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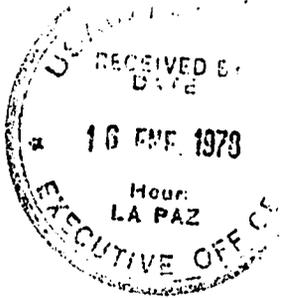
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IMPLEMENTATION IN THE ORGANIZATIONAL STRUCTURE OF THE
DIVISION OF ENVIRONMENTAL SANITATION OF THE
MINISTRY OF SOCIAL WELFARE AND PUBLIC HEALTH

1. Current Organizational Structure

At present, the organization of the Ministry of Social Welfare and Public Health is defined in the organic law provisionally approved by Ministerial Resolution No. 339 of the 27th of February, 1976.

In the organizational diagram contained in said law, the Environmental Sanitation Division (E.S.D.) figures as one of the Divisions under the Department of Ecology, which, in turn, is under the National Office of Public Health.

The above mentioned organic law establishes the general structure and functions of the Ministry. The second and eighth articles explain that the organization, attributions, and functions, as well as the coordination of and interrelation between the different units, will be the subject of future regulations, which will be issued once a Supreme Decree has approved said law.

For this reason, to date, the Division of Environmental Sanitation does not officially have a functional and organizational structure which defines its attributions and its interrelations with other levels, in the Ministry as well as at the regional level.

Informally, it can be said that the organization of the Environmental Sanitation program, as it operates at the present, follows the outline which is indicated in Annex No. 1 corresponding to the national and regional levels.

At the national level of said outline, the Chief of the ESD is responsible to the Department of Ecology and has the following components: An engineer who acts as the National Head of Environmental Sanitation, a secretary and a chauffer.

Only two units are responsible directly to this Office:

- a) One having administrative authority in which the following personnel are included - and administrator (economist), a warehouse attendant, an aide working in warehousing and purchasing, an accounting aide, two watchmen and a chauffer;
- b) A technical group composed of the following personnel - six engineers, one of whom acts as chief, and the rest undertake work relating to studies and project designs, four draftsmen-topographers, and environmental sanitation technician (supervisor), and a secretary.

The major part of the activities of the two units mentioned above are in the fields of water supply and waste disposal and, to a lesser degree, other fields related to Environmental Sanitation (control of food, public establishments, garbage, rodents, housing sanitation, etc.).

At the regional level, the Environmental Sanitation Offices, agencies of the Regional Health Units, operate in an informal manner, having two technical units: one undertaking the work in the field of water supply and in waste disposal, and which includes the Sanitation Shop which provides all services related to the acquisition, manufacture, storage, and distribution of equipment and materials for all construction; the other undertaking the rest of the Environmental Sanitation activities.

The following personnel are available for Cochabamba and Chuquisaca:

a) Cochabamba

- 1 Chief Engineer
- 1 Technical Supervisor for Environmental Sanitation
- 17 Inspectors for Urban Sanitation
- 15 Technicians for Rural Sanitation
- 1 Secretary
- 1 Bookkeeper
- 2 Well-drilling Technicians
- 2 Assistant well-drilling Technicians
- 2 Masons
- 2 Automotive mechanics
- 4 Chauffers
- 1 Watchman

b) Chuquisaca

- 1 Chief Engineer
- 1 Technical Supervisor
- 20 Technicians for Rural Sanitation
- 10 Technicians for Urban Sanitation
- 2 Well-drilling Technicians
- 2 Assistant Well-drilling Technicians
- 1 Person in charge of the Environmental Sanitation Shop
- 1 Automotive Mechanic
- 1 Chauffer
- 1 Mason
- 1 Bookkeeper

It should be noted that the Environmental Sanitation personnel of the Regional Health Units is selected initially by the District Engineer, and this appointment is then submitted for approval to the Physician/Director of the Regional Health Unit. Afterwards, the candidate's appointment is sent to the ESD for approval, which then requests the appointment through the National Office of Public Health of the Ministry of Social Welfare and Public Health.

As can be seen, this extraofficial organization does not correspond to the administrative necessities of a ministerial agency which has under its responsibility high-priority programs in the country's development plans, with investments of a magnitude to be substantially increased through the Rural Sanitation Project agreed upon with USAID.

Therefore, it would seem an opportune moment to suggest several modifications in the current organization as mentioned below.

2. Proposed Implementation in the Current Organization Outline

2.1 Justification

Apart from the considerations stated above, and taking into account the current opportunity arising from the study currently being undertaken with regard to the reorganization of the rural water supply and sewerage systems sub-sector for the country, it seems appropriate to improve the organizational structure of the ESD for the following reasons:

- a) The Rural Sanitation Project to be undertaken with the financial support of USAID will undoubtedly have significant consequences in the future development of programs in Basic Sanitation throughout the country;
- b) The view held concerning the development of programs for Rural Sanitation is based on the premises of decentralization, deconcentration and on administrative activity and rationality, without prejudice to the Ministry maintaining through the ESD its functions of assistance, coordination, supervision, evaluation, and control;
- c) Within the national plans for health, the sanitation programs play a role of vital importance, as they are a conditioning effect on the health status of the population and, therefore, considered as priority activities;
- d) For a rapid and rational use of the funds, by national, as well as international personnel assigned to the program, a practical and simplified organization is required in accordance with the responsibility that this investment will require;
- e) The proposed type of organization will benefit not only programs at the national level, but also at a community level, in that the agility and dynamism which is sought will result in the construction of a greater number of systems each budget year and, therefore, a greater number of people will be provided with water facilities annually;
- f) It is considered that one of the fundamental pillars upon which the Program of Basic Sanitation should rest, is that of community participation, not only during the process of construction of the systems, but in their future administration as well. When the division in charge of directing activities includes such a specialized unit in its infrastructure, with the adequate personnel and equipment, it will then take on the importance that such a program should have;
- g) The Ministry, as a consequence of undertaking the construction of the systems, automatically assumes the responsibility to maintain an advisory activity through the ESD, in that which

relates to administration, operation, and maintenance of these. For this purpose, units having a clear and well-defined function are required at the regional level, as well as, at the community level.

The ESD, through its corresponding specialized units, will also participate in advising, coordinating, supervising and evaluating the planning processes, technical studies, community promotion and education, construction, etc.

2.2 Proposed Organization

The organizational diagrams found in Annexes Nos. 2 and 3 indicate the proposed general organization for the current Environmental Sanitation Division (ESD), and its corresponding Sanitary Posts and Regional Health Units.

2.2.1 Description of and Interrelation Between the Different Levels

a) National Level

First, it is considered convenient that the current ESD be situated at the department level, directly responsible to the National Office of Public Health. The aim is to give the ESD a position that is in accordance with the importance of the programs under its charge, and with the magnitude of the proposed investments. This would mean greater autonomy and flexibility in fulfilling its activities.

