931/1059.15A201

Appendix 6A, Ch 6
Page 4 (TM 3:1)

FY MMO- A7A-

AGENCY FOR INTERNATIONAL DEVELOPMENT

# PROJECT PAPER FACESHEET

TO BE COMPLETED BY ORIGINATING OFFICE

1. TRANSACTION CODE ("X" appropriate box): [X] Original [ ] Change [ ] Add [ ] Delete — PP

DOCUMENT CODE: 3

2. COUNTRY/ENTITY: TAB/H RDA-13 Adaptation and Utilization

3. DOCUMENT REVISION NUMBER:

4. PROJECT NUMBER: 931-1059.15

5. BUREAU: a. Symbol: TAB; b. Code: 08

6. ESTIMATED FY OF PROJECT COMPLETION: FY 79

7. PROJECT TITLE - SHORT (stay within brackets): [TESTING PREDICTIVE SANITATION MODEL]

8. ESTIMATED FY OF AUTHORIZATION/OBLIGATION: a. INITIAL (mo. 1, yr. 78); b. FINAL FY 78

9. ESTIMATED TOTAL COST ($000 or equivalent, $1 = $1.00)

| a. FUNDING SOURCE | FIRST YEAR FY 78 | | | ALL YEARS | | |
|---|---|---|---|---|---|---|
| | b. FX | c. L/C | d. Total | e. FX | f. L/C | g. Total |
| AID APPROPRIATED TOTAL | 400 | | 400 | 400 | | 400 |
| (Grant) | ( 400 ) | ( ) | ( 400 ) | ( 400 ) | ( ) | ( 400 ) |
| (Loan) | ( ) | ( ) | ( ) | ( ) | ( ) | ( ) |
| Other U.S. 1. | | | | | | |
| Other U.S. 2. | | | | | | |
| HOST GOVERNMENT | | | | | | |
| OTHER DONOR(S) | | | | | | |
| TOTALS | 400 | | 400 | 400 | | 400 |

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

| a. Appropriation (Alpha Code) | b. Primary Purpose Code | c. Primary Tech. Code | FY 78 d. Grant | FY 78 e. Loan | FY 79 f. Grant | FY 79 g. Loan | FY ____ h. Grant | FY ____ i. Loan | ALL YEARS j. Grant | ALL YEARS k. Loan |
|---|---|---|---|---|---|---|---|---|---|---|
| PH | 512 | 540 | 400 | | | | | | 400 | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| TOTALS | | | 400 | | | | | | 400 | |
| 11. ESTIMATED EXPENDITURES | | | 240 | | 160 | | | | | |

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

[1. To make LDC decision-makers, planners, and designers aware of appropriate technology concepts and knowledgable of the alternatives available for utilization of in-country resources to meet LDC needs in water supply and wastewater treatment. 2. To demonstrate the value of the prediction methodology model for appropriate water and wastewater processes when applied under actual LDC resource constraints.]

13. WERE CHANGES MADE IN BLOCKS 12, 13, 14, or 15 OF THE PID FACESHEET? IF YES, ATTACH CHANGED PID FACESHEET.

[ ] Yes [X] No

14. ORIGINATING OFFICE CLEARANCE

Signature: Lee L. Howard, M.D.

Title: Director, Office of Health

Date Signed: mo. 01 day 09 yr. 78

15. Date Received in AID/W, or For AID/W Documents, Date of Distribution: mo. ___ day ___ yr. ___

AID 1330-4 (7-75)

Project Paper

**Title:** Workshops on Appropriate Technology Concepts Incorporating Utilization of a Mathematical Model for Predicting an Appropriate Use of In-country Resources for Treating Water, Wastewater, and Individual Family Excreta Products in Developing Countries

Short Title: Testing Predictive Sanitation Model

1.A. Purpose of Project: The purpose of this project is to: (1) initiate a field utilization program using the existing model to determine if two selected LDCs having tremendous water supply and wastewater treatment responsibilities and problems, can use the predictive model to bring together the large number of critical social, technological and existing economy inputs relating to the effective installation and use of appropriate water and wastewater treatment methods or processes, ultimately allowing the investigator to look at all plausible processes, their processes, their related costs, operation, maintenance, and the manpower requirements associated with each of the various processes, and (2) initiate a well conceived, concise series of "Appropriate Technology in Water and Wastewater Treatment Regional Workshops" around the world wherein the local national government, decision-makers, planners, designers and local consulting engineers could be exposed to appropriate technology discussions and taught how to effectively utilize an existing model for predicting appropriate use of in-house resources for treating water and wastewater.

1.B. Recommendations:

| | | |
|---|---|---|
| - - - - - - | Contract Grant in FY 1978 (competitive selection) | $400,000 |
| | Total | $400,000 |

1.C. Description of the Project:

The project entails the preparation for and presentation of a series of regional/national workshops dealing with the selection of appropriate technology for waste and wastewater treatment and individual family excreta disposal in LDCs; it also involves the field adaptation and utilization of a predictive selection model (developed as a part of AID/ta-C-7313, Lower Cost Methods of Water and Wastewater Treatment in Developing Countries) in two countries over a 3 month period. It is hoped that the field testing and workshops will provide LDC designers/planners with a much better understanding of process and equipment options open to them in providing water and wastewater/excreta disposal facilities to meet their population's needs.

The workshops will be presented in 18-20 countries where AID has development assistance programs for a period of 5 workshop days each. The target audience is decision makers/designers/private planners/and consultants in government and industry in the particular country who are responsible for selection of technology to meet national or regional water or sanitation problems.

The workshop materials will have been largely prepared under the following four previous AID Research and Development, Evaluation and Utilization or graduate Work/Study Projects: (1) AID/ta-C-7313, Lower Cost Methods for Water and Wastrewater Treatment in Developing countries; (2) AID/ta-C-147-0019, Development of a edited textbook focusing on Appropriate Technology in Water and Wastewater Treatment as Applied to developing countries; (3) AID/ta-C-147-0020, Development of an edited consolidated international water supply and wastewater treatment processes and equipment catalog to provide information on alternative technologies; their capital, operating and maintenance costs, manpower resources required and skill levels required; (4) AID/TAB/H graduate work/study grant to Ms. Gayle Townley entitled, "Non-Sewered Excreta Disposal Alternatives Available for Use in LDCs; Their Relative Economics, Operational and Maintenance Characteristics" (developed during period 1975-1977)

All of these workshop materials were developed under the supervision of Reagents Prof. George W. Reid, Director of the Bureau of Water and Environmental Resources Research at the Universiity of Oklahoma, Norman, Oklahoma

Under the field testing portion of the Predictive Sanitation Model, Contractor staff working directly with national counterpart personnel in the water, wastewater/excreta disposal organizations will be attempting to apply the methodology (See Annex D-2) against real world data available in Panama and Indonesia.

A Contractor selected by AID/W under competitive selection procedures will organize the workshop materials provided; present the workshops; organize the field testing in collaboration with Indonesian and Panamanian Government technical counterparts and prepare required reports and evaluations including recommendations for changes as necessary.

It is recommended that the various inputs to the project be financed through a direct cost reimbursement contract. The Contractor would receive advance money at the beginning of the project. A contract is recommended instead of a grant because AID/W technical offices wish to remain involved (by the project management role) in substantive policy and direction changes at appropriate benchmarks in the project. The workshops project is a dynamic one, requiring considerable fine tuning as the project evolves to obtain the results desired. The concept of improving understanding of appropriate technology in water and wastewater is a very important priority undertaking within the Office of Health and the Office of Engineering. (This applies not only to LDC decision makers and planners but to international lending organization technical, and development planning personnel as well). The Chief Engineer with the World Bank has requested that as many of his engineers as can be accommodated to attend the first workshop to be given in Washington, D.C. This indicates his interest and concern that projects are designed with proper concern for the importance of selecting appropriate technology to meet a water or wastewater problem.

The World Bank currently has a large 2 year project entitled, "Appropriate Technology for Water Supply and Waste Disposal in Developing Countries". This study is underway at the World Bank in order to analyze:

(1) the technical and economic feasibility of various options which are available for water supply and waste disposal in developing countries;

(2) the economic and environmental systems effects of technologies which provide for conservation of water and other resources and for reclamation of wastes; and

(3) the scope for designing technical improvements of existing intermediate technologies to improve their efficiency or enhance their transferability and acceptance.

Considerable urgency attaches to the project because of decisions now being made by officials of developing countries, lending institutions, development agencies, and by their engineering and economic advisors. These decisions are characteristically made on the basis of short-term financial considerations, but they result in long-term commitments with significant social and economic inpacts. Even when long-range planning is attempted, the lack of information on low-cost alternatives to conventional systems of water treatment and waste disposal frustrates effective decision making.

The workshops may be co-sponsored by organizations like the World Bank, PAHO, UNDP, UNEP, local missions, local government units or utilities, university or engineering societies. Co-sponsorship will require some allocation of services or facilities for the presentation of the workshops. For example, the UNDP group may wish to donate simultaneous translation equipment; a

university or government unit at a particular site may wish to donate the physical facility for the workshop to take place. Missions may want to donate liaison or workshop assistants to improve communication or public relations aspects. Missions will be relied upon to assist in the identification of the proper participants; the decision makers, planners, designers, consultants that need to be exposed to the ideas incorporated in the workshops. Missions may wish to sponsor certain participants.

The financing of the inputs identified in the logical framework should lead to the outputs (i.e., the workshops and field methodology utilization) without any particular problem. The bulk of workshop materials will be available before the initiation of the project. Appropriate workshop lecturers have already been preliminarily screened for interest and availability. The physical arrangements for setting up the workshops in the countries should be straight-forward. The major problem lies in attracting the attention of the proper mix of regional/national participants and scheduling them far enough in advance for the workshops. If the scheduling of participants can be satisfactorily worked out the workshops can begin. The major problem of having the inputs and outputs to meet the purpose lies in having communication take place. All of the funding and preparation will have little effect on meeting the purpose of the workshops if the methods and materials of presentation are not accepted by or useful to the participants. Considerable attention to materials and rehearsal of presentations by the contractor selected will take place before any workshops are given.

There is currently very little information on technical alternatives available to planners in the LDCs. The workshop materials and presentation will be geared to encourage communication. If the workshops are properly conducted, they could have a tremendous impact on LDC decision makers' attitudes and make them aware alternatives of which are generally not known.

