

UNCLASSIFIED

DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, D.C. 20523

4970247 (2)
PD-AAD-875-B1

PROJECT PAPER

~~FAIR~~
HOUSING FOR
EXPERIMENTERS

195p.

Proposal and Recommendations
For the Review of the
Development Loan Committee

PRIORITY
MINOR
1-1-67

INDONESIA - Rural Sanitation Manpower Development

497-0247

AID-DLC/P - 2133

UNCLASSIFIED

DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523

UNCLASSIFIED

DLC/P-2133

December 16, 1975

MEMORANDUM FOR THE DEVELOPMENT LOAN COMMITTEE

SUBJECT: Indonesia - Rural Sanitation Manpower Development

Attached for your review are the recommendations for authorization of a loan to the Government of the Republic of Indonesia ("Borrower") of not to exceed six million, eight hundred thousand United States dollars (\$6,800,000) to assist in the financing of the United States dollar and local currency costs of a rural sanitation manpower training project for Indonesia.

The loan proposal is scheduled for consideration by the Development Loan Staff Committee on December 22, 1975, at 9:30 a.m. in Room 3524 NS; please note your concurrence or objection is requested by close of business on December 24, 1975. If you are a voting member a poll sheet has been enclosed for your response.

Development Loan Committee
Office of Development Program
Review

Attachments:
Summary & Recommendations
Project Analysis
Annexes A-I

Rural Sanitation Manpower Development Project
- Indonesia -

Capital Assistance Committee:

USAID/Indonesia

Chairman/Technical Advisor	:	J. Jarrett Clinton, Jr.
Loan Officer	:	Steven P. Mintz
Economist	:	James A. Norris
Engineer	:	Leslie C. Koski
Controller	:	Richard L. Warin
Legal Advisor	:	Rodney W. Johnson

AID/Washington

Rural Sanitation Manpower Development Project
- Indonesia -

Abbreviations/Acronyms Used:

1. GOI - Government of Indonesia
2. MOH - Ministry of Health
3. PUSKESMAS - Community Health Center
4. Repelita I - The First Five-Year Plan, 1969-1974
5. Repelita II - The Second Five-Year Plan, 1974-1979
6. Repelita III - The Third Five-Year Plan, 1979-1984
7. RSMD - Rural Sanitation Manpower Development Project
8. WHO - World Health Organization

Local Government Organization:

1. Province - headed by Governor
2. Kabupaten - District; headed by Bupati
3. Kecamatan - Subdistrict; headed by Camat

RURAL SANITATION MANPOWER DEVELOPMENT PROJECT- INDONESIA -

TABLE OF CONTENTS

	<u>Page</u>
PART I. <u>SUMMARY AND RECOMMENDATIONS</u>	
A. Face Sheet	
B. Recommendations	1
C. Description of the Project	1
D. Summary Findings	3
E. Project Issues	4
PART II. <u>PROJECT BACKGROUND AND DETAILED DESCRIPTION</u>	6
A. Background	6
B. Detailed Description	10
PART III. <u>PROJECT ANALYSES</u>	14
A. <u>Technical Analysis</u>	14
1. The Present Manpower Training System	14
a. Preservice Training	14
b. Inservice Training	17
c. Advanced Training	18
2. Rural Sanitation Personnel On-the-Job	19
3. Project Concepts	21
a. Personnel to be Produced by the RSMD	22
i. The Sanitation Technologist	22
ii. The Sanitarian	23
iii. Advanced Sanitarians	24
iv. Other	25

TABLE OF CONTENTS (continued)

b.	Redevelopment and Strengthening of Preservice Training	25
i.	Schools for Sanitation Technologists	25
ii.	Schools for Sanitarians	27
c.	The Inservice Training Program	28
d.	Advanced Training Program	28
e.	Quantitative and Qualitative Considerations	28
4.	Technical Assistance and Fellowships	29
5.	Technical Findings and Environmental Assessment	31
B.	<u>Financial Analysis and Plan</u>	33
1.	Budget Analysis	33
2.	Recurrent Budget Analysis	35
3.	Proposed Methods of Financing	35
C.	<u>Social and Economic Analysis</u>	37
1.	Background Information on Rural Indonesia	37
2.	Subproject Selection	39
3.	Social Consequences and Benefit Incidence	40
4.	Sociocultural Feasibility	41
a.	Communication Strategy	42
b.	Spread Effect	42
5.	Least Cost Considerations	43
6.	The Role of Women	44
PART IV.	<u>IMPLEMENTATION ARRANGEMENTS</u>	46
A.	RSMD Organization and Implementation Capability	46
B.	Implementation Plan	48
1.	Project Implementation Plan	48
a.	An Overview	48
b.	Design and Construction of Schools	49
c.	Technical Services	49
d.	Commodity Procurement	50
e.	Software Development	51
f.	The Revised Training Program	52

TABLE OF CONTENTS (continued)

2. Loan Implementation Plan	53
3. RSMD Monitoring	54
a. GOI Monitoring	54
b. AID Monitoring	55
C. Evaluation	55
D. Conditions, Covenants and Negotiating Status	56

PART V ANNEXES

A. AID/W PRP Message	
B. Project Technical Details	
1. Specific Disease Prevalence, Indonesia, 1972	
2. Parasites Prevalence per 100 Population, Indonesia	
3. Ranking of Causes of Mortality in Indonesia	
4. Field Distribution of Sanitarian Personnel	
a. by Province	
b. by Municipality	
c. by Kecamatan	
5. An Analysis of the Demand and Supply of Rural Sanitarians in Indonesia.	
6. Pertinent Information on Existing Institutions	
7. Job Description for the Sanitarians plus Information and Skills The Rural Sanitarian Must Have in Addition to Those Specifically Identified in His Job Description.	
8. Conversion Costs of the Academies for Health Controllers Into Schools for Sanitation Technologists.	
9. Listing of the RSMD Schools for Sanitarians	
10. RSMD Costs for Construction and Supplying the Schools for Sanitarians.	
a. Construction Costs	
b. Office Equipment and Supplies	
c. Classroom Equipment and Supplies	
d. Laboratory Equipment and Supplies	
e. Transportation Costs	
f. Field Work Equipment and Supplies	
g. Library Equipment and Supplies	
h. Summary Equipment and Supply Costs	
i. Student Graduation Kit	

TABLE OF CONTENTS (continued)

11. RSMD Costs Associated with the In-Service Training Program and RSMD Administration.
12. Job Description for Sanitarian Advisory Team
13. Financial Disbursement Table
14. AID Financial Disbursement Table
15. RSMD Financial Output Table
16. Recurrent Costs of the RSMD

18. Distribution of Rural Water Supply Schemes undertaken during Repelita I and GOI FY 1974/75.
19. Health Manpower by Sex
20. Organization Chart of the Ministry of Health
21. Organization Chart of the Center for Education and Training
22. RSMD Implementation Plan
23. Source List, Selection Criteria and Request for Expressions of Interest for RSMD Advisory Services
24. Ministry of Health and Ministry of Interior Organizational Interrelationships

- C. Logical Framework Matrix
- D. Project Performance Tracking Network
- E. Statutory Checklist
- F. USAID Director's Certification
- G. Borrower's Application for Assistance
- H. Project Description for Loan Agreement
- I. Draft Authorizing Document and Other Requested Approvals

1. TRANSACTION CODE
 Original Change
 Add Delete

2. COUNTRY/TERITORY
Indonesia

3. DOCUMENT REVISION NUMBER

4. PROJECT NUMBER
497-247

5. BUREAU
 a. Symbol **EA** b. Code **2**

6. ESTIMATED FY OF PROJECT COMPLETION
 FY **80**

7. PROJECT TITLE - SHORT (stay within brackets)
Rural Sanitation Manpower Development

8. ESTIMATED FY OF AUTHORIZATION/OBLIGATION
 a. INITIAL ^{mo. yr.} **12 75** b. FINAL FY **80**

9. ESTIMATED TOTAL COST (\$000 or equivalent, \$1 =)

a. FUNDING SOURCE	FIRST YEAR FY <u>76</u>			ALL YEARS		
	b. FX	c. L/C	d. Total	e. FX	f. L/C	g. Total
NO. APPROX. (USD) TOTAL	1,399	5,401	6,800	1,399	5,401	6,800
(Grant)						
(Loan)	1,399	5,401	6,800	1,399	5,401	6,800
HOST GOVERNMENT	0	7,217	7,217	0	7,217	7,217
OTHER DONORS						
TOTALS	1,399	12,618	14,017	1,399	12,618	14,017

10. ESTIMATED COSTS/AID APPROPRIATED FUNDS (\$000)

a. Agency/Division/Project/Activity	b. Priority	c. Ref. No.	FY <u>76</u>		FY <u>77</u>		FY <u>78</u>		ALL YEARS	
			d. Grant	e. Loan	f. Grant	g. Loan	h. Grant	i. Loan	j. Grant	k. Loan
PH	401	541		6,800		0		0		6,800
TOTALS				6,800		0		0		6,800

11. ESTIMATED EXPENDITURES
 0 3260 2,849

12. PROJECT PURPOSE(S) (stay within brackets) Check if different from PID/PRP

The purpose of the Rural Sanitation Manpower Development Project is to develop a system that will allow Indonesia to meet its quantitative and qualitative manpower needs in the field of rural environmental sanitation.

13. WERE CHANGES MADE IN BLOCKS 12, 13, 14, OR 15 OF THE PID PAGESHEET? IF YES, ATTACH CHANGED PID PAGESHEET.
 Yes No

14. ORIGINATING OFFICE CLEARANCE

Signature: *Thomas C. Niblock*
 Thomas C. Niblock

Title: **Director, USAID Indonesia**

Date Signed: mo. day yr. **11 20 75**

15. Date Received in AID/W, or For AID/W Documents, Date of Distribution: mo. day yr. **11 28 75**

B. Recommendations. It is recommended that a loan be authorized for \$6,800,000 with the following proposed terms:

1. Maturity: forty years including a ten-year grace period.
2. Interest: two percent per annum during the grace period and three percent per annum thereafter.
3. Currency: interest and principal repayable in U.S. dollars.

A waiver is sought along with this authorization from the source/origin/componentry rules for local currency procurements for the Fixed Amount Reimbursement portion of the loan.

C. Description of the Project

The purpose of the Rural Sanitation Manpower Development Project, RSMD, is to develop a system that will allow Indonesia to meet its quantitative and qualitative manpower needs in the field of rural environmental sanitation. The creation and operation of such a manpower development system will remove the major barrier to the expansion of the delivery of environmental sanitation facilities to the rural populace and will thereby ultimately result in the improvement of overall health conditions in rural Indonesia.

At present, manpower requirements for rural environmental sanitation programs are met through a loose network of Academies for Health Controllers and Schools for Sanitarians and Assistant Sanitarians. The Academies train supervisory-level generalist public health officers while the Schools produce two classifications of field technicians. These institutions are poorly equipped, financial support is inadequate, and instruction is in need of improvement.

In order to achieve the Project's objectives, the RSMD is designed to upgrade the capacity of these existing educational training institutions to produce more and better qualified rural sanitation employees and to improve the skills and knowledge of the existing cadre. Two categories of rural sanitarians will be produced: supervisory-level officers (Sanitation Technologists) and field-level technicians (Sanitarians). /

Two Schools for Sanitation Technologists and nine Schools for Sanitarians will be created out of the existing educational system to train these classifications of health personnel.

Classrooms, offices, libraries, laboratories, workshops, field demonstration sites, dormitories, kitchen units and staff housing will be constructed and fully supplied and equipped where the existing physical facilities are clearly deficient. Ten manyears of foreign technical assistance will be provided to train instructors of the eleven educational institutions and to assist with the development of: (i) school curricula and revised methodologies for pre-service training of both Sanitarians and Sanitation Technologists; (ii) in-service training courses to improve the knowledge and skills of the existing rural sanitation cadre to the level of quality of the newly-trained Sanitarians and Sanitation Technologists; (iii) a field environmental sanitation manual for utilization by all rural sanitarians; and (iv) upgrading courses to advance special sanitation-related skills. Twenty-six fellowships for academic, non-degree training in the United States will be given to senior educators at the Schools for Sanitarians and Sanitation Technologists. Other educators at these institutions will be given the opportunity to pursue graduate level academic training in Indonesia.

During the four-year life of the RSMD: (a) two courses of four-to-five months duration will be given to the instructors of all the rural sanitation schools; (b) in-service courses of 6 weeks duration will be given to the entire cadre of rural sanitarians; (c) two presentations of the one-year program for the pre-service training of Sanitarians will be conducted; and (d) two classes will be enrolled and studying in the three year program at each of the two Schools for Sanitation Technologists. All those graduating from pre-service and in-service courses will be supplied a field manual on environmental sanitation and a field kit, both of which will increase their effectiveness on the job. By the end of the Project, the following conditions will indicate that the purpose of the RSMD has been met: (a) the number of qualified technical-level field sanitation workers in the rural areas will have increased from 830 to 2442 while the number of supervisory environmental sanitation personnel will have increased from 180 to 398; (b) the entire cadre of rural sanitarians will have received in-service training to improve their ability to function in their roles; (c) nine Schools for Sanitarians and two Schools for Sanitation Technologists will be functioning with the capacity of graduating 360 Sanitarians and 100 Sanitation Technologists annually.

The Training and Education Center within the Ministry of Health will be responsible for the execution of the Project. The Directorate of Hygiene and Sanitation within the Directorate General of Communicable Disease Control of the same Ministry, which is responsible for the execution of rural sanitation schemes in Indonesia and the employment of the rural sanitation cadre, will cooperate with the Training and Education Center in the implementation of the RSMD.

D. Summary Findings

The RSMD will, as designed, help Indonesia meet its short and longer-term qualitative and quantitative manpower needs in the field of rural environmental sanitation. This will remove the major constraint to the expansion of the provision of environmental sanitation facilities in the rural areas of Indonesia. The improved water supply and other sanitation facilities will have a favorable impact on improved health conditions for the rural populace.

There is an adequate supply of qualified high school graduates to provide candidates for the Schools of Sanitarians and Sanitation Technologists. Graduates of these institutions will be guaranteed employment by the Ministry of Health and the provincial governments. An analysis of the retention and the provincial data for technical and administrative personnel indicates that incentives are such to attract and hold competent employees.

An inspection of all existing school facilities along with the physical requirements necessary to implement an effective manpower development program indicates that the elements of construction, equipment and materials as specified in this Project Paper are necessary to successfully execute the RSMD. An analysis of the software needs of the RSMD (i.e., curriculum development for in-service, pre-service and upgrading training; revisions in teaching methodology; field manual preparation; and evaluation) indicates that they are adequately met with the provision of technical assistance and training of trainers both in Indonesia and abroad.

Organizationally, the Center for Training and Education within the Ministry of Health will be responsible for all GOI technical and budgetary support for the Schools for Sanitarians and Schools for Sanitation Technologists during the execution of the Project.

Although the Training and Education Center will continue financial and technical support for the Schools for Sanitarians even after completion of the Project, it is anticipated that the Ministry of Education will assume full support for the two Schools for Sanitation Technologists at some time after completion of the RSMD (in accordance with long-range GOI plans to have the Ministry of Education eventually administer all the academy-level institutions now run by other government agencies). It should be noted in this regard that the loan agreement will contain a borrower covenant that the Government of Indonesia agrees to continue the financial and technical support for the operation of both types of institutions even after termination of the RSMD. Discussions and recent actions by the central and provincial governments indicate that they are enthusiastically in support of the RSMD.

Alternative strategies for the creation and maintenance of a cadre of Sanitarians and Sanitation Technologists in sufficient quantity and quality to implement rural water/sanitation schemes in Indonesia have been compared with the RSMD as designed and presented in this Project Paper and it has been determined that the RSMD is the least-cost alternative to the achievement of the Project's purpose. The Project is also socially sound and will result in rural villagers utilizing and benefiting from improved water supply and sanitation facilities. Women will receive equal consideration for admission to both the Schools for Sanitarians and Sanitation Technologists (through the requirement of standardized admission criteria to the educational institutions) and therefore will have a professional government career open to them; thereby enhancing their role in the development of Indonesia.

In summary, the Rural Sanitation Manpower Development Project is technically, economically and socially sound. It has also been determined that Indonesia has the capability to effectively maintain and utilize the Project (see Mission Director's 611 (e) certification at Annex F). Furthermore the Project meets all applicable statutory criteria (see Annex E).

E. Project Issues

The following major issues were raised during the preparation and presentation of the Rural Sanitation PRP to AID/Washington and have been resolved as follows: (i) Will positions be guaranteed for each student graduated from the Schools for Sanitarians and Sanitation Technologists? The GOI has agreed to provide such a guarantee and it will appear as a borrower covenant in the loan agreement (see page 58).

(ii) Will the GOI clearly allocate the responsibility for technical and financial support for the Schools for Sanitarians and Sanitation Technologists following termination of AID assistance? Yes. A discussion of the anticipated division of responsibilities for such support is found on pages 46 through 48 .

(iii) Will the Ministry of Health suspend admission to the Schools for Sanitarians and Sanitation Technologists for a one-year period in order to train trainers, develop curriculum, revise teaching methodologies, etc.? It has been decided not to interrupt operations but rather to offer: (a) two courses instead of one for the training of instructors at different times in order to allow all Schools to remain open; and (b) the six-week in-service training course to all graduates of the sanitarian schools during the last year of the old program (See discussion on pages 48 through 52).

(iv) Will the Ministry of Health alter the current training of two classifications of technical-level rural sanitarians and focus on only one category? This has been agreed to by the GOI (See discussion on pages 22-24).

(v) Will the Ministry of Health alter the current training of its two academy-level schools away from general public health education and towards the training of rural sanitarians? Yes, the Ministry of Health has agreed to this. (See discussion on pages 25-26).

(vi) Is a single overseas fellowship for the GOI Project Manager sufficient to achieve the Project's objectives? Should some training in neighbouring South-East Asian nations also be included in the RSMD? It has been decided to expand the number of overseas fellowships from one to twenty-six to allow senior educators at many of the Schools for Sanitarians and Sanitation Technologists to study in an academic, non-degree setting for approximately 1 year. The loan will allow these senior educators to stop in neighbouring Asian countries for observation and discussion with counterpart officials on the way to or from their U.S. training program. In-country fellowships for academic graduate-degree training will also be available for other instructors at these institutions. (See discussion on page 31).

(vii) Should the technical assistance component of the Project be grant or loan-financed? It has been decided to have such services loan-financed and the Ministry of Health has accepted it. (See discussion on pages 35-36).

Other concerns raised by AID/Washington regarding (a) the size, duration, and costs of the advisory team, (b) the activities of other donors in the field of rural sanitation, (c) the logical framework matrix indicators, and (d) the adequacy of the three-year RSMD program are discussed and resolved on pages 29-31, 9-10, 14, and 48.

There are no major issues still facing the RSMD.

PART II. Project Background and Detailed Description

A. Background

Approximately 83% of the population, or 110 million Indonesians, live in rural areas in an estimated 46,000 villages. The vast majority of this rural populace has to depend upon unsafe water from dug wells, rivers, canals and ponds, which are always liable to be polluted. In certain islands and coastal areas where potable water is not available, water has to be brought by boat from nearby areas producing safe water. Villages in the mountainous areas of the country use bamboo pipe to carry water from natural springs. It has been estimated that little more than 1% of the total rural population had access to a safe water supply in 1974.

Not surprisingly then, water associated diseases (including skin infections, diarrheal diseases and eye infections) are among the outstanding health problems facing Indonesia (See Annex B1 for a listing of the most prevalent diseases identified in a Ministry of Health household survey conducted in 1972). Recent studies have found that the infestation of parasites spread by contaminated water to be almost 100% among all age groups in the rural population survey (See Annex B2 for a listing of the prevalence rates of parasites in South Sulawesi, West Java and Central Java). Furthermore cholera and typhoid are endemic in most areas of Indonesia and many cases of paratyphoid and infectious hepatitis have been reported. It is also clear that diseases related to deficient water supply and a lack of sanitation are among the principal causes of mortality (See Annex B3 for a ranking of the causes of mortality in Indonesia). It should particularly be noted that diarrhea and enteritis in children under age 2 is the leading cause of death in Indonesia.

The rural water supply program of the First Five-Year Plan, Repelita I (1969-1974), covered only pilot projects. It included the installation of 121 piped water supply schemes in 116 villages which benefited some 388,000 people. Another 233,000 people benefited from the installation of 1,950 hand pump systems. The total population benefiting from the rural sanitation program then amounted to only

621,000 individuals, which represented an increase from 1% (prior to Pelita I) to 1.6% of the total rural population. The allocation of funds by the Central Government for rural water supply schemes during this period was \$757,000.

Latrine construction activities during the First Five Year Development Plan were mainly based on the initiative of the Provincial and Kabupaten Health Offices. Such activities, however, were very limited and no national program evolved. No more than about .01% of the rural population had or used facilities for the safe disposal of excreta during this period.

In the Second Five-Year Plan, however, one of the Ministry of Health's five priorities is to increase rural environmental sanitation facilities with special emphasis on the provision of rural water supply. Using "Presidential Instructions" or INPRES funds, some \$5,542,000 was allocated for the execution of a rural community water supply and latrine program in GOI FY 1974/75. A sum of \$258,000 was also made available through the regular development budget. UNICEF provided G.I. pipes, fittings and equipment costing an additional \$1.8 million to support this program. Approximately 2.6 million and .7 million rural villagers benefited respectively from the installation of safe water supplies and latrine facilities by the end of the GOI FY 1974/75. During the current GOI FY 1975/76, INPRES funds allocated to the rural environmental sanitation program has increased to \$9,746,000. The total additional rural population to utilize the resulting water supply and latrine facilities is estimated at 3.6 million and 1.5 million respectively. At this rate, 15.8% and 5.6%, respectively, of the projected rural population will be utilizing water and latrine installations by 1980.

At the central government level, the responsibility for rural water supply and latrine project design, selection, resource allocation, supervision of construction and energizing community participation has been assigned to the Directorate of Hygiene and Sanitation under the Directorate General of Communicable Disease Control in the Ministry of Health. This Directorate works through its subdivisions at the Province, Kabupaten and Kecamatan levels; the Kecamatan being the level of government where the actual implementation of rural sanitation programs take place through utilization of the community health centers (PUSKESMAS). The program is presently being carried out by some 109 Health Controllers (academy trained public health officers), 1,100 Sanitarians and Assistant Sanitarians (technical-level sanitation workers), and

Auxiliary Sanitarians or Sanitary Aides (generally volunteers) with assistance in construction provided by the villagers themselves. The field distribution of these officials by Province, Municipality, Kabupaten, and Kecamatan is presented in Annex B4 (a), (b) and (c).

The major constraint to the expansion of the rural sanitation program in accordance with the plans for Repelita II and beyond is the shortage of qualified rural sanitarian personnel to carry out the program. The DAP Health Sector Assessment prepared by USAID points this out:

"The Department of Health clearly states that the primary constraints in developing rural water and sanitation programs are insufficient personnel, both quantitatively and qualitatively. These constraints coupled with the considerable time required to generate community agreement dictates that any significant impact on rural water supply and sanitation will demand greater analysis and technical skills than are available or planned for the immediate future."

This intuitive recognition on the part of USAID and the Ministry of Health has been confirmed by a quantitative analysis of the demand for sanitarian personnel over the Second and Third Five Year Plans which is presented as Annex B5. According to this study the following numbers of well-qualified Health Controllers (Sanitation Technologists) and Sanitarians will be necessary to execute the GOI rural sanitation program over the next nine years:

	<u>Existing Personnel</u>	<u>Demand by end Repelita II</u>	<u>Demand by end Repelita III</u>
Health			
Controllers (Sanitation Technologists)	180	958	958
Sanitarians	830	3440	3900

Clearly there is a great need to improve the system by which Indonesia meets its manpower needs in the field of rural sanitation.

USAID interest in the rural sanitation problems in Indonesia began in early FY 1974 with discussions with the Directorate of Hygiene and Sanitation. At that time, the GOI had not yet begun to increase its budgetary allocations for rural sanitation facilities;

therefore capital for the procurement of pumps, pipes and the like along with the shortage of qualified sanitarians were identified as primary constraints to the expansion of the program and possible areas for AID assistance. In April of 1974, Mr. Charles S. Pineo on a short-term consultancy to USAID, issued a report entitled "Suggested Cooperative GOI/AID Rural Sanitation Project" which focussed on what might be done for an AID-financed rural sanitation project. Simultaneously, the GOI accelerated its commitment to the rural sanitation program at the rates noted above. It became obvious that AID involvement should focus on a manpower training program. Consequently an American Public Health Association (APHA) Team composed of a health educator, a sanitary engineer, and a health auxiliary trainer were contracted beginning early in November 1974 to make an in-depth analysis of the requirements for and issues involved with such a training and manpower development project. Their report became the basis for the Rural Sanitation Manpower Development PRP submitted to AID/Washington in January 1975. Following AID/Washington's review and approval of the PRP, the health educator member of the November/December APHA team consultancy returned for six weeks in April and May of 1975 to assist with the further development of the Project: his report was issued in May. *see with file*

Throughout the development of this Project, close dialogue has been maintained between the Mission, the Ministry of Health and international donors involved in the field. It should be noted, however, that no other donor is directly supporting the training of sanitarians in Indonesia. ||

The World Health Organization (WHO) has three resident consultants working in the field of sanitation. Two of them are associated with the Directorate of Hygiene and Sanitation within the Ministry of Health: one as a general advisor and a second as a technical advisor on the design of sanitation works. The third consultant works out of the sanitary engineering department of the Bandung Technical Institute (ITB). There are no consultants with WHO within the Center for Training and Education itself and in general the expertise of the WHO advisors is in nursing and organizational development.

With UNDP funds, WHO is also assisting the GOI with a rural sanitation field demonstration pilot project within a kabupaten in the Province of East Java. There is one resident consultant associated with this activity.

Two consultants from the WHO Regional and Central Offices in New Delhi and Geneva assisted the Government of Indonesia with the overall field sanitation manpower projections as presented in Annex B5. USAID maintained close contact with these consultants during their visits and the RSMD generally reflects the combined USAID-WHO determinations.

Aside from WHO, UNICEF also has an interest in rural sanitation in Indonesia. It has provided in the past and continues to provide substantial assistance for pipes, hand pumps and related field commodities. Short-term UNICEF staff have consulted with WHO and USAID in RSMD development.

B. Detailed Description

The purpose of the Rural Sanitation Manpower Development Project is to develop a system that will allow Indonesia to meet its quantitative and qualitative manpower requirements in the field of rural environmental sanitation. Two classifications of personnel will be provided by this system on a continuing basis:

(a) Sanitation Technologists, or senior high school graduates who will receive three years of academy-level training leading to a Bachelor's of Science degree who will be prepared to plan, administer and evaluate sanitation programs at the central, provincial and kabupaten levels of government, to instruct in sanitation at appropriate educational institutions and to supervise the activities of Sanitarians; and (b) Sanitarians, or senior high school graduates who will receive one year of specialized technical training and will be capable of operating sanitation programs at the kecamatan health center level. The creation and operation of such a manpower development system will remove the major barrier to the expansion of the delivery of environmental sanitation facilities to the rural populace, of which only an estimated 1.6% had access to a safe water supply as of early 1974. This will ultimately result in the improvement of the overall health conditions of the rural populace.

By the end of the four-year duration of the RSMD or July 1980, there will be several conditions which will indicate that the Project's purpose will have been met. All existing rural sanitation field workers and professional level rural sanitarians will have been upgraded to a point where they can more effectively carry out the GOI's ambitious rural sanitation program. The number of qualified technical-level field sanitation workers in the rural areas will have been tripled from 830 to 2,442 while the number of professional-level supervisors of the rural sanitation program will have doubled

from 180 to 398. Furthermore nine fully-equipped Schools for Sanitarians and two fully-equipped Schools for Sanitation Technologists will have graduated 720 Sanitarians and 120 Sanitation Technologists respectively with the capability of producing an additional 360 Sanitarians and 100 Sanitation Technologists on an annual basis.

Key assumptions for achieving the Project's purpose include: (1) the currently employed rural sanitation field workers are willing able, and available for upgrading training; (2) the supply of secondary school graduates interested in and available for pursuing careers in the sanitation profession is adequate to graduate 720 Sanitarians and 120 Sanitation Technologists by July of 1980 and to sustain an output of 360 Sanitarians and 100 Sanitation Technologists on an annual basis over the long-run; (3) the GOI will guarantee positions for all graduates of these eleven schools; and (4) central government support will be sufficient to sustain these schools. The first two assumptions are discussed and analyzed in considerable detail on pages 20-21 and 25 of this Project Paper and the last two assumptions are covered as borrower covenants on pages 57-58.

To achieve the sector goal of improving the overall health of rural Indonesians by improving their sanitation facilities, it is assumed that: (1) GOI interest in the expansion of rural water supply and latrine facilities in rural areas, as expressed by increased budgetary support, continues; and (2) there is a direct linkage between improved rural sanitation and improved health. Regarding the former assumption, it should be noted that the Ministry of Health has sharply increased the funds flowing into this sector over the past two years and has plans to continue to increase these allocations through Repelita III (see page 7). Regarding the direct linkage between the provision of improved sanitation facilities and improved health, it has been noted on page 6 that water-associated diseases (including skin infections, diarrhea and enteritis, eye infections, cholera, typhoid, paratyphoid, and infectious hepatitis) are outstanding health problems facing the rural population. An IBRD/IDA report entitled "Village Water Supply and Sanitation in Less Developed Countries" dated March 1974 provides the most definitive statement to date on the relationship between the provision of a safe water supply and the control and/or alleviation of these water-borne diseases:

"A survey of the findings of twenty-six empirical studies carried out in various parts of the world directed at the association between water supply and health certainly suggests that a significant

relationship exists between an adequate, safe and convenient source of water and the incidence of waterborne and water-related diseases. The studies provide evidence, particularly for diarrhea diseases that a more convenient water supply outlet (closer to the user) is generally associated with lower infection rates and that villages with a piped water supply tend to have a lower incidence of a variety of water-associated diseases. However, the studies provide little information that intuition would not, for the magnitude of the relationship among improved water supply, sanitation and health remains uncertain. It is normally so affected by other economic, environmental, social and cultural factors that specific predictive statements cannot be used to forecast with acceptable accuracy the improvement to health from specific water supply improvements. At the same time, however, it can be concluded that all other measures such as improved excreta disposal, food and market sanitation, personal hygiene and village cleanliness, which can be taken to prevent and control the filth-borne diseases are so dependent on the availability of a good water supply that permanent improvements in health will be unlikely if not impossible unless a safe and convenient water supply either precedes or accompanies the other measures."

The RSMD recognizes the interrelationships between improved health and rural water supply, sanitation and other economic, environmental, social and cultural factors and attempts to establish a stronger linkage by gearing the revised training programs, both inservice and preservice, to these other factors. Thus the rural sanitarian who is called upon to stimulate community awareness and educate rural villagers in the need for and proper utilization of environmental sanitation facilities, will be better able to ensure a very significant impact on the improvement of rural health conditions as a direct consequence of the RSMD inputs and resultant outputs described below.

RSMD inputs include 10 man-years of foreign technical assistance which will result in: (1) the revision of the school curriculum and teaching methodologies utilized for the upgrading of existing MOH personnel, training of new Sanitarians and Sanitation Technologists, and design of special courses in sanitation for advancement in the profession; and (2) the development of a field environmental sanitation manual. Stipends, twenty-six U.S. and thirty-seven in-country fellowships, and foreign technical assistance will be combined to produce a group of sixty-three competent trainers to be employed full-time as instructors at the Schools for Sanitarians and Sanitation Technologists. Stipends will also be provided to allow for the in-service training

of all existing rural sanitarians in six-week courses and the pre-service training of all Sanitarians and Sanitation Technologists. Equipment, materials, construction contractor services and local manpower will yield two fully-equipped Schools for Sanitation Technologists and nine Schools for Sanitarians with classrooms, offices, libraries, laboratories, workshops, field demonstration sites, dormitories, kitchen units, staff housing, and appropriate transportation. And finally through the provision of appropriate equipment and materials, all existing MOH personnel receiving in-service training and all new graduates of the Schools for Sanitarians and Sanitation Technologists will receive a field kit and environmental sanitation manual for on-the-job utilization. The important assumptions for providing inputs are that: (1) consultants are available on a long-term basis to staff out the technical assistance called for under the loan; (2) appropriate, realistic organization, implementation and budget plans are developed; and (3) the U.S. and GOI make budgetary provisions for and provide their inputs on a timely basis.

Key assumptions for achieving the RSMD's outputs include: (1) instructors for the Schools for Sanitarians and Sanitation Technologists in sufficient quantities are available, willing and able to be remolded and reutilized; and (2) technical assistance, procurement of commodities, construction activities, and funds from all parties flow as planned over the life of the Project. Regarding the first assumption, there are already sufficient numbers of instructors in the existing sanitarian manpower training system to staff the RSMD-created institutions and with the stipends, staff housing, vehicles and in-country and overseas advanced training to be provided, it is expected that their enthusiasm and ability to instruct in the improved educational system will be assured.

If RSMD inputs are provided on schedule, it is anticipated that associated outputs can be produced on schedule. Since the schedule of inputs is reasonable, it is expected that the output schedule will be met. It is anticipated that the achievement of RSMD outputs will result in the attainment of the desired end-of-project conditions and, hence, the RSMD purpose. It is expected that the achievement of the purposes of the Project will make a significant direct contribution to the realization of the sector goal.

Annex C presents the Logical Framework Matrix which summarizes the detailed quantitative and qualitative targets of the RSMD as well as the important assumptions for achieving those targets.

The objectively verifiable indicators presented in this matrix are considered adequate and sufficiently specific and reliable for purposes of future evaluation. No problem at all is foreseen with the indicators which will be used to monitor the inputs, outputs and purpose. On the other hand, medical statistics to be utilized to track the expected reduction in water-associated diseases are less reliable. However it should be kept in mind that AID is assisting the Ministry of Health with census analyses, a research and development project, and a communicable disease reporting program so that the data coming forth should be sufficient to make reasonable judgements regarding the impact of the RSMD on improved health.

PART III. Project Analyses

A. Technical Analysis

1. The Present Manpower Training System

a. Pre-Service Training

Personnel employed in sanitation activities in Indonesia are now educated and trained in two Academies for Health Controllers, thirteen Schools for Sanitarians and four Schools for Assistant Sanitarians. Village level workers in sanitation, the Auxiliary Sanitarians or Sanitation Aides, and sanitarian laborers are trained by Sanitarians at the Kecamatan health centers.

The Academies for Controllers which produce professional level graduates with B.Sc. degrees are located in Jakarta and Surabaya. The former was started in 1953 and the latter in 1961. The curriculum is designed to prepare a generalist health worker with some emphasis on hygiene and sanitation. The Academies are operated with limited central government funds and do not provide for student financial support.

The limited nature of these funds is reflected in the minimal number of full-time professional staff and extremely inadequate, or totally lacking, teaching materials and equipment for both classroom and field work. In the libraries there are few texts or references and many of these which do exist are out-of-date or do not pertain to the subject matter being taught. Few if any of these materials are in the Indonesian language while at the same time there is very limited English reading comprehension by most of the students.

Laboratory facilities and equipment are quite primitive, and equipment such as microscopes, simple instrumentation for water testing and chemical laboratory glassware is inadequate or not available.

