

PJ-ABS-670
12/1/98

WATER AND SANITATION FOR HEALTH PROJECT

CAPABILITIES & EXPERIENCE



1611 N. Kent Street, Room 1001
Arlington, Virginia 22209-2111 USA
TEL: (703) 243-8200 FAX: (703) 243-9004

Sponsored by:
U.S. Agency for International Development
Operated by: CDM and Associates

THE WASH PROJECT: AN A.I.D. RESOURCE

The WASH Project was established in 1980 by the U. S. Agency for International Development to provide water and sanitation technical assistance for host governments, A.I.D. missions and bureaus, and other development organizations through the auspices of A.I.D. WASH's effective, timely provision of assistance in 62 countries and its interdisciplinary approach have earned it a leadership role in finding solutions to developing country water and sanitation needs. WASH works on a multiyear, multimillion dollar contract under the direction of A.I.D.'s Office of Health in the Bureau for Research and Development, functioning as the agency's water and sanitation technical assistance arm.

WATER AND SANITATION DEFINED

WASH defines the water supply and sanitation (WS&S) sector very broadly, including several aspects—such as environmental health—that may be left out of narrower definitions.

- ◆ In the most basic sense, WS&S involves the **provision of potable water supplies and sanitation** to urban, peri-urban, and rural communities. Water supply covers identification and development of water sources, treatment, distribution, and operation and maintenance. Technologies used range from simple dug wells to large municipal waterworks. Sanitation includes principally the **handling, treatment, and disposal of excreta**. Technologies range from pit latrines to waterborne sewage systems.
- ◆ Both water and sanitation have **environmental protection** aspects. Conserving water as a precious, indispensable resource and protecting it from pollution are primary objectives. Managing the handling, treatment, disposal, and recycling of **wastewater, solid waste, and industrial wastes** to avoid water pollution and preserve aquatic habitats are standard procedures.
- ◆ WASH's definition of WS&S also has a **behavioral** aspect. To be effective, most WS&S technological interventions—from the simplest to the most complex—must be accompanied by **changes in behavior**: handwashing, safe excreta disposal, personal and household hygiene, the avoidance of unsafe water sources, protection of pumps and wells, and so on, to changes in the behavior of communities, public and private organizations, and governments regarding waste disposal, conservation of resources, and support for environmental legislation and policy.
- ◆ Finally, any definition of WS&S must include project and program management. Policy formulation, finance and administration, planning and evaluation, institutional and human resources development, risk assessment, feasibility studies, and other management activities are indispensable for sound development of the sector.

THE WASH CONSORTIUM

WASH is organized in a unique manner as a consortium of specialized organizations managed by the international environmental consulting firm Camp Dresser & McKee International Inc. About half of the WASH staff is provided by CDM. Other staff members are seconded to WASH by four key subcontractors: Research Triangle Institute (RTI), Training Resources Group (TRG), International Science and Technology Institute (ISTI), and University Research Corporation (URC). Four other subcontractors serve as advisors to the project and provide consultants and other resources: Associates in Rural Development (ARD), University of North Carolina (UNC), and two historically black academic institutions: the Morehouse School of Medicine, and Clark/Atlanta University. (See last page for a description of the subcontractors.)

WASH's staff of about a dozen professionals is relatively small. Most WASH technical assistance is accomplished by specialists from WASH's large roster of consultants. Because of the consortium arrangement, WASH also has access to the staffs and consultant rosters of its subcontractors. From this large pool of experts, WASH can select a person with the right combination of skills, experience, and language ability to do the job.

APPLYING FOR WASH SERVICES

WASH consultant services may be requested by an A.I.D. mission, a host country government, or an A.I.D./Washington bureau or office. All requests should be channeled through A.I.D.'s Office of Health for approval. Non-governmental and private voluntary organizations may also request WASH services through an appropriate A.I.D. mission or bureau. A.I.D. missions, bureaus, and offices may transfer funds to the WASH contract by PIO/T (or "buy-in") to assure the availability of WASH services. After the request for WASH services has been approved, the WASH staff works directly with the client on final implementation details and the timing and delivery of the requested services.