A previously developed predictive model will have been field tested in two countries. Seven-hundred to 800 planners in 18 to 20 countries will have been exposed to appropriate water and wasterwater treatment alternatives and to the predictive methodology for selection among the alternatives.

The end of the project status will be when the last formal workshop evaluation is performed, and the final report is turned in. If the project receives the interest and effect anticipated, the project may be amended by additional funding for more sought after workshops for technical assistance in applying the selection methodology. We will know that the project purpose has been fulfilled if: (1) workshop participants exhibit enthusiasm and interest in the technical information being presented, (2) the workshop participants will request further information and technique information at the end of the course, (3) they will request technical assistance in applying the new information of which they are now aware.

1.D. Summary Findings

The project is anticipated to be a straightforward information dissemination project to improve LDC decision makers awareness of alternative technologies and ways of selecting appropriate technologies to meet water treatment, wastewater treatment and excreta disposal problems. The project has a well defined, firm financial plan, and detailed implementation plan involving active beneficiary involvement and an active, dynamic evaluation design.

The technical material to be presented in the workshops has been reviewed internationally (W.H.O, I.R.C. and Colombian workshop). There is a strong technical experience base relating to the subject matter available in the U.S. The project attempts to use and disseminate information and concepts developed by four previous projects developed by AID, and the University of Oklahoma.

The project is ready to implement as soon as a contractor is selected The cost of the project is determined to be reasonable and should result in a high rate of return. The contract will be a direct reimbursement type with logistical implementation assigned to the contractor.

## 1.E. Project Issues

All regional bureaus, technical offices in TAB (now DSB), and SER/ENGR (now DSB/ENGR), endorsed the project. The following issues were raised and have been resolved through project modification.

1. LA Bureau and TAB project managers agreed during PID review that Panama would be a better choice for the field demonstration than Colombia which had been first considered.

2. Asia Bureau recommended in the PID review that the role of the University of Oklahoma in project design be deleted because involvement in implementation following participation in project design could constitute a conflict of interest. TAB project managers agreed this could be considered conflict of interest. As a result, Prof. Reid and his interdisciplinary staff of Oklahoma have not participated in the project paper design. Project

managers do feel that the University of Oklahoma is one of the prime candidates for implementation and should not be excluded from the competition for the contract.

3. The Near East bureau was not represented at the formal PID technical review. They were provided copies of the PID and raised the following comments/issues:

a. The NE bureau requested "that any PP developed focus on a unified water-waste-latrine (excreta disposal) combination and on only those appropriate technologies which involve the community to a sufficient extent that hygiene education can be included and valued by the community as part and parcel of the waste system itself."

This project involves a rather extensive portion on alternative appropriate technologies available for individual family excreta disposal methods. Throughout the workshops, the point will be made several times through examples the need for integrated interventions: safe water supplies, efficient and suitable excreta disposal facilities and a solid sanitation/public health hygiene education program to educate the people in how to cope with their environments and protect their families.

b. The NE bureau indicated through its review that "the bureau should fund a field test of the predictive model in our region if necessary". TAB project managers feel that is a splendid idea and will work with the appropriate offices in the NE Bureau to further develop such plans.

## Part 2

## Project Background and Detailed Description

### 2.A. Background

The use of appropriate technology for meeting developing countries water supply and excreta disposal requirements is currently a subject of considerable discussion among the various international development organizations and LDCs. At the UN Water Conference at Mar del Plata, Argentina, many LDCs went on record as having a strong desire to implement large urban and rural water supply and sanitation program investments at a quicking pace. Large LDC technology utilization programs will likely proceed during the period 1980-1990 costing 60-80 billion dollars globally. Because of the extremely high LDC morbidity and mortality statistics directly associated with bacterial and viral diarrhea and/or intestinal parasites, the developing countries are beginning to focus on remedies or control measures to reduce the human suffering and improve the water supply and general "sanitation conditions" of the countries. Oftentimes, because of lack of personal experience or lack of technical knowledge in dealing with water and wastewater/excreta disposal alternaitves, the LDCs are forced to either flounder with ill conceived, completely irrational programs or invite interational consulting engineering organizations into the country to prepare water and wastewater treatment (sanitation system) assessments or feasibility studies.

There is common agreement among public health entities and international development organizations that the multiple interventions of ample safe water supplies, sanitary excreta disposal and public health

sanitation education should be of extremely high priority in the LDCs but that effective improvement programs are few. It is also agreed that a major obstacle in developing such programs is the lack of access by decision makers to information on available alternatives including comparative costs and manpower requirements. Because they are still virtually unaware of these alternatives in technology and are not able to choose between technologies, they select a cadillac technology because higher cost is automatically, even if erroneously, associated with better quality. LDS decision makers contend that the cost of water supply and sanitary waste disposal improvements are excessive. This is frequently true only because the LDCs implement programs with inappropriate, very expensive, and wasteful technology that are incompatible with their resources (monetary, organization and management capacity and manpower).

On the whole, the international consulting engineering organizations are surely providing a long-term benefit to the countries for which they are planning or constructing water supply and waste disposal sanitation programs. However, there is no monetary incentive for the international consulting organizations to push for water supply, wastewater disposal or excreta disposal solutions that are truely using appropriate technology to solve the problem. An example of this lack of monetary incentive is in the area of wastewater treatement of principal effluents. Frequently, the consultants, after a lengthy and costly feasibility study of various alternatives, recommend an activated sludge process facility (high capital, operation and maintenance costs) or a system involving sophisticated automated valves, pumps

or controls in the guise of saving manpower) instead of a series of stabilization ponds or aerated lagoons. The ponds would treat the wastes almost as well, but not have the highly involved engineering design, construction, expensive operation and maintenance requirements of a conventional U.S./European design. International engineering consultants will obtain considerably less money for their work if ponds are used. The fees are usually based on a percentage of the gross design costs. The more sophisticated the structure, the better the A&E firms like it. For a pond system, the gross design costs would be less than 1/20 of a complicated treatment system encompassing either conventional, primary or secondary treatment providing fairly comparable effluents. The same discussion can be applied to the water treatment systems, distribution systems and storage tanks, and individual family excreta disposal interventions.

The local government engineers or autonomous corporation managers who ultimately decide what type of process will be used often have tendencies to want to have the most modern technology brought in to meet their sanitation needs even if it is not appropriate. There is many times, a certain amount of prestige or national pride associated with use of advanced technologies. The problems that most of the developing country engineers and planners do not take into full consideration when installing these advanced processes are: (1) the need for trained personnel to maintain equipment, (2) the need for readily available spare parts, (3) the full energy demand impact of an advanced treatment system, which is not fully understood until the system is operated for a month or two, (4) high operation and maintenance costs, which can make regular operation unaffordable or require budget shifts at the expense of other programs.

In summary, the problem is one of lack of sufficient understanding of the pros and cons of the various treatment processes and of not having a concise, well designed, process evaluation format to determine the appropriate technology alternative for existing in-country resources.

PROPOSED RESPONSE TO THE PROBLEM:

The proposed response is to initiate a well conceived, concise series of "Appropriate Technology in Water and Wastewater Treatment Regional Workshops" for the LDCs wherein the host government decision makers and local consulting engineers could be exposed to appropriate technology discussions involving water and wastewater treatment alternatives and taught how to effectively utilize an existing model for predicting appropriate use of in-country resources for treating water and wastewater. The project also initiates a field utilization program using the existing model to determine if two selected LDCs, having tremendous water supply and wastewater treatment responsibilities and problems, can use the predictive model to bring together the large number of critical social, technological and economic inputs relating to the effective installation and use of appropriate water and wastewater treatment methods or processes. This ultimately allows the investigator to look at all plausible processes, their related costs, operation, maintenance, and the manpower requirements associated with each of the various processes.

PREDICTIVE METHODOLOGY TO BE UTILIZED:

During the period 1973 through 1976, AID sponsored a program at the University of Oklahoma which developed a predictive methodology for identifying appropriate processes for treatment of water treatment, wastewater

treatment and excreta disposal, i.e., ones that made maximum use of in-country capabilities. The predictive methodology uses socio-economic population scale, in-country physical resources, water quality parameters, manpower requirements and costs to forecast the most suitable treatment process for the given situation.

The model has the ability to bring together a number of critical inputs relating to the effective installation and use of various water and wastewater treatment processes and excreta disposal devices in developing country communities. This output allows planners or project engineers to look at all the pausible processes and their related costs, plus the operation, maintenance, and manpower requirements associated with each of the various process. This technique will eliminate the problem of overlooking good processes for water and wastewater treatment or excreta disposal.

The key elements of this approach are:

1. The systematic evaluation of the importance and interrelationship of all relevant aspects of the problems, such as technical, economic, social, political, and cultural factors.

2. The assessment of alternative courses of action.

3. An analysis of in-country costs as the basis on which policies can be determined and decisions made.

The emphasis is on obtaining a grasp of the total picture so that international health organizations, lending agencies, and regional institutes and host governments will have a viable planning tool.

The model output allows a rapid examination of the alternatives by planners and provides for objective elimination of non-feasible processes. Although the model is an important design tool, it does not replace the planner but rather allows him to concentrate his skills and experience on the identified alternatives in the most effective way.

The model has been computerized for a number of reasons. First and probably most important, is that a computerized version relieves the planner from the error-prone task of manually evaluating the alternative processes for the selection of the most appropriate treatment method. The manually run model is limited from a mathematical point of view; the number of steps to execute the model, while not complicated, are numerous and time consuming. The computerized version also can be used by the planner to evaluate several communities in one execution of the program. In less developed countries, electronic computers are becoming available for use by those involved in planning water and wastewater treatment. Computerization also provides a basis for a uniform analysis of planning water and wastewater treatment on a regional or national basis. Presently, the model is useful in evaluating the pausible treatment methods for a single community. It contains the type of information needed for a more aggregate approach of meeting the problem of water and wastewater treatment. It can be easily modified to provide cost information on a regional basis.

For those planners who do not have access to a computer capable of executing the model, a manual approach has been developed. This avoids the problem of having to send the data to some central computing center or (if a local computer is not available) to use the model as an operational test for planning. In short, the manual approach gives the model the ability

to use the computer technology if it is available while still preserving its applicability in even the remotest of areas.