Classroom teaching aids consist of a small blackboard and a few anatomical models and charts, and models of houses and the like constructed by former students. Some demonstration material such as household water filters and latrine slabs is available. Audio-visual equipment such as motion picture projectors, slide projectors, overhead projectors, flip charts, pad and pen easels and entire or cut away demonstration and practice items are scarce or unavailable. Even if suitable projection equipment were on hand some problems would arise from the scarcity of motion picture films, slides and other projectables. Furthermore, facilities to make projectables are not to be found. Classroom use of projectables would be difficult in any event because of a lack of provision for darkening the rooms and lack of, or problems with, electricity.

The same situation pertains to supplies and materials for field instruction. It is difficult to find an adequate amount so that each student can have actual practice with tools and equipment with which he or she is expected to become completely familiar. Transportation of students and staff is also a problem and places limitations on field experience.

Classroom instruction is almost entirely by lecture with students taking notes. They are seldom furnished printed lecture notes or other student reference materials. This is in part due to the lack of duplicating equipment and paper. Office machines and equipment to support training activities consist essentially of aging manual typewriters. The majority of the classroom instruction is furnished by a sizable number of part-time lecturers who commonly give four presentations a month each. This creates problems in coordinating the courses to insure that all pertinent subject matter is covered and that undue repetition or giving of conflicting information is avoided. Problems in scheduling also arise when a lecturer is unable to appear for some reason. The full-time staffs of the Academies indicate that they would like to assume more of the teaching load if they had the opportunity to be upgraded for this task.

In view of all the problems and limitations, it is remarkable that graduates of the Academies have proved to perform capably in many assignments in most of the levels of the Ministry of Health.

At the Schools for Sanitarians (which train senior high school graduates in a 12 month diploma course) and Schools for Assistant Sanitarians (which train junior high school graduates in a three year program) all of the foregoing difficulties pertain and are intensified by even lower levels of financing. This is particularly true in the provincially supported schools, such as that in Lampung, where no central government funds are allocated. The present budget for education and training at these institutions is inadequate to produce the quality or quantity of the sanitation manpower needed in Indonesia. This is seen in the deficiencies in the physical facilities such as laboratories, equipment and supplies, dormitories, staff housing, etc. In fact, some office space and the basic classroom space is about all that is usually found, and that has little blackboard area or other instruction aids and cannot be darkened for projection. As in the case of the Academies for Health Controllers, library facilities, books and references for faculty and students are essentially non-existent and such texts as are available are usually out-of-date and often do not relate to subjects being taught. In addition, the availability of teaching materials, equipment and supplies, audio-visual aids and student manuals are extremely limited and in many instances are unavailable. This is also true of field training supplies and materials and includes field transport for students. A large amount of instruction time is appropriately devoted to field training, but this can be largely wasted if the active participation of each student is not possible because of a lack of tools, field materials, adequate supervision, or ability to readily reach the field training area.

There are relatively few real fulltime staff to operate the schools. Those that are available, while evidently concerned and dedicated, have had limited training for teaching in the classroom and in the field. This, in addition to difficulties caused by low pay, low official ranking, limited chance for advancement and lack of incentives have at least in part led to the extensive use of part-time staff for teaching. This causes problems with insuring adequate subject coverage, repetition, uniform quality of instruction, and the adjustment of subject content to effectively meet the needs of sanitation students. Related to this to some extent is the inclusion in the curricula of subject matter which does not provide needed general nor technical background and which does not focus on job requirements. This non-essential matter not only is an unwise use of time in an already expanded curriculum, but may encourage placement of graduates outside the field of environmental health.

Two further constraints to sanitation manpower development appear to be lack of clear criteria for admission to schools such as prior education content and educational achievement, and the difficulties caused by the necessity of students individually paying the cost of their pre-service training. This latter is of particular concern in the Academies where three years are required to obtain the B.Sc.

Annex B6 provides a listing of some of these institutions along with relevant information regarding the teaching staffs and the size of the student body.

b. In-Service Training

There are a variety of in-service training opportunities available to sanitation personnel. Some short courses are prepared and presented on a decentralized basis by various elements of the Directorate General for Communicable Disease Control within the MOH, and are offered at National Training Centers; others are given by training elements in provincial health centers, such as the well-developed one in Surabaya, and by educational institutions including the Institute of Technology in Bandung. Much of this training has centered on aspects of improving rural sanitation such as the hand pump well program, latrine construction and community organization and development to further this work. Short courses in health education, administration and hygiene and sanitation are offered principally for Health Controllers. New courses in food hygiene, sanitation of public places, pesticide control, etc., are being prepared to meet the sanitation plans in Pelita II. The National Training Center at Cilandak, Jakarta, offers both pre-service and in-service training. A short course for training trainers is given, but there is not yet one specifically designed for sanitarian trainers. All in-service training is hampered by inadequate budget for personnel, supplies, materials and field transportation.

The formal training of trainers is practically non-existent. The full-time staffs of the two Academies and the thirteen Schools for Sanitarians are drawn from Ministry of Health personnel, usually Health Controllers who show an aptitude and interest in the training field. No special training is required or provided to these individuals prior to assuming their duties. However, a number have taken advantage of observation fellowships to other countries in the area and a very limited number have received fellowships for graduate-level study in the United States.

The part-time instructors receive only limited information with regard to course content, objectives of the course they are to teach, or other instructions. There is no formal training available for them. An exception is the teaching of health education where the teachers are often prepared at the School of Public Health and are well grounded in teaching techniques, objectives of the training they are to provide, and needs of students.

The above-mentioned National Training Centers for Ministry of Health personnel located in Cilandak, Jakarta, and Bekasi, West Java, provide training to all health disciplines in the form of seminars, workshops and field experience to students enrolled in the various schools and academies operated by the Ministry of Health. Both Health Controllers and Sanitarians receive field training at these Centers. The classroom facilities at these Centers are quite good and some teaching aides are available. However, equipment for demonstration and field experience is extremely limited and the classroom space is becoming insufficient as the number of inservice programs increase. Some transportation facilities are available but are not sufficient to move a whole class to a field site. The staffs of the Academies and Sanitarian Schools provide the greater part of the teaching staff during the training of Controllers and Sanitarians. The duration of such training is quite brief (2-3 weeks).

Provincial Training Centers operate in most of the provinces outside Jakarta and West Java. These Centers are usually extensions of working health centers with a classroom for the students. Demonstration and field experience equipment is limited to equipment which the health center has for its normal operation and is grossly inadequate for educational purposes. The training provided at these centers consists of workshops and seminars for employees of the health department and students are not generally trained at these centers. Field training is carried out in both urban and rural areas near the centers by the centers themselves.

c. Advanced Training

Advanced educational training for environmental health personnel is at present quite limited. The Institute of Technology, Bandung, is planning to institute a graduate level program leading to a MS degree in Sanitary Engineering in 1976. However, this course will not be available to professional-level sanitarians in the near future. The demand for the course by sanitary and civil engineering candidates will more than fill the quotas.

The School of Public Health in Jakarta is in the process of developing a program leading to a Master's Degree in Public Health with emphasis on environmental sanitation. The School is not yet prepared to commence such training; however, in a period of three or four years it could be in a position to provide advanced training opportunities to professional-level sanitarians.

Overseas scholarships for academic training of Health Controllers have been very limited. However, at least two participants did receive training at the Master's level in the United States in the early 1960's. Opportunities have been limited by the "generalist" nature of training of the Health Controllers and by the reluctance of U.S. institutions to accept a three-year baccalaureate. Observation scholarships and attendance of regional seminars or work-shops are made available to the Controllers by WHO and other international assistance agencies. These trips have been of considerable value as they have provided an insight into the program of countries such as Thailand, Philippines and India and have permitted the participants to discuss mutual problems with their counterparts in those countries.

In spite of these recognized problems with the rural sanitation manpower development system, the academies and schools for the education and training of sanitation personnel have existed for several years. Even with their recognized deficiencies, they form a basis for an educational system that can produce the quantity and quality of manpower desired. One measure of the accomplishment of these schools is the enthusiasm displayed by sanitation field personnel to execute the rural sanitation program. Furthermore, at the provincial level, leadership and concern for rural sanitation has been shown by the provision of classroom and field training. Their ongoing programs for the delivery of sanitation services also attests to this.

2. Rural Sanitation Personnel On The Job

Essentially all of the graduates of the Academies for Health Controllers and the Schools for Sanitarians and Assistant Sanitarians have been placed in public health assignments. While many of these have been in positions dealing with sanitation activities, a sizeable number have been placed in non-sanitation related activities. Health Controllers, as noted above, are prepared for a wide range of positions and the Sanitarian/Assistant Sanitarian curricula contains preparation in areas that permit graduates to work in a variety of specific disease control programs. While this type of placement is of general benefit to public health in Indonesia, it does not most effectively further the achievement of rural sanitation goals.

Approximately sixty-two percent of the graduates of the Academies for Health Controllers and the Schools for Sanitarians and Assistant Sanitarians who have been placed in sanitation-related activities have been employed and their salaries paid for by the provincial governments as contrasted with the central level. The intent is to eventually have the provinces make all of the posts locally supported. The problem that has arisen, however, is that many of the provinces are not in the financial position to increase their personnel levels. This is where the Inpres program has played an important role in recent years and will continue to do so in the foreseeable future in that Inpres funds can be and are used by local levels of government to hire sanitarians to carry out their annual programs. The sanitarians employed under this method do not come under the employment ceilings of the provinces and are essentially supported by these central government funds. It is anticipated that at that point in time when the Inpres program is terminated, the provincial governments will be in a better financial position to employ these sanitarians under their civil service. (At any rate, the loan agreement will contain a borrower covenant in which the GOI will ensure a position within the rural sanitation program for all graduates of the RSMD preservice training program.)

Promotion depends primarily on seniority and sometimes on job openings, subject to periodic appraisal. There is a considerable overlap of relative grades between Sanitarians/Assistant Sanitarians and Health Controllers. From this point of view, the administrative system is not rigid but there is a distinct reluctance on the part of Health Controllers to serve directly below a Sanitarian/Assistant Sanitarian, irrespective of seniority or experience. If a Health Controller is recruited for a Kabupaten (district), it is expected that he or she will be in charge after a short time even if there is a Sanitarian/Assistant Sanitarian on hand of much greater experience and with a higher grade.

Sanitation personnel are quite restricted in the possibility of obtaining jobs and extra income outside of their official appointment. Less than 1% of these people were reported to be earning additional income and this extra income was reported as insignificant. This is in sharp contrast with other health manpower categories, where substantial additional income is earned.

Retention of sanitarian personnel has been very good thus far. According to a Ministry of Health manpower survey conducted in 1972, only .4% of all sanitarians resigned or retired in that year. Furthermore, the bulk of existing sanitarians are quite young and with only 4.8% of the entire group age fifty years or over, attrition due to retirement or death is expected to be quite small over the next decade.

In the field, the effectiveness of many sanitation personnel is reduced by the dispersion of their efforts into activities unrelated to environmental health. This is undoubtedly related in some degree to the lack of clearly stated and understood job descriptions. In the field, no job descriptions for any level of sanitation worker was found. Pertaining to this situation, it has been discovered that Sanitarians and Assistant Sanitarians perform the same essential functions.

Another major deterrant to program progress is the lack of equipment in the field essential to doing the job. In some instances the sanitarian has absolutely nothing to work with other than a pencil and paper. In other cases equipment may be occasionally borrowed from a small centralized supply. This situation is not alleviated by the Inpress Funds for sanitation improvement as they are limited to construction purposes and are not available for operating needs, spare parts, maintenance or training. Another equipment related problem centers on the usual lack of transportation for field staff and materials. Many sanitarians who are expected to cover rather large areas must walk, while bicycles and motorcycles are available to only a few.

A variety of problems also seem to be related to inequalities in the quality of education, training and supervision. Most obvious is varying ability of individuals to effectively conduct the promotional and technical aspects of their job. A function of this, and lack of job descriptions, is the misassignment of individuals to tasks that at times are above their capabilities and at other times are below their capabilities, and the generating of the attendant difficulties in both cases. Also related is the inadequacy and lack of uniformity in communications on program progress and activity reporting. Communications both up and down through the organization appear uncertain. Lateral communication, as between training institutions, is poor or lacking.

Personnel problems identified as of immediate concern to field workers are the limited availability of in-service training, unclear career opportunities and low salaries.

3. Project Concepts

Given the existing situation, the AID-assisted RSMD has been designed to: (i) focus on the development of a framework for standardized training of environmental sanitation personnel; (ii) synergize with GOI intent to accelerate urgently required rural sanitarian training by providing timely financial and technical inputs;

(iii) recognize the uncertainties of long-term manpower demand projections by creating a flexible decentralized training network which can accommodate local requirements for varying numbers of sanitarians as conditions dictate and by providing sufficient opportunity for pragmatic, incremental development of the sanitation manpower cadre; and (iv) respect regional desires to have training schools scattered throughout Indonesia to minimize the social and geographic distances between the student's home, school and place of future employment.

More specifically, the RSMD seeks to create a system that will allow Indonesia to meet its manpower needs in the field of environmental sanitation by: (i) establishing standardized sanitation-related employee classifications which together with a standardized environmental sanitation manual and the provision of field kits will assist in the rationalization of field operations; (ii) providing the educational components necessary to produce new employees, on a continuing basis, to meet MOH and other agency requirements in the field of rural environmental sanitation; (iii) conducting programs for in-service training of existing personnel to improve their knowledge and skills on a continuing basis; and (iv) developing the capability for upgrading currently employed sanitation personnel into expanded fields of activity (as the need arises in the future and as the rural environmental sanitation requirements are satisfied) such as urban sanitation, program planning and supervision, management and other aspects of administration.

a. Personnel to be Produced by the RSMD

The following types of employee classifications will be created and trained to more effectively execute the environmental sanitation program in Indonesia. It should be noted that the Ministry of Health is in the process of revising their existing job classifications to conform with these job descriptions. The clarification and rationalization of job responsibilities is expected to positively impact on the operation of sanitarians in the field.

(i) The Sanitation Technologist

The Sanitation Technologist will be a professional environmental health worker prepared by the successful completion of classroom and field study leading to a B.Sc. degree in this field. His background in the sciences, sanitation technology, and the behavioral sciences involved in the development of interest in and the delivery of sanitation

services will equip him to plan, administer and evaluate sanitation programs, to instruct in the field of environmental sanitation at appropriate educational institutions, and to supervise the activities of Sanitarians who look to him for direction and support. He will be prepared to work in both urban and rural areas on environmental health activities such as the sanitary surveillance of municipal water supply and sewage disposal systems; the installation and surveillance of excreta disposal facilities; the education activities and the inspection and control of the manufacturing, processing and retail sales of food; refuse storage, collection and disposal problems and practices; sanitation of housing; the sanitation of public places; the installation and maintenance of hand pumped wells; and the control of pesticides, insects, rodents and animal vectors of disease. He will be able to devise and conduct limited research activities in environmental health practices and technology. He will be employed at the provincial level of government, in an office of the central Ministry of Health, or in a special assignment such as directing and teaching in a training facility.

At present this category by title does not exist, but the previously mentioned prototype professional entitled Health Controller has been produced in limited numbers for several years. Health Controllers will continue to serve along with the newly produced Sanitation Technologist, but Health Controller training will be converted to the preparation of the Sanitation Technologist. At present there are some 180 Health Controllers actively engaged in sanitation work. As stated earlier, the full implementation of the Pelita II and III sanitation program will require the education and training of 958 persons with this level of training, and there will be a continuing need for this training to meet future requirements.

The technical advisory team to be utilized in the RSMD (see below) will assist the Ministry of Health with a further refinement of the responsibilities of the Sanitation Technologists. The loan agreement will contain a borrower covenant requiring AID review and approval of the final job description.

(ii) The Sanitarian

The Sanitarian will be a technical level worker prepared by the successful completion of a one-year program of instruction in sanitation technology and the delivery of sanitation services following graduation from Senior High School. Between one-third and one-half of the training

will be in supervised field practice. He will be equipped to plan, administer and evaluate sanitation programs in his area; to make sketch maps of his area of work; to work educationally with individuals and groups in the community; to stimulate interest in, and demand for, sanitation improvements; to develop community support for sanitation projects and the maintenance of such projects when completed; to supervise the installation of hand pumped shallow wells and construction of latrines; to work for the sanitary maintenance of public places including food establishments; to provide information and services on the control of pests, insects, and other vectors; and to seek to obtain sanitary control of refuse disposal. The Sanitarian will be prepared to train and supervise Sanitation Aides who work with him or her at the village level to promote, encourage and maintain sanitary facilities. The Sanitarian will also train and supervise Labor Foremen who personally participate in the construction of wells and latrines.

A more comprehensive job description along with a description of information and skills which the Sanitarian must possess in addition to those specified in the job description is found in Annex B-7. The loan agreement will contain a borrower covenant requiring AID review and approval of the finalized job description for Sanitarians which will be prepared with the assistance of the U.S. technical advisory team.

The Sanitarian will normally be posted at the Kabupaten or Kecamatan (district or sub-district) level of government. At present there are some 830 Sanitarians and 582 Assistant Sanitarians who do essentially identical work and who, with the upgrading instruction described below, provide about 1,412 available personnel in the sanitarian category. It is estimated that full program coverage will require the production of at least 3,900 Sanitarians by the end of the Third Five-Year Plan.

(iii) Advanced Sanitarians

Although the focus of the RSMD is on training manpower initially for service principally in rural areas, there are 54 municipalities within Indonesia all with significant sanitation problems requiring the attention of specially trained field sanitation workers. In order to staff these positions and other more responsible assignments in environmental health, promising Sanitarians in rural areas will be upgraded by regularly available special upgrading training courses. These courses will be designed to include instruction in securing compliance with municipal sanitation regulations, housing, food manufacturing and processing control, program administration, and other facets of the new work that they will be expected to perform. It is not possible to estimate with any precision the numbers to be trained through short upgrading courses, but it will likely range between 75 to 100 per year.

(iv) Other

The other types of sanitation personnel necessary for the execution of rural environmental health programs are Sanitation Aides and Labor Foremen. The duties of these groups were noted earlier in this Project Paper. The RSMD is not directly concerned with the production of these categories of personnel and will be involved only to the extent that the training of Sanitarians includes preparing them for the responsibility of training such groups.

b. Redevelopment and Strengthening of Pre-Service Training

The existing system of pre-service training which produces Health Controllers, Sanitarians and Assistant Sanitarians will be modified to produce Sanitation Technologists and Sanitarians. Two Schools for Sanitation Technologists and nine Schools for Sanitarians will be developed while the existing Schools for Assistant Sanitarians will be closed. This will allow the consolidation, rationalization and standardization of training efforts in the field of rural environmental sanitation in Indonesia. Standardized admission criteria for these institutions will be developed to assure the selection of a well qualified and motivated group of students.

The availability of high school graduates does not appear to be a constraint to the redeveloped preservice training program. Within Indonesia, there is a great demand for higher education beyond secondary high school. Eighty-five percent of the 130,000 annual high school graduates desire to further their education while only 47% of this group are able to do so. This is borne out by the information presented in Annex B-6 which shows that at least twice as many high school graduates have attempted enrollment in the existing Schools for Sanitarians in the past than there have been positions for, while the ratio of applicants to enrollees at the two Academies for Health Controllers has been much larger. If anything, it is anticipated that the numbers of interested high school graduates will increase substantially as a result of the RSMD since: (1) stipends will be provided thereby removing a financial constraint to deserving but poorer income groups; and (2) positions will be guaranteed in the Indonesian rural sanitation program upon graduation.

(i) Schools for Sanitation Technologists

The two existing Academies which are currently preparing Health Controllers will be redesigned for the education of Sanitation Technologists. The B.Sc. curriculum will be revised to prepare the student to become a well rounded professional sanitarian. Curriculum will be developed to

include those subjects required by the Government of Indonesia at all such schools: appropriate coverage of biological, chemical and physical sciences and mathematics; necessary introduction to social and political science, administration, management and planning; approaches to evaluation and research; supervision and consultation; and specific education and field training in sanitation technology and the delivery of sanitation services.

An essential prerequisite to these revisions will be the preparation of the teaching staff of the Academies. The full-time staff from each of the two Academies will participate in one of two four month trainers courses focused on preparing the revised curriculum and developing new teaching skills, technical information and knowledge in educational science so that upon their return they will be able to conduct the majority of the instruction in the classrooms and laboratories, and will be able to provide the supervision of field training. Part-time staff will be able to be used sparingly to teach only in highly specialized areas. The full-time staff will insure that outside instruction is competent and properly integrated into the rest of the instruction. Other results expected from the trainers courses beyond curriculum development, include preparation of prototype classroom and field teaching materials and aids and the preparation of a comprehensive field manual on rural sanitation in Indonesia. In addition, a six-week program and curriculum for the retraining of presently employed sanitarians will be developed, tested, and used as described below.

The RSMD will provide further support to instruction at the Schools for Sanitation Technologists by the provision of teaching aids and classroom equipment; demonstration equipment; library facilities, books and references; laboratory facilities, supplies and equipment; student references, manuals notes and graduation kits; field training supplies and equipment; and vehicles for student transportation.

To overcome student and staff housing problems, and to assure attendance and improve staff efficiency, the RSMD will construct dormitories and staff housing as required. Classrooms, laboratories and offices will also be constructed as necessary. The Project will also provide financial incentives to the full-time staff and stipends for students. The student capacity for each of the two institutions will permit a graduating class of 50 annually.

Annex B8 presents a summary of estimated RSMD costs to convert, expand and fully equip the two Academies for Health Controllers into two Schools for Sanitation Technologists.

(ii) Schools for Sanitarians

The thirteen currently operating, provincially-supported Schools for Sanitarians described in Section III A(1) above will be converted into nine, centrally-supported regional Schools for Sanitarians each of which will serve the needs of several provinces. Annex B9 provides a listing of the locations of the proposed Schools for Sanitarians along with the areas which they will serve. A map of Indonesia is also included which displays these locations.

These nine Schools will be redesigned and strengthened in precisely the same way as the two Schools for Sanitation Technologists, with the modifications that would be expected in equipping a technical school as opposed to an academic institution. The full-time teaching staffs will be prepared in the same two courses for trainers and a new and refined sanitarian curriculum will be developed. This will assist in obtaining reasonable uniformity in curriculum content and level and quality of instruction at the several schools.

The RSMD will also construct and equip each School for Sanitarians, as appropriate, including teaching equipment and aides; suitable libraries, laboratories and field facilities; equipment and supplies; and transportation. Provision of dormitories, staff housing, staff financial incentives and stipends for students will be included. A special kit of tools and field equipment and an environmental sanitation manual, both of which are essential for effective performance on the job, will be provided to each Sanitarian upon graduation. The student capacity of each of these Schools will permit an entering class of 40 students for the one year program.

Annex B10 presents a summary of Project costs associated with the nine Schools for Sanitarians. Given the absence (or extremely poor condition) of existing buildings and furnishings, almost all of these costs represent the construction of the entire School complex and the provision of a standard package of supplies and equipment. Annex B10a describes construction requirements and associated costs. Annexes B10b through B10g provides a sample listing of supplies and equipment (along with RSMD costs) for offices, classrooms, laboratories, transportation, fieldwork and libraries for School for Sanitarians. Annex B10h summarizes the entire costs for supplies and equipment to be provided under the RSMD for the preservice training of Sanitarians. Annex B10i presents a sample composition of the student graduation packet along with estimated costs.

c. The Inservice Training Program

Six-week inservice retraining courses will be conducted at each of the Schools for Sanitarians to all presently employed Sanitarians and Assistant Sanitarians. This program will run through Indonesian school years 1978 and 1979. It will be designed to make up deficiencies in the prior training of Sanitarians, equalize the training background of Sanitarians and Assistant Sanitarians, and provide needed up-to-date information of a technical and operational nature. The RSMD will furnish all classroom, laboratory and field supplies and equipment and stipends which will be needed. In addition, each Sanitarian completing the retraining program will be furnished the kit of tools and field equipment and environmental sanitation field manual as described previously for newly-graduated Sanitarians from the preservice training program. Annex B11 presents a summary of costs associated with the inservice training program.

d. Advanced Training Program

Upgrading to prepare Sanitarians for more complicated and responsible assignments (e.g. urban sanitation) will be conducted in two or more of the Schools for Sanitarians, most likely those in Bandung and Surabaya. These redeveloped and strengthened institutions will have the necessary staff, facilities and equipment to undertake such courses. It is anticipated, however, that the RSMD will focus only on the planning and development of such a program, rather than on its actual execution (in keeping with the RSMD's purpose of removing an immediate constraint to the expansion of Indonesia's rural sanitation program). Once this advanced training program is initiated, it is estimated that some 75 to 100 students will take advantage of it annually.

e. Quantitative and Qualitative Considerations

The RSMD, as designed and described in this Project Paper, will allow Indonesia to meet its short and longer-term quantitative and qualitative manpower needs in the field of rural environmental sanitation. As analyzed in Annex B5 by the end of the Third Five-Year Plan with the RSMD preservice and inservice training programs, the supply of Sanitarians and Sanitation Technologists will begin to approach the minimal requirements necessary for Indonesia to run an effective rural environmental sanitation program. It is recognized, however, that it will take many years beyond that point in time (March of 1984) before Indonesia will have produced a sufficient number of sanitarian personnel to meet all of its needs in this field. The

availability of sufficient numbers of qualified high school graduates; the provision of student stipends to assist with living expenses during preservice study; the borrower covenant which will ensure that the GOI will guarantee employment for graduates of the preservice training programs, and the relative youthfulness of the existing and future sanitation cadre; all provide additional assurances that supply projections will be met.

Aside from the question of numbers, the RSMD will result in the development of more highly qualified health personnel better able to carry out an effective rural environmental sanitation program in the field. Since the Project includes the revision and refinement of job descriptions for Sanitarians and Sanitation Technologists and the incorporation of Assistant Sanitarians and Sanitarians into one classification of technical field workers, this in itself is expected to result in a better functioning field operation with many of the problems described in Section IIIA(2) removed (e.g. placement of professional sanitarians into non-sanitation related positions; the dispersion of the efforts of sanitation personnel into activities unrelated to environmental health; and the misassignment of individuals to tasks that at times are above and at other times are below their capabilities). Furthermore, by (1) gearing the redevelopment of classroom curriculum and field experiences to on-the-job requirements; and (2) standardizing admission criteria for all preservice training to select highly-qualified and motivated individuals for such training, it is expected that the technical and promotional capabilities of the rural sanitation cadre will increase manyfold. And finally, the provision of a graduation kit of field tools and supplies and a uniform and comprehensive environmental sanitation manual will increase their effectiveness on the job and assist in alleviating rural sanitation program communications and reporting problems.

4. Technical Assistance and Fellowships

Three long-term advisors and one short-term consultant will be required to assist the Center for Training and Education within the Ministry of Health with the implementation of the RSMD. Fellowships for all instructors at the two Schools for Sanitation Technologists and nine Schools for Sanitarians will also be available to further their academic training.

A project representative will be financed under the loan for up to $3\frac{1}{3}$ years to coordinate RSMD activities including all matters dealing with personnel, commodities and reports. Responsibilities will

also include providing technical and administrative assistance to the GOI and supervision and guidance to the other U.S. personnel described below. This individual will be either a sanitary engineer or sanitarian by training but regardless of degree preparation, he or she would have had to have extensive and varied experiences in working with basic, and preferably rural, sanitation programs. Suitable academic qualifications including a masters degree in sanitary engineering or environmental or public health is required. Special preparation and experience in administration and personnel management and supervision would be desirable. A more complete job description for this individual and the others identified below is found in Annex B12.

A sanitarian educator will also be financed under the loan for a maximum of $3\frac{1}{2}$ years. This individual will provide technical assistance in the design of curriculum for the training of trainers courses, for the retraining of sanitarians, for the revised preservice training programs for Sanitation Technologists and Sanitarians, and for the new upgrading courses. This person will also provide advice on the use of teaching methods and teaching aides; selection of materials for translation and classroom use; preparation of the list of commodities for laboratory, classroom and field training activities; and the coordination of classroom and field elements of the curricula. A background in sanitary science along with the satisfactory completion of graduate work in this field is required. An individual with a baccalaureate degree in environmental health and a masters degree in sanitary science or environmental health would have an ideal educational background. Experience in carrying out an environmental health program is also desired. The sanitary educator should also have a minimum of five years experience in designing, preparing, presenting and evaluating courses in environmental health, preferably at the introductory level. Special training and skills in teaching methodology and audio-visual production is also felt to be desirable.

The third full-time expatriate advisor included in the RSMD will be a field sanitarian who will assist in the development of content for the several curricula for field training for a period of up to $3\frac{1}{2}$ years. He will provide advice on the design and implementation of more effective field teaching methods, procedures and practices, and the selection of appropriate materials to be incorporated in the sanitarian field manual. He will also assist in the field re-orientation of the retrained sanitarians as they return to their regular duties, and with the development and undertaking of field training at the Schools for Sanitarians and Sanitation Technologists

during initiation of the newly redesigned preservice training program. A thorough academic preparation in environmental health preferably including masters degree work in environmental or public health is required. Experience and skills in conducting and teaching sanitation program field procedures including water well development and excreta disposal facilities is also deemed necessary.

In addition to the three full-time consultants, a short-term advisor skilled in evaluation methods is contemplated to assist with the development of an evaluation program for the Schools for Sanitarians and Sanitation Technologists. It is anticipated that this assignment will require the services of an unbiased observer for three one-month consultations during the life of the RSMD.

Aside from the 4 month course being prepared as part of the RSMD for the training of all instructors at the Schools for Sanitarians and Sanitation Technologists, instructors at these institutions will be given the opportunity to further their academic training in hygiene and sanitation both abroad (if they possess a sufficient language ability) and in-country. Therefore, twenty-six one-year fellowships for academic, non-degree training in the United States and thirty-seven fellowships for advanced academic study in Indonesia (e.g. at the School for Public Health) will be offered. Those entering the study program in the United States will be permitted to observe rural sanitation programs in other Southeast Asian nations on their way to or way back from the U.S.

U.S. contractor services, U.S. fellowships and in-country fellowships are estimated at \$60,000, \$12,000 and \$3,000 per man-year respectively.

5. Technical Findings and Environmental Assessment

The RSMD as designed will allow Indonesia to meet its short and longer term quantitative and qualitative needs in the field of rural environmental sanitation and will provide a more efficient cadre of rural sanitarians in the field in a manner which is compatible and consistent with the capabilities and organization of the Ministry of Health. The proposed construction; procurement of supplies and equipment; foreign technical advisory services; and training of instructors of the Schools for Sanitarians and Sanitation Technologists both in Indonesia and abroad; are reasonable and appropriate as are their related costs. Adequate planning for Project execution has taken place and the GOI has the financial and human resources to effectively execute the RSMD and operate and maintain the resulting manpower

development system, pursuant to Section 611(e) of the Foreign Assistance Act as so certified in Annex F.

Environmentally, the RSMO is also sound. It has been specifically designed, in fact, to result in the expansion of the environmental services which poor rural villagers receive and it is anticipated that there will be major, long-term positive environmental benefits flowing from it. Safe water supplies, excreta disposal systems, solid waste disposal systems, clean food markets, and clean restaurants are just a few examples of the types of environmental benefits which will result from the Project.

B. Financial Analysis and Plan

1. Budget Analysis

Table I presents a summary of the estimated costs associated with the Rural Sanitation Manpower Development Project broken down by RSMD elements and source of funding. The total cost of the four-year Project is \$14,017,000, of which \$1,399,000 represents a foreign exchange element. It is recommended that AID contribute \$6,800,000, or 49% of RSMD costs. Included in the AID contribution would be all foreign exchange costs plus \$5,401,000 of local currency costs. By element, AID will finance: (a) \$5,244,000, or 44% of the preservice training program; (b) \$259,000, or 55% of the inservice training program; (c) \$323,000, or 71% for the training of trainers; (d) \$800,000, or 100% for the supply of technical assistance; (e) \$174,000, or 48% of RSMD administration costs.

Annex B-13 presents a financial disbursement table which displays the annual costs of each element of the RSMD along with the AID and GOI contributions. By Indonesian fiscal year, RSMD costs are: GOI FY 1976/77 - \$5,373,000; GOI FY 1977/78 - \$6,208,000; GOI FY 1978/79 - \$1,240,000; and GOI FY 1979/80 - \$1,196,000. GOI contribution by Indonesian fiscal year are: GOI FY 1976/77 - \$2,600,000; GOI FY 1977/78 - \$3,018,000; GOI FY 1978/79 - \$791,000; and GOI FY 1979/80 - \$808,000. AID disbursements by U.S. fiscal year as presented in Annex B-14 are estimated at: U.S. FY 1977 - \$3,260,000; U.S. FY 1978 - \$2,849,000; U.S. FY 1979 - \$418,000; and U.S. FY 1980 - \$273,000.

Rural Sanitation Manpower Development Project Costs^{1/}
(in thousands of dollars)

Table I

RSMD Elements	AID		GOI		Total
	<u>2/</u> FX	<u>3/</u> LC	FX	LC	
I. <u>Pre-service Training</u>					
A. <u>Schools for Sanitation Technologists</u>					
1. Construction		975		976	1,951
2. Supplies and Equipment	74			6	80
3. Stipends (\$120/year)				50	50
4. Graduation kit				6	6
5. Operations and Maintenance				284	284
B. <u>Schools for Sanitarians</u>					
1. Construction		3,972		4,001	7,973
2. Supplies and Equipment	223			389	612
3. Stipends (\$120/year)				86	86
4. Graduation kit				73	73
5. Operations and Maintenance				820	820
II. <u>In-service Training</u>					
A. Supplies and Equipment				25	25
B. Stipends (\$70/month)		111		111	222
C. Graduation Kit	148			63	211
D. Operations				12	12
III. <u>Training of Trainers</u>					
A. Supplies and Equipment				8	8
B. Stipends (\$100/month)		11		11	22
C. U.S. Fellowships	312				312
D. In-country Fellowships				111	111
IV. <u>Foreign Technical Assistance</u>					
A. Project Representative	200	60			260
B. Sanitarian Educator	200	60			260
C. Field Sanitarian	200	60			260
D. Sanitarian Evaluator	15	5			20
V. <u>Project Administration Costs</u>					
A. Supplies and Equipment	27				27
B. Construction		147		147	294
C. Operations and Maintenance				38	38
Totals	1,399	5,401	0	7,217	14,017
		6,800		7,217	

Notes:

1/ Inflationary factors, contingencies and other relevant information used to derive these figures are found in the technical analysis section.

2/ All AID-financed foreign exchange items will be acquired through traditional direct procurement.

3/ All AID-financed local cost items will be disbursed on a Fixed Amount Reimbursement basis, except for local support costs of the technical advisory team.

Annex B-15 presents a table which costs out RSMD outputs as shown in the Logical Framework Matrix. RSMD costs appear, then, to be allocated as follows:

- (a) \$1,082,000 for the training of sanitarian instructors, development of revised curriculum and teaching methodologies, and preparation of the field manual;
- (b) \$9,744,000 for the construction and operation of the nine Schools for Sanitarians;
- (c) \$2,551,000 for the construction and operation of the two Schools for Sanitation Technologists; and
- (d) \$640,000 for the inservice training program.

2. Recurrent Budget Analysis

Annex B-16 presents a breakdown of recurrent, non-developmental costs necessary to administer, operate, and maintain the two Schools for Sanitation Technologists and the nine Schools for Sanitarians once the period of AID involvement ends. As can be seen, \$697,000 will have to be budgeted for by the central Ministry of Health for these purposes beginning in GOI FY 1980/81. Given the annual GOI budgetary requirements to execute the development stage of the RSMD from GOI FY 1976/77 through 1979/80, as presented in the preceding subsection, the recurring operational costs should not present much of a problem, and are thereby reasonably well assured. Regardless, the loan agreement will contain a borrower covenant committing the GOI to continue financial support for the RSMD institutions upon completion of the four-year Project.