It seems opportune to suggest that a Program Advisory Board be created that would guide the general policy of the country's sanitation program and further the rational administration of personnel, financial, technical and material resources, as well as serve as chief adviser to the Director of the Sanitation Department. The composition of this Board will be indicated below.

There would be two units at the advisory level:

- a) One which corresponds to those permanent and temporary advisers in the program's technical and administrative fields, who are sent by international organizations such as PAHO/WHO, UNICEF, AID, etc.; and
- b) The Coordinating Technical Committee which would work in collaboration with the Director's Office Department in resolving internal problems found in the sanitation activities.

The administrative support body, which is currently working with the ESD, would continue.

The general activities of Environmental Sanitation, under the responsibility of the current technical group, would continue to functioning under two well-defined divisions directly responsible to the Department of Environmental Sanitation. These are: the Environmental Hygiene Division and the Potable Water Supply and Waste Disposal Division.

For the moment, it is considered convenient that the former division begin functioning at the director's office level, with a sanitation technician and a secretary. Sections for food and environmental control, housing sanitation and waste disposal shall be created as these activities increase, and will be directly responsible to this Division.

Dependent sections under the Water Supply and Waste Disposal Division should operate in accord with the following outline:

- 1) Study and design section
- 2) Programming and information section
- 3) Supervision, operation and maintenance section
- 4) Community promotion section

b) Regional Level

Sections for environmental hygiene, water supply and waste disposal will be directly responsible to the Sanitation Offices of the Regional Health Units, having a structure similar to that of the Ministerial Department of Environmental Sanitation.

The Environmental Hygiene Section will continue to operate at a Department Director's office level, for the present, with a personnel which will be outlined below. Sections for food control, environmental control and housing improvement will be created as the rate of increase in such activities warrants.

Technical, promotional, warehouse and auxiliary service groups will be directly responsible to the water supply and waste disposal section.

The Regional Health Units will be directly responsible to the National Office Public Health as will be established through the regulations to be issued as a result of the organic law to be promulgated by the I.S.W./R.L. These regulations should not prevent the sanitation offices of said Regional Health Units from maintaining a technical relationship with the Department of Environmental Sanitation as relates to norms, planning, supervision, coordination, assistance, and control. The Environmental Sanitation

Department should also maintain its right to approve any sanitation personnel selected by the Regional Health Unit, and request their appointment by the National Office of Public Health.

The heads of the Regional Health Units shall primarily have authority over the planning, evaluating and controlling stages. The management of resources (financial, equipment and materials) will be delegated to the Regional engineers who are working on the program.

Under such circumstances, the Department of Environmental Sanitation and its branch Regional Offices will be responsible for the Sanitation constructions. Under other circumstances, the division of responsibility would only serve to create problems in the corresponding constructions and would give poor results.

2.2.2 Composition and Function of Each Unit

a) National Level

The advisory group and personnel needed in the different division of the Department of Environmental Sanitation, including their main functions, are as follows:

a.1) Departmental Head

A civil engineer, specialized in sanitary engineering, will be the Departmental Head, having in addition, secretarial, recording and transportational services.

His main duties shall include:

- Plan and evaluate those constructions which form part of the program according to the general outline and list of priorities drawn up by the MSW/PH.
- Direct, coordinate and control the development of the program's activities, shaping them within the general policy set by the Ministry.
- Study construction methods, check work programs and advise the National Administrative Office concerning the acquisition of materials, articles and equipment for the construction.

- Promote motivational, educational, and organizational programs in the community so as to obtain their participation in the program.
- Promote and maintain informed those national and international entities concerning the activities undertaken by the program, in the aim of benefiting through interchange in experience and mutual collaboration.
- Set up a regulation guideline for the program and see that it is followed.
- Prepare an annual departmental budget and control those resources allotted to the program.

a.2) Advisory Board

The Environmental Sanitation Advisory Board shall be composed of the following:

- The National Director of Public Health
- The Director of the Planning Section Office
- The National Administrative Director
- The Head of the Department of Ecology
- The Head of the Environmental Sanitation Department
- The Ministerial Legal Advisor

Their main duties shall include:

- Study and recommend a policy to be followed in overcoming the country's basic rural sanitation problems.
- Promote the rational use of personnel, financial, technical and material resources by those entities directly or indirectly related to the program's objectives and activities.
- Strive towards obtaining an increase in financial support in order to adequately cover the country's growing rural necessities.
- Inform and extend information concerning the program to all institutions related to the same for the purpose of elevating its importance in the country's development.

a.3) Technical Coordination Committee

The Technical Coordination Committee shall be composed of the following:

- The Head of the Environmental Sanitation Department
- The Head of the Administrative Division
- The Head of the Water Supply and Waste Disposal Division
- The Head of the Environmental Hygiene Division

By request of the Committee, the heads of different sections may also attend.

The Committee's duties are as follows:

- Collaborate with the Departmental Chief in the application, evaluation and revision of the program's policy.
- Participate in deciding and determining plans and programs, including resource distribution and acquisition.
- Approve initiatives and evaluate personnel training and capability.
- Make a study of and propose technical and administrative guidelines, submitting them to other decision-making authorities for approval.
- Advise the Departmental Chief in the prevention, moderation or solution of general problems which may arise at any program level.

a.4) Administrative Support Unit

The personnel included in this unit is the following: An administrator, a warehouse attendant, an aide working in warehousing and supplying, a bookkeeper, a secretary, two watchmen, two laborers, and a chauffeur.

This unit's duties are as follows:

- Handle all that relates to requests from authorized personnel for materials and services.

- Draw up an accounting plan that will govern investments at the regional level.
- Prepare the necessary documentation for the purchasing process at the national as well as international level.
- See that purchased material is received without delay.
- See to the maintenance of vehicles and equipment included in the program.

a.5) Water Supply and Waste Disposal Division

a.5.1 Chief Office

The personnel for this division is the following:

- A civil engineer, specialized in sanitary engineering, three secretaries who will work with the Chief Office as well as in the four sections, and two chauffeurs.

The following duties correspond to this group:

- Advise the Departmental Chief in water supply and waste disposal organizational plans.
- Program, distribute, supervise and coordinate all work delegated to the units under its charge.
- Participate in the Department's Technical Coordination Committee.
- Aid the Departmental Chief in preparing the annual budget and the general Departmental reports.
- Study, draw up and revise technical guidelines for Water Supply and Waste Disposal programs.
- Undertake studies and make designs for Water Supply and Waste Disposal systems.
- Coordinate and supervise activities at the operational level, supplying them with the necessary technical assistance in their construction, administration, operation, maintenance, promotion, etc.

- Promote the method guidelines to be followed in the process of community promotion and organization.

a.5.2 Study and Design Section

The personnel for this section is the following: a civil engineer, specialized in sanitary engineering, who will act as Section Chief, three civil engineers, preferably specialized in sanitary engineering, and four draftsmen-topographers.

