




**LIFE Integrated Water Resources Management  
Task Order No. 802  
EPIQ II: Contract No. EPP-I-802-03-00013-00**

**Annual Report  
Year 3  
(2006 - 2007)**

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## ACRONYMS AND ABBREVIATIONS

AAU	Agricultural Administrative Unit
AED	Academy for Educational Development (a US based entity providing USAID funded assistance regarding environmental education and awareness)
APRP	Agricultural Policy Reform Program
ASC	Alliance Steering Committee
BC	Branch Canal
BCWUA	Branch Canal Water User Association
CADI	Computer Assisted Development Inc. (a Ft. Collins, Colorado based consulting firm)
CD	Central Directorate
CDA	Community Development Association
CDIAS	Central Directorate, Irrigation Advisory Service
CTO	Cognizant Technical Officer. The USAID person responsible for supervising a technical assistance contractor
CY	Calendar Year
DAI	Development Alternatives, Inc. (a Washington DC based consulting firm working with IRG to implement the project)
DBAF	Dual Biological Aerated Filter (waste water treatment process)
EEAA	Egyptian Environmental Affairs Agency
EEPP	Egyptian Environmental Policy Program (a USAID funded program aimed at achieving environmental policy reform)
EPADP	MWRI Egyptian Public Authority for Drainage Projects
EPIQ	Environmental Policy and Institutional Strengthening Indefinite Quantity Contract
ET	Evapotranspiration
FAQ	Frequently Asked Questions
FWUO	Fayoum Water Users' Organization Project
GDA	Global Development Alliance
GD	General Directorate
GIS	Geographic Information System
GOE	Government of Egypt
GPS	Global Positioning System
GW	Groundwater
GWS	Groundwater Sector
HD	(Aswan) High Dam
IAS	Irrigation Advisory Service
IBRD	International Bank for Reconstruction and Development or World Bank
ID	Irrigation Department
IDS	Irrigation and Drainage system
IIIMP	Integrated Irrigation Improvement and Management Project
IIP	Irrigation Improvement Project
IRG	International Resources Group (a Washington DC based consulting firm that is prime contractor for the IWRMP)
IRU	MWRI Institutional Reform Unit
IRs	Intermediate Results
IS	Irrigation Sector of the MWRI

IT	Information Technology
IWMD	Integrated Water Management District
IWMU	MWRI Integrated Water Management Unit
IWRM	Integrated Water Resources Management
IWRMP	Integrated Water Resource Management Project
LAN	Local Area Network
LIFE	Livelihood and Income from the Environment (Project)
LOE	Level of Effort
LTTA	Long-term Technical Assistance
M&E	Monitoring and Evaluation
MALR	Ministry of Agriculture and Land Reclamation
MED	MWRI Mechanical and Electrical Department
MIC	MWRI Ministry Information Center
MISD	Matching Irrigation Supply and Demand
MOE	Ministry of Education
MOH	Ministry of Housing
MOU	Memorandum of Understanding
MSEA	Ministry of State for Environmental Affairs
MS	Master of Science
MWRI	Ministry of Water Resources and Irrigation
NGO	Non-Governmental Organization
NWRC	MWRI National Water Research Center
O&M	Operation and Maintenance
OJT	On-the-Job Training
PB	Performance Benchmarking
PM&E	Performance Monitoring and Evaluation
RSC/WP	Red Sea Coastal/Water Project, short name for USAID Red Sea Coastal and Improved Water Resource Management Project
RWP	Relative Water Supply
SIRs	Sub-Intermediate Results
SOs	Strategic Objectives
STTA	Short-term Technical Assistance
TA	Technical Assistance
TOR	Terms of Reference
USA	United States of America
USAID	United States Agency for International Development
WCU	MWRI Water Communication Unit
WDC	MWRI Central Water Distribution Center
WPRP	Water Resources Results Package
WQU	MWRI Water Quality Unit
WRI	Water Resource Inventory
WUA	Water User Association
WWTF	Waste Water Treatment Facility

## SUMMARY

International Resource Group (IRG) under the USAID/Egypt funded Livelihood and Income from the Environment Integrated Water Resources Management Project (LIFE IWRM), Contract No. EPP-I-802-03-00013-00 Task Order 802, is responsible for assisting the Government of Egypt (GOE) to promote integrated water resources management. The period of performance of the Project is from October 1, 2004 to September 30, 2008.

The purpose of this report is to present the status and performance of LIFE IWRM for Year 3 (2006/2007). The Annual Report has the following content: summary of Project activities and accomplishments for the year (2006-2007) including tables showing accomplishments vs targets; planned activities for the following quarter (October – December 2007); and a section on problems, issues, and lessons learned.

The following items have been included as annexes: Annex A M&E Plan Update, Annex B Annual Financial Status Report, Annex C List of Project Reports, Annex D Status of Technical Assistance, Annex E Training Report, and Annex F Procurement Status Report.

A summary of the activities and accomplishments for the Year (October 2006 to September 2007) follows:

A contract modification was issued by USAID on August 4, 2007 to fund the Global Development Alliance: Environmental Services for Improving Water Quality Management in Egypt.

A USAID/MWRI Steering Committee meeting was held on 27 Aug 2007.

Annual Work Plan Workshop for Year 4 was held from 7-9 September 2007 at Palestine Hotel, Alexandria. H.E. the Minister MWRI; representatives from USAID including Wafaa Faltaous and Eric Viala; members of the Steering Committee; Undersecretaries, Director Generals, and select Directorate and District staff from the 5 Directorates; IWMU; and LIFE IWRM TA team attended.

USAID/Egypt staff participated in a number of visits and meetings to review Project activities that included several meetings with H.E. Minister MWRI and visits to IWMDs in each of the 5 target Directorates.

Annual Year 4 Work Plan was approved by MWRI and EEAA in September 2007, and submitted to USAID.

Eng. Wafaa Faltaous (CTO) attended monthly LIFE Project coordination meetings at MWRI, Cairo She also made several visits to Lower and Upper Egypt to attend monthly Directorate meetings, meet with BCWUA members, and participate in wastewater reuse coordination activities held at the Luxor Demo site.

Eric Viala (LTTA, Expatriate Water Resources Management Specialist) left the Project on 28 February 2007 to take a position as Regional Water Advisor for the USAID Office of Middle East Programs

Integrated Water Management Unit (IWMU), headed by Eng. Gamil Mahmoud, continued to provide excellent coordination for the Project with MWRI entities to achieve Project objectives and facilitate implementation of Project activities in the field.

USAID teams visited the pilot waste water treatment facility in Senbo Village, Gharbiya several times during Year 3.

*Task 1 Formation of Integrated Water Management Districts* has been completed. 23/23 new IWMDs have been formed. The total number of IWMDs in the 5 target Directorates of West Sharkiya, New Zifta, East Qena, West Qena, and Aswan including those formed under USAID RSC/WP is now 27. The IWMDs are fully functioning and cover over 1.2 million feddan or 15% of Egypt's irrigated area. The IWMDs now have upgraded facilities, modern office equipment, training rooms, technical standards and guidelines. All administrative and technical staff has been officially assigned to the newly formed IWMDs.

*Task 2 Formation of Branch Canal Water Users' Associations* has established 601 BCWUAs covering all the branch canals in the 27 IWMDs. The BCWUAs involve over 1000 branch canals and serve almost 500,000 users. The streamlined approach used by the Project and the direct involvement District Managers and District staff to establish, activate, and implement the participatory water management program has proved highly successful. All BCWUAs have signed MOUs, prepared internal regulations, defined maintenance priorities, and developed annual action plans for 2006/07. Monthly, seasonal, and annual meetings were held with the BCWUA Board, IWMD, and Directorate level staff. Regional orientation workshops were held with the BCWUAs chairpersons. BCWUA board members were provided with membership cards. Several participatory water management activities were introduced to the BCWUAs including procedures for monitoring branch canal rotation schedules, providing crop data to the IWMDs, resolving conflicts, sharing in canal and structure maintenance, monitoring branch canal maintenance contracts, and conducting public awareness programs. Success stories were collected by the Districts and process documentation was compiled for each of the 601 BCWUAs.

Under *Task 3 Equitable Allocation of Water Resources* the Project has introduced techniques for data-based decision-making, equipment for measurement-based water management, procedures for matching irrigation supply and demand, and concepts of integrated water resources management to the IWMDs.

Water monitoring networks have been established in all IWMDs. The water discharge measurement program continued. Calibration was completed at 84 irrigation canal flow monitoring sites enabling calculation of actual inflows into each IWMD. To evaluate water balance estimates for the IWMDs, 65 drainage sites were added to the flow monitoring program and 55 have been calibrated. Water quality and groundwater monitoring equipment was delivered and training provided to all Districts. Ground water inventories have been conducted by IWMD staff for over 6000 wells. Water quality monitoring of dissolved oxygen, Ph, salinity, and temperature is being done at 380 sites.

To demonstrate procedures for continuous flow monitoring, seven data loggers have been installed at several critical locations. Hourly water level and related flow data can be accessed easily at any time at District, Directorate and Central level via a low cost GSM/GPSR communication system. As a result of this effort MWRI has awarded a contract to Campbell

Scientific Instrument to provide an additional 17 data loggers at critical locations within the Nile Irrigation system.

Procurement, delivery, and transfer of IWMD computer and office equipment have been completed. After training, computer maintenance support is now being provided by the Directorates to the IWMDs. Water level, complaints, matching irrigation supply and demand, ground water, and water quality data bases have been installed at each IWMD and at the Directorates. Daily water levels for over 1000 sites are being entered into the water level data bases. Data for 2004-2007 has been entered into the data bases. An Information System Assessment on Year 3 activities was prepared.

