Ministry of Water Resources and Irrigation
US Agency for International Development
Agricultural Policy Reform Program
Environmental Policy and Institutional Strengthening Indefinite Quantity Contract

APRP—Water Policy Activity
Contract PCE-1-00-96-00002-00
Task Order 807

FINAL REPORT

Report No. 66

September 2002

Water Policy Program
International Resources Group **Winrock International** **Nile Consultant**

Task Order No. 807
Contract No. PCE-I-00-96-00002-00

REPORT NO. 66

FINAL REPORT

Prepared by

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September 2002

For
United States Agency for International Development/Egypt

Environmental Policy and Institutional Strengthening Indefinite Quantity Contract (EPIQ)
Partners: International Resources Group, Winrock International,
and Harvard Institute for International Development

Subcontractors: PADCO; Management Systems International; and Development Alternatives, Inc.

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ACKNOWLEDGMENTS

This final project report has been prepared by Mr. Andrew Tczap who served as Chief of Party (COP) from December 2000 to project completion on 30 September 2002. The report is based on materials in the project files, primarily Quarterly Reports and databases maintained by the project staff over the life of the project. Eng. Gamil Mahmoud, Head of the Water Policy Advisory Unit (WPAU) reviewed the initial draft and provided valuable comments and insights that were incorporated into the final version. Dr. Ibrahim Elassiouty provided valuable input to the report and also reviewed the document as it was developed.

The outstanding success of the Water Policy Reform Program has been due in large measure to the vision, support, and assistance provided by H.E. Mahmoud Abou-Zeid, Minister of Water Resources and Irrigation. In addition, numerous MWRI officials, the Water Policy Advisory Unit, and especially Eng. Gamil Mahmoud participated directly in execution of the program and were key contributors to its successful completion.

Valuable information, opinions and advice provided by many individuals from WPAU, USAID, and the EPIQ Team throughout the project implementation period have influenced the preparation of this report and are gratefully acknowledged. Dr.. Craig Anderson, USAID Agricultural Development Officer; Eng. Mahmoud Mabrouk, USAID Cognizant Technical Officer (CTO) from project initiation through July 2000; and Dr. Wadie Fahim Mankarious, USAID CTO from July 2000 to project completion deserve special recognition for their valuable contributions to the success of the program. Dr. Mohamed Allam; Nile Consultants Interim COP during project startup and Dr. Jeffrey Fredericks; COP from January 1998 to December 2000 contributed outstanding leadership during the early years of the program that resulted in a focused approach and many significant achievements.

The EPIQ Technical Assistance Team of International Resources Group, Winrock International and Nile Consultants are gratified to have had an opportunity to participate in this unique and critically important project.

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1. Introduction

1.1 Authorization

The APRP Water Policy Reform Program of the U.S. Agency for International Development (USAID/EG) was implemented as Task Order 807 under the USAID Global Environment Center's Environmental Policy and Institutional Strengthening Indefinite Quantity (EPIQ) Contract (PCE-I-807-96-00002-00, Delivery Order 807). The original task order carried an effective date of 7 May 1997. It was modified seven times; Table 1-1 contains a summary description at each contract modification.

This report has been prepared in partial fulfillment of contractual requirements for the EPIQ Program.

1.2 Program Overview

Modern economic policy reform in Egypt began in the agricultural sector in about the mid-1980s. One major vehicle for these reforms was the Agricultural Production and Credit Project (APCP), which was implemented from 1986 to 1996. One key aspect of this project was an annual program of reforms, or "benchmarks", that were agreed by the Government of Egypt (GOE), primarily the Ministry of Agriculture and Land Reclamation, and USAID. After the accomplishment of these benchmarks was "verified" in an annual report, USAID made a disbursement of grant assistance to the Government.

Following seven tranches of agricultural policy reforms (benchmarks) in APCP, the agricultural Policy Reform Program (APRP) was designed and implemented in five tranches of such benchmarks. APRP is a United States Agency for International Development (USAID) grant program with a budget of US$245 million for cash transfers to participating Government of Egypt (GOE) entities. The program is designed to achieve policy reform in five areas:

- Prices, markets and trade.
- Private investment and privatization.
- Agricultural land and water resource utilization and investment.
- Agricultural sector support services.
- Food security and poverty alleviation.

Annual cash disbursements are made to the GOE based on the completion of policy reform benchmarks, as established and agreed to through annual memoranda of understanding (MOU) jointly developed and signed by GOE and USAID/Egypt.