Their duties are as follows:

- Draw up studies and designs for water supply and waste disposal systems.
- Take charge of supervising the construction when necessary.
- Promote contact and coordination between technical sections from other agencies within the same specialization for the purpose of exchanging mutual experiences.

a.5.3 Programming and Information Section

The personnel for this section is as follows: A civil engineer specialized or having experience in planning and a statistics technician.

Its duties are as follows:

- Collaborate with the Division Chief in planning and programming the development of activities within the Division itself.
- Coordinate the study at the national level in the field of water systems in the area under the responsibility of the Ministry of SW/PH.
- Decide upon methods for programming activities at the regional level. Collect and process the information necessary for controlling the program's progress at the central level.
- Collaborate in drawing up the annual Division budget.

- Establish and maintain statistical operations which allow the Division to furnish the different levels with the necessary information when it is required.
- Study and prepare the necessary documentation for obtaining the program's financial support.

a.5.4 Supervision, Operation and Maintenance Section

The personnel for this section is as follows:

- A civil engineer specialized in sanitary engineering and an operation and maintenance technician.

Their duties are the following:

- Advise and supervise the program's technical and administrative aspects at the regional level.
- Given the first opportunity, evaluate the program's activities at the regional level, indicating any necessary recommendations.
- Collaborate in making the annual work draft for the regional level and in determining budget allowances for the same.
- Collaborate in resolving technical and administrative problems which might arise at the regional level.
- Prepare operational and maintenance manuals for each kind and type of construction and advise in applying the corresponding guideline at the regional level.

a.5.5 Community Promotion Section

The personnel for this section is as follows:

A sociologist experienced in public relations and community promotion and development, a sanitation and community development technician and a publicity draftsman.

Their duties are as follows:

- Prepare guidelines and methods to be followed in motivating, organizing and educating the community to participate in the construction of the systems.
- Advise in the application of promotional, organizational and educational guidelines for the community at the regional level, and in organizational and functional procedures related to Administrative Councils for rural water systems.
- Prepare the models and instructions for socio-economic studies to be applied in the community and advise in their application at the regional level.
- Prepare the necessary material for social communicational and sanitary educational activities.

a.6) Environmental Hygiene Division

As already mentioned, this Division will begin functioning at a chief office level for the time being. A chemical engineer, specialized or experienced in clinical analysis and/or biology, will be in charge, aided by a sanitary technician and a secretary.

In broad terms, this Division's duties will be to draw up guidelines for food control, public establishments, air, soil and water control, as well as noise and obnoxious sounds control, housing sanitation, rodent extermination, garbage disposal, etc.

This Division will also advise in applying the corresponding guidelines at the regional level and will gather and process all information on these activities necessary for preparing reports required by other levels or related entities.

b) Regional Level

The composition and duty of each sanitation office at the regional level is as follows:

b.1) Office Chief

A civil engineer preferably experienced in sanitary engineering, will be in charge, aided by a secretary and a chauffeur.

The duties are as follows:

- Direct the sanitation activities under this office's jurisdiction at the regional level and/or those areas which are delegated to this office by the Ministry through the Environmental Sanitation Department.
- Coordinate, program, distribute and supervise the activities under their responsibility.
- Study and submit preproject budgets and work programs agreed upon by the Unit Physician/Director for approval by the Sanitation Department.
- Coordinate and work with the specialized technical agencies in the Ministerial Sanitation Department, furnishing advice when needed for better results in undertaken activities.
- Promote and maintain relations with governmental organizations, communities and others connected to the program.
- Submit any original reports made by the personnel to the Departmental Office, after having been submitted for approval to the Unit Physician/Director.
- Submit routine or other reports punctually when they are requested at any level.
- Undertake the controlling of the program's constructions on their own accord or by competent agencies.

b.2) Water Supply and Waste Disposal Section

The chief office personnel is as follows: A civil engineer, preferably specialized in sanitary engineering, a secretary, and a chauffeur.

This section's activities will be undertaken by three well-defined groups, as follows:

b.2.1 Technical Group

For the purpose of differentiating between personnel assigned to Cochabamba or to Chuquisaca, they are indicated separately:

Cochabamba: A civil engineer, 7 sanitation technicians, 2 well-drilling technicians, 2 assistant well-drilling technicians, 2 mechanics, a chauffeur and 2 masons.

Chuquisaca: A civil engineer, nine sanitation technicians (four assigned to the USAID project), two well-drilling technicians (one assigned to the USAID project), two assistant well-drilling technicians (one assigned to the USAID project), a mechanic, a chauffer, and a mason.

b.2.2 Warehouse and Auxiliary Services Group

With the following composition: A warehouse attendant, a bookkeeper, two chauffers, two watchmen, and two laborers.

b.2.3 Promotion Group

Having the following personnel: A supervising technician experienced in community promotion and development, seven sanitation technicians (ten in Chuquisaca; five will work on the USAID project and five on the UNICEF project), a chauffer for managing the mobil audiovisual unit, located in Cochabamba.

The duties for the three groups in this section can be summed up as the following:

- Supervise the construction of the systems.
- See to the financial control and work progress, reporting periodically to the Sanitation Office Chief.
- Develop and coordinate the work plans of the three groups under its charge.
- Direct, supervise and advise the system's administrative councils concerning organization and control, including the operation and maintenance of the same.
- Control the regularity and appropriate presentation of reports submitted to the Ministerial Departmental level by the Sanitation Office.
- Handle all that relates to the acquisition, manufacture, storage and distribution of materials or other articles needed by the construction.
- Guide the communities' activities so that they participate in the development of the construction.

- Record and control those amounts directly invested in each of the constructions.

b.3) Environmental Hygiene Section

This section shall continue operating as it is currently. The personnel for this section include: A technical Sanitation Supervisor who coordinates inspection activities related to the guideline set up for food control, public establishments, air, soil, water, housing sanitation, waste disposal control, etc.

This section shall also process information received for submitting reports to the Sanitation Department at the Ministerial level.

2.3 Increase in Environmental Sanitation Personnel

The previous suggestions demonstrate the need for increasing the sanitation personnel at the Ministerial level as well as at the level of the Regional Health Unit.

The present analysis has not only taken into account the Environmental Sanitation Division but also the Cochabamba and Chuquisaca Regional Health Units which are directly involved in the execution of the rural sanitation projects agreed upon with USAID for the next four years.