3. Proposed Methods of Financing

The costs of the RSMD can be divided into four financing categories: (1) traditional direct procurement of foreign exchange goods and services; (2) Fixed Amount Reimbursement (FAR); (3) local cost direct procurement; and (4) GOI contribution.

It is proposed that traditional direct procurement be limited to AID Geographic Code 941 countries plus Indonesia. The major items to be procured in this category are vehicles (estimated at \$186,000), foreign technical advisory services (estimated at \$615,000), and overseas fellowships (estimated at \$312,000). All major item procurement will have its source and origin in the United States. Other goods to be purchased directly under the loan include small numbers of various supplies and equipment for offices, classrooms, laboratories, field work and libraries.

Ninety-eight percent of the fixed amount reimbursement financing under the loan is associated with local construction costs for the RSMD educational facilities. AID will reimburse the Government of Indonesia a predetermined amount of these local building costs upon successful completion of construction according to mutually agreed upon plans and specifications. The remaining local costs being financed under the loan are for stipends for inservice and instructor training programs, both of which are one-time only development costs. As a general rule, USAID has attempted to finance 50% of the estimated developmental local currency costs, as opposed to recurring, operating costs.

Local support costs for the university-contractor team will be financed directly under the loan. These costs have been a problem in the past in Indonesia on many of USAID's projects. Much of it stems from the unusually high rental costs for adequate international-standard housing in Jakarta which currently runs at approximately \$1,000 per month for a three-year lease payable in advance. It is also connected with the situation in Indonesia where high level government officials live in homes which are below minimally-acceptable levels for expatriates. USAID has just been through a similar situation with another loan where a compromise solution was accepted by the GOI which allows the advisors' houses to be rented using loan funds. The GOI desires to follow this procedure on the RSMD. Considering that there has been reluctance on the part of the Ministry of Health to accept the magnitude of technical assistance proposed in this loan in the first case, USAID desires to follow the precedent established and thereby loan finance support costs.

C. Social and Economic Analysis

As stated previously, the creation of more and better qualified rural sanitarians as a direct result of the RSMD will remove the critical constraint to the realization of a much expanded GOI and donor-supported rural water supply program over the next several years. This analysis therefore focuses on the ultimate beneficiaries of the rural environmental sanitation program (and by implication, the RSMD); that is, the rural villagers in Indonesia.

1. Background Information on Rural Indonesia

The 1971 census provides the following information on the population of Indonesia (in millions):

<u>Area</u>	<u>Rural Population</u>	<u>Urban Population</u>	<u>Total</u>
Java & Madura	63.9	14.2	78.1
Outer Island	<u>36.4</u>	<u>7.1</u>	<u>43.5</u>
	100.3 (82.5%)	21.3 (17.5%)	121.6 (100%)

About 72% of the labor force in the rural areas is employed in the agricultural sector.

The pattern of per capita consumption in the rural areas of Indonesia is shown in the following table:

1974 Rural Per Capita Annual Expenditure Pattern

<u>Annual Per Capita Consumption Expenditures</u>	<u>Percentage of Population Expending less than this Amount</u>
Rp 12,000 (\$29)	3.5%
24,000	25.0%
36,000	53.0%
48,000	71.0%
60,000 (\$145)	81.8%
72,000	89.0%
84,000	92.0%
96,000 (\$231)	94.7%

It should be noted that this income distribution was calculated using data from a 1969 social and economic survey, estimated changes in average per capita consumption between 1969 and 1974, and the

assumption that the distribution of income did not change during this period. Due to the last assumption, the above results are optimistic.

Although the definition of poverty is in no way precise, AID has developed a variety of indicators to delineate that portion of a population which should be considered impoverished. Among these indicators, AID has used per capita annual income below \$150 in 1969 prices as a measure of who belongs to the poor majority. Given the inflation and foreign exchange rate changes that occurred in Indonesia between 1969 and 1974, it would have required \$245 (Rp 102,000) in 1974 to achieve the standard of living that a per capita income of \$150 would have permitted in 1969. It is clear that something of the order of 95% of the rural population fell within this definition of poverty in 1974. (Indeed, in both 1969 and 1974, more than 95% of the rural population on Java had incomes of less than this level.)

Another indicator of poverty is a daily diet that provides less than some minimum necessary amount. For Indonesia the minimum daily nutritional requirement is estimated at 2,150 kilo calories and 50 grams of protein. It is estimated that this caloric requirement is not met for 58% of the rural population on Java and 36% of the rural population on the outer islands. Although the statistical information necessary to estimate the portion of the population receiving adequate protein is not available, it is clear that this is even smaller than the fraction receiving adequate calories.

Other indicators of poverty and the corresponding statistics for Indonesia are:

- Life expectancy below 55 years. (Life expectancy is 45 years on the outer islands of Indonesia and 48 years on the inner islands.)
- Infant mortality over 33 per thousand. (Estimated at 125 per thousand live births for all of Indonesia.)
- Birth rates over 25 per thousand population. (The birth rate on Java is estimated at 40, while for the outer islands of Indonesia it is estimated at 46 per thousand.)

Although information is not available that would permit a quantitative estimate of the percentage of the rural population that fits these last three indicators of poverty, it is clear from the expenditure distribution information given earlier that the percentage must be large.

2. Subproject Selection

Rural water supply schemes throughout Indonesia obtain partial financing for spring protection, piped water systems, handpumps for existing wells, artesian wells and rain catchment systems under the INPRES program (Instruction of the President, Annex B-17). Annex B-18 documents the number of schemes by Kabupaten (district) constructed during Repelita I and GOI FY 1974/75. Current discussions suggest that this wide distribution of resources for rural safe water schemes will continue for the foreseeable future. As noted earlier, the level of financial resources allocated to this program is expanding rapidly.

Under current INPRES guidelines, the location of potable water projects within a district are chosen on the basis of one or more of the following criteria: the prevalence of cholera or other gastrointestinal diseases; the severity of inadequate current water supply; the degree of community participation in assisting the establishment of a water scheme; and the availability of a water resource (groundwater, spring, or rain). For the foreseeable future any village meeting the selection criteria listed above will be eligible to participate in these rural safe water schemes.

The trained rural sanitarian, under the supervision of the kabupaten sanitation supervisor, assists the village representatives in determining major health problems and water or sanitation requirements. He (she) then assists the village in applying for and using INPRES safe water and waste disposal funds. Final selection of any GOI-financed water scheme is made by the Chief of the Kabupaten (Bupati) upon consultation with the district health officer who in turn is advised by the field sanitarian and kabupaten sanitarian supervisor. (See organization chart at Annex B-24.)

3. Social Consequences and Benefit Incidence

The benefits of a safe water supply accrue directly to those village inhabitants who with financial assistance from INPRES and technical assistance from a rural sanitarian plan together to build a safe water system. These benefits accrue directly toward those individuals in the village who utilize the safe water supply. Because of the contagiousness of most gastrointestinal diseases of water origin, the community at large also benefits from the absence of gastrointestinal disease in an individual. This occurs by the elimination of sources of cholera, typhoid and other gastrointestinal diseases which may contaminate other safe water or food sources. The improved health benefits can be negated, however, if the individual chooses to consume contaminated water or food periodically from other sources, despite any instructions given by a sanitarian to the contrary.

The INPRES regulations stipulate a given number of safe water systems per kabupaten. Current guidelines dictate that each water scheme will provide, to the extent feasible, a public tap for every 200-400 people. Small rates, for example Rp 5 (\$.0125) per week, may be established by the village (desa) or subdistrict (kecamatan) for maintenance costs. In the event that the supply of safe water is adequate and an individual chooses to finance an extension pipe from the scheme to his (her) house, then the permission of the subdistrict chief (Camat) is required and a significantly higher rate must be paid.

Individuals who do not allow public access to wells or springs cannot participate in the GOI-financed projects but can seek technical information from the sanitarian. Indeed, the theoretical role of the sanitarian is to promote safe water and appropriate waste disposal by all the population. However, the paucity of sanitarians and the GOI emphasis on the broadest availability of safe water schemes will preclude any extensive efforts directed towards private individuals and the more affluent.

During PELITA II, the GOI plans to increase the safe water availability from 1.6% of the population to 15.8% of the population. Each kabupaten in Indonesia shall participate in this improvement. It is clear from the earlier discussion of income distribution in the rural areas of Indonesia and the fact that housing in rural

villages is not clustered by income strata that the beneficiaries of this program meet AID's definition of the poor majority.

4. Socio-Cultural Feasibility

The Ministry of Health recognizes that community awareness and maximal village participation requires greater community development and behavioral sciences skills than existing sanitarians possess. Though the current sanitarian curriculum provides some degree of this, the revised curriculum will contain even more.

Annex B-17 also shows current INPRES instructions to the sanitarians for catalyzing awareness and participation for waste disposal projects. Based on these guidelines, it is believed that the rural water supply program as envisaged for the next several years will impact positively upon the local culture. Indeed, more appropriate rural sanitarian training can provide skills to increase community participation and minimize negative reactions to particular social or cultural patterns that influence drinking water and human waste disposal habits.

Fieldwork from the AID-financed Health Education Manpower Development Project and other village health assessment surveys have documented the villagers' expressed desire for safe water and improved sanitation. Because of the frequently stated need for safe drinking water, it is believed that the rural water supply program will be perceived as a genuine benefit. On the other hand, both the Ministry of Health and USAID expect apathy or moderate opposition to latrine construction. Therefore, the rural water supply--a perceived benefit--is being stressed while the sanitation cadre and the general health education program attempt to educate and motivate villagers toward improved human waste disposal. It is expected that the development of this non-potable water component of a general sanitation education and motivation process will require many years and the combined efforts of health education, rural community development, and the basic education system.

Although village organizational differences are noted throughout Indonesia, in every village there is someone designated as "village chief." Frequently, there is also an individual within the village responsible for health matters; e.g., Jogowolyo in East Java. Village participation should be enhanced in nearly every village that develops a safe water scheme. This is a pre-condition for utilization of INPRES rural water supply funds. The establishment of a safe water system will not have a negative impact on the organization of the

village or kecamatan (subdistrict). On the contrary, the joint effort by local, district, provincial, and central resources may strengthen village social organization and weaken fatalistic philosophies.

a. Communication Strategy

As noted above, the sanitarian is expected to apply rural community development and behavioral science techniques in educating and motivating villagers to adopt and maintain potable water schemes and waste disposal projects. This forms the essence of the communication strategy. Special efforts in curriculum design, educational methodology, field work and short-term supplementary behavioral science advisors will be used to strengthen this communication strategy. In addition, a revitalized Indonesian health education manpower cadre, assisted in large part by USAID, will provide guidance and supervision.

Additional communication strategy factors are as follows:

- (i) the selection process for preservice training of rural sanitarians will consider an individual's innate community awareness; and
- (ii) the decision to regionalize the schools, thereby providing culturally appropriate training to trainees from their specific region was based on the recognition of the critical importance of this factor in the successful application of sanitarians to specific rural problems.

b. Spread Effect

A major sociocultural obstacle to rural development is the villagers' fatalistic outlook. Even among primary and junior high school graduates there is a significant percentage who give evidence that they believe their destiny cannot be influenced.

While several factors can change this negative viewpoint, evidence of the potential for an improved life is a powerful influence. The planned rural water supply program, if reasonably successful, can demonstrate that the environment can be changed and that disease and death among children can be reduced. This may have a positive effect on their broader outlook on health, fertility control, and agricultural production. It is not felt that leadership or patterns of mobility will powerfully influence this spread effect.

Conley

5. Least Cost Considerations

The difficulty of quantifying the direct and indirect economic benefits that will result from the rural sanitation program makes it impossible to carry out the usual type of economic analysis. It is, of course, recognized that more and better water supplies are generally associated with more and better health for the population concerned. It is also clear that given the existing all-pervasive poverty in Indonesian rural areas, the rural sanitation program will contribute to an improved pattern of income distribution. Safe water supplies may also contribute some attraction to remain in rural areas. The program certainly will not contribute to rural outmigration.

No adverse effects are foreseen if a given community water supply is successfully implemented and maintained. There may be, however, an increase in the population growth rate due to a reduction in death rates, particularly in infants and young children who now experience a high mortality rate due to gastrointestinal diseases. However, the current vigorous GOI-supported family planning program can forestall this negative feature. Further, there is some evidence to suggest that families have greater motivation to reduce their fertility if they believe that fewer children are dying.

With regard to the RSMD itself, although benefits cannot be quantified, it is appropriate to insure that this project represents the least cost, technically acceptable approach that is possible. In carrying out this assessment, the following factors must be considered:

- Effective functioning of the rural sanitarians requires that they be from the same cultural and ethnic background as the population with which they are working. It also suggests that their training, particularly with regard to their motivational role, should be in the area they are familiar with and in which they are going to work. These objectives would be best achieved by having one sanitarian training school for each of the 26 provinces.
- Minimum transportation costs for the trainees would be achieved by having one school in each province.
- Minimum construction, equipment and operating costs (other than transportation), on the other hand, would be attained by having one central school for sanitarian training for Indonesia.

The minimum size viable school is considered to have 40 students (20 in class and 20 in the field) and three to four trainers. Several provinces cannot presently absorb forty rural sanitarians per year.

This argues for at least some regionalization in the schools.

An evaluation of the trade-offs between the above factors (and the technical consideration that the number of fulltime sanitarian instructors is limited) by the Ministry of Health and USAID has led to the conclusion that at the present time there should be nine Schools for Sanitarians each with forty students, and two Schools for Sanitation Technologists. Schools of this size are considered to be replicable. As the availability of trainers and provincial absorptive capacities increase, additional schools could be established by the government in the future.

6. The Role of Women

Women as an important part of the rural village family will benefit from the provision of rural water supply systems to the same degree as men will. This section, then, looks into the role of women in the execution of the rural sanitation program.

The Indonesian health sector has attracted a large number of women into various health professional, auxiliary and administrative positions. Of the 139,979 people employed in the Indonesian health sector (excluding Armed Forces), 54,126, or 38.6%, are women.

Women are represented in nearly all categories except a few occupational classes employing relatively small numbers; e.g., plague control. As would be expected, midwifery attracts large percentages of women. On the other hand, the significant numbers of men in the various nursing categories (e.g., 40% in the "nurse" category) indicate that women are not by intent or neglect subjugated to certain personnel categories. The GOI Ministry of Health does not have any regulations prohibiting women from entering any occupational classes and provides equal wage rates for either a man or woman occupying a given position.

In the existing sanitarian classifications the current percentages of women are as follows: health controllers, 1.8%; sanitarians, 7.6%; assistant sanitarians (new style), 10.0%; assistant sanitarians (old style), 15.7%; auxiliary sanitarians, 17%; sanitarian aide, 12.5%. A complete review of health sector personnel by category and sex is available as Annex B-19.

While women have been attracted in only small numbers to the sanitation field due to the physical labor requirements (latrine construction, well drilling, pipe installation, etc.), female applicants to the proposed Sanitarian Schools and the Sanitation Technologist Schools will be accepted under the same criteria as for men.

As the sanitation field expands over time into sub-specialties such as water quality control, food and market sanitation, dairy product inspection and control and urban sanitation, even greater opportunities for women in this general field will become available.

Part IV. Implementation Arrangements

A. RSMD Organization and Implementation Capability

Annex B-20 provides an organization chart for the Ministry of Health. Within this GOI department, the Center for Education and Training; the Directorate of Health Installations within the Directorate General of Medical Care; the Bureaus of Planning and Personnel within the Secretariat General; and the Directorate of Hygiene and Sanitation within the Directorate General of Communicable Disease Control will play important roles in the execution of the RSMD.

Annex B-21 explores the organizational composition of the Center for Training and Education and the relationship of this agency with the RSMD-established Schools for Sanitarians and Sanitation Technologists and with the Provincial level of government. This Center will have prime responsibility for executing the RSMD, and its duties will include: (1) reviewing designs and specifications for all new construction and renovation associated with the physical erection of school facilities; (2) assuring that site location boundary maps and ownership documentation for the schools are in order; (3) monitoring the actual construction; (4) preparing selection criteria, lists of qualified universities, and requests for expressions of interest for the solicitation of expressions of interest to provide advisory services under the RSMD; (5) preparing and soliciting requests for technical proposals to provide such technical services; (6) reviewing the technical proposals, evaluating their merits, and negotiating and signing a contract with the most appropriate university; (7) preparing final listings for all local and overseas supplies, equipment and materials associated with the RSMD and undertaking such procurement; (8) preparing for and undertaking the training of trainers program; (9) developing revised school curriculum for preservice and inservice training; (10) drafting, publishing and distributing the field environmental sanitation manual; (11) designing, scheduling, and selecting candidates for the overseas and incountry fellowship program for the advanced training of sanitarian instructors; (12) planning, scheduling and monitoring the inservice training program for the existing rural sanitation cadre; (13) planning, programming and monitoring the revised preservice training of Sanitarians and Sanitation Technologists; and (14) planning and preparing for the advanced training courses for rural sanitarians.

Within the Center for Training and Education itself, a project management office will be established to focus attention on the execution of the RSMD and better insure its timely implementation. Seven professional and twelve lower-level administrative personnel will be employed to undertake these duties. It is anticipated that the present Director of the Academy for Health Controllers for Jakarta, who has been intimately involved with the design of the RSMD, will become the Director of this RSMD project management office.

The Directorate of Health Installations within the Directorate General of Medical Care holds chief responsibility within the MOH for the designing of standard health facilities throughout Indonesia and will carry out this activity as it relates to the RSMD with advice from the Directorate General of Communicable Disease Control, the Secretary General, and, of course, the Center for Training and Education.

The Bureaus of Planning and Personnel within the Secretariat General and the Directorate of Hygiene and Sanitation within the Directorate General of Communicable Disease Control will play a less direct and more advisory role in RSMD implementation. The former offices are responsible for (1) making decisions on the numbers of sanitarian positions to be opened up within the MOH and (2) the placement of graduates of the Schools for Sanitarians and Sanitation Technologists into Ministry positions, respectively. The latter directorate is the responsible agency within the MOH for employing sanitarians and carrying out the GOI rural sanitation program. In order to ensure that the technical expertise and advice of these and other agencies (and that of international donors involved with rural sanitation projects in Indonesia) is properly considered during the execution of the Project, an RSMD Advisory Committee will be established with which the Project management will consult regularly.

When considering the implementation capability of the Ministry of Health to execute the RSMD, it is valuable to separate the Project into physical/hardware and software components. Regarding design and construction associated with the former activity, little problem is foreseen: the facilities to be designed are simple one-story structures with which the MOH has many years of experience; and the school construction to be performed by private contractors is likewise uncomplicated in scope and nature. Furthermore, the local procurement, as another facet of the hardware component, is not viewed as a potential problem. Overseas procurement, on the other hand, of small quantities of tens of items could present some problem; however, it should be remembered that one of the responsibilities of the university contractor team to be financed under the loan is to assist with this activity. Successful implementation of the software component also seems well assured for this same reasoning plus the fact

that the Ministry has succeeded in operating two Academies for Health Controllers, thirteen Schools for Sanitarians, and four Schools for Assistant Sanitarians in the past with some degree of success despite severe budgetary, technical, and administrative constraints.

B. Implementation Plan

1. Project Implementation Plan

a. An Overview

The RSMD can be broken down into hardware and software components. The key in scheduling of all related activities is that preservice training at the Schools for Sanitation Technologists and Sanitarians and the inservice training of the existing rural sanitation cadre must begin in January 1978, in order to be in phase with the Indonesian school year. Therefore, hardware activities, including the design and physical construction of training facilities and the procurement of local and offshore commodities, must be completed prior to calendar year 1978. At the same time, the preparatory stage of the RSMD software activities (including the revision of school curricula, the training of faculty of all RSMD educational institutions, the preparation of teaching aides and supporting materials, the development of the environmental sanitation field manual, etc.) must also be executed prior to this date. The second phase of the software component, or the actual undertaking of two years of inservice and preservice training of Sanitarians and Sanitation Technologists, will therefore be conducted in calendar years 1978 and 1979. Technical assistance has been scheduled to assist with both elements of the Project, although it is deemed less critical for construction activities of the RSMD.

Annex B-22 contains a RSMD implementation schedule broken down into major activities. Annex D presents a Planned Performance Tracking Network Chart which demonstrates the relationships between the most critical performance indicators of RSMD success in terms of achieving the Project's purposes in a time rigid manner.

b. Design and Construction of the Schools

The Ministry of Health will provide technical expertise for the design and layout of the new construction involved with the Schools for Sanitarians and Sanitation Technologists. At the same time, the respective Provincial Public Works Departments will be responsible for site plans and modifications. Site selection and preparation, architectural and engineering plans, designs and layouts will be completed during the first six months of RSMD implementation. No problems or constraints are anticipated in designing these Schools.

Construction will be performed by private Indonesian contractors, with supervision, field inspections, monitoring, and final certification of satisfactory completion for purposes of reimbursement undertaken by the respective Provincial Department of Public Works. The contractors will be selected from lists of prequalified firms to erect new structures. It is felt that Class A, B, and C contractors have the capability to construct these Schools. Eighteen months have been allocated for the completion of all necessary construction in time for the commencement of the 1978 school year. Again, no problems or constraints are foreseen.

c. Technical Services

In view of the services required, technical assistance in the form of the project representative, sanitarian educator, field sanitarian and sanitarian evaluator will necessarily come from a U.S. university. Regulations in A.I.D. Handbook 11, Chapter I, Procurement of Professional and Technical Services, Section 1 B (3) will therefore be followed. Selection criteria for the evaluation of potential contractors, an initial source list of institutions considered qualified to undertake RSMD responsibilities based on the selection criteria noted above, and a request for expressions of interest have already been developed and are included as Annex B-23. Upon authorization of the subject loan, this material will be forwarded to potential contractors. This will allow approximately eight months for the distribution of requests for technical proposals, the evaluation of such proposals, negotiations and contract execution in order for the team to arrive as planned by September 1976. It should be noted that both USAID and the GOI view the selection of the university sanitarian team as very important to the success of the Project. Therefore, the

RSMD Project Manager and the Director of the Training and Education Center of the MOH will both be sent to the United States to interview interested U.S. educational institutions prior to the final contractor selection.

Ministry of Health officials have questioned, however, the need for the entire 10.25 man years of expatriate technical assistance as shown on the RSMD Project Implementation Plan of Annex B-22. Their reasoning rests with their perception that the major responsibilities of the project representative, sanitarian educator, and field sanitarian (in terms of curriculum development, preparation of the field manual, procurement of goods, training of sanitarian instructors, etc.) appear to be completed by the end of calendar year 1977 and prior to the commencement of school year 1978. It has been decided then that part of the July 1978 evaluation will include an assessment of the need for the entire (or part of) the U.S. university sanitarian team to continue with the provision of its services for another 1½ years. The scheduling of this rather major evaluation will have the benefit of six months' experience with preservice training and experience with several retraining courses for existing sanitarian personnel.

d.. Commodity Procurement

Goods to be financed under the RSMD include locally procured commodities for the training of trainers and for the inservice and preservice training programs and foreign exchange items for the inservice and preservice training programs. The technical assistance team in all instances will have the responsibility of assisting the Ministry of Health with deciding on types and quantities of goods to be acquired and with the actual procurement itself. Therefore, commodity procurement will not begin until the team of expatriate advisors arrives in country as scheduled for September 1976. This plan will allow five months for the purchase of goods to be utilized in the two four-month courses for instructors at the Schools for Sanitarians and Sanitation Technologists and seventeen months for the procurement of commodities for the retraining of the existing sanitarian cadre and the pretraining of new Sanitarians and Sanitation Technologists.

Procurement of offshore commodities with loan funds will come from eligible AID Geographic Code 941 sources. Much of this procurement to be financed under the loan is small valued and will therefore not require the formal preparation of invitations to bid, in accordance with A.I.D. Handbook 11, Chapter 3, Procurement of Equipment and Materials, Section 3C-7. In those instances, however, where there

will be procurement transactions of over \$50,000 (i.e., purchase of jeeps/vehicles for the sanitarian schools), the more formal non-major procurement regulations of the above-referenced handbook and chapter, Sections #3C-2 through 3C-6, will be followed. Jeep vehicles to be financed under this loan will come from the United States, in accordance with Section 636(i) of the Foreign Assistance Act.

Eighteen right-hand drive 10-12 passenger mini busses are also required under the RSMD for the Schools for Sanitarians to provide transportation to field demonstration sites. Such vehicles are not manufactured in the United States, however. The Government of Indonesia, therefore, has agreed to pick up the costs of these mini-busses under its contribution to the Project.

e. Software Development

Preparation of software will take place over a seventeen-month period beginning with the arrival of the university sanitarian team and ending with the commencement of the 1978 school year. During the first four- to five-month period, the university sanitarian team will assist a small group of approximately four instructors from the existing Academies for Health Controllers and Schools for Sanitarians and Assistant Sanitarians with the preparation of the two four-month courses for the training of all instructors of the RSMD-created Schools for Sanitation Technologists and Sanitarians. This will include a two-week workshop for the four instructors to prepare them for the training of trainers program. Curriculum development, revised teaching methodologies, and environmental sanitation technologies will be discussed.

During calendar year 1977, all existing sanitarian instructors will be put through one of two courses to strengthen faculty capabilities to a uniformly high level. These courses will focus on increasing their technical knowledge of rural environmental sanitation, strengthening their knowledge and skills in educational methodology, and developing the curriculum and field training exercises which they will have the responsibility for teaching the following school year. Curricula for the Schools of Sanitation Technologists and Sanitarians will be revised; teaching aids and supporting materials will be designed; a field environmental sanitation manual will be written; evaluation procedures will be developed; and criteria for the selection of entering students and procedures for actual recruitment will be decided upon (with RSMD Advisory Committee concurrence). The period between the first and second training of trainers course is viewed as a period of evaluation and constructive modifications of the program. And finally, it should be noted that this faculty training is to be given twice in order to permit the continuing operation of the existing preservice sanitarian schools during the year required for faculty upgrading. Some staff will continue to operate

the preservice institutions while others will attend the training course. Prior to the commencement of the revised preservice training program and inservice retraining program in 1978, a total of 63 instructors will have passed through the faculty upgrading program.

During the last two years of RSMD implementation, fellowships for incountry and overseas advanced training for instructors of the Schools for Sanitation Technologists and Sanitarians will be utilized. The scheduling of this advanced training will be designed so as not to disrupt the continuing operation of RSMD institutions. The U.S. university sanitarian advisory team will have as one of its responsibilities the programming of this advanced sanitarian instructor training.

f. The Revised Training Program

The RSMD Schools for Sanitation Technologists and Sanitarians will open in January 1978. By that time, all facilities will have been renovated or constructed, all necessary commodities will be in place, and all faculty will have been retrained. Revised admissions criteria will be utilized to select and recruit students for the three-year Sanitation Technologist program from school year 1978 onwards. During the first two years of operation of the revised Schools for Sanitarians, however, all students will be existing MOH personnel who have taken part in a three-month emergency training program of some 800 senior high school graduates being conducted in GOI FYs 1975/76 and 1976/77. Stipends will be given to all students, and field kits and manuals will be presented upon graduation. All graduates will have guaranteed positions in the rural sanitation program.

Inservice training courses of 6 weeks' duration will be given to the entire rural sanitation cadre over calendar years 1978 and 1979 at the regional Schools for Sanitarians. Criteria will be established for scheduling the dates on which individual rural sanitarians will be retrained. Stipends will be given to all rural sanitarians attending this program. Upon graduation, field kits and environmental sanitation manuals will be presented for on-the-job use.

2. Loan Implementation Plan

The following presents a timetable for implementation of the RSMD loan:

- | | |
|---------------------------------------------------------------|-------------------|
| 1. Loan authorized by AID/W | December 31, 1975 |
| 2. Loan agreement negotiated and signed | April 1, 1976 |
| 3. Conditions precedent to initial disbursement met | July 1, 1976 |
| 4. Sanitarian team contract signed | July 1, 1976 |
| 5. Initial commitment documents opened | September 1, 1976 |
| 6. Terminal date for requesting disbursement or reimbursement | January 1, 1980 |
| 7. Final disbursement date | July 1, 1980 |

A draft loan authorization is provided in Annex I. A description of the RSMD and a listing of conditions and covenants as they will appear in the draft RSMD loan agreement are found in Annex H and Section IV C below, respectively.

A waiver from certain AID rules for local procurement is requested as part of this Project Paper for the Fixed Amount Reimbursement (FAR) portion of the subject loan. A.I.D. Handbook 15 (Chapter 11, Financing of Local Procurement of Commodities) has source/origin definitions, componentry tests, shelf-item limitations, and documentation requirements including vouchers, invoices, and source and componentry certifications for local procurement of commodities. The problem lies in the fact that most of the local cost RSMD activities involve numerous separate, small local procurements in ten locations spread throughout the Indonesian archipelago by several small Indonesian contractors. If the A.I.D. Handbook 15 requirements on local procurement of commodities were to be complied with literally, Indonesian translation of the regulations would have to be made and understood and complied with by all contractors for procurement of all relevant commodities, including such items as window screening for school construction. Requiring suppliers' source certifications and monitoring compliance would represent a very large, if not impossible, administrative burden and add little, if any, protection to AID's interests.

All of the imported elements have been identified (e.g., laboratory equipment) and where appropriate will be funded under the loan as direct dollar procurement from Code 941 sources. Most other commodities

required for the FAR portion of this loan, such as cement, are produced in Indonesia in ample quantity. The patterns of Indonesia's trade, manufacturing, and commodities available at the school sites, for items which will be needed indicate that the extent of items likely to be obtained which might be of questionable origin will be very slight. Of those Indonesian imports which could become local purchases, some are of Code 941 origin (e.g., Korea or Taiwan). Some are of Code 935 origin (e.g., Japan). Only a small proportion are non-Code 935 origin. The risk of including shelf items or locally manufactured items with components from sources other than Code 935 countries is, in USAID's view, very low. Overall, AID reimbursement will not exceed 50% of FAR local costs, as described earlier.

Given these circumstances, a deviation from the requirements of Handbook 15, Chapter 11, is requested for the FAR portion of the loan.

3. RSMD Monitoring

a. GOI Monitoring

The Center for Training and Education within the Ministry of Health will have prime responsibility for monitoring the implementation of the RSMD on the GOI side. The purposes of such monitoring include: (i) planning annual budget allocations to ensure rapid project execution; (ii) approving all plans, specifications, designs and contracts associated with the RSMD; (iii) assuring timely construction, procurement and distribution of necessary commodities, and recruitment of technical advisory services; (iv) reviewing the progress with the training of instructors, preservice and inservice training programs; (v) certifying successful completion of all local cost activities for which AID reimbursement will be sought; and (vi) detecting problems as they arise and providing needed assistance. Advice to the Center for Training and Education in performing its monitoring duties will be supplied by the project representative member of the university contractor team who will set up standard procedures for RSMD monitoring as one of his main responsibilities. In addition, RSMD Advisory Committee meetings will be held periodically as another means of monitoring RSMD implementation and resolving outstanding problems and issues in a timely manner.

b. AID Monitoring

AID monitoring of the RSMD will require the services of a public health officer and a general civil engineer. The public health officer will be responsible for meeting periodically with representatives of the Center for Training and Education and RSMD Advisory Committee members; making frequent field trips to Project sites; reviewing general progress with Project implementation including procurement, construction and technical advisory services activities; assessing the adequacy of the training of trainers course and pre-service and inservice training programs; and keeping top Mission Management and AID/Washington apprised of progress through the Planned Performance Tracking Network System. Such an individual will be required to spend approximately one-fourth of his time on the RSMD.

The AID direct-hire engineer will be required to review and approve building designs, specifications, contracts and cost estimates prior to commencement of construction; and to certify satisfactory completion of all structures prior to AID reimbursement for completed units of work. There are ten RSMD school sites spread throughout the Indonesian archipelago which would have to be visited frequently. It is anticipated that one-fourth of a civil engineer's time will be required to staff out this monitoring function.

c. Evaluation

In addition to the monitoring requirements described above, AID will also finance three one-month consultancies of a sanitarian evaluator in order to review the Project and assess its success with Center for Training and Education, RSMD Advisory Committee, university sanitarian team and USAID personnel. These evaluations are tentatively scheduled for January 1977, July 1978, and December 1979. As noted earlier, the evaluation of July 1978 will have on its agenda the review of the sanitarian advisory services team and the determination of whether there is a need to continue financing all or a part of its services. The final evaluation scheduled for the end of calendar year 1979 will relate the progress of the RSMD with the Project's stated purposes and end-of-Project conditions, both of which are presented in the logical framework matrix.

D. Conditions, Covenants, and Negotiating Status

There are no Government of Indonesia actions which must be taken prior to execution of the RSMD loan agreement. The following represent conditions and covenants as they will appear in the loan agreement. These requirements have already been discussed with, and approved by, RSMD officials within the Ministry of Health.

Conditions Precedent to Initial Disbursement

1. An opinion of the Minister of Justice of the Borrower that the loan agreement has been duly authorized and/or ratified by, and executed on behalf of, the Borrower, and that it constitutes a valid and legally binding obligation of the Borrower in accordance with all of its terms.
2. A statement of the names of the persons who will act as representatives of the Borrower together with evidence of their authority and specimen signatures of each.
3. (a) Written assurance that the estimated annual expenditures for each year during which the Project is being conducted (other than the costs to be financed under the loan) will be made available to permit the work of the Project to proceed on a timely basis;
(b) a budgetary allocation for the Project for the Indonesian fiscal year 1976-1977;
(c) an approved payment authorization for payment of Indonesian currency in the amount required for the first three months of Project operations
4. A plan for project evaluation that identifies progress indicators to be measured, means of collecting base-line data, methodology for verifying progress, timing of evaluation, and organization responsible for evaluation.

Conditions Precedent to Commencement of Construction

Prior to the commencement of construction for every School for Sanitarians and Sanitation Technologists for which reimbursement will be sought by the Borrower under the Loan, the Borrower and A.I.D. shall review and approve in writing:

- (a) The plans, specifications, time schedules and other relevant materials along with the detailed cost estimates;

(b) Site location and boundary survey maps, together with documentation indicating the entity in which land ownership is vested;

(c) Borrower's consulting and construction contractor pre-qualification standards, Borrower's lists of prequalified consulting and construction contractors including a certification that all contractors listed meet the applicable prequalification standards of the Borrower approved by the Borrower and A.I.D. and Borrower's standard consulting and construction contract forms;

(d) The identity of the consulting and construction contractors and a copy of the contracts with a certification that the applicable standard consulting and construction contract forms approved by the Borrower and A.I.D. were utilized, and a statement of exceptions, if any.

Condition Precedent or Covenant on the Procurement of Any Offshore Goods and Services

Prior to the procurement for the Project of any goods and services having both their source and origin in Code 941 of the A.I.D. Geographic Code Book, the Borrower and A.I.D. shall review and approve in writing the lists of items to be procured along with their specifications, the description of services to be acquired, and estimated costs.

Borrower Special Covenants

1. The Borrower shall carry out the Project, or cause the Project to be carried out, with due diligence and efficiency, and in conformity with sound financial, administrative, and management practices.
2. The Borrower shall ensure that all financial and technical support required to effectively operate and maintain the schools constructed under the Project shall be provided both during the implementation of, and upon completion of, the Project.
3. The Borrower shall submit to A.I.D., promptly upon preparation, in form and substance satisfactory to A.I.D., criteria to be utilized for admissions to the Schools for Sanitation Technologists and Sanitarians.