USAID and the Ministry of Water Resources and Irrigation (MRWI), under the umbrella of the APRP, jointly designed a Water Policy Results Package (WPRP), which consisted of integrated water policy and institutional reforms. Technical Assistance (TA) for WPRP was contracted for under Task Order 807 of the EPIQ global IQC. The EPIQ technical assistance team (EPIQ) was responsible under Task Order 807 to assist MWRI to identify and carry out policy reforms to meet the goal of increasing global efficiency

and productivity of Egypt's Nile water system. The expected results of WPRP identified in the Task Order are:

1. Improved irrigation policy assessment and planning process.
2. Improved irrigation system management.
3. Improved private sector participation in policy change.
4. Improved capacity to manage the policy process.

1.3 Program Management

MWRI established a project Steering Committee to provide direction and advice to the WPRP Team and to review and approve all policy outputs prior to passing them on to the Minister for his review and decision regarding adoption. MWRI also established the Water Policy Advisory Unit (WPAU) with funding from USAID. This unit was designed to incorporate a multidisciplinary working group of local experts to directly support the policy reform process. WPAU functioned as the counterpart to the EPIQ technical assistance team.

The EPIQ TA team assisted MWRI to identify and carry out policy reforms designed to meet the program objectives. The team directly assisted and took the lead in identifying and achieving annual policy reform benchmarks. This was done in close cooperation with the Steering Committee, WPAU, key ministry officials, USAID, and other APRP units.
All project activities were conducted in accordance with annual work plans that were approved by USAID and MWRI. USAID actively participated by reviewing all work products and by attending coordination meetings with WPAU and EPIQ on a regular basis.

This management structure resulted in effective communication and close cooperation among all involved parties and is considered to be one of the key factors in the successful outcome of the program.

1.4 Organization of Report

The remainder of this report is organized in six chapters as follows:

- Scope of technical services.
- Planned versus actual achievements.
- Program impacts.
- Staff resources utilized.
- Financial resources utilized.
- Problems encountered and lessons learned.

The report is structured to present program results in a concise, but comprehensive format. Details, if desired, can be found in the sixty-five reports prepared during program implementation and prior to this Final Report. A list of all WPRP reports is presented in Appendix A.

TABLE 1-1
SUMMARY OF TASK ORDER MODIFICATIONS
(CONTRACT PCE-I-807-96-00002-00)

MOD. NO.	PURPOSE
1	1. Extend the completion date of the task order from September 30, 1999 to June 30, 2000. 2. Increase incremental funding by $3,000,000.00.
2	1. Modify the task order number, 2. Revise the key personnel and level of effort in the task order, 3. Realign the budget, and 4. Obligate the amount of $1,999,054 to fully fund the task order
3	Extend the completion date of the task order to September 30,2001, include an option period to September 30,2002, revise the Statement of work, level of effort and budget to include the extension period and the option period, change CTO to Mahmoud Mabrouk, increase the ceiling price of the task order to $10,318,222 and add incremental funding in the amount of $692,000.
4	1. Correct some typos in the titles of the labor categories. 2. Correct some dates. 3. Correct ceiling price for the labor line item and the total ceiling price for the option period.
5	Incorporate clauses entitled “Investment Promotion, January 1994”.
6	1. Extend the Task Order Completion date to 03/29/02 by exercising a six month option period, 2. Increase the ceiling price by $556,381 to $10,874,603, 3. Increase the total obligated amount by $2,000,000 to $10,691,054, 4. Change the Chief of Party and the Contract Technical Officer (CTO) to Andrew Tczap and Wadie F. Mankarious respectively, 5. Revise Workdays Ordered, Other Direct Cost for the base and option period, 6. Revise the Statement of Work for the option period.
7	1. Revise the statement of work, 2. Extend the Task Order Completion date to 09/30/02, 3. Increase the ceiling price by $306,407 to $11,181,010, 4. Increase the total obligated amount by $489,959 to $11,181,010, and 5. Increase the Workdays Ordered and the Other Direct Cost for the option period.

NOTE: The information provided in the table is extracted from the cover page of each modification.

2. Scope of Services

2.1 General

The introduction section of Task Order 807 states:

> "To improve the system efficiency through improved water allocation, the MPWWR and the United States Agency for International Development (USAID) jointly designed a results package which consists **of *integrated water policy and institutional reforms***." (emphasis added)

It also states:

> "…To carry out studies and research programs to help the government to analyze and resolve ***various policy and institutional issues*** addressed in the first three results." (emphasis added)

The detailed SOW was developed during program design and was considered the best illustration of the path to achieve the APRP goal of policy reform. The detailed SOW of the task order defines fifty-three specific tasks to be executed under the task order. These tasks were a mixture of studies, research, pilot programs requiring engineering and construction, policy reforms and workshops/meetings. Only four of the 53 tasks addressed policy reform.