The required additional personnel, under such circumstances, is the following:

a) Environmental Sanitation Department

a.1 Departmental Chief

1 Recording Official

a.2 Administrative Division

1 accountant, 1 secretary, 2 laborers

a.3 Water Supply Division

2 chauffers, 2 secretaries

a.3.1 Programming Section

1 Planning engineer, 1 statistician

a.3.2 Supervision Section

1 Operation and maintenance technician

a.3.3 Promotion Section

1 sociologist or a professional experienced in public relations, community promotion and development, 1 publicity draftsman

a.4 Environmental Hygiene Division

Request the transfer of the chemical engineer from the La Paz Unit to that of the Sanitation Department.

b) Regional Health Units

b.1 Cochabamba

2 engineers, 1 secretary, 1 warehouse attendant, 2 chauffeurs, 1 watchman, and 2 laborers

2.4 Annual Implementation

The list of positions necessary at the central level of the Sanitation Department as well as at the level of the Cochabamba and Chuquisaca Regional Health Units, including the proposed positions is indicated in Annex No. 4, as refers to the USAID project.

All of the positions should be filled by no later than 1979 by which time the project will have started.

In short, the provision for positions during 1978 and 1979, as indicated in the graph found in Annex No. 4, is the following.

1. Environmental Sanitation Department

| Position Requested | To be Filled in | |
|--|-----------------|------|
| | 1978 | 1979 |
| 1 Recording Official | | 1 |
| 1 Accountant | 1 | |
| 3 Secretaries | 2 | 1 |
| 1 Planning engineer | 1 | |
| 1 Statician | | 1 |
| 1 Sociologist | 1 | |
| 1 Publicity draftsman | | 1 |
| 1 Operation and maintenance technician | 1 | |
| 2 Chauffeurs | 1 | 1 |
| 2 Laborers | 1 | 1 |
| SUB-TOTAL | 8 | 6 |

2. Cochabamba

| | | |
|-----------------------|---|---|
| 2 Engineers | 1 | |
| 1 Warehouse attendant | 1 | |
| 1 Secretary | | 1 |
| 2 Chauffeurs | | 2 |
| 1 Watchman | | 1 |
| 2 Laborers | 1 | 1 |
| SUB-TOTAL | 3 | 6 |

3. Chuquisaca

| Position Requested | To be Filled in | |
|--------------------|-----------------|-----------|
| | 1978 | 1979 |
| 2 Engineers | 1 | 1 |
| 2 Secretaries | 1 | 1 |
| 4 Chauffers | 2 | 2 |
| Watchmen | 1 | 2 |
| 2 Laborers | 1 | 1 |
| SUB-TOTAL | <u>6</u> | <u>6</u> |
| TOTAL | <u>17</u> | <u>18</u> |

2.5 Salary Increase

Technical and supporting personnel who work on national level and regional level sanitation programs are underpaid in comparison with the pay scale of personnel working for other entities in the public sector; therefore, as indicated in the graph found in Annex No. 4, an annual increase in salaries is suggested as of 1978 for all mentioned positions. This suggested increase would serve to stabilize personnel, avoiding a turnover in technical personnel specialized in Sanitation, and also serve to stimulate the personnel to higher efforts and responsibility in the fulfillment of their activities.

The proposed increase in salaries will encourage the employee to do his job well, dedicating his full time to the work under his responsibility. Without a salary increase, the technician would be forced to search for other means of gaining his livelihood and maintaining a standard of living that accords with his professional position.

2.6 Salary and Per Diem Costs

The costs of salaries and benefits for Sanitation personnel working on the project are also indicated in Annex No. 4. The estimates have been calculated up to 1979, by which time the positions should be filled. The estimations for 1980, 1981 and the first three months of 1982 have been based on the total costs corresponding to 1979, with an additional 10 percent increase.

These estimations have been based on earnings received in 1977 by professionals in the public sector who work for state agencies or at other similar levels. An annual 10 percent increase has been proposed based on the salary earned in the previous year. The figures for these costs are indicated in Annex No. 4A including those figures corresponding to an alternative annual increase of 0 percent, 5 percent, or 10 percent.

An estimation of costs for per diem and transportation fare for professional and supporting personnel who must spend some time in the field is indicated in Annex No. 5.

The 1977 costs for this item are based on the amounts authorized by current National Regulation for the public sector. The EST has only two categories: \$b 230 per diem (US\$ 1.50) for professional personnel, and \$b 180 per diem (US\$ 9.00) for supporting personnel.

The J/W/P should be prevailed upon to obtain a more adequate per diem from the National Government that reflects the present cost of living. The current per diem does not cover expenses in the least, and as a consequence, personnel who should spend time in the field are not motivated to do so, which naturally leads to a general deterioration in the program.

A 10 percent increase is being considered, however, for 1979 and 981 due to a possible hike in transportation fares. Three alternatives are being considered for 1978, 1979, 1980, 1981, and 982: The first alternative is no increase at all, the second is a 5 percent increase, and the third is a 10 percent increase.

Estimations for personal expenses and per diem were made only for personnel assigned to USAID financed activities. The reason for this is to be able to determine the amount which the National Government has committed itself to paying as accorded in the Agreement, Annex No. 1, page 11 (letter) C - Bolivian Government Contribution - C. Professional and Supporting Personnel.

3 Alternatives

3.1 General Organization

The proposed changes in organization and personnel will serve to improve the organization and the current structure of the Environmental Sanitation Division and the Sanitation Offices at the regional level, which do not appear to be adequate for handling a project of such goals and investments as agreed upon with USAID. The changes in structure would permit the Ministry by means of its specialized Environmental Sanitation Unit to answer to the financing entity for all its responsibilities acquired under the signed agreement. This will be possible once the Departmental Sanitation Offices are directly responsible to the Ministerial Sanitation Department in water supply and waste disposal activities.

For the present, a transitional organization is suggested. This would first of all avoid substantial changes in the J/W/P structure since it concerns the development of a project in only a limited area of the country; and secondly it would allow time for evaluating the results of the project, which would indicate any obstacles encountered in its development.

