



# GUIDELINES FOR THE DEVELOPMENT OF SMALL SCALE RURAL WATER SUPPLY AND SANITATION PROJECTS IN ETHIOPIA



# **GUIDELINES FOR THE DEVELOPMENT OF SMALL-SCALE RURAL WATER SUPPLY AND SANITATION PROJECTS IN ETHIOPIA**

## **A Policy and Planning Framework for Activities Funded by USAID under the Title II (Food for Peace) Program**

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## ACRONYMS

CFR	Code of Federal Regulations
CS	Cooperating Sponsor
DAP	Development Activity Proposal
ESR	Environmental Status Report
IEE	Initial Environmental Examination
PAA	Previously Approved Activity
TAP	Transitional Activity Proposal
USAID	United States Agency for International Development
WHO	World Health Organization

## **PART I: BACKGROUND**

### **Introduction**

This document constitutes general guidelines for the planning and implementation of Title II-funded water and sanitation activities in rural Ethiopia. It is the result of a cooperative effort by the USAID Mission to Ethiopia and the non-governmental organizations (Cooperating Sponsors) participating in the Title II (Food for Peace) Program to improve the effectiveness, environmental protection and long-term sustainability of water supply and sanitation activities carried out in food insecure areas of Ethiopia.

It is expected that these guidelines will be used, and revised as needed, to orient the overall direction and nature of water and sanitation projects within the Title II program. The guidelines are not intended to be restrictive but rather to encourage development that is more likely to be sustainable and have greater potential for enhanced health benefits in the project communities.

### **Origins of the Guidelines**

These guidelines are the result of several major policy changes in USAID and a number of initiatives taken by the USAID/Ethiopia Mission. The first change was the new global emphasis put on environmental protection by USAID in the late 1990s. Due to growing concerns over the cumulative impact of development activities upon the environment and the health-related effects of toxic contaminants, especially arsenic, in water, small water supply and sanitation projects were made subject to the USAID environmental regulations, most notably 22 CFR 216. These regulations require the Agency to make threshold decisions concerning the significance of environmental impacts that various types of actions, including water and sanitation activities may have. In addition to this regulatory role, USAID also became concerned about the effects of adverse environmental consequences upon the sustainability of development activities.

The second change was the decision of USAID/Ethiopia to take the initiative in reviewing the environmental consequences of small irrigation and of potable water and sanitation projects funded under the P.L. 480 Title II (Food for Peace) account. This

program is used in Ethiopia to address food security issues affecting highly vulnerable rural households. Food-assisted programs are directed at marginal communities to strengthen their economic and social base and to move them from dependence on external food resources to food security and increasingly, to sustainable development activities. These programs provide not only food but also improve rural infrastructure through the provision of health facilities, drinking water sources, latrines, small scale irrigation schemes and agricultural training. The program is currently delivered through five non-governmental organizations, termed Cooperating Sponsors.

The Title II program in Ethiopia incorporates a variety of potable water and sanitation activities, including the construction of ponds, wells, springs, boreholes, latrines, cattle troughs and washing facilities. These activities are subject to an environmental review, typically under an Initial Environmental Examination (IEE), which usually results in a finding that they do not have significant effects on the environment and hence a formal Environmental Assessment is not required. Despite such a finding, water and sanitation activities function within the natural environment and cumulatively may have significant harmful effects upon it and the welfare of the people they serve.

In 1998, USAID/Ethiopia commissioned a Programmatic Environmental Assessment of small-scale irrigation activities funded by Title II, and in 1999 it sponsored an environmental study of potable water and sanitation activities within Title II. The report of this second study, completed in March 2000, concluded that water supply and sanitation activities within the Title II program in Ethiopia were subject to various weaknesses in both environmental protection and project sustainability. The major concerns arising from this study were:

- Sanitation was lacking in most projects.
- The number of water and sanitation projects being implemented was insufficient to bring about a significant developmental effect.
- Inappropriate technologies for water systems were sometimes used.
- Technical design of water systems was sometimes sub-standard.
- Water quality monitoring was rarely done and never on a regular basis.
- The integration of Title II projects in community-wide development efforts rarely occurred.



- Community participation was inadequate to fully involve communities in all aspects of the projects.
- Water and sanitation committees were generally weak and unable to properly manage the systems.
- Women did not fully participate in project development or have responsible leadership roles.
- Health and hygiene education was inadequate for raising awareness or changing health-related behaviors.

It was noted by the March 2000 report that neither USAID nor the Government of Ethiopia had technical guidelines for the design, construction, operation and maintenance of water and sanitation schemes. To correct these weaknesses, the report recommended a number of improvements in program development and project implementation. These improvements were to be undertaken by both USAID, which was the source of Title II funds, and by the Cooperating Sponsors, the implementers of Title II activities.

This document contains general guidelines that incorporate and build upon the recommendations found in the March 2000 report. It is not an engineering manual, but rather a policy and planning framework within which Title II water and sanitation projects should be implemented. The guidelines were formulated by representatives of the Cooperating Sponsors, Government of Ethiopia, and USAID at a workshop on Title II water and sanitation projects, held March 17-22, 2003 in Dire Dawa. These guidelines represent a consensus on the approach that water and sanitation activities should follow under the Title II program.

### **USAID Regulations**

As of 1998, all PVO/NGOs submitting a new Development Activity Proposal (DAP) or a Previously Approved Activity (PAA) proposal for Title II funds are required to submit environmental documentation for each program. As of 1999, all new Transitional Activity Proposals (TAPs) also need to include environmental documentation. These USAID environmental procedures are included under the Foreign Assistance Act, Section 117, Title 22, Code of Federal Regulations, Part 216, also known as CFR 216 (Regulation

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216). The objective of Reg. 216 is to ensure that all U.S. government funded projects under USAID undergo an environmental review to avoid or lessen any potential adverse impact on the environment. For water and sanitation projects, further reference should be made to the current status of arsenic testing and allowable limits for arsenic in drinking water. The preparation of USAID-funded water and sanitation projects should be based upon the following regulatory and guidance materials:

- 22 CFR 216 (USAID environmental regulations)
- Guidelines For Determining The Arsenic Content Of Ground Water in USAID-Sponsored Well Programs in Sub-Saharan Africa (USAID Bureau for Economic Growth, Agriculture and Trade, June 12, 2002, draft)
- Arsenic Testing in Potable Water - IEE/EA Needs (USAID, State Cable no. 051298, May 12, 1998)

### **Ethiopian Regulations**

In addition to USAID regulations, water and sanitation projects in Ethiopia need to take into consideration current Ethiopian legislation. The Federal Government of Ethiopia published its Environmental Policy in 1997 and, more recently, several water supply and sanitation regulatory and planning documents over 2001-2003, as shown below. The legislative and regulatory requirements of these Ethiopian documents have been considered in the preparation of the USAID guidelines.