An important point is in-country acceptance of appropriate or suitable technology. The information currently available indicates a strong desire on the part of developing countries to be identified with "high technology" (often termed "going first class"). In effect, the developing countries are expressing a desire to have the latest type of water and/or wastewater treatment facilities now being used in developed countries. Such facilities might be feasible in a few of the developing countries largest cities, but the majority simply do not have the in-county resources to build, maintain, or man these expensive, highly technical plants. In fact, this project stemmed from the all too frequent waste of developing countries resources in attempts to build and operate advanced treatment plants, most of which were complete failures.

This phenomenom is also prevalent in developed countries. Even U.S. cities and towns often demand the "best" available technolgy when an older, proven technology would be more appropriate for their environment and available resources.

The methodology model developed by the University of Oklahoma project helps design engineers and planners mitigate the problems created by this desire for high technology. Through the use of the computerized model, a large amount of data/information can be processed quickly and resultant output will display the consequences of all the various actions including all relevant cost. Such a display will, in most cases, enhance the design

The methodology model developed by the University of Oklahoma project helps design engineers and planners mitigate the problems created by this desire for high technology. Through the use of the computerized model, a large amount of data/information can be processed quickly and resultant output will display the consequences of all the various actions including all relevant cost. Such a display will, in most cases, enhance the design of the engineer's or planner's professional judgment. Also, in his defense of the selection of a lesser technology, the designer can now say that he has a "high technology device" with the mystique of the computer and the systems approach that evaluates quickly the large number of variables associated with the needs and resources of a specific community and the available alternatives. This evaluation will add the prestige of "science" to professional judgment as well as helping formulate the judgment.

Finally, although the model essentially does the same job done by good designers, it is visible, inclusive, and would be of value as a map for either expert or novice. The model can be run on a computer or operated manually. Both the computer program and manual procedures are provided in technical manuals that already exist.

Along with the selection methodology, the University of Oklahoma under AID contracts has also developed the following information for use in the workshop series:

a. Technical and economic comparisons of intermediate non-sewered excreta disposal facilities in lieu of general excreta disposal or pit latrines.

b. An internationally edited textbook focusing on appropriate technology in Water and Wastewater treatment/excreta disposal as applied to LDCs.

c. An edited consolidated international water supply and wastewater treatment equipment and processes catalog oriented at providing information on alternative technologies; their capital, operating, and maintenance costs, manpower resources and skill level required.

d. Several volumes of technical state of the art, historical survey, predictive methodology, cost-demand models, and expedient devices catalogs developed under AID/ta-c-7313, Lower Cost Methods of Treating Water and Wastewater in developing countries.

The alternative technology information described in items a-d above are as important to the LDC decision maker as understanding how to use the selection methodology. The inclusion of these materials and others into workshop materials will certainly enhance the workshop participants awareness of "what is happening" in the field and hopefully enlarge the range of options/alternative technologies he is willing to try.

This project is one of Adaptation and Utilization. It represents an attempt to utilize information developed specfically for this purpose in previous R&D, E&U, and a graduate work/study grant. These projects have developed to fruition over the last 3-4 years. The outputs from the previous projects were innovative, technically informative, professionally performed and well formulated for use in information dissemination programs such as the proposed workshops.

B. Detailed Description of Project

1. Field Utilization of the Selection Methodology Portion

AID will provide funds (about $100,000) for the field utilization of the predictive methodology for the selection of appropriate technology in water and wastewater treatment/excreta disposal in two (2) LDC countries (Indonesia and Panama). These input funds will provide for selected two man teams, to travel to the two countries involved. The teams will work with host country counterpart personnel in the countries for 3 months in the gathering of available data oriented around pending LDC projects to use the selection methodology for showing relative capital costs/manpower requirements/O&M costs for various alternatives. The teams will have office space and furniture provided by the LDC government counterpart organization. Secretarial and technical support services (key punch) will be provided in the contract. Some local travel within the country to validate data for input may be necessary and will be provided for in the contract. While in the country, the team will have to do the following things to implement the selection methodology.

(A) Do an analysis of government water and wastewater infrastructure.

(B) Identify the decision makers and decision making processes.

(1) Who sets priorities and investment levels?

(2) What data do they use?

(3) What other useful data is available?

(C) Assess the available data against the necessary for use of the methodology; select appropriate substitute data if necessary.

(D) Identify proposed projects.

(E) Field check data available; determine data reliability.

(F) Select the sites or projects on which to have the methodology used.

(G) Collect the specific data on projects.

(H) Enter data into methodology model; process data with computer-US or local.

(I) Obtain U.S. or local recommendations on output and assess against country sites.

(J) Evaluate merits of methodology from government counter-parts; do they want to do it for future projects?

(K) Write up recommendations, conclusion and report.

These inputs will result in the outputs of: (1) the physical use of the selection methodology in real LDC project/site situations, (2) the collaborative participation training of at least (2) government counterpart organizations in in the actual use of the selection, methodology and (3) the generation of of experience on the part of the LDC counterparts as to the efficacy of this approach to the solution of selection of technology problems in their country.

With these inputs and outputs (counterpart knowledge of how that methodology works) the project purpose will be met by demonstrating the efficacy and value of the prediction methodology for selecting appropriate water and wastewater treatment processes when applied under actual LDC resource restraints.

if the local government counterparts use the methodology on subsequent projects to identify the appropriate technology, then the program or sector goals will be met. These sector goals include: (1) improving the quality of human life in LDCs through the reduction of water supply and wastewater/excreta disposal associated diseaases; (2) more effectively utilizing available technologies and national/international funds to meet water and wastewater excreta disposal program problems

2. National/Regional Workshops Portion

AID will provide funds (about $300,000) for the development and presentation of workshops on appropriate technology in water and wastewater treatment/excreta disposal in LDCs. These funds will provide for a more experienced subject matter contractor to develop and organize existing technical materials into workshop presentations and to conduct 18-20 national/regional workshops over a two year period. The contractor will recruit distinquished associate workshop lecturers from universities, private enterprise, or government units all over the United States. These workshop associates will represent the best available U.S. expertise in the areas of water treatment, wastewater treatment, excreta disposal and environmental engineering.

The workshop teams will consist of a workshop director, two workshop associates and one liaison coordinator. Where appropriate, workshops will have simultaneous translation capabilities in at least one language and in some cases two languages (besides English). Each workshop will use previously developed workshop materials. They will consist of, at least, a textbook and catalog developed especially for use in the workshops by the University of

Oklahoma under AID/ta-147-0019 and 0020. Between 30 and 45 national/regional workshop participants are expected for each workshop. Each participant will be given a working copy of the textbook and catalog. The textbooks will be available in English, Spanish and French as necessary. The catalog will be predominately in English with summary and cost information, narratives and transition portions in English, French and Spanish.

The results (outputs of these inputs) will be (1) 30-45 national/regional participants (decision makers/planners/designers/consultants) exposed to the concepts of selecting appropriate technologies (processes and equipment) in water and wastewater treatment/excreta disposal to meet in-country resource capabilities and (2) a new awareness and working familiarity on the part of the participants with a selection methodology developed to assist the decision makers select appropriate processes and equipment for LDC use, using a logical input and output comparison framework.

These workshop outputs will result in meeting the project purpose: (1) to make LDC decision makers, planners, designers and consultants aware of appropriate technology and knowledgeable of the alternatives available for utilization of in-country resources to meet LDC needs in water treatment, wastewater treatment and individual family excreta disposal, (2) to demonstrate the value of the predicition methodology for selecting appropriate water and wastewater treatment processes and excreta disposal methods when applied under actual LDC resource constraints.

If these concepts are accepted by the participants, and true awareness is achieved of alternatives available, the program goal will be met by the application of the concepts into technology selection for actual projects

in the LDCs by the participants in their daily duties. The program goal consists of (1) improving the quality of human life in LDCs through the reduction of water supply and wastewater/excreta disposal associated diseases (2) to have decision makers in the LDCs more effectively utilize available technologies and national/international funds to meet water and wastewater/excreta disposal program problems.

(3) Crucial Project Assumptions

The purposes and goals of the project cannot be attained without the following assumptions:

a. Adequate money and workshop teams/field teams are available at the proper times.

b. Workshop methods and materials are properly designed to be interesting, and technically stimulating to participants, not to high and not to low a level of presentation.

c. Workshop participants openly and actively participate in workshops.

d. Communication takes place between lecturers, and participants.

e. Workshop participants will accept and use appropriate technology, alternative information and selection methodologies presented in the workshop and field demonstration portions of the project.

f. Local/national/international organizations will continue to demonstrate investment into this services sector.

## Part 3

### Project Analyses

(A) Technical Analysis including Environmental Assessment

As a result of following discussions and analysis two prefunding judgements can be made: (1) the project and its technological implications are appropriate for the specific time and place for which the project is proposed and (2) the project is felt to be reasonably designed and priced.

The project represents a high quality U.S. contribution making considerable use of technical materials developed under four previous AID contracts that took place over the past 4 years. The workshop lecturers will represent the "cream of the the crop" available in the subject areas of water and wastewater/excreta disposal and environmental engineering. Each of the countries that have been tenatively selected for the workshops or field utilization portion have ongoing rural and urban interventions in the water and wastewater treatment/excreta disposal fields funded by contributions of national governments/the World Bank/the Inter-American Development Bank/the Asia Development Bank/Africa Development Bank/Canadian International Development Agency/British Overseas Development Agency/the U.S. Agency for International Development, various P.V.O's including CARE, Church World Services, and U.N. organizations like UNICEF, UNEP, and UNDP. The Swiss, Germans and Chinese and other bilateral donors are also actively involved in funding various types of development programs in the water, wastewater sector. A copy of this PP and explanatory cable will be sent to each country mission to formalize their support for the workshops/field utilization portion. Preliminary discussions with AID/W bureaus and desk officers indicate considerable interest and support for the concepts being presented. No workshops or field utilization portion <u>will</u> be initiated until formal approval of the missions is obtained. No contractor will be selected until the mission approvals/rejections are all obtained.

The project represents an attempt to ensure that LDC decision makers have the alternative technology information to select proper or appropriate technologie to be used in their myriad of projects. The workshops will emphasize that the technology selected for their projects should be examined with relation to employment effects, i.e., stimulation of possible local manufacture; suitability for use and replication/diffusion, and host country capability for operation and maintenance.