The implementation of the Matching Irrigation and Supply and Demand (MISD) program continued. Biweekly data from the Ministry of Agriculture is being collected by the 27 IWMDs on crops and cropping patterns. Water resource budgets were prepared by each IWMD manager. A water resource inventory (WRI) was carried out by each District. The WRI is being used at Directorate and by the Irrigation Sector to determine targeted water supply to each IWMD.

Digital maps with District boundaries, canals, drains, water monitoring points, and water quality sampling sites over laid on 1/25,000 base maps for all IWMDs were completed. Field measurement of BC command areas using GPS for all IWMDs was completed. Non-irrigated land was estimated from satellite imagery. This information was transferred to the digital maps as a separate layer. Names and locations the BCWUAs were added to the digital maps.

The purpose of *Task 4 Improved Maintenance and Upgrading of Water Management Equipment* was to assess the capacity of the Governorate technical schools administered by the Central Department of Technical Education within the Ministry of Education (MOE) to provide training in the repair and maintenance of agricultural and irrigation equipment and in business management. An updated report was submitted. Although capacity building of the technical schools is outside the scope and budget of the Project it was decided that irrigation pump maintenance awareness training should be provided to users through the BCWUAs.

*Task 5 Environmental Services for Improving Water Quality Management* activities continued in Senbo Village, Gharbiya Governorate, the pilot area selected for demonstration purposes. Three interventions were evaluated: domestic solid waste collection and disposal, liquid wastewater treatment, and agricultural waste recycling.

Construction was completed on the 600 m<sup>3</sup>/day Dual Flow Aerated Bio-Filters (DBAF) waste water treatment facility. Training was provided to local persons selected by the CDA/BCWUA consortium formed to implement the Project. These persons are now operating the system under a Project sponsored on-the-job training (OJT) program. Transfer of the DBAF system to the consortium or the local water and waste water company is under discussion.

Because of the success of the pilot waste water treatment facility, USAID has decided to replicate the activity under a Global Development Alliance (GDA) between Cola Africa Foundation, USAID, MWRI, IRG and UNICEF. The activity will be replicated in three rural communities, two in Gharbiya Governorate and one in Luxor. USAID has provided additional funds to the Project to carry out the work.

*Task 6 Improved Wastewater Reuse Practices* is being implemented in coordination with MSEA/EEAA. The purpose of the activity is to demonstrate environmental feasibility of treated wastewater reuse for commercial crops and to promote private sector participation in the use of treated waste water for irrigation. Successful operation of the 10 feddan Luxor Demo site continued. The site uses effluent from the USAID funded Luxor treatment plant for irrigation. Winter and summer crops were planted. The following crops are being grown: flax, flowers, jojoba, jatropha, and sorghum. Regular comprehensive environmental monitoring of water, soil, and plants was carried out. Long term training was completed for 5 agricultural graduates on safe agriculture practices utilizing treated wastewater. A new batch of seven graduates was selected and started a 6 month OJT program in June 2007. An economic feasibility report was prepared and an environmental evaluation was carried out.

Funds have been obligated to LIFE IWRM by USAID under *Task 7 Graduate Degree Training for MWRI Staff* to provide academic degree training to MWRI staff. Both U.S. and Egyptian institutions are being used to provide the degree training. Two participants completed their MS degree programs at Utah State University, two persons continued their studies at American University in Cairo for MS degrees, and five participants are enrolled in local Egyptian University MS programs.

The purpose of the *Monitoring and Evaluation (M&E)* component of the Project is to provide LIFE IWRM Project stakeholders with the information needed to follow and manage the Project's progress and assess its outcomes and impacts. Monthly meetings were conducted with the IWMDs. Each District Manager now submits a monthly status report. Regular data collection continued by the IWMDs to monitor complaints, cropping patterns, rotations, water requests, and actual water allocations. District managers were introduced to procedures for performance monitoring using indicators such as quality of irrigation service, water demands vs. deliveries, equity of water distribution, and areas covered by BCWUAs. Improved procedures for collecting, analyzing, and reporting the M&E IWMD data were introduced. A Year 3 M&E Field Survey of Farmers in Twenty-Seven Integrated Water Management Districts (5,000 respondents) was conducted. Year 3 M&E report was prepared. Conditions in each of the Project IWMDs were evaluated.

*Public Awareness, Education, and Communication Support* is being provided to all Project activities. The MWRI Water Communication Unit is the key partner for this effort. The Project has prepared and disseminated over 90,000 Project brochures, folders, booklets, flyers, calendars, and posters; several videos on IWRM and BCWUA benefits; a 45 page, illustrated flip-book, communication tool kit "Discussion Guide to Share with Water Users"; and a 13 page flip-chart kit based on the "Discussion Guide". During the last year the Project conducted three awareness workshops for senior MWRI officials; prepared several large lobby display boards; printed and distributed 10,000 Project awareness cards; participated in several conferences and exhibitions; collected over 200 IWMD and BCWUA success stories; published three quarterly newsletters; and continued to maintain and update the Project website ([www.iwrmeg.org](http://www.iwrmeg.org)).

*Gender issues* are being integrated into all activities. One General Director, three IWMD District managers, and 25% of the IWMD section heads are women. Discussions on gender issues were included in all BCWUA training. Ten percent of the BCWUA board members are women.

*Training* has been used to provide technical assistance through a combination of formal and on-the-job training programs. As of September 2007, the Project had conducted almost 400 formal training events with more than 800 training days for more than 9,200 trainees. Sixteen percent of the participants were women. Topics have included IWMD organization, integrated maintenance, management and communications, BCWUA formation and activation, participatory water management, computer use and maintenance, water monitoring, MISD, data bases, digital mapping, and English language training.

*Procurement program* has supplied the major commodities approved under the original Life of Project Procurement Plan. Because most of the procurement was done locally, the procurement was completed with major cost savings and in a very short time.

## ACCOMPLISHMENTS DURING YEAR 3 (2006-2007)

### Task 1: Formation of Integrated Water Management Districts

The overall objective of this task is to assist MWRI in integrating all its District level delegations into Integrated Water Management Districts in the five target Directorates of New Zifta, West Sharkiya, East Qena, West Qena, and Aswan.

Eng. Nabil Fawzi (LTTA, Local Water Resources Management Specialist) is assigned as Regional Advisor for Upper Egypt. He is supported by Eng. Yehia Youssef (IWMU). Eng. Maher Khodary (LTTA, Water Resources Management Specialist) is assigned as Regional Advisor for Lower Egypt. He is supported by Eng. Mohamed El Hamrawy (IWMU). Eng. Tarek Kotb (I&D Maintenance Specialist) provided local STTA support.

Activities carried out during Year 3 by LIFE IWRM team included:

- Monthly coordination meetings were held with Undersecretaries, General Directors, and IWMD managers in the five target Directorates. Outputs included dissemination of information, monitoring of progress, discussion of upcoming events, identification of roadblocks, and sharing of experiences.
- IWMD managers prepared and submitted IWMD monthly reports to General Directors, who in turn prepared Directorate monthly reports.
- A follow-up training on Integrated Maintenance for IWMD staff was provided. Integrated Maintenance Plans were prepared for 2007-2008 by all 27 IWMDs.
- Refresher course on IWMD establishment and organization was held for IWMD and Directorate management staff.
- Management training for IWMD managers and section heads, started in Year 2, was completed for all IWMDs.
- Three LIFE IWRM awareness workshops were held for over 80 MWRI irrigation and drainage top officials (Undersecretaries and General Directors) from Upper and Middle Egypt; and East, West, and Middle Delta. Eng. Gamil Mahmoud (Steering Committee Chairman), Dr. Mohamed Bahaa El Deen Saad (Chairman Irrigation Department), Eng. Mohamed Reda El Bandary (Irrigation Sector Head), Eric Viala (USAID) all participated. Presentations were given by staff from the IWMDs. Participants visited an IWMD.
- Eng. Wafaa Faltaous (CTO) visited Qena Governorate on 14-15 February.
- Eng Wafaa Faltaous (CTO) visited Aswan and Qena from 15-19 April. She attended the monthly meetings, a monthly water distribution meeting, and met with BCWUA members. She was accompanied by Dr. Millie Gadbois (USAID/Ag Business Officer).
- Guidelines were prepared on Process for Formation of IWMDs, IWMD Organization, and Integrated Maintenance.

**Table 1 Task 1 Accomplishments vs Project Benchmarks**

<b>Task No. 1: Establishment of IWMDs - Year 3</b>				
	Activities	Outputs	Target	Completed
			Yr 3	Yr 3
<b>Task No. 1: IWMDs</b>	1. Support to definition of IWMD boundaries	MWRI decrees to officialize IWMDs	100%	100%
	2. Support to preparation of organizational plans and transfer of staff	Organizational plans approved	100%	100%
	3. Support to transfer of facilities and equipment	Equipment /facilities transferred	100%	100%
	4. Support to preparation of maintenance plans and budget requests	Maintenance plans prepared by IWMDs	100%	100%
	5. Revision/clarification of roles and responsibilities	Clear roles and responsibilities for all IWMD staff	100%	100%
	6. Support to IWMD management and performance monitoring	Monthly reports and meetings	80%	80%
	7. Training and capacity building activities	Number of training courses delivered	80%	80%

## **Task 2: Formation of Branch Canal Water Users' Associations**

The overall objective of this task is to enhance decentralized water management decision making and increased participation of all water users in such decision making. Greater civic responsibility can be expected in maintaining the water conveyance infrastructure and protecting the quality of local water resources through better management of locally generated liquid and solid wastes. To that end, the approach is to form and activate functional and sustainable Branch Canal Water Users Associations (BCWUAs).

Eng. Moamen Mohamed Said El Sharkawy (IWMU) and Eng. Amira Abdel Hady (IWMU) are coordinating this task.