Very early in the implementation process, the EPIQ/MWRI/USAID team responsible for program execution noted the apparent discrepancy between program goals and the detailed SOW. Furthermore, it became clear to the team that serial implementation of the tasks leading to identification and adoption of the four policy reform tasks was not the most efficient, nor desirable method of maximizing policy reform. It was jointly decided therefore that emphasis would be on an expanded policy reform effort with the necessary studies, pilot programs and research folded into the policy definition process. In summary, the required policy benchmarks were identified annually and then the work plan to achieve adoption of the policy was developed, including the specific tasks defined in the contract SOW. This emphasis on policy reform and the methodology to achieve it is demonstrated in Contract Modification No. 3, the preamble to Contract Modification No. 3 which states:

> " The Objective of this procurement is to obtain technical assistance services to assist the Ministry of Public Works and Water Resources (MPWWR) and USAID/Egypt in the ***development and implementation of water resources policy reforms***. These services are to be provided by amending the existing Task Order No. 807 issued under the Global Bureau Environmental Policy and Institutional Strengthening IQC, No. PCE-I-00-96-00002-00 (EPIQ). The base period for this task order amendment will be extended from July 1, 2000 to September 30, 2001, which coincides with the end date of the basic IQC. A priced option period from October 1, 2001 through September 30, 2002 is also required". (emphasis added)

Under the heading "Tasks and Deliverables", Modification No. 3 included only three items; 1) Water Resources Policy Reform Benchmarks; 2) Public Awareness and KAP

Survey; and 3) APRP Impact Assessment. No mention was made of the fifty-three tasks that were defined in the original Task Order.

The result achieved under Task Order 807 was an efficient and highly effective policy reform program that met the program objectives. However, identifying completion of the fifty-three tasks contained in the original task order SOW is not readily apparent to the uninitiated since achievement of the tasks are described within the policy benchmark reports and not in stand-alone outputs.

2.2 Policy Reform

The SOW, as approved through Annual Work Plans and executed during implementation focused primarily on policy reforms to meet the WPRP overall objective ("to increase the global efficiency and productivity of Egypt's Nile Water System"). Twenty-one such benchmark reforms were identified, studied, defined and adopted by MWRI under WPRP. All twenty-one WPRP benchmark were verified by USAID to be accomplished, i.e. 100% accomplishment. This compared to 81% accomplishment achieved by the APRP as a whole. Appendix B presents a complete description of the twenty-one policy benchmarks.

The process used in achieving these policy reforms was as follows:

- MWRI, USAID and EPIQ jointly defined the proposed policy benchmarks at the beginning of each of the five project tranches. The benchmarks for each tranche were then formally adopted by means of a Memorandum of Understanding between the GOE and USAID.
- Working Groups were established for each policy benchmark with representatives of EPIQ, WPAU, MWRI, consultants and individuals from other stakeholders whose input was considered critical to success.
- The working group analyzed the driving issue behind the policy reform, identified studies/pilot programs and other inputs required to formulate a practical, workable policy statement.
- The working group then conducted, or contracted with local entities, the efforts needed to compile all the data/information needed to arrive at the recommended policy and implementation framework.
- Finally, the recommended policy statement was framed, and included in the benchmark completion report. These reports were presented at a workshop attended by: the WPRP Steering Committee, high level MWRI officials, officials of other ministries, USAID, and in most instances, by H.E. the Minister. After incorporating the workshop comments, the policy statement that was approved by the Steering Committee was transmitted to the Minister for action.

The use of Working Groups in the policy process is noteworthy as it was innovative and proved to be very effective. This mechanism evolved as implementation proceeded. It starting with attempts to include stakeholders in the process and over time evolved to establishing Benchmark Working Groups to participate in an active manner in the policy development process.