An initial environmental examination of the project was accomplished and reviewed at the PID stage. A copy of the IEE is found in Annex C. Because the inputs and outputs being academic or narrative in form rather than "bricks and mortar", the project will not initially effect the environment. It will effect men's minds and hopefully result it better and more appropriately applied technology to resolve water treatment, wastewater treatment and excreta disposal problems. No environmental assessments beyond the IEE done at the PID stage are recommended.

Project technical cost/design analysis

The following represents a detailed financial cost analysis by functional area for the development and implementation of 18-20 national regional workshops (30-45 participants each) and two 3 month field demonstrations of the selection methodology working with counterparts in Indonesia and Panama.

DSB/ENGR and DSB/H project managers have developed the project design and financial cost estimate. Adequate planning has taken place up to the point of selecting the contractor (project implementor) and working out implementation details. The estimated cost is reasonable. Contractor should be allowed to use money inter-changeably between line items during the project. The line items have been carefully estimated, but small variations may occur. A direct cost reimbursement contract is recommended.

FINANCIAL PLAN
TESTING PREDICTIVE SANITATION MODEL
Projected U.S.A.I.D. Project Costs

I. Workshop Preparatory Costs

| | | | |
|---|---|---|---|
| A. | 1 Project Director x $150/day x 60 days | = 9,000 | |
| B. | 2 full-time supporting Assistants x $100/day x 60 days | = 12,000 | |
| C. | Printing of Workshop materials (800 copies) | = 16,000 | |
| D. | Travel between Washington, D.C. and contractor site (for fixing up plans) | = 1,500 | |
| E. | Travel for Workshop Associates to contractor site and return for indoctrination into project (no salary, just travel & per diem) (per diem - $30/day) | = 5,400 | |
| F. | Miscellaneous Expenses in preparation | = 3,500 | |
| | | $ 47,400 | |
| | I. Subtotal | | $47,400 |

II. Workshop Implementation Costs

A. Workshop Personnel Costs

1. Workshop Director

| | |
|---|---|
| 1 cap x $150/day x 150 days (salary) | = 22,500 |
| 1 cap x $50/day x 150 days (per diem) | = 7,500 |
| | $ 30,000 |

2. Workshop Associates (2 people)

| | |
|---|---|
| 2 cap x $125/day x 150 days (salary) | = 37,500 |
| 2 cap x $50/day x 150 days (per diem) | = 15,000 |
| | $ 52,500 |

3. Workshop Liaison Officer (1 person)

| | |
|---|---|
| 1 cap x $100/day x 150 days (salary) | = 15,000 |
| 1 cap x $50/day x 150 days (per diem) | = 7,500 |
| | $ 22,500 |

4. Workshop Simultaneous Interpreter (2 people)

| | |
|---|---|
| 1 cap x $100/day x 150 days (salary) | = 15,000 |
| 1 cap x $50/day x 150 days (per diem) | = 7,500 |
| 1 cap x $100/day x 60 (salary) | = 6,000 |
| 1 cap x $50/day x 60 days (per diem) | = 3,000 |
| | $ 31,500 |

| | | | |
|---|---|---|---|
| B. Miscellaneous In-Country Workshop Costs | | | |
| 1. materials | | 3,800 | |
| 2. logistical support | | 4,200 | |
| 3. possible space rental | | 1,200 | |
| 4. possible simultaneous translation equipment rental | | 3,000 | |
| | | $ 12,200 | |
| | II. Subtotal | $148,700 | |
| | (I & II) Subtotal | | $196,000 |

III. Workshop Travel Costs

| | | |
|---|---|---|
| A. Washington, D.C. Workshop | | |
| 1 Director to Washington, D.C. & return | 450 | |
| 2 Workshop Assts. to Washington, D.C. & return | 900 | |
| 1 Logistics Asst. to Washington, D.C. & return | 450 | |
| Miscellaneous local travel | 200 | |
| | $ 2,000 | |
| B. Second Stage 18-20 site Regional Workshops | | |
| 1 Dir. to 18-20 sites and return | 13,000 | |
| 2 Workshop Assts. to 18-20 sites and return | 26,000 | |
| 1 Logistics Asst. to 18-20 sites and return | 13,000 | |
| 2 Interpreters to 18-20 sites and return | 26,000 | |
| Misc. local travel expenses in 18-20 sites | 2,000 | |
| | $ 60,000 | |
| III. Subtotal | $ 82,000 | |
| (I+II+III) Subtotal | | $278,900 |

IV. Methodology Field Utilization Evaluation in Panama and Indonesia

| | | |
|---|---|---|
| A. Manpower Requirements | | |
| 1. 2 prof. investigators x 2 countries x $80/day x 90 days (salary) | = | $ 28,800 |
| 2 prof. investigators x 2 countries x $50/day x 90 days (per diem) | = | 18,000 |
| 2. 2 secretaries x 2 x countries x $500/mo. x 3 mo. | = | 6,000 |
| 3. 6 key punch operators x $500/mo./opr x 2 mo. | = | 6,000 |
| | | $ 58,800 |

B. Travel Requirements

| | | | |
|---|---|---|---|
| 1. | 2 cap x $500/cap to Panama and return | = | $ 1,000 |
| 2. | 2 cap x $2000/cap to Indonesia and return | = | 4,000 |
| 3. | Misc. travel within 2 countries over 3 mo. | = | 1,000 |
| | | | $ 6,000 |

C. Equipment and Reports

| | | | |
|---|---|---|---|
| 1. | Eight (8) key punch machines x $400/mo./ machine to rent x 2 mos. | = | $ 6,400 |
| 2. | Report Preparation @ $2,500 per report/ country x 2 countries | = | 5,000 |
| | | | $ 11,400 |
| | IV Subtotal | | $ 76,200 |
| | I+II+III+IV Subtotal | | $355,100 |

V. Miscellaneous Expenses

| | | | |
|---|---|---|---|
| A. | Computer programming and processing time for 2 countries | = | $ 7,400 |
| B. | Misc. admin. expenses in 2 field validation sites | = | 4,600 |
| C. | Final Report Preparation and Printing | = | 3,000 |
| D. | Evaluation of Workshops | = | 4,600 |
| | V Subtotal | | $ 19,600 |
| | I+II+III+IV+V Subtotal | | $374.700 |

IV. Management Overhead for Workshops = $ 25,000

I+II+III+IV+V+IV Subtotal $399,700

The technical soundness of the project is excellent. FAA Section 611(a) and (b) do not apply since this is not a grant or a loan to a LDC.

(B) Financial Analysis and Plan

Each workshop (assuming 18-20 given) will cost approximately $15-$17,000 total to perform. This includes materials preparation, printing, team member preparation, management, logistics support, travel, salaries, per diem, support equipment and translation services.

Each field utilization of the selection methodology will cost approximately $45-$48,000 total to perform. This includes salaries, per diem, secretarial assistance, key punch operators, travel, equipment rental, report preparation and miscellaneous admin expenses. Two field utilizations of the selection methodology are planned, one in Indonesia and one in Panama.

1. Financial Rate of Return/Viability

It is extremely difficult to estimate the financial rate of return on a project oriented at shaping minds or making people aware of tools for selecting technologies. Each workshop will cost $15,000-$17,000. If there are only 30 participants, the cost per participant is $500-$600. If that participant uses the information presented in only one project for which the individual is responsible, saving on materials alone could well exceed many times $500.

How does one measure savings in cost of providing projects that work well; that use appropriate technology; that do not cause frustration and disgust on the part of the implementers or users? What is the social cost benefit to people of having water/wastewater/excreta disposal systems that work for a change. Can this be itemized in terms of improved health, less sickness and more productivity? Many people have tried (and failed) to answer this question adequately. The purpose of this project is making people aware of alternatives available and using logical methods to select appropriate intervention technologies to solve problems in water/wastewater/excreta disposal.

2. Recurrent Budget Analysis of Implementing Agencies

a. All of the government units have the ability to be aware of the alternatives and select the right technology if they have an understanding of the methodology. The methodology can be implemented by computer or by hand. Since no real recurrent expenses result from this project (no O&M for physical facilities), no recurrent budget analysis is needed.

b. The implementing unit for this project will be a U.S. contractor/university that has experience in performing overseas workshops/seminars/courses, a management team capable of logistically supporting the effort, and an experienced technical staff knowledgeable and actively generating concepts of lower cost methods and appropriate technology relating to LDCs. The implementing agent will be selected after approval of the PP.

MISSING PAGE
NO. 30

(4) Summary Option

Considerable effort has been involved over the last 4 years in the preparation of materials that could be used in information dissemination, LDC workshops, or by AID missions or LDC implementing organizations in improving water and wastewater treatment/excreta disposal in the LDCs. These materials are essentially ready. The prediction methodology has already been presented and used in two international workshops sponsored by the University of Oklahoma. One workshop was held in Colombia and the other in the Hague, Netherlands. Both had international participants that were asked to consider, use, and critique the selection methodology for fine tuning. This was accomplished. The information on available alternative technology processes and equipment was developed concurrently by literature reviews and international questionnaires. The concepts, information and documentation are ready for broad scale exposure to decision makers.

The adequacy and firmness of the financial plan is strong and the financial soundness of the project is strong.

(C) Social Analysis

While this project will disseminate information across cultures, cultural problems will be minimal because the information is technical and the people who will receive the information are accustomed to dealing in technical matters. The only attitudinal problem foreseen is the one noted elsewhere in this paper, that is a bias on the part of some planners toward high technology solutions.

The social impact at the level of the ultimate beneficiary, the users of improved and well functioning sanitation systems, should be uniformly positive.

(D) Economic Analysis

All AID projects must be economically justified. In the last decade, implementation costs for water supply, water treatment and wastewater treatment facilities have quadrupled. Levels of national and international agency investment are not correspondingly keeping pace with inflation of labor, equipment and materials cost. Therefore, it is extremely important that money invested be utilized efficiently and that the "LDCs get more lasting value for their investment". The economic benefits of teaching LDC decision-makers/planners/designers/consultants how to select appropriate technologies to meet LDC water, wastewater and excreta disposal problems ought to be obvious. Facilities costing $10,000 - 300,000 with essentially zero or minimal operation and maintenance could be used instead of facilities costing $100,000 - $10,000,000 with high recurrent costs to O&M and high personnel skill requirements.

