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***ESTABLISHMENT OF BRANCH CANAL WATER
USER ASSOCIATIONS IN THE EGYPTIAN
IRRIGATION SYSTEM***

Report No. 17

June 1999

Water Policy Program
International Resources Group Winrock International Nile Consultants

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Establishment of Branch Canal Water User Associations in the Egyptian Irrigation System

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EXECUTIVE SUMMARY

This report presents the results of the work carried out in completion of Benchmark C-3 of the agreement between the Government of the Arab Republic of Egypt (GOE) and USAID/Egypt for Tranche III (FY 98/99). The benchmark states:

“ The GOE will decree a policy and initiate an action program for formation of water user associations at the distributary and branch canal levels. ”

Over 9,000 farmers participated in the process of Branch Canal Water User Association (BCWUA) formation. Central-level, general directorate and directorate staff of the IIP, IAS, and Irrigation Department took part, as well as extension workers, local leaders, and members of the Peoples Assembly. This report documents the process of BCWUA formation and policy development and presents conclusions and recommendations for improving the process, and for replication of these efforts on a broader scale. The ministerial decree formally sanctioning the establishment of a pilot program, and records of the process of initiating the pilot BCWUAs in are attached in appendices.

The rationale for BCWUAs in irrigated agriculture is based on principles of participatory irrigation management (PIM). Generally acknowledged benefits of PIM include, but are not limited to:

- productivity increases,
- positive changes in cropping intensity,
- improvement in financial impact performance indicators,
- resolution of water-related conflicts, and
- a positive environmental impact.

In 1981, the Ministry of Public Works and Water Resources (MPWWR) initiated the Irrigation Systems Management Project (ISM) with USAID funding. The ISM project was amended in 1984 to take advantage of the Egypt Water Use and Management Project (EWUP, 1977-84). The successor to the EWUP project was the Irrigation Improvement Project (IIP), which carried on the work of the ISM and began the incorporation of farmers' participation in irrigation improvement at the mesqa level. The IIP continued from 1989-96 with support from USAID. In 1996, the World Bank initiated a project in selected areas not previously covered.

The IIP is a socio-technical irrigation improvement process involving the support of active farmer participation in physical improvements and the subsequent management of improved systems. The IIP established a number of private mesqa-level water user associations (WUAs) and set up an institutional structure for an Irrigation Advisory Service (IAS). Mesqa-level WUAs have been instrumental in physical improvements, most notably single-point lift pumping, and the efficient organized maintenance of the mesqas, machinery and physical structures.

Recommendations from arising from the Tranche II (1997-98) benchmark on WUAs in areas not improved by the IIP included:

- establish water user organizations at the branch canal level, allowing for eventual expansion to the district level,
- review current legal ordinances and institutional regulations related to farmer participation in irrigation management,
- make necessary amendments to the existing laws, and
- strengthen the formal institutionalization of the Irrigation Advisory Service in the MPWWR.

In order to achieve these recommendations, it was suggested and adopted that 1) MPWWR would establish an Action Team of MPWWR, MALR and EPIQ officials to be an advisory body to MPWWR in matters related to expanding farmer participation in water management, and 2) two branch canals would be selected, one each in an IIP and a non-IIP area, for formation of BCWUAs.

The benchmark methodology included:

- issuance of a ministerial decree allowing the formation of BCWUAs at four selected locations;
- establishment of a ministerial Action Team on Participatory Irrigation Management;
- MPWWR Action Team orientation and training;
- training for benchmark implementation field teams (staff from IAS, IIP and Irrigation Department) in participatory rural appraisal (PRA) techniques, communications and BCWUA organizing elements;
- formulation of a common work plan and strategy for BCWUAs,
- development of policy objectives for BCWUAs, establishment of Egyptian chapter International Network on Participatory Irrigation Management (INPIM) in support of the BCWUA benchmark process;
- development of a phased process for organizing BCWUAs and establishing indicative parameters for BCWUA organizational structure and functions, including financial planning and budgeting, policy and procedures, administrative operations, legal

foundation, description of Executive Council member's role and responsibilities, and the role of BCWUA manager;

- role and responsibilities of the District Engineer in supporting BCWUAs;
- IAS role in supporting the BCWUAs;
- role of MPWWR Action Team in BCWUA program and policy development; and
- importance of process documentation in BCWUA development.

This report summarizes the work undertaken in forming BCWUAs in the four selected locations. For each BCWUA there is a section on basic background data and information regarding agricultural and cropping practices, water delivery, and description of the physical system. A list of the Executive Councils for each BCWUA is given, along with the elected officers. In each case the District Engineer acts as an ex-officio member of the BCWUA. Detailed information is provided for Qemri, Bahr el Dahram and Balaqtar branch canals. (Work on the fourth sanctioned command area, El Reity canal (Qena Governorate), began late in the Tranche III process and will be reviewed in a subsequent report.)

Cost-sharing plans were developed at two of the locations, i.e. Qemri and Bahr el Dahram branch canals. Preparation of two cost-sharing plans is a verification indicator for this benchmark. There are eight basic elements of the cost-sharing plan:

- Operations and Maintenance (O&M) work being undertaken in a negotiated process by the BCWUA with additional involvement of the GOE,
- BCWUA setting an achievable target for O&M performance, for which they would be reimbursed for most costs through a contracting arrangement with GOE,
- using a 5-year calculation base to determine annual O&M cost ceiling,
- developing the cost-sharing plan in 3-year incremental phases, incorporating BCWUA institutional performance targets,
- negotiation and selection from among several options of a particular *pathway* for O&M by the BCWUA and GOE,
- issuance of a Memorandum of Understanding (MOU) between the BCWUA and GOE for the O&M pathway,
- conducting by the IAS of training workshops for BCWUA members to support the work in the MOU, and
- a plan for phasing in a mesqa improvement package and using the BCWUA to form mesqa-level WUAs.

Results of cost-sharing planning workshops at Qemri and Bahr el Dahram BCWUAs are incorporated into the plans. The plans focus on sharing of O&M responsibilities, and illustrate that farmers are willing to contribute toward routine maintenance, and supervision in system operations, and managing controls over water distribution among mesqas,

monitoring flow levels and controlling violations and disputes. The values ascribed to these activities are indicative, i.e. not absolute and would need to be subject to verification, but point to a clear reduction in costs to the GOE. A suggested financial budget illustrates distribution of tasks and responsibilities. An additional added value to GOE will be in the role the BCWUAs play in organizing mesqa-level WUAs, thus reducing IAS and IIP overhead costs for personnel and equipment.

Recommendations

Increased user participation in planning, operation, maintenance and management of branch canal irrigation units is a desirable goal and is supported by the results achieved during this benchmark implementation period. Formation and establishment of water user associations at the branch canal level is viable, highly desirable means of advancing farmer participation in irrigation management. Management capabilities and capacities at this level must be supported and improved as water supplies become more constrained and the innovation of continuous flow availability is advanced to larger areas of the system. Willingness on the part of users to assume part of the O&M costs as well as mesqa WUA organizational costs (as witnessed through the focus group process), in the form of time, labor, and other resources, serves to reduce government costs, and affirms that eventual management transfer can be successfully negotiated.

The development of semi-autonomous and quasi-private irrigation districts may be a long-term goal. In such cases, the district water user organizations are entirely responsible for the operation, maintenance and periodic upgrading of water delivery and control structures within their districts. This *irrigation management transfer* process should be the subject of a performance benchmark during the next cycle of water policy reform implementation.

The working group identified two significant recommendations as paramount next steps. The first will be to amend Law 12 regarding formation of BCWUAs throughout Egypt, as part of the overall review and revision of the law. The second is an innovative policy initiative pilot program on transferring irrigation system management to the private sector.

- MPWWR will take steps to amend Law 12 to allow formation and registration of Water Users Associations in all categories of land and among primary, secondary and

tertiary levels of the irrigation system. Until such time as the law is amended, these organizations will function legally under the mandate of a MPWWR ministerial decree.

- MPWWR will develop a pilot program introducing Irrigation Management Transfer (IMT) in at least two selected locations. IMT presents a logical progression in the participatory process from developing branch canal-level user associations. The incentives for Government and farmers and other private sector entities to undertake this initiative include a reduction in the cost of irrigation, enhanced financial self-reliance of irrigation schemes, expansion of service areas, greater irrigation water efficiency, and increases in cropping intensity and yields. This recommendation represents a major policy and conceptual shift toward empowering users. The process of irrigation system subsection management transfer is an evolutionary one, and a national plan for management transfer would be phased-in over a period of several years.

Other recommendations are based on the activities implemented under this benchmark:

- MPWWR should strengthen the IAS through adequate budgetary, infrastructure, training and personnel resources.
- MPWWR should continue to support and strengthen the role of the ministerial Action Team on Participatory Irrigation Management.
- Mesqa-level and branch canal WUAs should include both irrigation and drainage functions, thereby discontinuing the need for separate drainage collector associations.
- IAS should adopt a flexible approach and procedure for organizing BCWUAs, using an integrated departmental team strategy, depending on local prevailing conditions.
- MPWWR should establish, with BCWUA cooperation, maintenance centers for spare parts, equipment and other O&M material used in irrigation improvement at the branch canal level.
- BCWUAs, irrigation district engineers, IAS engineers and IIP engineers will jointly plan, design and implement branch and distributary canal improvements in the command area and establish continuous flow and downstream water level control.
- In unimproved command areas, IAS should establish BCWUAs at least one to three-years in advance of any irrigation improvement program intervention.
- In national irrigation projects, e.g. Toushka and El Salaam, while land is being distributed, 1) membership in a canal association should be included as part of the contract agreement, and 2) the contract agreement should include a statement of rights and responsibilities regarding water management and canal maintenance.
- The branch canal O&M cost-sharing plan process should continue to be refined and adopted as a standard feature of the BCWUA organizing process. As the process gains acceptance, and as application mechanisms are clearly defined and approved by MPWWR, a schedule for pilot implementation should be undertaken.
- The Irrigation Advisory Service (IAS) should strengthen central as well as local coordination with public and private sector agencies, e.g. Agricultural Extension, agricultural census unit, cooperatives, banks, growers' associations, local councils, research institutes, et. al.
- Coordination should be maintained with all other projects working in this sector, e.g. the Netherlands government-assisted project on water boards.

- Awareness building programs for BCWUAs and MPWWR engineers, technicians and field agents, need to focus on priority concerns.
- The potential for WUAs in New Lands, national project areas and oases needs to be carefully assessed and analyzed for future planning.

1 INTRODUCTION

1.1 Overview

The Agricultural Policy Reform Program (APRP) is a four-year United States Agency for International Development (USAID) grants program involving several ministries. The Ministry of Public Works and Water Resources (MPWWR) is the primary Egyptian governmental agency charged with the management of water resources. MPWWR and USAID under the umbrella of the APRP jointly designed a water policy package, which consists of integrated water policy and institutional reforms. USAID supports the Ministry's efforts through annual cash transfers based on performance in achieving identified and agreed upon policy reform benchmarks and technical assistance.

Co-ordination among MPWWR, USAID and the water policy technical assistance program is through the Water Policy Advisory Unit (WPAU) and a project steering committee established by the MPWWR.

Technical assistance for the water policy analysis activity is provided through a water resources results package task order (Contract PCE-I-00-96-00002-00, Task Order 807) under the Environmental Policy and Institutional Strengthening Indefinite Quantity Contract (EPIQ) between USAID and a consortium headed by the International Resources Group (IRG) and Winrock International. Local technical assistance and administrative support for EPIQ is provided through a subcontract with Nile Consultants.

The EPIQ Water Policy team assists MPWWR to identify and carry out policy reform which will increase the global efficiency and productivity of Egypt's Nile water system under a water resources results package task order. EPIQ directly assists and takes a lead in identifying and achieving annual policy reform benchmarks, working closely with the MPWWR steering committee, WPAU, key ministry officials, and other APRP units.

1.2 Purpose of the Report and Background

A memorandum of understanding between the Arab Republic of Egypt (GOE) and USAID listing mutually agreed policy reform benchmarks for the APRP Tranche III period (1 July 1998 – 30 June 1999) was signed on 27 September 1998. Benchmark 3 of Section C of the

APRP medium/long term policy goals: Agricultural Land and Water Resource Investments, Utilization and Sustainability states:

“The GOE will decree a policy and initiate an action program for formation of water user organizations at the distributary and branch canal levels.”