WASH FIELDS OF EXPERTISE

The assistance WASH provides falls into the nine general fields of expertise listed below. However, the lines of demarcation between them are not watertight. Because of the nature and complexity of water and sanitation sector problems, most technical assistance is provided by interdisciplinary teams of consultants. This interdisciplinary orientation is the hallmark of the WASH approach.

In each assignment, WASH tries to apply the following lessons it has learned during eleven years of experience in providing technical assistance to developing countries.

- Technical assistance is most successful when it helps people learn to do things for themselves. No matter how well-intentioned, doing things for other people does not lead to development.
- The process of technical assistance is just as important as the substance: a participatory approach—facilitation not dictation—maximizes the chance for sustainable programs and projects.
- The most important rule in successfully delivering technical assistance is to provide what the client wants, not what the provider thinks the client needs.

Institutional and Human Resources Development

In the area of institutional development, WASH has the ability to assess institutional effectiveness, design and monitor institution-building projects, and carry out institutional improvement activities, including management development programs. In addition, WASH has had experience in determining the adequacy of overall sectoral arrangements, including the legal and regulatory environment, and suggesting remedies when there are problems. Concerning human resources, WASH's focus has been on developing long-term capabilities. Examples include long-term HRD planning, design of the training component of projects, development of training materials, setting up training departments, and training trainers. Related to these ID/HRD activities, WASH provides facilitation services for events ranging from team-planning meetings to national policy workshops to international conferences. WASH seeks to make these events more participatory. Facilitators are drawn from a pool of training and organizational development specialists who are knowledgeable about the sector.

***Environmental Management**

WASH environmental capabilities fall into three categories. The first, **managing water as a natural resource**, covers activities such as water-resource (surface and groundwater) monitoring and evaluation, water resource planning, water pricing, water quality monitoring,

* A more detailed capability statement is available on this topic.

watershed management, and environmental education programs. The second category is **pollution control**, as related to water and sanitation, including the handling of sewage, solid wastes, hazardous wastes from industrial processes, and urban runoff. Specific services available in this category illustrate its breadth and importance, especially in the context of rapid urbanization and population growth: wastewater treatment options, use of wastewater for irrigation, integrating waste management, hazardous waste treatment technologies, appropriate recycling and reuse methods, management practices to reduce toxic releases, risk assessments and reduction strategies, and technology assessments. The third category, **management of the water and sanitation elements of environmental programs**, comprises legislation and regulation, environmental monitoring, environmental impact studies, assessment of environmental degradation, water law, use of geographic or remote sensing information systems, and management of water resources.

In carrying out environmental technical assistance, WASH draws on persons with varied skills—engineers, hydrologists, geographers, ecologists, economists, trainers, anthropologists, lawyers—all with concrete experience in solving environmental problems. Environmental management is the most “cross-cutting” of WASH’s fields of expertise. Through its experience as a multidisciplinary project, WASH has the ability to integrate the various elements of environmental management, without losing sight of the inter-relatedness of ecology and development.

Water and Sanitation Engineering

WASH is operated by the internationally respected environmental engineering firm Camp Dresser & McKee International Inc. Along with WASH subcontractors, ARD, RTI and UNC, CDM makes available to WASH a full range of engineering and technical skills in the planning, feasibility analysis, design, and construction management of WS&S systems. Examples include facilities planning and design, materials and equipment specification, water resources investigation and development, well drilling, facilities construction management, and specific technical issues such as water and sewage treatment processes, corrosion resistance, water quality testing, and selection and maintenance of water meters. WASH’s special capability in this field is that it provides engineers who not only have strong technical backgrounds but who also can work in an interdisciplinary team and are possessed of language capabilities, overseas working experience, and the strong interpersonal skills that are required to insure the selection of appropriate technical solutions and their effective transfer.