Activities carried out during Year 3 by LIFE IWRM team included:

- Establishment of 601 BCWUAs covering all the branch canals in the 27 IWMDs was completed.
- Formation and restructuring BCWUAs in 5 IWMDs in Lower Egypt was carried out to increase BCWUAs coverage of branch canals, to provide participation opportunities for all water users at District level, and to increase the number of water users benefiting from the activities.
- Compilation of organizational documentation and process documentation of all 601 BCWUAs. This included decrees, MOUs, internal regulations, maintenance priorities, and action plans.
- Winter/Summer regular and seasonal meetings with BCWUA chairpersons and members were held by all IWMDs. These seasonal meetings are used for District-level information sharing and discussions between IWMD staff and BCWUAs representatives.
- Orientation training for 11 IWMDs involving all General Directorate staff and IWMDs section heads.
- Activation training for 16 IWMDs involving IWMD section heads and Water Advisory (WA) teams.
- Participatory water management training for Directorate and IWMD staff.

- East and West Qena Directorates initiated BC maintenance activities using local labors jointly supervised by BCWUA and Districts in 7 IWMDs.
- BCWUAs Chairpersons Orientation Workshops for BCWUAs chairpersons to introduce common messages concerning participation concepts and benefits, participatory organization structure and legal base, participatory water management activities, gender equity, and roles of BCWUA women members.
- On Nov 16, the new Governor of Aswan visited Project activities in Edfu, and met with BCWUA representatives and IWMD staff. Eng. Nabil Fawzy (LIFE Upper Egypt Regional advisor) facilitated the visit.
- On Nov 28, a USAID Team visited Project activities in Quesna and Santa IWMDs. They met with BCWUA representatives at El-Gaafaria canal. The USAID Team included Richard Rousseau (PSD Office Director), Jeremy Gustafson (Team Leader, Infrastructure Office), Suzanne Polak (Team Leader, Small Development Activities), and Eng Wafaa Faltaous (Project CTO). They were accompanied by Eng. Gamil Mahmoud (Chairman Steering Committee/Head IWMU), Dr. Jeff Fredericks (COP), Eng. Maher Khodary (Lower Egypt Project Regional Advisor), Dr. Wadie Mankarious and Eric Viala (Project Task Leaders).
- Support and monitoring of BCWUAs activation and participatory water management activities. These activities were designed to assist IWMD staff to engage BCWUAs in strengthening BCWUA organizations, encouraging BCWUA participation in decision making, and involving users in water management. Typical activities introduced to the BCWUAs included procedures for monitoring branch canal rotation schedules, providing crop data to the IWMDs, resolving conflicts, sharing in canal and structure maintenance, monitoring branch canal maintenance contracts, and conducting public awareness programs.
- BCWUA Chairpersons' survey was conducted.
- Guidelines were prepared on Process for Formation of BCWUAs, BCWUA Establishment, BCWUA Activation, and Participatory Water Management.

The status of BCWUAs at the end of Year 3 is presented in Table 2.

**Table 2 Status of BCWUAs**

<b>Directorate</b>	<b>W. Sharkiya</b>	<b>New Zifta</b>	<b>E. Qena</b>	<b>W. Qena</b>	<b>Aswan</b>	<b>Total</b>
<b>Milestone</b>						
Established	151	105	102	124	119	601
MOU	151	105	101	124	118	599
Internal regulations	151	105	101	124	118	599
BC Priorities/ Maintenance Plans	151	105	101	124	118	599
Action Plans	151	105	101	124	118	599

Table 3 Task 2 Accomplishments vs Project Benchmarks

<b>Task No. 2: Establishment of BCWUAs Yr 3</b>				
	Activities	Progress indicators	Target	Completed
			Yr 3	Yr 3
<b>Task No. 2: BCWUAs</b>	1. Standardization of BCWUA formation process	Streamlined BCWUA formation process	100%	100%
	2. Awareness raising activities	Awareness material and events	100%	80%
	3. Training of IWMD staff for BCWUA formation and activation	Trained staff in each IWMD	100%	100%
	4. Monitoring of BCWUAs	Process documentation for BCWUAs	75%	75%
	5. Support Participatory Water Management	Participatory Water Management activities implemented	50%	75%

### Task 3: Equitable Allocation of Water Resources

The objective of Task 3 is to improve water management decision making processes within the MWRI by providing decentralized tools for improved data collection, analysis and use. The first and most critical sub-task is to achieve equitable water allocation via the “Matching Irrigation Supplies and Demands” (MISD) program at both District and Directorate levels through accurate assessment of demands and better control of allocations with improved water monitoring. The other sub-task is to build data base management capacity at both District and Directorate levels to support Integrated Water Resource Management.

Dr. Ragab Ali Abdel Azim (Water Resources Management Specialist) is coordinator for this task with assistance from Eng. Alaa Abbas (IWMU), Eng. Mohamed Hamed (IWMU), Eng. Hisham Shehab (IWMU), and Dr. Mohamed Rami Mahmoud (MWRI). Dr Tom Sheng (CADI) provided short-term technical assistance.

Activities carried out during Year 3 by LIFE IWRM team included:

- Continued support to MISD activities. Coordination meetings between MALR and MWRI staff of IWMDs and Directorate were held to improve data collection and exchange. MISD data bases are working in all IWMDs. IWMD staff are now regularly collecting agricultural crop data and preparing biweekly water requests according to the MISD process. MISD Directorate data base was prepared and installed at Directorate level to assist in consolidating biweekly IWMDs crop data and water requests at Directorate.
- Support to the water monitoring program continued. Monitoring sites include 84 canal inflow/outflow sites, 70 main drain inflow/outflow sites, and 380 water quality canal, drain, and groundwater locations. The ground well inventory continued in all IWMDs. Over 6000 wells have been inventoried. The calibrations of stage-discharge relationships for the 84 canal sites were updated and initial calibrations of 55 drain sites were completed.
- Continued support for evaluating biweekly volumetric water supplies to all 27 IWMDs for period May 04-present for the calibrated canal inflow/outflow sites

- In collaboration with MWRI Telemetry Section, six additional Campbell Scientific data loggers were procured and installed. The total number provided by the Project is now seven. GSM modem connections allow water level and related flow data to be accessed and monitored on a continuous basis at different management levels of the MWRI.
- Preparation of seasonal District water budget by each IWMD for winter season 2006/2007 and summer season 2007.
- Consolidation of water level data base in all five Directorates. The Directorate version of this data base is now installed at Directorates and training was given to both Directorate staff and IWMD staff. The daily records of water levels for over 1000 locations are stored in IWMD data bases and exported to Directorate on regular basis. Data for 2004-2007 has been entered into the data bases.
- Consolidation of complaints data base in all five Directorates. The Directorate version of this data base is now installed at Directorates and training was given to both Directorate staff and IWMD staff.
- Consolidation of water quality data base at Directorate level. The Directorate version of the water quality data base was installed in all five Directorates and training of Directorate staff was conducted. Data are being exported from IWMDs data base to Directorate water quality data base on a monthly basis.
- Consolidation of groundwater quality data base at Directorate. The data base was installed at all five Directorates and data are being exported from IWMDs data base to Directorate data base.
- Training on digital mapping for IWMD staff in all five target Directorates.
- Digitizing of canals and drains on 1/25,000 digital base maps for all IWMDs.
- Field measurement of BC command areas using GPS for all IWMDs. Non-irrigable area for each BC was digitized from satellite imagery. This information is being used to reconcile long standing differences between MALR and MWRI on irrigable area (MISD area) needed for accurate crop water requirement calculations.
- Support to computer maintenance in all IWMDs and Directorate. Five training events were conducted to cover all IWMDs and their Directorates. IT persons in IWMDs are now responsible for computer maintenance activities under the supervision of the IT persons from the Directorate IT maintenance sections. A monthly report is prepared by Directorate computer maintenance section on the status of the IWMD computers.
- Water resources inventory (WRI) at IWMDs. Data were collected in all IWMDs and is being used at Directorate and by the Irrigation Sector to determine targeted water supply to each IWMD.
- Guidelines were prepared on Principles of Efficient Water Management, Flow Measurement, Calibration of Canal Flow Rating Curves, Matching Irrigation Supply and Demand, Water Resource Inventory, Water Budget/Water Balance, Computer and Networks Maintenance, Mapping Branch Canal Areas, and Integrated Water Resources Management Plan.
- Initiation of Water Distribution meetings at Directorate level to improve coordination between IWMDs, General Directorates and Regional Distribution center regarding assessment of water needs (MISD) and allocation of water resources.

**Table 4 Task 3 Accomplishments vs Project Benchmarks**

<b>Task No. 3: Equitable Allocation of Water Resources - Year 3</b>				
<b>Task No. 3: Equitable Allocation of Water Resources</b>	<b>Activities</b>	<b>Outputs</b>	<b>Target</b>	<b>Completed</b>
			<b>Yr 3</b>	<b>Yr 3</b>
	<b>1. Institutional arrangements</b>	<b>IWMD distribution staff assigned</b>	<b>100%</b>	<b>100%</b>
	<b>2. Water monitoring</b>	<b>Monitoring networks, water monitoring data (flow and quality)</b>	<b>100%</b>	<b>100%</b>
	<b>3. MISD</b>	<b>Water requests and allocation plans prepared by IWMDs</b>	<b>60%</b>	<b>90%</b>
	<b>4. Water resource databases</b>	<b>Computer water management systems in IWMDs</b>	<b>80%</b>	<b>90%</b>
	<b>5. Digital mapping and BC data</b>	<b>Digital mapping systems in Directorates</b>	<b>80%</b>	<b>90%</b>
	<b>6. Integrated water management planning</b>	<b>Water resource inventories and management plans</b>	<b>75%</b>	<b>75%</b>
<b>7. Training and capacity building activities</b>	<b>Number of training courses delivered</b>	<b>80%</b>	<b>90%</b>	

#### **Task 4: Improved Maintenance and Upgrading of Water Management Equipment**

The purpose of this Task was to assess the capacity of the Governorate technical schools administered by the Central Department of Technical Education within the Ministry of Education (MOE) to provide training in the repair and maintenance of agricultural and irrigation equipment and in business management. A rapid assessment of both vocational and technical schools in the Project's priority Governorates was conducted and a report submitted to USAID in September 2005. USAID requested an updated assessment that included data collected from additional focus group meetings with newly formed BCWUAs and an extended pump maintenance workshop survey. The final report "Updated Assessment of Egyptian Farmers' Need for Improved Maintenance of Irrigation Equipment and Training to Manage Water Users' Associations" was prepared and submitted to USAID in November 2006.