2.3 Studies

In addition to the policy benchmark activities, a number of studies were conducted. These studies were conducted for one of the following purposes: 1) to confirm the need for a potential policy reform that was identified but not universally accepted; 2) to provide input to ongoing policy reform activities; 3) to provide input to potential future policy reforms; or, 4) to provide data for assessing impacts of the WPRP. The studies conducted were as follows:

- Performance assessment of Irrigation Improvement Project
- Hydrogeology of deep aquifers in the Western Desert & Sinai
- Water saving through utilization of short duration rice
- Study of Egypt's rice and sugar cane water management policies
- Short duration rice pilot program results
- Review of agricultural water sector model
- Survey of knowledge, attitudes and practices of Egyptian farmers
- Assessment of impacts of WPRP
- Economic instruments for improved water resources management in Egypt
- Survey of Nile system pollution sources
- Study of policy integration

2.4 Training

Although not a specific requirement in the original task order SOW nor in amendments thereto, EPIQ did conduct training during the life-of-project. The training consisted of On-The-Job (OTJ) training conducted by EPIQ staff and consultants. One hundred thirteen workshops and training sessions and one National Conference on Water Policy were conducted by EPIQ staff involving approximately 3,000 participants. OTJ training was conducted on policy implementation issues and mechanisms for 102 participants in twelve events.

3. Program Achievements

3.1 Planned vs. Actual

The program SOW is defined in the original task order and modifications 1 through 7 to the task order. Table 3-1 summarizes the fifty-three tasks contained in the original scope of work, defines if the task was accomplished or not, and provides references to documents that confirm accomplishment. Three of the 53 originally specified tasks were initiated and then determined to be accomplished by others. These are identified and discussed as follows:

Task No. 1.4.2. This task, "To assess the brackish groundwater resources in the Delta and coastal plains" was reviewed and discussed among the implementing parties, USAID, WPAU, MWRI and EPIQ. It was noted that a preliminary economic assessment of desalinization had already been completed by WPAU at the request of the Minister. That study concluded that desalinization would not be a feasible method to augment irrigation water supplies in the foreseeable future. It was also noted that an accurate assessment of this potential resource would require extensive data collection and analysis (considered a time and labor consuming activity), construction of additional wells, and performing a number of pumping tests to supplement existing data. Since the TA budget did not include construction funds and since desalinization for irrigation purposes was considered to be highly unlikely for the foreseeable future; it was jointly decided that this task had already been accomplished by others and did not warrant further effort by the EPIQ team.

Task No. 1.4.7. This task, "To evaluate the economic and technical feasibility of sea water desalinization was eliminated from the EPIQ work plan because it was already completed by WPAU and because it was scheduled to be performed under the National Water Resources Plan Project that was underway with funding by the Netherlands.

Task No. 1.4.9. This task was defined as: "To design, procure equipment and implement small scale pilot projects for non-conventional water resources such as treatment of polluted water and desalinization of seawater." The team did design and prepare procurement documents for intermediate drain reuse pump stations but implementation of the pump stations was left to MWRI. After discussion among the implementing parties, it was agreed not to proceed further with this activity for the reasons cited above and because the TA budget did not include funds for construction.

All other requirements of the base task order were fully accomplished.

Table 3-2 summarizes the required activities contained in the seven amendments to the base task order. That table demonstrates that all requirements contained in the seven amendments were successfully accomplished.

3.2 Summary of Significant Achievements

The Water Policy Reform Project accomplished significant policy achievements that cannot be recognized from a review of the specific tasks described above and in Tables 3-1 and 3-2. A description of the "Policy Chains" that were developed during program implementation can best summarize the achievements accomplished under WPRP. The individual policy reforms achieved under the WPRP are presented in Appendix B. The policy chains are discussed in the following sections and can be characterized as follows:

- Participatory Management / Decentralization / Democratization.
- Improved Water Use Efficiency.
- Enhanced Environmental Management.
- Institutional Reform.

Several of the policies adopted as a result of WPRP efforts are crosscutting and therefore contribute to more than one policy chain.

3.2.1 Participatory Management / Decentralization / Democratization

A series of policies were identified, defined, justified and finally adopted for implementation that has privatization as the ultimate goal. The chain started with a policy to expand the formation of mesqa level Water User Associations to non-Irrigation Improvement Project (IIP) areas. This was followed by formation of WUAs at the Branch Canal Level (BCWUA) which include a number of mesqas. An Irrigation Advisory Service was institutionalized within the Ministry to be responsible for formation of water user associations and for nurturing them after initial formation. A policy to transfer operation and maintenance to BCWUAs was then adopted and four pilot areas established. These individual policy reforms resulted in improved private sector participation and established a solid basis to move to true privatization in future. The future policy links in this chain required to reach true privatization could be as follows:

- Transfer of Infrastructure to the BCWUA.
- Expand BCWUAs to District level water user federations, if studies show that a higher level is required for sustainability.
- Establish an annual water allocation to District Federations or BCWUA and provide the legal right to trade portions of the allocations, either between farmers within the association or from association to association.