4. The Borrower shall ensure that each student graduated from the Schools for Sanitarians and Sanitation Technologists will be guaranteed a position in the Ministry of Health with the rural sanitation program.
5. The Borrower shall submit to A.I.D., promptly upon preparation, in form and substance satisfactory to A.I.D., job descriptions for Sanitarians and Sanitation Technologists to be utilized by the Ministry of Health.



PAGE TWO CV 2087

UNCLASSIFIED

OF CONFIDENCE THAT SUCH ISSUES WILL BE FAVORABLY RESOLVED AND WHAT COMMITMENT MISSION INTENDS SEEK TO ASSURE COMPLIANCE. HOWEVER ON SEC.V-3 OF PRP, WE HAVE SOME CONCERN WITH PLAN TO SUSPEND ADMISSIONS TO EXISTING SCHOOLS FOR ONE YEAR. QUESTION IF THIS ONLY FEASIBLE ALTERNATIVE. COULD NOT SOME PARALLEL ACTIVITIES TAKE PLACE SUCH AS SPLIT DAYS WITH NEW AND ON-GOING TRAINING SIDE-BY-SIDE?

6. PREDOMINANT ACTIVITIES USING WATER ARE CONDUCTED BY WOMEN. WHILE INDONESIA'S RECORD HAS BEEN FAVORABLE IN INCLUDING WOMEN IN DEVELOPMENT PROCESS, BELIEVE THIS PROJECT APPROPRIATE ATTEMPT TO CONTINUE FOSTER WOMEN'S ROLE. ACCORDINGLY, EFFORTS SHOULD BE MADE TO EXTENT PRACTICABLE TO INCREASE INVOLVEMENT OF WOMEN IN TRAINING PROGRAM.

7. AS INDICATED IN SEC.VII. OF PRP SEVERAL OTHER DONORS WORKING IN RELATED FIELDS. PP SHOULD SHOW HOW THESE ACTIVITIES COORDINATED TO AVOID DUPLICATION OR CONTRADICTORY EFFORTS.

8. CONCERN RAISED WITH PROPOSAL FOR SINGLE OVERSEAS FELLOWSHIP. WISH TO AVOID RELIANCE ON ONLY ONE PERSON AND ALSO PROVIDE SOME SMALL TRAINED CADRE TO SUPPORT PROJECT DIRECTORS. MISSION SHOULD REASSESS NEEDS THIS AREA IN CONTEXT FOREGOING COMMENTS AND ADDRESS ISSUE IN PP. (SEE ALSO COMMENTS SWISHER MEMOS REFERRED TO PARA 13 BELOW) SUGGESTION ALSO MADE THAT SOME TRAINING WITHIN SE ASIA REGION MIGHT ALSO BE APPROPRIATE TO BENEFIT FROM NEIGHBORING COUNTRY EXPERIENCE.

9. PRP CONTAINS DOLS 150,000 OF AID LOCAL COST FINANCING FOR VEHICLES. THIS NEEDS EXPLANATION IN LIGHT SEC.636(I) OF FAA.

10. OTHER COMMENTS TO BE CONSIDERED IN PREPARATION PP CONTAINED IN TWO MEMOS FROM DALE SWISHER DATED JAN 14 AND 23 WHICH GIVEN VAN RAALTE. INGERSOLL
BT

RJH

UNCLASSIFIED

Specific Disease Prevalence, Indonesia, 1972

	<u>Percentage of Total</u>	<u>Point Prevalence</u>
1. Acute upper respiratory infections	18%	0.88
2. Skin infections	13%	0.64
3. Tuberculosis	10%	0.52
4. Acute lower respiratory infections	8%	0.37
5. Diarrhea diseases	5%	0.27
6. Malaria	5%	0.25
7. Eye infections	4%	0.20
8. Other diseases of the eye	3%	0.12
9. Anemia	3%	0.16
10. Nutritional deficiencies	2%	0.12

Source: Household Survey, Department of Health,
Indonesia - 1972

Parasites Prevalence per 100 Population, Indonesia**

	<u>South*</u> <u>Sulawesi</u>	<u>West</u> <u>Java</u>	<u>Central</u> <u>Java</u>
<u>Helminths</u>			
Ascaris lumbricoides	88	90	85
Trichuris trichiura	82	91	91
Hookworm	59	67	52
Enterobus vermicularis	3	2	1
Hymenolepis diminuta	1	--	--
Strongyloides stercoralis	--	1	--
<u>Protozoa</u>			
E. Histolytica	8	10	13
E. Hartmanni	2	2	4
E. Coli	19	40	36
Endolimax nana	6	10	6
Indamoeba butschilii	2	8	1
Giardia lamblia	2	5	2
Chilomastix mesnili	1	3	1
Malaria	19	2	--

* of 659 people sampled 97% had parasites, at least one, 80% had two or more, 60% had 3 or more.

** Extracted from

1. "Intestinal Parasites and Malaria in Margolembo, Luwu Regency, South Sulawesi, Indonesia, Cross, J.H. et al. SE Asian J. Trop. Med. & Pub. Health, Vol. 3, p. 587-593, Dec. 1972.
2. "Human Malaria and Intestinal Parasites in Kresek, West Java, Indonesia, with a cursory Serological Survey for Toxoplasmosis and Amoebiasis", Clarke, M.D., et al. SE Asian J. Trop. Med. & Pub. Health, Vol. 4, p. 32-36. March 1973.
3. "A Parasitological Survey in the Yogyakarta Area of Central Java, Indonesia", Clarke, M.D., et al, SE Asian J. Trop. Med. & Pub. Health, Vol. 4, p. 195-201.

Ranking of Causes of Mortality in Indonesia

1. Diarrhea and enteritis in children under age 2
2. Pnuemonia and bronchitis
3. Accidents, poisoning and violence
4. Disease of the liver and digestive system
5. Heart disease
6. Respiratory TB
7. Tumors
8. Cerebrovascular Disease
9. Avitaminosis and related deficiencies
10. Typhus

Source: "Penjusunan Prioritas Penyakit/Problema Kesehatan Dengan Cara Scoring/Ranking Berdasarkan Perhitungan "Composite Index".
Department of Health, Indonesia, 1972.

Annex B-4a

Field Distribution of Sanitarian Personnel
by Province

Province	Population	San. Eng.	Total Staff in Province Office			
			H. Cont.	San.	Asst. San.	Aux. San.
Aceh	2,110		1	3	-	-
N. Sumatera	7,002		1	1	-	1
W. Sumatera	2,889		1	2	-	1
Riau	1,738		1	1	-	-
Jambi	1,068		1	2	-	-
Bengkulu	555		1	2	-	-
S. Sumatera	3,678		1	7	-	-
Lampung	2,966		1	2	-	-
Total	22,016		8	20	-	2
Jakarta	4,989		1	3	1	1
W. Java	22,542		2	1	1	3
C. Java	22,645	1	3	2	-	3
Yogyakarta	2,543		1	2	4	4
E. Java	26,340	1	3	2	-	1
Bali	2,195		1	1	-	2
Total	81,254	2	11	11	6	14
W. Nusa Tenggara	2,291		1	3	-	2
E. Nusa Tenggara	2,366		1	-	2	-
Total	4,657		2	3	2	2
W. Kalimantan	2,121		1	2	-	1
C. Kalimantan	729		1	1	-	1
S. Kalimantan	1,769		1	3	-	-
E. Kalimantan	764		1	2	-	-
Total	5,383		4	8	-	2
N. Sulawesi	1,815		1	4	-	1
C. Sulawesi	965		2	-	2	-
S. Sulawesi	5,348		1	5	-	1
S.E. Sulawesi	736		1	1	-	-
Total	8,864		5	10	2	2
Maluku	1,160		1	-	1	-
Irian Jaya	961		1	2	-	-
Total	2,121		2	2	1	-
GRAND TOTAL	124,295	2	32	54	11	22

San. Eng. = Sanitary Engineer
H. Cont = Health Controller
San. = Sanitarian
Asst. San. = Assistant Sanitarian
Aux. San. = Auxiliary Sanitarian

Annex B-4b

Field Distribution of Sanitarian Personnel
by Kotamadya (Municipal) and Kabupaten

Province	Total Staff in Kotamadya Office					Total Staff in Kabupaten Office				
	Total Kotamadya	H. Con.	San.	Asst. San.	Aux. San.	Total Kabupaten	H. Con.	San.	Asst. San.	Aux. San.
Aceh	2	-	3	1	-	8	-	8	9	1
N. Sumatera	6	1	-	7	3	11	-	1	14	5
W. Sumatera	6	-	8	-	2	8	-	11	3	4
Riau	1	-	3	-	-	5	-	10	-	-
Jambi	1	1	-	1	-	5	-	3	1	1
Bengkulu	1	-	1	1	-	3	-	3	2	-
S. Sumatera	1	-	3	-	2	9	-	11	5	1
Lampung	1	-	2	1	-	3	-	3	3	-
Total	19	2	20	11	7	52	-	50	37	12
Jakarta	5	5	2	2	17	-	-	-	-	-
W. Java	4	2	2	4	2	20	4	17	8	4
C. Java	6	2	5	2	8	29	2	15	18	11
Yogyakarta	1	-	-	4	-	4	-	-	8	14
E. Java	8	4	6	6	2	29	17	8	7	4
Bali	-	-	-	-	-	8	-	4	-	10
Total	19	13	15	18	29	90	23	44	41	43
W. Nusa Tenggara	-	-	-	-	-	6	-	7	2	4
E. Nusa Tenggara	-	-	-	-	-	12	-	-	12	-
Total	-	-	-	-	-	18	-	7	14	4
W. Kalimantan	1	1	1	1	-	6	-	2	1	3
C. Kalimantan	1	-	-	-	-	9	2	3	1	-
S. Kalimantan	2	-	-	2	1	9	-	3	-	6
E. Kalimantan	2	-	-	-	-	4	-	4	-	-
Total	6	1	1	3	1	28	2	12	2	9
N. Sulawesi	2	-	1	1	1	4	-	1	3	-
C. Sulawesi	-	-	-	-	-	4	-	-	4	-
S. Sulawesi	2	1	8	-	-	21	-	31	-	-
S.E. Sulawesi	-	-	-	-	-	4	-	5	-	-
Total	4	1	9	1	1	33	-	37	7	-
Maluku	1	1	-	-	-	4	4	1	-	-
Irian Jaya	-	1	2	-	-	9	4	4	-	-
Total	1	2	2	-	-	13	8	5	-	-
GRAND TOTAL	54	19	47	33	38	234	33	155	101	68

San. Eng. = Sanitary Engineer
H. Cont. = Health Controller
San. = Sanitarian
Asst. San. = Assistant Sanitarian
Aux. San. = Auxiliary Sanitarian

Annex B-4c

Field Distribution of Sanitarian Personnel
by Kecamatan

Province	Total Kecamatan	Total Desa	Total Staff in Kecamatan Office			
			H.Con.	San.	Asst.San.	Aux.San.
Aceh	129	601	-	18	-	-
N. Sumatera	167	5,303	-	1	4	1
W. Sumatera	80	559	-	5	1	4
Riau	67	721	-	28	-	-
Jambi	37	918	-	-	-	-
Bengkulu	23	71	-	-	-	-
S. Sumatera	85	1,692	-	29	3	40
Lampung	58	1,124	-	14	7	-
Total	646	10,989	-	95	15	45
Jakarta	27	220	3	-	-	-
W. Java	387	3,927	1	30	97	112
C. Java	492	8,485	-	25	131	154
Yogyakarta	74	556	-	-	61	-
E. Java	544	8,865	21	48	113	112
Bali	50	560	-	-	-	-
Total	1,547	22,393	25	103	402	378
W. Nusa Tenggara	56	553	-	-	-	-
E. Nusa Tenggara	98	1,714	-	-	1	-
Total	154	2,267	-	-	1	-
W. Kalimantan	106	3,589	-	-	1	-
C. Kalimantan	82	1,183	-	1	-	-
S. Kalimantan	94	674	-	-	-	-
E. Kalimantan	69	915	-	19	-	-
Total	351	6,361	-	20	1	-
N. Sulawesi	81	1,142	-	-	6	2
C. Sulawesi	61	1,149	-	-	35	-
S. Sulawesi	169	1,163	-	-	-	5
S.E. Sulawesi	43	394	-	30	-	-
Total	354	3,848	-	30	41	7
Maluku	51	1,605	-	1	-	3
Irian Jaya	35	892	-	-	-	-
Total	86	2,497	-	1	-	3
GRAND TOTAL	3,138	48,575	25	249	460	433

H. Con. = Health Controller
 San. = Sanitarian
 Asst. San. = Assistant Sanitarian
 Aux. San. = Auxiliary Sanitarian

An Analysis of the Demand and Supply of Rural Sanitarians
in Indonesia

I. Sanitarians

Demand projections for the numbers of Sanitarians required during the Second and Third Five-Year Plans are derived from two sets of assumptions. The first assumes that each Puskesmas (kecamatan health center) requires a minimum of one Sanitarian for its operations and that an additional 10-15% positions are required for staffing at the kabupaten, provincial and national levels of government. Using that assumption, one merely tracks the number of existing and planned kecamatan health centers to derive an estimate of Sanitarian needs.

The second projection of the demand for Sanitarians is based on a study in manpower planning for rural water supply and sanitation made by WHO in April 1975 entitled Preliminary Report on Demand and Supply of Manpower. This report utilizes a systems analysis approach which bases manpower requirements on the type of water supply and latrine schemes to be constructed and maintained (e/g. the installation and maintenance of an artesian well requires x hours of a Sanitarian's time). It assumes that by the end of the Third Five-Year Plan, approximately 50% and 14.3% of the rural population will be covered with rural water and latrine systems respectively (along with an associated three-fold increase in annual expenditures from the GOI FY 1975/76 levels).

The results of using the first and second sets of assumptions regarding Sanitarian requirements are found in Columns 1 and 2 of Table I below. It should be kept in mind, however, that both analyses attempt to approximate the requirements of Sanitarians solely to implement the rural water supply and latrine program and does not include utilization of such personnel for related activities which also fall into their job descriptions (e.g. inspection of local food markets, pesticide control, etc.). In fact, in order for Sanitarians to implement all responsibilities as delineated in their job descriptions, a Puskesmas would have three Sanitarians on its staff, thereby implying longer-term Sanitarian demand at 11,700. It is clear, then, that both projections are minimal requirements for Sanitarians and that as the environmental health services in Indonesia expand, so will the need for this category of health personnel.

Supply projections are based on the implementation of the RSMD. The annual supply of qualified Sanitarians is computed by adding prior year employment figures to recruitment projections while making allowances for losses due to retirement. During the Second Five-Year

Plan, recruitment will come from regular training programs at the Schools for Sanitarians and upgrading training for existing Assistant Sanitarians. During the Third Five-Year Plan the supply of new Sanitarians will come solely from the annual output of the nine Schools for Sanitarians. A comparison of supply and demand projections for Sanitarians to implement the rural water supply and latrine program indicates that over a nine-year time horizon, the RSMD will allow Indonesia to begin to meet its minimal requirements in the field of rural environmental sanitation.

II. Sanitation Technologists

This category of health personnel will have many immediate rural sanitation responsibilities, only one of which will be supervising Sanitarians execute the rural water supply and latrine program (e.g. pesticide control, food hygiene and health education). Therefore demand projections will come solely from staffing pattern requirements rather than manpower projections based on the numbers of rural water supply and latrine facilities to be constructed and maintained. The Directorate of Hygiene and Sanitation within the Ministry of Health requires 27 Sanitation Technologists at the national level, 5 in each of the 26 provinces, 2 in each of the 234 kabupatens and 2 in each of the 54 municipalities; totalling demand for 733 Sanitation Technologists. There is also a demand for this professional rural sanitarian to train new rural sanitarians in Indonesia: 4 at each of the 9 Schools for Sanitarians, 15 at each of the 2 Schools for Sanitarian Technologists and 5 for each of 26 provincial training institutions, thereby totaling an additional 199 individuals. Furthermore, there exists an immediate need for one Sanitation Technologist to be stationed in each of 26 provincial laboratories. The total immediate demand, then, for Sanitation Technologists is 958.

Sanitation Technologists can also be utilized in other positions outside of rural environmental sanitation including 530 for hospital sanitation, approximately 120 for the malaria control program and not yet quantifiable numbers for harbour sanitation, industrial safety and hygiene, urban water supply and sewerage disposal, housing sanitation and of course private sector needs (e.g. hotel, restaurant sanitation). A longer-term estimate, then, for Sanitation Technologist needs would easily exceed 2500.

Supply projections for Sanitation Technologists come solely from existing personnel and newly-graduated manpower from the three-year Schools for Sanitation Technologists (and from the Academies for Health Controllers until they are converted to Sanitation Technologist Schools). Estimates of losses due to retirement are also attempted in Table II below.

A comparison of the supply and demand projections for Sanitation Technologists to implement environmental sanitation programs indicates that over a nine-year time horizon, the RSD will allow Indonesia to begin to meet its minimal requirements in the field of rural environmental sanitation.

TABLE I

DEMAND AND SUPPLY OF SANITARIANS

Indonesian Fiscal Year	Demand for Sanitarians		Supply of Qualified Sanitarians	Recruitment during FY			Losses due to retire- ment	
	(Assump- tion 1)	(Assump- tion 2)		Total	Emergency Training	Regular Training		Upgrading/ Promotions of Ass. Sa- nitarians
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1974/75	2843	-	506	324		314	10	-
1975/76	3343	1430	830	263	(408) a)	250	13	10
1976/77	3343	1580	1083	268	(400) a)	250	18	15
1977/78	3375	1730	1336	272	-	250	22	25
1978/79	3400	2330	1583	889	-	360	529	30
1979/80	3500	2950	2442	360	-	360	-	35
1980/81	3600	3650	2767	360	-	360	-	40
1981/82	3700	4300	3087	360	-	360	-	45
1982/83	3800	5050	3402	360	-	360	-	50
1983/84	3900	5850	3712	360	-	360	-	60

a) All students in the emergency training program will be put through the regular year-long program at the Schools for Sanitarians during IFY 1978/79, 1979/80 and 1980/81 before being considered qualified Sanitarians.

TABLE II**DEMAND AND SUPPLY OF SANITATION TECHNOLOGISTS**

Indonesian Fiscal Year	DEMAND	SUPPLY	Recruitment through Sanita- tion Technolo- gist Schools	Losses due to attrition
1974/75	958	109	73	2
1975/76	958	180	60	3
1976/77	958	237	60	4
1977/78	958	293	60	5
1978/79	958	348	60	10
1979/80	958	398	60	12
1980/81	958	446	100	13
1981/82	958	533	100	21
1982/83	958	612	100	24
1983/84	958	688	100	34

Pertinent Information on Existing Institutions

Name of Institution	Year Started	No. Full Time Prof. Staff	No. Part-Time Prof. Staff	Approx. No. Candidates Per Yr.	Approx. No. Admitted Per Yr.	Approx. No. Graduated Per Yr.
Health Controllers Academy, Jakarta	1952	3	37	300	45	23*
Health Controllers Academy, Surabaya	1961	4		650	70	50
Sanitarians School, Jakarta	1963	4	14	70	30	24
Sanitarians School, Bandung	1965	2	30	70-100	35-40	31-36
Sanitarians School, Surabaya	1961	4	24	100	50	35
Sanitarians School, Lampung	1971	1	20	99-27+	15	13
Assistant Sanitarians School, Bandung	1957	3	36		100	80
Assistant Sanitarians School, Surabaya	1969	5	22	50-100	40-45	35

* The relatively large attrition is due to the rather large personal expense to the student for three years of education and training, approximately 100,000 rupiahs, and in some instances to substandard high school preparations in outer island Provinces.

JOB DESCRIPTION - SANITARIAN (RURAL)

Sanitarians can effectively carry out the following procedures and practices:

I. Rural Water Supply

- A. Secure the interest of individuals and communities in the development and use of potable water supplies. Depending on local conditions this may involve shallow hand pumped wells, deep hand pumped wells, cisterns, protected springs or simple piped supplies.
- B. Work with other health department personnel to promote cooperation in local health improvement by relating the water hygiene programs to other programs such as nutrition and communicable disease control.
- C. Properly conduct an inspection to determine a suitable site for a well or other water source.
- D. Install, protect and disinfect a hand pumped well including those that are dug, driven and drilled. This includes making chlorine solutions from stocks of chlorine concentrates of various strengths.
- E. Protect, install pump, and disinfect an existing dug well.
- F. Carry out engineering plan for building a simple piped water supply as from a spring or catchment area. This may involve the installation of a hydraulic ram or other pump and simple chlorination equipment.
- G. Sample water supplies for chemical analysis and sample protected water supplies for bacteriological analysis.
- H. Clearly understand and interpret laboratory reports of the chemical and bacteriological examination of water particularly as they relate to chemical and bacteriological water quality standards of Indonesia.
- I. Take the proper steps to obtain correction of water supply problems indicated by laboratory analysis, or in regular surveillance activity.

JOB DESCRIPTION - SANITARIAN (RURAL)

- J. Conduct and interpret field tests of water supplies for temperature, turbidity, pH, total alkalinity, hardness, iron, chlorides, carbon dioxide and chlorine.
 - K. Accurately measure the flow of springs and yield of wells.
 - L. Treat by emergency methods small volumes of water.
 - M. Calculate the capacity of dug wells and of water storage tanks.
 - N. Demonstrate and promote safe methods of water storage in the home.
 - O. Construct an effective household sand filter.
 - P. Conduct inspection and surveillance of individual and piped water supplies recognizing problems or potential problems and notifying proper authority for their correction. Make minor repairs to individual or small piped supplies. Repair of hand pumps, replacement of taps, repairs of broken pipe - disinfection of supply or system following repairs, repair of hydraulic ram etc. Detect malfunctioning of power driven water pumps and backsiphonage and cross connection problems, high and low pressure problems, corrosion and depositing problems and failure of chlorination operation.
 - Q. Provide advisory services on individual water supply as necessary.
- II. Sewage Disposal
- A. Locate suitable sites for latrines.
 - B. Make and properly install a latrine.
 - C. Promote individual and community acceptances of sanitary sewage disposal methods and relate this to other health department activities, particularly communicable disease control.
 - D. Provide surveillance of latrines through inspections and recommendations for the correlation of defects noted.

JOB DESCRIPTION - SANITARIAN (RURAL)

- E. Provide advisory services on proper excreta disposal to local authorities concerned with public places.

III. Vector Control

- A. Identify the insecticide and its concentration, necessary for the control of the several insects of concern to the sanitarian.
- B. Apply insecticides effectively and safely, accomplishing control but protecting himself, other persons, animals and the general environment.
- C. Disassemble, clean, maintain and repair hand spraying equipment.

IV. Drainage and Liquid Waste Disposal

- A. Provide health education directed toward the promotion of proper liquid waste disposal and rain water drainage.
- B. Identify and obtain correction of malfunctioning liquid waste disposal systems.
- C. Construct a liquid waste seepage pit.
- D. At village level advise on rain water runoff problems.

V. Food Hygiene

- A. Provide health education directed toward community demand for safe food supplies and for sanitary food establishments.
- B. Make a complete and thorough inspection of food establishments including manufacturing plants, public eating establishments, food stores and ambulant vendors. Identify sanitation deficiencies, recommend corrections and re-inspect for compliance.
- C. Maintain a registry book and sanitation file on all food establishments.

JOB DESCRIPTION - SANITARIAN (RURAL)

page 4

- D. Conduct courses in food hygiene for the personnel of food establishments.
- E. Provide the public with information on good food sanitation practice in the home.

VI. Solid Waste

- A. Provide health education directed to individual and community action on the storage, collection and disposal of solid waste.
- B. Assist home owners in the design and construction of solid waste disposal facilities.
- C. Provide advisory services on solid waste disposal to local government authorities, management of commercial businesses, and other interested parties.
- D. Provide community surveillance on solid waste storage, collection and disposal.

VII. Hygiene of Public Places

- A. Provide health education directed toward the provision and maintenance of sanitary facilities in industrial establishments and public places and the maintenance of a sanitary environment.
- B. Make inspections for sanitation problems relating to solid waste, rodent breeding, fly breeding, mosquito breeding, stagnant water, industrial wastes, the sanitary construction of public place structures, provision of toilets and lavatories, and food preparation and services; and implementing the correction of such problems.

VIII. Mapping

Accurately map (field sketch) village areas and indicate all necessary features using the standard mapping symbols. The map should be properly oriented and distances should be reasonably accurate. (The map should be easily followed by an individual not familiar with the area.) Elevations are not usually necessary unless there are particularly important features such as the source of water for a piped gravity water supply.

JOB DESCRIPTION - SANITARIAN (RURAL)

IX. Administrative Practices

- A. Prepare proper official correspondence and correctly complete records and forms and other written field and office procedures.
- B. Make simple statistical records and charts and graphs relating to program planning, implementation and evaluation.
- C. Carry out legal requirements of the sanitation laws properly and on time. Required reinspection procedures would be an example.
- D. Receive and implement directions from supervisors and supply competent leadership to those supervised.
- E. Keep current with administrative and technical developments in sanitation practice.

X. Miscellaneous Skills

- A. Make good concrete and pour in suitable forms he has constructed. Know types of reinforcing material and where they are placed in different types of small concrete structures.
- B. Have general competence in the use of hand tools used in village sanitation works.
- C. Properly use a tripod mounted level as well as simple leveling devices including carpenters level, string level, transparent hose level, etc.

**INFORMATION AND SKILLS THE RURAL SANITARIAN
MUST HAVE IN ADDITION TO THOSE SPECIFICALLY
IDENTIFIED IN HIS JOB DESCRIPTION**

1. The structure of the health organization in Indonesia from the Central Government to Kecamatan level. He must know his place and relationship in this structure.
2. The administration, funding and logistics of the rural environmental health program. (the real facts of life). May also involve knowledge of the politics of getting the job done.
3. Specific knowledge of the public health laws pertaining to rural sanitation, their provisions and details of enforcement. Emphasis should be placed on gaining compliance with the laws without having to resort to legal sanctions.
4. The principal diseases prevented to a significant degree by the application of sanitation techniques and practices. The basic epidemiology of these diseases and the sanitary practices which are applied in each case. (This information is effectively and authoratively and briefly given in the American Public Health Association publication "Handbook for the Control of C.D. in Man.")
5. The following fundamentals of bacteriology:
 - a. What microorganisms are;
 - b. Where do they come from;
 - c. How do they get from place to place;
 - d. What conditions are necessary for their survival and growth;
 - e. How do we kill them.

Instruction should include classroom introduction followed by simple laboratory exercises illustrating each of the above points.

6. "Cook Book" level chemistry as it applies directly in sanitation applications such as chemical analysis of water. No teaching of chemical theory or science is necessary or desirable.
7. A good comprehension of and ability to use the relatively simple mathematics required to carry out sanitation activities. This includes basic arithmetic and percentages, proportions, ratios etc.
8. Brief and selected introduction to hydraulics. Theory of pumps and pumping, syphon, characteristics of flow of water in pipes, water hammer (inc. ram application of this principle) venturi principle etc.
9. General knowledge of hydrology as related to water cycle, and the development of wells and springs.
10. Thorough comprehension of the sanitarians limitations in the design of piped water systems and other engineering activities.
11. Detailed knowledge of the materials and equipment used in producing a properly protected hand pumped well. This includes equipment for producing the well, pumps, pipes, fittings, concrete base and disinfection materials. In addition to producing a protected water source this is necessary in creating the ability to identify mechanical problems that will occur and to correct them.
12. Ability to perform a proper sanitary survey for the purpose of determining the location of a well or other water sources.
13. Prevention of the creation of problems such as vector breeding, water drainage and accident hazards around well installations.
14. Basic entomology of the insects of public health importance in Indonesia sufficient for their recognition and proper application of appropriate control measures.
15. Introduction to rodents and their control sufficient for their identification, location of harborages, food and water sources, and the application of general sanitation measures and specific techniques for their control.

16. Principles of municipal water treatment-sufficient to permit intelligent inspection of such plants, recognition of problems or potential problems, proper functioning of gas chlorinators or hypochlorinators used, check of operating records and water sampling procedures.
17. Principles and practices in liquid waste disposal. Ability to inspect and evaluate septic tank installation operation, functioning of oxidation ponds and other systems used.
18. Good solid waste storage, collection and disposal methods in urban and rural areas.
19. Basic principles of food hygiene and skills to properly inspect all types of food establishments. These include food manufacturing plants, food processing plants, restaurants of all kinds, food markets and ambulant vendors.
20. Basic principles of the hygiene and public places. This includes insect breeding, rodent harborage, drainage, waste storage, and sanitation elements of public structures (lighting, ventilation, toilets, etc.)
21. Skills in working with individuals and groups to motivate change. Practical application of health education methods to initiate and further sanitation programs.

CONSTRUCTION REQUIREMENTS AND COSTS FOR THE CONVERSION OF THE ACADEMIES
FOR HEALTH CONTROLLERS INTO SCHOOLS FOR SANITATION TECHNOLOGISTS 1/

I. School for Sanitation Technologists - Jakarta

A. Dormitory (3 story) 1200 M2 @ Rp 90,000/M2	=	Rp 108,000,000
B. Laboratories		
1. Sanitation 300 M2 @ Rp 87,500/M2	=	Rp 26,250,000
2. Chemical 200 M2 @ Rp 87,500/M2	=	Rp 17,500,000
3. Entomological 200 M2 @ Rp 87,500/M2	=	Rp 17,500,000
C. Workshop - 300 M2 @ Rp 80,500/M2	=	Rp 24,150,000
D. Staff Housing		
1. Dir/Dep Dirs - 4x120M2 @ Rp 70,000	=	Rp 33,600,000
2. Instructors - 6x70 M2 @ Rp 70,000	=	Rp 29,400,000
3. Assistants - 6x50M2 @ Rp 70,000	=	Rp 21,000,000
4. Lower Staff 8x50M2 @ Rp 70,000	=	<u>Rp 28,000,000</u>
	TOTALS	Rp 305,400,000
	With 10% Contingency;	Rp 403,128,000
	20% inflation	(\$ 971,393)

II. School for Sanitation Technologists - Surabaya

A. Office - 297 M2 @ Rp 70,000/M2	=	Rp 20,790,000
B. Auditorium - 600 M2 @ Rp 77,000/M2	=	Rp 46,200,000
C. Laboratories - 560 M2 @ Rp 87,500/M2	=	Rp 49,000,000
D. Dormitories - 1050 M2 @ Rp 70,000/M2	=	Rp 73,500,000
E. Housing (same as above) 1600M2 @ Rp 70,000/M2	=	Rp 112,000,000
F. Mechanical Unit 80 M2 @ Rp 80,500/M2	=	<u>Rp 6,440,000</u>
	TOTALS	Rp 307,930,000
	With 10% contingency	Rp 406,467,600
	20% inflation	(\$ 979,440)

III. Construction Costs - Schools for Sanitation Technologists

Rp 809,595,600
(\$1,950,833)

1/ Unit cost information was obtained from national averages as developed by Bappenas, the Ministry of Finance and the Division of Health Installations within the Ministry of Health.

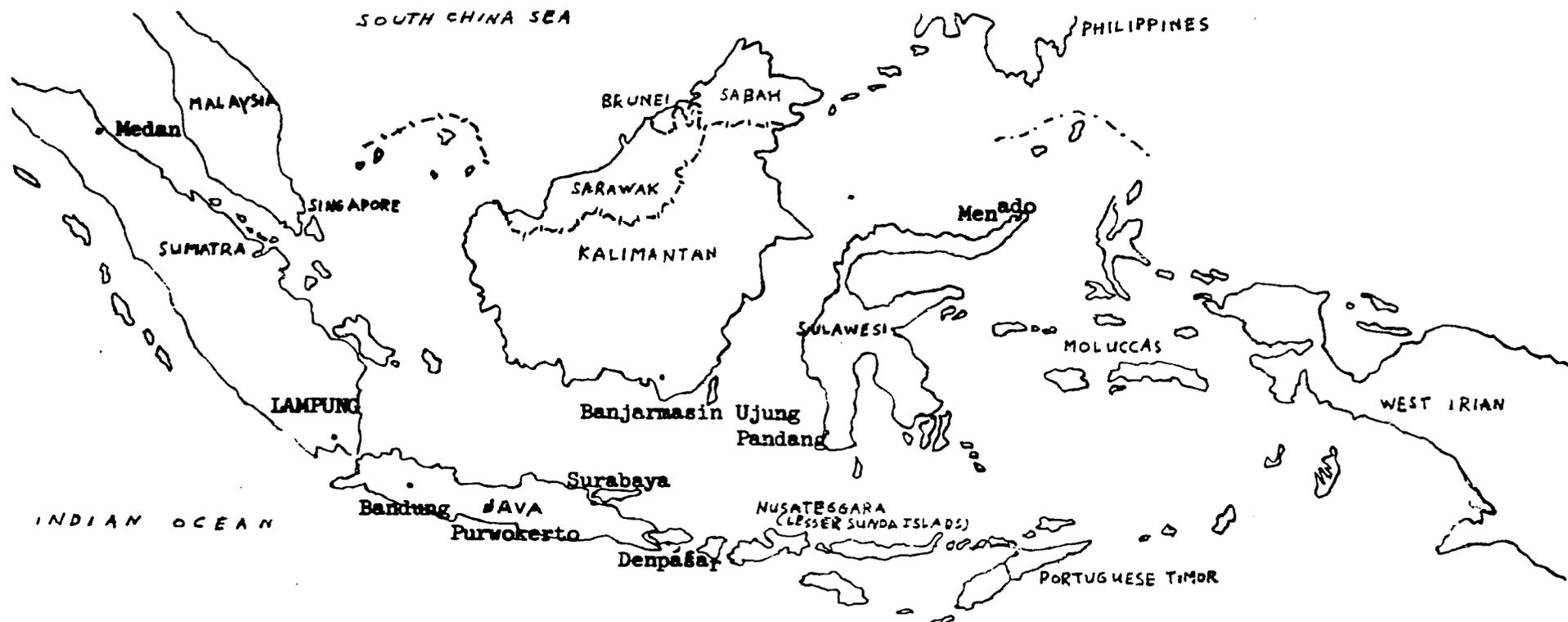
Supply and Equipment Costs for Conversion
of Each Academy for Health Controllers
into Schools for Sanitation Technologists
(in U.S. dollars)

<u>Item</u>	<u>FE</u>	<u>LC</u>
1. Classroom	\$ 3,000	\$ 500
2. Laboratory	4,000	--
3. Fieldwork	5,000	2,500
4. Transportation	24,000	--
5. Library	<u>1,000</u>	<u>--</u>
TOTALS	\$ 37,000	\$ 3,000

LISTING OF SCHOOLS FOR SANITARIANS

<u>School Site</u>	<u>Provinces Served</u>
1. Medan	Aceh, North Sumatra, West Sumatra and Riau
2. Lampung	Jambi, South Sumatra, Bengkulu and Lampung
3. Bandung	Jakarta, West Java and West Kalimantan
4. Purwokerto	Central Java and Yogyakarta
5. Surabaya	East Java
6. Denpasar	Bali, West Nusa Tenggara and East Nusa Tenggara
7. Banjarmasin	Central Kalimantan, South Kalimantan and East Kalimantan
8. Ujung Pandang	Central Sulawesi, South Sulawesi and Southeast Sulawesi
9. Manado	North Sulawesi, Maluku and Irian Jaya

INDONESIA



0 50
KILOMETERS
METERS

NEW CONSTRUCTION
SCHOOL FOR SANITARIANS INDONESIA

I.	1. Classroom	: 2.4 M2/ capita. 40 students = 40 x 2.4 M2 = Size: 7 x 13.5 M2 (if one class) 6 x 16 M2 (if two classes)	96 M2
	2. Toilet room	: 3/4 M2/ capita. 40 students = 40 x 3/4 M2 = Size: 5 x 6 M2 = 30 M2 Within the 30 M2 space are included: - 5 Toilet rooms - 3 Urinals - 4 Handwashing facilities	30 M2
	3. Passage space	: 1 M2/ capita. 40 students = 40 x 1 M2 =	40 M2
		<u>Total Unit Classroom space</u>	<u>166 M2</u>
II.	Office: 1. Director Office	: 3 M x 5 M =	15 M2
	2. Administrative staff:	8 M x 5 M =	40 M2
	3. Teachers room	: 5 M x 5 M =	25 M2
	4. Library	: 5 M x 6 M =	30 M2
	5. Conference room	: 20 M x 5 M =	100 M2
	6. Storage room	: 5 M x 8 M =	40 M2
		<u>Total Unit Office space</u>	<u>250 M2</u>
III.	Auditorium: 3 M2/ capita.	Estimate attendance: 100 persons = 100 x 3 M2 =	300 M2
	Laboratories: 1. Laboratory Sanitation: 6 M2/ capita.	40 students = 40 x 6 M2 =	240 M2
	2. Workshop Sanitation: 10 M2/ capita.	40 students = 40 x 10 M2 =	400 M2
		<u>Total Auditorium & Laboratories space</u>	<u>940 M2</u>

IV. Dormitories

1. Bed room	: 10 M2/ capita. 40 students = 40 x 10 M2 =	400 M2
2. Dining room	: 3 M2/ capita. 40 students = 40 x 3 M2 =	120 M2
3. Waiting room	: 3 M2/ capita. Expected attendance = 20 persons = 20 x 3 M2 =	60 M2
4. Kitchen	: 4 M2/ capita. 40 students = 40 x 4 M2 =	160 M2
5. Laundry	: 3 M2/capita. 40 students = 40 x 3 M2 =	120 M2
6. Study room	: 3 M2/ capita. 40 students = 40 x 3 M2 =	120 M2
7. Passage space:	(connecting passage) 4 M2/ capita 40 students = 40 x 4 M2 =	160 M2
<u>Total Unit Dormitory space</u>		<u>1140 M2</u>

V. Staff Housing

	<u>Size</u>	<u>Amount</u>	<u>Total size required</u>
1. Director + Deputy	120 M2	2	240 M2
2. Instructors	70 M2	4	280 M2
3. Assistants	50 M2	8	400 M2
4. Lower staff	50 M2	8	400 M2
<u>Total Unit Staff Housing space</u>			<u>1320 M2</u>

Note: The various sizes of the above mentioned staff housing are based on the Government regulation as defined by BAPPENAS.