Estimates from the U.N. Water Conference held in Mar Del Plata, Argentina in May of 1977 indicate that the projected required investments in water supply alone during the period 1978-1990 will amount to over $90 billion dollars (over $50 billion for urban investments and over $40 billion for rural investments). They estimate that national/international investments in water supply currently exceed $3.5 billion and that more than $6.2 billion is annually needed to meet investment and service goals for 1990. These amounts do not include investments for wastewater treatment or excreta disposal. If the wrong types of technologies are selected, this money (and, more importantly, the time of many well-meaning technicians) will be wasted because the process equipment will last for only a very short time or else the implementing organization will decide that they cannot afford the O&M requirements of the process technology they originally bought with the result that the system will be abandoned or will be only sporadically effective.

It is easy to see the magnitude of the problem and how drastically important it is to make sure that key decision makers/planners/designers/and consultants are aware of alternative technologies and know how to logically select among them. Thus the need for this workshop series. The economic rate of return would constitute an estimated 3000-10000% of investment or higher, if the LDC planners buy the concepts. The economic soundness of the project is strong.

## Part 4

## Implementation Arrangements

### (A) Analysis of the Recipient's and AID's Administrative Arrangements

#### 1. Recipient Responsibilities

A single contractor to implement both portions of the project will be selected through open competition.

The contractor will be responsible for the detailed planning, management and logistics support, team gathering and implementation of the workshops, and field testing of the methodology in conjunction with AID. (The term "largely" was included to indicate that there will definitely need to be AID project managership, control, guidance, and coordinating between the contractor and the mission/embassies. This will be expanded upon in the "AID" section). The contractor's implementing organization will need to be experienced in the planning, staging, and implementing of international courses, workshops, or seminars. They will need to have a strong project management section experienced in dealing with the logistics problems of overseas work. The contractor's management needs to take the administrative burden off the technical workshop lecturers while at the workshop site so that they can concentrate on subject matter, information projection, and communication with participents.

The contractor's technical teams will have to be intimately familiar with low cost methods of water and wastewater treatment/excreta disposal and have an extensive experience record of work in the LDC's developing projects along this line to ensure credibility. The workshop lecturers of the contractor have to have credibility because they will be lecturing to high level decision makers virtually from every organization in the country that makes daily technology selection decisions for projects in water, wastewater, and excreta disposal.

2. A.I.D. Responsibilities

AID/W project managers will provide guidance to the contractor concerning coordination or set-up details for the workshop sites. The project manager will serve as an interface between the contractor and the mission/LDC country mix of agencies involved. Since these workshops will entail a dynamic process of improvement from one to the next, the project manager will ensure that the contractor is utilizing participant criticism in modifying the format for the next workshop.

Some assistance from AID field missions will be necessary for implementation (e g., help select a place for the workshops, help identify interested participants or participants whom the mission thinks should attend, provide at least one mission attendee to the workshop for purposes of instruction and establishing contracts with influential decision makers that could be useful in subsequent AID programs, and help identify potential workshop co-sponsoring organizations. The co-sponsoring organizations would be asked to volunteer workshop lecturer rooms, workshop assistants, additional unofficial interpretors or refresments for attendees. This aspect could be worked out by the AID mission AID/W project manager, contractor and the potential co-sponsoring organizations after approval of the PP.

The time requirements to coordinate the project for the AID/W project manager would be about 7 man-weeks spread over a 2-year period. For each workshop the local AID mission would need to appoint a project officer about 3 months ahead of the workshop for coordination purposes. The local mission project liaison officer would spend about 1 man-week of work during the 3 month period coordinating the project. An additional 5 man-days of mission personnel 3 months ahead of the workshop for coordination purposes. An additional 5 man-days of mission personnel time would be spent by having at least 1 mission person attend the 5 day workshop.

Total AID manpower requirements over the length of the project is estimated at 46 man-weeks for putting on 20 one-week workshops. This breaks out at 7 man-weeks for AID/W project manager and 39 man-weeks of combined mission man-power in about 20 sites around the world over a 2 year period.

Testing Predictive Sanitation Model
Proposed Project Implementation Plan

Project Implementation Period - - - 22 months

Project funded January 1978 - September 1979

A. Methodology field Utilization Program — **Feb. - May 1978**

(1) Indonesia
(2) Panama

B. Washington, D.C. AID/International Organization participant 5-day Workshop* — **June, 1978**

C. Regional/National 5-days Workshops** — **June 78-Aug. 1979**

(1) Santa Domingo, Dominican Republic
(2) Cartegena, Colombia
(3) Panama City, Panama
(4) Guatemala City, Guatemala
(5) Asuncion, Paraguay
(6) La Paz, Bolivia
(7) Lima, Peru
(8) Lagos, Nigeria
(9) Abijan, Ivory Coast
(10) Dakar, Senegal
(11) Tunis, Tunisia
(12) Nairobi, Kenya
(13) Manila, Philippines
(14) Jakarta, Indonesia
(15) Bangkok, Thailand
(16) Islamabad, Pakistan
(17) Dacca, Bangladesh

*Workshop sites are tentative selections based upon AID/W regional bureau reviews at PID stage.

**Up to three additional sites may be added during the course of the project based upon technical demand.

## Implementation Plan

| | Action | Date |
|---|---|---|
| 1. | Approval of PP | 15 Dec 77 |
| 2. | Approval of PIO/T | 20 Dec 77 |
| 3. | Selection of Contractor | 20 Jan 77 |
| 4. | Signing of Contract | 1 Feb 77 |
| 5. | Contractor begins demonstration teams in Indonesia and Panama | 13 Feb 77 |
| 6. | Field Demonstration end-Reports in | 15 May 77 |
| 7. | Contractor initiates 1st workshop in Washington, D.C. for international organization participants | 12-16 Jun 77 |
| 8. | Dominican Republic Workshop | 26-30 Jun 78 |
| 9. | Cartagena; Colombia Workshop | 10-14 Jul 78 |
| 10. | Panama Workshop | 17-21 Jul 78 |
| 11. | Guatemala Workshop | 24-28 Jul 78 |
| 12. | Paraguay, Workshop | 7-11 Aug 78 |
| 13. | Bolivia, Workshop | 14-18 Aug 78 |
| 14. | Lima, Workshop | 21-25 Aug 78 |
| 15. | Nigeria Workshop | 8-12 Jan 79 |
| 16. | Ivory Coast Workshop | 15-19 Jan 79 |
| 17. | Senegal Workshop | 22-26 Jan 79 |
| 18. | Tunisia Workshop | 12-16 Mar 79 |
| 19. | Kenya Workshop | 19-23 Mar 79 |
| 20. | Philipines Workshop | 21-25 May 79 |
| 21. | Indonesia Workshop | 28- 1 Jun 79 |
| 22. | Thailand Workshop | 4- 8 Jun 79 |
| 23. | Pakistan Workshop | 25-29 Jun 79 |
| 24. | Bangladesh Workshop | 2- 6 Jul 79 |
| 25. | Evaluation of Project performed | 6-24 Aug 79 |
| 26. | Final Project Report Finished | 21- Sept. 79 |
| | End of Project | 28- Sept. 79 |

Note: 18 workshop sites are those tentatively proposed. Final selection will be made in conjunction with Missions.

After the workshops have proven in worth, we anticipate being asked to add 2-3 additional sites as the project is in progress. Money for this contingency has been programmed into the financial plan.

Project Monitoring Plan

a. Field Utilization of Selection Methodology

DS/H (SER/ENGR) project manager and contractor will closely monitor contractor's teams in Indonesia and Panama for level of progress. Contractor's representative in the two sites will have access to AID cable facility to send notice of problems as necessary. AID/W project manager will immediately notify contractor and problems will be worked out. The contractor will receive a weekly progress report from each team up to the 8th week of the 3 month period. From that point until the team returns, no progress reports will be necessary as team will be synthesizing input data.

b. Regional/National Workshops

DS/H (SER/ENGR) project manager and contractor will closely monitor workshops presented. Contractor's personnel will be conducting each workshop. DS/H project manager will attend first 3 workshops (Washington, D.C., Santo Domingo, Dominican Republic and Cartagena, Colombia) to observe, evaluate and refine workshop presentation with contractors. Missions will be asked to have at least 1 person attend workshop full-time for purposes of obtaining information, critiquing, and making contacts with LDC decision makers.

Contractor will be required to report to the project manager on results of workshops at the end of each workshop.

AID/W project manager monitoring and project adjustment time estimated to be 7-man-weeks over the 21 month period. If no major project redesign or modification is necessary, then project would take at least 4 man-weeks of AID/W project manager's time.

Evaluation Plan

The contractor's performance and the general success of the workshop will be evaluated by several different groups. At the end of each workshop, the participants will be asked to critique the proceedings (materials and presentations). A critique or evaluation will come back from the USAID representative to the workshop. The DS/H project manager will broadly evaluate the reception of the first 3 workshops and turn those evaluations into workshop redesign. An independent evaluator assigned from DS/RUI will do an evaluation of a workshop and review the entire series of contractor's evaluations, coming up with a composite evaluation. This project is designed as a dynamic one; improving on an already good presentation as much as possible through a myriad of evaluations resulting in workshop modification. The evaluations may result in changes in emphasis, method of illustration, method of communication, or change in material content.

Logistical Support Plan

The contractor will be provided with sufficient funds and responsiblity to provide for the majority of logistical support for the workshops and the field demonstration of the selection methodology. The contractor will provide interpreter services, provide all equipment, select workshop lecturers, administratively support lecturers in field, administratively support utilization teams in the field, contract or obtain site for workshops if necessary, print and bind workshop materials, transport materials from preparation site to workshop sites. The USAID mission will be asked to provide the contractor with access to the cable communications system, provide at least one (1) mission participant to take part

in the workshops, provide recommended names of participants within the country to the AID/W project manager and to sponsor certain participants (if desired) to attend the workshop by paying the travel/per diem for a person to attend if necessary.

Types of Contracts

It is recommended that a direct cost-reimbursement contract be initiated based on a competitive services/experience bid for institutions intimately intimately familiar with the development and presentation of information concernning the alternatives available in water and wastewater treatment using appropriate technology and the development and use of selection methodologies for choosing amongst alternative technologies.

Implementation plans, problems and Issues

No unusual implementing problems or issues have been identified at this time. One key problem area to be resolved is the specific identification of workshop participants. This would be accomplished after approval of the PP.