***Financial Management and Cost Recovery**

To complement WASH’s integrated approach to WS&S, considerable attention has been given to building WASH capabilities in dealing with important issues of financial viability and sustainability. WASH can provide technical assistance to help solve financial problems concerning water supply and sanitation at the sector, agency, and household level. At the

* A more detailed capability statement is available on this topic.

sector, or policy, level, WASH has experience in assisting governments to mobilize the resources of the private sector for providing water services (both through contracting and full investment), devising innovative financial instruments for increasing sector resources (such as municipal and revenue bonds), developing plans for devolving more financial responsibility to users, and helping governments to determine the full cost of water as an aid for planning. At the institutional level, WASH offers guidance in financial planning, cost management, and cost containment for urban WS&S authorities aimed at providing efficiency gains. At the household level, WASH can assist in assessing the demand for water and sanitation in resource-scarce situations, including willingness-to-pay studies to help decide what level of service can be sustained given realistic cost-recovery projections.

Environmental Health

WASH can help solve environmental health problems related to water supply, sanitation, wastewater management, solid waste management, and water pollution. While most WASH technical assistance has emphasized the prevention of diarrheal disease, guinea worm disease, and, more recently, cholera, WASH also has the capability to assist in developing programs for the prevention of any water- or sanitation-related disease. Technical assistance is available in designing WS&S programs that maximize health benefits, in selecting appropriate health indicators for monitoring and evaluation, and in conducting project evaluations—including evaluations of health impacts. Through its subcontractors, WASH has access to expertise in operations research and quality assurance methodologies for the design and management of environmental health programs. On the local level, WASH can work with health service programs to help design the most effective integration of disease prevention and treatment services, from helping to sort out institutional relationships to defining the role of primary health care workers. WASH has a history of producing state-of-the-art technical reports examining key issues in the relationship between water and sanitation and health. Issues receiving increased attention include rapid epidemiologic assessment methods for program planning and monitoring—including risk assessment—special environmental health problems of peri-urban areas, and the key role of sanitation in improving health.

Community Participation and Hygiene Education

The expertise available from WASH in this specialty area comes from the social and behavioral sciences. In general terms, WASH can assist governments and agencies and non-governmental organizations carrying out WS&S projects to make sure that the essential elements of community participation and hygiene education are integrated in plans for new or improved systems. Specifically, WASH can provide assistance in conducting a social soundness analysis of water supply and sanitation projects; devising community participation/hygiene education strategies appropriate for particular cultures, socioeconomic groups, regions, or nationalities; analyzing community behavior—both organizational and as regards hygiene practices; developing training programs and materials for hygiene education and community participation; evaluating community participation and hygiene education

* A more detailed capability statement is available on this topic.

programs or program components; and devising strategies for strengthening institutional support for community management.

Program and Project Development

WASH can provide assistance at all points on the program or project cycle: planning, design, implementation, and evaluation. This technical assistance ranges from working with developing country governments to develop long-range WS&S programs, to helping A.I.D. missions to prepare background material, Project Papers (PPs), or Project Identification Documents (PIDs), to providing advice to non-governmental organizations in setting program priorities and directions. An important part of program and project development assistance is collecting the data and information necessary for decision-making. WASH has considerable experience in this area, having produced data profiles on the water and sanitation status of numerous countries in Africa and Latin America and having helped many developing country governments to set up appropriate information-gathering mechanisms. WASH has also prepared WS&S programming guidelines or planning manuals for use by private and public development organizations. During its history, WASH has conducted or helped conduct 60-some evaluations and assessments of WS&S projects and programs. WASH assistance stresses the widest possible participation of project personnel and beneficiaries in planning. In providing technical assistance in this specialty, WASH draws on many other specialties, particularly finance and institutional and human resources development.

Information and Technology Transfer

WASH develops and disseminates generic materials on technical subjects, such as pump installation or financial management assessment. (A complete list of materials available may be obtained from WASH headquarters.) In addition, WASH maintains an information center and specialized networks and collections on rainwater harvesting, guinea worm disease, and peri-urban issues. Individuals and institutions can have access to this information on request. To increase the capacity of developing countries to develop and apply technology on their own, WASH provides technical assistance on the "software" components of technology transfer. These include not only written reports and manuals on how to operate, maintain, and manage technology but also management information systems. Specifically, WASH can provide governments and agencies with assistance in setting up libraries, document centers, information networks, and records management and project monitoring systems.