- Environmental Impact Assessment Proclamation (No. 299/2002)
- Environmental Pollution Control Proclamation (No. 300/2002)
- Standard of Drinking Water - specifications (2<sup>nd</sup> edition ES261/2001)
- National Water Supply and Sanitation Master Plan (Ministry of Water Resources, 2003)
- National Drinking Water Quality Guidelines (Ministry of Water Resources, draft 2003)
- Ethiopian Public Health Proclamation
- Ethiopian Health Guidelines
- Environmental Health Guidelines

## Indicators and Guideline Statements

The development of guidelines starts with the identification of one or more indicators, which are issues, concepts or actions that can be defined and then measured. In effect, indicators are the general variables that provide the structure, or framework, for guidelines. For example, an important indicator for Title II projects is a water supply and sanitation committee. By itself, this indicator is only a term that describes a group of people in the community with responsibilities for water and sanitation project development. However, there are a number of different characteristics this committee should have in order to contribute to Title II projects. Guideline statements are used to indicate what these characteristics are and how the committee should operate.

To illustrate how guidelines are related to an indicator, consider the indicator of the water supply committee. The committee should have the following: (1) it should define and manage the operations of the project; (2) it should have a legal basis and be authorized to administer financial accounts; (3) it should have input into project planning; and so forth. These characteristics can be formulated as guideline statements, as follows: (1) a water supply and sanitation committee should be established to define and manage the operations of the project; (2) where appropriate, the committee should have a legal basis and be authorized to administer financial accounts; (3) project planning should reflect committee inputs. These three statements, in fact, are included as Title II guidelines within the planning phase of project development.

Thus, indicators are the general concepts from which more specific guideline statements are drawn. The guidelines may be qualitative and show how an activity is to occur, as demonstrated above, or they may be quantitative and show a limit of acceptability, as in the case of water quality (maximum arsenic concentrations of 0.05 mg/l) or water quantity (minimum water supply of 20 liters of water per person per day). The guideline statements, therefore, set out limits and areas of acceptable action.

Part II of this document contains the indicators and guideline statements for Title II water and sanitation projects. There are a total of 23 indicators and 57 guideline

statements. Most of the guideline statements are qualitative in nature describing what should happen rather than how much or how fast it should happen. A few guideline statements have quantitative limits, most notably water quality and water quantity. Together, they define the general framework within which Title II projects should be developed without unnecessarily restricting the flexibility of Cooperating Sponsors to seek the best possible project solution.

Part III consists of a brief statement emphasizing the advisory nature of the indicators and guideline statements presented in Part II. Both USAID and its Cooperating Sponsors are urged to periodically revise the guidelines, as appropriate, on the basis of field experience.

Part IV of this document contains a checklist that should be completed during the appropriate phase of project development (planning, implementation, sustainability) as well as on an annual basis as part of Environmental Status Report.

## **PART II: GUIDELINES FOR WATER SUPPLY AND SANITATION PROJECTS**

### **Policy Requirements**

Title II water supply and sanitation projects are expected to contribute to the USAID/Ethiopia objective of Enhanced Household Food Security in Target Areas. This objective contains five critical intermediate results: increased agricultural production, increased household income, improved health status, maintaining the natural resources base, and maintaining emergency response capacity. To some degree, the small-scale water and sanitation activities funded under Title II generate results that support all of these critical areas. In addition, they are intended to improve the health and welfare of rural Ethiopians through the development of water supply and sanitation activities that are protective of the environment and sustainable in the long term.

The overall guidelines presented here constitute of two general types of directives. The first are policy statements signaling major new directions in the development of Title II water and sanitation programs, while the second consist of guidelines statements specifically addressed to project planning and implementation.

### **Policy Statements**

All new water supply and sanitation programs funded under Title II must conform to the following policy directives:

#### **1. *Sanitation must be linked to water supply.***

This policy requires that sanitation be considered an essential aspect of potable water supply improvements in Title II-funded programs. It is based upon the conclusion that the potential health benefits of improvements in water supplies will not be fully realized unless they are supported by sanitation improvements. As a result, Title II will no longer support improvements in potable water supply systems unless they are accompanied by appropriate components of sanitation. Relevant sanitation investments

may include latrines, washing basins, showers/bathing houses, refuse disposal pits, and household drainage, as well as hygiene education and training for sanitation sustainability.

**2. *Water quality monitoring must occur in all potable water systems.***

Title II water systems are intended to improve the availability, access and quality of drinking water in Ethiopian communities. Without regular monitoring of the quality of water in the supported schemes, there is no acceptable way to determine whether a system is free of harmful pathogenic constituents, or indeed whether the system is providing water of better quality than before the project. Of particular importance to this policy is the monitoring of fecal coliforms, arsenic, fluorides, and nitrates.

**3. *The planning, design, implementation, operation and maintenance of potable water and sanitation projects must be in conformance with these technical guidelines.***

Earlier difficulties with environmental protection and project sustainability in Title II water and sanitation projects arose partly from the absence of guidelines for program development and implementation on the part of the Cooperating Sponsors. These Guidelines are intended to provide essential guidance in the formulation and implementation of Title II water and sanitation projects and to encourage information sharing among all stakeholders, including USAID, the Government of Ethiopia, Cooperating Sponsors, and communities, while at the same time allowing adequate flexibility for innovative program and project development.