Dr. Wadie Fahim Mankarious (IRG), Senior Organization/Institutional Development Specialist, is coordinator for this task.

Activities carried out during Year 3 by LIFE IWRM team included:

- The Final Report # 30 Task 4: Updated Assessment of Egyptian Farmers' Need for Improved Maintenance of Irrigation Equipment and Training to Manage Water Users' Associations was submitted to USAID.
- Discussions were held with USAID and MWRI on the updated assessment and it was recommended that:
  1. Training and awareness material should be prepared on maintenance of irrigation pumps.
  2. BCWUA Chairpersons should be provided with this material and encouraged to conduct awareness programs among their members.

**Table 5 Task 4 Accomplishments vs Project Benchmarks**

<b>Task 4: Improved Maintenance and Upgrading of Water Management Equipment</b>				
	Activities	Outputs	Target	Completed
			Yr 3	Yr 3
<b>Task No. 4</b>	<b>1. Verify Findings on Pump Maintenance</b>	<b>Pump Maintenance needs determined</b>	<b>100%</b>	<b>100%</b>
	<b>2. Determine Training Needs of BCWUA</b>	<b>Needs Assessment completed</b>	<b>100%</b>	<b>100%</b>
	<b>3. Conduct Rapid Assessment of Training Facilities</b>	<b>Rapid Assessment Completed</b>	<b>100%</b>	<b>100%</b>

### **Task 5: Environmental Services for Improving Water Quality Management**

The extent of the problem of solid and liquid wastes and their adverse affect on the water quality of irrigation, drainage, and groundwater systems in the five target Directorates is well documented (“Management of Solid and Liquid Wastes for IWMD and General Directorates”, H. Dorrah and H. El-Zonfely, September 2004). LIFE IWRM is implementing a pilot activity to address this problem.

Dr. Wadie F. Mankarious (IRG) is coordinator for this task. He was assisted by Eng. Mohamed Hamed (IWMU). STTA was provided by Dr. Mohamed El-Hussaini (Waste Water Treatment Consultant) and Dr. Samir Ahmed El-Shimi (Ag Recycling Consultant). MWRI Water Quality Unit and MWRI Ground Water Sector assisted with the water monitoring program and the MWRI Water Communications Unit assisted with the public awareness activities.

#### **1. Senbo Pilot Project:**

Senbo Branch Canal, (South Zifta IWMD, Gharbiya Governorate) was selected in Year 1 to implement a pilot to introduce environmental services for improving water quality management.

Activities carried out during Year 3 by LIFE IWRM team included:

- The 600 m<sup>3</sup>/day Dual Biological Aerated Filter (DBAF) waste water treatment facility (WWTF) constructed by the Project, designed to serve Senbo Village, and completed in August 2006, was put into operation. System performance was monitored and adjusted as required. Influent and effluent samples were tested on a regular basis. The plant is operating as designed.
- Five participants, selected by the Senbo CDA, were given a 1 week O&M training program to learn how to operate the WWTF. The 5 trainees were employed under an OJT program by the Project and are successfully operating and maintaining the WWTF.

- Numerous discussions were held between the CDA, MWRI, USAID, Tanta Water & Wastewater Company, and Minister of Housing on options for transfer of the WWTF. The decision of who will take over the WWTF is still pending.
- Ag Waste recycle STTA consultant prepared an initial report summarizing farmer requirements with recommendations for implementation. A meeting with CDA/BCWUA representatives was conducted on January 29 to discuss the different alternatives. A decision was made by MWRI and the Project to postpone procurement of any equipment until Senbo CDA can ensure availability of land for the activity.
- A USAID team visited the DBAF site on 28 November. The team included Richard Rousseau (PSD Office Director), Jeremy Gustafson (Team Leader, Infrastructure Office), Suzanne Polak (Team Leader, Small Development Activities), and Eng Wafaa Faltaous (Project CTO).
- A USAID delegation visited Senbo DBAF facility and met with the village representatives and Tanta Water & Wastewater Company on May 3, 2007.

**Table 6 Task 5 Accomplishments vs Project Benchmarks (Senbo Pilot)**

<b>Task No. 5: Environmental Services for Improving Water Quality Management Year 3</b>				
	<b>Senbo Pilot Activities</b>	<b>Progress indicators</b>	<b>Target</b>	<b>Completed</b>
			<b>Yr 3</b>	<b>Yr 3</b>
<b>Task No. 5: Water Quality Management</b>	<b>5.1 Collect and Review Data on Existing Solid and Liquid Waste Disposal/Re-use Practices</b>	<b>Waste Water Reuse Profile Prepared</b>	<b>100%</b>	<b>90%</b>
	<b>5.2. Stakeholders Mobilization</b>	<b>Working Groups Formed</b>	<b>100%</b>	<b>100%</b>
	<b>5.3 Assess Alternative Methods for Treatment and Disposal/Re-Use of Solid Waste and Wastewater</b>	<b>Waste Water Reuse Alternatives Selected</b>	<b>100%</b>	<b>100%</b>
	<b>5.4 Pilot Projects</b>	<b>Pilot Project Implemented</b>	<b>75%</b>	<b>95%</b>
	<b>5.5 Formation of Management Consortia</b>	<b>Management Consortium Formed</b>	<b>100%</b>	<b>100%</b>
	<b>5.6 Training and Awareness Raising</b>	<b>Public Awareness Workshops held</b>	<b>85%</b>	<b>90%</b>

## **2. Global Development Alliance (GDA)**

As a result of the success of the Senbo pilot program USAID expanded the LIFE IWRM contract scope of work and provided additional funds to accommodate a GDA initiative “Environmental Services for Improving Water Quality Management in Rural Areas of Egypt” between the Coca Cola Africa Foundation, USAID, MWRI, IRG and UNICEF.

The overall objective of the GDA is to:

- Improve water resources quality
- Reduce water health hazards
- Increase water productivity

Activities carried out during Year 3 by LIFE IWRM team included:

- MOU was signed between USAID, MWRI, Coca Cola, and IRG on 4 December 2006.
- USAID signed a modification to the LIFE IWRM task order on 5 August 2007 providing a scope of work and additional funds to support the implementation of the GDA.
- Implementation plan was prepared.
- Three sites were selected for implementation: Damanhour El Wahsh (Gharbiya Governorate), Shobra Kas (Gharbiya Governorate), and El Tood/Ideis (Luxor).
- Data collection and preliminary technical baseline survey for the design of WWTF was started.
- GDA Steering Committee meetings were held on 9 and 30 August.

### **Task 6: Improved Wastewater Reuse Practices**

The Project is providing technical assistance, guidelines, and commodity support for a demonstration site for using treated waste water for irrigating a variety of commercial crops in accordance with the “Egyptian Code for Reuse of Treated Wastewater in Agriculture” issued in April 2005. The 10 feddan (fd) Demo site was officially established in Luxor in January 2006. Regular comprehensive environmental monitoring of water, soil, and plants is being carried out. The environmental and economical feasibility of reuse of treated wastewater to cultivate the approved commercial crops is under evaluation. EEAA and MALR are the main partners for this task.

Dr. Wadie Fahim Mankarious (IRG) is coordinator for this task. He was assisted by Eng. Mohamed Hamed (IWMU). Short term technical assistance is also being provided by Eng. Ayad Thapet Kariakos (ECODIT-Demo site coordinator), Eng. Awad Shafik (Demo Site Manager Consultant), and Dr. Medhat El Helepi (Ag Economist). Karim El-Jisr (ECODIT) is providing expat short-term technical assistance.

Activities carried out during Year 3 by LIFE IWRM team included:

- Successful operation of the Luxor Demo site continued.
- Winter and summer crops were planted. A total of 7 fd are under cultivation. The following crops are being grown: flax (2.5 fd), flowers (1.5 fd), jojoba (2 fd), jatropha (1 fd). Supplemental flower seedlings were provided to the site. Flax crop was cultivated with the technical support from Tanta Flax Oil Company. The company provided the Project with the certified flax seeds and committed to buy the yield this year. The total yield was 6.47 tons with an average of 3.2 tons/fd. It was sold to Tanta Oil Company for LE 3,476. The company stated that the yield is high compared to the yields from Delta areas and the quality is good compared to the ones from the new lands. Sorghum first cut from 0.33 fd was sold for LE 184. Jatropha primary yield was 225 kg/feddan. It was sold for LE 2,250. Flowers from the demo site were marketed in Luxor.
- Local long term training was completed for 5 agricultural graduates on safe agriculture practices utilizing treated wastewater in May 2007. A new batch of seven graduates was selected and started a 6 month OJT program in June 2007.
- Environmental monitoring continued. Health tests for all the new and old graduates were conducted. Samples were collected from crops and sent for analysis. Results indicated that they are clean and safe. Sample from milk of animals fed by sorghum planted at the Demo site was sent to the lab for analysis. The results indicated no

trace of contamination in the milk. Soil samples and GW samples were collected and analyzed The Ministry of Health Lab in Luxor was authorized to collect and test water samples from the Demo Site.