VI. Unit Mechanical

1. Water pump house	: 4 x 4	=	16 M2
2. Electric power house	: 3 x 3	=	9 M2
3. Guard house	: 3 x 3	=	9 M2
4. Mechanical storage	: 2 x 3	=	6 M2
<u>Total Unit Mechanical space</u>			<u>40 M2</u>

VII. Parks and Parking-lots

The space required for Parks and Parking-lots, including traffic space within the school campus, should be 5 times the building space.

Estimate building space = 3856 M2, specified as follows:

1. Unit classroom	=	166 M2
2. Unit office	=	250 M2
3. Unit Auditorium and Laboratories	=	940 M2
4. Unit Dormitory	=	1140 M2
5. Unit Staff housing	=	1320 M2
6. <u>Unit Mechanical</u>	=	<u>40 M2</u>
Total	=	3856 M2

Open space required for Parks and Parking-lots =

$$5 \times 3856 \text{ M2} = 19,280 \text{ M2}$$

Approximately: 2 HA.

VIII. Fencing

In providing a fence around the 2 HA. space, approximately 600 M fencing is required.

SCHOOLS FOR SANITARIANS
-Construction Cost Estimates-

I. Cost of Single Unit <u>1)</u>		
A. Classroom - 166 M2 @ Rp 70,000/M2	= Rp	11,620,000
B. Office - 250 M2 @ Rp 70,000/M2	=	17,500,000
C. Auditorium - 300 M2 @ Rp 77,000/M2	=	23,100,000
D. Laboratory - 240 M2 @ Rp 87,500/M2	=	21,000,000
E. Workshop - 400 M2 @ Rp 80,500/M2	=	32,200,000
F. Dormitories - 1140 M2 @ Rp 70,000/M2	=	79,800,000
G. Staff Housing - 1320 M2 @ Rp 70,000/M2	=	92,400,000
H. Mechanical - 40 M2 @ Rp 80,500/M2	=	3,220,000
		Total
		Rp 280,840,000
Adding 10% Contingency;		Rp 370,708,800
20% Inflationary Factors		(or \$ 893,274)
II. Costs of Eight Units (Medan, Lampung, Bandung, Surabaya, Denpasar, Banjarmasin, Ujung Pandang, Menado)		Rp 2,965,670,400 (or \$ 7,146,194)
III. Cost of Purwokerto (Central Java) School for Sanitaricians <u>2)</u>		Rp 342,988,800 (or \$ 826,480)
IV. TOTALS (II + III)		Rp 3,308,659,200 (or \$ 7,972,674)

-
- 1) Unit cost information was obtained from national averages as developed by Bappenas, the Ministry of Finance and the Division of Health Installations within the Ministry of Health.
- 2) Six staff houses totaling 300 M2 of an existing hospital will be utilized

B. GOI Cost Listing

ITEM	Catalog Source	Unit Price	No. Units	Total Cost
Typing paper (1000 sheets)	Est. local	Rp 1,287.	5	Rp 6,435.
Carbon paper (100 sheets)	"	1,199.	3	3,597.
Onionskinpaper (1000 sheets)	"	2,034.	6	12,204.
Mimeograph paper (500 sheets)	"	20,542.	1	20,542.
Mimeograph stencils (box 24)	"	1,988.	5	9,940.
Mimeograph ink (1 lb.)	"	1,199.	3	3,597.
Typewriter ribbons - nylon (set /3)	"	1,718.	2	3,436.
Pencils - lead #2 (box 144)	"	2,693.	2	5,386.
Rubber erasers (doz.)	"	623.	1	623.
Ballpoint pens (doz.)	"	581.	2	1,162.
Paper clips (pkg. 1000)	"	992.	2	1,984.
Scotch tape dispenser	"	3,507.	1	3,507.
Scotch tape (3/4"x2592") pkg. 6	"	12,450.	1	12,450.
*Stapler - standard desk	"	3,523.	2	7,046.
Staple remover	"	297.	5	1,535.
Pencil sharpener - desk model	"	1,905.	1	1,905.
Ruled pads (doz.)	"	2,282.	2	4,564.
Scissors	"	5,810.	1	5,810.
*Staples - (box 5000)	"	370.	5	1,850.
Rupiah Sub-Total				107,573.

Total budget for office supplies and materials plus

a. shipping 15% - 1 yr. inflation 13% - 5% adjustments to list.

TOTAL \$ 2,879.16

b. 15% inflation - 10% adjustments to list.

TOTAL Rp136,618

SANITARIAN SCHOOL - EQUIPMENT AND SUPPLIES

CLASSROOM

A. U.S. Dollar Cost Listing*

ITEM	Catalog Source	Unit Price	No. Units	Total Cost
Slide projector - Kodak #750H	Kodak	\$ 160.00	1	\$ 160.00
Replacement lamp - 500W - D&K	Calhoun Co., Inc.	6.67	2	13.34
Kodak carousel 80-slide tray	Kodak	3.25	5	16.25
Screen-Lenticular-60"x60"-tripod	Sears	50.00	1	50.00
Overhead projector - mod. 566ABH	3M Co.	160.00	1	160.00
Acetate sheeting - 50' roll	Calhoun Co., Inc.	7.00	1	7.00
Transparencies-type 533, Item #64 500 sheet box	3M Co.	79.86	1	79.86
Transparency pen (vis-a-vis) set /12, 4 color	Calhoun Co., Inc.	7.20	1	7.20
Projector table - 42" high, with shelves	"	49.00	1	49.00
Blackboard-green, wall, 4'x6'	GSA	54.50	2	109.00
Flip Chart easel	GSA	23.90	1	23.90
Flip Chart pads - 500 sheets	GSA	3.60	10	36.00
Instructors Table - steel - 60'x30"x29- $\frac{1}{2}$ "	GSA	72.00	1	72.00
Straight chairs, stacking plastic, pkg.4	Sears	94.00	1	94.00
		Sub-Total		\$ 877.55

* All prices based on 1975 catalog listings or local estimates.

SANITARIAN SCHOOL - EQUIPMENT AND SUPPLIES

CLASSROOM

GOI Cost Listing @ Rp 415/\$1.00

ITEM	Catalog Source	Unit Price	No. Units	Total Cost
Blackout curtain material (make to order) meters	Est.local	Rp 1660.	24	Rp 39,840.
Chalk - pkg. 12	"	374.	10	3,740
Felt tip pens - 6 color set (red, orange, green, blue, black, brown)	"	300.	6	1,800.
Blackboard erasers	"	100.	6	600.
Pencils, lead - box 144	"	2693.	1	2,693.
Notebook	"	1614.	50	80,700.
Notebook paper, ruled, pkg. 100	"	353.	50	17,650.
Protractor, 8"	"	141.	50	7,050.
Ruler	"	249.	50	12,450
Sanitation manual, Indonesian	MOH/GOI	2075.	50	103,750.
Student chairs (with writing arm)	"	12,450.	40	<u>498,000.</u>
Rupiah Sub-Total				Rp 768,273

Total budget for classroom supplies and materials plus:

- a. shipping 15% - 1 year inflation 13% -
5% adjustments to list

TOTAL \$1,193.47

- b. 15% inflation - 10% adjustments to list

TOTAL GOI Rp 975,707

SANITARIAN SCHOOL - EQUIPMENT AND SUPPLIES

LABORATORY

A. U.S. Dollar Cost Listing

ITEM	Catalog Listing	Unit Price	No. Units	Total Costs
Microscope	Fisher Scientific	\$ 200.00	10	\$2000.00
Microscope Illuminator	"	12.00	10	120.00
Microscope slides (box 216)	GSA	6.00	1	6.00
Storage cabinet - steel, 2 door, 36" wide	GSA	100.00	2	200.00
Incubator - gravity convection - 12"x12"x12"	Fisher Scientific	175.00	1	175.00
Immersion oil-viscosity- (16 oz.)	"	5.80	1	5.80
Methylene Blue stain (25 grams)	"	3.44	1	3.44
Grams stain (1 pt.)	"	3.80	1	3.80
Malachite Green stain (100 grams)	"	13.42	1	13.42
Xylene (500 grams)	"	3.70	1	3.70
Sodium Thiosulphate (1 lb.)	"	2.30	1	2.30
<u>Reagents</u>				
Phenolphthalein indicator (½ lb.)	"	3.60	1	3.60
Standard 0.02 N Sulphuric acid (1 pt.)	"	4.63	1	4.63
Methyl Orange indicator (1 lb.)	"	20.55	1	20.55
Brom Cresol Green solution (1 pt.)	"	4.64	1	4.64
Methyl Red indicator (10 grams)	"	3.44	1	3.44
Sodium hydroxide pellets (1 lb.)	"	2.56	1	2.56
Bromothymol Blue indicator solution (1 pt.)	"	4.64	1	4.64
Phenol Red indicator solution (1 pt.)	"	5.05	1	5.05
Thymol Blue indicator solution (1 pt.)	"	4.79	1	4.79
Standard iron solution (1 pt.)	"	8.45	1	8.45

LABORATORY (cont'd)

ITEM	Catalog Listing	Unit Price	No. Units	Total Costs
Potassium Permanganate solution (1 qt.)	Fisher Scientific	\$ 7.55	1	\$ 7.55
Potassium Thiocynate solution (1 qt.)	"	5.75	1	5.75
Hydrochloric acid (1 pt.)	"	3.79	1	3.79
Standard Manganous Sulphate solution (1 pt.)	"	6.94	1	6.94
Alkaline Potassium Iodine solution (1 qt.)	"	12.73	1	12.73
Concentrated Sulphuric Acid (1 qt.)	"	3.11	1	3.11
Starch indicator (1 qt.)	"	5.45	1	5.45
Sodium Thiosulphate solution 0.025N (1 qt.)	"	5.91	1	5.91
Standard soap solution (1 pt.)	"	5.84	1	5.84
Pure Anhydrous Calcium Carbonate (1 lb.)	"	9.85	1	9.85
Standard Orthorolidine solution (500 ml.)	VWR	1.75	1	1.75
Pipets-measuring, 1 ml.-0.1 ml. (doz.)	GSA	21.50	1	21.50
Pipets-measuring, 10 ml.-ml. (doz.)	GSA	31.00	1	31.00
Bunsen burner - L.P.G.	Fisher Scientific	2.85	5	14.25
Rubber tubing, 3/16 (20 ft.)	GSA	2.55	1	2.55
Ground Key cock, gas, double 180°	Fisher Scientific	17.00	3	51.00
Staining jar	"	1.75	5	8.75
Staining tray	VWR	7.20	2	14.40
Bacteriological needle	Fisher Scientific	4.50	5	22.50
" " holder	"	4.00	5	20.00
" loops (box 10)	"	93.60	1	93.60
Petri dishes - pyrex (case 72)	"	59.76	2	119.52
Dilution bottles (case 48)	"	24.96	1	24.96
Graduated Cylinder (10 ml.)	"	2.05	10	20.50
" " (100 ml.)	"	3.13	5	15.65
" " (500 ml.)	"	5.09	3	15.27
" " (1000 ml.)	"	6.60	1	6.60
(Nalgene 3662 - Polypropelene)				

LABORATORY (cont'd)

ITEM	Catalog Listing	Unit Price	No. Units	Total Costs
Water sample bottles - Vitro 400	Fisher Scientific	\$ 1.29	12	\$ 15.48
60 ml. reagent bottle (pkg. 46)	"	11.04	3	33.12
125 ml. reagent bottle (pkg. 36)	"	12.90	3	38.70
500 ml. reagent bottle (case 24)	"	72.72	1	72.72
Florence Flask, pyrex 4060, 250 ml. (pkg. 6)	"	6.60	1	6.60
500 ml. (pkg. 6)	"	8.58	1	8.58
1000 ml. (pkg. 6)	"	11.16	1	11.16
30 ml. dropper bottle (pkg. 6)	"	9.30	1	9.30
Test tubes - 16x150mm (case 1000)	"	23.40	1	23.40
Medicine droppers, 1 ml. bulb attached (case 72)	"	20.25	1	20.25
100 ml. graduate	"	3.90	2	7.80
Standard 8 oz. flat-sided bottle (doz.)	VWR	3.56	1	3.56
Nessler tubes, graduated at 100 ml., tall form (set 6)	Fisher Scientific	5.73	1	5.73
Erlemyer flasks, wide-mouth, 250 ml.	"	.86	10	8.60
25 ml. Buret (case 12)	VWR	76.32	1	76.32
Buret Stand & locking clamp	Fisher Scientific	18.00	1	18.00
Test tube rack	GSA	4.95	2	9.90
Glassware cleaning assortment (buy separately)	GSA	10.00	1	10.00
Wax pencil, red-marking on glass (box 12)	Fisher Scientific	3.60	1	3.60
Thermometer, metal case, alcohol & glass - 10 ⁰ -+110 ⁰ C	"	3.10	5	15.50
Comparator, Hellige	"	30.00	1	30.00
Color disc, chlorine, range 0.0-1.0 ppm	"	45.00	1	45.00
Color disc, methyl red, pH range 6.0-7.6	? - Est.	43.00	1	43.00

LABORATORY - cont'd

ITEM	Catalog Listing	Unit Price	No. Units	Total Costs
Color disc, Brom Thymol Blue, pH range 6.0-7.6	Fisher Scientific	\$ 43.00	1	\$ 43.00
Color disc, Thymol Blue, pH range 8.0-9.6	VWR	39.40	1	39.40
Color disc, Phenol Red, pH range 6.8-8.4	Fisher Scientific	43.00	1	<u>43.00</u>
		Sub-TOTAL		\$ 3788.25

B. GOI Rupiah Cost Listing

L.P.G. Gas cylinder - small	<u>Rp 20,000.00</u>	1	<u>Rp20,000.00</u>
		Sub-TOTAL	

Total budget for laboratory supplies

a. shipping 15% - 1 year inflation 13% - adjustment 5% to list	TOTAL	\$ 5152.02
b. 15% inflation - 10% adjustments to list	TOTAL	Rp 25,000.00

SANITARIAN SCHOOL - SUPPLIES AND EQUIPMENTTRANSPORTION

A. U.S. Dollar Costs

<u>Item</u>	<u>Source</u>	<u>Unit Cost</u>	<u>No. Units</u>	<u>Total Cost</u>
Jeep-type vehicle		\$4,500	2	\$ 9,000

Total dollar budget for transportation supplies plus - shipping 15% - 1 yr. inflation 13% - 5% adjustment				TOTAL \$12,280

B. GOI Rupiah Costs

<u>Item</u>	<u>Source</u>	<u>Unit Cost</u>	<u>No. Units</u>	<u>Total Cost</u>
120 cc Motorcycle		41,000	4	Rp 164,000
Mini-bus - 10-12 passenger		6,225,000	2	12,450,000
-----				Subtotal Rp 12,614,000
Total rupiah budget for transportation plus 15% inflation - 10% adjustment to list for a total 27% increase in rupiah costs				TOTAL Rp 16,019,780 (\$ 38,600)

SANITARIAN SCHOOL - SUPPLIES AND EQUIPMENT

FIELD WORK

A. U.S. Dollar Costs

ITEM	Catalog Source	Unit Cost	No. Units	Total Cost
Clipboard - 9"x15½" (also used in classroom & student will keep)	GSA	\$.44	50	\$ 22.00
Boots-rubber-non insulated (pr)	Sears	18.95	6	113.70
Helmets	GSA	4.60	10	46.00
Gloves-leather-work (pr)	GSA	2.60	10	26.00
Flashlight - 2 cell	GSA	.93	50	46.50
35 mm Instamatic camera	Sears	24.00	4	96.00
Magnetic compass	GSA	12.70	3	38.10
Lightmeter (est. cost)	----	20.00	3	60.00
Measuring tape, metal, metric - 2 meter	VWR	2.00	1	2.00
Measuring tape, metal, metric - 25 meter	"	8.00	1	8.00
Level & tripod	Sears	145.94	1	145.94
Leveling rod & target - metric (est. cost)	----	30.00	1	30.00
Water testing kit - Hecht? (est. cost)	----	275.00	1	275.00
Hand sprayers, stainless steel, wide mouth	Sears	41.79	2	83.58
Wrenches, open, metric (10 pc. set)	"	23.79	1	23.79
Wrenches, pipe - 2½" cap - 2' handle	GSA	7.40	1	7.40
Wrenches, pipe 1"-2" cap	Sears	8.20	1	8.20
Wrenches, chain-up to 5" cap	GSA	24.00	1	24.00
Hammer - 13 oz.	"	3.30	3	9.90
Screw drivers (9 pc. kit)	Sears	14.00	1	14.00
Chisel - ½"	GSA	3.45	1	3.45
Chisel - 1"	"	2.40	1	2.40
Chisel - 1½"	"	4.30	1	4.30
Saw, hand, crosscut	"	3.25	1	3.25
Saw, hand, rip	"	2.40	1	2.40
Hacksaw	"	5.95	1	5.95
Hacksaw blades - 24 tooth, flexible (pkg. 10)	"	.90	1	.90
Handle clamp	"	2.75	1	2.75
Pipe threaders, ½", 3/4", 1½" (est. total)	----	50.00	1	50.00

Field Work (cont.)

ITEM	Catalog Source	Unit Cost	No. Units	Total Cost
Crowbar	GSA	\$ 6.75	1	\$ 6.75
Broadhoe	"	4.90	2	9.80
Plasterer's trowel	"	5.00	2	10.00
Pail - 12 qt.	"	1.75	2	3.50
Pick and handle	"	6.05	2	12.10
Shovel, pointed, long handle	"	4.15	2	8.30
Spade, square edge	"	6.10	2	12.20
Ladder, 18' ft., straight, wood	"	39.50	1	39.50
Pulley (est. cost)	----	2.00	1	2.00
Rope-Manila, 3-strand - ½" (600 ft. coil)	GSA	38.00	1	38.00
Pipe vise stand	"	44.00	1	44.00
Rat trap spring (pkg. 12)	"	3.75	1	3.75
Rat trap-steel	"	1.00	12	12.00
Sharpening stone, rectangular, combination grit	"	.54	2	1.08
Shears-metal cutting-straight	"	1.70	1	1.70
Shears-metal cutting-combination	"	4.25	1	4.25
				4.25
		Sub-Total		\$ 1364.44

B. GOI Rupiah Costs

Altimeter - 5 meter scale (est. cost) \$50	local	Rp20,750.-	1	Rp20,750.-
Measuring wheel (est. cost) \$45	"	18,675.-	1	18,675.-
Pumps-shallow well (est. cost) \$50	"	20,750.-	4	83,000.-
Pumps-deep well (est. cost) \$100	"	41,500.-	2	93,000.-
Hydraulic ram (est. cost) \$75	----	31,125.-	1	31,125.-
Galvanized iron pipe - 1½" dia. (210') \$5.80	local	2,407.-	10	24,070.-
Pencils (box 144) \$6.49	"	2,693.35	1	2,693.35
Pencils red (doz.) \$.48	"	199.20	10	1,992.-
Pencils blue (doz.) \$.48	"	199.20	10	1,992.-

Field Work (cont.)

ITEM	Catalog Source	Unit Cost	No. Units	Total Cost
Eraser-rubber (doz.) \$1.50	local	Rp 622.50	4	Rp 2,490.-
Tracing paper (1000 sheets) \$13.10	"	5,436.50	1	5,437.-
Bags-cloth, to carry small equipment (est. cost) \$1.00	"	415.00	40	16,600.-
Film, 35 mm photo, 20 exposure roll inc. processing (type processed in Indonesia) \$5.00	"	2,075.00	3	6,225.-
Knife-used for bamboo (est. cost) \$2.50	"	1,037.50	2	2,075.-
Pipe clamp (est. cost) \$6.00	"	2,490.00	2	4,980.-
Nails, assorted-6d-16d (50 lb pkg.) est. cost \$7.50	"	3,112.50	1	3,113.-
SAE #40 motor oil - case 24 (est. cost) \$15.00	"	6,225.00	1	6,225.-
Chlorine compound, tech. grade - 50 lb. (est. cost) \$14.50	"	6,017.50	1	6,018.-
Plastic pipe - 1½" dia- 100 ft coil (est. cost) \$9.70	"	4,025.50	3	12,077.-
Bell and spigot pipe - cement + vitrified - several section (est. cost) \$20.00	"	8,300.00	1	8,300.-
Well drive point - 1½" x 30" (est. cost) \$19.95	"	8,279.00	3	24,837.-
Well drive point - 2" x 30" (est. cost) \$37.50	"	15,562.50	3	46,687.-
Well drive pipe 1½" x 30" (est. cost) \$7.50	"	3,112.50	10	31,125.-
Well drive pipe 2" x 30" (est. cost) \$12.95	"	5,374.25	10	53,743.-
Reinforcing steel - ½" - 5/20' length (est. cost) \$5.80	"	2,407.00	4	9,628.-
Carpenter's square-metric (est. cost) \$3.50	"	1,452.50	1	1,453.-
Insecticides (est. cost) \$30.00	"	12,450.00	1	12,450.-

Field Work (cont.)

ITEM	Catalog Source	Unit Cost	No. Units	Total Cost
Rodenticides (est. cost) \$30.00	local	Rp12,450.00	1	Rp12,450.-
Zinc plate (est. cost)	"	1,000.00	1	1,000.-
Well screen (est. cost)	"	2,000.00	4	8,000.-
Water-seal toilet bowl mould-complete (est.cost)	"	4,000.00	3	12,000.-
Field absorption tiles (est. cost)	"	80.00	50	4,000.-
Brick	"	8.00	500	4,000.-
Building stone (m3)	"	4,000.00	1	4,000.-
Sand (m3)	"	2,400.00	1	2,400.-
Gravel (m3)	"	4,000.00	1	4,000.-
Cement (bag)	"	1,700.00	10	17,000.-
Wooden boards (pc.)	"	450.00	5	2,250.-
				<u>2,250.-</u>
		Sub-total		Rp 601,860.-

Total budget for fieldwork supplies and materials plus -

a. shipping 15% - 1 yr inflation 13% - 5% adjustments	TOTAL	\$ 1,855.64
b. 15% inflation, 10% adjustments to list	TOTAL	Rp 764,362.00

SANITARIAN SCHOOL - EQUIPMENT AND SUPPLIES

LIBRARY

A. U.S. Dollar Costs

ITEM	Catalog Listing	Unit Price	No. Units	Total Cost
English dictionary - (est. cost)		\$ 35.00	1	\$ 35.00
Reference material				
- Standard Environmental Health Reference Books - to be selected - estimated cost each		20.00	10	200.00
- U.S. Gov't publications - to be selected - estimated cost each		1.50	50	75.00
- Sanitation References - WHO, etc. - to be selected - est. cost each		20.00	10	200.00
Bookshelf base - metal	GSA	7.10	2	14.20
Bookshelf - open - metal	"	11.60	4	46.40
Bookshelf top - metal	"	4.15	2	8.30
Table - metal, 60x30x29½	"	72.00	2	144.00
Chairs - stacking, plastic (box 4)	Sears	94.00	3	282.00
				<u>282.00</u>
		Sub-Total		\$1,004.90

3. GOI Rupiah Costs

English-Indonesian dictionary (est. cost \$30.00)	Local	Rp 12,450.	1	Rp 12,450.
Indonesian dictionary (est. cost \$15.00)	"	6,225.	1	<u>6,225.</u>
		Sub-Total		Rp 18,675.

Total budget for Library supplies and materials plus:

a. shipping 15% - 1 year inflation 13% - 5% adjustments to list	TOTAL	\$1,366.66
b. 15% inflation, 10% adjustments to list	TOTAL	Rp 23,717.

SANITARIAN SCHOOL - SUPPLIES & EQUIPMENT

COST OF ONE 40 STUDENT STANDARD PACKAGE

<u>Category</u>	<u>U.S. dollars</u>	<u>GOI Rupiahs (shown in dollars)</u>	<u>US & GOI Costs (shown as U.S. dollars) - Total</u>
Office	\$ 2,879	\$ 329	\$ 3,208
Classroom	1,193	2,351	3,544
Laboratory	5,152	61	5,213
Fieldwork	1,856	1,842	3,698
Transportation	12,280	38,600	50,880
Library Study Room	1,367	57	1,424
TOTAL	\$ 24,727	\$ 43,240	\$ 67,967

SANITARIAN SCHOOLS - EQUIPMENT & SUPPLIES

COST OF STANDARD PACKAGES x NUMBER OF PACKAGES TO BE BOUGHT

#	Units Category	U.S. dollars	GOI Rupiahs (shown in dollars)	US & GOI Costs (shown as U.S. dollars) - Total
9	Office	\$ 25,911	\$ 2,961	\$ 28,872
9	Classroom	10,737	21,159	31,896
9	Laboratory	46,368	549	46,917
9	Fieldwork	16,704	16,578	33,282
9	Transportation	110,520	347,400	457,920
9	Library Study Room	12,303	513	12,816
TOTAL		\$ 222,543	\$ 389,160	\$ 611,703

**Sanitarian School - Supplies and Equipment
Student Graduation Packet**

A. GOI Rupiah Costs

Clipboard, paper and pencils	Local	Rp	1500
Thermometer - 10° to 110°C	"		1300
Flashlight	"		800
Measuring Tape			800
Knife			1000
Bag			1000
Stopwatch			2000
Ruler/Triangles			1200
	Rupiah	Subtotal	Rp 9600

B. U.S. Dollar Costs

6 piece wrench set	Sears	\$	26
Wrenches 1"-2" cap	"		8.20
Hammer 13 oz	GSA		3.30
Screwdriver set (9 pc)	"		14.00
	Dollar	Subtotal	\$ 51.50

Total budget for graduation kit plus

a. 15% inflation - 10% adjustment to list	Rp	12,144
b. shipping 15% - 1 yr. inflation 13% 5% adjustment to list	\$	70.27

RSMD Costs Associated with the In-Service Training Program

I. Supplies and Equipment **Rp 10,375,000**

Since the inservice training program will be conducted at each of the regional School for Sanitarians (which will be fully provided for under the preservice training program), major purchases of supplies and equipment will not be necessary. The amount allocated here would be for the procurement of those additional items and materials necessary to retrain the existing cadre.

RSMD ADMINISTRATIVE COSTS

I. Construction

Project Administration Staff Housing

	<u>Size</u>	<u>Amount</u>	<u>Size required</u>
1. Project Director	150 M2	1	150 M2
2. Project Staff numbers	120 M2	3	360 M2
3. Assistant staff	70 M2	3	210 M2
4. Administrative staff	50 M2	6	300 M2
5. Lower staff included drivers etc.	50 M2	6	300 M2
Total Unit Project staff housing -			<u>1320 M2</u>

Construction Cost

1320 @ Rp.70,000/M2 = Rp. 92,400,000
with 10% contingency;
20% inflationary
factors Rp.121,968,000
(\$ 293,899)

II. Supplies Equipment

6 Jeep vehicles \$ 27,000

III. Operations and Maintenance Rp.15,770,000
(\$ 38,000)

U.S. PERSONNEL -- PROJECT REPRESENTATIVE

The Project Representative will coordinate the total U.S. role in the Project including all matters dealing with personnel, commodities and reports. He will provide technical and administrative assistance to the Government of Indonesia in carrying out the project. In addition, he will provide supervision and guidance to the Sanitarian-Educator and the Field Sanitarian who are the other U.S. personnel in the Project. His activities will relieve these personnel of administrative, material and related concerns so that they may concentrate on their technical tasks.

Essential to the success of the Project is the expeditious acquisition of required supplies and equipment. These will be identified in detail as a first activity in planning the training of trainers, and will be grouped into standard "packages." These "packages" are identified as those for classroom instruction, laboratory and workshop instructions, field instructions, training school administration and library, and trainee personal equipment. In cooperation with the Project Coordinator and procurement specialists in USAID and GOI, the Project Representative will find this material acquisition an early challenge. Equipment "packages" which are not completed in final detail have been prepared for budget estimating purposes, and are included in this Project proposal.

Related to this will be the development of the logistics for the continuing supply of materials and the maintenance of office, classroom and field equipment sufficient to maintain a satisfactory level of instruction. This will be required throughout the life of the Project and should be intended to institute a permanent pattern in MOH.

Another specific activity can be providing assistance in devising a procedure and facilities for the production, reproduction, storing and distribution to sanitarian schools projected and non-projected visual aids produced in Indonesia. Effective visual aids developed at one training center would be made available to all other centers by this system. This would help to solve the critical need for locally produced training aids.

There is evidence that the sanitarian schools, in conjunction with the field activities in particular, could carry out effectively relatively single research activities producing valuable, and currently unavailable information on environmental health in Indonesia. The Project Representative could become involved with the various offices of MOH concerned. Success in this area could have a marked beneficial effect on sanitarian training by providing additional status, and possibly income, for the training staff.

U.S. PERSONNEL -- PROJECT REPRESENTATIVE

A variety of other special activities to further the Project will appear as the Project develops. The Project Representative may become involved with these as they can be fitted into his schedule of primary administrative and personnel responsibilities. An example of this would be the expediting of the publishing of the sanitation manual in Bahasa Indonesia to be developed during the Training of Trainers.

The Project Representative can be a Sanitary Engineer or Sanitarian, but regardless of degree preparation, the individual must have had extensive and varied experience in work with basic, preferably rural sanitation programs. He must have suitable academic qualification including Masters degree work in sanitary engineering, environmental or public health. Special preparation and experience in administration and personnel management and supervision would be desirable.

He must have the presence and ability to work with people in the highest levels of the host government. He must be patient and adaptable and still have leadership qualities that will enable him to see through the aims of the Project within prescribed time limits. Experience in conducting and administering sanitation programs in developing tropical countries would be most helpful.

U.S. PERSONNEL - SANITARIAN---EDUCATOR

The Sanitarian-Educator will provide technical assistance in the design of:

- a. The curriculum for Training of Trainers Course;
- b. The curriculum for the retraining of sanitarians;
- c. The curricula for the new regular course for Sanitarians;
- d. The curricula for the new upgrading courses.

This will involve a variety of inputs including subject content; timing; methods of presentation and instruction for each classroom, laboratory demonstration and field training session; delineation of laboratory or other materials to be prepared and available for each session, visual aids to be used; and examinations and other evaluation procedures.

The content of the course for sanitarians will relate directly to the "Job Description - Sanitarian" and the statement on "Information and Skills the Rural Sanitarian must have in addition to those specifically identified in his job description" which appear elsewhere in this document.

The upgrading of training methodology will require the institution of procedures to supplement or replace, as possible, straight lecture presentation, now the almost exclusive teaching method. The Sanitarian-Educator must be able to perform and teach others the following:

- a. **Classroom Teaching Problems.** Problems can be designed in almost any area of environmental health technology or administration which are amenable to solution by individual class members. It has been repeatedly shown that this is a method of choice in strengthening student comprehension of new concepts, identifying relationships between concepts and in attaining competence in their application. Study of the student solutions of well designed problems is an excellent means of evaluating the effectiveness of instruction and student ability to use the knowledge gained. Students normally find this type of instruction stimulating and enjoyable.

U.S. PERSONNEL - SANITARIAN---EDUCATOR

- b. **Projected Visual Aids.** The making of projected visual aids in the sanitarian schools should be limited to 2 x 2 color slides and overhead projectable transparencies. The much needed slides can be taken with an uncomplicated 35 mm. camera and processed locally. These can be arranged in series to support lectures or group discussions. Overhead projectables can be easily made by Thermofax processing by pen or wax pencil drawing and by other means. In application they have some uses to which slides are not adaptable and have the advantage of being readily seen in rooms that are not entirely darkened. All slides and projectables should be submitted to a central visual aid facility. (See Position Description-Project Representative). Generally applicable good quality slides and projectables should be copied in sufficient number for distribution to all sanitarian schools. An excellent start on such a visual aid resource can be made by the faculty and students during visual aid preparation classes in the Course for Training Trainers.
- c. **Non-Projected Visual Aids.** These include the preparation and use of flip charts, flannel board or hook and loop displays, and models and the making and collection of teaching demonstration items. The latter may include such simple items as real examples of good and poor concrete, samples of types of pipes and fittings, and more complicated items such as pumps. Collections of biological specimens principally insects and rodents would be included. Illustrating all technical verbal presentations, discussions and workshops with the real item under discussion should be an instruction aim insofar as possible. Where practical, as with flip charts and hook and loop displays, all useful items should be sent to a central aid facility for copying and distribution.

Upgrading the technical aspects of the sanitarian's curriculum will include the following inputs:

- a. **Environmental Health Technology -** The Sanitarian Educator must have a thorough comprehension of the fundamentals of rural sanitation practice that may be applied in Indonesia. This includes well water supplies, small piped water supplies, non-water carried and water carried sewage disposal, storage collection and disposal of solid wastes, fundamentals of food hygiene, fundamentals of insect and rodent control including formulation and use of insecticides and rodenticides, and surface water drainage. The public health and disease control implications of these measures must be clearly understood.