**Guideline Statements**

To assist in the overall formulation of Title II water and sanitation activities, guideline indicators and values are described below in terms of the phases of project development in which they occur. There are three phases that occur in most programs: planning, implementation, and sustainability. The planning phase constitutes activities leading up to the approval of project funding; the implementation phase represents activities involving the creation of the project in the field under the direction of the

Cooperating Sponsor; and the sustainability phase consists of the activities carried out by the community and the local government to operate and maintain the water and sanitation system over the long term.

#### **A. Planning Phase**

##### **A.1. Community participation**

- *The Cooperating Sponsor should begin working with the community as the first step in project development.*

Project development must begin with the community and with their concerns and needs. To obtain the essential trust and support for a sustainable project, the Cooperating Sponsor should be prepared to work with the community for 6 to 12 months before starting any project implementation activities in the field.

- *The Cooperating Sponsor should build upon traditional community structures, where available.*

It is better to work with traditional patterns of community leadership and organization that have proven to be effective in the past than to set up procedures and rules for project development that are imported from outside the community. The key is to identify successful traditional approaches and adopt them in project planning where possible.

- *The Cooperating Sponsor should use participatory methods in working with the community.*

Participatory methods should be the basis for all contacts between the Cooperating Sponsor and the community. They provide the only reasonable foundation for generating full involvement and a sense of ownership in the community.

- ***The Cooperating Sponsor should encourage communities to contribute part of the project cost in labor and local materials for the construction of the project.***

Community contributions of labor and materials are an accepted practice in Ethiopia for small-scale development projects. Such contributions help develop a sense of community ownership of the project and enhance local responsibility for long-term operation, maintenance and sustainability.

- ***The Cooperating Sponsor should assist the community to establish effective links with local government technical bureaus and the private sector involved in the provision of maintenance and repair services and the supply of spare parts.***

Local government technical bureaus are the natural partners for the community in maintaining sustainable water and sanitation activities. As the government is neither capable nor expected to cover the maintenance requirements of each water point, the involvement of local artisans and spare part vendors has to be enhanced through the capacity created within the community. These partnerships should be established as early as possible in the planning phase.

#### **A.2. Needs Assessments**

- ***Projects should be based on needs identified by the community.***

The community should identify its own water and sanitation needs and corresponding project solutions through a process of internal discussion and external negotiation. The Cooperating Sponsor should assist this process with information and technical guidance.

#### **A.3. Water Source Identification**

- ***All potential water sources should be considered.***

The most obvious water source may not be the best in terms of quantity available, social acceptance, cost, community health and project sustainability over the expected



service period. The Cooperating Sponsor should use its technical expertise to assess all potential water sources in order to identify an optimal solution subject to concurrence of the community in question.

- ***Whenever surface water resource is considered for development, the community at the upstream and downstream should be consulted and involved in the decision-making process prior to the implementation.***

The quality and quantity of surface water is affected by how it is used upstream of the community. In turn, how the community uses the water will affect the water for the downstream users. Because all communities have interests in maintaining good quality and adequate quantities of water, it is important that proposed surface water developments be discussed with and approved by both the upstream and downstream communities.

- ***All projects should draw water from protected sources.***

Unprotected water sources are subject to contamination and thereby pose risks to the health of the users. Wherever possible, protected sources should be utilized. If protected sources are not available, some form of water treatment may be required. (See guideline A.5. Water Quality.)

- ***Groundwater sources are generally preferable to surface water sources.***

Surface water is more likely to be contaminated than groundwater with microbiological pathogens from human and animal excreta, the most common cause of water pollution in rural Ethiopia. Groundwater, however, is more likely to contain hazardous chemical contaminants, such as arsenic, fluorides and nitrates. Groundwater tends to be safer and less in need of costly water treatment than surface water. In general, the determination of an optimal source of water for a given project should be made on case-by-case basis, taking all the above mentioned factors into consideration.

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- ***Where possible, projects should use water sources that will remain reliable to meet the demand throughout the year and for the design life of the project.***

Water sources that are intermittent or seasonal can be very disruptive to community life and often pose health risks to the users. The Cooperating Sponsor should give priority to sources that provide a reliable supply at all times and for the life of the project.

#### **A.4. Watershed considerations**

- ***All projects should be considered as part of the overall watershed.***

Water supply and sanitation activities should not be considered in isolation from the overall watershed. Environmental and sustainability issues elsewhere in the watershed, both upstream and downstream, may have an influence on the viability of a proposed water and sanitation project.

- ***Where possible, projects should be part of an integrated watershed management approach and support multiple uses of water.***

Title II projects often are funded in water-short areas. Wherever possible, these projects should be incorporated into existing watershed management plans and should promote multiple uses of water as a means of conserving and using efficiently this scarce resource.

#### **A.5. Water quality**

- ***Water quality should be a primary concern in all water projects.***

Since the improvement of health is the major expected benefit of Title II projects, the quality of drinking water must be uppermost in the planning and implementation of water and sanitation activities. Concerns for water quality are integral to all aspects of project development, from source selection through choice of technology to maintenance of completed systems.

- ***A continuous effort should be made to maintain drinking water quality at the highest practical level.***

Projects should draw water from the best available sources, as it is easier to maintain high quality water than to provide treatment to low quality sources. In addition, water quality should not be allowed to deteriorate between the source and the ultimate user. The maintenance of water quality may require a combination of hardware (source improvement, technical design, construction, etc.) and software (education, rules for system usage, monitoring and testing, etc.).