Disaster Management

WASH has a full range of interdisciplinary expertise to respond to both man-made and natural disasters. Assistance ranges from immediate post-disaster damage and needs assessment, to environmental health management and long-term reconstruction planning, to pre-disaster technical assistance in mitigation and preparedness activities. Disciplines available include water and sanitation engineers, hydrologists, public health specialists, sanitarians, epidemiologists, trainers, behavioral scientists, planners and disaster management specialists. WASH's core staff and consultants have a significant range of

experience in establishing refugee camps and in coping with WS&S problems in the aftermath of earthquakes, cyclones, and droughts. WASH's ongoing work in development allows it to make the link between poverty and environmental degradation and greater vulnerability to disasters. Therefore, it is able to design its disaster work within a disaster-development continuum context rather than a traditional relief approach. In addition, WASH's efficient management system allows it to respond rapidly to emergency requests.

REPRESENTATIVE ASSIGNMENTS

The assignments described below were drawn from among the 650 technical assistance assignments in 62 countries since 1980. These assignments run the gamut from a single consultant providing assistance on a specific task for a few days to a large team of experts from multiple disciplines providing assistance over a period of months on a multifaceted assignment. What these assignments have in common is their attention to adequate preparation and feedback. In all but a few cases, the assignment begins with a facilitated team planning meeting and ends with a debriefing to discuss the findings and lessons learned.

- ◆ **Team planning meetings** are generally two-day events in which the elements of an assignment are thoroughly planned. The meetings focus on the background of the assignment; identification of the clients; the scope of work; the end product; key team issues; and a detailed work plan. WASH has found that the seemingly long time devoted to team planning is well spent because many potential problems are sorted out before the team goes overseas.
- ◆ **Debriefings** are organized to discuss the outcomes of a completed assignment, review the status of the final report, describe the way individuals functioned as a team, assess the adequacy of preparation gained from the team planning meeting and capture the major lessons learned. The last is probably the most valuable of these objectives. Extrapolating lessons learned is extremely useful for a project such as WASH, which needs to apply insights from every project to its other work.
- ◆ With few exceptions, **written reports** are issued on WASH technical assistance. These reports communicate the findings, conclusions, and recommendations to the client and provide a record which becomes part of WASH's institutional memory.



Topic: Increasing Private Sector Participation in Urban Water Supply in Indonesia

Client: USAID and the Government of Indonesia

Timeframe: Three months in the autumn of 1990.

Team Makeup: A multidisciplinary team made up of Indonesian and WASH consultants including engineers, financial analysts, specialists in public policy and administration, and legal experts.

Description: A study to set out the factors that should be considered by the Government of Indonesia to develop a strategy for increasing private sector participation in urban water supply and to prepare administrative guidelines for water authorities in dealing with the private sector. The results of the study were presented in a three-volume report: Volume 1 summarizes the findings and recommended the next steps, Volume 2 consists of a set of administrative guidelines for water authorities in dealing with a private investor; and Volume 3 contains six working papers on specific policy areas that should be addressed if the Government of Indonesia is to successfully involve the private sector. Upon completion of the report, a workshop was held in Bali to assist key officials from concerned ministries and private sector representatives to discuss the recommendations and seek solutions.

Results: The central conclusion of the study is that private sector participation in urban water supply is feasible and desirable. However, steps must be taken to make the sector more attractive to prospective investors by removing or modifying the constraints identified and establishing a regulatory framework and related policies to protect the public interest.



Topic: Institutional Development of the Ecuadorian Institute of Sanitary Works

Client: USAID/Ecuador

Timeframe: A series of 30 activities carried out over four years (note: WASH has carried out assignments in institutional strengthening in a number of countries by means of a series of related tasks. [Examples are Tunisia, Sri Lanka, and Oman.] This arrangement is ideal for helping a country to progress methodically through the steps necessary to achieve long-range institutional development goals.)