- b. Sanitary Laboratory Procedures. These are limited to demonstration and supervising student practice in a few simple exercises illustrating some fundamentals of bacteriology, e.g. (1) what bacteria are; (2) where they come from; (3) what is necessary for their survival and growth; (4) how do they get from place to place; and (5) how do you kill them. In addition, basic bacteriological examination of water should be completed and interpreted. No chemistry, as such would be taught, but the "cookbook" procedures for field tests of common chemical constituents in water should be carried out by students. These include temperature, soap hardness, pH, chlorine total alkalinity, iron, chlorides, and carbon dioxide. Safe laboratory procedures must be taught and emphasized.
- c. Sanitation Workshop. The sanitarian trainee should have the opportunity, under supervision, to practice the skills and techniques he is expected to master, and to become familiar with all the equipment and materials relating to his job. Some of this, such as pipe threading can be done in an indoor work space, and other things such as insecticide application in a designated outdoor area. These learning experiences are not to be confused with formal field experience and should precede it. In fact the workshop activities are essentially direct extensions of classroom work and should be very closely related in time.
- d. Administration and Health Education Activities in Environmental Health. The Sanitarian-Educator will be largely directed here by the Project Director who can furnish the required information on administrative organization and procedures, laws, planning, etc. as they are constituted in Indonesia.

In addition to training methods and course content, the Sanitarian-Educator will assume or share the following responsibilities:

- a. During the Training of Trainers Course he will make certain that all training procedures and practices discussed are actually experienced by the trainees during the course. It is only in this way that the effectiveness and practicability of the techniques can be convincingly demonstrated.
- b. A task early in the assignment is the finalizing of lists of equipment and supplies that will be provided for each sanitarian school. For convenience, these lists are divided into classroom, laboratory, office and library, fieldwork and personal items for each student.

U.S. PERSONNEL - SANITARIAN---EDUCATOR

- c. During the Training Course for Trainers a sanitation manual will be compiled for printing in Bahasa Indonesia. This will become the standard student text and field reference in sanitation practice. The Sanitarian-Educator should provide valuable assistance in the selection of content, format, illustrations, charts, tables, diagrams and formulae to be included.
- d. He will assist in developing criteria for the selection of students for the sanitation schools and provide consultation on procedures for recruitment.
- e. He will help with the development and application of procedures for the evaluation of the theoretical and applied elements of the training.
- f. As the opportunities arise, he will assist in the design of small research projects that can be undertaken by the sanitarian school staff. In this, as in all areas of activity, he is free to seek advice, consultation and assistance from the Field Sanitarian and the Project Representative.

The Sanitarian-Educator must be soundly prepared in sanitary science and have satisfactorily completed graduate work in this area. An individual with baccalaureate degree in Environmental Health and a Masters degree in Sanitary Science on Environmental health would have the ideal educational background. The individual should have had creditable experience in carrying out an environmental health program. In addition, there should be a minimum of five years of designing, preparing and presenting and evaluating courses in environmental health. These should preferably be at the introductory level. Special training and skills in teaching methods and audio-visual production would be most desirable.

The Sanitarian-Educator should have the ability to work with people, be adaptable and imaginative and able to work comfortably in a low profile role. Prior experience in developing countries in the tropics would be particularly useful, as would facility in learning languages.

In the preparation of sanitarians' field practice and training is at least equal in importance to classroom instruction. For this reason, as much care and effort should be given to the planning, preparation, execution and evaluation of field work as is given any other part of the teaching process. The accomplishment of this in the courses for trainers and for sanitarians is the principal responsibility of the Field Sanitarian. Specifically this will include assistance to school staffs in the following activities:

- a. Preparation of and instruction and supervision of shop activities where specific skills are practiced. Examples of this would be making concrete, pipe treading, maintenance of spraying equipment, repair of pumps, and formulation of insecticides and rodenticides.
- b. Development of demonstration areas where students under supervision of the instruction staff construct and install sanitation facilities, perform field operations and carry out Health Education activities. This includes well construction, latrine installation, solid waste storage facilities, drainage improvement, insect and rodent control and promotion of public information and support for these and other sanitation improvements.
- c. Development of field training areas in cooperation with public health departments or other agencies which will provide much of the introduction to, and practice in actual operating programs. The school staff must participate in field training at least to the extent that a well rounded experience for the trainee is assured, that all aspects of sanitation work is experienced, that instruction provided by the personnel of the cooperating agency is adequate, and that sufficient information is obtained on which to evaluate the trainees performance.

All of the foregoing must be coordinated with classroom and laboratory instruction so that the course is a true continuum and that there are no conflicts or omissions in content. Provision must be made for the student to practice adequately all the skills and techniques he will be expected to use in his employment. New field training techniques will be devised to assure this as may be found necessary.

U.S. PERSONNEL -- FIELD SANITARIAN

The Field Sanitarian will participate in the following additional activities:

- a. Completion of the detailed list of field equipment to accompany the other lists of supplies and equipment to be provided to the schools.
- b. Provide special help in the field components of the Training for Trainers Course to assure that these elements are not only properly taught and comprehended, but also that the trainers understand and can carry out the preparations and teaching techniques involved.
- c. Provides assistance in the preparation of sanitation manual to be printed in Bahasa Indonesia particularly as it relates to the technical details of field practice.

The Field Sanitarian will have a special concern in the courses for retraining of presently employed sanitarians. He will provide assistance necessary to assure that updated field practice and newer techniques and concepts in this regard are adequately and effectively covered.

The Field Sanitarian must have a thorough academic preparation in environmental health preferably including Master degree work in environmental health or public health. He must be experienced and skilled in conducting and teaching sanitation program field procedures including water well development and excreta disposal facilities.

He must have a marked interest and capacity to work successfully with administrative and field level personnel in a developing country while working largely in the background. He must be prepared to travel and work under the constraints existing in a tropical rural environment. Previous experience in working in such areas will be most beneficial. Competence in Bahasa Indonesia would be most valuable.

RSMF Financial Disbursement Schedule
(thousands of U.S. dollars)

Annex B-13

Element	GOI FY 1976/77		1977/78		1978/79		1979/80		1980/81	Totals
	AID	GOI	AID	GOI	AID	GOI	AID	GOI	GOI recurrent cost (non-additive)	
I. Pre-service Training										
A. Schools for Sanitation Technologists										
1. Construction	488	488	487 ^{1/}	488						1,951
2. Supplies and Equipment			74 ^{1/}	6						80
3. Stipends (\$120/year)						19		31	(36)	50
4. Graduation kit								6	(10)	6
5. Operations and Maintenance						142		142	(142)	284
B. Schools for Sanitarians										
1. Construction	1,986	2,001	1,986 ^{1/}	2000						7,973
2. Supplies and Equipment			223 ^{1/}	389						612
3. Stipends (\$120/year)						43		43	(43)	86
4. Graduation kit						37		36	(36)	73
5. Operations and Maintenance						410		410	(410)	820
II. In-service Training										
A. Supplies and Equipment				25						25
B. Stipends (\$70/month)					56	55	55	56		222
C. Graduation kit					74 ^{1/}	32	74 ^{1/}	31		211
D. Operations						6		6		12
III. Training of Trainers										
A. Supplies and Equipment		8								8
B. Stipends (\$100/month)		3	8 ^{1/}	8						22
C. U.S. Fellowships	3 ^{1/}		78 ^{1/}		78 ^{1/}		78 ^{1/}			312
D. In-country Fellowships	78 ^{1/}	27		28		28		28		111
V. Foreign Technical Assistance										
A. Project Representative	46 ^{2/}		78 ^{2/}		78 ^{2/}		58 ^{2/}			260
B. Sanitarian Educator	46 ^{2/}		78 ^{2/}		78 ^{2/}		58 ^{2/}			260
C. Field Sanitarian	46 ^{2/}		78 ^{2/}		78 ^{2/}		58 ^{2/}			260
D. Sanitarian Educator	6 ^{2/}				7 ^{2/}		7 ^{2/}			20
V. Project Administration										
A. Supplies and Equipment			27 ^{1/}							27
B. Construction	74	73	73	74						294
C. Operations and Maintenance						19		19	(19)	38
Totals	2,773	2,600	3,190	3,018	449	791	388	808	697	14,017
		5,873		6,208		1,240		1,196		

Footnote:

^{1/} represents foreign exchange cost

^{2/} 77% of this cost is a foreign exchange element

AID Financial Disbursement Schedule ^{1/}
(thousands of U.S. dollars)

Annex B-14

Element	FY 1977	FY 1978	FY 1979	FY 1980	Totals
<u>I. Schools for Sanitation Technologists</u>					
A. Construction	488	487			975
B. Supplies and Equipment	74				74
<u>II. Schools for Sanitarians</u>					
A. Construction	1,986	1,986			3,972
B. Supplies and Equipment	223				223
<u>III. In-service Training</u>					
A. Stipends			56	55	111
B. Graduation kit			74	74	148
<u>IV. Training of Trainers</u>					
A. Stipends	3	8			11
B. U.S. Fellowships	78	78	78	78	312
<u>V. Foreign Technical Assistance</u>					
A. Project Representative	100	70	70	20	260
B. Sanitarian Educator	100	70	70	20	260
C. Field Sanitation	100	70	70	20	260
D. Sanitarian Educator	7	7		6	20
<u>VI. Project Administration</u>					
A. Supplies and Equipment	27				27
B. Construction	74	73			147
Totals	3,260	2,849	418	273	6,800

note:

This schedule assumes that reimbursements for successfully completed local currency activities are made six months after physical completion.

Costing of RSMD Outputs/Inputs
(in thousands of U.S. dollars)

<u>Project In-</u> <u>puts</u>	RSMD Outputs a)				Totals
	# 1	# 2	# 3	# 4	
1. Technical ad- visory services b)	540	90	90	80	800
2. US/in-country fellowships	423	0	0	0	423
3. Construction activities	0	7,973	1,951	0	9,924
4. Supplies and equipment	8	612	80	25	725
5. Stipends	22	86	50	222	380
6. Graduation kits		73	6	211	290
7. RSMD administra- tion costs (in- cluding O&M)	89	910	374	102	1,475
TOTAL	1,082	9,744	2,551	640	14,017

a) RSMD outputs correspond to those shown in the Logical Framework Matrix of Annex C.

- 1) Competent instructors for the educational facilities along with revised curriculum, teaching methodologies, materials and field environmental sanitation manual.
2. Fully-equipped Schools for Sanitarians.
3. Fully-equipped Schools for Sanitation Technologists.
4. In-service training program.

b) This assumes that the Project Representative's efforts are divided among RSMD outputs nos. 2,3 and 4 while all other advisory services go into the "software component" output no. 1.

RSMD Recurrent Cost Analysis

2 Schools for Sanitation Technologists	\$188,000
9 Schools for Sanitarians	\$490,000
Central Administrative Costs	<u>\$ 19,000</u>
	\$697,000

Recurrent Cost Analysis

Schools for Sanitation Technologists

<u>Budget Item</u>	<u>Rp (1000's)</u>	<u>\$</u>
I. Instructor salaries + fringe benefits (rice and leave allowances)	12,480	30,072
II. Other operational expenses (office costs, electricity, telephone, water and gas, food for students, educational supplies, laboratory supplies, etc.)	12,253	29,525
III. Maintenance costs (vehicles, equipment, facilities, etc.)	4,388	10,573
IV. Travel expenses	269	648
V. Stipends	7,470	18,000
VI. Graduation kit	<u>2,088</u>	<u>5,032</u>
TOTALS	Rp 38,948,000 or	\$ 93,850

Recurrent Cost Analysis

Schools for Sanitarians

<u>Budget Item</u>	<u>Rp (1000's)</u>	<u>\$</u>
I. Instructor salaries + fringe benefits (rice and leave allowances)	5,841	14,075
II. Other operational expenses (office costs, electricity, telephone, water and gas, food for students, educational supplies, laboratory supplies, etc.)	10,882	26,222
III. Maintenance costs (Vehicles, equipment, facilities, etc.)	2,057	4,957
IV. Travel expenses	133	320
V. Stipends	1,992	4,800
VI. Graduation kits	<u>1,671</u>	<u>4,026</u>
TOTAL	Rp 22,576,000	or \$ 54,400

Distribution of Rural Water Supply Schemes During
Repelita I

List of piped water supply schemes undertaken in First Plan

<u>Province</u>	<u>Total number of schemes taken up between 1969-1974</u>
N. Sumatera	8
W. Sumatera	6
S. Sumatera	3
Lampung	4
W. Java	25
C. Java	15
Yogyakarta	10
E. Java	33
Bali	7
West Nusa Tenggara	1
East Nusa Tenggara	1
West Kalimantan	2
C. Kalimantan	1
North Sulawesi	2
S. Sulawesi	3

Details of schemes undertaken in the First Five-Year Plan

The Pilot Project activities in water supply schemes mainly with pipe distribution of water and excluding wells with hand pumps, have progressed as follows:

4 schemes in 4 provinces in 1969-1970
61 schemes in 14 provinces in 1973-1974

The distribution of all schemes (excluding wells with hand pumps) have been as follows:

(Total number of provinces is 24, excluding Jakarta and Irian Jaya)

Province	Number of schemes					Total
	69-70	70-71	71-72	73-74	73-74	
N. Sumatera			1	3	4	8
W. Sumatera			1	2	3	6
S. Sumatera			1	1	1	3
Lampung			1	1	2	4
W. Java	1	1	3	7	13	25
C. Java	1		1	7	6	15
Yogyakarta		2	2	2	4	10
E. Java	1	1	2	11	18	33
Bali	1	2	1	2	1	7
West Nusa Tenggara					1	1
East Nusa Tenggara			1			1
West Kalimantan					2	2
C. Kalimantan					1	1
North Sulawesi					2	2
S. Sulawesi					3	3
Total	<u>4</u>	<u>6</u>	<u>14</u>	<u>36</u>	<u>61</u>	<u>121</u>

As the first phase, Health Centres and Schools have been given preference for the location of the wells.

Based on the assumption of 1 well supplying water to about 120 people, the total population served by wells is estimated at 233 000.

PROGRESS OF PIPED RURAL WATER SUPPLY SCHEMES
UNDERTAKEN IN THE FIRST FIVE-YEAR PLAN(1969-1974)

JUNE 1975.

No.	Year	Kabupaten	Desa	Population Served	Water Source	Distribution system		Progress
						Gravity	Motor Pump	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<u>NORTH SUMATRA:</u>								
1.	71/72	Simalungun	Merek Raya	1,500	SP	Yes	-	2 km. pipes installed. System in service.
2.	72/73	Labuhan Batu	Tanjung Medan	1,300	IW	-	Yes	Installation postponed, budgetted for 1975-1976.
3.	"	"	Negeri Lama	2,500	RI	-	Yes	Installation postponed, budgetted for 1975-1976.
4.	"	Asahan	Prupuk	1,500	IW	-	Yes	Completed
5.	73/74	South Tapanuli	Pintu Padang	5,000	SP	Yes	-	Under construction, to be completed in 1975.
6.	"	"	Bungo Bandar	1,500	SP	Yes	-	Completed
7.	"	Dairi	Sumbul	3,000	SP	Yes	-	Completed
8.	"	Labuhan Batu	S. Berombang	1,000	RW	-	-	Completed
<u>WEST SUMATRA:</u>								
9.	71/72	Solok	Muara Panas	2,000	IW	-	Yes	Motor pump installed, to be completed in 1975.
10.	72/73	Solok	Koto Sani	1,100	SP	Yes	-	Completed
11.	"	Tanah Datar	Lintau Buo	10,000	SP	Yes	-	Pipes under installation, to be completed in 1975.

...../2

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
12.	73/74	Pasaman	T a l u	3,000	SP	Yes	-	System in service. More pipes needed for expansion
13.	"	Limapuluh Kota	Kimbanang	3,000	DW	Yes	-	Storage tank sent. awaiting local funds.
14.	"	"	Situjuh Bandar	1,500	SP	Yes	-	Completed
		<u>SOUTH SUMATRA</u>						
15.	71/72	Ogan Komering Ilir	Sri Bandung	2,000	AW	-	Yes	Completed
16.	72/73	Musi Banyuasin III	Pangkalan Balai	1,700	DW	-	Yes	Completed
17.	73/74	Muara Enim	Tegal Rejo	4,000	SP	-	Yes	Pipes and storage tank sent. Awaiting local funds. Plan to be completed in 1976.
		<u>LAMPUNG</u>						
18.	71/72	South Lampung	Kalianda	10,000	SP	Yes	-	Completed
19.	72/73	Tanjung Karang	Pahoman	500	SP	-	Yes	Completed
20.	73/74	North Lampung	Dwi Kora	1,000	SP	Yes	-	Completed
21.	"	"	Manggala	3,000	AW	-	-	Completed
		<u>WEST-JAVA</u>						
22.	69/70	Majalengka	Jati Tujuh	3,000	AW	-	Yes	Completed
23.	70/71	Ciadas	Banjar	7,500	SP	Yes	-	Completed
24.	71/72	Indramayu	Losarang	1,500	AW	-	-	Completed
25.	"	"	Jatibarang	4,000	RI	-	Yes	Completed
26.	"	Majalengka	T a l a g a	6,000	SP	-	Yes	Completed
27.	"	Cirebon	K a n c i	3,000	AW	-	Yes	Postponed, due to delayed arrival of pump.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
28.	72/73	Bandung	Cikalong Wetan	2,500	SP	-	Yes	Postponed, due to delayed arrival of pump.
29.	"	Subang	Rancasari	4,500	AW	-	Yes	- " -
30.	"	Purwakarta	Cileunca	5,000	SP	-	Yes	Completed.
31.	"	Tasikmalaya	Rahayu	2,000	SP	-	Yes	Completed.
32.	"	"	(Hospital)	-	DW	-	Yes	Completed.
33.	"	Sukabumi	(Hospital)	-	DW	-	Yes	Budget obtained; for implementation in 1975.
34.	"	Karawang	Rengas Dengklok	4,500	AW	-	Yes	Under construction, to be completed in 1975.
35.	73/74	Tasikmalaya	Pakemitan	7,500	SP	Yes	-	Completed
36.	"	Ciamis	Panjalu	5,000	SP	Yes	-	Completed
37.	"	Subang	Patinban	2,500	AW	-	Yes	Water Source quality problem. Other alternative under study.
38.	"	"	Bumi Ayu	1,500	SP	Yes	-	Under construction, to be completed in 1975.
39.	"	Purwakarta	Daranglan	1,500	SP	Yes	-	Funds obtained, to be completed in 1976.
40.	"	"	Cilingga	2,500	SP	-	Yes	Under construction, to be completed in 1976.
41.	"	Sumedang	Cibodas	2,500	SP	Yes	-	Completed.
42.	"	B o g o r	Cipayung	10,000	SP	Yes	-	50% Completed. Add. pipes to be provided by local government, to be completed in 1976.
43.	"	Serang	SukaLaba	3,000	SP	Yes	-	Under construction, to be completed in 1975.
44.	"	Sukabumi	Pelabuhan Ratu	5,000	SP	Yes	-	Completed.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
45.	73/74	Sukabumi	Jampang Tengah	1,000	SP	-	-	Completed.
46.	"	"	Nagrak	1,000	SP	-	-	Completed
47.	"	"	Baros	1,000	SP	-	-	Completed
<u>CENTRAL JAVA:</u>								
48.	69/70	Denak	Karang Sari	3,000	AW	-	Yes	Completed
49.	72/72	Wonosari	Wuryantoro	3,000	SP	-	Yes	Completed
50.	72/73	Boyclali	Mangkup	2,270	SP	Yes	-	Completed
51.	"	"	Kembang	4,000	RI	Yes	-	Completed
52.	"	Karanganyar	Wonorejo	4,850	SP	Yes	-	Completed
53.	"	Kendal	Bangunrejo	1,000	AW	-	Yes	Completed
54.	"	Penalang	Jatingarang	1,850	SP	Yes	-	Completed
55.	"	Sragen	Genolong	3,000	AW	-	Yes	Completed
56.	"	Tebal	Wururejo	3,000	AW	-	Yes	Completed
57.	73/74	Banyumas	Karangnangu	1,300	SP	Yes	-	Completed
58.	"	Purbalinggo	Karangrejo	1,000	SP	Yes	-	Completed
59.	"	"	Bobotsari	1,000	SP	Yes	-	Completed
60.	"	Semarang	Patemon	1,000	SP	Yes	-	Awaiting Kabupaten budget. Postponed until 1976.
61.	"	Magelang	Kaliangkrik	1,000	SP	Yes	-	Pipes sent. Awaiting Kabupaten budget.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
62	73/74	Brebes <u>YOGYAKARTA:</u>	Randusongc	2,800	RI	-	-	Completed
63.	70/71	Gunung Kidul	Rongkop	1,000	RW	-	-	Completed
64.	"	B a n t u l	Nawungan	1,000	SP	Yes	-	Completed
65.	71/72	B a n t u l	Sri Martani	1,500	SP	Yes	-	Completed
66.	"	Gunung Kidul	Hospital	-	DW	-	Yes	Budgetted for 1976 implementation
67.	72/73	Kulon Progo	Gerbosari	1,300	SP	Yes	-	Completed
68.	"	Gunung Kidul	Sidoharjo	5,000	RW	-	-	Completed
69.	73/74	"	Sawahen	3,000	SP	Yes	-	Completed
70.	"	"	Candirejo	1,500	RW	-	-	Completed
71.	"	B a n t u l	Mangunan	3,000	SP	Yes	-	Project under construction
72.	"	Kulon Progo	Pendowo Harjo	1,800	SP	-	-	Completed
		<u>EAST JAVA</u>						
73.	69/70	Mojokerto	Mojorejo	3,000	SP	-	-	Completed
74.	70/71	Lumajang	Kali Penggung	4,000	SF	Yes	-	Completed
75.	71/72	Pacitan	Punung	4,000	SP	Yes	-	Completed
76.	"	Bondowoso	Sukosari	5,000	SP	Yes	-	Completed
77.	72/73	Mojokerto	Purworejo	7,000	SP	Yes	-	Completed
78.	"	N g a w i	Karang Gupito	10,000	SP	Yes	-	Completed

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
79.	72/73	Surabaya	Prupuk	4,000	SP	-	Yes	Completed
80.	"	Tuban	Sumur Gung	5,000	SP	Yes	-	Completed
81.	"	"	Simbatan	9,500	SP	Yes	-	Completed
82.	"	Magetan	Ganilangit	12,000	SP	Yes	-	Completed
83.	"	"	Ginuk	12,000	SP	Yes	-	Completed
84.	"	Sampang	Jelgung	4,000	SP	Yes	-	Completed
85.	"	Bangkalan	Pucung	6,000	SP	-	Yes	Completed
86.	"	Magelang	Durenan	4,000	SP	Yes	-	Completed
87.	"	Lanongan	Bentarmadalan	1,750	SP	Yes	-	Completed
88.	73/74	Nganjuk	Klodan	4,000	SP	Yes	-	Completed
89.	"	"	Sawahin	2,000	SP	Yes	-	Completed
90.	"	"	Tempuran	4,000	SP	Yes	-	Under construction, to be completed end 1975.
91.	"	Kediri	Besowo	4,500	SP	Yes	-	Under implementation, to be completed in 1975.
92.	"	Tulung Agung	Sendang	4,000	SP	Yes	-	Completed
93.	"	"	Dono	4,700	SP	Yes	-	Completed.
94.	"	Pacitan	Ngawangan	2,000	SP	Yes	-	Completed.
95.	"	Jombang	Purisemanding	3,000	SP	Yes	-	Under construction
96.	"	Situbondo	Balung	1,000	SP	Yes	-	- " -

...../7

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
97.	73/74	Bojonegoro	K l i n o	2,200.	SP	Yes	-	Pipes sent. Budgetted for implementation in 1975
98.	"	"	Pajong	2,000	SP	Yes	-	- " -
99.	"	Pamekasan	Batakanjaya	4,000	SP	Yes	-	No reports
100.	"	Banyuwangi	Kalipuro	8,000	SP	Yes	-	Pipes sent. Under construction.
101.	"	Bangkalan	G a l i s	3,500	SP	-	Yes	Under construction, to be completed in 1975.
102.	"	Lumajang	Guci Alit	10,000	SP	Yes	-	Under implementation
103.	"	Ponorogo	P a t i k	3,000	SP	Yes	-	- " -
104.	"	Sampang	Muktiserah	4,000	SP	Yes	-	Pipes sent. Under construction.
105.	"	Sampang	Ketapangjaya	14,000	SP	Yes	-	Completed.
		<u>BALI Province</u>						
106.	"	Badung	Pecatu	2,000	RW	-	-	Completed
107.	70/71	Gianyar	Malinggih	2,500	SP	Yes	-	Completed
108.	"	Buleleng	Sembiran	2,500	SP	Yes	-	Completed
109.	71/72	Bangli	"	5,000	SP	Yes	-	Completed
110.	72/73	"	Manik Liu	1,000	SP	Yes	-	Completed.
111.	72/73	Den-Pasar	Hospital	-	DW	-	Yes	Completed
112.	73/74	Buleleng	Bondalen	3,000	SP	-	-	Pipes sent, no report
		<u>WEST NUSA TENGGARA</u>						
113.	"	Lombok Timur	Tanjung Luar	4,000	SP	Yes	-	Installation of pipes underway.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		<u>EAST NUSA TENGGARA</u>						
114	71/72	Kupang Hospital		-	SP	Yes	-	Completed
		<u>WEST KALIMANTAN</u>						
115	73/74	Sambas	Senparuh Kota	1,000	RW	-	-	Completed
116	"	Ketapang	Teluk Melano	1,000	RW	-	-	Completed
117	"	<u>CENTRAL KALIMANTAN</u>						
117	"	Kapuas		1,000	RW	-	-	No reports
		<u>NORTH SULAWESI</u>						
118	"	Minahasa	Mo-toling	750	SP	Yes	-	Storage tank sent, to be completed in 1976.
119	"	"	Paslaten	750	SP	-	Yes	Storage tank sent, motor-pump to be provided by level- government, under implementation.
		<u>SOUTH SULAWESI</u>						
120	"	Soppeng	Tetowatu	10,000	SP	-	Yes	No reports.
121	"	Sinjai	Balanidah	4,500	SP	Yes	-	Under construction
122	"	Gua	Malakaji	2,000	SP	Yes	-	Pipes sent, under construction.

Note: SP = Spring Protected at Source
SF = Spring Free Water
RW = Artesian Well
M+ = " Positive

DW = Dug Well
IW = Infiltration Well
RI = River intake
RW = Rain Water Catch.

H.S./Ch.
16/6/75.

1974 INPRES : PUSKESMAS, WATER SUPPLY, LATRINES

SL No.	Province/Kabupaten	Total no. PUSKESMAS	Total No. of Water Supply Projects & Latrines					
			Piped project	Artesian well	Rain water collection	Spring protection	Hand pump	Sanitary latrines
1.	<u>Aceh</u>							
	Aceh Barat	3	-	-	-	-	30	300
	Aceh Besar	1	-	-	-	-	20	300
	Aceh Selatan	4	-	-	-	-	20	300
	Aceh Tengah	2	1	-	-	-	20	300
	Aceh Tinur	2	-	-	-	-	40	300
	Pidie	2	1	-	-	-	40	300
	Aceh Utara	3	-	-	-	1	30	300
	Kodya Banda Aceh	1	-	-	-	-	-	50
	Kodya Sabang	1	-	-	-	-	-	50
2.	<u>Sumatera Utara</u>							
	Asahan	3	1	-	2	-	75	1,000
	Dairi	3	1	-	-	-	-	600
	Deli Serdang	4	-	-	-	-	100	700
	Karo	2	1	-	-	-	-	100
	Labuhan Batu	4	-	-	4	-	25	400
	Langkat	3	-	1	-	-	40	700
	Nias	4	1	-	-	-	-	100
	Sialungun	3	-	-	-	-	100	300
	Tapanuli Utara	4	1	-	-	-	30	1,300
	Tapanuli Tengah	1	1	-	-	-	-	100
	Tapanuli Selatan	4	1	-	-	-	30	700
	Kodya Binjai	1	-	-	-	-	-	200
	Kodya Pematang Siantar	1	-	-	-	-	-	200
	Kodya Medan	1	-	-	-	-	-	300
	Kodya Sibolga	1	-	-	-	-	-	200
	Kodya Tanjung Balai	1	-	-	-	-	-	100
	Kodya Tebing Tinggi	1	-	-	-	-	-	200
3.	<u>Sumatera Barat</u>							
	Ayam	2	1	-	-	-	30	600
	Limapuluh kota	2	-	-	-	-	70	400
	Padang/Periaman	2	-	-	-	-	30	800
	Pasakam	2	-	-	-	-	25	400
	Pesisir Selatan	2	-	-	-	-	25	400
	Sawah Lunto	2	-	-	-	-	35	200
	Solok	3	1	-	-	-	60	600
	Tanah Datar	2	1	-	-	-	25	600
	Kodya Bukittinggi	1	-	-	-	-	-	200
	Kodya Padang	1	-	-	-	-	-	200
	Kodya Padang Panjang	1	-	-	-	-	-	200
	Kodya Sawahlunto	1	-	-	-	-	-	100
	Kodya Solok	1	-	-	-	-	-	200
	Kodya Payakumbuh	1	-	-	-	-	-	100

SL No.	Province/Kabupaten	Total no. of PUSKES-MAS	Total No. of Water Supply Projects & Latrines					
			Piped project	Artesian well	Rain water collection	Spring protection	Hand pump	Sanitary latrines
4.	<u>Riau</u>							
	Kampar	3	1	-	-	-	50	700
	Indragiri Ulu	2	-	-	-	-	50	800
	Indragiri Ilir	2	-	-	3	-	-	300
	Bengkalis	3	-	-	3	-	25	600
	Kcp. Riau	3	-	-	4	-	25	700
	Kodya Pekanbaru	1	-	-	-	-	-	100
5.	<u>Jambi</u>							
	Batanghari	2	-	-	-	-	10	200
	Bungatebo	2	-	-	-	-	15	200
	Bangka Sarolangun	2	-	-	-	-	10	200
	Kerinci	1	1	-	-	-	15	200
	Tanjung Tabung	2	-	-	4	-	-	100
	Kodya Jambi	1	-	-	-	-	-	300
6.	<u>Sumatera Selatan</u>							
	Bangka	2	1	-	-	-	40	400
	Belitung	1	-	-	-	-	80	600
	Lahat	3	-	-	-	-	40	800
	Muara Enim	2	1	-	-	-	40	400
	Musi Banyuwasin	2	-	-	-	-	40	400
	Musi Rawas	2	-	-	-	-	40	600
	Ogan Komering Ilir	2	-	1	-	-	40	600
	Ogan Komering Ulu	2	-	-	-	-	80	600
	Kodya Palembang	1	-	-	-	-	-	400
	Kodya Pangkal Pinang	1	-	-	-	-	-	400
7.	<u>Lampung</u>							
	Lampung Selatan	2	1	-	-	-	100	1,400
	Lampung Tengah	2	-	-	-	-	127	1,000
	Lampung Utara	2	1	-	-	-	100	600
	Kodya Tanjung Karang	1	-	-	-	-	-	200
8.	<u>Bengkulu</u>							
	Bengkulu Utara	2	1	-	-	1	50	800
	Bengkulu Selatan	2	-	-	-	-	75	800
	Rejang Lebong	1	1	-	-	-	75	400
	Kodya Bengkulu	1	-	-	-	-	-	200

SL No.	Province/Kabupaten	Total No. of PUSKESMAS	Total No. of Water Supply Projects & Latrines					Hand pump	Sanitary latrines
			Piped project	Artesian well	Rain water collection	Spring protection			
9.	<u>Jawa Barat</u>								
	Bandung	2	1	-	-	-	150	1,000	
	Bekasi	2	-	3	-	-	120	1,700	
	Bogor	2	1	-	-	-	150	1,000	
	Garut	3	3	-	-	5	100	1,000	
	Indramayu	2	-	3	5	-	100	1,300	
	Krawang	1	-	3	-	-	150	1,200	
	Kuningan	1	2	-	-	6	150	1,000	
	Lebak	3	-	-	-	-	100	1,000	
	Majalengka	1	2	-	-	6	120	1,000	
	Pandeglang	2	2	-	-	5	100	1,000	
	Purwakarta	1	1	-	-	-	100	1,000	
	Serang	4	-	3	5	-	150	1,800	
	Subang	1	-	2	-	-	100	1,200	
	Sukabumi	2	-	-	-	13	130	1,000	
	Sumedang	1	3	-	-	5	-	1,000	
	Tangerang	3	-	4	10	-	200	1,800	
	Tasikmalaya	2	3	-	-	-	150	1,000	
	Ciamis	2	1	-	-	-	150	1,000	
	Cianjur	2	2	-	-	5	130	1,000	
	Cirebon	1	-	3	10	-	150	2,300	
	Kodya Bandung	2	-	-	-	-	-	1,000	
	Kodya Bogor	1	-	-	-	-	-	100	
	Kodya Cirebon	1	-	-	-	-	-	500	
	Kodya Sukabumi	1	-	-	-	-	-	100	
10.	<u>DKI Jakarta Raya</u>								
	Jakarta Utara	1	-	-	-	-	-	120	
	" Pusat	1	-	-	-	-	-	800	
	" Timur	2	-	-	-	50	-	700	
	" Selatan	1	-	-	-	60	-	780	
	" Barat	2	-	-	-	35	-	600	
11.	<u>Jawa Tengah</u>								
	Cilacap	1	1	-	-	-	40	1,600	
	Banyumas	2	1	-	-	-	50	2,000	
	Purbalinggo	1	-	-	-	-	60	600	
	Banjarnegara	2	1	-	-	-	50	600	
	Kebumen	2	-	-	-	-	60	1,000	
	Purworejo	2	1	-	-	-	30	600	
	Wonosobo	2	1	-	-	-	-	600	
	Magelang	1	1	-	-	-	70	200	
	Boyolali	2	-	-	-	-	70	800	
	Klaten	2	-	-	-	-	60	1,400	
	Sukoharjo	1	1	-	-	-	40	600	
	Wonogiri	2	1	-	-	-	20	800	
	Karanganyar	2	-	-	-	-	60	600	
	Sragen	2	-	-	-	-	70	600	
	Grobogan	2	1	-	-	-	30	600	
	Blora	2	1	-	-	-	30	600	