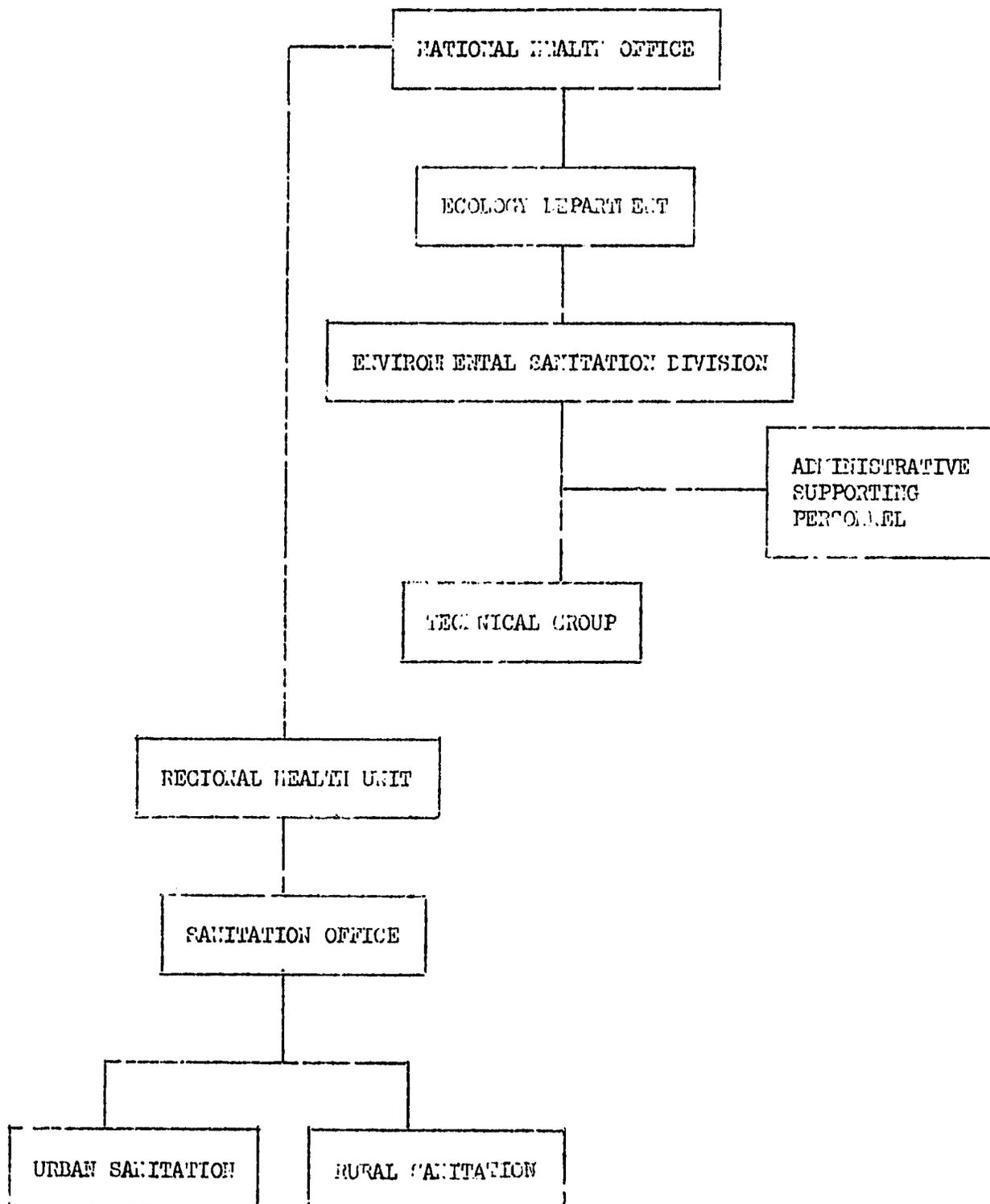
Should unresolvable problems arise in the future, or should be investments or water supply and waste disposal programs reach a nation-wide proportion, as is possible considering that it relates to man's basic needs and necessities, especially in Latin America's rural areas which have long been neglected; then it would be necessary to search for a more rapid and rational manner for completing the programs.

In such case, the MSW/PI should rely upon the services of specialized entities such as the World Health Organization through which the necessary collaboration for resolving such eminent problems could be obtained.

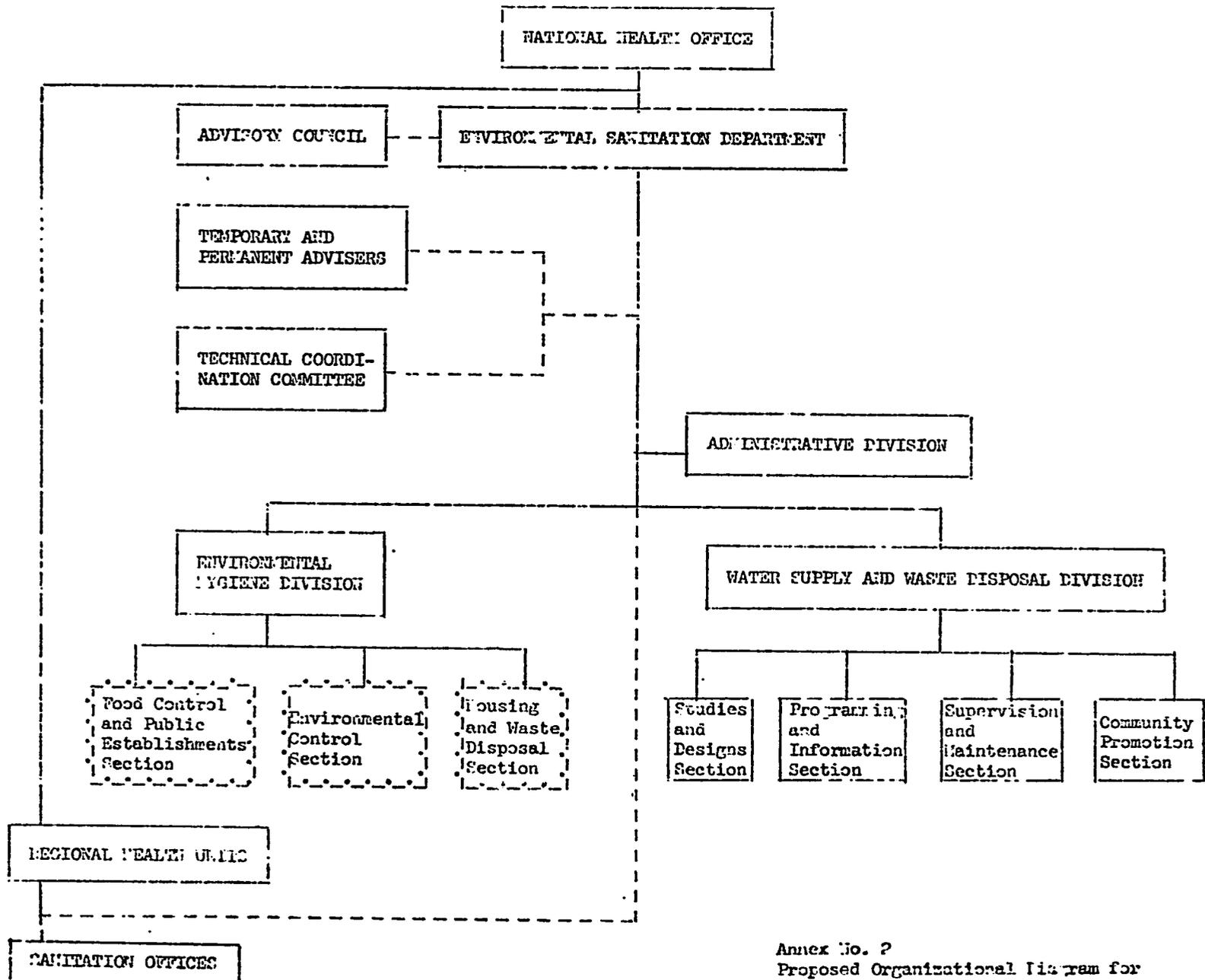
3.2 Project Execution

Another alternative is being considered in order to further the project. The alternative is that regional level activities could be accelerated under a single regional command in Cochabamba rather than under the two Sucre and Cochabamba Offices considering that other programs, in coordination with UNICEF, are being undertaken in Chuquisaca. The parallel needs of both programs could overlap and cause administrative difficulties which would detain the progress of each program, from the stand point of acquisitions, stored material and account reports.