Beneficiary Participation

Beneficiary participation is emphasized by the use of the workshops. The primary beneficiaries are the workshop participants. The seconday beneficiaries are the system users that will hopefully benefit by having one of the workshop participants choose a technology intervention that is appropriate; one that works well for a long time at a suitable O&M cost. The participants will have an opportunity to critique the workshop, hopefully improving it for future presentations.

(C) Evaluation Arrangements for the Project

A normal evaluation as outlined in (B) implementation "Evaluation Plan" is anticipated. The project will have ample opportunity and evaluation exposure. Project designers look at evaluation and critiques as dynamic management aids to improving the final product - the workshops.

(D) Conditions, Covenants and Negotiating Status

Not Applicable.

ANNEXES TO FOLLOW

DS/H/EH:VWehman:ja:11/18/77:revsd 12/28/77

**ANNEX A**

DATE: August 24, 1977

TO : AA/TA, Mr. Curtis Farrar

FROM : TA/PPU, John N. Gunning

PROBLEM: Your Approval is Requested of the Project Identification Document (P.I.D.) for Testing Predictive Sanitation Model
Proposed Project Begins: Early FY 1978 Proposing Office: TA/H

A. TA/PPU Review:

1. Does PID adequately Describe and Justify Project?

Yes. The DAA/TA review of TA/H FY 1979 ABS designated water and sanitation for high priority TAB attention. TA/H and TA/PPU/RUI were requested to undertake an Executive Summary on the subject. The PID addresses the crucial problem of treating water and waste water in LDC. Its purpose is to influence decision makers' choice of appropriate technologies for water supply and waste water treatment through a series of workshops which will teach them how (1) to use predictive methodology and evaluate alternative technology information and (2) to apply this knowledge in an LDC situation against LDC data.

The PID states that the workshops will utilize materials developed by the University of Oklahoma under a previous AID program. The University's report, plus eight subject-matter-focused reports, and other associated materials developed at the University's expense have been well received by the environmental engineering community, the IRC and AID subject matter reviewers.

TA/H will submit, along with the PP, a justification for a contract with the University of Oklahoma. The University of Oklahoma (Prof. Reid and his interdisciplinary staff) is the only organization in the U.S. that has an extensive past history of concept development associated with the "lower cost methods of water and wastewater treatment in LDC's". The selection methodology and prioritizing model developed by O.U. and to be used in the workshops is a truly unique, innovative approach to alternative selection and decision making. Prof. Reid is recognized as one of the foremost experts in the world if not the foremost expert in this field.

2. Funding Adequate? In FY 77/78 Budget? How compares to FY 77 C.P.?

Funding is a best estimate and not more than a variance of 10-20 per cent is anticipated. The FY 78 Budget includes $350,000 proposed for this activity.

3. Are Plans for PP Development, Approval and Project Initiation Realistic?

Yes. Initial draft on the PP is being reviewed in TA/H. TA/H expects to have it ready for an early Spetember R&DC meeting.

TA/H appropriate technicians met with the Regional Bureau technical officers for an initial review and discussion of the proposed activity. AFRICA, ASIA and LA Bureau representatives strongly supported the PID. (NE Bureau was absent.) Each of the Bureaus represented have identified sites they deem appropriate and ones which are satisfactory to AID technical offices and the University of Oklahoma.

B. N.A.

C. __X__ Approval
_____ Approval subject to _____

_____

_____ Disapproval

D. AA/TA Action:

__✓__ Approved
_____ Approved subject to _____

_____

_____ Disapproval

M Bulka for C Jones Aug 29 '77
Signature Date

Attachment: PID for Testing Predictive Sanitation Model
Recommendation for Environmental Threshold Decision

AGENCY FOR INTERNATIONAL DEVELOPMENT

# PROJECT DOCUMENT ACTION FORM

1. TRANSACTION CODE: [A] (A: ADD, C: CHANGE, D: DELETE)

PDAF

2. DOCUMENT CODE: 4

3. COUNTRY/ENTITY: TA/H, RDA 13, Adaptation & Utilization

4. DOCUMENT REVISION NUMBER: [--]

5. PROJECT NUMBER (7 digits): [931-1059]

6. BUREAU/OFFICE: A. SYMBOL: TAB; B. CODE: [08]

7. PROJECT TITLE (Maximum 40 characters): [Testing Predictive Sanitation Model]

8. RELATED DOCUMENT CODE: [1] (1 - PID, 2 - PRP)

9. PROJECT DOCUMENT ACTION (ENTER COMMENT FOR * ITEMS IN BLOCK 13)

ACTION TAKEN: [ ] (A - APPROVED, D - DISAPPROVED*, S - SUSPENDED*, CA - CONDITIONALLY APPROVED*, DD - DECISION DEFERRED*)

10. APPROVED BUDGET AID APPROPRIATED FUNDS ($000)

| A. APPROPRIATION | B. PRIMARY PURPOSE CODE | PRIMARY TECH CODE C. GRANT | PRIMARY TECH CODE D. LOAN | E. FIRST FY 78 F. GRANT | E. FIRST FY 78 G. LOAN | LIFE OF PROJECT H. GRANT | LIFE OF PROJECT I. LOAN |
|---|---|---|---|---|---|---|---|
| (1) | 512 | 540 | | Contract | | | |
| (2) | | | | 350 | | 350 | |
| (3) | | | | | | | |
| (4) | | | | | | | |
| TOTALS | | | | | | | |

11. PROPOSED PLANNING RESOURCES: [ ] (1 - APPROVED, 2 - DISAPPROVED, 3 - APPROVED AS MODIFIED)

12. PROPOSED NEXT DOCUMENT: A [3] (2 - PRP, 3 - PP)

B. PROPOSED NEXT DOCUMENT DATE: MM 08 YY 77

13. COMMENTS (Maximum 240 characters)

[ ]

14. ACTION REFERENCE

A. MIRGRAMS [AIDTOA]

TELEGRAMS [STATE]

MEMORANDA [ ]

B. ACTION REFERENCE DATE: MM DD YY

15. CLEARANCES

| | TYPED NAME | TITLE | DATE | INITIALS |
|---|---|---|---|---|
| A. | Victor Wehman VWW | Project Manager | 6/21/77 | VWW |
| B. | for L.M. Howard, M.D. | Director, TA/H | 6/29/77 | HE for LMH |
| C. | L. Wakefield | TA/PPU, Proj. Analyst | 8/22/77 | LW |
| D. | R. Simpson | Director, TA/PPU | 8/26/77 | RS |
| E. | | | | |
| F. | | | | |

16. RESPONSIBLE BUREAU SIGNATURE: Mary E. Mogensen

17. ACTION DATE: MM 08 DD 30 YY 77

AID 1330-5 (5-75)

AGENCY FOR INTERNATIONAL DEVELOPMENT

# PROJECT IDENTIFICATION DOCUMENT FACESHEET

TO BE COMPLETED BY ORIGINATING OFFICE

1. TRANSACTION CODE: [A] (A = ADD, C = CHANGE, D = DELETE)

PID

2. DOCUMENT CODE: 1

3. COUNTRY/ENTITY: INTERREGIONAL - - RDA #13

4. DOCUMENT REVISION NUMBER:

5. PROJECT NUMBER (7 DIGITS): 931-1057

6. BUREAU/OFFICE: A. SYMBOL: TAB; B. CODE: 08

7. PROJECT TITLE (MAXIMUM 40 CHARACTERS): TESTING PREDICTIVE SANITATION MODEL

8. PROPOSED NEXT DOCUMENT: A. [3] (2 = PRP, 3 = PP); B. DATE: MM 07, YY 77

9. ESTIMATED FY OF AUTHORIZATION/OBLIGATION: a. INITIAL FY [78]; b. FINAL FY [79]

10. ESTIMATED COSTS ($000 OR EQUIVALENT, $1 = )

| FUNDING SOURCE | LIFE OF PROJECT |
|---|---|
| A. AID APPROPRIATED 350 | 350 |
| B. OTHER U.S. 1. | |
| B. OTHER U.S. 2. | |
| C. HOST COUNTRY | |
| D. OTHER DONOR(S) | |
| TOTAL | 350 |

11. PROPOSED BUDGET AID APPROPRIATED FUNDS ($000)

| A. APPROPRIATION | B. PRIMARY PURPOSE CODE | PRIMARY TECH. CODE C. GRANT | PRIMARY TECH. CODE D. LOAN | E. FIRST FY F. GRANT | E. FIRST FY G. LOAN | LIFE OF PROJECT H. GRANT | LIFE OF PROJECT I. LOAN |
|---|---|---|---|---|---|---|---|
| (1) PH | 512 | 540 | | 350 | | 350 | |
| (2) | | | | | | | |
| (3) | | | | | | | |
| (4) | | | | | | | |
| TOTAL | | | | 350 | | 350 | |

12. SECONDARY TECHNICAL CODES (maximum six codes of three positions each)

13. SPECIAL CONCERNS CODES (MAXIMUM SIX CODES OF FOUR POSITIONS EACH)

14. SECONDARY PURPOSE CODE

15. PROJECT GOAL (MAXIMUM 240 CHARACTERS)

Improve the quality of human life in LDCs through the reduction of water supply and wastewater disposal associated diseases.

16. PROJECT PURPOSE (MAXIMUM 480 CHARACTERS)

1. To make LDC decision-makers, planners, and designers aware of appropriate technology concepts and knowledgable of the alternatives available for utilization of in-country resources to meet LDC needs in water supply and wastewater treatment. 2. To demonstrate the value of the prediction methodology model for appropriate water and wastewater processes when applied under actual LDC resource constraints.

17. PLANNING RESOURCE REQUIREMENTS (staff/funds)

18. ORIGINATING OFFICE CLEARANCE

Signature: [signature]

Lee M. Howard, M.D.