Another critical achievement that is required to solidify and expand the implementation of this chain is to provide a legal basis for the various levels of user associations that defines their rights and responsibilities. WPRP undertook a review of Law 12 and proposed a revised version that treats the rights and responsibilities of WUAs under one of the

proposed revisions. This revised law has been accepted by MWRI and is under legislative review at present.

By giving operation and maintenance authority/responsibility to a local water user association through the achievements to date, decentralization has been achieved. Such associations rely on free and open election of a governing board and the opportunity for individual members to interact in a multitude of decision-making transactions. As a result, the presently existing democratic process has been strengthened. As noted above, this policy chain has resulted in significantly enhanced private sector involvement and participatory management.

3.2.2 Improved Water Use Efficiency

Several policies designed to improve efficiency of irrigation water were adopted, some linked and building upon one another and some independent of others.
Rice and sugarcane are both very high consumers of water. Therefore, a significant joint effort (MWRI and MALR) went into studying how the agricultural sector could maintain production levels of these crops while using less water.

Pilot studies demonstrated that sugarcane production per feddan could be increased through improved land leveling and use of a gated pipe water delivery system while applying significantly less water per feddan. This result led to the conclusion that land area planted with sugarcane could be a frozen at present levels, total production could be increased, and the quantity of water applied per feddan could be reduced.

Rice production in Egypt was reviewed and several studies and pilot programs were carried out jointly by MWRI and MALR. The result was a policy of substituting short duration rice varieties for long duration varieties. Pilot programs demonstrated a significant decrease in the volume of water to produce a ton of rice. During execution of these studies it became clear that water distribution could be conducted more efficiently if information on cropping patterns were known in advance of planting. A policy of matching irrigation water deliveries to crop demand was jointly developed and pilot tested by MWRI and MALR. Based on the success of that pilot program, the policy was adopted by both Ministries and implementation is actively underway at present.

Distribution of water on the basis of measuring volume rather than water levels was identified as another enhancement to efficient water distribution. This concept was subjected to pilot testing and as a result; water distribution based on volume, using telemetry data for that purpose at locations where telemetry equipment exists, became policy.

A very significant step was taken by MWRI when the policy to integrate all water management at the District level was adopted. This policy integrates several different line functions at the District level and devolves operational authority from the Directorate to the District level. The expected outcome is improved efficiency, both organizationally and technically. Two pilot districts were established and expansion of this policy will take place after the pilot effort experience defines the optimal methodology.

It should also be noted that the integrated management experience gained during these pilot programs will be transferred to the existing WUAs discussed previously thereby strengthening the operations and efficiency of these organizations.

3.2.3 Enhanced Environmental Management

Several policies were adopted under WPRP with the objective of improving management of environmental issues. The focus of these policies was protection of water quality, however broader issues were also addressed.

This policy chain began with a comprehensive study of drainage reuse in the Egyptian agricultural sector (EPIQ Report No. 8, National Policy for Drainage Water Reuse). A series of "Policy Visions" were identified and recommendations made to protect drain water quality and manage reuse. The first step necessary for implementing the policy visions was to provide a legal basis. This was accomplished through WPRP by preparing a revision to Law 48 governing water quality management. The Intermediate Drainage Reuse policy resulted directly from the national policy study. This policy established the concept of intercepting branch drain flows for beneficial reuse prior to the point where they enter the main drains. This policy resulted in augmenting fresh water irrigation supplies but was a product of the water quality management policy chain.

The chain then progressed to adopting a policy related to achieving improved management of urban wastewater discharge and its reuse. When fully implemented, this policy will result in augmentation of irrigation water supplies and water quality protection by prioritizing waste water treatment plant construction and by putting urban wastewater (municipal and industrial) to beneficial reuse prior to its' entering the agricultural drain system. Another interesting and beneficial aspect of this policy is the provision for public awareness and training in the health aspects of urban wastewater reuse.

The final link in this Environmental Protection Policy Chain is the adoption of a policy institutionalizing the Environmental Impact Assessment process within MWRI. Implementation of the policy will result in improved management and protection of the environment in general. It will also significantly improve transparency since public disclosure is an integral component of the EIA process.

