciones sanitarias .....

c) Letrinas sanitarias .....

d) Cámaras sépticas .....

e) Red de alcantarillado .....

OBSERVACIONES: .....

.....

.....

.....

.....

Técnico .....

Area de trabajo .....

// ..

* 2.4. Croquis de la distribución de viviendas