Team Makeup: A local team comprising specialists in health, hygiene education, operations and maintenance, and appropriate technology supplemented by ten WASH consultants in organizational development, training, medical anthropology, health, environmental engineering, and operations and maintenance.

Description: This series of activities is designed to provide ongoing technical support to the WASHED Project in Ecuador—Water and Sanitation for Health and Ecuadorian Development. WASHED is a four-year, \$22.4 million USAID project with institutional development as its main objective. Project activities are designed to strengthen the Ecuadorian Institute of Sanitary Works (IEOS), the agency in charge of rural water and sanitation. Five project components are covered: management (particularly as related to decentralization), hygiene education, operations and maintenance, appropriate technology research, and training.

Results: This kind of arrangement, whereby long-term technical assistance is provided through a series of discrete short-term tasks, has many advantages, the prime one being continuity. In the WASHED Project, to assure continuity USAID/Ecuador and IEOS contracted a local technical assistance team to work together throughout the life of the project. This team was supplemented by expatriate WASH consultants—also contracted to be available during the life of the project—to provide expertise in specific areas and to serve as mentors/trainers.

Another advantage of “serial” tasks is enhanced assistance in planning, using techniques pioneered by WASH. For the WASHED Project a series of workshops was held, starting with a project start-up workshop bringing together the consultant teams, IEOS personnel, and USAID mission staff. Subsequent workshops coordinated project activities and tracked progress in meeting goals. These planning and review workshops not only confirmed IEOS as “owner” of the project, but also formed a project learning and internal monitoring system.

Convenience and cost-effectiveness are additional advantages of this serial technical assistance. By providing overall management and coordination of the whole series of technical assistance activities, WASH helps free the USAID mission staff from many burdensome administrative tasks.

Topic: Preimplementation Workshop for the Community and Child Health Project, Chulumani/La Paz, Bolivia

Client: USAID/Bolivia

Timeframe: Two weeks in January 1990

Team Makeup: A trainer and an expert in public health, both fluent in Spanish.

Description: WASH consultants designed and delivered a preimplementation workshop for the 40-some persons that were to be involved in a five-year USAID-funded project to improve the health status of the rural population of Bolivia, with emphasis on reducing infant and child mortality and morbidity. Participants included Ministry of Health and USAID mission personnel and the team from John Short and Associates that would provide technical assistance to the project. The workshop was intended to provide a better understanding of the project and to address the issues of project management, development of a project team, and design of a work plan for the first year of the project. To meet these objectives, the workshop was planned as a participatory exercise that focused on management, working together and other relevant issues. Facilitator Guide for Conducting a Project Start-Up Workshop (WASH Technical Report No. 41) was used.

Results: The workshop was successfully conducted and the participants made a number of recommendations that resolved some problems with the scope of work.



Topic: Midterm Evaluation of the USAID/Tunisia Rural Potable Water Institutions Project

Client: USAID/Tunis and the Office de Développement de la Tunisie Central.

Location: Tunisia

Timeframe: One month in January-February 1989

Team Makeup: A six-person team, including two Tunisians: a training specialist, a sociologist, an economist/institutional development specialist, an anthropologist/information systems specialist, a medical anthropologist/women's involvement specialist, and a water supply engineer/operations and maintenance specialist.

Description: The evaluation used a rapid rural assessment approach in visits to a representative sample of project sites in the governorates of Kasserine and Gafsa and an adjacent control area, the governorate of Kairouan. Other techniques used included interviews, questionnaires, documentation review, and meetings with project personnel. The purpose of the evaluation was to determine the extent to which the project's goal and specific purposes were being met or could be met within the life of the project and to provide the mission, the Government of Tunisia, and the Office de Développement de la Tunisie Central with guidelines for undertaking required changes in project design.

Results: The project being evaluated aimed to develop a decentralized approach to rural water with user participation and user fees that could be adopted nationwide and to provide improved access to potable water for underserved rural populations. The decentralized approach was eventually adopted

by the Government of Tunisia and subsequent WASH consultancies have assisted the government to implement it.