SL No.	Province/Kabupaten	Total No. of PUSKESMAS	Total No. of Water Supply Projects & Latrines					Sanitary latrines
			Piped project	Artesian well	Rain water collection	Spring protection	Hand pump	
	Rembang	2	1	-	-	-	30	600
	Pati	2	-	2	-	-	30	800
	Kudus	2	-	-	-	-	50	600
	Jepara	1	-	1	-	-	20	600
	Demak	2	-	2	-	-	20	400
	Semarang	1	1	-	-	-	50	600
	Temanggung	1	1	-	-	-	30	400
	Kendal	2	-	1	-	-	30	200
	Batang	1	1	1	-	-	30	400
	Pekalongan	2	-	-	-	-	60	600
	Pemalang	1	1	-	-	-	40	800
	Tegal	2	-	1	-	-	50	1,000
	Brebes	2	-	2	-	-	20	1,600
	Kodya Magelang	1	-	-	-	-	-	200
	Kodya Surakarta	1	-	-	-	-	-	200
	Kodya Salatiga	1	-	-	-	-	-	200
	Kodya Semarang	1	-	-	-	-	-	200
	Kodya Pekalongan	1	-	-	-	-	-	200
	Kodya Tegal	1	-	-	-	-	-	200
12.	<u>Jawa Timur</u>							
	Bangkalan	1	-	-	-	-	57	1,350
	Banyuwangi	1	-	-	-	-	55	750
	Blitar	1	2	-	-	-	39	250
	Bojonegoro	1	-	-	-	-	40	1,300
	Bondowoso	1	-	-	-	-	86	750
	Jember	1	-	-	-	-	66	250
	Jombang	1	-	-	-	-	86	750
	Kediri	1	1	-	-	-	36	750
	Lamongan	1	-	-	-	-	87	750
	Lumajang	1	-	-	-	-	37	1,350
	Madiun	1	2	-	-	-	48	750
	Magetan	1	1	-	-	1	67	1,350
	Malang	1	-	-	-	-	36	250
	Nojokerto	1	-	-	-	-	48	750
	Nganjuk	1	2	-	-	-	71	2,000
	Ngawi	1	-	-	-	2	56	750
	Parekasan	1	-	-	-	1	69	750
	Pasuruan	1	-	-	-	-	81	250
	Situbondo	1	-	-	-	-	57	750
	Pacitan	2	-	-	-	-	37	1,350
	Ponorogo	1	1	-	-	1	37	750
	Probolinggo	1	1	-	-	-	67	250
	Sampang	2	1	-	-	1	37	2,000
	Sumenep	1	2	-	-	-	46	250
	Sidoarjo	1	-	-	-	-	106	250
	Surabaya	1	-	-	-	1	92	750
	Trenggalek	2	1	-	-	1	37	250
	Tuban	1	-	-	-	-	47	1,350
	Tulungagung	1	2	-	-	2	72	1,350
	Kodya Blitar	1	-	-	-	-	-	100
	Kodya Kediri	1	-	-	-	-	-	100
	Kodya Madiun	1	-	-	-	-	-	100
	Kodya Malang	1	-	-	-	-	-	100

SL No.	Province/Kabupaten	Total no. of PUSKES-MAS	Total No. of Water Supply Projects & Latrines					
			Piped project	Artesian well	Rain water collection	Spring protection	Hand pump	Sanitary latrines
	Kodya Mojokerto	1	-	-	-	-	-	100
	Kodya Pasuruan	1	-	-	-	-	-	100
	Kodya Probolinggo	1	-	-	-	-	-	100
	Kodya Surabaya	1	-	-	-	-	-	100
13.	<u>Yogyakarta</u>							
	Bantul	3	2	-	-	-	200	2,000
	Gunung Kidul	2	1	-	10	-	-	400
	Kulon Progo	2	1	-	-	-	200	1,300
	Sleman	3	1	-	-	-	200	2,000
	Kodya Yogyakarta	2	-	-	-	-	-	1,500
14.	<u>Kalimantan Barat</u>							
	Kapuas Hulu	3	-	-	4	-	-	-
	Ketapang	2	-	-	4	-	-	600
	Pontianak	4	1	-	4	-	-	-
	Sambas	5	-	-	4	-	-	600
	Sintang	4	-	-	-	-	20	200
	Sanggau	4	-	-	-	-	30	200
	Kodya Pontianak	1	-	-	-	-	-	400
15.	<u>Kalimantan Tengah</u>							
	Barito Selatan	3	-	-	6	-	12	500
	Barito Utara	2	-	-	4	-	8	240
	Kota Waringin Barat	2	-	-	2	-	5	190
	Kota Waringin Timur	4	-	-	5	-	11	500
	Kapuas	5	-	-	7	-	14	580
	Kodya Palangkaraya	1	-	-	-	-	-	190
16.	<u>Kalimantan Timur</u>							
	Berau	1	-	-	3	-	15	250
	Bulungan	2	-	-	3	-	-	150
	Kutai	2	-	-	3	-	15	200
	Pasir	1	-	-	3	-	20	250
	Kodya Balikpapan	1	-	-	-	-	-	200
	Kodya Samarinda	3	-	-	-	-	-	350
17.	<u>Kalimantan Selatan</u>							
	Banjar	2	-	-	3	-	-	250
	Barito Kuala	2	-	-	3	-	-	200
	Hulu Sungai Selatan	2	-	-	-	-	20	200
	Hulu Sungai Tengah	2	-	-	-	-	20	300
	Hulu Sungai Utara	2	-	-	-	-	10	200
	Kota Baru	1	-	-	3	-	-	200
	Tabalong	1	-	-	3	-	-	200
	Tanah Laut	1	-	-	3	-	-	200
	Tapin	1	-	-	3	-	-	200
	Kodya Banjarmasin	3	-	-	-	-	-	450

SL No.	Province/Kabupaten	Total No. of PUSKES-MAS	Total No. of Water Supply Projects & Latrines					Sanitary latrines
			Piped Project	Artesian well	Rain water collection	Spring protection	Hand pump	
18.	<u>Sulawesi Utara</u>							
	Bolaang Mongondow	3	1	-	2	-	40	450
	Gorontalo	3	-	-	-	-	50	400
	Minahasa	3	1	-	-	-	25	450
	Sangihe Talaud	2	-	-	2	-	10	400
	Kodya Gorontalo	1	-	-	-	-	-	250
	Kodya Manado	1	-	-	-	-	-	250
19.	<u>Sulawesi Tengah</u>							
	Donggala	3	1	-	1	-	30	700
	Poso	3	-	-	1	-	40	700
	Bual Toli-Toli	2	-	-	-	-	25	300
	Luwuk Banggai	3	-	-	2	-	10	300
20.	<u>Sulawesi Tenggara</u>							
	Buton	4	-	-	2	-	31	400
	Kendari	2	1	-	-	-	40	400
	Kolaka	1	-	-	-	-	24	400
	Muna	1	-	-	2	-	15	200
21.	<u>Sulawesi Selatan</u>							
	Bantaeng	1	-	-	-	-	35	300
	Barru	2	-	-	-	-	35	300
	Bone	2	1	-	-	-	35	400
	Bulukumba	1	-	-	-	-	35	350
	Jeneponto	1	-	-	2	-	35	300
	Enkerang	1	1	-	-	-	35	300
	Gowa	1	-	-	-	-	40	350
	Majene	1	-	-	-	-	35	300
	Mamuju	2	-	-	-	-	40	250
	Maros	1	-	-	-	-	30	250
	Polewali Mamasa	1	1	-	-	-	35	300
	Selayar	1	-	-	3	-	10	300
	Sidenreng Rappang	1	-	-	-	-	35	350
	Sinjai	1	-	-	-	-	35	300
	Soppeng	1	-	-	-	-	35	400
	Takalar	1	-	-	-	-	35	300
	Tanah Toraja	1	1	-	-	-	30	300
	Wajo	1	-	-	-	-	35	350
	Pangkajene Kepulauan	1	-	-	-	-	35	300
	Kodya Ujung Pandang	1	-	-	-	-	-	500
	Kodya Pare-Pare	1	-	-	-	-	-	300
22.	<u>Bali</u>							
	Bangli	2	1	-	1	1	25	400
	Badung	2	1	-	1	2	20	900
	Buleleng	2	1	-	-	-	20	1,200
	Jembrana	1	-	-	-	1	50	800
	Gianyar	2	1	-	-	-	25	900
	Karangasem	2	1	-	-	-	50	400
	Klungkung	2	-	-	2	1	30	600
	Tabanan	2	1	-	-	-	30	1,000

SL No.	Province/kabupaten	Total No. of PUSKES-MAS	Total No. of Water Supply Projects & Latrines					
			Piped Project	Artesian well	Miner col-lect-ion	Springs pro-tection	hand pump	Sanitary latrines
23.	<u>Nusa Tenggara Barat</u>							
	Bima	2	1	-	-	-	50	500
	Dompu	1	-	-	-	-	35	300
	Lombok Barat	3	-	-	-	-	70	900
	Lombok Tengah	2	-	-	-	-	35	700
	Lombok Timur	3	-	-	-	-	45	300
	Sumbawa	2	1	-	-	-	35	500
24.	<u>Nusa Tenggara Timur</u>							
	Aloa	2	-	-	-	3	-	200
	Belu	2	-	-	-	2	-	200
	Ende	2	-	-	-	1	-	200
	Flores Timur	2	-	-	-	4	-	200
	Kupang	3	1	-	-	2	-	400
	Manggarai	3	-	-	-	-	10	200
	Ngada	2	-	-	-	1	-	200
	Sikka	2	-	-	-	1	-	200
	Sumba Barat	2	-	-	-	-	10	200
	Sumba Timur	2	-	-	-	-	10	200
	Timur Tengah Selatan	2	-	-	-	2	-	200
	Timur Tengah Utara	2	-	-	-	3	-	200
25.	<u>Maluku</u>							
	Maluku Tengah	2	1	-	-	-	15	200
	Maluku Tenggara	2	-	-	4	-	10	400
	Maluku Utara	3	-	-	-	-	25	400
	Kodya Ambon	1	-	-	-	-	-	200
26.	<u>Irian Jaya</u>							
	Fak-Fak	1	-	-	2	-	10	400
	Jayapura	2	-	-	-	-	20	200
	Japen Waropeng	1	-	-	-	-	10	200
	Manokwari	2	-	-	-	-	10	200
	Merauke	2	-	-	2	-	10	200
	Painai	2	-	-	-	-	10	300
	Peg. Jaya Wijaya	3	-	-	-	-	10	200
	Sorong	1	-	-	2	-	10	100
	Teluk Cendrawasih	2	-	-	2	-	10	200

Health Manpower, by Sex, 1972/1973 All Indonesia*
(excludes Armed Forces)

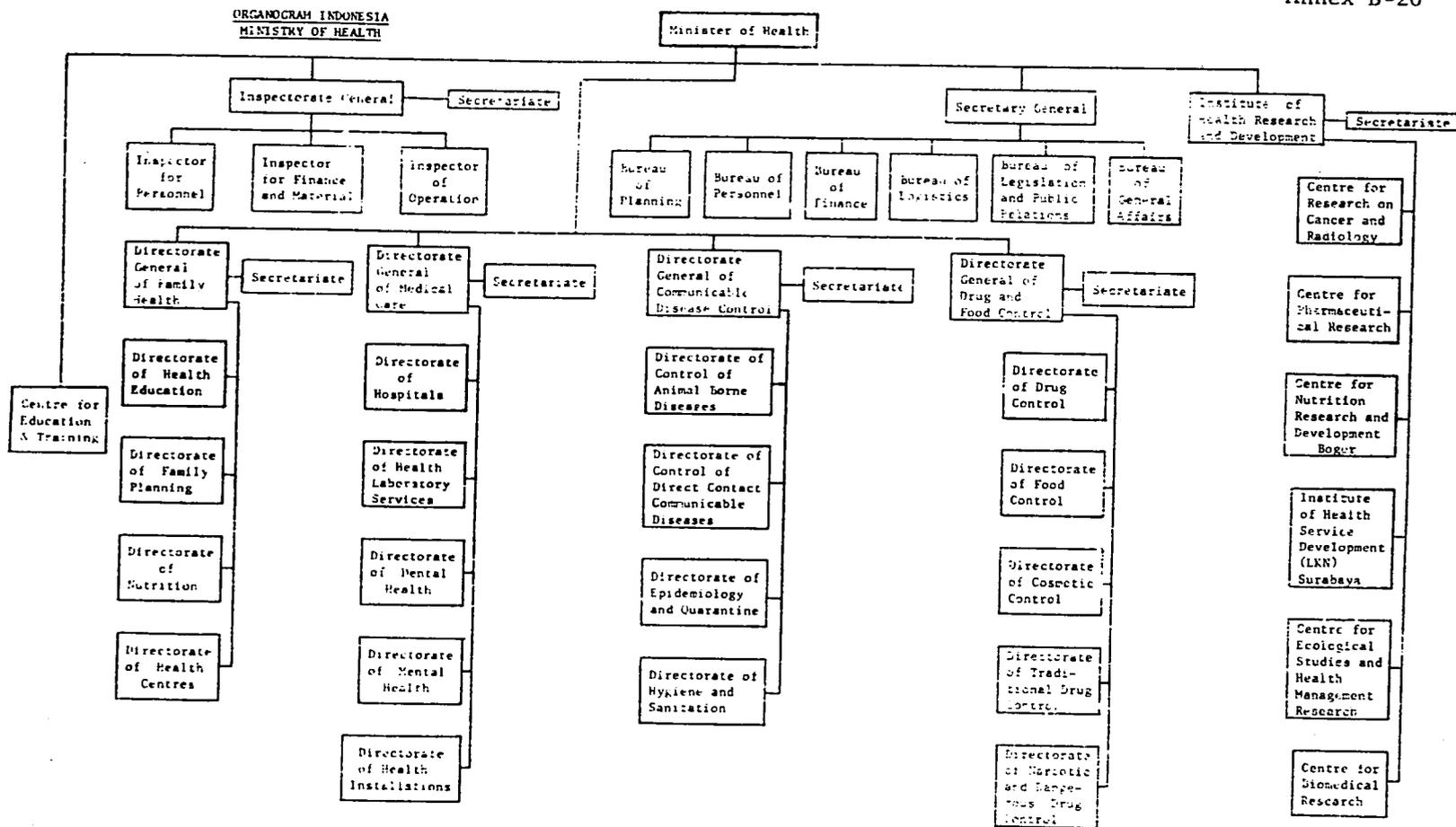
Type	Total	Male	Female	% Female
Physician	4,963	4,171	792	15.9
Drs. Medicos	207	174	33	15.9
Dentist	800	419	381	47.6
Drs. Med. Dentist	7	6	1	14.2
Pharmacist	853	517	336	39.3
Sayan Pharm.	11	9	2	18.1
Health Controllers/Inspectors	655	536	119	18.1
Prof. General Nurse	269	44	225	83.6
Prof. Pediatrics Nurse	29	1	28	96.5
Asst. Anesthetist	58	45	13	22.4
Nurse Teachers	101	36	65	64.3
Midwife Teachers	40	28	12	30.0
Radiographer	10	6	4	40.0
X-ray Technician	2	2	-	0
Nutritionist	130	65	65	50.0
Physiotherapist	51	31	20	39.2
Asst. Nurse Teacher	102	58	44	43.1
Asst. Midwife Teacher	78	-	78	100
Asst. Public Health Nurse	54	30	24	44.4
Sanitarian	781	721	60	7.6

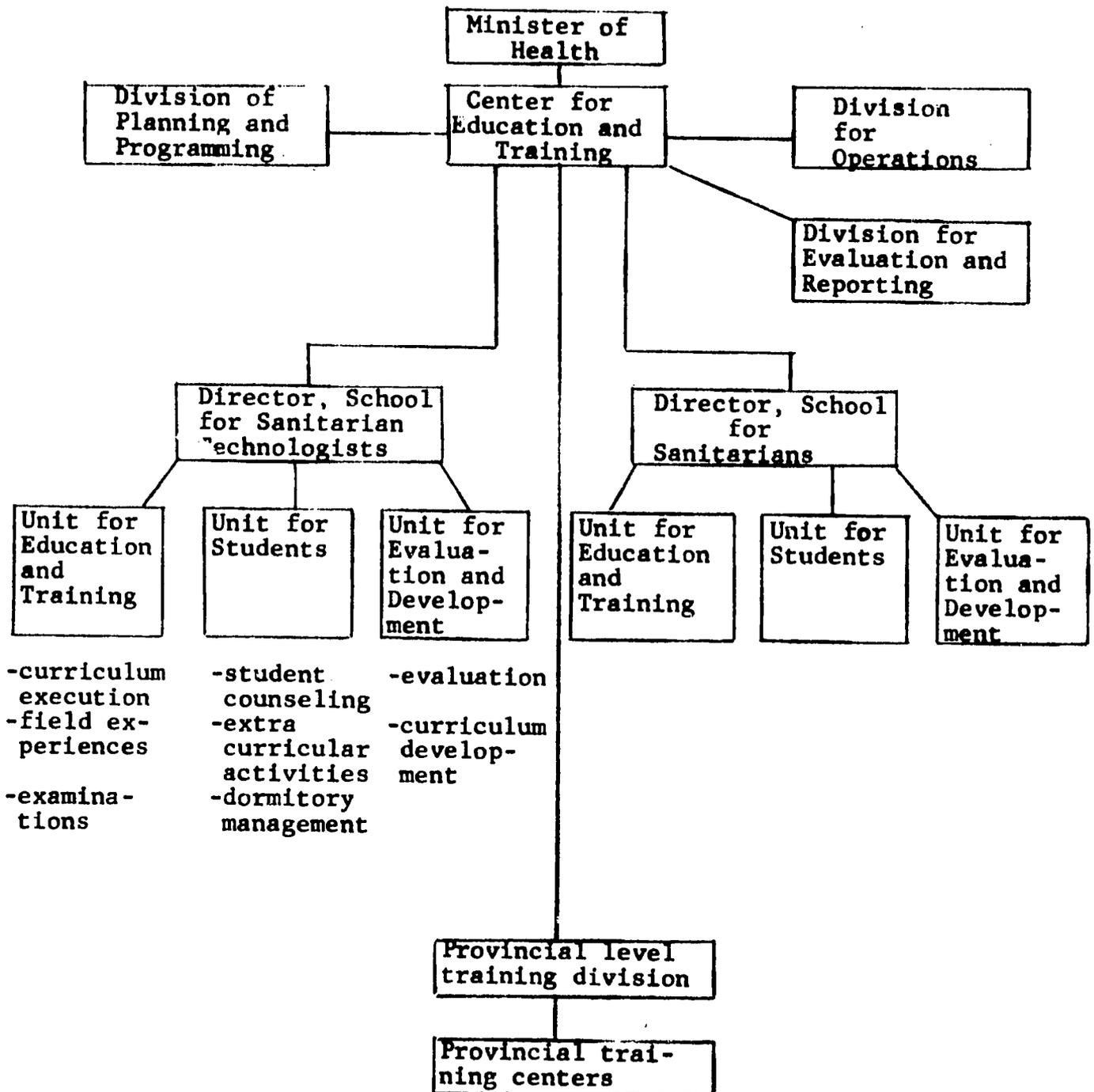
Health Manpower, by Sex, 1972/1973 All Indonesia*
(excludes Armed Forces)

<u>Type</u>	<u>Total</u>	<u>Male</u>	<u>Female</u>	<u>% Female</u>
Dental Nurse	218	-	218	100
Dental Technician	58	51	-	0
Sr. Asst. Pharmacist	4,221	1,274	2,947	69.8
Nurse-midwife	147	-	147	100
Nurse	7,252	2,963	4,289	59.1
Midwife	7,647	-	7,647	100
Nurse A general	54	22	32	59.2
Nurse B (mental)	61	41	20	32.7
Dental nurse	100	60	40	40.0
Asst. Radiographer	53	41	12	22.6
Asst. X-ray Technician	111	82	29	26.1
Analyst	539	317	222	41.1
Sr. Asst. Nutritionist	169	-	169	100
Asst. Physiotherapist	63	42	21	33.3
Jr. Asst. Pharmacist	4	2	2	50
Asst. Gen. Nurse (NS)	1,739	1,007	732	42.0
Asst. Gen. Nurse (OS)	7,888	4,854	3,034	38.4
Asst. Mental Nurse	167	94	73	43.7
Asst. Midwife	1,725	-	1,725	100
Asst. Sanitarian NS	1,921	1,728	193	10.0
Asst. Sanitarian OS	57	48	9	15.7

Health Manpower, by Sex, 1972/1973 All Indonesia*
(excludes Armed Forces)

Type	Total	Male	Female	% Female
Lab. Asst.	259	203	56	21.6
Aux. Sanit.	47	39	8	17.0
Aux. Nurse A	5,492	3,626	1,866	33.9
Aux. Nurse B	127	76	51	40.1
Jr. Asst. Nut.	10	3	7	70.0
Drug Dispenser	1,344	882	461	34.3
Nurse Aide (CS)	5,664	3,193	2,471	43.6
Nurse Midwife Aide	3,730	2,434	1,296	34.7
Sanitarian Aide	151	132	19	12.5
Lab. Aide NS	76	69	7	10.1
Nurse Aide NS	5,912	3,033	2,879	48.6
Aide/Plague Info.	14	14	-	0
Aide/Plague Cont.	58	58	-	0
Plague Home Visitors	6	4	2	33.3
Lab. Aide (CS)	252	203	49	19.4
Malaria Surveyor	55	55	-	0
Aide in Malaria Control	8,334	8,251	83	10.0
Smallpox Vaccinator	2,161	2,145	16	0.7
Aide in Frambosia Cont.	1,391	1,391	-	0
Aide in Leprosy Cont.	94	91	3	3.2
BCG Vaccinator	332	280	52	15.6





RURAL SANITATION MANPOWER DEVELOPMENT PROJECT IMPLEMENTATION PLAN

Activity	CY 1976	CY 1977	CY 1978	CY 1979
1. <u>Technical Assistance</u>				
A. Preparation of selection criteria, list of qualified institutions, and request for expressions of interest	—			
B. Solicitation expressions of interest	—			
C. Solicitation of requests for technical proposals	—			
D. Evaluation and negotiation of proposals	—			
E. Preparation and signing of contract	—			
F. Contract team on board				
i Project representative				
ii Sanitarian educator				
iii Field Sanitation				
iv Sanitarian evaluator				
2. <u>Construction</u>				
A. Preparation final designs	—			
B. Construction				
3. <u>Procurement of Commodities</u>				
A. Procurement of local commodities for the training of trainers program		—		

RURAL SANITATION MANPOWER DEVELOPMENT PROJECT IMPLEMENTATION PLAN

Activity	CY 1976	CY 1977	CY 1978	CY 1979
B. Procurement of local commodities for the preservice and inservice training programs				
C. Procurement of Code 941 commodities for the preservice and inservice training programs				
4. <u>Training of Trainers</u>				
A. Preparation for training of trainers courses - including 2 week faculty workshcp				
B. Training courses				
C. Development curriculum for Schools for Sanitarians and Sanitation Technologists and inservice training				
D. Preparation of field manual				
E. U.S. fellowships				
F. Incountry fellowships				
5. <u>Inservice Training</u>				
6. <u>Preservice Training</u>				
A. Sanitation Technologists				
B. Sanitarians				

Selection Criteria for the RSMD Technical Services Contractor

1. Current experience in training sanitation personnel.
2. Experience with incorporating sanitation fieldwork into training programs.
3. Experience in overseas sanitation fieldwork training, preferably in Asia.
4. Experience with handling overseas contracts of comparable complexity with the RSMD.
5. Demonstrated ability to develop mutually cooperative relationships with overseas endeavors.
6. Ability to deal with Indonesian personnel, agencies and language.
7. Ability to meet contract requirements with qualified personnel.
8. Ability to meet contract requirements with its own staff and its own institutional capabilities.

Source List for the RSMD Technical Services Contractor

1. University of California at Berkeley
2. University of California at Los Angeles
3. Columbia University
4. Harvard University
5. University of Hawaii
6. University of Illinois
7. The John Hopkins University
8. University of Loma Linda
9. University of Michigan
10. University of Minnesota
11. University of North Carolina
12. University of Oklahoma
13. University of Pittsburgh
14. University of Puerto Rico
15. University of Texas
16. Tulane University
17. University of Washington
18. Yale University
19. University of Massachusetts
20. East Tennessee State University
21. Ferris State College
22. California State University at Northbridge
23. Florida State University

Request for Expressions of Interest

The Government of Indonesia is soliciting expressions of interest and statements of qualifications from interested U.S. education institutions which can qualify, through experience with projects of similar type and magnitude, for technical assistance to a Rural Sanitation Manpower Development Project.

Approximately ten manyears of foreign technical assistance will be provided over three years to train instructors of the eleven educational institutions and to assist with the development of: (i) school curricula and revised methodologies for pre-service training of both Sanitarians (field-level workers) and Sanitation Technologists (professional environmental sanitation supervisors); (ii) in-service training courses to improve the knowledge and skills of the existing rural sanitation cadre to the level of quality of the newly-trained Sanitarians and Sanitation Technologists; (iii) a field environmental sanitation manual for utilization by all rural sanitarians; and (iv) upgrading courses to advance special sanitation-related skills. In addition, twenty-six fellowships for academic, non-degree training in the United States will be arranged by the contractor for senior educators at the Schools for Sanitarians and Sanitation Technologists.

Financing will be under an A.I.D. loan and will be paid in U.S. dollars. A fixed price type contract is anticipated.

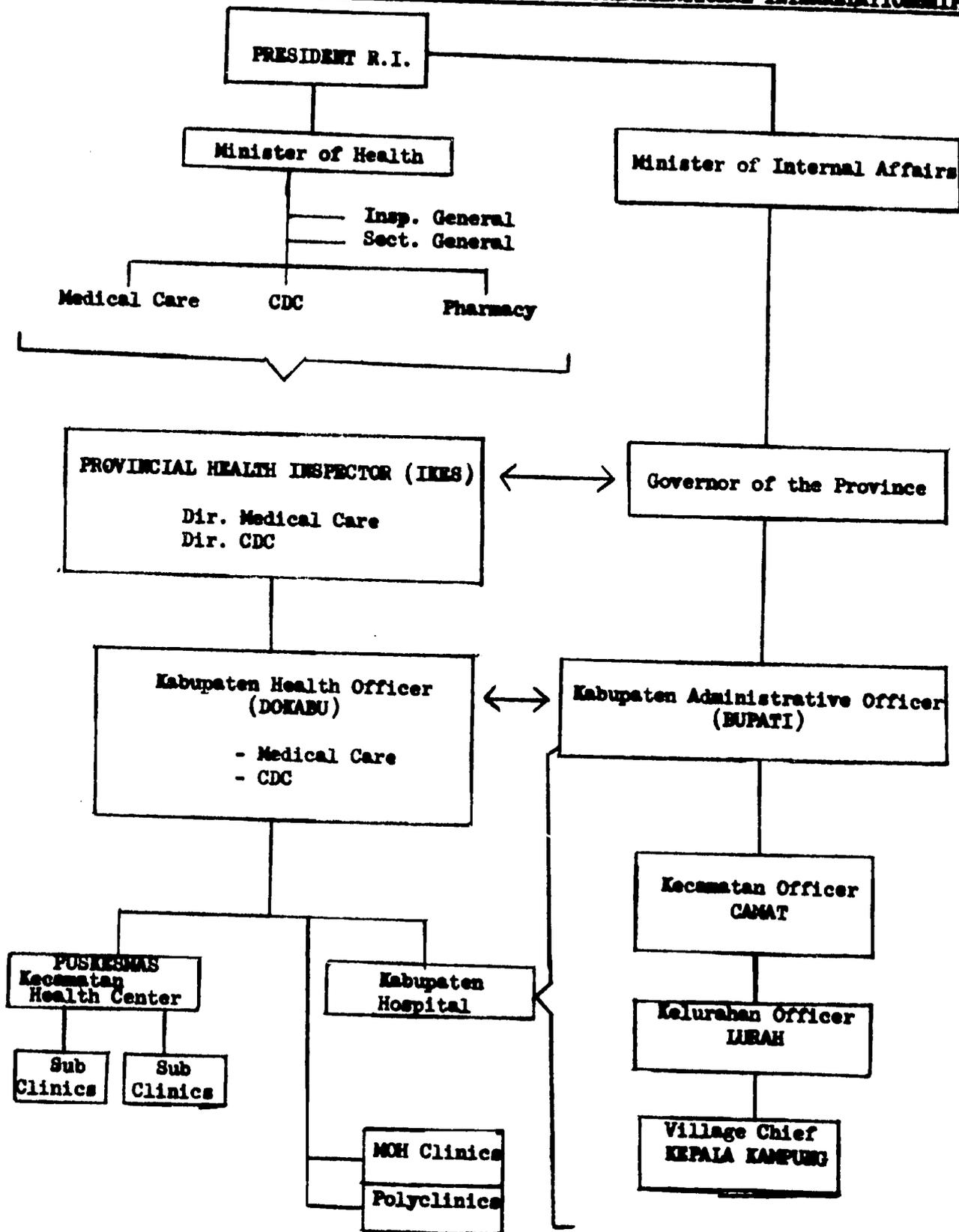
Expressions of interest and statements of qualification should be sent by international air mail to:

Secretary General, Ministry of Health
Attn: Rural Sanitation Manpower Development Project
Jl. Prapattan 10
Jakarta, Indonesia

Letters should be postmarked not later than (allow 6 weeks).

All qualified institutions submitting an expression of interest will be sent a copy of the request for a technical proposal. No cost or pricing data will be requested or required from your institution by the technical proposal.

MINISTRY OF HEALTH AND MINISTRY OF INTERIOR ORGANIZATIONAL INTERRELATIONSHIPS



Rural Sanitation Manpower Development Project

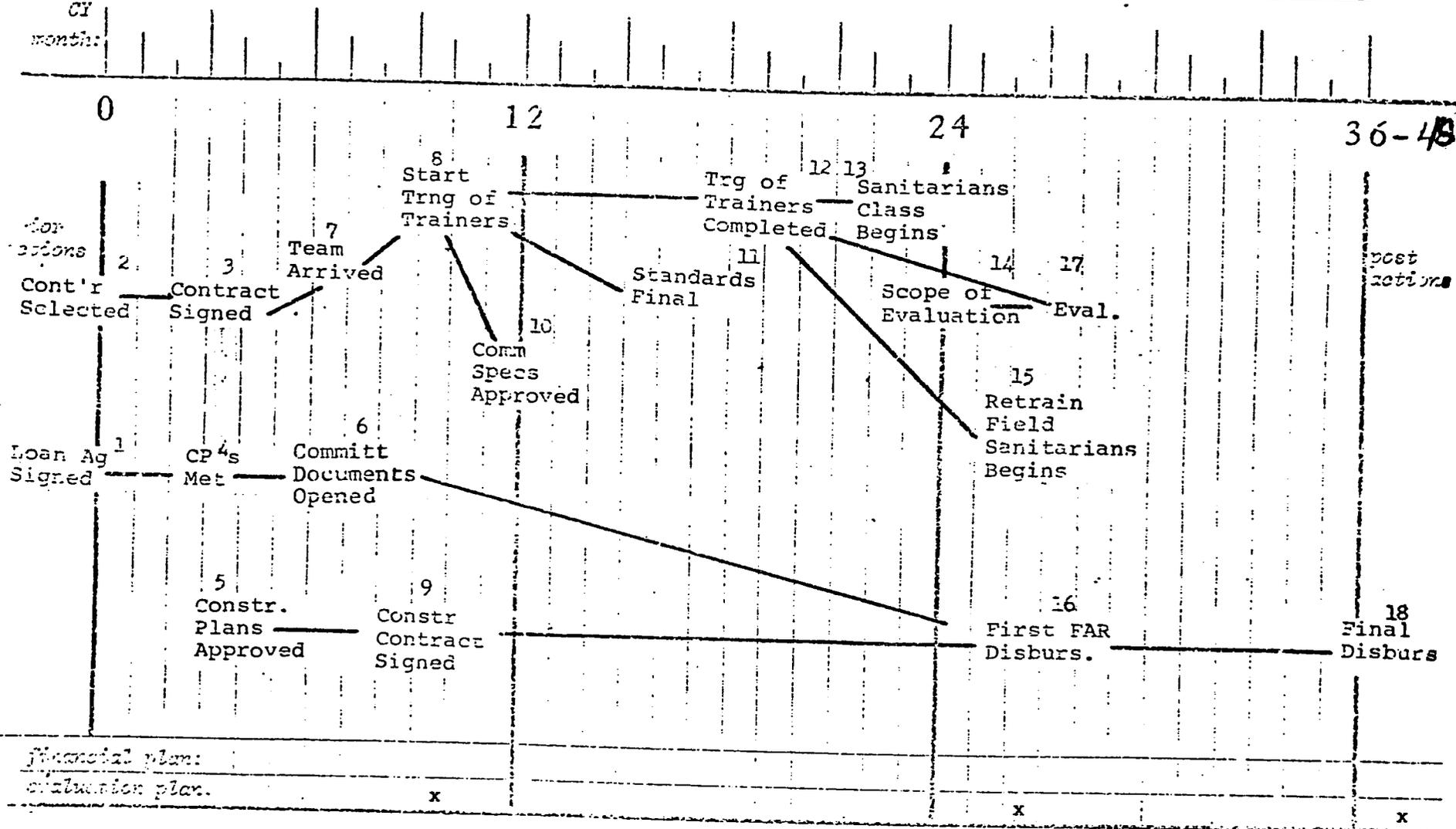
ANNEX C
 80
 5, 6, 8, 9, 10, 11
 November 12, 1985

<p>to improve the overall health of rural areas by improving rural sanitation.</p>	<p>1. Decrease in gastro-intestinal, skin and eye morbidity and mortality rates. 2. Increase in safe water supply systems currently available from 12 to 16% of the rural population by 1980.</p>	<p>Ministry/regional/provincial health surveys Regional/provincial statistics and reports GOI census figures and statistics</p>	<p>1. GOI interest in the expansion of rural water supply and latrine facilities continues. 2. There is a direct linkage between improved rural sanitation and improved health.</p>
<p>To develop a system that will allow Indonesia to meet its quantitative and qualitative manpower needs in the field of rural environmental sanitation.</p>	<p>1. Triple the number of qualified technician-level field sanitation workers from 830 to 2,442. 2. Double the number of professional-level rural sanitation supervisors from 180 to 398. 3. Nine fully-equipped Schools for Sanitarians and two fully-equipped Schools for Sanitation Technologists will be graduating 360 Sanitarians and 100 Sanitation Technologists annually. 4. Entire cadre of rural sanitarians retrained to better perform in the field.</p>	<p>Ministry of Health and Education records and reports Regional and provincial records, statistics</p>	<p>1. The currently employed rural sanitation fieldworkers are willing, able and available for upgrading training. 2. The supply of secondary school graduates interested in and available for pursuing careers in sanitation is adequate to sustain the program. 3. Positions for all graduates will be guaranteed. 4. Central government support will be sufficient to sustain these schools.</p>
<p>1. Competent instructors for the educational facilities along with revised curriculum, teaching methodologies and materials, and environmental sanitation field manual. 2. Fully-equipped Schools for Sanitarians. 3. Fully-equipped Schools for Sanitation Technologists. 4. Fully-equipped in-service training program with all existing sanitarians receiving upgrading training.</p>	<p>1. 63 sanitarian instructors upgraded. 2. Nine Schools for Sanitarians and two Schools for Sanitation Technologists, all fully supplied and equipped with dormitories, classrooms, laboratories, staff housing, etc.</p>	<p>Ministry of Health reports/surveys Provincial on-site inspections Curriculum syllabus Personnel records Contractor records</p>	<p>1. Instructors are available, willing and eager to be upgraded. 2. Technical assistance, commodity procurement, construction and funds will flow as planned.</p>
<p>USG: \$ 1,399,000 FX \$ 5,401,000 LC GOI: 0 FX \$ 7,217,000 LC Technical advisory team, U.S. and incountry fellowships, local and offshore commodities, local construction and local currency training costs.</p>	<p>See PP tables for detailed breakdown of input by quantity, cost, implementing agency, AID financing category, source of financing, and time phasing.</p>	<p>USAID records/reports Ministry of Health records/reports RSMH evaluation reports</p>	<p>1. Consultants are available on a long-term basis. 2. Appropriate, realistic organization, implementation and budget plans are developed. 3. The GOI makes budgetary provisions for and provides its inputs, on a timely basis.</p>

FINANCIAL PERFORMANCE MEASURING (FPM) SYSTEM

country: Indonesia	project no:	project title: Rural Sanitation Manpower Development	date: / * / original / / revision	FPI app:
-----------------------	-------------	---------------------------------------------------------	--------------------------------------	----------

or FY:
CY
month:



36-4B

Critical Performance Indicators

1.	4/76	Sign Loan Agreement	AID and GOI
2.	5/76	Select Contractor (Dep. Health Officials in U.S.)	GOI
3.	7/76	Contract signed	GOI
4.	7/76	CPs met	GOI
5.	7/76	Construction Plans Approved by GOI	GOI
6.	9/76	Commitment Documents Opened	AID and GOI
7.	10/76	Contract Team in Indonesia	GOI
8.	1/77	Start Training of Trainers	GOI
9.	1/77	Construction Contracts Signed	GOI
10.	4/77	Commodity Specifications Approved	AID and GOI
11.	10/77	Finalize Curriculum and Admissions Standards	GOI
12.	12/77	Complete Training of Trainers	GOI
13.	1/78	First Revised Class for Sanitarians Begins	GOI
14.	5/78	Scope of Evaluation	AID and GOI
15.	6/78	Start Retraining of Field Sanitarians	GOI
16.	7/78	First FAR Disbursement	AID and GOI
17.	7/78	Major Evaluation including Input Readjustment	AID and GOI
18.	9/80	Final FAR Disbursement	AID and GOI

STATUTORY CHECKLIST

I. FULFILLMENT OF STATUTORY OBJECTIVES

A. Needs Which the Loan is Addressing

1. FAA Section 103. Discuss the extent to which the loan will alleviate starvation, hunger, and malnutrition and will provide basic services to poor people enhancing their capacity for self-help.

