

PN AAL 450

# Water for the World



How to Use Technical Notes  
Technical Note No. HR. G

"Water for the World" technical notes are intended for use in the developing nations by people who have field responsibility for water supply and sanitation programs in rural areas. There are 160 technical notes covering detailed topics on human resources, water supply, sanitation and disease. Some of the topics are complicated but most of the technical notes present materials in a way that a layperson with some knowledge of water supply and sanitation can carry out the activity described.

There are a number of possible uses of technical notes in addition to their primary purpose of providing useful information to people working directly in the field on water supply and sanitation projects. For example, the material can be translated as is into local languages and reproduced; it can be divided into more useful segments to meet a local situation's needs and made culture specific; it can be used as training materials; or it can be the basis for posters, radio spots, flyers, or other audio-visual aids for use in a community education effort or in other ways.

### Other "Water for the World" Materials

Also a part of the "Water for the World" series is a book and three booklets. The book is titled Safe Water and Waste Disposal for Rural Health: A Program Guide. It was written for people in the developing nations who are interested in putting together a countrywide program for improving rural water supply and sanitation facilities. It does not contain as much specific technical information as the technical notes. Rather, it focuses on all of the elements that go into designing and implementing a successful water and waste disposal program.

The three booklets were written for policy-makers in the developing nations to highlight the need for action to

improve water supplies and sanitation facilities. One of the booklets is a short summary of the Program Guide. The other two are titled "Program Planning for the Decade for Water" and "Program Implementation for the Decade for Water."

### Organization of Technical Notes

The technical notes are divided into four broad categories: Human Resources (HR), Rural Water Supply (RWS), Sanitation (SAN), and Disease (DIS). The notes are organized as shown in Table 1. Each broad category is divided into two or more series, each of which is assigned a number. Then the numbered series are divided into methods (M), planning (P), design (D), construction (C), and operation and maintenance (O) for the Rural Water Supply and Sanitation categories; into methods (M), planning (P) and implementation (I) for the Human Resources category; and into methods (M) and planning (P) for the Disease category.

If possible, the technical notes should be read and used in order: methods first, then planning, then design, and so on. In this way, the person using the technical notes will have a thorough understanding of the subject covered and will be able to proceed with the activity in an orderly, logical way. The methods, planning and design technical notes were written for people with some experience in the subject covered who are responsible for project design and decision-making. The construction and operation and maintenance technical notes, in most cases, may be used by people with less experience since these activities involve little or no decision-making. Thus, the construction and operation and maintenance technical notes may be used by someone who is carrying out their tasks, but is working under another person who has consulted the methods, planning and design notes for that particular project.

All technical notes have both a title and a number which identifies where they fit on Table 1. For example, SAN.3.C.4, "Constructing a Biogas System" is in the Sanitation category (SAN), the Solid Waste Disposal series (3), and has to do with construction (C). It is the fourth

kind of solid waste disposal system on which technical notes were written (4). All of the technical notes are cross-referenced by both title and number so that they will be easy to find. The following is a list of all of the "Water for the World" technical notes.

## List of Technical Notes

### HUMAN RESOURCES

- HR.G How to Use Technical Notes
- HR.1 Overview of Water and Sanitation System Development

#### HR. 2 Community Participation

##### Methods

- HR.2.M Methods of Initiating Community Participation in Water Supply and Sanitation Programs

##### Planning

- HR.2.P Community Participation in Planning Water Supply and Sanitation Programs

##### Implementation

- HR.2.I Community Participation in Implementing Water Supply and Sanitation Programs

#### HR. 3 Operation and Maintenance Training

##### Methods

- HR.3.M Methods of Operation and Maintenance Training

##### Planning

- HR.3.P Planning Operation and Maintenance Training

##### Implementation

- HR.3.I.1 Implementing Operation and Maintenance Training
- HR.3.I.2 Evaluating Operation and Maintenance Training

## RURAL WATER SUPPLY

RWS.G Overview of Rural Water Supply

### RWS. 1 Surface Water

#### Methods

RWS.1.M Methods of Developing Sources of Surface Water

#### Planning

RWS.1.P.1 Planning How to Use Sources of Surface Water

RWS.1.P.2 Conducting Sanitary Surveys to Determine Acceptable Surface Water Sources