- Report No. 33 on “Economic Feasibility Study of Using Treated Wastewater in Irrigation” was prepared.
- Draft Environmental Evaluation report was prepared and is under review.
- USAID, EEAA, MALR, and LIFE IWRM held a number of coordination meetings and site visits. Regular participants included Eng. Wafaa Faltaous (USAID), Dr. Mawaheb Abu Elazm (EEAA), Dr. Moustafa El Hakeem (EEAA), Eng. Mohamed Mostafa (MALR), Eng. Mohamed Hamed (IWMU), Eng. Dr. Wadie Fahim (LIFE IWRM), Eng. Mohamed Abu Zied (Luxor Water & Waste Water GD), and demo site staff.
- At the request of the Luxor Governor, 200 visitors representing 17 Arabian countries visited the Demo Site on 16 May.
- Karim El-Jisr (ECODIT) conducted a STTA assignment from July 8 – 17 to prepare the Environmental Evaluation report.

**Table 7 Task 6 Accomplishments vs Project Benchmarks**

<b>TASK 6 Improved Water Reuse Practices - Progress of year 3</b>				
	Activities	Indicator	Targets	Completed
			Y3	Y3
<b>TASK 6: Improved Water Reuse Practices</b>	1. Site Selection	Demo site and project office identified	100%	100%
	2. Crop Selection and Cropping Layout	Crops selected and approved	80%	75%
	3. Participation of Agricultural Graduates	Graduates appointed and contracted	100%	100%
	4. Orientation and training	NGOs oriented and Graduates trained	90%	100%
	5. Baseline Assessment and Environmental Monitoring Plan	Baseline data collected and EMP developed and approved	100%	90%
	6. Irrigation and Crop Management Plan	Irrigation and Crop Mgt Plan completed	100%	100%
	7. Field Implementation	Irrigation network installed and tested; Crops planted	80%	80%
	8. Private Sector Participation	Draft MOU	70%	65%
	9. Preliminary economic evaluation of water reuse in Luxor	Economic Evaluation Complete	30%	75%

### **Task 7: Graduate Degree Training**

Funds have been obligated to LIFE IWRM by USAID to provide academic degree training to MWRI staff. Both U.S. and Egyptian institutions are being used to provide the degree training.

Dr. Ibrahim Elassiouti (LLTA, Deputy Chief of Party) is coordinator for this task. He is being assisted by Dahlia Hamdy (LTTA, Institutional/Organizational Development Specialist).

Activities carried out during Year 3 by LIFE IWRM Team included:

- Nine persons were sponsored for M.Sc Graduate Degree Training.
  - Two persons attended and completed their degrees at Utah State University, USA, in Irrigation and Hydraulic Engineering.
  - Two persons are attending American University Cairo in Environmental Engineering.
  - Five persons are attending local Universities.
- Periodic status reports on MS students.
- Financial and logistical support for all trainees.

**Table 8 Status of MS Degree Training**

Name	Position	University	Department	Field of Study	Required Degree	Status	Expected Graduation Date
<b>US Institutions:</b>							
Hussein Aly Morsy Batt	Engineer - Irrigation Improvement Sector, MWRI	Utah State University	Biological & Irrigation	Irrigation Engineering	M.Sc. of Science in Irrigation Engineering	Completed	Spring 2007
Mohamed Hamed Maamoun	Ass. Researcher, Hydraulic Research Inst. NWRC, MWRI	Utah State University	Civil & Environment	Fluid Mechanic & Hydraulics Engineering	M.Sc. of Science in Civil & Environment Engineering	Completed	Summer 2007
<b>Cairo American University:</b>							
Heba Yaken Aref	Minister Technical Office - MWRI	American University in Cairo	Environmental Engineering	Water Quality	M.Sc. in Environmental Engineering	Working on Thesis	Fall 2008
Doaa Lashien Dessouky Lashien	Nile Forcasting Center planning Sector - MWRI	American University in Cairo	Environmental Engineering	Water Quality	M.Sc. in Environmental Engineering	Working on Thesis	Fall 2008
<b>Egyptian Institutions:</b>							
Ahmed Abdel Hafeez Shalaby	Irrigation Improvement Sector	Ain Shams University	Irrigation & Hydraulics	Irrigation Engineering	M.Sc.of Science in Irrigation Engineering	Working on thesis "Evaluation of Irrigation Improvement Projects"	Spring 2008
Heba Hussein Bayoumi	Planning Sector - MWRI	Ain Shams University	Irrigation & Hydraulics	Environmental	Master in Environmental Engineering	Working on Thesis	Spring 2008
Mona Fathy Allam	Chemical Engineer - Environmental Research Institute	Ain Shams University	Environmental Engineering	Wet Land Study	M.Sc. in Environmental Engineering	Working on Thesis	Spring 2008
Dina Mamdouh El Damerdash	Planning Sector - MWRI	Ain Shams University	Biological & Irrigation	Irrigation Engineering	Master of Science in Irrigation Engineering	Got a Scholarship in Germany	NA
Heba Abdel Aziz Abo Bakr	Groundwater Sector - MWRI	Cairo University	Irrigation & Hydraulics	Groundwater	M.Sc. in Irrigation & Hydraulic	Working on Thesis "Integrated Water Resources Management in the Nile Valley Fringes"	Spring 2008
Mahmoud Rafa Mohamed	Asst. Director of Works - Grand Barrage Sector - MWRI	Cairo University	Irrigation & Hydraulics	Optomization of New Location for Old Hydraulic Structures	M.Sc. in Irrigation & Hydraulic	Working on Thesis	Spring 2008
Hussein Mohamed Aly	Architect Administration of Buildings - MWRI	Helwan University	Architecture	Hydraulic Urban Design	M.Sc. in Architecture	On Leave from The Ministry (Working Abroad)	NA

**Table 9 Task 7 Accomplishments vs Project Benchmarks**

<b>Task No. 7. Graduate Degree Training for MWRI Staff Year 3</b>				
<b>Task No. 7 Graduate Degree Training</b>	<b>Activities</b>	<b>Outputs</b>	<b>Target Year 3</b>	<b>Completed Year 3</b>
	1. Determine MWRI Training Priorities	MWRI Priorities for Graduate Degree Training established	100%	100%
	2. Design Procedure for Selection of Trainees	MWRI Selection Panel Convened Candidates Selected	100%	100%
	3. Selection of Training Institutes in USA & Egypt	Institution selected for prospective trainees	100%	100%
	4. Assist Trainees with Application Process	Candidates applications to US & Egyptian Institutions Submitted	100%	100%
	5. Assist US bound Trainees	Pass TOEFL Exams Pre-Departure Orientation(s) hold US Bound trainees depart Egypt	100%	100%
	6. Monitor Progress of Trainees in USA & Egypt	Transcripts from Training Institutions, Degreed candidates return to MWRI	100%	90%

### **Monitoring & Evaluation**

The purpose of the Monitoring and Evaluation (M&E) component of the Project is to provide LIFE IWRM Project stakeholders with the information needed to follow and manage the Project's progress and assess its outcomes and impacts.

Dr. Ibrahim Elassiouti (LLTA, Deputy Chief of Party) is coordinator for this component. Eng. Alaa Abbas (IWMU) provided local STTA support. Dr. Mark Svendsen (DAI) provided expatriate STTA support.

Activities carried out during Year 3 included:

- Assembled data required to calculate all indicators contained in the M&E Plan.
- Advised and assisted USAID on input to the USAID/Egypt performance monitoring plan as it relates to LIFE IWRM.
- Implemented a training program for District staff serving as survey enumerators and supervisors for the farmer field survey.
- Carried out the annual farmer field survey in the 27 IWMDs. For the survey over 4500 persons were interviewed.
- Coordinated with the Information Systems teams to refine and regularize the IWMD Information System to assemble, process, store and report data useful to managers at various levels.
- Evaluated and reported on the M&E Plan performance indicators measured during year 3.
- Advised and assisted District Managers and General Directors and their staff in establishing performance goals and monitoring their results in terms of these goals.
- Reported and discussed Year 2 Monitoring & Evaluation and Performance Benchmarking with District Manager and General Directorates.
- A presentation was given to USAID staff at USAID/Egypt on 6 March 2007 on the status of the Project's Monitoring and Evaluation activities.

- Prepared report # 36 “Monitoring and Evaluation: Field Survey of Farmers in Twenty Seven Integrated Water Management Districts (Year 3)”.
- Prepared report # 38 “Monitoring and Evaluation Report Year 3”.

## **Education, Communication, Public Awareness and Participation**

To achieve success in the core activities of the Project, namely formation and strengthening of IWMD and BCWUAs, public awareness, education, and communication support is essential. LIFE IWRM is working closely with MWRI Water Communication Unit staff (WCU) in support of these activities. The public awareness team has been engaged in various cross-cutting communication activities including planning, shooting and editing video, still photography, writing, and design and production of program materials.

Dr. Khalid Wassif (MWRI) provided STTA support for this task. Six members of the MWRI Water Communication Unit staff have been engaged in various cross-cutting communication activities including planning, shooting and editing video; still photography; and writing, and design for program materials. Patrick Papania (AED) provided expatriate STTA support.