Title: Director, Office of Health

Date Signed: MM 06, DD 15, YY 77

19. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION: MM, DD, YY

AID 1330-2 (3-76)

Title: Workshops on Appropriate Technology Concepts Incorporating Utilization of a Mathematical Model for Predicting an Appropriate Use of In-Country Resources for Treating Water and Wastewater in Developing Countries

Short Title: Testing Predictive Sanitation Model

1. Summary of the Problem:

The use of appropriate technology for meeting developing countries water supply and excreta disposal requirements is currently a subject of considerable discussion among the various International Development Organizations and LDCs. Because of extremely high LDC morbidity and mortality statistics directly associated with bacterial and viral diarrhea and/or intestinal parasites, the developing countries are beginning to focus on remedies or control measures to reduce the human suffering and improve the water supply and general "sanitation conditions" of the countries. Oftentimes because of lack of personal experience or lack of technical knowledge in dealing with water and wastewater/excreta disposal system alternatives, the developing countries are found to either flounder with ill conceived, completely irrational programs or invite external source international consulting engineering organizations into the country to prepare sanitation system assessments or feasibility studies.

There exists reasonably common agreement among public health entities that ample safe water supplies and sanitary sewage disposal should be of extremely high priority in the LDCs; that effective improvement programs are few; and that a major obstruction to the design of effective improvement programs is that decision makers do not have ready access to information concerning alternative courses of action open to them. Because they are unaware of these alternatives, decision makers contend that costs of water supply and sanitary waste disposal improvements are excessive. This is

frequently true only because of the use of inappropriate and wasteful technology that is incompatible with their resources.

PROPOSED RESPONSE TO THE PROBLEM:

The proposed response is to initiate a well conceived, concise series of "Appropriate Technology in Water and Wastewater Regional Workshops" around the world wherein the local national government decision-makers and local consulting engineers could be exposed to appropriate technology discussions and taught how to effectively utilize an existing model for predicting appropriate use of in-country resources for treating water and wastewater, and (2) initiate a field utilization program using the existing model to determine if two selected LDCs having tremendous water supply and wastewater treatment responsibilities and problems, can use the predictive model to bring together the large number of critical social, technological and existing economy inputs relating to the effective installation and use of appropriate water and wastewater treatment methods or processes, ultimately allowing the investigator to look at all plausible processes, their related costs, operation, maintenance, and the manpower requirements associated with each of the various processes.

PREDICTIVE METHODOLOGY TO BE UTILIZED:

During the period 1974 through 1976, AID sponsored a program at the Univ. of Oklahoma which developed a predictive methodology for identifying appropriate processes for treatment of water and wastewater, i.e., ones that made maximum use of in-country capabilities. The predictive methodology uses socio-economic, population scale, in-country physical resources, water quality parameters, manpower requirements and costs to forecast the most suitable treatment process for the given situation.

The model has the ability to bring together a number of critical inputs relating to the effective installation and use of various water and wastewater

treatment processes in developing country communities. This output allows planners or project engineers to look at all the pausible processes and their related costs, plus the operation, maintenance, and manpower requirements associated with each of the various processes. This technique will eliminate the problem of overlooking good processes for water and wastewater treatment.

II. Financial Requirements and Plans:

The best estimate of project cost is approximately $350,000. The AID share of the projected costs would be $350,000 in the form of a grant. It is probable that the University of Oklahoma will wish to contribute a considerable portion of their normal overhead expense to the project. Any overhead expenses will only be applied to salaries and services performed at the University of Oklahoma facility. The project would be funded in Oct. or Nov. 1977 and continue until the end of Sept. or Oct., 1979.

III. Development of the Project:

The project will be developed primarily between AID and the University of Oklahoma (Prof. George Reid and invited workshop presentation assistants). Dr. Reid and his associates will prepare the workshop materials, arrange for workshop personnel and translator requirements, and develop the program in close coordination with AID/W project development staff and the AID/W project manger in TAB.

1. General - The project is envisioned to take place in five distinct phases. The first phase will be the workshop development and gathering of materials to serve as handouts and class discussion aids.

The second phase will consist of a workshop on "Appropriate Technology Concepts Incorporating Utilization of a Mathematical Model for Predicting an Approximate Use of In-Country Resources for Treating Water and Wastewater in Developing Countries in Washington, D.C. This initial workshop will

be given under AID auspices in Washington, D.C. for a five (5) day period in late November or early December 1977. The participants will be AID interbureau and field personnel and invited appropriate technology program officers in WHO, BID, IBRD, PAHO, IDRC, UNICEF and CARE.

Phase three will consist of the presentation of the adjusted or modified Washington, D.C. workshop in five (5) global or regional areas. The workshops will be presented in English with mobile translation facilities capable of four (4) language simultaneous translation.

Phase four initiates a field demonstration of the use of the methodology in 2 countries (probably Indonesia and Panama). The methodology will be applied against actual country programs and statistics and will be developed by 2 project investigators and secretarial staffs in each country, for a three (3) month period working directly with the local government agencies involved with planning and implementing water and wastewater programs.

Upon the successful completion of the methodology field utilization demonstration studies, the project will initiate a series of 15 regional five (5) day workshops similar to the five (5) workshops given in phase 3. These will be performed between Sept. 1978 and September 1979.

These 15 regional 5-day workshops (Phase 5) will be used to spread the ideas of appropriate use of technology in water and wastewater treatment to a large segment of the decision-makers in the developing world.

2. The next proposed document for submission before funding would be the PP, to be submitted August 1977 with tentative approval by Sept. or Oct. '77.

3. AID/W, TA/H projects the following manpower requirements for development and writing of the PP:

| | | |
|---|---|---|
| TA/H personnel | 1 person | 1 man week |
| 2 Univ. of Oklahoma consultants | | 4 man weeks |

TA/H will provide travel and per diem funds for 2 Univ. of Oklahoma consultants to come to Wash.. D.C. for PP discussions and writing of document.

Once the PID has been approved, considerable coordination will commence between TA/H, Regional Bureau offices, the Univ. of Oklahoma, PAHO, WHO, the Missions involved, and host country government personnel

Estimated USAID costs of preparing PP will be about $2500 from TA/H consultant funds and approximately $600 for TA/H personnel.

IV. Issues of a Policy or Programmatic Nature:

1. Issue: Should the University of Oklahoma be considered for the implementing organization for the project since there were 2 time overruns, without additional cost to AID, amounting to a total of 1 year on the previous contract.

Answer: Dr. George Reid and his interdisciplinary staff at the University of Oklahoma should definitely be the primary implementing participants for the pr ect. The two time delays that resulted in a 1 year time extension without additional funding resulted from subcontracts between the Univ. of Oklahoma and various overseas universities. The overseas universities simply did not produce within the time frame outlined by the Univ. of Oklahoma subcontracts, leaving Oklahoma holding the bag. TA/H is extremely pleased with the professional approach that Dr. Reid and his capable staff have exhibited in the execution of the previous research contract on "Lower Cost Methods of Treating Water and Wastewater in Developing Countries". The multitude of documents produced under the contract were concise, well organized, and innovative. Professor Reid and his staff are more familiar with the predictive methodology to be used in the workshops and field utilization portion than anyone in the devloped world. His ability to explain the methodololgy, its usefulness and applicability is unequaled.

ENVIRONMENTAL THRESHOLD DECISION

TO: AA/TA, Mr. Curtis Farrar

THRU: TA/PPU

FROM: TA/H, Lee M. Howard, M.D.

SUBJECT: Environmental Threshold Decision

Project Title: Testing Predictive Sanitation Model
Project #: 931-1059
Specific Activity (if applicable): Appropriate Technology Regional Workshops
Project Manager: Victor W.R. Wehman, Jr.
REFERENCE: Initial Environmental Examination (IEE) contained in P.I.D. dated 5 April 1977

On the basis of the Initial Environmental/Examination (IEE) referenced above and attached to this memorandum, I recommend that you make the following determination:

__X__ 1. The proposed agency action is not a major Federal action which will have a significant effect on the human environment.

_____ 2. The proposed agency action is a major Federal action which will have a significant effect on the human environment, and:

____ a. An Environmental Assessment is required; or

____ b. An Environmental Impact Statement is required.

The cost of and schedule for this requirement is fully described in the referenced document.

_____ 3. Our environmental examination is not complete. We will submit the analysis no later than _____ with our recommendation for an environmental threshold decision.

Approved: M Bolden for C Farrar

Disapproved: _____

Date: 29 AUG 1977

# INITIAL ENVIRONMENTAL EXAMINATION

Project Location: Inter-Regional

Project Title: Testing Predictive Sanitation Model

Funding (Fiscal Year and Amount): This project is proposed to be funded in October, 1977 for a period of 23 months. Cost of project is estimated to be approximately $350,000 over the two year period.

IEE Prepared by: Victor W.R. Wehman, Jr. Date: 5 April 1977

Environmental Action Recommended: It is recommended that this project receive a negative determination and that no further environmental examinations be carried out on this project.

Concurrence:

L. M. Howard, M.D. , Director, Office of Health, TAB

Assistant Administrator's/Director's Decision: Date:

## Contents of Initial Environmental Examination

### I. Examination of Nature, Scope, and Magnitude of Environmental Impacts

Discription of Project:

The objective of this project is to initiate a well conceived, concise series of "Appropriate Technology in Water and Wastewater Regional Workshops" around the world wherein the local national government decision-makers and local consulting engineers could be exposed to appropriate technology discussions and taught how to effectively utilize an existing model for predicting appropriate use of in-country resources for treating water and wastewater and (2) to initiate a field utilization program using the existing model to determine if two selected LDCs havi g tremendous water supply and wastewater treatment responsibilities and problems, can use the predictive model to bring together the large number of critical social, technological and existing economy inputs relating to the effective installation and use of appropriate water and wastewater treatment methods or processes, ultimately allowing the investigator to look at all plausible processes, their related costs, operation, maintenance, and the manpower requirements associated with each of the various processes.

IMPACT IDENTIFICATION AND EVALUATION FORM

| Impact Areas and Sub-areas 1/ | Impact Identification and Evaluation 2/ |
|---|---|
| **A. LAND USE** | |
| 1. Changing the character of the land through: | |
| a. Increasing the population | N |
| b. Extracting natural resources | N |
| c. Land clearing | N |
| d. Changing soil character | N |
| 2. Altering natural defenses | N |
| 3. Foreclosing important uses | N |
| 4. Jeopardizing man or his works | N |
| 5. Other factors | |
| _____ | N |
| _____ | N |
| **B. WATER QUALITY** | |
| 1. Physical state of water | N |
| 2. Chemical and biological states | N |
| 3. Ecological balance | N |
| 4. Other factors | |
| _____ | N |
| _____ | N |

1/ See Explanatory Notes for this form.