Topic: Market Survey of Solid Waste Management in Port-au-Prince

Client: USAID and the Government of Haiti

Timeframe: Two weeks in September 1990 for the field work

Team Makeup: Four-person team including a management specialist, an engineer with financial management skills, a specialist in composting, and a specialist in institutional resource development. The Haitian marketing firm of LOGOS was subcontracted by WASH to carry out some of the surveys.

Description: The objective was to carry out a survey of solid waste management for households, businesses, and industries in metropolitan Port-au-Prince. A total of 404 households, 30 businesses, and 11 industries were surveyed as representative samples of waste producers. In addition, information was gathered from both the government agency and representatives of small businesses and individual entrepreneurs engaged in waste collection. The disposal of solid wastes was also studied with special emphasis on composting as a productive use for wastes and on the proper use of landfills.

Results: Survey results showed that people are willing to pay for proper services and that these services can be provided by the private sector at costs well within the range of estimated revenues from all zones of the metropolitan area. A financial analysis of several scenarios indicated that a private waste management authority could provide complete waste collections with a positive cash flow.



Topic: Surface Water Data Collection in Oman

Client: Omani-American Joint Commission for Economic and Technical Cooperation

Timeframe: Four months of fieldwork, January-April 1991: a total of 245 person days

Team Makeup: A five-person team for the fieldwork. The five specialists include: two senior civil engineering hydrologists; one senior fluvial geomorphologist, a senior water resources specialist, and a water resources engineer.

Description: This is one of six separate technical assistance assignments aimed at assisting the Omani Ministry of Water Resources to improve its management of the country's scarce water resources. Current problems result because the use of groundwater exceeds the average rate of recharge. In this particular assignment WASH consultants assisted Oman to upgrade and improve its network of rain gauging stations and to develop information on the physical characteristics of wadi basins in Northern Oman.

Results: The team recommended several concrete steps that Oman can take to evaluate throughflow and wadi-flood infiltration and to test various aquifer recharge enhancement methods, including the establishment of monitoring wells to assess the performance of recharge efforts.

Topic: Willingness to Pay for Water in Newala District, Tanzania

Client: USAID Tanzania

Timeframe: Four weeks in Tanzania in July-August 1988

Team Makeup: A four-person team headed by a water resources economist consisted of a local counterpart economist from the Institute of Resource Assessment, University of Dar-es-Salaam and two Ph.D. students from the Department of City and Regional Planning of the University of North Carolina at Chapel Hill.

Description: The team carried out a study of households' willingness to pay for water in the Kitangari Water Scheme in southern Tanzania. The scheme depends on diesel fuel to pump the water from very deep wells, but because funds for fuel are often not available from the Ministry of Water, the scheme often does not operate and the 162,000 people served by the scheme have a very difficult time obtaining the water they need. The study sought to find out if households served by the scheme were willing to contribute to the operations and maintenance (O&M) of their water system so that it could be kept running, and if so, how much they could afford to pay. The team used the contingent valuation or willingness-to-pay methodology.

Results: The study ascertained that people were willing to contribute substantial sums of money for O&M but not enough to cover all costs. After the first draft of the study was completed, a workshop was held in Tanzania for high-level representatives of the government. The report formed the basis for a decision by the authorities to begin immediately to establish a cost-recovery system in the area served by the Kitangari Scheme.



Topic: CARE/Sierra Leone Community Participation Assessment

Client: CARE/Sierra Leone

Timeframe: Three weeks in August 1987

Team Makeup: A two-person team consisting of an anthropologist from the WASH staff and the CARE Regional Technical Advisor for Primary Health Care for West Africa, assisted by two officials from the Government of Sierra Leone.

Description: The consultancy provided CARE/Sierra Leone with assistance in revising its implementation strategy for the Moyamba Rural Water Supply and Community Health Project to more fully incorporate community participation. The team determined the need for the further development of the "preimplementation" community organization component of the strategy, reviewed the training needs of project personnel, and assessed the needs for further technical assistance.