During Year 3 LIFE IWRM accomplished the following:

- BCWUA membership cards were prepared for board members.
- Conducted three Awareness Workshops for all MWRI irrigation and drainage Undersecretaries and General Directors.
- Delivered the English and Arabic version of the ten USAID lobby display boards.
- Printed an additional 400 Arabic copies of the “Discussion Guide” kit designed to support BCWUAs. Items were distributed to each BCWUA chairman.
- Printed and distributed 10,000 3x7 cm Awareness Cards describing LIFE Project and Egypt’s water resources.
- Participated in several conferences and exhibitions.
- Collected over 200 IWMD and BCWUA success stories and translated them to English.
- WCU published three issues of a quarterly newsletter on success stories that were distributed to the IWMDs; journalists; ordinary irrigation & drainage Districts; all Irrigation/ Drainage/ Groundwater Directorates & Undersecretaries; MWRI Staff in Ministry Building Cairo; and related projects i.e. World Bank IIIMP & W. Delta, Fayoum, CDIAS, & IIP.
- Support was provided by WCU for video and photographic documentation of all Project training and field activities.
- Project web-site ([www.iwrmeg.org](http://www.iwrmeg.org)) and photo archive were maintained.

## **Training**

Training is an important component of the LIFE IWRM and is used to support all the task activities. LIFE IWRM has a full time training/workshop coordinator to support this effort.

Dahlia Hamdy (LTTA, Organizational/ Institutional Development Specialist) is coordinator for this component. Activities carried out during Year 3 by LIFE IWRM team included:

- Updated training status sheet for Year 3.
- Prepared the training work plan for Year 4.

- Prepared and organized the Project Annual Workshop Year 4.
- Organized and arranged for three Awareness Workshops for all MWRI irrigation and drainage Undersecretaries and GDs (80), held in both Lower & Upper Egypt (1 event in Luxor & 2 events in Mansoura).
- Coordinated the English Languages Training classes provided by AmidEast in Qena, Aswan, Zifta & W. Sharkiya Directorates. The 90 hour English Language Course was provided for 77 (25% female) MWRI staff at 9 locations. Training began in February 2007 and was completed end of June2007.
- Entered and updated all the required data for US training in TraiNet.
- Prepared, coordinated, and followed up with the regional offices in Lower and Upper Egypt for all Project related training programs.
- Carried out training evaluation for all courses.
- Identified, negotiated prices, and prepared purchase orders for services of training providers as required.
- Maintained Project training data base.
- Coordinated the US and the Local Master Degree programs.
- Made arrangements for three MWRI Project Sponsored participants to attend Sacramento, USA ICID Conference held in October 2007.

The following table shows the number of participants which have been trained under the Project through the end of Year 3:

**Table 10 Participants Trained to Date**

Total to Date			Year 3 Total		
Total	Male	Female	Total	Male	Female
9200	7688	1512	3621	3017	604

Training conducted for Year 3 is presented in Annex E. A summary is presented in Table 11.

**Table 11 Training Conducted During Year 3**

No	Event	Days	Persons	Female
Task 1				
1	Directorate Monthly Meetings	47	608	110
2	District's Establishment (IWMD Organization)	4	136	28
3	Integrated & Preventive Maintenance	3	59	10
4	Management Training Course	6	94	23
5	LIFE IWRM Awareness Workshop	6	127	9
Task 2				
6	BCWUA Activation Workshop	18	237	17
7	BCWUA Orientation Workshop	8	89	13
8	Participatory Water Management Workshop	18	203	39
9	BCWUAs Chairpersons Orientation Workshop	9	655	8
Task 3				
10	Assess of BC Areas & Localization of BCWUAs	12	106	25
11	MISD Coordination Meeting	4	107	15
12	Computer Maintenance	15	71	35
13	Water Distribution Meeting	50	573	160
14	Operation of Data Logger & Logger Net Software	10	77	25
15	Water Quality Database-Database Consolidation	9	79	34
16	Ground Water Database-Database Consolidation	6	46	19
Task 5				
17	CDA/BCWUA Operation & Maintenance of the DBAF Station at Senbo	5	0	5
Task 6				
18	Improving Wastewater Reuse Practices Coordination	1	8	2
M&E Task				
19	Survey Data Collectors	12	161	10
Cross Cutting Task				
20	USAID/MWRI Coordination Meeting	120	12	19
21	LIFE IWRM Annual Workplan Workshop	60	10	19

## Procurement

LIFE IWRM has undertaken selected procurement of Project and MWRI commodities and equipment. All equipment was procured in accordance with USAID, GOE, and IRG standard procurement regulations. USAID is required to approve the list in advance before procurement can proceed.

Mahmoud Said, (LLTA Procurement Coordinator) is responsible for this activity. He was assisted by Firas Traish (IRG Home Office Manager). Activities carried out during Year 3 by LIFE IWRM team included:

- Updated Life of Project (LOP) Procurement Plan. The plan was approved by USAID and MWRI.
- Prepared specifications and procured Project equipment IAW LOP procurement plan.
- Custom Clearance for two US air shipments.
- Successfully installed and transferred all supplied equipment to MWRI.

The status of the Year 3 commodity procurement program is presented in Table 12.

**Table 12 Year 3 Commodity Procurement**

<b>Project Office Setup/Equipment (Cairo and Regional Offices)</b>			
<b>No.</b>	<b>Item</b>	<b>Description</b>	<b>Qty</b>
<b>Computer Equipment</b>			
0-24	External Hard Drive		<b>10</b>
<b>Training Equipment</b>			
0-33	Digital Camera, High Quality		<b>1</b>
<b>Performance Requirement I: Task 1,2 &amp;3</b>			
<b>1</b>	<b>District Computer Equipment and Peripherals Set</b>		
1-2	Database Computer	2 per directorate/ WCU	<b>4</b>
1-4	Notebook		<b>1</b>
1-6	Laser Printer		<b>2</b>
1-7	A4 Scanner		<b>5</b>
1-10	USB Hard Drive		<b>25</b>
1-13	Tables	1 per computer	<b>1</b>
1-14	Chairs	1 per computer	<b>1</b>
<b>2</b>	<b>District Office Equipment Set</b>		
2-1	Small Photocopier		<b>1</b>
2-3	Fax Machine		<b>2</b>
2-4	Air-conditioning	USAID Waiver	<b>16</b>
<b>3</b>	<b>District Training Equipment Set</b>		
3-2	TV Sets	USAID Waiver	<b>1</b>
3-3	VCRs		<b>1</b>
3-8	Furniture	Tables and Chairs for each IWMD	<b>3</b>
3-8	Furniture	Filing Cabinets	<b>15</b>
<b>6</b>	<b>District Water Monitoring Equipment Set</b>		
6-8	Data logger		<b>5</b>
6-13	GSM Modem	Samba & Tango	<b>13</b>
<b>7</b>	<b>District Water Quality Equipment Set</b>		
7-7.3	D.O. PROBE	For Sension Meters, 1 M Cable	<b>5</b>
<b>Performance Requirement II: Stakeholder Engagement in Water Resources Management</b>			
<b>Task 6, Improved Waste water reuse practices</b>			
<b>Luxor Wastewater Reuse Demonstration Site</b>			
7	Accessories Back-up equipment	Emergency pump	<b>1</b>

## **ACTIVITIES PLANNED FOR NEXT QUARTER**

### **Task 1: Formation of Integrated Water Management Districts**

The following activities are planned for the next quarter:

- Monthly coordination meetings with MWRI managing staff (Undersecretaries, General Directors, and IWMD directors) within the five target Directorates.
- Support to preparation of IWMD monthly reports and to Directorate monthly reports.
- Identify Directorate and IWMD training courses to be conducted by local staff.
- Support to monthly maintenance Directorate/IWMD coordination meeting.

### **Task 2: Formation of Branch Canal Water Users' Associations**

The following activities are planned for the next quarter:

- Support and follow up BCWUAs activation in all IWMDs.
- Support IWMD staff in implementing participatory water management activities in each BCWUA.
- Continue assisting IWMDs in compiling process documentation.
- Preparation of courses, material, and guidelines for training events on BCWUA participatory water management (to be implemented second quarter).
- Support to regular and seasonal IWMD-BCWUA meetings in all IWMDs.
- Support to Monthly Water Advisory Directorate/IWMD coordination meeting.

### **Task 3: Equitable Allocation of Water Resources**

The following activities are planned for the next quarter:

- Continue water flow monitoring and structure calibration program at Directorate and District levels.
- Complete MISD data base update installation in all five Directorates.
- Training of IWMDs technicians on gate/canal operation.
- Measurement and calibration of key branch canals.
- Calibration training for Directorate and IWMDs staff (refresher training)
- Initiate water control structure inventory.
- Conduct mapping system refresher training.
- Continue preparation of Integrated Water Management Plans by each Directorate.

### **Task 4: Improved Maintenance and Upgrading of Water Management Equipment**

The following activities are planned for the next quarter:

- Prepare training material on pump maintenance
- Prepare a plan for training and reaching the BCWUAs members.

### **Task 5: Environmental Services for Improving Water Quality Management**

The following activities are planned for the next quarter:

**1. Senbo Pilot:**

- Finalize the Task 5 brochure on Low Cost Wastewater Treatment facilities.
- Continue the communications with Tanta Water & Wastewater Company for transferring the WWTF in Senbo.
- Continue water quality monitoring program for Senbo pilot.

**2. GDA:**

- Sign MOU with the selected three villages on their commitment for implementation the GDA activities.
- Collect design data for alternatives
- Present technical alternatives for WWTF and ag recycling options to stakeholders and have them select preferred alternatives.
- Prepare WWTFs tender documents and issue request for quotation.
- Call for bidding.

### **Task 6: Improved Wastewater Reuse Practices**

The following activities are planned for the next quarter:

- Continue Class-Training and OJT of the selected graduates.
- Continue monitoring of water quality and cultivated crops.
- Continue training of the new graduates
- Complete the Environmental Evaluation Study

### **Task 7: Graduate Degree Training**

The following activities are planned for the next quarter:

- Continue monitoring progress of local MS trainees.
- Provide financial and logistical support (tuition fees) for local trainees.