RWS.1.P.3 Selecting a Source of Surface Water

RWS.1.P.4 Choosing Where to Place Intakes

RWS.1.P.5 Evaluating Rainfall Catchments

#### Design

RWS.1.D.1 Designing Structures for Springs

RWS.1.D.2 Designing Intakes for Ponds, Lakes and Reservoirs

RWS.1.D.3 Designing Intakes for Streams and Rivers

RWS.1.D.4 Designing Roof Catchments

RWS.1.D.5 Designing Small Dams

#### Construction

RWS.1.C.1 Constructing Structures for Springs

RWS.1.C.2 Constructing Intakes for Ponds, Lakes and Reservoirs

RWS.1.C.3 Constructing Intakes for Streams and Rivers

RWS.1.C.4 Constructing, Operating and Maintaining Roof Catchments

RWS.1.C.5 Constructing Small Dams

#### Operation and Maintenance

RWS.1.O.1 Maintaining Structures for Springs

RWS.1.O.2 Maintaining Intakes

RWS.1.O.5 Maintaining Small Dams

## RWS 2. Ground Water

### Methods

RWS.2.M Methods Identifying Sources of Ground Water

### Planning

RWS.2.P.1 Planning How to Use Sources of Ground Water

RWS.2.P.2 Selecting a Method of Well Construction

RWS.2.P.3 Selecting a Well Site

### Design

RWS.2.D.1 Designing Dug Wells

RWS.2.D.2 Designing Driven Wells

RWS.2.D.3 Designing Jetted Wells

RWS.2.D.4 Designing Bored or Augered Wells

RWS.2.D.5 Designing Cable Tool Wells

### Construction

RWS.2.C.1 Constructing Dug Wells

RWS.2.C.2 Constructing Driven Wells

RWS.2.C.3 Constructing Jetted Wells

RWS.2.C.4 Constructing Bored or Augered Wells

RWS.2.C.5 Constructing Cable Tool Wells

RWS.2.C.6 Maintaining Well Logs

RWS.2.C.7 Testing the Yield of Wells

RWS.2.C.8 Finishing Wells

RWS.2.C.9 Disinfecting Wells

## RWS. 3 Water Treatment

### Methods

RWS.3.M Methods of Water Treatment

### Planning

RWS.3.P.1 Determining the Need for Water Treatment

RWS.3.P.2 Taking a Water Sample

RWS.3.P.3 Analyzing a Water Sample

RWS.3.P.4 Planning a Water Treatment System

### Design

- RWS.3.D.1 Designing Basic Household Water Treatment Systems
- RWS.3.D.2 Designing a Small Community Sedimentation Basin
- RWS.3.D.3 Designing a Slow Sand Filter
- RWS.3.D.4 Designing a Small Community Disinfection Unit
- RWS.3.D.5 Water Treatment in Emergencies

### Construction

- RWS.3.C.1 Constructing a Household Sand Filter
- RWS.3.C.2 Constructing a Sedimentation Basin
- RWS.3.C.3 Constructing a Slow Sand Filter
- RWS.3.C.4 Constructing a Disinfection Unit

### Operation and Maintenance

- RWS.3.O.1 Operating and Maintaining Household Treatment Systems
- RWS.3.O.2 Operating and Maintaining a Sedimentation Basin
- RWS.3.O.3 Operating and Maintaining a Slow Sand Filter
- RWS.3.O.4 Operating and Maintaining a Chemical Disinfection Unit

### **RWS. 4 Water Distribution**

#### Methods

- RWS.4.M Methods of Delivering Water

#### Planning

- RWS.4.P.1 Choosing Between Gravity Flow and Pumps
- RWS.4.P.2 Choosing Between Community Distribution Systems and Household Water Connections
- RWS.4.P.3 Selecting Pipe Materials
- RWS.4.P.4 Selecting a Power Source for Pumps
- RWS.4.P.5 Selecting Pumps
- RWS.4.P.6 Manufacturing Hand Pumps Locally

#### Design

- RWS.4.D.1 Designing a System of Gravity Flow
- RWS.4.D.2 Determining Pumping Requirements
- RWS.4.D.3 Designing a Transmission Main