The benchmark includes three achievement *verification indicators*:

- A ministerial decree allowing the formation of water user organizations above the mesqa level,
- Process Documentation reports (demonstrating) that organizations were formed on two branch canals (one in an IIP and one in a non-IIP community), and
- A cost-sharing plan prepared for two branch canals in consultation with the stakeholders.

To implement the policy benchmark activity, a task team was set up, led by the EPIQ Senior Sociologist, and with members representing the Water Policy Advisory Unit and the Irrigation Advisory Service. The task team developed a work program to cover activities between October 1998 and June 1999. This work program was incorporated into the overall EPIQ work plan.

A methodology was developed which allowed for an efficient Branch Canal WUA organizing process, within a flexible time frame, utilising the existing personnel and capabilities of the Irrigation Advisory Service and the Department of Irrigation.

1.3 Organization of the Report

Following the Introduction (Chapter 1) there is a general overview of participatory irrigation management experiences in Egypt (Chapter 2). A summary of the major conclusions and recommendations from the Tranche II work program provides the basis for Chapter 3. A description of the Tranche III benchmark methodology is presented in Chapter 4. Chapter 5 summarizes and analyzes the work carried out on the selected branch canals. The results of the efforts on developing branch canal cost-sharing plans for O&M are described in Chapter 6, including recommendations to be made to the MPWWR Minister. Chapter 7 highlights benchmark conclusions and recommendations. Literature referenced in this report can be found in Chapter 8.

2. BACKGROUND AND PROBLEM DESCRIPTION

2.1 Overview of Water User Association Development in Egypt

The primary Government of Egypt agency responsible for water resources management is the Ministry of Public Works and Water Resources. As such, it is mandated to plan, construct, operate, manage and maintain the irrigation and drainage network in Egypt. The MPWWR distributes irrigation water to Egypt's "old lands" by diverting water at various points on the River Nile to principle canals, which, in turn, feed a complex network of main canals. Most of the main system operates on gravity flow. Water is generally supplied below the surrounding farm ground level, which means that farmers must use pumping devices to lift water from the watercourse supplying their farms. Exceptions include the Fayoum oasis and some canal commands in Upper Egypt, where deliveries to farm turnouts are by gravity flow.

2.1.1 Brief Background of WUA Formation and Development Initiatives in Egypt

In 1981, the MPWWR initiated the Irrigation Management Systems Project (IMS) with USAID funding. The IMS Project was amended in 1984 to take advantage of the seven-year Egypt Water Use and Management Project (EWUP, 1977-84), an interdisciplinary project implemented by the MPWWR. The recommendations¹ of that project related to farmer participation in irrigation management were:

- farmers should be involved in improvements to the water delivery system,
- farmers must play a role in ensuring more efficient operations, improved maintenance and protection of physical works,
- farmers should become involved in management of water,
- there is a need for a well-trained cadre of IAS professionals to provide farmers with services related to water delivery and water use, and effectively organizing mesqa-level WUAs, and
- continued farmer involvement is essential for improved operations, water scheduling, mesqa improvements and renovations of branch canals.

As a successor to EWUP, the Irrigation Improvement Project was added as a component of IMS in 1987, and has since evolved in organizational status to a "sector" within MPWWR, with a number of projects for irrigation improvement assisted by several donors and international lenders. Participatory irrigation management began in a formal way under the

¹ MPWWR, Egyptian Water Use and Management Project, Findings of the Egypt Water Use and Management Project, Improving Egypt's Irrigation Systems in the Old Lands, MPWWR, March 1984, pages 55-58.

IIP, and while many lessons have been learned, insufficient monitoring and evaluation were carried out to document the impact.

2.1.2 Brief Overview of the IIP and the Introduction of the IAS

The IIP has established a number of private WUAs and set up an institutional structure for the Irrigation Advisory Service. Cost recovery measures for mesqqa improvements, a vital element in the PIM process, have been instituted. The MPWWR has established a special fund for collections payments realized from cost recovery.

This section is an attempt to identify lessons that are important for developing appropriate policies for expanding WUAs to non-IIP areas and for forming water user apex organizations (e.g. branch canal organizations in both improved and unimproved areas). It is the view of MPWWR that merely transferring O&M responsibilities to secondary level users' organizations, without adequate level of incentive, is neither prudent nor possible. It should not be assumed that farmers would willingly organize and operate or maintain systems that are run-down and cannot provide a predictable and stable water supply. BCWUAs are not designed to take over the roles and responsibilities of the district engineers and others, but are seen as a means of complementing and supplementing the work of the irrigation department. User participation programs in countries as diverse as Mexico, Colombia, Senegal, the United States and Indonesia have demonstrated positive results in involving farmers and reducing government expenditures.² A review of the literature reveals certain elements that tend to exist in successful secondary level user associations. These are:

- clear aim and purpose in a charter backed by appropriate legislation and policies,
- clear incentives for water users, who devise their own rules and have clear sanctions for those who violate them,
- improved services to water users if they are to be expected to mobilize financial and other resources for O&M and irrigation improvements,
- clear roles and responsibilities of water suppliers as well as water users,
- accountability and transparency of irrigation agencies and WUA members,
- time and flexibility so that water users and suppliers can learn to be successful, and
- monitoring (process documentation) and chronicling of records for future reference.

² Sevendsen, Mark and Meinzen-Dick, Ruth, *Irrigation Management Institutions in Transition: a Look Back, a Look Forward*, in *Irrigation and Drainage Systems*, Kluwer Academic Publishers, Printed in the Netherlands, 1997, pages 139-156.

3. RECOMMENDATIONS FROM TRANCHE II FINDINGS

One of the concrete results of the Tranche II work on WUAs was a set of recommendations, which guided the formulation of this present benchmark, and were adopted by the EPIQ Project Steering Committee:

- Generally support the overall expansion of participatory irrigation management in the Egyptian irrigation system.
- Encourage establishment of Water User Associations in areas not covered previously under any IIP phase, and improve the strategies and policies of development in the following ways:
- Give first priority to completion of the remaining IIP mesqas as expeditiously as possible.
- Establish criteria for selecting major irrigation development sites in the future over large command areas.
- Establish water user apex organizations on those branch canals which have the potential for future expansion to an institution at the irrigation district level. Alternatively, a mechanism should be established for operation and maintenance at the branch canal level.
- Develop the main and the branch canals in a way that aids the achievement of objectives/targets of the IIP.
- Review the current legal ordinances and institutional regulations (related to water user organizations), and further amend and expand them to strengthen the current and future needs of irrigation improvement.
- Study and analyze the organizational, legal, and administrative requirements to support the functioning and authority of WUAs and water user apex organizations.
- Strengthen the formal institutionalization of the IAS in the ministry in order to enable it to perform its tasks efficiently.

In order to achieve these objectives, it was concluded the following steps must be taken:

- Establish by ministerial decree, an Action Team comprised of MPWWR officials and other key players experienced in the development of participatory water user organizations.
- Select two initial branch canals that are technically and economically feasible and acceptable to the water users for forming branch canal user organizations: one in an IIP area with WUAs, and the other in a non-IIP area with no WUAs. Establish all necessary decrees and recommendations required to fulfill this objective.
- Design and conduct a training course for IAS staff, district engineers and WUA members to orient them to the exigencies of branch canal water user organizations and other levels of participatory irrigation management.
- Conduct a study and prepare plans for establishing privatized water user associations in the El Salaam, North Sinai, and Toughka Projects.³

³ A study on formation of water user organizations in New Lands is scheduled for September 1999.

4. DESCRIPTION OF BENCHMARK METHODOLOGY

4.1 Selection of Branch Canals and Ministerial Decree

A decision was taken by the benchmark task group⁴ in October 1998 to select four branch canals, two in improved and two in unimproved areas. The benchmark task group carried out a field survey of a number of branch canals in Upper Egypt and in the Nile delta. Four branch canals were recommended to the project Steering Committee, which endorsed the recommendation and forwarded it to the MPWWR Minister for approval. MPWWR issued a decree authorizing formation and registration of BCWUAs on four specific canals, and establishing a Ministerial Action Team to support the BCWUA process. A copy of the Ministerial Decree is included in this report as part of Appendix A.

4.2 Training and Orientation for Ministerial Action Team and Benchmark Field Teams

As part of the orientation for the teams involved in the implementation of this benchmark both the Action Team and the benchmark field teams participated in training programs.

4.2.1 Ministerial Action Team Study Tour

The MPWWR Action Team embarked on a two-week study and orientation program conducted by Colorado State University. This hands-on workshop primarily focussed on how to organize farmers to operate canals upstream of the mesqas in branch canals. During the course of the workshop, the Action Team developed a detailed action plan for:

- improving Egyptian farmer-operated mesqa organizations; and
- organizing branch canal WUAs so that farmers can take increased responsibility for water delivery, conflict management, and routine operations and maintenance in the irrigation system above the mesqa level.

The plan includes organizational criteria and breakdown of responsibilities for water scheduling and delivery, raising local revenue, financial record-keeping, setting financial priorities for O&M, conflict management, and performing facility maintenance at the several canal levels. The details of the plan have been incorporated into sections 4.3 to 4.10 of this chapter.

⁴Dr. Robert Cardinalli, EPIQ, Task Leader, Eng. Essam Barakat, IAS Gen. Director, Eng. Nasser Ezzat, WPAU, Eng. Ramsis Bakhom, IIS Head.

The workshop also included in-depth study of two major private sector water delivery and management entities: the Northern Colorado Water Conservancy District and the New Cache La Poudre Irrigation Company. The Action Team members analyzed the managerial, financial record-keeping and technical aspects of both organizations, comparing them to the current level of water management and delivery in Egypt.

4.2.2 Training for Benchmark Field Teams

Training for the benchmark field teams was designed as an integral component of the EPIQ work plan for this benchmark. Training was conducted in three phases between January and April 1999, for district engineers and technicians of the Irrigation Department, for IIS and the IAS, and for field agents.

The objectives of the training were to:

- provide field engineers and other field operatives with appropriate inter-communication skills for farmers and branch canal community groups;
- develop skills in collecting and transferring information from and to target beneficiary groups on the four branch canals, and in generating impact monitoring and evaluation feedback;
- develop capabilities in participatory rural appraisal techniques as a tool for BCWUA command area diagnostic analysis.

The training was intended to assist in creating information channels to help assess the impact of the benchmark activity on all levels.

During the first phase of the training program participants were trained in planning, implementation, analysis and reporting on PRA based survey and monitoring. During the second phase, the participants were introduced to the basic elements of PRA, supervising, monitoring and reporting.

The training utilized a mixture of case study analysis, field exercises, working groups, preparation of sample PRA reports, and lecture/discussions.

The curriculum modules covered the following subjects:

- Principles of communication skills
- Confrontation and withdrawal methods
- Methods of dialoging

- Methods of conducting participatory meetings
- Mechanics of knowledge transfer
- Conflict management through participatory methods
- Identifying target groups, and leaders
- Report writing techniques
- Participatory Rural Appraisal (PRA) and why it is appropriate for BCWUA development
- Principles of PRA
- Sources of participatory data and information, and methods of analysis
- Methods and mechanics of carrying out PRA exercises
- Limitations and timeliness of using PRA methods
- Techniques of preparing and presenting PRA reports

4.3 Policy Development

During the Tranche II workshop regarding WUAs, the project Steering Committee adopted the option for increasing user participation in irrigation management. This option stated that branch canal WUAs would be organized in non-IIP areas, in order to facilitate the process of mesqa-level WUA development, as well as in IIP areas, in order to strengthen the work of the existing mesqa-level WUAs and better align them with the Irrigation Department.

Additional measures included:

- Branch canal WUAs, working closely with the district engineer, the IAS and IIP engineers, will participate in the planning and implementation of the necessary improvements to the branch and distributary canals, mesqa off-takes, tail escapes, etc. to allow continuous flow. The BCWUA will have an operational oversight role, working with the district engineer to monitor and regulate water delivery to unimproved mesqas until mesqa improvements are completed.
- Facilitate private sector mesqa improvement, where highest demand is experienced, with IIS/IAS oversight.
- Institutionalize the IAS as a separate unit within MPWWR.
- Along with farmer participation, prioritize selection of new improvement command areas.