### **Monitoring and Evaluation**

The following activities are planned for the next quarter:

- Refine M&E data reporting systems.
- Assemble relevant secondary M&E data from all Project IWMDs.
- Revisit the base line and Year 2 Farmer Field Survey Data in the 27 IWMDs.
- Initiate District Performance monitoring process.

### **Education, Communication, Public Awareness and Participation**

The following activities are planned for the next quarter:

- Prepare Success Stories of BCWUAs.
- Investigate the promotion of Project results and achievements through various media such as TV adds, newsletters, brochures, videos, awareness events, etc.
- Continue to provide the Project with communication support across task areas as needed.

## Training

The following training courses are planned for the next quarter:

**Table 13 Training Courses Planned for Next Quarter**

ID	Course Title	Task	Events	Date	Venue
8.2.107	Directorate Monthly Meeting	1	12	Oct.07 – Dec. 07	Each Directorate
3.3.14.51	Water Distribution Meeting	3	15	Oct.07 – Dec. 07	Each Directorate
1.8.1	Maintenance Monthly Meeting	1	8	Nov.07 – Dec. 07	Each Directorate
2.4.6	Water Advisory Monthly Meeting	2	15	Oct.07 – Dec. 07	Each Directorate
2.4.1.1	BCWUA Participatory Management 1 (IWMD Staff )	2	6	Nov.07 – Dec. 07	Each Directorate
3.4.1.1	Digital Mapping Refresher	3	6	Nov.07 – Dec. 07	Each Directorate
3.4.2.1	Canal Operation	3	TBD	Nov.07 – Dec. 07	Each Directorate
3.4.4.1	MWRI/MALR Coordination Mtg.	3	1	Nov.07 – Dec. 07	Each Directorate
5.4.1	GDA Monthly Meeting	5	2	Nov.07 – Dec. 07	Cairo
6.2.23	OJT for Graduates on Reuse of Treated Waste Water in Agriculture	6	3	Oct.07 – Dec. 07	Luxor

## Procurement

Projected procurement activities for next quarter include the following activities:

- Continue procurement, supply, installation, and transfer of Task 1, 2 and 3 commodities as required.
- Continue procurement, supply, installation, and transfer of Task 5, 6 materials and equipment as required.
- Prepare Project Equipment inventory report
- Prepare MWRI equipment transfer report.

## **PROBLEMS, ISSUES, AND LESSONS LEARNED**

### **Task 1: Formation of Integrated Water Management Districts**

The IWMD concept works. The formation of the 23 IWMDs and capacity building of the 27 IWMDs during Years 1 – Year 3 shows that institutional reorganization and decentralization is an achievable goal at the local level. It also resulted in a significant mentality change for IWMD managers and staff. A general feeling of empowerment has been observed and leads to IWMD staff taking initiatives and responsibility for a complete range of water management activities. This change is not always reflected at higher levels within the MWRI. Delegation to and empowerment of IWMDs is facing some expected roadblocks and resistance to change. The awareness events sponsored by the Project for Undersecretaries and General Directors were well received. The Project needs to continue to target MWRI decision-makers and raise awareness about the benefits of decentralization and user participation.

IWMDs are responsible for more tasks than the previous irrigation Districts. Their needs in terms of budget, facilities, and resources are consequently greater. The Project can only provide temporary support, while the transfer of adequate resources to IWMDs from other MWRI entities has yet to be completed. The Project is collaborating with and lobbying the MWRI to identify IWMD needs and address them. To ensure sustainability it will be important to make sure the IWMDs have sufficient budget allocated for maintaining equipment supplied under the Project.

MWRI has issued instructions that District managers are now responsible for issuing work orders for contractors within their IWMDs.

Shortage of managing staff (engineers) in Aswan Directorate continues to be an issue. This is being addressed through IWMU by the Irrigation Department.

The use of MWRI staff to provide technical assistance for preparing the IWMD maintenance plans was very successful and helped to identify and resolve many of the problems and issues resulting from the integration of the irrigation & drainage Districts under an IWMD. Formal transfer of the drainage budget from EPADP to the Irrigation Department still has not been accomplished. This needs to be resolved.

Directorate involvement is critical to the success of IWMDs. When forming IWMDs it is recommended to form all IWMDs in a Directorate at the same time. Equivalent organizational sections at Directorate should be formed in parallel with IWMD formation to be responsible for monitoring activities of IWMDs. Directorate staff should attend training with IWMDs staff. Involvement of more staff members from the Directorate level has strengthened the staff capacity of the five Directorates. Directorate staff are taking a leadership role in monitoring and coordinating IWMD activities. This will help to ensure sustainability of the tools and procedures introduced under LIFE IWRM.

### **Task 2: Formation of Branch Canal Water Users' Associations**

The effort of establishing BCWUAs over five Directorates and 27 IWMDs is significant, as compared to previous similar activities. In order to address this, both BCWUA establishment

and activation activities have been implemented and managed locally by IWMDs. To that end, training courses have been synthesized and simplified.

It is clear that IWMDs should be formed before establishing BCWUAs in a District. This new approach using IWMDs to directly form BCWUAs has proven to be more cost-effective, empower IWMD staff, and help ensure a direct and sustainable partnership between IWMD staff and BCWUA representatives. It also provides a smooth and incremental transition towards Irrigation Management Transfer (IMT). The key objective of the new strategy has been to focus on achieving tangible benefits for BCWUA members instead of stressing the process itself, unlike previous pilot projects. By immediately solving conflicts and issues, BCWUAs bring immediate benefits to their members and demonstrate their credibility.

The introduction of a framework of participatory water management was a key step forward for sustainable and effective participation of BCWUAs with IWMDs. The objective is to involve BCWUAs in all and every water management activity at the District level. Four themes were introduced under this framework including water distribution, water quality, maintenance, and management and administration of water resources. The approach is based on data collection, data analysis, and information exchange between both BCWUAs and IWMDs staff. The more involvement of BCWUAs with the IWMDs the more benefits they both get.

The question of how to sustain the BCWUA effort needs to be addressed. Although the IWMDs have water advisory teams, they will continue to need support, training, and monitoring in carryout the participatory water management program. Directorate and Central level involvement will be necessary.

Another challenge is how to involve all users in the participatory water management process. For the five target Directorates there are 600 BCWUA chairpersons, over 4000 board members, more than 12,000 water user representatives, and over 500,000 users. Awareness and training programs need to be tailored to target each of these groups.

No financial interventions have been used to support the BCWUAs. This not only encourages the BCWUAs to be self reliant it helps to ensure sustainability after Project completion.

### **Task 3: Equitable Allocation of Water Resources**

Equitable Allocation of water resources is achievable at District level.

The Directorate should take the lead on coordinating the water management measurement and information system activities within their Directorates. The introduction of monthly water distribution monthly meetings headed by the Directorate water distribution section and attended by IWMD water distribution engineers and representatives from the Central Directorate for Water Distribution has proved to be an excellent tool in solving many water management issues. This encourages Directorate staff to be directly responsible for following-up and monitoring of IWMD performance. These meetings are seen as an important mechanism for ensuring sustainability of many of the innovative activities for promoting integrated water management introduced to the five target Directorates and 27 Districts under the Project.

The Project sponsored a series of coordination meetings between MALR and MWRI at Directorate level to ensure proper implementation of the MISD process. Involvement of MALR in the MISD process through seasonal MALR/MWRI coordination meetings proved very useful in facilitating exchange and accuracy of data received from MALR. It is recognized that BC command area is a key factor in MISD for determining IWMD water requirements. During Year 3 the IWMDs conducted GPS surveys to determine branch canal command areas. The involvement of MALR to confirm these areas is critical to the MISD program. In Year 4, the Project will support coordination between MALR and MWRI to review, finalize, and achieve agreement on each of the BC command and irrigable areas.

Directorates and IWMDs can now use the flow data based on water level/discharge calibration equations developed for the key inflow/outflow locations to allocate water resources at the District level. Current meter calibration is required after 100 working hours or after one year of the last calibration. This is very essential to the accuracy of the flow measurements and calibration and consequently to the volume-based water distribution. The Directorate needs to establish a systematic program for doing this.

The Project with assistance from Telemetry Central Directorate installed seven data loggers. Hourly data on water levels are being accessed by IWMD, General Directorate and Central Level of Water Distribution. Engineers of Telemetry sections at Directorates were trained and need to be tasked for undertaking the responsibility of operation and maintenance of these data loggers in coordination with Central Telemetry Directorate in Cairo. Directorate and District staff should use the continuous flow data to get a more accurate estimation of canal flow taking into consideration the fluctuation of water levels during the day. As a result of this effort MWRI has awarded a contract to Campbell Scientific Instrument to provide an additional 17 data loggers at critical locations within the Nile Irrigation system.

The direct involvement of the Water Quality Unit and the Groundwater sector in the establishment and implementation of the water quality monitoring and groundwater well inspection programs has proved quite successful. It is expected that this involvement will continue after the completion of the Project and will help to ensure sustainability.

The information system activities introduced by the Project have also been very successful. To sustain this effort will require that IWMD computers and peripheral equipment be properly maintained and upgraded after completion of the Project. Appropriate budgets and trained staff need to be in place for this to happen.

**Data Bases:** The use of use of MWRI entities to develop and support the data base program in general has been a good approach. However the Water Level and Complaints data bases are too complicated for the IWMDs. The sophisticated programmed data bases have caused IWMD staff members many problems particularly when modifications and/or debugging are required. In the future, all IWMD data bases should be “open-source” systems and based on standard MS-Access data base software. Many Directorates and Districts have developed their own simple but effective data bases. These data bases can be used as prototypes when developing new data bases.