RWS.4.D.4 Designing Community Distribution Systems

RWS.4.D.5 Designing a Hydraulic Ram Pump

Construction

RWS.4.C.1 Installing Pipes

RWS.4.C.2 Installing Mechanical Pumps

RWS.4.C.3 Installing Hand Pumps

RWS.4.C.4 Constructing Community Distribution Systems

RWS.4.C.5 Constructing a Distribution System with Household Connections

Operation and Maintenance

RWS.4.O.1 Detecting and Correcting Leaking Pipes

RWS.4.O.2 Operating and Maintaining Mechanical Pumps

RWS.4.O.3 Operating and Maintaining Hand Pumps

RWS.4.O.5 Operating and Maintaining Household Water Connections

**RWS. 5 Water Storage**

Methods

RWS.5.M Methods of Storing Water

Planning

RWS.5.P.1 Determining the Need for Water Storage

Design

RWS.5.D.1 Designing a Household Cistern

RWS.5.D.2 Designing a Ground Level Storage Tank

RWS.5.D.3 Designing an Elevated Storage Tank

Construction

RWS.5.C.1 Constructing a Household Cistern

RWS.5.C.2 Constructing a Ground Level Storage Tank

RWS.5.C.3 Constructing an Elevated Storage Tank

Operation and Maintenance

RWS.5.O.1 Maintaining Water Storage Tanks

## SANITATION

SAN.G Overview of Sanitation

### SAN. 1 Simple Excreta and Washwater Disposal

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SAN.1.M.1 Simple Methods of Excreta Disposal

SAN.1.M.2 Simple Methods of Washwater Disposal

#### Planning

SAN.1.P Planning Simple Excreta and Washwater Disposal Systems

#### Design

SAN.1.D.1 Designing Slabs for Privies

SAN.1.D.2 Designing Pits for Privies

SAN.1.D.3 Designing Privy Shelters

SAN.1.D.4 Designing Aqua Privies

SAN.1.D.5 Designing Bucket Latrines

SAN.1.D.6 Designing Compost Toilets

SAN.1.D.7 Designing Sumps, Soakage Pits and Trenches

#### Construction

SAN.1.C.1 Constructing Slabs for Privies

SAN.1.C.2 Constructing Pits for Privies

SAN.1.C.3 Constructing Privy Shelters

SAN.1.C.4 Constructing Aqua Privies

SAN.1.C.5 Constructing Bucket Latrines

SAN.1.C.6 Constructing Compost Toilets

SAN.1.C.7 Constructing, Operating, and Maintaining Sumps, Soakage Pits, and Trenches

#### Operation and Maintenance

SAN.1.O.1 Operating and Maintaining Privies

SAN.1.O.4 Operating and Maintaining Aqua Privies

SAN.1.O.5 Operating and Maintaining Bucket Latrines

SAN.1.O.6 Operating and Maintaining Compost Toilets

## SAN. 2 Combined Excreta and Washwater Disposal

### Methods

SAN.2.M Methods of Combined Washwater and Excreta Disposal

### Planning

SAN.2.P.1 Planning Combined Washwater and Excreta Disposal Systems

SAN.2.P.2 Estimating Sewage or Washwater Flows

SAN.2.P.3 Determining Soil Suitability

### Design

SAN.2.D.1 Designing Subsurface Absorption Systems

SAN.2.D.2 Designing Cesspools

SAN.2.D.3 Designing Septic Tanks

SAN.2.D.4 Designing Sewer Systems

SAN.2.D.5 Designing Stabilization Ponds

SAN.2.D.6 Designing a System of Stabilization Ponds

SAN.2.D.7 Designing Mechanically Aerated Lagoons

SAN.2.D.8 Designing Non-Conventional Absorption Disposal Systems

### Construction

SAN.2.C.1 Constructing, Operating and Maintaining Subsurface Absorption Systems

SAN.2.C.2 Constructing Cesspools

SAN.2.C.3 Constructing Septic Tanks

SAN.2.C.4 Constructing Sewer Systems

SAN.2.C.5 Constructing Stabilization Ponds

SAN.2.C.7 Constructing Mechanically Aerated Lagoons

SAN.2.C.8 Constructing, Operating and Maintaining Non-Conventional Absorption Systems

### Operation and Maintenance

SAN.2.O.3 Operating and Maintaining Septic Tanks

SAN.2.O.4 Operating and Maintaining Sewer Systems

SAN.2.O.5 Operating and Maintaining Stabilization Ponds

SAN.2.O.7 Operating and Maintaining Mechanically Aerated Lagoons



## SAN. 3 Solid Waste Disposal

### Methods

SAN.3.M Methods of Solid Waste Management

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SAN.3.P Planning Solid Waste Management Systems