Farmers interviewed during the organization of the four BCWUAs indicated an expectation for efficient O&M on the branch canals. They also indicated they would need a maintenance center facility to be used for organizing meetings, storage of equipment and spare parts, and farmers' training. The facility would also function as a center for services from the MPWWR Drainage Authority, and MALR, e.g. extension and pest management. The BCWUA members emphasized the need for a stable water supply with continuous flow as crucial to ensuring their collective, sustained participation. If continuous flow cannot be maintained, a predictable and fair rotational water supply, the design and planning of which would involve

the BCWUAs, is the preferred secondary option. Furthermore, the BCWUAs expressed the need for a legal institutional foundation if they will be expected to operate, manage and maintain the branch canals. A number of participants indicated they would like to have the MPWWR decentralize authority and decision-making (and not just responsibilities) to the district engineers.⁵

4.4 Establishment of INPIM Chapter in Egypt in Support of BCWUA Development

As part of the BCWUA benchmark work program, MPWWR USAID/EPIQ with collateral support from EDI/World Bank sponsored the holding of a national workshop on participatory irrigation management, on 15-18 November 1999 in Alexandria. The objectives of the workshop were to exchange information and experiences regarding PIM at the international and regional levels; to develop recommended guidelines for establishing and supporting WUAs above the mesqa level; and to formally launch to formally launch an International Network on Participatory Irrigation Management (INPIM) chapter in Egypt.

Among the conclusions and recommendations adopted by the plenary were:

- BCWUAs should be proactive in branch canal O&M.
- BCWUAs should take primary responsibility in supervising and monitoring water distribution below the branch canal intake, and schedule distribution between mesqas.
- BCWUAs should be proactive in improving soil and drainage conditions in their respective commands.
- BCWUAs should be included as members of the local chapter of INPIM.
- BCWUAs should have, as ad hoc members, representatives from Irrigation, Drainage and Agricultural Extension.
- BCWUAs to be granted legal authority commensurate with its functional mandate.
- Pending formal amendment to the existing Law 213, BCWUAs should be allowed to operate legally by MPWWR ministerial decree (as in the case of the El Fayoum situation).
- BCWUAs' executive councils should have a minimum of 5 and a maximum of 15 members, and be based on representation for each 500 – 750 feddans, with an equal distribution of members from head, middle and tail reaches of each branch canal.
- The BCWUA executive council will have a chairman, secretary, treasurer and manager.
- BCWUAs should be the conduit between beneficiaries and all relevant government agencies in matters related to irrigated agriculture (Irrigation, Drainage, MALR, and Agricultural Development Bank, etc.)
- BCWUAs should focus also on other issues in addition to irrigation and drainage, e.g. social environment, water and soil quality, etc.

⁵ It is interesting to note that the issues and prerequisites to effective organizing of Branch Canals expressed by farmers is clearly similar to the responses from farmers during the Tranche II WUA focus groups.

- BCWUAs will handle resolution over disputes related to water delivery and allocation.
- BCWUAs will report member violations of procedures to the appropriate authority.
- BCWUA officers will receive training in organizational management, financial management, and record keeping.
- MPWWR will establish a ministerial Action Team to advise and assist MPWWR and the BCWUAs in policy and implementation matters.
- MPWWR is to consider a recommendation to initiate an Irrigation Management Transfer program in selected pilot areas during FY 1999/2000.

The recommendations of the INPIM workshop were adopted by MPWWR and formally issued in February 1999. The Summary Proceedings are included as Appendix C of this report. The work program for BCWUAs incorporated the workshop recommendations into its schedule.

4.5 BCWUA Organizing Process

At its first structured meeting, the MPWWR Action Team for Participatory Irrigation Management developed the following process for organizing Branch Canal Water User Associations. The process has since received ministerial ratification and approval.

- The branch canal will be divided into natural hydrological reaches (i.e. head, middle and tail).
- Influential persons will be identified on each reach for initial contact.
- Irrigation district and IAS field teams will hold several individual and joint meetings with influential farmers on each reach.
- Field teams will hold additional meetings with branch canal stakeholders on each reach to explain the program, address queries, and help farmers to plan their activities.
- When the influential local leaders and field teams feel confident that farmers are sufficiently apprised of costs and benefits related to BCWUA formation, farmers on each reach will be asked to nominate representatives to sit on the BCWUA Executive Council. The Executive Council can, at its own discretion, have a membership ranging from 7 to 15 members, depending on branch canal stakeholder population.
- The Executive Council may, at its discretion, designate the Irrigation Department Engineer as an ex-officio member of the Executive Council.
- The Executive Council will select its officers (Chairman, Vice-Chairman, Treasurer and Secretary) from among Executive Council members.
- The BCWUA will designate one person to manage daily operations. Until the BCWUA starts generating its own resources, this operations manager may be a Council member on a volunteer basis.
- The Executive Council's meeting minutes will be communicated to the Governorate office.
- The Executive Council will develop a list of priorities and issues for action, and an implementation schedule to support it.

4.6 BCWUA Organizational Criteria

4.6.1 Purpose of the Association

The purpose of BCWUAs is to represent a collective association of cultivators on a branch canal, and to liaise with the Irrigation Department in all matters related to operation, maintenance and management of the branch canal.

4.6.2 BCWUA Budget and Financial Planning

- There are existing laws requiring farmers to financially participate in BCWUA O&M. However, the BCWUA may opt to collect assessment fees using modalities practiced by mesqa-level WUAs, e.g. based on feddans under commanded irrigation per year, or based on number of hours of irrigation.
- *Other potential sources of resource mobilization:*
 - Member voluntary contributions,
 - Income from work contracted by BCWUA
 - Bank interest and investment dividends.

4.6.3 General BCWUA Policy and Procedures:

- The treasurer will maintain regular bookkeeping functions.
- BCWUA funds can be withdrawn only with the signature of both the chairman and treasurer.
- The Executive Council will approve all purchases or contracts under the BCWUA.
- General policy issues (including fee assessments) will require approval by the Executive Council.
- The General Assembly of the BCWUA will review and approve the final annual budget.

4.6.4 BCWUA Administrative Operations

Each BCWUA will establish an office and hold its regular meetings in one of the following venues:

- Office of the District Engineer
- IAS Field Office
- Premises provided by BCWUA member
- Rented premises (paid by BCWUA)

4.6.5 BCWUA Legal Foundation

- Law 213, which amends Law 12 on Irrigation and Drainage, does not allow for the formation of BCWUAs in old lands. The law must be further amended to allow BCWUAs on these lands.
- The MPWWR will need to prepare appropriate documentation in support of an amendment to the law allowing for BCWUAs to be formed in old lands.

4.7 BCWUA Functions and Responsibilities

- Monitoring the irrigation and drainage performance and requirements and the water level in the area served by the branch canal.
- Regularly prepare a set of observations and recommendations on branch canal issues for joint review with Irrigation Department officials.
- Manage scheduling and water deliveries between branch canals and mesqas.
- Regularly conduct and oversee branch canal maintenance work for pitching and weeding and embankments and gates.
- Perform leveling and compaction of embankment pads.
- Assume major responsibility for the establishment and strengthening of mesqa-level Water Users Associations
- Manage BCWUA internal finances.
- Manage BCWUA internal administration.
- Interface with public sector authorities, e.g. Irrigation Department, MALR, Drainage Authority, District Council, etc., regarding problems that arise on the branch canal.
- Assist farmers on the branch canal with seasonal crop plans. Collect cropping plans for each mesqa, and review with Irrigation Department and MALR.
- Follow up on the cropping plan implementation and report back to the irrigation or drainage authority directorate.

4.8 Responsibilities of the Executive Council

The Executive Council will have operational and managerial control over the BCWUA, including planning, monitoring, fiscal management and implementation. The following delineation of tasks and responsibilities illustrates this control in greater detail. It also shows the important role of other major stakeholders in the process, including the District Engineer, the Irrigation Advisory Service and the MPWWR Action Team.

4.8.1 Chairman of the Executive Council

- Monitor the association's activities.
- Chair all BCWUA meetings.
- Represent the BCWUA with other agencies.
- Approve BCWUA expenses and sign for withdrawals of money.
- Maintain direct contact with district engineer on all branch canal related issues.
- Serve as signatory on all BCWUA contracts and agreements.

4.8.2 Vice Chairman

- Assume Chairman's responsibilities in his absence.
- Develop agenda and work plan for BCWUA activities.
- Monitor implementation of the official BCWUA work plan.

4.8.3 Secretary

- Record all BCWUA meeting minutes.
- Inform BCWUA members of scheduled meetings and distribute agenda.
- Promptly record and disseminate any decisions taken by the BCWUA, and follow up on any further action required.
- Follow up on administrative decisions regarding the BCWUA
- Supervise the BCWUA manager's activities, and receive the manager's weekly report.

4.8.4 Treasurer

- Collect user assessment fees and issue receipts.
- Monitor and control all account deposits and withdrawals .
- Serve as signatory on checks.
- Maintain all ledgers and current accounts related to BCWUA income and expenses.
- Coordinate preparation of annual budget, along the BCWUA Executive Council members.
- Make regular financial reports to the BCWUA, including consolidation of all supporting financial statements and documentation.

4.8.5 Executive Council Members at-Large

- Follow up implementation of the Executive Council decisions in each reach.
- Designate roles and responsibilities for each of the specialized BCWUA sub-committees: Technical Committee, Communication Committee, and Follow-up Committee.
- Liaise on a day-to-day basis with the BCWUA manager.
- Organize and supervise scheduling water flow between Mesqas.
- Organize and supervise branch canal maintenance work, and coordinate with the District Engineer.
- Vet and refer farmer requests to Executive Committee, as necessary.
- Monitor use and misuse of branch canal; report back to the Executive Council.
- Prepare and submit a weekly Activity Report to the BCWUA Secretary.
- Oversee the work by short-term manual labor contracts under the BCWUA.
- Make certain the canals are clean and free-flowing at all times, and report any problems to the BCWUA Secretary for remedial action.
- Attend BCWUA meetings and execute any instructions and/or recommendations (as communicated through the BCWUA Secretary).
- Participate in the preparation of the BCWUA Annual Work Plan.
- Participate in the planning and execution of BCWUA member training by the Irrigation Advisory Service and MPWWR Water Communications Unit.

4.8.6 BCWUA Manager

- Monitor water flows to mesqas.
- Monitor logistics related to BCWUA maintenance work.

- Process requests from farmers to appropriate Executive Council sub-committee).
- Note any misuse of facilities or water delivery and refer to the Executive Council.
- Prepare and submit a weekly branch canal status report to the BCWUA Secretary.
- Monitor work of short-term labor contracts.
- Oversee branch canal maintenance work.
- Attend BCWUA meetings and execute the BCWUA instructions and orders (as communicated by BCWUA Secretary).
- Contribute suggestions at the time of BCWUA Annual Work Plan preparation.

4.9 Role and Responsibilities of the District Engineer in Supporting BCWUA Work

- Identify technical problems, and propose solutions to BCWUA Executive Council.
- Provide the Executive Council with technical data required for sound decision-making.
- Assist Executive Council members in setting the Annual Work Plan.
- In the event of varying opinions on technical matters on the branch canal, the view of the District Engineer will predominate.

4.10 Role and Responsibilities of the Irrigation Advisory Service in Supporting BCWUA Work (IAS Engineers)

- Coordinate the organizing process and establishment of BCWUAs.
- Increase farmer awareness about BCWUAs.
- Develop awareness among Executive Council members as to BCWUA roles and responsibilities and provide necessary technical consultation.
- Provide orientation and training to Executive Council members and branch canal manager
- Participate in BCWUA meetings.
- Regularly collect data on BCWUA performance and problems, evaluating activities. Report problem issues to MPWWR Irrigation authorities.
- Assist the BCWUAs in organizing mesqa-level WUAs (in non-improved areas), as well as the technical package of improvements
- Assist the BCWUA and mesqa-level WUAs prepare for the mesqa improvements.
- Coordinate with MPWWR Water Communication Unit to develop awareness of building programs among farmers and field staff. (Prepare fliers, news bulletins, posters, publications etc).
- Coordinate with Agriculture Extension Service and other related agencies in the Ministry of Agriculture to strengthen BCWUAs and WUAs.
- Facilitate establishment of communication linkages between BCWUA and different ministerial agencies.

4.11 Role of the MPWWR Action Team in BCWUA Program Development

- Follow up work on the formation of the BCWUAs.
- Monitor the Annual Work Plan activities of the BCWUA.
- Hold regular monthly meetings.
- Keep MPWWR and other agencies apprised of plans for establishing new BCWUAs, and prepare reports accordingly.