- ***All water sources should have acceptable water quality.***

Title II projects should provide water that is safe and protective of health. Of particular concern are the microbiological contaminants, represented by fecal coliforms, and the toxic chemical contaminants, notably arsenic, fluorides and nitrates. While it is recognized that some project locations may not have available water sources that are free of substances in concentrations hazardous to health, every effort must be taken to ensure that project users are not supplied with water whose quality is worse than the water used before the project was implemented. It is also recognized that because of cost and resource limitations, and the small scale of Title II projects, international guidelines and national standards for water quality may be difficult to apply in rural Ethiopia. For these reasons, the following permissible levels of the main water contaminants are to be used for Title II projects:

Organism or Chemical	International Guidelines <sup>1</sup> Maximum Desirable Level	Title II Projects Maximum Allowable Level
Fecal (E. coli) Coliforms	Nil	50 FC per 100 ml
Arsenic	0.01 mg/l	0.05 mg/l
Fluoride	1.5 mg/l	3.0 mg/l
Nitrate as NO <sub>3</sub>	50 mg/l	50 mg/l

<sup>1</sup> = WHO (1993), Guidelines for Drinking-Water Quality

It should be noted that the proposed guideline values for fecal coliforms, arsenic and fluoride in Title II projects allow higher levels of contaminants than the current international guidelines recommended by WHO. Because water quality monitoring is not yet uniformly practiced in Title II projects, it is believed that the initial application of less restrictive guideline values will encourage greater compliance with the new monitoring requirements. The initial guideline values can be made more restrictive at a later time if (a) water analyses show high levels of contaminants, (b) testing equipment is readily available, and (c) all parties are cooperating with these guidelines. In the case of arsenic, USAID has drafted proposed guidelines for the adoption of the USEPA standard of 0.01 mg/l for drinking water, but this regulation has not yet been adopted.

If a water supply intended for drinking and other consumptive uses does not meet the above maximum allowable levels, a different source or additional treatment may be required. In extreme situations, where alternative water sources are not available and treatment is not feasible, the Cooperating Sponsor must justify why it proposes to use water failing to meet these guidelines and provide training on additional measures the community may take. The Cooperating Sponsor should justify any proposal for the use of an unprotected source and indicate measures it intends to take to protect the health of the users.

- *All water sources/water systems should be regularly monitored for water quality.*

Water quality monitoring in the form of sampling, testing and reporting is an essential aspect of maintaining water quality at the highest practical level. Water sources should be tested before project approval, if possible, and then at project completion. In addition, annual testing of all water systems should be performed to monitor the safety of drinking water.

#### **A.6. Water quantity**

- *Projects should have the capability of supplying at least 20 liters of water per person per day to the service population.*

Title II projects should provide sufficient quantities of water to meet essential health-related household and personal needs, including drinking, cooking, personal hygiene, clothes washing and cleaning. The amount of water available has to be based upon existing and potential downstream demands during the lifespan of the project, taking technical and hydro-geological parameters into consideration. Although actual water usage in Ethiopian rural communities is often very low, even when water is plentiful, projects should be designed to supply a minimum of 20 liters per person per day. If this system capability cannot be achieved, for reasons of inadequate water sources or high costs, the Cooperating Sponsor must justify why it proposes to supply a lesser quantity of water.

#### **A.7. Sanitary surveys**

- ***Project approval must include a sanitary survey assessing health risks.***

Before any new water source or modification to an existing source is approved, the Cooperating Sponsor must submit a sanitary survey showing that the risks to health of the proposed works are either negligible or can be controlled with specific mitigating actions. This sanitary survey will be part of the baseline information for the water source and its associated water system.

#### **A.8. Water supply and sanitation committee**

- ***A water supply and sanitation committee should be established at the onset of the project to define and manage its operations.***

Water and sanitation activities need a dedicated group to oversee and be responsible for project implementation as well as system operation and long-term sustainability. The Cooperating Sponsor should assist the community to set up and support a water supply and sanitation committee to take on these tasks.

- ***Where appropriate, the committee should have a legal basis and be authorized to administer financial accounts.***

In some communities, water and sanitation activities may require committees to collect water fees, hire caretakers, and oversee operations and repairs. The Cooperating

Sponsor in such situations should ensure that the establishment of the committee is in accordance with local laws and financial regulations.

- ***Project planning should reflect committee inputs.***

The committee should be closely involved in the planning and implementation of water and sanitation activities. The Cooperating Sponsor should introduce participatory methods as a means of ensuring the relevance of committee inputs in the planning process.

- ***The committee should be representative of the community.***

If the committee is to carry out its responsibilities on behalf of the entire community, the members of the committee should be representative of all the main interest groups, including women, ethnic minorities, the poor and the weak. The Cooperating Sponsor should assist the community to understand the need for a representative committee.

- ***Women should be fully represented on the committee.***

Women often have the most to gain from improvements in water supplies and sanitation. They usually have to carry the water, maintain the water points, clean the latrines, wash the clothes and prepare the meals. Their membership on the committee should reflect their daily involvement with water and sanitation tasks. In most cases, women should constitute at least half of the members of the committee.

- ***Women should be encouraged to take on leadership roles on the committee.***

Committee membership is not sufficient if the women members have no functional roles. In Ethiopia, women rarely are allowed to take on leadership roles in rural communities. The Cooperating Sponsor has a special responsibility to ensure that women are encouraged to take key leadership positions and is given the training and support to assist them to do so.



### A.9. Project design

- *Projects should reflect generally accepted engineering practices in Ethiopia.*

Title II projects are generally built in poor rural areas and should be implemented within the experience and technical skills of their host communities. If they are designed and constructed beyond the understanding of the users, they are not likely to be properly operated and maintained and the sustainability of the resulting water and sanitation system will be in doubt. Using accepted engineering practices also may allow more people to become involved in overall project development.

- *Project design should be supported by appropriate technical data.*

All projects, no matter how simple or complex, require accurate technical data, such as survey information, water flows, water demands, soil characteristics, etc. Such data are needed for both immediate planning and implementation and for subsequent review in the event of operational problems or project expansion. The Cooperating Sponsor should ensure that appropriate data and information is collected, used and saved for future reference.

- *The choice of technology should reflect costs, community preferences and considerations of long-term sustainability.*

The technologies used to improve water and sanitation should be chosen by the community in light of its expressed needs and capacities. Unless the community believes that it can influence the choice of technology and how it is used, it will not develop a sense of ownership towards the resulting water and sanitation system. The Cooperating Sponsor should assist the community to understand the available technological options and help them to select the technology best suited for their needs.