2/ Use the following symbols: N - No environmental impact
L - Little environmental impact
M - Moderate environmental impact
H - High environmental impact
U - Unknown environmental impact

C. ATMOSPHERIC

1. Air additives ---------- N
2. Air pollution ---------- N
3. Noise pollution ---------- N
4. Other factors

_____ N

_____

D. NATURAL RESOURCES

1. Diversion, altered use of water ---------- N
2. Irreversible, inefficient commitments ---------- N
3. Other factors

_____ N

_____

E. CULTURAL

1. Altering physical symbols ---------- N
2. Dilution of cultural traditions ---------- N
3. Other factors

_____ N

_____

F. SOCIOECONOMIC

1. Changes in economic/employment patterns ---------- N
2. Changes in population ---------- N
3. Changes in cultural patterns ---------- N
4. Other factors

_____ N

_____

G. HEALTH

1. Changing a natural environment ---------- N
2. Eliminating an ecosystem element ---------- N
3. Other factors

_____ N

_____

H. GENERAL

1. International impacts ---------- N
2. Controversial impacts ---------- N
3. Larger program impacts ---------- N
4. Other factors

_____ N

_____ N

I. OTHER POSSIBLE IMPACTS (not listed above)

_____ N

_____ N

_____

ANNEX B

# ENVIRONMENTAL THRESHOLD DECISION

TO: AA/TA, Mr. Curtis Farrar

THRU: TA/PPU

FROM: TA/H. Lee M. Howard, M.D.

SUBJECT: Environmental Threshold Decision

Project Title: Testing Predictive Sanitation Model
Project #: 931-1059
Specific Activity (if applicable): Appropriate Technology Regional Workshops
Project Manager: Victor W.R. Wehman, Jr.
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Approved: M Belcher for C Farrar

Disapproved: _____

Date: 29 AUG 1977

ENVIRONMENTAL THRESHOLD DECISION

TO: AA/TA, Mr. Curtis Farrar

THRU: TA/PPU

FROM: TA/H, Lee M. Howard, M.D.

SUBJECT: Environmental Threshold Decision

Project Title: Testing Predictive Sanitation Model
Project #: 931-1059
Specific Activity (if applicable): Appropriate Technology Regional Workshops
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_____ 3. Our environmental examination is not complete. We will submit the analysis no later than _____ with our recommendation for an environmental threshold decision.

Approved: M S Bellman for C Farrar

Disapproved: _____

Date: 29 AUG 1977

# INITIAL ENVIRONMENTAL EXAMINATION

Project Location: Inter-Regional

Project Title: Testing Predictive Sanitation Model

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|---|---|
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| a. Increasing the population | N |
| b. Extracting natural resources | N |
| c. Land clearing | N |
| d. Changing soil character | N |
| 2. Altering natural defenses | N |
| 3. Foreclosing important uses | N |
| 4. Jeopardizing man or his works | N |
| 5. Other factors | |
| _____ | N |
| _____ | N |
| **B. WATER QUALITY** | |
| 1. Physical state of water | N |
| 2. Chemical and biological states | N |
| 3. Ecological balance | N |
| 4. Other factors | |
| _____ | N |
| _____ | N |

1/ See Explanatory Notes for this form.

2/ Use the following symbols:
N - No environmental impact
L - Little environmental impact
M - Moderate environmental impact
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IMPACT IDENTIFICATION AND EVALUATION FORM

C. ATMOSPHERIC

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4. Other factors

_____ N

_____

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1. Diversion, altered use of water ---------- N
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_____

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1. Altering physical symbols ---------- N
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3. Other factors

_____ N

_____

F. SOCIOECONOMIC

1. Changes in economic/employment patterns ---------- N
2. Changes in population ---------- N
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4. Other factors

N

_____

G. HEALTH

1. Changing a natural environment ---------- N
2. Eliminating an ecosystem element ---------- N
3. Other factors

_____ N

_____

H. GENERAL

1. International impacts ---------- N
2. Controversial impacts ---------- N
3. Larger program impacts ---------- N
4. Other factors

_____ N

_____ N

I. OTHER POSSIBLE IMPACTS (not listed above)

_____ N

_____ N

_____

ANNEX C

Testing Predictive Sanitation Model
Proposed Project Implementation Plan

**Project** Implementation Period - - - 22 months

**Project** funded January 1978 - September 1979

**A.** Methodology Field Utilization Program **Feb. - May 1978**

(1) Indonesia
(2) Panama

**B.** Washington, D.C. AID/International Organization participant 5-day Workshop **June, 1978**

**C.** Regional/National 5-day Workshops **June 78-Aug 1979**

(1) Santa Domingo, Dominican Republic
(2) Cartagena, Colombia
(3) Panama City, Panama
(4) Guatemala City, Guatemala
(5) Asuncion, Paraguay
(6) La Paz, Bolivia
(7) Lima, Peru
(8) Lagos, Nigeria
(9) Abijan, Ivory Coast
(10) Dakar, Senegal
(11) Tunis, Tunisia
(12) Nairobi, Kenya
(13) Manila, Philippines
(14) Jakarta, Indonesia
(15) Bangkok, Thailand
(16) Islamabad, Pakistan
(17) Dacca, Bangladesh

***Up to three additional sites may be added during the course of the project based upon technical demand.**

AID 1020-20 (1-72)

# PROJECT DESIGN SUMMARY
## LOGICAL FRAMEWORK

Life of Project:
From FY 1978 to FY 1979
Total U.S. Funding $400,000
Date Prepared: November 14, 1977

Project Title & Number: Testing Predictive Sanitation Model--931-1059.15

| NARRATIVE SUMMARY | OBJECTIVELY VERIFIABLE INDICATORS | MEANS OF VERIFICATION | IMPORTANT ASSUMPTIONS |
|---|---|---|---|
| Program or Sector Goal: The broader objective to which this project contributes:<br>-1. To improve the quality of human life in LDC's through the reduction of water supply and wastewater disposal associated diseases. | Measures of Goal Achievement:<br>1. LDC decision-makers using methodology and info alternatives to select processes that meet incountry resources. 2. Appropriate tech and O & M systems are being introduced thru multilateral programs. 3. Communities actively soliciting systems because they know others are functioning with a minimum of problems. 4. Mo re systems/units installed for previous investment levels. 5. National/international funding organ. more willing to invest because of higher benefit/cost ratios. | 1. Thru incountry surveys and discussions with national/international organizations. | Assumptions for achieving goal targets:<br>1. Workshop participants will accept and use appropriate technology alternative information and methodologies presented in the workshops.<br>2. Local/national governments will continue to wish to invest into this services sector. |
| Project Purpose:<br>1. To make LDC decision-makers, designers, planners aware of appropriate technology concepts & knowledgable of the alternatives available for utilization of in-country resources to meet LDC needs in water treatment, wastewater treatment and individual family excreta disposa<br>2. To demonstrate value of prediction methodology for selecting appropriate water and wastewater treatment processes when applied under actual LDC resource constraints. | Conditions that will indicate purpose has been achieved: End of project status.<br>1. Workshop participants exhibit enthusiasm and interest in materials/concepts presented. 2. Available technologies and national/international funds to meet W&WW/excreta disposal program problems is more effectively utilized. | 1. Indepth evaluation of before and after "techniques and information obtained" to look at investment and service facilities histories. | Assumptions for achieving purpose:<br>1. Workshop participants openly & actively participate, 2. Workshop methods & materials are properly designed to be interesting & technically stimulating. 3. Communication ta place between lecturers & participants. 4. Workshop facilities, environment and wor shop lecturers create a positive learning situation. 5. Government, industry & privat consultants participate by sending key decision-makers/planners/designers to worksho 6. Workshop developers are truly knowledgabl in the subject matter. |
| Outputs:<br>1) Workshop-Training of LDC decision-makers/planners/designers/consultants in the use of selection methodologies for appropriate water and wastewater/excreta disposal treatment.<br>2) Collaborative participation training of LDC government counterparts in the actual use of the selection methodology on real world data in two LDC countries (Indonesia and Panama). | Magnitude of Outputs:<br>1. 18-20 five day workshops. 2. 700-800 decision-makers trained. 3. Selection methodology used & verified in 2 countries. 4. 2 countries have trained counterparts. 5. 35-50 international development organization technical managers trained. 6. 35 hours worth of detailed workshop lesson plans developed. | 1. Reports, manuals, questions generated at workshop.<br>2. Workshop Reports<br>3. Completed workshops<br>4. Field verification reports. | Assumptions for achieving outputs: 1. Ready availabilit of printing facilities. 2. Ready availabilit & interest of highly qualified workshop lecturers. 3. Workshop materials (catalog an textbook) are completed. 4. Government count parts enthusiastically support data acquisition and massaging necessary for methodolog utilization. 5. Ready availability of funds to accomplish inputs and outputs. |
| Inputs: 1. 18-20 workshop training teams. . Simultaneous translation equipment for 45 people . $400,000. 4. Cooperation & participation of the ter & wastewater/excreta disposal infrastructure Panama & Indonesia. 5. Workshop facilities preded by co-sponsoring organization. 6. Approximately 0-800 workshop participants (30-45 participants r workshop) 7. 800 sets of workshop documents. | Implementation Target (Type and Quantity)<br>1. Proj. implementation period-21 mos.<br>2. AID/W/International lending Org. 5 day workshop-Winter '78, 3.5 day regnat'l workshops-Winter/Spring '78.<br>4. Methodology field utilization prog. In Panama & Indonesia-Jun-Aug '78.<br>5. 12-14 5 day workshops Fall '78-Fall '7<br>6. Evaluation & Final Report on Workshops-Fall '79 -Tot. funds expended = $400,000 over 24 months. | 1. Financial Reports<br>2. Progress Reports | Assumptions for providing inputs:<br>1. Team members available for workshops. 2. $400,000 contract signed by end of January 1978. 3. Missions support, AID/W enthusiasm for project. 4. Proper mix of workshop participants available & interested 5. Contractor has assembled competent management team to work out myriad of technical details before workshop can actively take place. |

PROJECT NUMBER: 9311059

| PROCESS: | ACTION: | DATES: | INITIALS: |
|---|---|---|---|
| CATALOGUE | ✓ | 3/6/81 | MBJ |
| ABSTRACT | ✓ | 3/6/81 | MBJ |
| FICHE | | | |
| | | | |
| | | | |

COMMENTS:

DS/DIJ