- Help in establishment of an IAS information database on WUAs.
- Meet with BCWUA Executive Council members, as needed.
- Assist IAS in setting up a BCWUA monitoring and evaluation plan.
- Advise the MPWWR in drafting the legal amendments to formally institutionalize BCWUAs.
- Help MPWWR identify local and international sources of financial and technical assistance to support the BCWUA concept.
- Advise the MPWWR in its role as leader of the Egyptian chapter of INPIM⁶
- Advise MPWWR in the preparation of a training plan for MPWWR staff and BCWUA leaders on PIM.
- Advise and assist MPWWR agencies in conducting workshops and seminars on BCWUA activities and programs.
- Advise MPWWR in expansion plan for BCWUA programming.
- Advise MPWWR on Irrigation Management Transfer (IMT) issues and pilot program to be implemented under the MPWWR/USAID Trance IV benchmark program.

4.12 BCWUA Process Documentation

The documentation of processes in social organizations is critical for participants to maintain a history of their local institution, and for service entities such as the Irrigation Department to understand the nature of the organization. Process Documentation, therefore, was a major aspect of the implementation of this BCWUA work plan. The complete set of records for initial contact meetings, clustered branch canal reach meetings, and combined membership meetings for the three BCWUAs are attached as Appendices D-1 and D-2.

4.13 BCWUA Under-Secretarial Decrees

To formally attest the legitimacy of the new Branch Canal Water User Association, the Under-Secretary for MPWWR in the relevant Governorate issues a registration certificate on behalf of the Minister. This document, authorized by Ministerial Decree, is issued to the BCWUA upon submission of its membership charter and list, by-laws, and plan of action. Copies of the MPWWR Under-Secretarial decrees for Qemri, Bahr el Dahram and Balaqtar BCWUAs can be found in Appendix A of this report.

4.14 Benchmark Work Plan

The benchmark work plan was developed in joint consultation with key units of MPWWR, and sets out a phased implementation schedule over the period August 1998 to June 1999.⁷ The major landmarks in the work plan were:

⁶ International Network on Participatory Irrigation Management

- MPWWR established a Ministerial Action Team on Participatory Irrigation Management and provide orientation study tour and training to Action Team.
- MPWWR formally authorizes formation of Branch Canal Water User Associations at the selected sites.
- BCWUAs were organized and established at four selected sites.
- Collation of records and minutes of meetings with farmers on the four BCWUAs documenting the process of formation;
- Training of senior field staff, technicians and field agents in communication skills, BCWUA organizing methodologies, and participatory rural appraisal (PRA) techniques;
- Preparation branch canal O&M cost-sharing plans with two BCWUAs;
- Submission of benchmark report.

⁷ The elements of the work plan were implemented accordingly, with the exception of the roundtable workshop on results and findings, which later was deemed unnecessary by the benchmark task group.

5. BCWUA ESTABLISHMENT AND IMPLEMENTATION RESULTS

5.1 Qemri Branch Canal

5.1.1 Basic Background Information

- *Situation.* Qemri Branch Canal branches off of the Saidiya Canal, with its off-take at point 7.15 km on the left bank. Qemri Canal bisects the Abou Hamad, Fakous and El Korin areas of Sharkaiya Governorate.
- *Length and Discharge.* The branch canal 19.5 km, and it discharges 4 m³/Sec from the main canal. This discharge is supplemented by the discharge of water from ten wells along the reach that lies between point 6.5 km and 14.0 km of the branch canal. Continuous flow has been implemented, but is not wholly reliable as yet.
- *Command Area Served.* The command area of Qemri Branch Canal is 7,500 feddans.
- *Farmer Households.* There are 3,500 farmers served by the branch canal.
- *Crop Types:* wheat, maize, peanuts, vegetables, berseem.
- *Mesqas.* 80 of the total 85 mesqas of Qemri have been improved under the IIP program and are presently functioning under their respective WUAs.
- *Industrial Activity:* 1 commercial fodder production factory
- *Irrigation Method and Rotation:* Single point lift pumping on all mesqas.
- Continuous flow (irregular)
- *Major Problems:* Absence of reliable and predictable continuous flow.

5.1.2 Process Chronology of Qemri BCWUA Implementation

- An implementation workshop held on 11 Nov 98 at Sharkaiya IIP office in Zagazig, with the Director General IIS, EPIQ team and IAS General Director, IIS and IAS engineers, and Irrigation Department engineers, and some field agents. Strategy and work plan was developed, with designation of field team tasks tied to an implementation timeline. The work plan targeted completion of BCWUA formation by April 15, 1999.
- Qemri branch canal was divided into 3 hydrological reaches:
 - Head Reach 0.0 km to 10.5 km
 - Middle Reach 10.5 km to kilo16
 - Tail Reach 16 km to end.

Each reach was determined to have an appropriate number of persons.

- A list of local influential persons and traditional leaders was prepared, including assembly leaders and other political representatives.
- Individual meetings with local influential persons and local council members were held between December 1998 and January 1999.
- Ten group meetings were held during February and March to orient farmers toward BCWUA objectives and to identify potential BCWUA representatives.
- In April, 13 reach representatives were nominated to the Executive Council, including the district engineer as an ex-officio member in standing. In its first collective decision, the Executive Council voted to increase the number of council members to 15.

- The members of the Qemri Branch Canal WUA Executive Council are:

M. Hussein Mohammad,	Chairman
Mohsil Abdel Aati,	Deputy Chairman
Ibrahim Mohammad,	Secretary
M. Ali Assan,	Treasurer

Members at Large:

M. El Kamri
 Sobha Ibrahim
 Shakhada Ali
 Ismail Abdel Aati
 M. Essein Ayat
 M. Salem
 M. Abou El Qasm
 Ali Mukhmil
 Hussein Abdel Fattah

BCWUA Advisor:

Sayed Manour,	District Engineer
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- Regular meetings are held the first Tuesday of each month at the IAS room in the IIP building, Zagazig

The process of forming the BCWUA on Qemri Canal is documented in Appendix D-1 by records of all meetings and milestones.

5.2 Bahr el Dahram Branch Canal

5.2.1 Basic Background Information

- *Situation.* Bahr el Dahram branch canal is on the El Bohia Canal, with its off-take at point 10.0 km on the right bank. Bahr el Dahram branch canal is administered by the Deyarb Negm Irrigation District and crosses through Dakhlaiya and Sharkaiya Governorates.
- *Length and Discharge.* The branch canal has a total length of 11. km. long, and it discharges 4 m³/Sec from the main canal.
- *Command Area Served.* The command area of Bahr el Dahram Branch Canal is 6,400 feddans.
- *Farmer Households.* There are approximately 5,800 farming households served by the branch canal.
- *Crop Types:* Summer: rice, cotton and maize. Winter: Wheat, berseem, vegetables, and broad beans (fuul).
- *Mesqas.* There are 13 mesqas on Bahr-el Dahram, none of which has been physically improved.
- *Industrial Activity:* None reported.

- *Irrigation Method and Rotation:* Direct lifting by private pumps from branch canal to mesqa, and mesqa to fields. Rotation is as follows: Summer: 4 days on and 6 days off. Winter: 5 days on and 10 days off.
- *Agricultural Cooperatives.* Eight agricultural coops serve the population of the command area.
- *Major Problems.* No major problems regarding water supply apart from seasonal shortage during May and June, supplemented by drainage water reuse and private wells.

5.2.3 Process Chronology of Bahr el Dahram BCWUA Implementation

- In the absence of an IAS field team in Mansoura, assistance was sought and received from the Irrigation Under-Secretary to augment the Irrigation Department field staff. He allocated staff sufficient to carry out the fieldwork, and one car exclusively to the field team for organizing the BCWUA. Four technicians were borrowed from the irrigation Department to work full-time with the project. Three motorcycles and fuel were allocated for the three technicians to be mobile in the field.
- In December 1998 a work plan was prepared for the establishment of a BCWUA on Bahr el Dahram Canal. Guidance in this process was provided by the IAS Director of Operations. In terms of methodology and incremental steps, the work plan for Bahr el Dahram branch canal closely mirrored that drawn up for the Qemri branch canal.
- Bahr el Dahram branch canal was divided into two hydrological reaches:
 - Reach 1: Head to 7.3 km point (juncture of the middle regulator)
 - Reach 2: From Middle regulator to the 11.7 km point (tail).
- The field team held twelve meetings with clusters of farmers after further dividing each reach into sub-sections. During these meetings farmers discussed general branch canal operations, maintenance and management, as well as issues and problems related to water delivery and head-to-tail equity. Farmers discussed implications of working together to solve these common issues, and met with farmers of Qemri Canal.
- Sixty-five separate meetings were held with local influential persons and traditional leaders, in addition to resident farmers employed in the public and private sector. These key individuals were given orientation in farmer-to-farmer awareness-building techniques, and accepted the role of agents of information transfer.
- Field engineers assigned to work on this branch canal received training in participatory rural appraisal and interpersonal communication techniques, conducted by the EPIQ team in January 1999.
- The schedule of reach meetings was completed from February to April 1999. These meetings were attended by farmers representing every farming community on the branch canal covering the entire command area.
- Following completion of these farmer cluster meetings, 13 members were elected to sit as the Executive Council: seven persons from Reach 1, and five persons from Reach 2, in addition to the District Engineer (ex-officio member).

Hamid Ali El Bas	Chairman
Md Abdel Wahab	Secretary
Ibrahim Ali Youssuf	Treasurer

Members at Large:

Salam el Hanfi Ahmed
Ali Ali Almerwashi
Ahmed Md Altayeb
Omer Md. Abu Salama
Sobia Ali Barakat
Abdul Aziz Hafiz
Sayed Abdul Maqsood
Abdel Hakim El Sayed
Md. Shafiq Ahmed

BCWUA Advisor:

Abdou Ahmed

District Engineer

The Executive Council decided that regular monthly meetings would be held on the first Monday of each month in the District Irrigation office.

5.3 Balaqtar Branch Canal

5.3.1 Basic Background Information

- *Situation.* Balaqtar Branch Canal is on the Mahmoudia Canal, with its off-take at point 29.6 km on the left bank. Balaqtar branch canal is administered by the Kafr el Dawar Irrigation District and is located in El Behaira Governorate.
- *Length and Discharge.* The branch canal has a total length of 16.6 km, and it discharges 6.25 m³/Sec from the main canal.
- *Command Area Served.* The command area of Balaqtar Branch Canal is 11,500 feddans.
- *Farmer Households.* There are approximately 5,500 farming households served by the branch canal.
- *Crop Types:* Summer: rice, cotton, vegetables and maize. Winter: wheat, berseem, vegetables, caraway, and broad beans.
- *Mesqas.* There are 95 mesqas on Balaqtar, 41 of which have been physically improved under the USAID funded IIP program. An additional 54 mesqas are currently under construction under the World Bank financed IIP follow-on project.
- *Industrial Activity:* There is one fodder plant located at the tail of the branch canal.
- *Irrigation Method and Rotation:* Single point lift pumping on all improved mesqas. Continuous flow (adequate reliability).
- *Agricultural Cooperatives.* Four agricultural coops serve the population of the command area.
- *Major Problems.* Year-round weed infestation, primarily water hyacinth, results in obstruction of water flow.

5.3.2 Summary Process Chronology of Balaqtar BCWUA Implementation

- In November 1998 the IAS Director General and members of the EPIQ team introduced the concept of the BCWUA to the Director General of the IIP in

Damanhour. The latter officer designated a team from the IAS and IIP staff in Damanhour to work for BCWUA formation on the Balaqtar branch canal.