A final decision should be taken on this matter once a progress evaluation has been made.

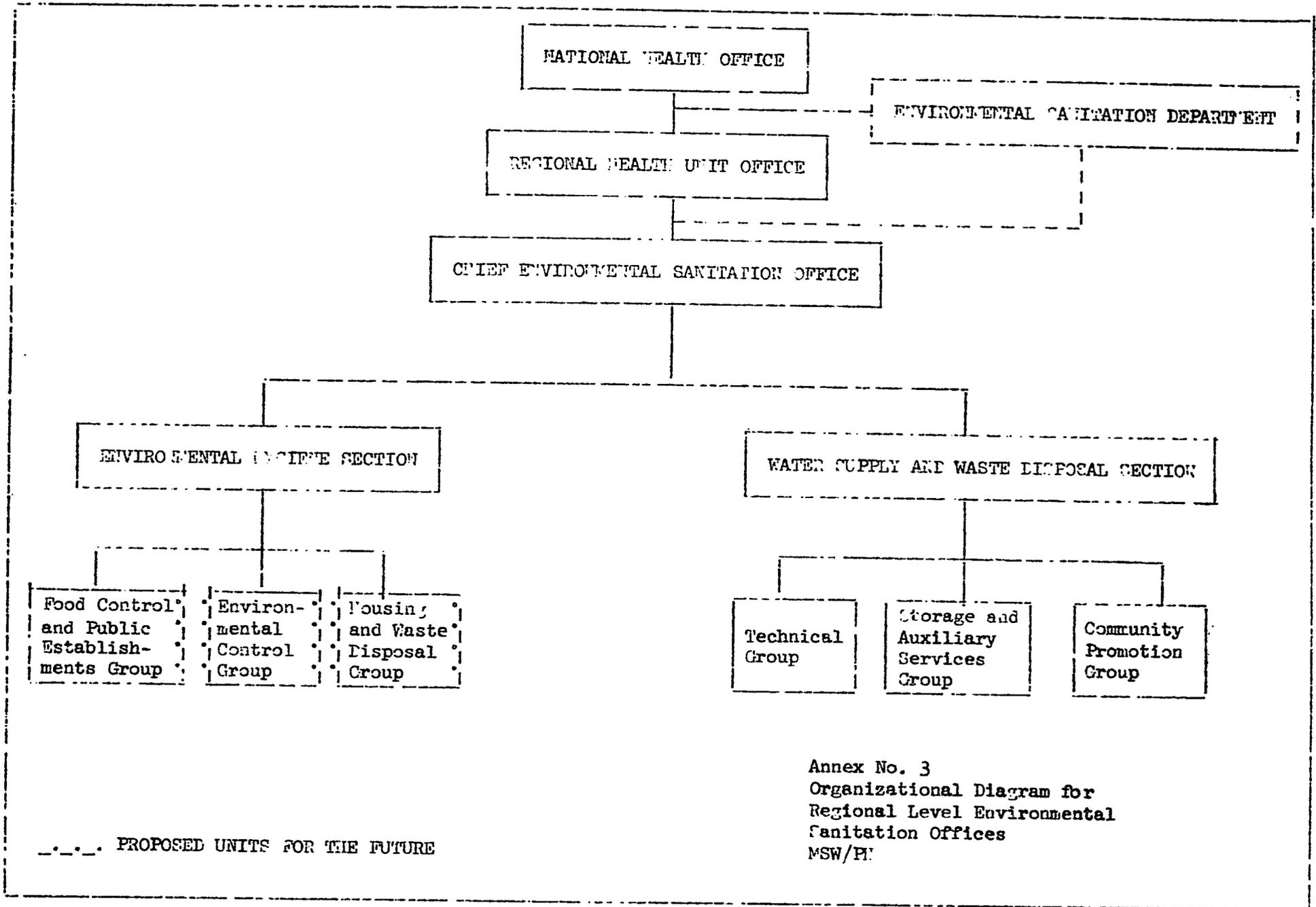


Annex No. 1
 Current Organizational Diagram of the
 Environmental Sanitation Division
 MSW/Pi



Annex No. 2
 Proposed Organizational Diagram for
 National Level Environmental
 Sanitation Department
 MCH/PL

PROPOSED UNITS FOR THE FUTURE



..... PROPOSED UNITS FOR THE FUTURE

Annex No. 3
 Organizational Diagram for
 Regional Level Environmental
 Sanitation Offices
 MSW/PI

ANNEX 4A

SUMMARY OF SALARIES AND SOCIAL BENEFITS
SANITATION PERSONNEL - USAID PROJECT

(Bolivian Pesos)

| AGENCY | % Of Increase | Y E A R S | | | | | | TOTAL | TOTAL |
|-----------------------|---------------|-------------------|-----------|-----------|-----------|-----------|-------------------|------------|-----------|
| | | 1977 4th Trim. | 1978 | 1979 | 1980 | 1981 | 1982 1st Trim. | \$b | US\$ |
| Sanitation Department | 0 | 189,009 | 1,155,895 | 1,406,585 | 1,406,585 | 1,406,585 | 351,646 | 5,916,305 | 230,300 |
| | 5 | | 1,213,680 | 1,476,914 | 1,550,760 | 1,628,298 | 427,478 | 6,486,089 | 318,258 |
| | (1) 10 | | 1,271,485 | 1,547,243 | 1,701,967 | 1,872,164 | 514,845 | 7,096,713 | 348,219 |
| Cochabamba | 0 | 274,349 | 1,744,720 | 2,240,344 | 2,240,344 | 2,240,344 | 560,086 | 9,300,187 | 456,339 |
| | 5 | | 1,831,956 | 2,352,361 | 2,460,979 | 2,593,478 | 680,788 | 10,202,911 | 500,634 |
| | 10 | | 1,919,192 | 2,464,378 | 2,710,816 | 2,981,898 | 820,022 | 11,170,655 | 548,118 |
| Chuquisaca | 0 | 137,009 | 939,033 | 1,193,511 | 1,193,511 | 1,193,511 | 298,378 | 4,954,953 | 243,128 |
| | 5 | | 985,985 | 1,253,187 | 1,315,846 | 1,387,639 | 362,680 | 5,436,346 | 266,749 |
| | 10 | | 1,032,936 | 1,312,863 | 1,444,149 | 1,588,564 | 436,855 | 5,952,376 | 292,069 |
| TOTALS | 0 | 600,367 | 3,839,648 | 4,840,440 | 4,840,440 | 4,840,440 | 1,210,110 | 20,171,445 | 989,767 |
| | 5 | | 4,031,621 | 5,082,462 | 5,336,585 | 5,603,415 | 1,470,896 | 22,125,346 | 1,085,640 |
| | 10 | | 4,223,613 | 5,324,484 | 5,856,932 | 6,442,626 | 1,771,722 | 24,219,744 | 1,188,407 |