Results: The consultants presented a number of recommendations plus a plan showing specifically how they could be implemented.

CORE STAFF

J. Ellis Turner (Registered Professional Engineer; M.S. in Environmental Engineering),
Project Director.

Craig Hafner (M.A.-Geography), Deputy Project Director

O. Masseur Bateman (M.D. and Diploma in Tropical Medicine and Hygiene), Associate
Director for Environmental Health

Diane B. Beldahmane (M.A.-English and Education), Project Specialist for Information
Management

Dan Campbell (M.S.-Library Science), Librarian

Eduardo Perez (Civil Engineer; M.S.-Technology and International Development),
Associate Director for Engineering

Philip Roark (M.S.-Watershed Sciences and Hydrology), Associate Director for
Environmental Science and Management

Fred Rosensweig (M.A.-Education), Associate Director for Institutional and Human
Resources Development

Teresa Sarai (B.S.-Linguistics), Task Manager and Assistant to the Director

Jane Walker (M.S.-Economics), Project Specialist for Financial/Management Systems

May Yacoob (Ph.D.-Anthropology), Associate Director for Community Participation and
Hygiene Education

CONTRACTOR AND SUBCONTRACTORS

Camp Dresser & McKee International Inc. (CDM), Cambridge, Massachusetts, one of the largest consulting organizations in the U.S. specializing in environmental engineering and related subjects. CDM, the WASH contractor, provides overall management of the project as well as expertise in technical and engineering areas.

Associates in Rural Development, Inc. (ARD), Burlington, Vermont, provides a range of services designed to promote the development of rural communities and improvement of life for rural inhabitants. In particular, ARD is dedicated to carrying out activities which are directed toward natural resource development in ways that ensure the future sustained use and conservation of these resources. The corporation has domestic and international experience and capability.

International Science and Technology Institute, Inc. (ISTI), Washington, D.C., is a minority-owned, private, for-profit, consulting firm providing assistance to developing countries through

technical, managerial, and financial expertise in the field of economic and social development. ISTI performs assignments for international agencies, governments, public institutions and private firms in the fields of private enterprise and economics; health, population, and nutrition; and agriculture and natural resources. Since its establishment in 1978, the firm has consistently provided experts with specific technical and language skills and geographic experience, fielding them in as little as two weeks from the time of request.

Two historically black educational institutions **Morehouse School of Medicine** and **Clark/Atlanta University** (both located in Atlanta, Georgia) work through ISTI to provide WASH with expertise in the field of health. Morehouse School of Medicine conducts research on health and provides special assistance on primary health care and vector control; Atlanta University conducts studies on the sociocultural aspects and economic benefits of water supply and sanitation.

Research Triangle Institute (RTI), Research Triangle Park, North Carolina, is a contract research organization established in 1958. RTI conducts applied and basic research in the United States and abroad for clients in government, industry, and public service. Major areas of training and expertise include social sciences; survey research; mathematics, statistics, and computer sciences; environmental sciences and engineering; chemical and biological sciences; and engineering and physics.

Training Resources Group (TRG), Alexandria, Virginia, is a small business devoted exclusively to designing and implementing innovative approaches to human resources development. TRG is dedicated to making people and organizations work better. TRG provides service in organizational and institutional development, management training, training materials development, workshop design and delivery, and training of trainers. TRG serves a wide range of clients in both the public and private sectors.

University of North Carolina (UNC), Chapel Hill, North Carolina, facilitates the development of international and cross-cultural research, consultation, and training in the field of public health, through its International Public Health Programs Office. The office also maintains and develops relationships with international assistance agencies and governments to promote the exchange of expertise and the establishment of collaborative research and demonstration projects.

University Research Corporation (URC), Bethesda, Maryland, helps businesses and government clients solve tough problems through the application of innovative services and products. Through a variety of project efforts in operations research, family planning, basic health care, child survival, and improved management services, URC helps developing nations to establish, implement, and maintain the financial and management teams that are needed to assure quality services and a better life.