- The first task of the designated BCWUA organization team was to prepare a work plan covering the period December 1998 to April 1999. The IAS Director of Operations provided technical guidance and orientation to the work plan preparation process and assisted in tailoring the plan to the specific exigencies of Balaqtar.
- Work in organizing the BCWUA was distributed among the designated IIP staff, and a resource pool allocation was determined (e.g. sharing of transport, secretarial staff, field engineers, technicians and field agents).
- Approximately 500 key persons and influential farmers living on Balaqtar and in the near vicinity were identified. Between December 1998 and the end of January 1999 the field team met with these persons through 135 separate meetings to introduce the concept of the BCWUA and to determine the level of interest. In addition, the team was able to determine to what extent it could utilize the resources of local influential persons in the overall organizing process.
- The meetings with individual farmers and local leaders revealed unanimous consent for establishing the BCWUA on Balaqtar, general agreement about the need to participate regularly in branch canal O&M.
- The farmers consistently reiterated that if the BCWUA is to take on the larger share of responsibility for O&M of the branch canal, some type of maintenance / meeting / equipment storage center is needed.
- Farmers were of the view that as a necessary part of the BCWUA agreement, the Irrigation Department must be able to guarantee regular and continuous flow to the branch canal. (Both the farmers and the Irrigation Department authorities accepted that while continuous flow is part of the IIP package of services, in reality it has not been implemented efficiently or predictably.)
- For organizing purposes, the Balaqtar branch canal was divided into five hydrological reaches, each reach demarcated by the presence of a new automatic control regulator.
- It was proposed by most of the farmers that each 1,000 feddan under irrigated command be represented by 1 member on the Executive Council.
- The IAS senior officers in Damanhour provided on-the-job training to field agents in improving communication skills during the organizing process.
- Following the individual meetings with farmers, a series of thirteen “hydrological reach” meetings was conducted with groups of farmers. In the last of each of the “reach” meetings, one person was elected to represent the cluster on the BCWUA Executive Council.
- At the first Executive Council meeting it was unanimously agreed to add an additional person to the Executive Council. This was done in the interest of establishing more equitable and evenly distributed farmer representation on the Executive Council.
- Regular meetings of the Executive Council are scheduled for the second Saturday of each month at the IIS office in Damanhour.
- The members of the Balaqtar Branch Canal WUA Executive Council are:

Md Salah el Masr	Chairman
Md Hussein Awat	Vice Chairman
Abdel Azim Abdel Ghani	Secretary
Md. Ahmed Hamada	Treasurer

Members at Large

Anwar Musa Abdel Hamid
Abdalla Abdel Karim
Sayed Zaki
Essafi Abda Rabou
Md Ahmed Abdel Rahman
Ragab Md Enagaf
Salah Abde Tawar
Mustafa Awat
Md Abdel Aati

BCWUA Advisors:

Abbas Mohammad Abbas
Fatteh Mansour

District Engineer
Drainage Engineer

5.4 El Reity Canal

Work on the El Reity Canal WUA is in the development phase, and a report on the implementation program there will be issued separately.

5.4.1. Basic Background Information

- *Situation.* El Reity Canal is located on the Sawahal Armant Canal with its off-take at point 8.2 km on the left bank. El Reity Canal is administered by the Armant Irrigation District under the Qena Irrigation Department.
- *Length.* The canal has a total length of 5.63 km, in addition to a branch of 1.5 km length.
- *Command Area Served.* The command area of El Reity Canal is a total of 2,050 feddans.
- *Farmer Households.* There are approximately 1,330 farming households served by the branch canal.
- *Crop Types.* Summer: sugarcane (65% of total cultivation) and maize. Sugarcane is cultivated on the basis of a 4 year on and 1 year off, cropping cycle. Winter: wheat, berseem, and vegetables.
- *Mesqas.* There are 28 mesqas on el Reity, none of which have been physically improved under any government scheme.
- *Industrial Activity.* There is one sugarcane processing unit near the tail reach of the main El Reity canal. There is also a fodder production plant located near the head reach.
- *Irrigation Method and Rotation:* Gravity flow.
- *Agricultural Cooperatives.* Two agricultural co-ops serve the population of the command area.

5.4.2 Process Chronology of El Reity BCWUA Implementation

Work on establishing a BCWUA at El Reity was initiated in April 1999, and will be documented in a subsequent report.

6. BRANCH CANAL O&M COST-SHARING PLANNING PROCESS

The following is a brief overview of the branch canal cost-sharing rationale, process and results. The complete cost-sharing plan documentation can be found in Appendix B.

In order to improve overall irrigation system management in Egypt , farmers should gradually participate more fully in the operation and maintenance of their branch canals.. Increased farmer involvement, as well as cost-sharing is to be accomplished through the development of branch canal water users associations.

6.1 Cost-Sharing Program

The cost-sharing plan process proposes to utilize:

- O&M contracts for the BCWUA,
- earnings from contract work to be used by the BCWUA to develop its managerial, fiscal and record-keeping skills,
- a three-year developmental plan utilizing:
 - a five-year base value for determining the ceiling on O&M contract payments,
 - a negotiated process between GOE and the BCWUA that defines a unique cost-sharing plan for each BCWUA, based on the size and scope of the O&M contract, and
 - a memorandum of understanding between GOE and the BCWUA that is contractual in nature and covers the details of the cost-sharing plan. The memorandum will spell out procedures for financial transfers, responsibilities and transparency.

6.2 Rationale and Justification

Local participation of this nature is needed because of the anticipated gradual reduction in GOE resources available for branch canal O&M in the future. Irrigation system management can also be improved through the existence of BCWUAs, as they gradually develop water record-keeping capability to provide "real-time" aggregate reporting of local branch canal water demand. One can only imagine the benefits to national water resource planning if this "bottom-up" data assembling and reporting capability were to be developed in BCWUAs.

There are many social benefits to participation that cannot be easily quantified or measured in economic terms. It is always important to acknowledge, that whatever the social benefits, participation also imposes some costs to farmers in the form of time and other resources spent in these activities. In the initial stages, farmers must become more involved in branch canal

management, with minimal opportunity costs to them, i.e. they should be reimbursed for participation in branch canal O&M which will allow them to build up a small capital reserve for the BCWUA. This system should continue over several years until the farmers have sufficient economic resources and incentives to assume more managerial, fiscal and record-keeping responsibilities. It is believed that opportunity costs for such participation can be greatly minimized.

6.3 Requirements and Elements of the Cost-Sharing Plan

BCWUAs must be transparent in their management. They must:

- develop managerial, fiscal and record-keeping procedures that are open and detailed enough to ensure success in the cost-sharing program,
- have representative leadership,
- be fair and reasonable in their decisions and administration of resources,
- have by-laws, rules and regulations governing their activities, and
- be supported by a legal foundation.

There are eight basic elements to the cost-sharing program:

- The farmers will be responsible for routine O&M contract work. The BCWUA is the contracting entity and the contract work will be directed and overseen by the BCWUA. Farmers do not enter into contracts individually. They are employed by the BCWUA. Again, the purpose of moving from indirect (using private contractors) to direct (using BCWUAs) government support for branch canal O&M is to eventually minimize assistance to a level that both GOE and farmers can accept.
- Through their BCWUA, farmers will conduct O&M at a level suitable to their economic abilities, and will be reimbursed upon completion of the contracted work.
- The cost-sharing program uses a *five-year base value* for determining the annual level and ceiling of O&M costs. This base value is negotiated between GOE and the farmers. It represents the estimated annual cost of operating the branch canal, including potential overhead costs associated with public agency administration and salaries.
- The cost-sharing program uses a phased, three-year developmental plan for BCWUAs that can be redesigned and renewed at the end of a three-year period. The plan has some institutional performance targets associated with it. There are some modest penalties for failure to meet targets in the developmental plan. Each phase in the increased cost-sharing of the branch canal moves the local farming community toward greater responsibility of its management. This includes the development of managerial, fiscal, record-keeping and dispute resolution skills.
- The cost-sharing program provides a menu of different options to BCWUA development. The particular option utilized during this benchmark implementation is a three-year developmental plan, negotiated between the farmers and GOE.
- The cost-sharing plan is negotiated and finalized in a memorandum of understanding between farmers and GOE.

- Training and workshops for the farmers will be needed to implement the cost-sharing program. These should be implemented through a training plan executed by the IAS outreach team.
- The renewable three-year plan also phases in a mesqa improvement package in areas where mesqa improvement packages are being introduced to farmers through GOE. The program does not entirely depend upon the availability of an improvement package, but a mesqa improvement package will most likely move the farming community more quickly in the direction of BCWUA development, if it is carefully linked to developmental targets. When available, mesqa improvement is an important additional economic incentive to the overall cost-sharing program.

More than one three-year plan might be needed. However, it is anticipated that some BCWUAs will reach some of the more important managerial, fiscal and record-keeping targets by the end of the first three-year plan. Factors that determine the level of BCWUA development will be tracked and measured as a matter of routine process documentation.

The proposed program will greatly minimize up front opportunity costs, giving farmers time to adjust to the new regime and to assess its benefits. Re-direction of GOE funds from private contractors to BCWUAs for branch canal O&M work will be the basic economic incentive, as well as governmental policy change needed. It is believed that this can be accomplished with minimal administrative adjustments.

6.4 Cost-Sharing Plan Preparation

In launching the O&M cost-sharing planning process MPWWR held focus group workshops on May 26 and 27 for Bahr el Dahram and Qemri branch canals, respectively. The expected output of these workshops was arrival at consensus for O&M cost-sharing between the members of the BCWUA and the Irrigation Department. It is understood that these plans will likely not be implemented until such time as the procedures for GOE contracting likewise are amended to allow BCWUAs work as contractors. The plans have the following structure breakdown of O&M:

- tasks/activities which the BCWUA will undertake voluntarily,
- tasks/activities which the BCWUA will be contracted to carry out by the Irrigation Department, and
- tasks/activities which the Irrigation Department will continue to execute directly.

6.4.1 Cost-Sharing Plan for Qemri and Bahr el Dahram Branch Canals

The cost-sharing plan targets costs associated with the operation and maintenance of branch canals in Egypt. The program assumes a high level of mutual cooperation between the MPWWR and the BCWUAs to share in these costs.

The plans also assume that BCWUAs will be governed by their executive council, will have by-laws, will be a legal entity, and will maintain a small office and staff, including possibly, patrollers trained to measure water and maintain records. Both BCWUAs agreed to levy a small annual O&M assessment to cover costs, in addition to receiving continued government financial assistance at some level.

Farmers presently do not contribute to branch canal O&M, either through an assessment or through voluntary labor mobilization. To reduce some of the costs of doing so, the MPWWR will allow these associations to enter into *O&M contracts* with the government to do annual O&M, rather than using private contractors do the work.

Both BCWUAs have indicated in their willingness to enter into contractual agreements with MPWWR. As the association strengthens, it will gradually take on more O&M responsibilities, reducing the annual cost to the government in maintaining branch canal systems throughout Egypt. At present, the program is not designed to reduce actual outlays made by the government, but rather to give *added value* to these outlays.

Added value is based on the assumption that BCWUAs will do higher quality work than that performed by private contractors. This is an empirical issue, but if, as expected, it is substantiated, it will stretch current government expenditures further and reduce the rate of depreciation of canal systems over time. In addition, there are many social benefits suggested from this program that cannot easily be measured in economic terms. Among these are more local control, improved systemic oversight, reduction in water disputes, and improved relations among farmers.

The cost-sharing plan presented in this report is framed in economic and business terms, and uses accepted accounting and fiscal management standards to assess the value and determine success of the plan. The plan entails the following steps:

- formation of a BCWUA;
- focus groups on cost-sharing planning (including workshops);

- developing the five-year “base value” of O&M costs (this is a negotiation process);
- developing the association’s three-year plan, including participation in O&M contracts;
- defining and implementing performance targets in the three-year plan;
- BCWUA satisfactory completion of O&M contracts;
- cost-sharing plan impact evaluation.

6.4.1.1 Qemri BCWUA Cost Sharing Plan

A. Estimated Cost Savings to Government of Egypt

The policy of allowing the to perform O&M contract work for the Ministry is designed to improve the utilization of O&M funds, and to obtain greater benefits from these expenditures. Government funds will administered more efficiently, the rate of depreciation of Government canal assets will be reduced, and farmers will be offered a package economic incentives to assume more responsibility for the protection and management of these assets.

ANTICIPATED SAVINGS TO GOVERNMENT

Awarding O&M contracts to BCWUAs, and at approximately the current cost rate, will allow the association to build up a reserve account. This reserve account can be used to improve the irrigation system, either physically or through more full-time management. he association will build up a reserve account because it operates at cost. It does not charge the government an overhead cost or profit margin. The economic value of this policy will be measured by the rate of formation of the reserve account, as well as the additional O&M work undertaken by the association with this capital savings.

Awarding O&M contracts to canal associations is expected to reduce the rate of depreciation of Government assets over time. This is accomplished by empirically verifying that the BCWUA does more careful work, thereby minimizing the cost of future rehabilitation. as well as increasing the length of time before maintenance needs to be repeated. Farmers, represented by their BCWUA council, depend upon the branch canal for their livelihood, while the private contractors normally doing the same O&M do not.