#### **A.10. Project appraisal**

- ***Final project approval should include agreement by the water supply and sanitation committee, local government and USAID.***

There should be no unilateral decision-making in the selection and approval of projects. The Cooperating Sponsor should ensure that all major stakeholders agree with the project plan before it is submitted for approval and funding.

#### **B. Implementation Phase**

##### **B.1. Community involvement**

- ***The Cooperating Sponsor should ensure that the community remains fully involved during project implementation.***

Community involvement in the project does not end with planning but must continue through the implementation and sustainability phases. The Cooperating Sponsor should encourage the community to remain engaged in decision-making and in the various implementation activities. It also should remain patient with the level of community interest and involvement and not accelerate implementation faster than the rate at which the community is willing to progress.

- ***The Cooperating Sponsor should remain sensitive to the changing needs and preferences of the community.***

As projects evolve, communities sometimes change their minds about the design, location and operation of the proposed system. The Cooperating Sponsor should recognize the right of a community to request project modifications. Changes in community preferences should be seen as a reflection of greater understanding of the project's potential on the part of the community.

- ***The Cooperating Sponsor should encourage local government to be involved in program implementation.***

As a key stakeholder in long-term project sustainability, the local government through its technical bureaus should be involved in overall program implementation, and especially during project construction. The Cooperating Sponsor should act as a channel to keep the local government technical bureaus informed of project progress and actively engaged in major decisions and tasks of project implementation.

## **B.2. Construction**

- ***Projects should use local materials and practices wherever possible.***

The use of local materials and practices, including system designs, construction methods, and labor practices, should be encouraged as communities are familiar with them and can immediately contribute to them. This is an important element in helping the community to develop a sense of ownership towards the project.

- ***Projects should use generally accepted construction practices.***

As stated in the planning phase, construction practices that are familiar can be more readily supported by the community than practices that are different or unnecessarily complex.

## **B.3. Health/hygiene education**

- ***All projects should have a hygiene education component that promotes behavioral change.***

Since the health benefits of improved water supply and sanitation rarely occur without some form of behavioral change, the project should have an educational component that helps the community to understand the need for health and hygiene-related changes in behavior. The most important health-related behavioral changes are (1) washing hands after using the latrine and before preparing meals or nursing babies, (2)

protecting water supplies at the source and in the home, and (3) disposing of human excreta so that it does not contaminate water supplies, food, people or animals.

- ***Wherever possible, watsan projects should be integrated with community health projects.***

Personal and community health are the major beneficiaries of improved water supplies and sanitation. These benefits can be enhanced if water and sanitation projects are part of community health projects, such as primary health care, community integrated management of childhood illnesses, and healthy village projects. Cooperating Sponsors should seek opportunities to link water and sanitation activities with new or ongoing health projects.

#### **B.4. Training**

*(including village management, committee organization, operations and maintenance, finance, monitoring)*

- ***Cooperating Sponsors should share experiences and best practices among themselves.***

There is inadequate sharing of project experiences among the Cooperating Sponsors. Efforts should be made to have a regular forum to exchange information about project designs, best practices, new technologies, participatory methods, cost sharing and water quality monitoring, among others.

- ***The Cooperating Sponsor should ensure that its personnel are adequately trained to plan, develop and support water supply and sanitation projects.***

Personnel responsible for project development should be properly trained and have relevant experience to carry out their responsibilities. It is essential for Cooperating Sponsors to ensure that their staffs are adequately trained and have the appropriate technical references to plan, implement and support Title II water and sanitation activities.

- ***The Cooperating Sponsor should be capable of working with communities on a participatory basis.***

Since participatory methods are supposed to be the basis for all contacts between the Cooperating Sponsor and the community, it is essential that the field personnel of the Cooperating Sponsor are knowledgeable of these methods and capable of using them when working with the communities.

- ***The Cooperating Sponsor should assist the community to develop the skills necessary to manage and maintain the project.***

Many rural communities do not have the skills required to manage a water and sanitation system. The Cooperating Sponsor should see the task of training and advising the community, perhaps through the water supply and sanitation committee, as a top priority of project development and sustainability.

- ***The Cooperating Sponsor should encourage the sharing of experiences between communities.***

Successful activities and approaches in one community should be shared with other communities, especially among neighboring villages. The Cooperating Sponsor should consider ways in which communities can exchange ideas and experiences.

#### **B.5. Monitoring**

- ***The Cooperating Sponsor should work with the water supply and sanitation committee to monitor the implementation of the project.***

The committee should be assisted by the Cooperating Sponsor to understand the critical aspects of project implementation and the need for regular and accurate monitoring of project implementation.

- *The Cooperating Sponsor should assist the water supply and sanitation committee to develop a plan for the future monitoring of the system.*

Long-term sustainability of the water and sanitation system is dependent upon a continuous flow of accurate information regarding operations, water quality, maintenance and financial status. The Cooperating Sponsor should act as a partner with the community in developing a long-term monitoring plan.

- *The Cooperating Sponsor should encourage local government technical bureaus to monitor project implementation.*

The involvement of local government technical bureaus in long-term sustainability of the system is best assured by encouraging them to assist in the monitoring of project implementation. This should help to develop a working relationship between the community and the local government bureaus.

#### **B.6. Reporting**

- *The Cooperating Sponsor should ensure that all reports and records are available to USAID and the water supply and sanitation committee, as appropriate.*

A record of project development activities must be maintained as an aid to future maintenance, trouble-shooting, system modification and evaluation. Since the Cooperating Sponsor will not maintain a permanent presence in the community, it is important that records of all essential information (e.g. surveys, well logs, water quality tests, system designs, expenditures and fee collections) be provided to USAID and to the water supply and sanitation committee.

- *The Cooperating Sponsor should maintain a basic set of technical reference documents in its country office.*

To carry out basic technical design, monitoring and operations of the water and sanitation activities supported by Title II, each Cooperating Sponsor should obtain and

keep a core set of reference documents to guide project development. The list of reference documents considered essential for this purpose is found in Annex A.