### Design

SAN.3.D.1 Designing a Landfill

SAN.3.D.2 Designing a Composting System

SAN.3.D.3 Designing a Solid Waste Collection System

SAN.3.D.4 Designing a Biogas System

### Construction

SAN.3.C.4 Constructing a Biogas System

### Operation and Maintenance

SAN.3.O.1 Operating and Maintaining a Landfill

SAN.3.O.2 Operating and Maintaining a Composting System

SAN.3.O.3 Operating a Solid Waste Collection System

SAN.3.O.4 Operating and Maintaining a Biogas System

## DISEASE

DIS.G Overview of Diseases

### DIS. 1 Water Supply, Sanitation and Disease

#### Methods

DIS.1.M.1 Means of Disease Transmission

DIS.1.M.2 Methods of Improving Environmental Health Conditions

#### Planning

DIS.1.P Planning Disease Control Programs

### DIS. 2 Specific Diseases

#### Methods

DIS.2.M.1 Methods of Controlling Schistosomiasis

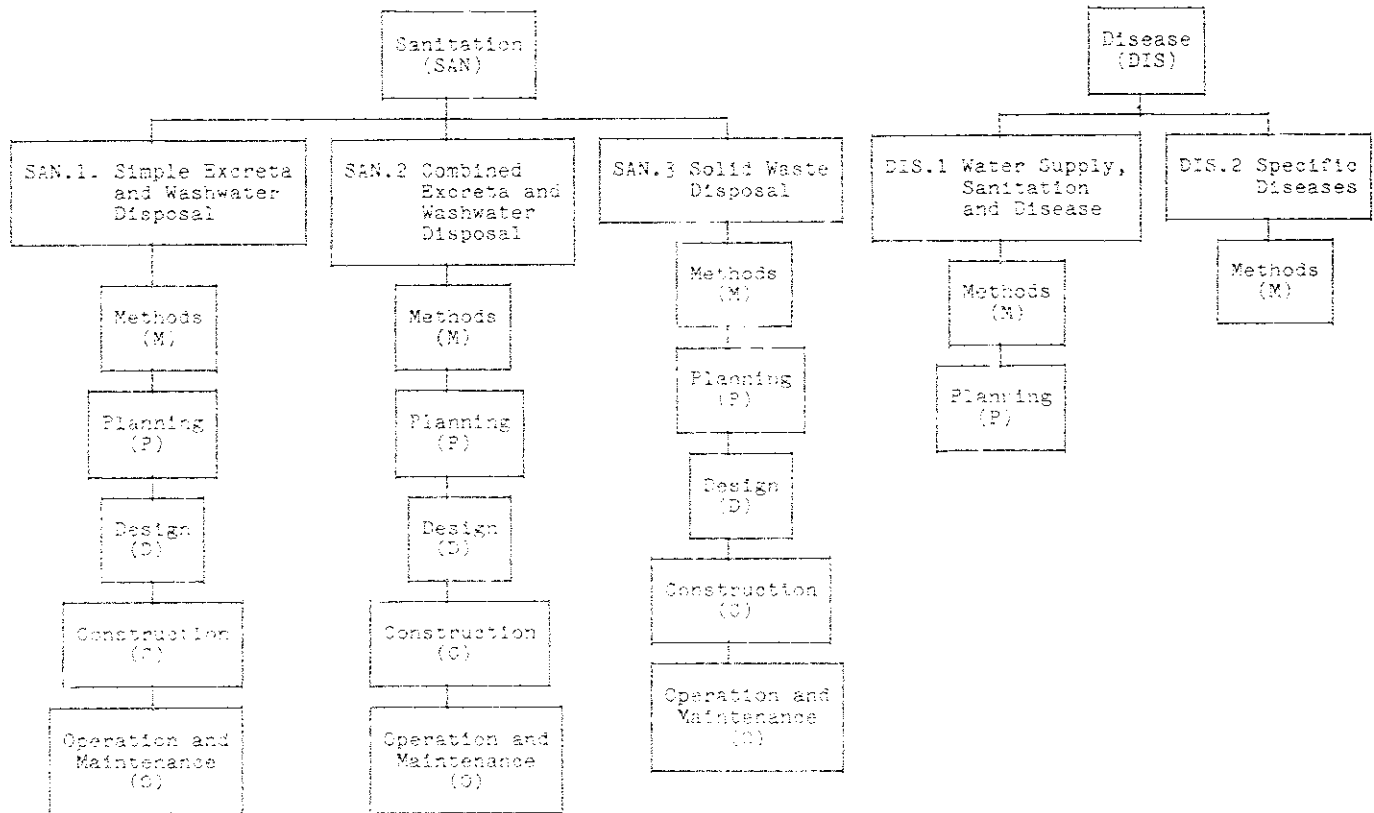
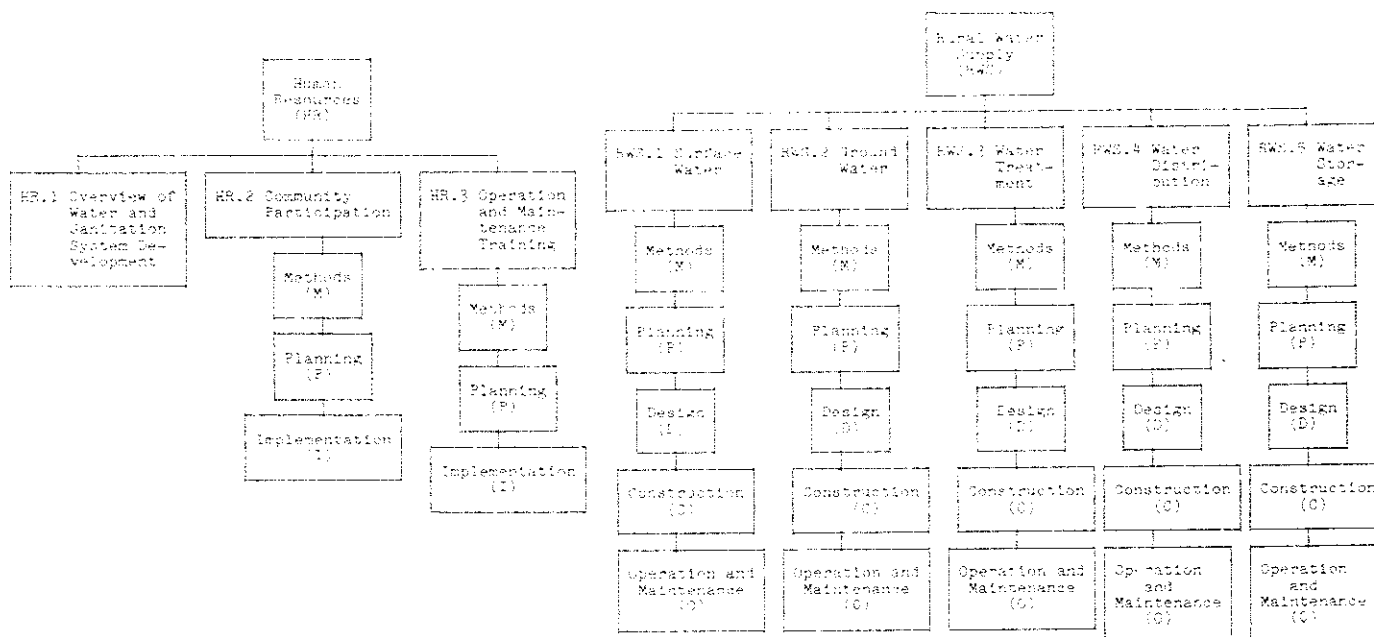
DIS.2.M.2 Methods of Controlling African Trypanosomiasis

DIS.2.M.3 Methods of Controlling South American Trypanosomiasis

DIS.2.M.4 Methods of Controlling Enteric Diseases

DIS.2.M.5 Methods of Controlling Onchocerciasis

Table 1. Organization of Technical Notes



## Notes

**Technical Notes** are part of a set of "Water for the World" materials produced under contract to the U.S. Agency for International Development by National Demonstration Water Project, Institute for Rural Water, and National Environmental Health Association. Artwork was done by Redwing Art Service. Technical Notes are intended to provide assistance to a broad range of people with field responsibility for village water supply and sanitation projects in the developing nations. For more detail on the purpose, organization and suggestions for use of Technical Notes, see the introductory Note in the series, titled "Using 'Water for the World' Technical Notes." Other parts of the "Water for the World" series include a comprehensive Program Manual and several Policy Perspectives. Further information on these materials may be obtained from the Development Information Center, Agency for International Development, Washington, D.C., 20523, U.S.A.