The current cost-sharing plan presumes that the BCWUA will introduce an annual assessment as their contribution toward operating and maintaining the branch canal. The BCWUA benefits from the new policy on O&M contracts, in return for agreeing to initiate this assessment. This assessment represents additional revenue to increase patrolling of the canal and to catch up on critical deferred maintenance. Such activities as these undertaken by the BCWUA also reduces the rate of depreciation of the irrigation system

BCWUA participation also will reduce costs to government associated with efforts to organize WUAs at the mesqa level. Initially, a BCWUA will be developed, and after a

certain point in time will begin to assist IAS and IIP staff to organize the mesqa-level WUAs. Over time this will reduce the required number of IAS and IIP field staff needed to form these WUAs.

B. Five-year “Base Value” of O&M Costs

This value is based on the documented average cost of operating and maintaining the branch canal over the previous five-years. Negotiations between the Ministry and the BCWUA council would concur after an examination of cost records, leading to an agreed upon base value. This base value is the basis of contract reimbursements to the BCWUA by the Ministry upon completion of O&M work performed by association. Private contractors have been doing most of the O&M work up to this time. Records of payments to private contractors will be reviewed in this process. The association would be awarded a reimbursement upon fulfillment of contract specifications.

Table 1. Average Annual O&M Cost Per Year by Expense Account

	Estimates (LE)
401- Salaries - canal patrolling (supervision of mesqa demand and canal reaches)	5,100
402- Salaries - office clerk/patrolman (fiscal and water delivery record keeping)	2,550
403- Wages - casual labor	1,200
404- Equipment and supplies (trash rakes, tools)	200
405- Council stipend (for meetings, trips, coordinating activities)	200
406- Special services (auditing, consultative)	200
407- Rental fees (for small storage facility or office)	2,400
408- Vehicle maintenance (small motorcycle, tractor)	3,000
409- Fuel (tractor, motorcycle)	4,000
410- Weed control (machine)	2,500
411- Weed control (manual)	2,500
412- Dredging - trash removal (machine)	12,000
413- Dredging - trash removal (manual)	6,600
414- Pitching	1,000
415- Rip rap	1,000
416- Maintenance of bridges	1,000
417- Drainage	1,000
418- Depreciation/Contingency fund	0
419- Mesqa WUA development	1,000
420- Bank fees	20
421- Other expenses	10
Total annual cost of branch canal operation and maintenance	48,680

C. Three-year Association Development Plan

The BCWUA evaluates its capability in meeting various expense items. Some expense items would be fully reimbursable by the Ministry, while other items would be assumed by the association without anticipated reimbursement. The development of the three-year plan requires the establishment of an accurate “base value.” One-hundred percent (100%) means that the BCWUA would assume all of the costs of the expense account. Zero percent (0%) means that the association will not assume any of the costs of the expense item. The willingness of the BCWUA to enter into O&M contracts for any of these expense items is not reflected on this page. That is shown clearly in section D of this plan.

Table 2. Proposed BCWUA Cost Sharing by Expense Account

Proposed BCWUA Cost Sharing by Expense Account	Year 1	Year 2	Year 3
(The BCWUA percentage is financed through its own O&M assessment)	%	%	%
401 - Salaries - canal patrolling	50	50	100
402 - Salaries - office clerk/patrolman	50	50	100
403 - Wages - casual labor	100	100	100
404 - Equipment and supplies	100	100	100
405 - Council stipend	100	100	100
406 - Special services	100	100	100
407 - Rental fees	0	0	0
408 - Vehicle maintenance	100	100	100
409 - Fuel	100	100	100
410 - Weed control (machine)	0	0	0
411 - Weed control (manual)	0	0	0
412 - Dredging - trash removal (machine)	0	0	0
413 - Dredging - trash removal (manual)	0	0	0
414 - Pitching	0	0	0
415 - Rip rap	0	0	0
416 - Maintenance of bridges	0	0	0
417 - Drainage	0	0	0
418 - Depreciation/Contingency fund	0	0	0
419 - Mesqa WUA development (task already completed)	0	0	0
420 - Bank fees	100	100	100
421 - Other expenses	100	100	100

Example #1 - For account #401 above, which is estimated to cost LE 5100 per year (see base value in section C of this plan), the association agrees to cover 50% in year 1 and 2. This represents all the resources it can bring to bear on the expense item, and will be paid out of a small annual assessment. The other 50% would be covered by the MPWWR but as shown in the next section the BCWUA would contract with MPWWR to perform this remaining 50%.

In other words, it would do this remaining 50% as part of an O&M contract. In year 3, the BCWUA would feel capable of assuming all of the cost of this particular expense item, probably as a function of wanting to exercise more local control.

Example #2 - For accounts #412-413, which are estimated to cost LE 12,000 and LE 6,600 per year (see base value in previous section), the BCWUA has not agreed to cover any of the cost. They are large expense items, and #412 involves the use of heavy equipment which the association does have access to. However, as can be seen in the following section, the BCWUA feels capable of at least entering into an O&M contract for doing some of the manual dredging and trash removal

D. Projected Association Revenue from O&M Contracts

The Ministry has indicated a willingness to allow BCWUAs to perform O&M contracts in place of the use of private contractors. BCWUAs have indicated a willingness to do this. However, the mechanics of this need to be worked out. The Qemri Branch Canal Water User Association has indicated a willingness to do the following. It is important to view the anticipated reimbursements received by the BCWUA from the Ministry for fulfilling O&M contracts as revenue for the BCWUA.

Table 3. O&M Contract (and BCWUA revenue) by Expense Account

	Year 1	Year 2	Year 3	
401 - Salaries – canal patrolling	2,550	2,550	0	
402 - Salaries – office clerk/patrolling	1,275	1,275	0	
403 - Wages – casual labor	0	0	0	
404 - Equipment and supplies	0	0	0	
405 - Council stipend	0	0	0	
406 - Special services	0	0	0	
407 - Rental fees	0	0	0	
408 - Vehicle maintenance	0	0	0	
409 - Fuel	0	0	0	
410 - Weed control (machine)	2,500	2,500	2,500	
411 - Weed control (manual)	2,500	2,500	2,500	
412 - Dredging – trash removal (by machine)	0	0	1,200	
413 - Dredging – trash removal (manual)	2,000	2,000	2,000	
414 - Pitching	1,000	1,000	1,000	
415 - Rip rap	0	0	100	
416 - Maintenance of bridges	1,000	1,000	1,000	
417 - Drainage	0	0	100	
418 - Depreciation/Contingency fund	0	0	0	
419 - Mesqa WUA development	0	0	0	
420 - Bank fees	0	0	0	
421 - Other expenses	0	0	0	
Total O&M revenue	LE 12,825	12,825	10,400	36,050

This worksheet indicates that the BCWUA has agreed to perform certain O&M contract work, for which it will earn revenue. Above, it shows that the association will earn LE 36,050 through O&M contracts over the three-year period. Some of this revenue goes to paying whoever conducted the work in the name of the BCWUA. A small percentage of the O&M contract revenue (15%) goes to account #418, which is a depreciation/contingency fund.

E. Year by Year Totals - Revenue and Expenses

The BCWUA operates as a nonprofit association, meaning that it operates at cost. A percentage of O&M revenue is allocated by the BCWUA to a depreciation account or contingency fund (#418). The BCWUA is able to do this because it does not charge the Ministry an overhead cost or profit margin. The #418 account represents savings to the Ministry. This is in the form of added value from additional O&M work that the association will fund through this account in the future. This represents “added value” above what the private contractors would provide.

Table 4. Revenue and Expense Accounts

Revenue Accounts					
301 - O&M Revenue (Ministry reimbursement to BCWUA)		12,825	12,825	10,400	
302 - BCWUA Assessments (LE 1.50 per feddan)		10,500	10,500	10,500	
303 – Jobbing (work performed by BCWUA for mesqas)		0	3,500	3,500	
304 - Contributions (Member voluntary labor)		39	0	2,549	
305 - Cash gifts, and donations				0	
306 - Grants (Government, NGO, or private sector)				0	
Total revenues	LE	23,364	26,825	26,949	77,138
Expense Accounts					
401 - Salaries – canal patrolling		5,100	5,100	5,100	
402 - Salaries – office clerk/patrolman		2,550	2,550	2,550	
403 - Wages – casual labor		1,200	1,200	1,200	
404 - Equipment and supplies		200	200	200	
405 - Council stipend		200	200	200	
406 - Special services		200	200	200	
407 - Rental fees		0	0	0	
408 - Vehicle maintenance		3,000	3,000	3,000	
409 - Fuel		4,000	4,000	4,000	
*410 - Weed control (machine)		2,125	2,125	2,125	
*411 - Weed control (manual)		2,125	2,125	2,125	
*412 - Dredging - trash removal (machine)		0	0	1,020	
*413 - Dredging - trash removal (manual)		1,700	1,700	1,700	
*414 - Pitching		850	850	850	
*415 - Rip rap		0	0	100	
*416 - Maintenance of bridges		850	850	850	
*417 – Drainage		0	0	90	
418 - Depreciation/Contingency (15% of O&M revenue)		1,924	1,924	1,560	
419 - Mesqa WUA development		0	0	0	
420 - Bank fees		20	20	20	
421 - Other expenses		10	10	10	
Total expenses	LE	26,054	26,054	26,900	79,008
Excess of revenues over expenses	LE	(2,690)	771	49	(1,870)

The accounts marked (*) show the expense after crediting 15% to account #418. Notice that there is a modest negative balance in the revenue. This would indicate a possible need to increase the annual assessment slightly to create a zero balance, which is the objective of a nonprofit association.

F. Three-year Totals – Revenue and Expenses

Table 5. Revenue and Expense Accounts

Revenue Accounts		
301 - O&M contracts (Ministry reimbursements to BCWUA)	36,050	
302 - BCWUA assessments (LE 1.50 per feddan)	31,500	
303 - Jobbing (work performed by BCWUA for mesqas)	7,000	
304 - Contributions (voluntary labor by BCWUA members)	2,588	
305 - Cash gifts and donations	0	
306 - Grants (government, NGO or private sector)	0	
Total revenues		LE77,138
Expense Accounts		
401 - Salaries – canal patrolling (900 man days)	15,300	
402 - Salaries – office clerk/patrolman (450 man days)	7,650	
403 - Wages – casual labor (900 man days)	3,600	
404 - Equipment and supplies (trash rakes, tools)	600	
405 - Council stipend (for meetings, trips, coordinating activities)	600	
406 - Special services (auditing, consultative)	600	
407 - Rental fees (for small storage facility or office)	0	
408 - Vehicle maintenance (small motorcycle, tractor)	9,000	
409 - Fuel (tractor, motorcycle)	12,000	
410 - Weed control (machine)	6,375	
411 - Weed control (manual)	6,375	
412 - Dredging – trash removal (machine)	1,020	
413 - Dredging – trash removal (manual)	5,100	
414 - Pitching	2,550	
415 - Rip rap	100	
416 - Maintenance of bridges	2,550	
417 - Drainage	90	
418 - Depreciation/Contingency fund	5,408	
419 - Donations of time for mesqa WUA development	0	
420 - Bank expenses	60	
421 - Other expenses	30	
Total expenses	LE	79,008
Excess of revenues over expenses	LE	(1,870)

G. Statement of Assets and Liabilities

Table 6. Assets and Liabilities

Branch Canal Association Assets (current assets)		
Cash (from expense account #418)	1,241	
Accounts receivable (Ministry reimbursements forthcoming)	0	
Inventory (materials, supplies)	200	
Savings account (from expense account #418)	1,000	
Prepaid expenses	0	
Reserve account (Remaining balance of expense account #418)	3,167	
Total current assets		5,608
Government Assets (fixed assets)		
Land and buildings	350,000	
Equipment	12,000	
Other fixed assets	3,000	
(Less depreciation)	(50,000)	
Total fixed assets		315,000
Other Assets		
Long-term investments	0	
Enter other assets here	0	
Enter other assets here	0	
Total other assets		0
Total assets		320,608
Liabilities and Equity		
Current Liabilities		
Accounts payable	1,870	
Short-term loans payable	0	
Other current liabilities	0	
Total current liabilities		1,870
LONG-TERM LIABILITIES		
Long-term loans payable	0	
Other long-term liabilities	0	
Total long-term liabilities		0
Equity		
Net equity	0	
Retained earnings	318,738	
Total equity	LE	318,738
Total liabilities and equity		LE 320,608

H. Detailed Description of Cost-Sharing Plan Expense Accounts

Expense Account Numbers

401-2 Costs associated with these two expense accounts are based on local rural labor rates for semi-skilled people operating small hydraulic equipment, driving a vehicle, and with some primary education. They are not based on salary levels for such comparable work within the Irrigation Department. Specific activities associated with this account have not been completely defined at this time. As part of the cost sharing performance targets outside of O&M contracts with GOE, the BCWUA would investigate its ability to hire one or two branch canal patrollers to maintain records and supervise (1) the level of water in branch canal reaches, (2) rates and timing of mesqa pumping and, (3) conducting light maintenance work. BCWUA patrollers will be full time positions. BCWUA office management might be a part-time position (limited hours of a small BCWUA office during the day). The cost of branch canal patrollers is estimated at 15 to 20 LE per day in rural areas for a semi-skilled employee able to operate a tractor, small hydraulic equipment, make repairs to motorcycles, and observing and recording water measurements after proper training. This would be for approximately 300 days a year.