3.2.4 Institutional Reform

MWRI has undergone significant change during implementation of WPRP. While not all of the change can be attributed to WPRP, some of the changes are a direct result of WPRP, some are an indirect result, and some are the result of other factors. Some of the more significant institutional changes attributable to WPRP are:

- The policy to involve the public in MWRI decision-making is a significant change that will result in improved decision-making and greater transparency.
- MWRI, through its' direct participation in the policy process gives it an enhanced capability to assess, plan and implement policy reform in the future.
- MWRI embarked on the WPRP with some level of trepidation regarding "policy reform". In fact, some reforms that were proposed in the early years of the project were promptly dismissed by MWRI but were reintroduced and readily accepted in later years resulting in policies that were adopted. This change of "culture" within MWRI is attributed to the fact that MWRI participated actively with the EPIQ/WPAU team throughout program implementation, became familiar with the process and enthusiastic about the results.
- Several of the policy reforms required MWRI to work jointly with MALR. This has resulted in much-improved relations and cooperation between the two Ministries.
- Decentralization of decision-making and authority has resulted from several of the policies adopted under WPRP. This has resulted in more efficient operations.
- The need for, and benefit of, some form of privatization at some level of the irrigation system has become a generally accepted fact among top MWRI officials. This was not the case at project initiation.

TABLE 3-1 (CONTINUED)

TABLE 3-1
ORIGINAL TASK ORDER SCOPE OF WORK
ASSESSMENT OF ACCOMPLISHMENT

Result No. 1 Improved Irrigation Policy Assessment & Planning Process

Activity No. 1.1: Forecasting of the Water Demands of the Various Water use sectors							
Task No.	**Task Description**	**Accomplished**		**Reference**			**Notes**
		Yes	**No.**	**Tranch No.**	**Benchmark No**	**Deliverable (Report No.)**	
1.1.1	To forecast the water demands of the various water use sectors such as agriculture, M&I, tourism, recreation, fisheries and inland navigation.	✓		II II IV (Phase II)	C4 Study C1	6 27 45	• Only agriculture water demands (about 85% of total demands) were considered in matching irrigation supplies and demands because the National Water Resources Plan project was doing detailed demand forecast. • Since rice and sugarcane are the major crops affecting water requirements, strategies were developed for rice and sugarcane production. • The agricultural sector model of Egypt was reviewed. • Report 6: "Assessment of Egypt's Rice Policy and Strategy for Water management". June 1998. • Report 27: "Review of the Agricultural Sector Model of Egypt (ASME 97): 1999 Version" December 1999. • Report 45: Matching Irrigation Supply and Demands" November 2001.

TABLE 3-1 (CONTINUED)

Activity No. 1.2: Evaluation of Water Conservation Alternative							
Task No.	**Task Description**	**Accomplished**		**Reference**			**Notes**
		Yes	**No.**	**Tranch No.**	**Benchmark No**	**Deliverable (Report No.)**	
1.2.1	To organize Workshops and roundtable meetings attended by senior officials of the concerned ministries	✓		II IV	C5 C1	6 33	• Report 33: "Reducing Mismatch of Irrigation Deliveries, Phase I: Pilot Program". November 2000.
1.2.2	To help MWRI initiate the continuous flow IIP command areas (at least three) and to set up a monitoring system for the performance of these areas.	✓		II	C7	7	• Report 7: "Egypt's Irrigation Improvement Program: I. Performance Assessment II. Proposed National Strategy" June 1998
1.2.3	To assess and evaluate the performance of IIP activities (including the continuous flow) in these areas.	✓		II	C7	7	
1.2.4	To help MWRI establish a national policy for irrigation improvement.	✓		II	C7	7	

Activity No. 1.3: Augmentation of the Water Supply							
Task No.	**Task Description**	**Accomplished**		**Reference**			**Notes**
		Yes	**No.**	**Tranch No.**	**Benchmark No**	**Deliverable (Report No.)**	
1.3.1	To review the previous hydro-geological investigations of the deep groundwater aquifer in Sinai and Western Desert.	✓		II	Study	10	• Report 10: "Hydrogeology of Deep Aquifers in the Western Desert and Sinai" August 1998.
1.3.2	To help MWRI in selecting the location of the production/test and monitoring wells for the deep groundwater aquifer.	✓		III	C2	16	• 12 Wells in the area of West Qasr El-Farafra were selected of which 11 wells for irrigation and one for domestic and industrial uses.