Although the loan is not directed towards food production, the creation and maintenance of a qualified cadre of rural sanitarians will provide basic rural environmental sanitation services to poor Indonesians throughout the archipelago and, through community involvement, enhance their capacity for self-help.

2. FAA Section 104. Discuss the extent to which the loan will increase the opportunities and motivation for family planning; will reduce the rate of population growth; will prevent and combat disease; and will help provide health services for the great majority of the population.

The successful implementation of the loan coupled with a continued expansion of the GOI rural water supply and latrine program may result in an increase in population growth rate due to a reduction in death rates, particularly in infants and young children who now experience high mortality rates due to gastrointestinal diseases. However, the current vigorous family planning program can forestall this negative feature. Further, there is some evidence to suggest that families have greater motivation to reduce their fertility (i.e., become more highly motivated towards family planning) if they believe that fewer children are dying. The loan will also provide for an expansion

of rural environmental sanitation services for the great majority of the population through the creation of a qualified cadre of rural sanitarians.

3. FAA Section 105. Discuss the extent to which the loan will reduce illiteracy, extend basic education, and increase manpower training in skills related to development.

The establishment of two Schools for Sanitarian Technologists and nine Schools for Sanitarians will increase the capacity of Indonesia to train health officials in skills related to rural environmental sanitation. Furthermore, these newly-skilled rural sanitarians will themselves go out and train poor rural villagers in the benefits, proper utilization, and maintenance of rural environmental sanitation facilities.

4. FAA Section 106. Discuss the extent to which the loan will help solve economic and social development problems in fields such as transportation, power, industry, urban development, and export development.

Although the loan is directed towards providing environmental sanitation services to rural Indonesia, it will also develop the capacity of the Ministry of Health to design and execute special courses such as in municipal/urban sanitation and thereby contribute to solving a major problem facing municipal/urban areas in Indonesia.

5. FAA Section 107. Discuss the extent to which the loan will support the general economy of the recipient country; or will support development programs conducted by private or international organizations.

Not applicable.

B. Use of Loan Funds

1. FAA Section 110. What assurances have been made or will be made that the recipient country will provide at least 25% of the costs of the entire program, project or activity with respect to which such assistance is to be furnished under Sections 103-107 of the FAA.

The GOI will give its assurances by signing a loan agreement with such a provision therein. The GOI will contribute \$7.2 million of the estimated \$14.0 million total Project cost which constitutes 51% of the entire RSMD cost.

2. FAA Section 111. Discuss the extent to which the loan will strengthen the participation of the urban and rural poor in their country's development, and will assist in the development of cooperatives which will enable and encourage greater numbers of poor people to help themselves toward a better life.

A key to the successful execution of a nationwide rural water supply/excreta disposal program is a highly motivated and aware beneficiary population. The loan, through the revision of curricula and field demonstration experiences, will increase the community development and behavioral science skills of rural sanitarians, thereby strengthening the participation of the rural poor in Indonesia's development.

3. FAA Section 660. Will arrangements preclude use of funds for police training or other law enforcement assistance?

Yes

4. FAA Section 113. Describe the extent to which the programs, projects or activities to be financed under the loan give particular attention to the integration of women into the national economy of the recipient country.

Women as an important part of the rural village family will benefit from the provision of rural water supply and excreta disposal systems to the same degree as men will. As executors of the Indonesian rural sanitation program, there will be no barriers to their participation in the pre-service, in-service or training of instructors programs, since there will be uniform selection criteria. Furthermore, as the sanitation field expands over time into subspecialties (e.g., water quality control, dairy product inspection and control, etc.), even greater opportunities for women will be available.

5. FAA Section 114. Will any part of the loan be used to pay for the performance of abortions as a method of family planning or to motivate or coerce any person to practice abortions?

No

II. COUNTRY PERFORMANCE

A. Progress Towards Country Goals

1. FAA §§ 201(b)(5), 201(b)(7), 201(b)(8), 208. Discuss the extent to which the country is:

(a) Making appropriate efforts to increase food production and improve means for food storage and distribution.

Indonesia is giving priority attention to projects which aim at increasing food production, particularly rice. There are currently 100-110 donor-supported technical and capital assistance projects in support of food production. The majority of the above projects are directly concerned with increasing food production, and improved food storage, distribution and marketing.

(b) Creating a favorable climate for foreign and domestic private enterprise and investment.

The GOI enacted a comprehensive law with built-in incentives for encouraging foreign capital investment and has concluded an Investment Guaranty Agreement with the U.S. Under the foreign investment law tax credits of up to 5 years may be obtained for new investment in plant and facilities, subject to negotiation.

(c) Increasing the people's role in the development process.

Although the Government owns a majority of the large enterprises in the country, it is actively encouraging private domestic investment. Officials of State Enterprises are receiving more freedom in management, and some State Enterprises are being converted to semi-private corporations. National elections were carried out in July 1971, and Parliament has a part in the budgetary process inasmuch as the annual budget must be authorized by Parliament and expenditures reported in the "Annual Report of Budgetary Accounts."

(d) Allocating expenditures to development rather than to unnecessary military purposes or to intervention in the affairs of other free countries.

With the end of confrontation with Malaysia in 1966, the Suharto Administration reversed the foreign intervention policy of the Sukarno regime. Military expenditures have been sharply reduced as the Government has concentrated the nation's domestic resources - and foreign aid receipts - on achieving economic stability and pursuing an ambitious development program.

(e) Willing to contribute funds to the project or program.

The GOI will contribute up to \$7.2 million (equivalent) in local currency to meet a major part of the local expenditure requirements of the Project.

(f) Making economic, social, and political reforms such as tax collection improvements and changes in land tenure arrangements; and making progress toward respect for the rule of law, freedom of expression and of the press, and recognizing the importance of individual freedom, initiative, and private enterprise.

Major economic reforms have been instituted with IMF/IBRD assistance including incentives to growth of individual initiative and private enterprise. Effective December 9, 1970, the GOI established one uniform exchange rate for all types of foreign exchange. On August 9, 1971, to reduce the trade gap, the Rupiah was devalued by about 10% to Rp. 415/US \$1. Further devaluations in December 1971 and early 1973 were pegged to devaluations of the dollar; the Rupiah has remained stable since then. The rate of inflation was reduced from 636.8 percent per annum in CY 1966 to about 10% in CY 1971. Inflation was about 26% in 1972, largely due to rice price increases; and continued at a level of about 30% during 1973 and 1974, although due principally to general price increases, not just rice alone. GOI revenues from the oil sector have grown rapidly since 1967 - equalling Rp. 48 billion in 1969/70, Rp. 345 billion in 1973/74, and projected Rp. 1.5 trillion in 1975/76 (2/3 of projected government revenues). Non-oil revenues have grown with the economy during the same period.

(g) Responding to the vital economic, political, and social concerns of its people, and demonstrating a clear determination to take effective self-help measures.

Approximately 12 percent of the development budget is devoted to the social field, which includes education, health, family planning, housing, manpower, social welfare, drinking water supply, culture and religion. The cooperating Government has encouraged self-help projects, such as Food for Work and other irrigation and road building projects carried out through its Department of Manpower. A substantial low cost housing program will be implemented in the Second Five Year Plan which began in April 1974.

B. Relations with the United States

1. FAA §§ 620(c). If assistance is to a government, is the Government indebted to any U.S. citizen for goods or services furnished or ordered where:
(a) such citizen has exhausted available legal remedies, including arbitration, or
(b) the debt is not denied or contested by the government, or (c) the indebtedness arises under such government's or a predecessor's unconditional guarantee?

We are not aware of any cases that make Indonesia ineligible under this Section.

2. FAA § 620(d). If the loan is intended for construction or operation of any productive enterprise that will compete with U.S. enterprise, has the country agreed that it will establish appropriate procedures to prevent export to the U.S. of more than 20% of its enterprise's annual production during the life of the loan?

Not applicable.

3. FAA § 620(e)(1). If assistance is to a government, has the country's government, or any agency or subdivision thereof, (a) nationalized or expropriated property owned by U.S. citizens or by any business entity not less than 50% beneficially owned by U.S. citizens, (b) taken steps to repudiate or nullify existing contracts or agreements with such citizens or entity, or (c) imposed or enforced discriminatory taxes or other exactions, or operation conditions? If so, and more than six months has elapsed since such occurrence, identify the document indicating that the government, or appropriate agency or subdivision thereof, has taken appropriate steps to discharge its obligations under international law toward such citizen or entity? If less than six months has elapsed, what steps if any has it taken to discharge its obligations?

The majority of business and property owned by U.S. citizens which was nationalized during the Sukarno regime (principally in 1964 and early 1965) has been returned to U.S. owners or mutually acceptable settlement negotiated. The Government of Indonesia in a Presidential Decree dated December 14, 1966 indicated its willingness to return nationalized assets.

4. FAA § 620(i). Has the country permitted, or failed to take adequate measures to prevent the damage or destruction by mob action of U.S. property, and failed to take appropriate measures to prevent a recurrence and to provide adequate compensation for such damage or destruction?

The country has not so permitted nor has it failed to take adequate measures.

5. FAA § 620(l). Has the government instituted an investment guaranty program under FAA § 234 (a)(1) for the specific risks of inconvertibility and expropriation or confiscation?

Yes.

6. FAA § 620(o). Fisherman's Protective Act of 1954, as amended, Section 5. Has the country seized, or imposed any penalty or sanction against, any U.S. fishing activities in international waters? If, as a result of a seizure, the USG has made reimbursement under the provisions of the Fisherman's Protective Act and such amount has not been paid in full by the seizing country, identify the documentation which describes how the withholding of assistance under the FAA has been or will be accomplished.

No. Remainder of question therefore not applicable.

7. FAA § 620(q). Has the country been in default, during a period in excess of six months, in payment to the U.S. on any FAA loan?

No; however, repayment of one FAA loan has been rescheduled by bilateral agreement dated March 1971 in accordance with terms of the Paris Agreed Minutes of April 1970.

8. FAA § 620(t). Have diplomatic relations between the country and the U. S. been severed? If so, have they been renewed?

No. Remainder of question therefore not applicable.

C. Relations with Other Nations and the U.N.

1. FAA § 620 (i). Has the country been officially represented at any international conference when that representation included planning activities involving insurrection, or subversion directed against the U.S. or countries receiving U.S. assistance?

We have no information as to any such representational activity.

2. FAA § 620(a), 620 (n). Has the country sold, furnished or permitted ships or aircraft under its registry to carry to Cuba or North Vietnam items of economic, military or other assistance?

We have no information of any such action by Indonesia.

3. FAA § 620(u); App. § 107. What is the status of the country's U.N. dues, assessments, or other obligations? Does the loan agreement bar any use of funds to pay U.N. assessments, dues, or arrearages?

Indonesia is not delinquent with respect to U.N. obligations. The loan agreement limits the use of loan proceeds to procurement of goods and services from A.I.D. Geographic Code 941 (Selected Free World) countries plus Indonesia.

D. Military Situation

1. FAA § 620(i). Has the country engaged in or prepared for aggressive military efforts directed against the U.S. or other countries receiving U.S. assistance?

No.

2. FAA § 620(s). (1) What is (a) the percentage of the country's budget devoted to military purposes; (b) the amount of the country's foreign exchange resources used to acquire military equipment, and (c) has the country spent money for sophisticated weapons systems purchased since the statutory limitations became effective? (2) Is the country diverting U.S. development assistance or PL-480 sales to military expenditures? (3) Is the country directing its own resources to unnecessary military expenditures? (Findings on these questions are to be made for each country at least once each fiscal year and, in addition, as often as may be required by a material change in relevant information.)

(1)(a) The Department of Defense portion of the Operating and Development State Budget has ranged from a high of 33% in CY 1967 to a low of 22% in the FY 1973/74 budget. Defense and national security expenditures equal 4.8% of the 1974/75 development budget. (b) We have no knowledge of any significant expenditures of foreign exchange for the military. Less than 10% of the military budget is allocated for foreign exchange purchases. Moreover, the Department of Defense budget includes substantial amounts for construction of roads, bridges and other civil works projects. (c) No, the Government is placing primary emphasis on economic development and not diverting its own resources for unnecessary military expenditures.

(2) No.

(3) No.

III. CONDITIONS OF THE LOAN

A. General Soundness

Interest and Repayment

1. FAA §§ 201(d), 201(b)(2). Is the rate of interest excessive or unreasonable for the borrower? Are there reasonable prospects for repayment? What is the grace period interest rate? Is the rate of interest higher than the country's applicable legal rate of interest?

Although Indonesia's debt burden was heavy in the past, there has been very rapid growth in real Government revenues and favorable economic performance. With the high current level of foreign exchange export earnings, it is considered that future debt payments will be easily manageable. The various donors agree Indonesia has a debt burden for which the prospects of repayment are reasonable. Country terms of a 40-year loan, 10-year grace period, 2% interest during the grace period, 3% thereafter, pertain. The rate of interest is not higher than the country's applicable legal rate of interest.

Financing

1. FAA § 201(b)(1). To what extent can financing on reasonable terms be obtained from other freeworld sources, including private sources within the U.S.?

Loan assistance to Indonesia is provided within the framework of the Inter-Governmental Group on Indonesia (IGGI), advised by the IBRD and the IMF. This loan has been selected by AID as part of the U.S. Government contribution to the IGGI consortium and as such is supported by the IBRD resident mission. The Exim Bank has expressed no interest in financing any portion of this Project.

Economic and Technical Soundness

E. FAA §§ 201(b)(2), 201(e). The activity's economic and technical soundness to undertake loan; does the loan application, together with information and assurances, indicate that funds will be used in an economically and technically sound manner?

Yes. See the Technical Analysis and Socio-economic Analysis sections of the Project Paper.

2. FAA § 611 (a)(1). Have engineering, financial, and other plans necessary to carry out assistance, and a reasonably firm estimate of the cost of assistance to the U.S., been completed?

Necessary planning and a reasonably firm cost estimate for the Project have been completed (see the Technical and Financial Analysis Sections of the Project Paper).

3. FAA § 611(b): App. § 101. If the loan or grant is for a water or related land-resource construction project or program, do plans include a cost-benefit computation? Does the project or program meet the relevant U.S. construction standards and criteria used in determining feasibility?

Not applicable.

4. FAA § 611(e). If this is a Capital Assistance Project with U.S. financing in excess of \$1 million, has the principal AID officer in the country certified as to the country's capability effectively to maintain and utilize the project?

Yes, the Mission Director has so certified. See Annex D.

**B. Relation to Achievement of Country
and Regional Goals**

Country Goals

1. FAA §§ 207, 281(a). Describe this loan's relation to:

(a) Institutions needed for a democratic society and to assure maximum participation on the part of the people in the task of economic development.

Through the creation of a well qualified group of rural sanitarians trained in community development and behavioral science skills, the Project will increase community participation in decision making regarding rural environmental sanitation thereby maximizing the involvement of villagers in the task of economic development.

(b) Enabling the country to meet its food needs, both from its own resources and through development, with U.S. help, of infrastructure to support increased agricultural productivity.

Not applicable.

(c) Meeting increasing need for trained manpower

The primary purpose of the Project is to create and sustain through training, a cadre of rural sanitarians of sufficient quality and in sufficient quantity to implement rural water supply/sanitation programs in Indonesia. This will remove the primary constraint to the expansion of such programs.

(d) Developing programs to meet public health needs.

This Project is designed to meet public health needs in the field of rural environmental sanitation.

(e) Assisting other important economic, political, and social development activities, including industrial development; growth of free labor unions; cooperatives and voluntary agencies; improvement of transportation and communication systems; capabilities for planning and public administration; urban development and modernization of existing laws.

By improving overall health conditions and maximizing involvement of villagers in the installation and utilization of environmental sanitation facilities in rural Indonesia, through the training of a well-qualified rural sanitarian cadre, the Project improves the ability of rural people to play a greater role in the activities of Indonesia and thereby is an essential precondition to economic, political and social development. Furthermore, through the advanced sanitarian training program, capabilities in public health planning and public administration and urban development as it relates to urban/municipal sanitation will be enhanced.

2. FAA s 201(b)(4). Describe the activity's consistency with and relationship to other development activities, and state contribution to realizable long-range objectives.

The Project is consistent with other development activities in the field of public health. In fact, permanent improvements in the health conditions of rural Indonesia are very much dependent on the expansion of safe and convenient water supplies; a goal which cannot be achieved without first improving the system which trains rural sanitarians.

3. FAA § 201(b)(9). How will the activity to be financed contribute to the achievement of self-sustaining growth?

Improvements in the overall health conditions of the great majority of Indonesians who live and work in rural areas, through the provision of rural environmental sanitation facilities and services, is a precondition to the achievement of self-sustaining growth.

4. FAA § 201(f). If this is a project loan, describe how such will promote the country's economic development, taking into account the country's human and material resource requirements and the relationship between ultimate objectives of the project and overall economic development.

Improvements in the overall health conditions of the great majority of Indonesians who live and work in rural areas, through the provision of rural environmental sanitation facilities and services, is a precondition to Indonesia's economic development. The human and material resource requirements to the expansion of rural environmental sanitation facilities and services in Indonesia have been taken into account in designing the Project.

 project

5. FAA § 201(b)(3). In what way does the activity give reasonable promise of contributing to development of economic resources, or to increase of productive capacities?

The Project will contribute to the development of human resources in the execution of rural environmental sanitation programs. Ultimately, it will increase the productive capacities of the great majority of Indonesians who live and work in rural areas.

6. FAA § 281(b). How does the program under which assistance is provided recognize the particular needs, desires, and capacities of the country's people; utilize the country's intellectual resources to encourage institutional development; and support civic education and training in skills required for effective participation in political processes?

The Project will ultimately result in the installation of water supply and sanitation systems in rural Indonesian villages, thereby satisfying an expressed and documented desire of rural villagers. The Project will achieve this goal by training the entire cadre of rural sanitarians in Indonesia thereby utilizing Indonesia's intellectual resources and encouraging institutional development. Civic education and training for effective participation in the development process will be gained through the training to be provided rural sanitarians in community participation and behavioral science skills.

7. FAA § 601(a). How will this loan encourage the country's efforts to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture, and commerce; and (f) strengthen free labor unions?

- (a) Not applicable.
- (b) Not applicable .
- (c) Not applicable.
- (d) Not applicable.
- (e) The Project will encourage Indonesia's efforts to improve technical efficiency in industry, agriculture and commerce by improving its technical knowledge and skills in environmental sanitation.
- (f) Not applicable.

8. FAA § 202(a). Indicate the amount of money under the loan which is: going directly to private enterprise; going to intermediate credit institutions or other borrowers for use by private enterprise; being used to finance imports from private sources; or otherwise being used to finance procurements from private sources.

Commodities to be procured for the Project using foreign exchange will be purchased from private enterprise. Commodities to be procured for the Project using local currency will be purchased from Indonesian suppliers, most of them privately-owned. Construction of all structures will be contracted to Indonesian firms, many of them privately-owned, wherever possible.

9. FAA § 611(a)(2). What legislative action is required within the recipient country? What is the basis for a reasonable anticipation that such action will be completed in time to permit orderly accomplishment of purposes of loan?

None

Regional Goals

1. FAA § 619. If this loan is assisting a newly independent country, to what extent do the circumstances permit such assistance to be furnished through multilateral organizations or plans?

Not applicable.

2. FAA § 209. If this loan is directed at a problem or an opportunity that is regional in nature, how does assistance under this loan encourage a regional development program? What multilateral assistance is presently being furnished to the country?

The first part of the question is not applicable. The loan is being furnished in the context of multilateral aid to Indonesia by a consortium of donor countries (IGGI). The assistance is being coordinated with the advice of the IBRD.

C. Relation to U.S. Economy

Employment, Balance of Payments,
Private Enterprises.

1. FAA § § 201(b)(6): 102. Fifth. What are the possible effects of this loan on U.S. economy, with special reference to areas of substantial labor surplus? Describe the extent to which assistance is constituted of U.S. commodities and services, furnished in a manner consistent with improving the U.S. balance of payments position.

Since traditional direct procurement finance by the Loan will be limited to AID Geographic Code 941 (Selected Free World) countries plus Indonesia and reimbursement to the GOI for Fixed Amount Reimbursement (FAR) items will be made via a special Letter of Credit (SLC) against evidence of the export of goods and services from the U.S., there will be a minimal adverse effect on the U.S. balance of payments.

2. FAA § § 612(b), 636(h). What steps have been taken to assure that, to the maximum extent possible, foreign currencies contributed by the country are utilized to meet the cost of contractual and other services, and that U.S. foreign-owned currencies are utilized in lieu of dollars?

Services requiring foreign exchange financing will be procured from AID Geographic Code 941 countries plus Indonesia. U.S. owned local currency is not available in Indonesia. /

3. FAA § 601(d); App. § 108. If this loan is for a capital project, to what extent has the Agency encourage utilization of engineering and professional services of U.S. firms and their affiliates? If the loan is to be used to finance direct costs for construction, will any of the contractors be persons other than qualified nationals of the country or qualified citizens of the U.S.? If so, has the required waiver been obtained?

Advisory services required to implement the Project will be procured from a U.S. university. All construction contractors will be qualified Indonesian firms who employ Indonesian nationals.

/A large part of the loan is for local currency costs but the GOI is providing at least 50% of such costs. SLC procedures will be used to attribute U.S. experts to the dollars used to reimburse the local currency costs.

4. FAA § 608(a). Provide information on measures to be taken to utilize U.S. Government excess personal property in lieu of the procurement of new items.

U.S. Government excess property will be used for this Project to the extent feasible.

5. FAA § 602. What efforts have been made to assist U.S. small business to participate equitably in the furnishing of commodities and services financed by this loan?

The loan agreement will contain a provision to ensure that opportunity for participation in the furnishing of commodities will be provided and appropriately published. Advisory services, however, will necessarily come from a U.S. university due to the nature of the services required.

6. FAA § 621. If the loan provides technical assistance, how is private enterprise on a contract basis utilized? If the facilities of other Federal agencies will be utilized, in what ways are they competitive with private enterprise (if so, explain); and how can they be made available without undue interference with domestic programs?

Due to the nature of technical assistance required (i.e. expertise in rural sanitation training), advisory services will necessarily have to come from an American university.

7. FAA § 611(c). If this loan involves a contract for construction that obligates in excess of \$100,000, will it be on a competitive basis? If not, are there factors which make it impracticable?

The loan agreement will cover this requirement.

8. FAA § 601(b). Describe the efforts made in connection with this loan to encourage and facilitate participation of private enterprise in achieving the purposes of the Act.

Commodities to be procured for the Project using foreign exchange will be purchased from private enterprise. Commodities to be procured for the Project using local currency will be purchased from Indonesian suppliers, most of them privately-owned. Construction of most physical works will be contracted to Indonesian firms, many of them privately-owned, wherever possible.

Procurement

1. FAA § 604(a). Will commodity procurement be restricted to U.S. except as otherwise determined by the President?

Yes, procurement is limited to AID Geographic Code 941 countries plus Indonesia.

2. FAA § 604(b). Will any part of this loan be used for bulk commodity procurement at adjusted prices higher than the market price prevailing in the U.S. at time of purchase?

No.

3. FAA § 604(e). Will any part of this loan be used for procurement of any agricultural commodity or product thereof outside the U.S. when the domestic price of such commodity is less than parity?

No.

4. FAA § 604(f). Will the agency receive the necessary pre-payment certifications from suppliers under a commodity import program agreement as to description and condition of commodities, and on the basis of such, determine eligibility and suitability for financing?

Not applicable. This is a project loan and not a commodity import program assistance loan.

D. Other Requirements

1. FAA § 201(b). Is the country among those countries in which development loan funds may be used to make loans in this fiscal year? Yes.
2. App. § 105. Does the loan agreement provide, with respect to capital projects, for U.S. approval of contract terms and firms? The loan agreement will cover this requirement.
3. FAA § 620(k). If the loan is for construction of a production enterprise, with respect to which the aggregate value of assistance to be furnished will exceed \$100 million, what preparation has been made to obtain the express approval of the Congress? Not applicable.
4. FAA § 620(b), 620(f). Has the President determined that the country is not dominated or controlled by the International Communist movement? If the Country is a Communist country (including, but not limited to, the countries listed in FAA § 620(f)) and the loan is intended for economic assistance, have the findings required by FAA § 620(f) been made and reported to the Congress? Yes, the required determination has been made. Remainder of question is, therefore, not applicable.
5. FAA § 620(h). What steps have been taken to insure that the loan will not be used in a manner which, contrary to the best interest of the United States, promotes or assists the foreign aid projects of the Communist-bloc countries? The loan agreement will cover this requirement.

6. App. § 109. Will any funds be used to finance procurement of iron and steel products for use in Vietnam other than as contemplated by § 109? No.
7. FAA § 636(1). Will any part of this loan be used in financing non-U.S. manufactured automobiles? If so, has the required waiver been obtained? No.
8. FAA § 620(a)(1) and (2). Will any assistance be furnished or funds made available to the government of Cuba? No.
9. FAA § 620(g). Will any part of this loan be used to compensate owners for expropriated or nationalized property? If any assistance has been used for such purpose in the past, has appropriate reimbursement been made to the U.S. for sums diverted? No. No assistance has been used for such purposes in the past.
10. FAA § 201(f). If this is a project loan, what provisions have been made for appropriate participation by the recipient country's private enterprise? Commodities to be procured for the Project using local currency will be purchased from Indonesian suppliers, most of them privately-owned. Construction of most works will be contracted to Indonesian firms, many of them privately-owned, wherever possible.
11. App. § 103. Will any funds under the loan be used to pay pensions, etc., for persons who are serving or who have served in the recipient country's armed forces? No.

12. NSA § 901.b. Does the loan agreement provide, for compliance with U.S. shipping requirements, that at least 50% of the gross tonnage of all commodities financed with funds made available under this loan (computed separately by geographic area for dry bulk carriers, dry cargo liners, and tankers) be transported on privately owned U.S.-flag commercial vessels to the extent such vessels are available at fair and reasonable rates for U.S. flag vessels. Does the loan agreement also provide for compliance with U.S. shipping requirements, that at least 50% of the gross freight revenues of goods shipped under this loan must be earned by privately owned U.S. flag commercial vessels to the extent such vessels are available at fair and reasonable rates for U.S. vessels?

Yes to both questions. These requirements will be applicable only to traditional direct procurement financed by the loan. The loan agreement will contain a provision covering these requirements.

13. FAA § 481. Has the President determined that the recipient country has failed to take adequate steps to prevent narcotic drugs produced or procured in, or transported through such country from being sold illegally within the jurisdiction of such country to U.S. Government personnel or their dependents or from entering the United States unlawfully?

No.

14. App. § 110. Is the loan being used to transfer funds to world lending institutions under FAA §§ 209(d) and 251(h)?

No.

15. App. § 501. Are any of these funds being used for publicity or propaganda within the United States? No.
16. FAA § 612(d) and Section 40 of PL 93-189 (FAA of 1973). Does the United States own excess foreign currency and, if so, what arrangements have been made for its release in compliance with Section 40 (FAA of 1973)? U.S. owned excess local currency is not available in Indonesia.
17. FAA § 604(d). Will provision be made for placing marine insurance in the U.S. if the recipient country discriminates against any marine insurance company authorized to do business in the U.S.? Yes. This requirement will be applicable only to traditional direct procurement financed by the loan. The loan agreement will contain a provision covering this requirement.
18. FAA § 659. Is there a military base located in the recipient country which base was constructed or is being maintained or operated with funds furnished by the U.S., and in which U.S. personnel carry out military operations? If so, has a determination been made that the government of such recipient country has, consistent with security, authorized access, on a regular basis to bonafide news media correspondents of the U.S. to such military base? No. Remainder of question therefore not applicable.
19. Sections 30 and 31 of PL 93-189 (FAA of 1973). Will any part of the loan be used to finance directly or indirectly military or paramilitary operations by the U.S. or by foreign forces in or over Laos, Cambodia, North Vietnam, South Vietnam, or Thailand? No.

20. App. § 111. Will any part of this loan be used to provide assistance to North Vietnam? No.
21. FAA Section 640(c). Will a grant be made to the recipient country to pay all or part of such shipping differential as is determined by the Secretary of Commerce to exist between U.S. and foreign flag vessel charter or freight rates? No.
22. App. § 112. Will any of the funds appropriated or local currencies generated as a result of AID assistance be used for support of police or prison construction and administration in South Vietnam or for support of police training of South Vietnamese? No.
23. App. § 113. Have the House and Senate Committees on Appropriations been notified fifteen days in advance of the availability of funds for the purposes of this project? Appropriate steps are being taken to satisfy this requirement.
24. App. § 504. Will any of the funds appropriated for this project be used to furnish petroleum fuels produced in the continental United States to South east Asia for use by non-U.S. nationals? No.
25. FAA § 901. Has the country denied its citizens the right or opportunity to emigrate? No.

26. FAA § 115. Will country be furnished, in same fiscal year, either security supporting assistance, Indochina Postwar Reconstruction, or Middle East peace funds? If so, is assistance for population programs, humanitarian aid through international organizations, or regional programs? No. Remainder of question therefore not applicable.
27. FAA § 653(b). Is assistance within country or international organization allocation for fiscal year reported to Congress (or not more than \$1 million over that figure plus 10%)? Yes.
28. FAA § 662. Will arrangements preclude use of funds for CIA activities? Yes.

INDONESIA - RURAL SANITATION MANPOWER DEVELOPMENT PROJECT

CERTIFICATION PURSUANT TO SECTION 611(e) OF
THE FOREIGN ASSISTANCE ACT OF 1961, AS AMENDED

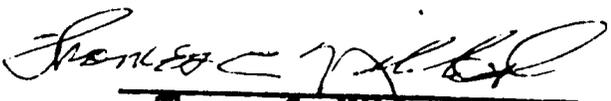
I, Thomas C. Niblock, the principal officer of the Agency for International Development in Indonesia, having taken into account among other things:

the experience of the Government of Indonesia in association with multilateral and bilateral donors, including AID, in implementing programs directed to the construction, operation and maintenance of educational institutions for the training of professional and technical-level rural sanitarians;

the commitment of the Government of Indonesia to carry out this Project effectively as evidenced by the scale of effort included for the Second Five-Year Plan (1974-79),

do hereby certify that in my judgment Indonesia has the financial and human resources capability to implement, maintain and utilize effectively the Rural Sanitation Manpower Development Project. This judgment is based on the following:

1. The Government of Indonesia will agree to the obligations to be included in the authorization for subject capital assistance project; and
2. Adequate planning for project implementation and sufficient financial support for timely and effective execution will be provided if the Government of Indonesia complies with the program set forth in the Project Paper.



Thomas C. Niblock
Director, USAID Indonesia

20 Nov 1975
Date

Mr. Thomas C. Niblock
U.S. Agency for International Development
c/o American Embassy
Jl. Medan Merdeka Selatan
Jakarta

Dear Mr. Niblock:

The Government of the Republic of Indonesia requests from the Government of the United States a loan of up to SIX MILLION EIGHT HUNDRED THOUSAND UNITED STATES DOLLARS (\$6,800,000) to assist with the implementation of the Rural Sanitation Manpower Development Project. The purpose of this Project is to develop a system that will allow Indonesia to meet its quantitative and qualitative manpower needs for professional, supervisory-level and technical, field-level workers (Sanitation Technologists and Sanitarians) to implement the Government rural water supply/sanitation program.

The estimated total cost of the Project is \$14.0 million. Of this amount, approximately \$1.4 million represents the foreign exchange costs of goods and services. The remaining \$12.6 million represents local currency costs.

Other sources of financing for this project are not available to the Government at present nor anticipated in the foreseeable future. Funds available from other donor countries have been allocated or are planned to be allocated to other priority projects within the framework of Repelita II.

We hope that this information is sufficient for you to proceed immediately with consideration of this loan application.

Sincerely,

Project Description for Loan Agreement

The Project shall consist of assistance to the Ministry of Health (MOH) in carrying out a manpower development training program aimed at developing a system that will allow Indonesia to meet its quantitative and qualitative manpower needs for professional, supervisory-level, and technical, field-level workers (Sanitation Technologists and Sanitarians) to implement the Government of Indonesia rural water supply/sanitation program. Out of the existing educational system for rural sanitarians, two Schools for Sanitation Technologists and nine Schools for Sanitarians having estimated annual outputs of 360 and 100 graduates, respectively, will be established. Instructors for these institutions will receive upgrading training. All existing MOH personnel engaged in rural environmental sanitation programs will likewise receive special training to improve their knowledge and skills so that they may perform their responsibilities more effectively. The total Project budget will not be less than the Rupiah equivalent of fourteen million United States dollars (\$14,000,000), of which the Borrower shall provide not less than the Rupiah equivalent of seven million, two-hundred thousand United States dollars (\$7,200,000).

LOAN AUTHORIZATION

A.I.D. Loan No.: _____

Provided under : Section 104:
Population Planning
and Health

For: Indonesia : Rural Sanitation Manpower
Development Project

Pursuant to the authority vested in the Administrator, Agency for International Development ("A.I.D."), by the Foreign Assistance Act of 1961, as amended, ("Act") and the delegations of authority issued thereunder, I hereby authorize the establishment of a Loan pursuant to Section 104 of said Act to the Government of the Republic of Indonesia ("Borrower") of not to exceed six million, eight hundred thousand United States dollars (\$6,800,000) to assist in financing the United States dollar and local currency costs of a rural sanitation manpower training project for Indonesia, the Loan to be subject to the following terms and conditions:

1. Terms of Repayment and Interest Rate

Borrower shall repay the Loan to A.I.D. in United States dollars within forty (40) years from the date of the first disbursement under the Loan, including a grace period of not to exceed ten (10) years. Borrower shall pay to A.I.D. in United States dollars interest at the rate of two

percent (2%) per annum during the grace period and three percent (3%) per annum thereafter on the outstanding disbursed balance of the Loan and on any due and unpaid interest accrued thereon.

2. Other Terms and Conditions

a. Except as A.I.D. may otherwise agree in writing:

(1) Goods and services financed under the Loan shall have their source and origin in Indonesia and countries included in A.I.D. Geographic Code 941;

(2) The Borrower shall agree, by condition precedent, covenant, or both, to provide on a timely basis its portion of project financing at levels, under arrangements and on timing acceptable to A.I.D.

b. The Loan shall be subject to such other terms and conditions as A.I.D. may deem advisable.

Administrator

Date