#### **B.7. Exit strategy**

- *The Cooperating Sponsor should develop a handing over plan for the transfer of its responsibilities at the completion of the project to the water supply and sanitation committee and local government technical bureaus, as appropriate.*

There are several points at which the Cooperating Sponsor terminates its responsibilities to a project. The first is at the completion of project implementation, when the community becomes responsible for on-going operation and maintenance of the system. The second is when the Cooperating Sponsor is no longer able to provide periodic technical advice and assistance. To help the community understand and be prepared for these transitions, the Cooperating Sponsor should work with the community to prepare a plan for transferring responsibilities to the water supply and sanitation committee.

- *The Cooperating Sponsor should assist the community to establish an agreement with local government technical bureaus for major technical repairs that may be required in the future.*

Although the community is expected to undertake routine maintenance and repairs on its water and sanitation system, it probably will need technical and financial assistance for major technical problems and repairs. The Cooperating Sponsor should help set up an agreement with the local government technical bureaus, which have been involved throughout the project development cycle, for assistance in the event that major interventions are needed in the future.



## **C. Sustainability Phase**

### **C.1. Operations**

- *The community should be fully responsible for the continued operations of the water supply and sanitation system.*

Responsibility for the continuing management and operation of the water and sanitation system will be with the community, most likely through the water supply and sanitation committee. The Cooperating Sponsor should ensure that the community understands that unless it accepts this responsibility long-term sustainability of the system is not possible.

- *The Cooperating Sponsor should continue to assist the community for an appropriate period of time following completion of project implementation.*

The community and its water supply and sanitation committee will probably need technical and advisory assistance for some time following implementation of the project. The Cooperating Sponsor should be prepared to provide minor levels of assistance for perhaps a year or more, as may be needed depending on the type of the scheme, the level of awareness of the committee, accessibility to major towns etc.

### **C.2. Maintenance**

- *The community should have a plan to support and carry out routine maintenance and repairs.*

A plan outlining routine maintenance and repairs should be prepared and accepted by the community before departure of the Cooperating Sponsor.

- *The water supply and sanitation committee should be responsible for carrying out the maintenance plan.*

Management and maintenance of the system should be the primary continuing responsibility of the water supply and sanitation committee.

### C.3. Community Management

- *The community should ensure that the water supply and sanitation committee reports regularly on the status of the water and sanitation system.*

Reporting on system status and operations is an essential part of long-term sustainability. The water supply and sanitation committee should report to the community (and possibly to the local government technical bureaus, and the Cooperating Sponsor) annually and preferably more often. The Cooperating Sponsor may, in turn, need to report to the USAID.

### C.4. Institutional links

- *The Cooperating Sponsor should assist the community to maintain effective links with local government technical bureaus.*

In the event that the community is unable to establish or maintain the necessary close working relationships with the local government technical bureaus, the Cooperating Sponsor should assist this process with all appropriate measures.

### C.5. Monitoring

- *The community should have a plan for the routine monitoring of system operations and community sanitation and hygiene practices.*

As in the case of routine maintenance and repairs, the community should have a plan for carrying out monitoring of system operations, water quality, sanitation activities and the adoption of hygiene and behavioral change practices. The Cooperating Sponsor should help the community to prepare this plan and provide minor amounts of assistance in carrying it out.

- *The water supply and sanitation committee should be responsible for carrying out the monitoring plan.*

The monitoring of the water and sanitation system, environmental health, and the community hygiene practices is another important priority for the water supply and sanitation committee.

#### C.6. Program evaluation

- *The Cooperating Sponsor should carry out an external evaluation of projects at the completion of the overall program.*

An external evaluation should be commissioned by the Cooperating Sponsor at the end of its DAP (Development Activity Proposal) cycle. If necessary, a mid-term evaluation may also be required.

### PART III: REVIEW AND REVISION OF GUIDELINES

The indicator measures and related guideline values contained here should be seen as advisory and intended to encourage the planning and implementation of water and sanitation projects that improve health, protect the environment, and lead to long-term sustainability. These guidelines, however, are not infallible or expected to be permanent. They should be periodically reviewed and revised on the basis of field experience and their contribution to the development of Title II water and sanitation activities. Over time, as experience with the use of guidelines in Title II programming accumulates and both USAID and the Cooperating Sponsors find that the guidelines contribute to better water and sanitation activities, the various guidelines values can be strengthened to promote even better projects. In this manner, the guidelines can be employed as a constantly evolving tool serving to "pull" water and sanitation activities to higher levels of service and effectiveness.

## PART IV: PROJECT DEVELOPMENT CHECKLIST

The purpose of the following checklist is to ensure that Cooperating Sponsors actively consider the indicators and guideline statements in the development and implementation of Title II projects. The checklist should be completed during the appropriate phase of project development (planning, implementation, sustainability) as well as on an annual basis as part of the Environmental Status Report. Each guideline statement should be checked off when the condition described by the statement is either achieved or is being implemented. Guideline statements that are not checked off should be noted by the Cooperating Sponsor and an explanation given why it was not achieved.

A. Planning Phase:	Development Activity Proposal (DAP)	Environmental Status Report (ESR)
<b>A.1. Community mobilization</b> <ul style="list-style-type: none"> <li>o The Cooperating Sponsor should begin working with the community as the first step in project development.</li> <li>o The Cooperating Sponsor should build upon traditional community structures, where available.</li> <li>o The Cooperating Sponsor should use participatory methods in working with the community.</li> <li>o The Cooperating Sponsor should assist the community to establish effective links with the local government technical bureaus.</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>A.2. Needs assessments</b> <ul style="list-style-type: none"> <li>o Projects should be based on needs identified by the community.</li> </ul>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
<b>A.3. Water source identification</b> <ul style="list-style-type: none"> <li>o All potential water sources should be considered.</li> <li>o All projects should draw water from protected sources.</li> <li>o Groundwater sources are generally preferable to surface water sources.</li> <li>o Where possible, projects should use water sources that will remain reliable throughout the year.</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>A.4. Watershed considerations</b> <ul style="list-style-type: none"> <li>o All projects should be considered as part of the overall watershed.</li> <li>o Where possible, projects should be part of an integrated watershed management approach and support multiple uses of water.</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>