TABLE 3-1 (CONTINUED)

Activity No. 1.3: Augmentation of the Water Supply

Task No.	Task Description	Accomplished		Reference			Notes
		Yes	No.	Tranch No.	Benchmark No	Deliverable (Report No.)	
1.3.3	To help MWRI in the analysis of the hydrogeologic and monitoring data of the deep aquifer to estimate regional hydrogeologic characteristic and potential utilization for this aquifer.	✓		III	C2	16	• Report 16: "Policies and Procedures for Free-Flowing Groundwater Management in Egypt's Western Desert". June 1999.
1.3.4	To help MWRI establish a national policy for the utilization of the deep groundwater.	✓		III	C2	16	
1.3.5	To help MWRI identify potential water (seasonal) shortage areas where shallow groundwater may be used to overcome these seasonal shortages.	✓		V	C1	49	• Two pilot areas were selected in South Zifta District in Menoufia and El-Ibrahimia District in West Sharkia for integrated water management. • The pilot area of Zifta includes 9 wells of shallow groundwater for conjunctive use. For Ibrahimia pilot area 10 shallow groundwater. • Wells were proposed to cover shortage of water in irrigation canals.
1.3.6	To help MWRI carry out up to six pilot projects to utilize the shallow groundwater to overcome water shortage problem.	✓		*V*	C1	49	
1.3.7	To evaluate the technical and economic feasibility of the utilization of shallow groundwater in irrigation as well as other water uses, based on the results of the six pilot projects.	✓		V	C1	49	• Report 49: "Integrated Water Management District." December 2001
1.3.8	To help MWRI establish a national policy for promoting the conjunctive use of the shallow groundwater aquifer to meet short-term irrigation water shortages as well as water demands of other use sectors.	✓		V	C1	49	

TABLE 3-1 (CONTINUED)

Activity No. 1.4: Non- Conventional Water Resources							
Task No.	**Task Description**	**Accomplished**		**Reference**			**Notes**
		Yes	**No.**	**Tranch No.**	**Benchmark No**	**Deliverable (Report No.)**	
1.4.1	To develop an inventory for the quantities and qualities of the residual flows of the Nile system.	✓		II	C8	8	• Report 8: "National Policy for Drainage Water Reuse". June 1998.
1.4.2	To assess the brackish groundwater resources in the Delta and Coastal Plains.		✓				• This task was dropped after several meetings and discussions with the MWRI senior officials, as the use of desalinated water for irrigation is not yet economically feasible.
1.4.3	To determine the potential of aquaculture (fisheries) as an agricultural enterprise for utilizing drainage water.	✓		II	C8	8	
1.4.4	To prepare an inventory for quantity and quality of treated and untreated wastewater, and the expected future increase of these waters.	✓		III	C7	20	• Report 20: "Intermediate Drainage Reuse in Bahr Bagar Drain Basin". June 1999.
1.4.5	To identify and evaluate the various means for reclaiming brackish and non-saline, but otherwise polluted, water including polluted drainage water.	✓		IV (Phase I)	C2	34	• Report 34: "Policies and Procedures for Improved Urban Wastewater Discharge and Reuse". November 2000.
1.4.6	To analyze public health and environmental risks associated with the reuse of polluted and saline water.	✓		IV	C2	46	• Report 46: "Application of Policies and Procedures for Improved Urban Wastewater Discharge and Reuse". December 2001
1.4.7	To evaluate the economic and technical feasibility of sea water desalinization		✓				• The same note as in task 1.4.2.

TABLE 3-1 (CONTINUED)

Activity No. 1.4: Non- Conventional Water Resources							
Task No.	**Task Description**	**Accomplished**		**Reference**			**Notes**
		Yes	**No.**	**Tranch No.**	**Benchmark No**	**Deliverable (Report No.)**	
1.4.8	To evaluate previous studies concerning the minimum drainage outflow to the sea which is required to carry out the Nile system pollutants, and to maintain the ecological system of the estuaries and the northern lakes; and to develop the necessary recommendations.	✓		II	C8	8	
1.4.9	To design, procure equipment and implement small-scale pilot projects for non-conventional water resources such as treatment of polluted water and desalinization of seawater.		✓				• The same note as in task 1.4.2.
1.4.10	To help MWRI establish national and strategies and policies for the non-conventional water resources.	✓		IV (Phase II)	C2	46	
1.4.11	To help MWRI organize and facilitate workshop (s) and round table meetings for Nile water quality protection attended by the senior officials of the concerned ministries.	✓		III	*C8*	21	• Report 21: "Revision of Law 48 of 1982 for the Protection of the Nile River and its Waterways from Pollution". June 1999.
1.4.12	To help the MWRI develop a national policy and an implementation plan for pollution control and management for the Nile system. The national policy and implementation plan shall benefit from findings of the above stated workshops and round table meetings.	✓		III IV (Phase II) *V*	*C8* C2 *C3*	21 46 51	• Report 51: "Environmental Management at MWRI" December 2001.