The example shows that during the first two years, the BCWUA will be reimbursed by the Ministry for expenditures incurred in these accounts. For the third year, the BCWUA will assume the full cost of these accounts. Also, during the first two years, a patroller will be hired at part-time, rather than at full time. This is in keeping with some expected need for the BCWUA to explore the value and use of patrollers.

403 Specific activities and costs associated with this account include the hiring of casual labor for miscellaneous O&M tasks in excess of those itemized under other accounts below. As an example, Account #103 would generally not include casual labor hired by the BCWUA to perform work associated with an Irrigation Department O&M contract undertaken by the association. Account #103 represents O&M work performed by the BCWUA on its own, without any reimbursement from the Ministry. The cost of casual laborers is estimated at 8 LE per day in rural areas.

404 This account defines BCWUA expenditures to maintain a small store of provisions for branch canal maintenance, including essential equipment for removing trash, shovels, lumber, rebar, gabion, spare parts for mesqa pumps, pipe, cement and an assortment of carpentry and masonry tools. This store of equipment and goods would be built up over time, with purchases coming from the BCWUA capital reserve account or annual assessments.

405 This account represents costs incurred by council members for attending meetings, and time spent by them in providing special assistance to individual farmers to (1) resolve special problems that cannot be addressed by the BCWUA patrollers, (2) assisting mesqa associations in their formation, or (3) addressing issues associated with the planning of land leveling in mesqa areas, etc. The importance of Account #105 is in keeping with the expressed desire by farmers in focus groups to solve water problems locally whenever possible, and without the intervention of local police or the Ministry.

- 406 This account includes possible costs associated with the auditing of BCWUA records, and legal requirements associated with BCWUA registration, other government or Ministry requirements, etc. It is not anticipated at this time that Ministry funds would be available for such expenditures. Furthermore, such expenses may be minimal initially.
- 407 This account would be defined by expenses associated with renting small office, storage facility, etc. Rental fees for a small 16' x 16' storage shed might be about 200 LE per month in rural village areas.
- 408 This account is associated with costs in maintaining vehicles, such as motorcycles for patrollers, a tractor, carts, etc. Maintaining a motorcycle, including daily mileage of about 30 kilometers, is estimated at 20 LE per day. The cost of a 1 ton, 4-cylinder pickup truck would be about 100 LE per day, including mileage. This cost estimate would be for a BCWUA tractor as well.
- 409 This expense account shows the cost of all fuel, whether for vehicles or other purposes, consumed by the BCWUA while conducting expense account activities it undertakes on its own. This would generally not include fuel costs under O&M contracts.
- 410-
410 This account is apparently of great interest to farmers. During focus groups, farmers indicated the desire to conduct weeding themselves (through the association), rather than having private contractors do this work. These accounts would be the source of major accounts for BCWUA contracting with the Ministry.
- 412-
413 This is generally the account with the highest costs. In focus groups, farmers have indicated that all costs associated with canal dredging, presumably including labor as well as machinery costs, would not be undertaken by the BCWUA through O&M contracts. This is because of the need for large earthmoving equipment and associated skills. However, it is not clear if this means that farmers, through their BCWUA, would be unwilling to engage in O&M contracts for manual dredging, as opposed to mechanical dredging. In any event, only minimal costs associated with these accounts are borne by the BCWUA during the third year. This reflects some growing capability over time of BCWUA participation in this account category.
- 414 This account is represented by labor and possible fuel costs associated with this annual activity.
- This account represents unique costs of purchasing, or otherwise acquiring, and transporting rip-rap. Again, nominal participation of the BCWUA in the third year to reflect growing capability.
- 416 Focus groups with farmers indicated a general unwillingness to participate in this account. Costs borne by the BCWUA for conducting minor maintenance on bridges, or the value of O&M contracts undertaken by the association occurs at a very minimal

level in year three. This reflects an expected growing capability of the BCWUA to participate in this account.

- 417 This account may be incurred or assumed by BCWUAs in the future, and may have several cost items including, removal of trash and weeds, supervision of drains, pumping, and repair or installation of drains (see discussion in report).
- 418 This account is charged against the revenue collected from O&M contracts. It is used as a capital reserve fund for the association.
- 419 Mesqa WUA development can be assisted by the branch canal association. When this occurs it is a cost item for the association.
- 420 Fees charged for a checking account.
- 421 Other expenses.

6.4.1.2 Bahr el Dahram BCWUA Cost Sharing Plan

A. Estimated Cost Savings to GOE

The policy of allowing the branch canal associations to perform O&M contract work for the Ministry is designed to improve the allocation of these funds and to obtain greater benefits from these expenditures. Government funds are administered more efficiently, the rate of depreciation of canal assets is reduced, and farmers are given much needed economic incentives to assume more responsibility for the protection and management of these assets

ANTICIPATED SAVINGS TO GOVERNMENT

Awarding O&M contracts to the Bahr el Dahram BCWUA, and at approximately the current cost rate, would allow the association to build up a reserve account over time. This reserve account can be used to further improve the irrigation system, either physically or through more full time management with patrollers, etc. The association can build up a reserve account because it operates at cost. It does not charge the government an overhead cost or profit margin on the O&M contracts. The economic value of this policy can be measured by the rate of formation of the reserve account, as well as the additional O&M work on previously deferred maintenance undertaken by the association with this capital fund.

Awarding O&M contracts to BCWUAs is expected to reduce the rate of depreciation of these government assets over time. This is accomplished in the following way. Although it needs to be empirically verified, it is believed that the association will do more careful work, thereby minimizing the cost of future rehabilitation as well as increasing the length of time before maintenance needs repeating. Farmers, represented by their association council, depend upon the canal for their livelihood, while the private contractors normally doing the same O&M contract do not.

The current cost-sharing plan recommends that the association introduce an annual assessment as its contribution toward operating and maintaining the branch canal. The association makes benefit of the new policy on O&M contracts, in return for agreeing to initiate this assessment; however small it is. This assessment represents additional revenue to increase patrolling of the canal, and to catch up on critical deferred maintenance. Activities such as these undertaken by the association also reduces the rate of depreciation of the irrigation system.

Branch canal associations can minimize government costs associated with efforts to organize smaller associations at the mesqa level. Initially, a branch canal association is developed and at a certain point in time begins to assist Ministry staff in organizing smaller mesqa associations. Over time, this will gradually reduce the required number of Ministry staff needed to form these mesqa groups.

B. Five-year “Base Vale of O&M Costs

This is a negotiated value, based on the documented average cost of operating and maintaining the branch canal over the previous five-years. Negotiations between the Ministry and the BCWUA council occur after an examination of cost records, leading to an agreed upon base value. This base value is the basis of contract reimbursement rates to the BCWUA by the Ministry upon completion of O&M performed by the association. Private contractors have been doing most of the O&M work up to this time. Records of payments to private contractors could be consulted in this process. The association would be awarded a reimbursement upon fulfillment of contract specifications.

Table 7. Average Annual Bahr el Dahram O&M Cost per Year, by Expense Account

	Estimates (LE)
401 - Salaries - canal patrolling (supervision of mesqa demand and canal	5,100
402 - Salaries - office clerk/patrolman (fiscal and water delivery record keeping)	2,550
403 - Wages - casual labor	1,500
404 - Equipment and supplies (trash rakes, tools)	300
405 - Council stipend (for meetings, trips, coordinating activities)	300
406 - Special services (auditing, consultative)	200
407 - Rental fees (for small storage facility or office)	2,400
408 - Vehicle maintenance (small motorcycle, tractor)	2,000
409 - Fuel (tractor, motorcycle)	3,000
410 - Weed control (machine)	4,000
411 - Weed control (manual)	3,500
412 - Dredging - trash removal (machine)	14,000
413 - Dredging - trash removal (manual)	8,600
414 - Pitching	2,000
415 - Rip rap	2,000
416 - Maintenance of bridges	1,000
417 - Drainage	1,000
418 - Depreciation/Contingency fund	0
419 - Mesqa WUA development	5,000
420 - Bank fees	20
421 - Other expenses	10
Total annual cost of branch canal operation and maintenance LE	58,480

C. Three-year Bahr el Dahram Development Plan

The BCWUA evaluates its capability in meeting various expense account items. Some expense items would be covered by the Ministry, as in the past, while other items would be assumed by the association. One-hundred percent (100%) means that the BCWUA would assume all of the costs of the particular expense account. Zero percent (0%) means that the association will not assume any of the costs of the expense items. Fifty percent (50%) would mean that the Ministry would cover the remaining 50% of expected cost. The willingness of the BCWUA to enter into O&M contracts for any items they do not meet one-hundred percent of the cost on is shown on the next page.

Table 8. Proposed Bahr el Dahram BCWUA Cost Sharing, by Expense Account

	Year 1	Year 2	Year 3
(The BCWUA percentage is financed through its own O&M assessment)	%	%	%
401 - Salaries - canal patrolling	0	0	50
402 - Salaries - office clerk/patrolman	0	50	50
403 - Wages - casual labor	0	0	25
404 - Equipment and supplies	100	100	100
405 - Council stipend	100	100	100
406 - Special services	0	0	0
407 - Rental fees	0	0	0
408 - Vehicle maintenance	0	0	100
409 - Fuel	0	0	100
410 - Weed control (machine)	0	0	0
411 - Weed control (manual)	0	0	0
412 - Dredging - trash removal (machine)	0	0	0
413 - Dredging - trash removal (manual)	0	0	0
414 - Pitching	0	0	0
415 - Rip rap	0	0	0
416 - Maintenance of bridges	0	0	0
417 - Drainage	0	0	0
418 - Depreciation/Contingency fund	0	0	0
419 - Mesqa WUA development (task already completed)	0	0	0
420 - Bank fees	100	100	100
421 - Other expenses	100	100	100

Example #1 - For account #401 above, which is estimated to cost LE 5100 per year (see base value on previous page), the association agrees to cover 50% in year 2. This all the resources it can bring to bear on the expense item, and will be paid out of a small annual assessment. The other 50% would be covered by the Ministry, but as shown on the next page, the association would contract with the Ministry in all three-years to perform this activity. In

year 3, the association would feel capable of assuming 50% of the cost of this particular expense item, probably as a function of wanting to exercise more local control.

Example #2 - For accounts #412-413, which are estimated to cost LE 14,000 and LE 8,600 per year (see base value on previous page), the association has not agreed to cover any of the cost. They are large expense items, and #412 involves the use of heavy equipment which the association does have access to. However, as will be represented on the following page, the association feels capable of at least entering into an O&M contract for doing some of the manual dredging and trash removal (#413).

D. Projected Bahr el Dahram BCWUA Revenue from O&M Contracts

The Ministry has indicated a willingness to allow BCWUAs to perform O&M contracts in place of the use of private contractors. The BCWUAs have indicated a willingness to do this. The question is, what kinds of contract work will the BCWUA be willing to do. The Qemri Branch Canal Association has indicated a willingness to do the following. It is important to view the anticipated reimbursements received by the BCWUA from the Ministry for fulfilling O&M contracts as revenue for the association.