NOTE:

(1) Since the Central Office and Chuquisaca will use Water Supply and Waste Disposal personnel approximately 50 percent of the time, this diagram has been drawn up indicating half of that which is indicated in Annex No. 4 for 1978 and 1981. Half a trimester has been indicated for 1977 and 1982, the estimated project time during those years.

(2) Personnel assigned to Water Supply and Waste Disposal will spend all of their time on the Cochabamba project. However, 1977 and 1981 have been indicated in only a trimester period, for the same reason as mentioned above in Note (1).

ANNEX No. 5

ESTIMATION OF PER DIEM AND TRANSPORTATION FARES FOR SANITATION PERSONNEL 1977 - 1982

USAID PROJECT

(Bolivian Pesos)

| AGENCY | % OF Increase | Y E A R S | | | | | | TOTAL \$b | TOTAL US\$ |
|-----------------------|---------------|--------------------------|-----------|-----------|-----------|-----------|---------|-----------|------------|
| | | 1977 4th Trimester | 1978 | 1979 | 1980 | 1981 | 1982 | | |
| Sanitation Department | 0 | 100,000 | 430,000 | 540,000 | 540,000 | 550,000 | 138,000 | 2,298,000 | 112,758 |
| | 5 | | 452,000 | 564,000 | 573,000 | 605,000 | 164,000 | 2,458,000 | 120,608 |
| | 10 | | 474,000 | 590,000 | 600,000 | 655,000 | 278,000 | 2,598,000 | 127,478 |
| Cochabamba | 0 | 100,000 | 400,000 | 500,000 | 500,000 | 500,000 | 125,000 | 2,125,000 | 104,269 |
| | 5 | | 420,000 | 525,000 | 550,000 | 578,000 | 152,000 | 2,325,000 | 114,082 |
| | 10 | | 441,000 | 550,000 | 605,000 | 715,000 | 197,000 | 2,608,000 | 127,969 |
| Chuquisaca | 0 | 50,000 | 200,000 | 250,000 | 250,000 | 250,000 | 62,000 | 1,062,000 | 52,110 |
| | 5 | | 210,000 | 260,000 | 273,000 | 287,000 | 75,000 | 1,155,000 | 56,673 |
| | 10 | | 220,000 | 275,000 | 302,000 | 332,000 | 91,000 | 1,270,000 | 62,310 |
| TOTALS | 0 | 250,000 | 1,030,000 | 1,290,000 | 1,290,000 | 1,300,000 | 325,000 | 5,485,000 | 269,136 |
| | 5 | | 1,082,000 | 1,349,000 | 1,396,000 | 1,470,000 | 391,000 | 5,938,000 | 291,364 |
| | 10 | | 1,135,000 | 1,415,000 | 1,507,000 | 1,703,000 | 466,000 | 6,476,000 | 317,763 |

A 10 percent increase in air fares has been calculated for 1979 and 1981.

US\$ 1 = \$b 20.38

TECHNICAL ASSISTANCE PLAN

The AID Technical Assistance Plan is a vital component in the Rural Sanitation Project, which the MSW/PH has agreed upon to undertake with the financial collaboration from AID according to Agreement No. 511-U-058 and 511-0458 signed by both parties September 16, 1977. Technical advice will be given in the following fields:

1. General Administration
2. Operation and maintenance in systems under construction
3. Community promotion and education
4. Education
5. Impact evaluation
6. Accounting

The advisory body could be doing activities on those aspects outlined in the following graph.

MAIN ASPECTS OF THE TECHNICAL ASSISTANCE PLAN

PROJECT 511-U-058 AND 511-045E

| <u>Advisory Field</u> | <u>Duration (months)</u> | <u>Activity Schedule</u> | <u>Adviser's Qualifications and Experience</u> | <u>Adviser's Main Duties</u> |
|---------------------------|------------------------------|------------------------------|--|--|
| Administration | 30 | 2/78- 7/80 | Professional Sanitation Technician with a minimum of 5 years experience in sanitation project planning and administration. | Collaborate with the MSW/PH personnel in all that relates to organizational adjustments and implementations in the executing entity; coordinate in designing and starting administrative information systems, and also coordinate in the accounting and evaluation of technical assistance activities. |
| Operation and Maintenance | 30 | 7/78-12/80 | Sanitation Engineer having a minimum of 5 years experience in well-drilling activities and pump equipment operation. | Design and establish an operation and maintenance system, submitting a periodical evaluation; coordinate in designing and creating training courses for technicians in charge of equipment installation and maintenance. |

| Advisory Field | Duration (months) | Activity Schedule | Adviser's Qualifications and Experience | Adviser's Main Duties |
|-----------------------------------|-------------------|-------------------|--|--|
| Community Promotion and Education | 5 | 3/78-4/78 | Sociologist or anthropologist specialized in community development having a minimum experience of five years in rural community works. | Plan strategy and outline for manuals on community promotional, motivational, educational and organizational activities using audiovisual aides. Draw up regulations for the construction's Community Council. |
| | | 10/79-11/79 | | Run field analysis and tests and evaluate their results. |
| Education | 3 | 6/78-8/78 | Health expert experienced in training personnel (five years minimum experience) | Analyze the training level and the current structure of courses for Sanitation technicians. Plan refresher courses for in-service technicians and courses for new personnel. |

| Advisory Field | Duration (months) | Activity Schedule | Adviser's Qualifications and Experience | Adviser's Main Duties |
|-------------------|-------------------|-------------------|---|---|
| Impact Evaluation | 5 | 4/79- 6/79 | Epidermologist or Health Expert with a minimum of 5 years experience in evaluating health programs. | Plan a system to be installed for impact evaluations and institutional adjustments. |
| | | 3/80 and 3/81 | | Analyze information and adjustments in order to evaluate the last two-year period. |
| Accounting | 3 | 8/78-10/78 | Certified Public Accountant with a minimum of 5 years experience. | Analyze the current accounting system and plan or change the system according to its needs, including budget and financial report planning. |

OUTLINE OF ACTIVITIES TO BE UNDERTAKEN BY THE
ENVIRONMENTAL SANITATION DIVISION OF THE MSW/P.
FOR OCTOBER, 1977

I. General Aspect

The MSW/P. has acquired several obligations under USAID/Bolivia through the Project Agreement (AID Loan 511-U-05C and AID Donation 511-045E) signed on September 16, 1977, for the purpose of building rural water systems and latrines in Cochabamba and North Chuquisaca over the next four years. The Environmental Sanitation Division (ESD), representing said Ministry as the specialized unit in all of the agreement aspects, should submit the following information to AID as required before payments can be made:

Article 5. Section 5.1

- c) A financial plan of the project mentioning the amount to be matched by the National Government counterpart.
- d) A required Technical Assistance Plan.