**Digital Mapping:** A review of the digital map layers produced by the IWMDs showed that many small errors need to be corrected. It is necessary that the Project technical assistance staff review the digital data and systematically identify and correct all errors. District maps are currently rare and generally not available. A majority of the 27 IWMDs have out-dated

maps from the Egypt Survey Authority. As a part of the digital mapping effort, the mapping staff in each Directorate should consolidate all IWMD map layers under their Directorate, and generate and print the IWMD and Directorate maps with the pre-defined map layout for the IWMDs. To meet the requirements of the IWMDs, the maps should have a minimum of nine layers including boundaries (Directorate and/or IWMD), canals, drains, water monitoring points, water quality sampling points, wells, control structure locations, BCWUA locations, and branch canal areas (total, urban and irrigable). This procedure will ensure standardization and the production of high quality, professional, multi-layer digital maps.

**Data Consolidation and Utilization:** Water and agricultural data are not systematically organized and consolidated at the five Directorates. In order to improve Directorate data management activities the Directorate and IWMD Groundwater, Water Quality, and BCWUA data bases should be updated with canal identifiers so the water resources data can be aggregated by branch canal to create comprehensive datasets to support IWRM at both District and Directorate levels. Consideration should be given to strengthening the GIS capabilities at the Directorate level. With the use of Arc View GIS software provided by the Project, water objects on the digital maps (i.e., wells, water monitoring sites, and BCWUA locations) can be linked to the data bases to provide additional attributes for GIS spatial analysis. Using GIS spatial analysis many key spatial relationships can be derived, and results can be symbolized, visualized, and presented through thematic maps.

**Data Sharing:** In order to fully utilize the IWMD and Directorate data, it is essential to improve coordination and two way transfer of information between IWMDs, Directorates, and central level through digital data transfer, monthly coordination meetings, and preparation of integrated water management plans. Additionally, MWRI needs to seriously promote data sharing, collaboration, and reuse at all levels.

#### **Task 4: Improved Maintenance and Upgrading of Water Management Equipment**

None at this time.

#### **Task 5: Environmental Services for Improving Water Quality Management**

**Senbo Pilot:** The Project has completed construction of the DBAF treatment facility. Operators have been trained and the plant is fully operational. The capacity of the CDA to manage and finance the O&M of the DBAF facility is limited. Other options including transferring the facility to a government agency are under investigation. Minister MWRI has sent a letter to the Minister of Housing on this issue. The Senbo CDA has been unable to provide the land for implementation of the agricultural residual recycle activity. This has delayed implementation of this activity.

**GDA:** It is essential to get beneficiaries' commitment on land and O&M before implementation. It is also important to involve Ministry of Housing and Water & Waste Water companies during the early stages of design and implementation.

## **Task 6: Improved Wastewater Reuse Practices**

Changing attitudes and practices takes time. Although the Luxor Demo site has successfully shown that a variety of commercial crops can be safely grown using treated wastewater, the government sector continues to support limiting the use of treated wastewater for growing only wood trees.

There are indications that the private sector may have the interest to invest in lands where treated wastewater is available for irrigation; however there seems to be reluctance from the government to release land to small (graduates) and/or large investors at this time.

## **Task 7: Graduate Degree Training**

Trainees at Cairo American University and other local universities are now preparing their theses for their MSc degrees. These participants have been pursuing their degrees on a part time basis. In order to enable them to finish before the end of the Project, it is recommended that they be given paid leave from the MWRI.

## **Monitoring & Evaluation**

The Project has successfully increased the authority and capacity of Districts to manage. The major remaining task is to employ this new authority and capacity to improve the quality of irrigation service to farmers. Output performance indicators thus far show little or no impact on quality of service. To be fair most of the IWMDs were formed less than three years ago and many of the BCWUAs were established only one year ago. To expect real impacts in such a short time may be over optimistic. This emphasizes the importance of continuing a comprehensive M&E program to help evaluate short-term and long-term affects introduced by the Project.

The Project has greatly expanded the amount and quality of volumetric water information available to irrigation managers. Tools and concepts to employ this information in an improved management system are now available and widely-understood. The task which remains is to integrate the concepts of estimated demand, delivery targets, and actual deliveries into a coherent volume-based water management system.

The Ministry's primary intended tool for managing water among branch canals (BCs) within a District is a system of rotating water supply among BCs. About one-third of the farmers interviewed in the client satisfaction survey indicate that the rotation is seldom applied on their BCs. This failure is strongly linked to farmer dissatisfaction with the quality of irrigation service. More rigorous application of the nominal rotation, particularly in summer, should receive attention as a possible way of quickly improving the quality of irrigation service.

The basic elements of a Performance Benchmarking (PB) system are now available in all Project Districts and Directorates. The task which remains is applying these PB tools in a regular way and integrating them into a performance-based management system for Districts. As greater use is made of quantitative information on irrigation performance, it will be necessary to implement a quality control system for the data used. Such a system must insure that the data used are objective and accurate and must be, itself, transparent and open.

Available agricultural data are not sufficiently accurate, precise, or accessible to permit estimating the agricultural impacts of the Project at this time.

## **Education, Communication, Public Awareness and Participation**

The close cooperation with the MWRI Water Communication Unit in carrying out communication and public awareness activities has been a total success. The process allows the Project to provide direct support to the WCU and in return make use of a well trained and equipped staff. The WCU has the capacity and capability to produce training and awareness videos and conduct awareness campaigns.

Now that BCWUAs have been formed covering all the branch canals in all the 27 IWMDs, these organizations are key to involving users in water management. Awareness activities and materials must be developed to target the different levels of the BCWUAs to include chair persons, board members, water user representatives, residential members, and water users in general. Gender focused programs also need to be considered.

Success stories collected by the IWMDs and compiled by the WCU on BCWUAs have proved to be a good way of documenting achievements of the BCWUA activities. For distribution to a wider audience the format for these success stories, types of photographs, and the categories should be standardized.

The three LIFE IWRM awareness workshops held for over 80 MWRI irrigation and drainage top officials proved very effective in informing MWRI senior staff on the concepts of IWMDs. These types of workshops should be extended to include inspector and District engineer level staff as well as sector heads.

HE Minister MWRI authorized that a lecture on integrated water management districts be included in the promotion courses of the MWRI engineers program that is held regularly in the Regional Centre for Training and Water Studies at Six October City.

The website has been a great tool for sharing Project news, information, successes stories, and reports.

## **Training**

A major emphasis of the Project has been on training. Over 700 (25% women) core MWRI staff has been trained in the five target Directorates. Most of the technical assistance has been provided through the training program. A key to the success of the training has been to use MWRI staff as trainers. Another approach that has proved successful was to support the establishment of training facilities at the District and Directorate level. All training is given at the regional level. Directorate and District staff now have trained and capable staff. To maintain this expertise Directorate should build its own training programs within IWMDs and Directorate to train new staff and staff who where unable to attend previous training programs.. The staff who trained under the Project training program can be used as trainers. The Project can support this activity in order to make sure that training will continue and become a part of Directorate agenda and responsibilities.

The idea of limiting the training during the summer irrigation season (June – August) because of the work load of MWRI staff during this period was recommended by several of the Undersecretaries and General Directors. This suggestion was adopted by the Project.

The On-the-Job Training programs have proved very successful. They allow trainees to learn by doing and provided a mechanism for mobilizing IWMD staff to participate in achieving Project objectives and targets.

The 90 hour English language training program offered by AmidEast in nine locations was excellent and well received by the MWRI staff. Even though the course was given after working hours, attendance and participation was excellent. A total of 77 persons (25% female) attended the training. If interest and funds allow the training should be continued.

### **Procurement**

The use of FT800 funds and having a procurement geographic code of 263 has simplified the procurement process.

The purchase of computer equipment and supplies at regional locations has ensued reliable and timely maintenance at a lower cost.

Life IWRM with the help of USAID and MWRI has established streamlined US procurement procedures that permit supply and delivery of US purchased equipment within 30 days.

### **Cost Control**

The Project has implemented a number of cost saving measures.

The Project has made extensive use of MWRI Integrated Water Management Unit, MWRI District staff, and local staff instead of more expensive expatriate and local sub-contractor STTA.

With the strong support of the MWRI Integrated Water Management Unit and H.E. MWRI Minister, the contractor was able to establish offices within MWRI Ministry building in Cairo and on the MWRI premises in Zagazig and Qena. This has resulted in major savings in rent and travel, has allowed for considerable sharing of resources, including personnel, vehicles, furniture, and equipment, and has supported the accelerated completion of a number of activities.

The Project decentralized and regionalized its training programs. Training is offered in each Governorate to minimize travel and accommodation expenses of trainers and trainees. Regional trainers and service providers have been used to the maximum extent possible, instead of bringing trainers from Cairo or the US.

To reduce costs and decentralize establishment of BCWUAs, instead of using Central Irrigation Advisory Staff, IWMD staff were trained and were able to successfully establish and begin activation of the BCWUAs themselves.

Computers have been procured locally instead of from the US, and maintenance is being provided by local suppliers. The result was a tremendous cost and installation time savings.

Instead of procuring current meters for measuring discharge flow from the US, an agreement was made with MWRI to provide 37 of these items from their inventory.

To reduce laboratory costs for water quality and soil sampling, special arrangements have been made with the Ministry of Health Lab in Luxor and the MALR soils lab.

Instead of purchasing vehicles, to reduce costs, the contractor is renting less expensive vehicles, in many cases on an as needed basis.

To reduce printing and distribution costs a website was established to post Project reports.

After the departure of the local finance specialist in July 2006 (Nermin Mokhtar) instead of hiring new staff, IRG successfully distributed admin/financial/procurement responsibilities among existing staff.