A. Planning Phase:	Development Activity Proposal (DAP)	Environmental Status Report (ESR)
<b>A.5. Water quality</b> <ul style="list-style-type: none"> <li>o Water quality should be a primary concern in all water projects.</li> <li>o A continuous effort should be made to maintain drinking water quality at the highest practical level.</li> <li>o All water sources should have acceptable water quality.</li> <li>o All water sources/water systems should be regularly monitored for water quality.</li> <li>o Use of field test kits should be encouraged.</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>A.6. Water quantity</b> <ul style="list-style-type: none"> <li>o Projects should have the capability of supplying at least 20 liters of water per person per day to the service population.</li> </ul>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
<b>A.7. Sanitary surveys</b> <ul style="list-style-type: none"> <li>o Approval must include a sanitary survey assessing health risks.</li> </ul>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
<b>A.8. Water supply and sanitation committee</b> <ul style="list-style-type: none"> <li>o A water supply and sanitation committee should be established to define and manage the operations of the project.</li> <li>o Where appropriate, the committee should have a legal basis and be authorized to administer financial accounts.</li> <li>o Project planning should reflect committee inputs.</li> <li>o The committee should be representative of the community.</li> <li>o Women should be fully represented on the committee.</li> <li>o Women should be encouraged to take on leadership roles on the committee.</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>A.9. Project design</b> <ul style="list-style-type: none"> <li>o Projects should reflect generally accepted engineering practices in Ethiopia.</li> <li>o Project design should be supported by appropriate technical data.</li> <li>o The choice of technology should reflect costs, community preferences and considerations of long-term sustainability.</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>A.10. Project appraisal</b> <ul style="list-style-type: none"> <li>o Final project approval should include agreement by the water supply and sanitation committee, local government and USAID.</li> </ul>	<input type="checkbox"/> <input type="checkbox"/>	

B. Implementation Phase:	Development Activity Proposal (DAP)	Environmental Status Report (ESR)
<b>B.1. Community involvement</b> <ul style="list-style-type: none"> <li>o The Cooperating Sponsor should ensure that the community remains fully involved during project implementation.</li> <li>o The Cooperating Sponsor should remain sensitive to the changing needs and preferences of the community.</li> <li>o The Cooperating Sponsor should encourage local government to be involved in program implementation.</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>B.2. Construction</b> <ul style="list-style-type: none"> <li>o Projects should use local materials and practices wherever possible.</li> <li>o Projects should use generally accepted construction practices</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>B.3. Health/hygiene education</b> <ul style="list-style-type: none"> <li>o All projects should have a hygiene education component that promotes behavioral change.</li> <li>o Wherever possible, water and sanitation projects should be integrated with community health projects.</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>B.4. Training</b> <i>(village management, committee organization, operations and maintenance, finance, monitoring)</i> <ul style="list-style-type: none"> <li>o Cooperating Sponsors should share experiences and best practices among themselves.</li> <li>o The Cooperating Sponsor should ensure that its personnel are adequately trained to plan, develop and support water supply and sanitation projects.</li> <li>o The Cooperating Sponsor should be capable of working with communities on a participatory basis.</li> <li>o The Cooperating Sponsor should assist the community to develop the skills necessary to manage and maintain the project.</li> <li>o The Cooperating Sponsor should encourage the sharing of experiences among communities.</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

B. Implementation Phase:	Development Activity Proposal (DAP)	Environmental Status Report (ESR)
<b>B.5. Monitoring</b> <ul style="list-style-type: none"> <li>○ The Cooperating Sponsor should work with the water supply and sanitation committee to monitor the implementation of the project.</li> <li>○ The Cooperating Sponsor should assist the water supply and sanitation committee to develop a plan for the future monitoring of the system.</li> <li>○ The Cooperating Sponsor should encourage local government technical bureaus to monitor project implementation.</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>B.6. Reporting</b> <ul style="list-style-type: none"> <li>○ The Cooperating Sponsor should ensure that all reports and records are available to USAID and the water supply and sanitation committee, as appropriate.</li> <li>○ The Cooperating Sponsor should maintain a basic set of technical reference documents in its country office.</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>B.7. Handing over</b> <ul style="list-style-type: none"> <li>○ The Cooperating Sponsor should develop a handing over plan for the transfer of its responsibilities at the completion of the project to the water supply and sanitation committee and local government technical bureaus, as appropriate.</li> <li>○ The Cooperating Sponsor should assist the community to establish an agreement with local government technical bureaus for major technical repairs that may be required in the future.</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

C. Sustainability Phase:	Development Activity Proposal (DAP)	Environmental Status Report (ESR)
<b>C.1. Operations</b> <ul style="list-style-type: none"> <li>○ The community should be fully responsible for the continued operations of the water supply and sanitation system.</li> <li>○ The Cooperating Sponsor should continue to assist the community for an appropriate period of time following completion of project implementation.</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>C.2. Maintenance</b> <ul style="list-style-type: none"> <li>○ The community should have a plan to support and carry out routine maintenance and repairs.</li> <li>○ The water supply and sanitation committee should be responsible for carrying out the maintenance plan.</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>C.3. Community management</b> <ul style="list-style-type: none"> <li>○ The community should ensure that the water supply and sanitation committee reports regularly on the status of the water and sanitation system.</li> </ul>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
<b>C.4. Institutional links</b> <ul style="list-style-type: none"> <li>○ The Cooperating Sponsor should assist the community to maintain effective links with local government technical bureaus.</li> </ul>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>
<b>C.5. Monitoring</b> <ul style="list-style-type: none"> <li>○ The community should have a plan for the routine monitoring of system operations and community sanitation and hygiene practices.</li> <li>○ The water supply and sanitation committee should be responsible for carrying out the monitoring plan.</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>C.6. Program evaluation</b> <ul style="list-style-type: none"> <li>○ The Cooperating Sponsor should carry out an external evaluation of projects at the completion of the overall program.</li> </ul>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>



## ANNEXES

### Annex A: Core Technical Reference Documents

Burpee, Gaye et al (February 2000). **A Cooperating Sponsor's Field Guide to USAID Environmental Compliance Procedures.** CRS, Program Quality and Support Department: Baltimore. (<http://www.foodaidmanagement.org/pdfdocs/usaiddoc/FldGuide2000Text1.PDF>)

CRDA (1999). **Training Manual on Community-Based Water Supply and Sanitation.** Training program prepared by Mafeteria Consulting Engineers. Debre Zeit. 4-13 January 1999.