These requirements must be submitted within 90 days after signing the Agreement.

Section 5.2

- a) A detailed plan indicating implementation and evaluation for the first year of project activities.
- c) An activities schedule indicating training programs to be set up by the MSW/P. for in-service training and for preparing new personnel including a schedule of sanitary education activities at the community level.
- d) A plan specifying the duration of each stage in the construction of warehouses for materials.
- e) A maintenance and housing plan for the project's vehicles and equipment.

These requirements must be submitted within 120 days after signing the Agreement.

USAID/Bolivia has contracted a programming, organizing and administrative consultant to work with ESD personnel in preparing the required documents, so that the MSW/P. (ESD) can comply correctly and promptly with the above mentioned requirements.

The consulting will be done in two stages: The first from September 12 to October 8, 1977, and the second from October 31 to November 26, 1977.

The Consultants have been in permanent contact with the ESD Officials throughout the first stage and have begun preparing requirements 5.1.c and 5.1.d. Copies of these have been submitted to AID and EST, although the results are still not well defined.

Moreover, the determining of technical specifications and characteristics for project pipes and accessory parts has begun and several contacts have been made for arriving at the best method for obtaining such materials.

Considering that the first consulting stage expires on October 8, 1977, the ESD should begin preparing the next activity with the collaboration of the AID consultant in October, at the start of the second consulting stage on October 31, so that the required documents stipulated under the agreement can be submitted by the end of November or at the latest by December, 1977.

II. ESD 1977 Activities Schedule from October 10th to the 31st

- A. A diagram should be drawn up indicating an activities schedule for the project's first year, including the sequence of activities in the construction process for the systems.

The number of activities to be undertaken throughout the year should be specified as suggested in the model graph below. Project activities for the remaining years could also be projected in a like manner.

Number of Activities

| Activity | 1977 | | 1978 | | 1979, etc. | |
|--------------------------|-----------------------|--|-----------------------|--|-----------------------|--|
| | Cochabamba-Chuquisaca | | Cochabamba-Chuquisaca | | Cochabamba-Chuquisaca | |
| 1. Com. Study | | | | | | |
| 2. Bidding Preparation | | | | | | |
| 2.1 Topographical Survey | | | | | | |
| 2.2 Designs and Reports | | | | | | |
| 3. | | | | | | |

The following are suggested as principal activities:

1. Sanitary and socio-economic study of the area.
2. Project preparation, such as topographical surveys, designs, reports, and construction budget.

3. Community motivation, promotion, and organization.
4. Obtaining materials and equipment for the construction.
5. Construction execution.
 - 5.1 Water systems
 - 5.2 Well digging
 - 5.3 Letrines

An evaluating system shall be drawn up for determining the establishment of priorities for the construction of the projects based on parameters and criteria for selecting communities.

The parameters and criteria are as follows:

1. Availability of supply resources in the considered area.
2. Level of necessity, interest, and collaboration found in the community.
3. The number of inhabitants to be covered under the project.
4. The existence of development plans under other state agencies for that region or area.
5. Community aspects.
 - 5.1 Whether or not there is a community council.
 - 5.2 Availability for participating in the project execution.
6. Determining the sources, whether they are underground or on the surface, taking into account their distance from the community and their quantity.
7. Access to the area considering type of roads and distances.
8. Concentration of the area's population that would permit the construction of communal systems.
9. Existing or available resources that might belong to the area or to other entities.
- B. A plan will be devised for completing the storehouses by stages, some of which are already under construction in La Paz, Cochabamba, and Sucre.

The different stages in completing said storehouses will be outlined by activities in a bar diagram, including the estimated corresponding investments.

- C. A maintenance and storehouse plan shall also be drawn up for housing vehicles and project equipment, which, according to Implementation Chart No. 1, should include the following:

1. The organization's responsibilities.
 2. Procedures.
 3. Required maintenance personnel.
 4. Maintenance and repair of acquired and current equipment.
 5. Spare parts and materials necessary for maintenance and selecting their purchase.
 6. Annual estimates of required funds.
- D. Apart from the requirements mentioned above, the determining of characteristics and technical specifications for equipment and materials required in the project will continue in order to speed up the construction.

This aspect could be accomplished with AID collaboration in the second consulting stage.

PROJECTED TECHNICAL CHARACTERISTICS AND SPECIFICATIONS FOR
PIPE AND PVC ACCESSORY PARTS

1. The pipes should be made of poli (chloride-vinyl) rigid, type 1, grade 1.
2. The pipes should be odorless and tasteless, and should have the same or equivalent physical and chemical qualities as specified in the A.S.T.M. regulations concerning this type of pipe (ASYM D 1785-68).
3. The pipes should comply with the toxicity regulations cited above. The results of a non-toxicity laboratory test should be submitted.
4. Pipe thickness should be based on the corresponding regulation table (diagram 40) in accordance with construction stipulations specified in No. 8. Pipe quantity, diameter, and working pressure limits are described under this number.
5. All bidders should present the necessary documentation giving evidence that they have complied with regulations concerning the required PVC pipes.
6. Grooved pipes to be fitted to accessory parts should have a minimum thickness of 2.8 mm.
7. A tin stabilizer should be used in manufacturing the pipes.
8. Pipe quantity, diameter, and working pressure limits are as follows:

| <u>Diameter in mm.</u> | <u>Pressure limits (Kg./cm²)</u> | <u>Quantity (M.L.)</u> |
|------------------------|---|------------------------|
| 20 (3") | | |
| 25 (1) | | |
| 40 (1 1/2") | | |
| 50 (2") | | |
| 65 (2 1/2) | | |
| 75 (3") | | |

9. The pipes should have a maximum length of 4 m. and should include their respective connecting fittings.
10. The required accessory parts should also comply with the specifications stated in the ASTM D-224K-69 regulations.
11. The quantity, diameter, and pressure limits for accessory parts are as follows:

| <u>Type of Accessory</u> | <u>Quantity</u> | <u>Diameter</u> | <u>Working Pressure Li.</u> |
|--------------------------|-----------------|-----------------|-----------------------------|
|--------------------------|-----------------|-----------------|-----------------------------|