Table 9. O&M Contract (and association revenue) by Expense Account

	Year 1	Year 2	Year 3	
*401 - Salaries - canal patrolling	0	0	2,550	
*402 - Salaries - office	0	1,275	1,275	
403 - Wages - casual labor	0	0	0	
404 - Equipment and supplies	0	0	0	
405 - Council stipend	0	0	0	
406 - Special services	0	0	0	
407 - Rental fees	0	0	0	
408 - Vehicle maintenance	0	0	0	
409 - Fuel	0	0	0	
410 - Weed control (machine)	0	0	0	
411 - Weed control (manual)	3,500	3,500	3,500	
412 - Dredging - trash removal (machine)	0	0	0	
413 - Dredging - trash removal (manual)	4,300	4,300	4,300	
414 - Pitching	0	1,500	1,500	
415 - Rip rap	0	0	0	
416 - Maintenance of bridges	0	0	0	
417 - Drainage	0	0	0	
418 - Depreciation/Contingency fund	0	0	0	
419 - Mesqa WUA development	1,000	1,000	1,000	
420 - Bank fees	0	0	0	
421 - Other expenses	0	0	0	
Total O&M revenue	8,800	11,575	14,125	34,500
LE				

This worksheet indicates that the branch canal association has agreed to perform certain O&M contract work, for which it will earn revenue. Above it shows that the association earned LE 34,500 through O&M contracts over the three-year period. Some of this revenue goes to paying whoever conducted the work in the name of the association. A small

percentage of the O&M contract revenue (15%) goes to account #418, which is a depreciation/contingency fund.

For items marked (*), the Ministry would generally not award O&M contracts for these expense items if the association is unwilling to cover at least a small percentage of the cost. This is why no revenue from O&M contracts is earned from these items in year 1 and 2, whereas in year three there is some revenue earned.

E. Year by Year Totals – Revenues and Expenses

The Bahr el Dahram BCWUA operates as a nonprofit association, meaning that it operates at cost. A percentage of O&M revenue is allocated by the BCWUA to a depreciation account or contingency fund (#418). The BCWUA is able to do this because it does not charge the Ministry an overhead cost or profit margin. The #418 account represents a savings to the Ministry. This is in the form of added value from additional O&M work that the association will fund through this account in the future. This represents added value above what the private contractors would provide.

Table 10. Revenue Accounts

Revenue Accounts				
301 - O&M Revenue (Ministry reimbursement to BCWUA)	8,800	11,575	14,125	
302 - BCWUA Assessments (LE .50 per feddan)	3,200	3,200	3,200	
303 - Jobbing (work performed by BCWUA for	0	0	0	
304 – Contributions (Voluntary labor by members)	0	0	0	
305 - Cash gifts, and donations	0	0	0	
306 - Grants (Government, NGO, or private sector)	0	0	0	
Total revenues	12,000	14,775	17,325	44,100
Expense Accounts				
401 - Salaries - canal patrolling	0	0	2,500	
402 - Salaries - office clerk/patrolman	0	1,275	1,275	
403 - Wages - casual labor	0	0	375	
404 - Equipment and supplies	0	0	150	
405 - Council stipend	300	300	300	
406 - Special services	0	0	0	
407 - Rental fees	0	0	0	
408 - Vehicle maintenance	0	0	1,000	
409 - Fuel	0	0	1,320	
*410 - Weed control (machine)	0	0	0	
*411 - Weed control (manual)	2,975	2,975	2,975	
*412 - Dredging - trash removal (machine)	0	0	0	
*413 - Dredging - trash removal (manual)	3,655	3,655	3,655	
*414 - Pitching	0	1,275	1,275	
*415 - Rip rap	0	0	0	
*416 - Maintenance of bridges	0	0	0	
*417 - Drainage	0	0	0	
418 - Depreciation/Contingency Fund (15% of O&M revenue)	1,320	1,736	2,119	
419 - Mesqa WUA development	0	0	0	
420 - Bank fees	20	20	20	
421 - Other expenses	10	10	10	
Total expenses	8,280	11,246	16,974	36,500
Excess of revenues over expenses	3,720	3,529	351	7,600

The accounts marked (*) show their expense after crediting 15% to account #418. Notice that there is an anticipated positive balance in the revenue. This would indicate a possible need to have the association invest in some of the performance targets, although the final decision would be up to the association.

Table 11. Three-year Totals – Revenue and Expenses

Revenue Accounts		
301 - O&M contracts (Ministry reimbursements to BCWUA)	34,500	
302 - BCWUA assessments (LE .50 per feddan)	9,600	
303 - Jobbing (work performed by BCWUA for mesqas)	0	
304 - Contributions (voluntary labor contributed by association members)	0	
305 - Cash gifts and donations	0	
306 - Grants (government, NGO or private sector)	0	
Total revenues		44,100
Expense Accounts		
401 - Salaries - canal patrolling (900 man days)	2,500	
402 - Salaries - office clerk/patrolman (450 man days)	2,550	
403 - Wages - casual labor (900 man days)	375	
404 - Equipment and supplies (trash rakes, tools)	150	
405 - Council stipend (for meetings, trips, coordinating activities)	900	
406 - Special services (auditing, consultative)	0	
407 - Rental fees (for small storage facility or office)	0	
408 - Vehicle maintenance (small motorcycle, tractor)	1,000	
409 - Fuel (tractor, motorcycle)	1,320	
410 - Weed control (machine)	0	
411 - Weed control (manual)	8,925	
412 - Dredging - trash removal (machine)	0	
413 - Dredging - trash removal (manual)	10,965	
414 - Pitching	2,550	
415 - Rip rap	0	
416 - Maintenance of bridges	0	
417 - Drainage	0	
418 - Depreciation/Contingency fund	5,175	
419 - Mesqa WUA development	0	
420 - Bank expenses	60	
421 - Other expenses	30	
Total expenses		36,500
Excess of revenues over expenses	LE	7,600

G. Bahr el Dahram BCWUA Statement of Assets and Liabilities

Table 12. Assets and Liabilities

Assets		
Cash (from expense account #418)	1,500	
Accounts receivable (Ministry reimbursements forthcoming)	0	
Inventory (materials, supplies)	100	
Savings account (from expense account #418)	1,000	
Prepaid expenses	0	
Reserve account (Remaining balance of expense account #418)	2,675	
Total current assets		5,275
Land and buildings	250,000	
Equipment	4,000	
Other fixed assets	1,000	
(Less depreciation)	(100,000)	
Total fixed assets		155,000
Long-term investments	0	
Enter other assets here	0	
Enter other assets here	0	
Total other assets		0
Total assets		160,275
Liabilities and Equity		
Current Liabilities		
Accounts payable	400	
Short-term loans payable	0	
Other current liabilities	0	
Total current liabilities		400
Long-term Liabilities		
Long-term loans payable	0	
Other long-term liabilities	0	
Total long-term liabilities		0
Equity		
Net equity	0	
Retained earnings	159,875	
Total equity	LE	159,875
Total liabilities and equity	LE	160,275

7 CONCLUSIONS AND RECOMMENDATIONS

Increased user participation in planning, operation, maintenance and management of branch canal irrigation unit is a desirable goal and are supported by the results achieved during this benchmark implementation period. The formation and establishment of water user associations at the branch canal level has proven to be a viable, highly desirable means of intensifying farmer participation in irrigation management. Management capabilities and capacities at this level must be supported and improved as water supplies become more constrained and the innovation of continuous flow availability is advanced to larger areas of the system. Willingness on the part of users to assume part of the O&M costs, in the form of time, labor, and finances, is shown to reduce government costs in operations and maintenance, and will affirm that eventual management transfer can be successfully negotiated in the future.

The development of semi-autonomous and quasi-private irrigation districts may be a long-term goal. In such cases, the district water user organizations are entirely responsible for the operation, maintenance and periodic upgrading of water delivery and control structures within their districts. This *irrigation management transfer* process is recommended to be the subject of a performance benchmark during the next EPIQ implementation cycle of water policy development.

7.1 Recommendations for Tranche IV Benchmarks

Achievements to date in BCWUA formation signal two important water policy directions for the future. The first will be formally amending Law 12 on Irrigation and Drainage to allow formation of WUAs at all levels of the Egyptian irrigation system. The second involves launching an innovative pilot program of irrigation system management transfer to the private sector.

7.1.1 Amending Law 12

As part of its on-going review of Law 12, MPWWR will take steps to amend the law to allow formation and registration of Water Users Associations in all categories of land and among primary, secondary and tertiary levels of the irrigation system. Until such time as the law is amended, these organizations will function legally under the mandate of a MPWWR ministerial decree. With Law 12 appropriately amended, MPWWR will have the capability to

1) implement a national plan for BCWUAs in the Old Lands, and assign Government resources to support it; 2) reduce implementation costs for mesqa-level WUA development in the Irrigation Improvement Sector by employing the BCWUA as an organizing mechanism; and 3) further private sector opportunities in water and agriculture extension services.

7.1.2 Pilot Program for Introducing Irrigation Management Transfer (IMT)

Irrigation Management Transfer (IMT) allows the private sector to assume managerial control over the physical infrastructure, its operations and many O&M tasks, thereby reducing government expenditures. IMT is a logical progression in the participatory process from developing branch canal-level water user associations. The incentives for Government and farmers to undertake this initiative include an overall reduction in the cost of irrigation, enhanced financial self-reliance of irrigation schemes, expansion of service areas, greater irrigation water efficiency, and increases in cropping intensity and yields. It is apparent that the GOE cannot continue to provide the present quality and range of infrastructure services, including system O&M in new areas, and still provide high-quality services in the old lands in the Nile Delta and Valley. The organizations that take on this role will be financially autonomous, within parameters establishing by the GOE enabling statutes or decrees, and will be able to hire or contract for technical operational and management services.

This recommendation for Tranche IV represents a major policy and conceptual shift toward empowering users and other private sector entities, increasing public appreciation for management by the end users gained from the BCWUA benchmark. Irrigation schemes will become self-regulating and potential for on-farm water conflicts will decrease. The process of irrigation system subsection transfer is an evolutionary one, and a national plan for management transfer would be phased over a period of many years.

7.2 Other Recommendations

The following recommendations are based on the activities implemented under this benchmark:

- MPWWR should strengthen irrigation extension delivery by providing adequate budgetary, infrastructure, training and personnel resources to the Irrigation Advisory Service.
- MPWWR should continue to support and strengthen the role of the ministerial Action Team on Participatory Irrigation Management.

- In order to respond more efficiently to local needs, mesqa-level and branch canal WUAs should include both irrigation and drainage functions. The creation of drainage collector associations should be discontinued.
- IAS should adopt a flexible approach and procedure for organizing BCWUAs, employing an integrated team strategy involving IAS, Irrigation Department, Drainage Authority, IIP where present, and Agriculture Extension, depending on local prevailing conditions. The BCWUA organizing strategy should ensure equal representation.
- MPWWR should establish, with BCWUA cooperation, maintenance centers for spare parts, equipment, and other O&M material used in irrigation improvement at the branch canal level.
- BCWUAs, irrigation district engineers, IAS engineers and IIP engineers will jointly plan, design and implement branch and distributary canal improvements in the command area and establish continuous flow and downstream water level control.
- In unimproved command areas, IAS should establish BCWUAs at least one to three-years in advance of any irrigation improvement program intervention.
- In national irrigation projects, e.g. Toushka and El Salaam, while land is being distributed, 1) membership in a canal association should be included as part of the contract agreement, and 2) the contract agreement should include a statement of rights and responsibilities regarding water management and canal maintenance.
- The branch canal O&M cost-sharing plan process should continue to be refined and adopted as a standard feature of the BCWUA organizing process. The mechanisms for implementing the plan should be defined including a method for MPWWR to directly contract with the BCWUA for O&M tasks.
- The Irrigation Advisory Service (IAS) should strengthen central as well as local coordination with public and private sector agencies, e.g. Agricultural Extension, agricultural census unit, cooperatives, banks, growers' associations, local councils, research institutes, et. al.
- Coordination should be maintained with all other projects working in this sector, e.g. the Netherlands government-assisted project on water boards.
- Awareness building programs for BCWUAs and MPWWR engineers, technicians and field agents, need to focus on priority concerns.
- The potential for WUAs in New Lands, national project areas and oases needs to be carefully assessed and analyzed for future planning.

8. LIST OF CITED REFERENCES

MPWWR. Findings of the Egypt Water Use and Management Project: Improving Egypt's Irrigation Systems in the Old Lands, MPWWR, March 1984.

MPWWR/EPIQ. Egypt's Irrigation Improvement Program: Performance Assessment and Proposed National Strategy, EPIQ/WPRP, 1998.

MPWWR/EPIQ. Water User Association Formation Outside the Irrigation Improvement Program Area. EPIQ/WPRP, 1998.

Svendsen, Mark and Ruth Meinzen-Dick. "Irrigation Institutions in Transition: a Look Back, a Look Forward", in Irrigation and Drainage Systems. Amsterdam: Kluwer Academic Publishers, 1997.

MPWWR. Proceedings of the Second National Workshop on Participatory Irrigation Management, Alexandria, November 1998.