Ethiopian Social Rehabilitation & Development Fund (1997). **Technical Design Manual.** Prepared by Carl Bro International a/s.

Fisher, Weston and Mark Stoughton (March 2002). **USAID Environmental Procedures Training Manual for USAID Environmental Officers and USAID Mission Partners.** AFR Edition. USAID Bureau for Asia and the Near East, Bureau for Africa/Office of Sustainable Development, and REDSO/ESA. (<http://www.encapafrica.org/EPTM.htm>)

Lloyd, Barry and Richard Helmer (1991). **Surveillance of Drinking Water Quality in Rural Areas,** Essex (UK): Longman Scientific and Technical.

Simpson-Hebert, Mayling, Ron Sawyer and Lucy Clarke (1997). **The PHAST Initiative: Participatory Hygiene and Sanitation Transformation: A New Approach to Working with Communities.** WHO/EOS/96.11. Geneva.

USAID (May 12, 1998). **Arsenic Testing in Potable Water - IEE/EA Needs.** State cable 051298.

USAID (June 12, 2002). **Guidelines for Determining the Arsenic Content of Ground Water in USAID-Sponsored Well Programs in Sub-Saharan Africa (draft).** USAID Bureau for Economic Growth, Agriculture and Trade.

U.S. Government Code of Federal Regulations. **Agency Environmental Procedures.** 22CFR216. (<http://www.usaid.gov/environment/22cfr216.htm>)

Warner, Dennis et al (March 2000). **Water and Food-Aid in Environmentally Sustainable Development: An Environmental Study of Potable Water and Sanitation Activities Within the Title II Program in Ethiopia.** Prepared for USAID/Ethiopia by Winrock International. Task Order Contract No. PCE-1-00-96-00002-00. (<http://www.encapafrica.org>)

Warner, Dennis (2002). **Environmental Guidelines for Small-Scale Water Supply and Sanitation Projects: The Application of USAID Regulations under Title II, Regulation 216.** CARE: Atlanta.

WHO (1993). **Guidelines for Drinking-Water Quality (3 vols.).** Geneva: WHO.

WHO (1996). **Fact Sheets on Environmental Sanitation: Cholera and other epidemic Diarrheal Diseases Control.** WHO/EOS/96.4. Prepared by the Robens Institute, University of Surrey.

WHO (2001). **Arsenic in Drinking Water.** Fact Sheet No. 210 (revised). Geneva: WHO. (<http://www.who.int/inf-fs/en/fact210.html>)

Wyatt, Alan et al (1992). **Environmental Guidelines for PVOs and NGOs: Potable Water and Sanitation Projects.** WASH Task No. 383. Water and Sanitation for Health Project. USAID: Washington DC .

## **Annex B: Draft USAID Guidelines for Arsenic in Drinking Water**

### **GUIDELINES FOR DETERMINING THE ARSENIC CONTENT OF GROUND WATER IN USAID-SPONSORED WELL PROGRAMS IN SUB-SAHARAN AFRICA (June 12, 2002 DRAFT)**

Note: These guidelines are derived from draft Agency-wide guidelines prepared by the Bureau for Economic Growth, Agriculture and Trade in 2001. As of the date of this document, the Agency-wide guidelines were still in draft form.

#### **1. Background**

Over the last few years, considerable information has been shared about arsenic problems in the Ganges basin of Bangladesh and India (see WHO Fact Sheet attached as Annex A). This resulted in a cable being sent out by the U.S. Agency for International Development (USAID) in 1998 (cable attached as Annex B). Subsequently, USAID has evaluated approaches in the Agency's ground water development efforts to prevent similar consequences arising in USAID development activities.

In order to protect the beneficiaries of USAID-sponsored well drilling programs from long-term arsenic ingestion, all contractors, grantees, or cooperative agreement groups must follow the protocol below in assuring that safe water is being supplied, and meeting U.S. Environmental Protection Agency (USEPA) standards.

#### **2. USEPA standard for arsenic in drinking water**

On January 22, 2001, the USEPA adopted a new standard for arsenic in drinking water at 10 ppb (10 micrograms per liter), replacing the old standard of 50 ppb. The rule became effective on February 22, 2002. USEPA regulations on arsenic are available at the following URL: <http://www.epa.gov/safewater/arsenic.html>

#### **3. Criteria for selecting which wells to test in a common aquifer.**

One cannot usually be sure of a homogeneous structure within an aquifer. Aquifers often consist of separate geologic units with different geochemical properties. Thus, USAID requires that each well be tested.

#### **4. Timing and extent of sampling required**

After installation is completed, the well should be pumped and tested. Samples for arsenic analysis should be taken once water that is representative of the aquifer is found, i.e., once equilibrium conditions have been established (rather than stagnant water around the well, or water that has been affected by drilling). A suggested time for the first sample would be when the temperature, pH, and conductivity measurements are stable (as determined by field probes). New wells should be sampled initially and each quarter for a total of 4 quarters. At this point USAID would turn over any additional sampling and analysis results to the local authority. Should the funds in the project terminate before all required sampling has been completed and samples analyzed, it will be the responsibility of the USAID Mission to assure that sampling and analysis is completed.

#### **5. Analysis of samples**

At the present time there is one field kit that USAID will accept for use in measuring arsenic in the field, the Hach Arsenic Kit, which appears to be reliable in measuring arsenic down to the U.S. standard of 10 ppb (see Annex C for information about this kit). If a sample should show >10 ppb by the field kit test, USAID will require that a qualified laboratory conduct an analysis on this well. The laboratory selected must be one approved by at least one of the following persons: the Bureau Environmental Officer, the Regional Environmental Officer (or Advisor), the country Mission Environmental Officer, or the country Food for Peace Officer.