TABLE 3-1 (CONTINUED)

Activity No. 1.5: Balancing Water Demand and Supply							
Task No.	**Task Description**	**Accomplished**		**Reference**			**Notes**
		Yes	**No.**	**Tranch No.**	**Benchmark No**	**Deliverable (Report No.)**	
1.5.1	To address the issues related to better water management to increase production on existing irrigated lands and in the new lands.	✓		IV (Phase II)	C1	45	
1.5.2	To identify options for use of conserved and new water, considering the potential agricultural municipal, and industrial uses of water.	✓		II III IV	C8 C2 C7	8 16 34	
1.5.3	To examine the technical economic, and financial viability of using water pumped from deep aquifers for various uses, including industrial, municipal and agricultural uses both on site or conveyed to more favorable sites.	✓		II III	Study C2	10 16	
1.5.4	To evaluate the social economic, environmental and political ramifications of different water use strategies.	✓		IV (Phase II)	C1	45	
1.5.5	To develop and evaluate various scenarios for matching projected national water demands with potential supplies up to year 2017.	✓		*IV*	C1	45	
1.5.6	To incorporate the results of task 1.5.5 into an integrated national water map for Egypt that contains the physical availability of water in terms of both quantity and quality, and the associated cost of developing or conserving water	✓		IV	C1	45	

TABLE 3-1 (CONTINUED)

Result No. 2 Improved Irrigation System Management

Activity No. 2.1: Integrated water supply augmentation, water conservation and utilization							
Task No.	**Task Description**	**Accomplished**		**Reference**			**Notes**
		Yes	**No.**	**Tranch No.**	**Benchmark No**	**Deliverable (Report No.)**	
2.1.1	To set up criteria for the selection of the three pilot areas.	✓		III	C1	Unpublished Report Jun.99	• Unpublished Report: "Nile Water Flow Measurement" June 1999.
2.1.2	To help MWRI select the most suitable locations for the pilot areas and to determine the required infrastructure development for each of them.	✓		III III IV IV (Phase I) V	C2 C7 C2 C3 C1	16 20 46 35 49	• Report 19: "Water Saving Through Utilization of Short Duration Rice Varieties: National policy Package, 1999 – 2000". June 1999. • Report 35: "Water Management at the Directorate Level" November 2000
2.1.3	To help MWRI set up an implementation plan for the integrated water practices in the pilot areas.	✓		*III* V	C6 *C1*	19 49	
2.1.4	To help MWRI set up a monitoring system to monitor the impacts of the integrated water practices.	✓		V	C1 Study	49 59	
2.1.5	To evaluate the impacts of the integrated water practices on system efficiency and productivity for the three pilot areas	✓		III	C6	22	• Report 22: "Short Duration Rice Variety Pilot Program results" July 1999.

TABLE 3-1 (CONTINUED)

Activity No. 2.2: Cost Sharing							
Task No.	**Task Description**	**Accomplished**		**Reference**			**Notes**
		Yes	**No.**	**Tranch No.**	**Benchmark No**	**Deliverable (Report No.)**	
2.2.1	To develop different scenarios for the cost share of various water use sectors, reflecting their ability and willingness to pay and ensuring recovery of the O&M cost of the main system.	✓		V	Study	57	• Report 57: "Economic Instruments for Improved Water Resources Management in Egypt". April 2002
2.2.2	To help MWRI organize and facilitate a workshop of the Ministry to discuss the different water charges, scenarios, addressing the political, social and institutional considerations.	✓		*V*	Study	57	
2.2.3	To revise the proposed scenarios of water changes according to the findings of the above workshop.	✓		V	Study	57	
2.2.4	To help MWRI organize and facilitate a national workshop for water cost sharing attended by senior officials of the concerned ministries and sectors to discuss the revised scenarios for water charges.	✓		V	Study	57	
2.2.5	To help MWRI organize and facilitate a round table meeting attended by top senior officials of the concerned ministries and sectors to discuss, revise and approve the findings of the national workshop.	✓		V	Study	57	

TABLE 3-1 (CONTINUED)

Result No. 3 Improved Private Sector Participation in Policy Changes

Activity No. 3.1: User Involvement in Decision-Making

Task No.	Task Description	Accomplished		Reference			Notes
		Yes	No.	Tranch No.	Benchmark No	Deliverable (Report No.)	
3.1.1	To study the feasibility of creating WUAs in non-IIP commands areas, addressing potential incentives for farmers to join these WUAs.	✓		II III	C6 C2 C4	9 16 18	• Report 9: "Water User Association Formation Outside the Irrigation Improvement Program Area". June 1998.
3.1.2	To study the feasibility of federations of WUAs above the mesqa level with a possible participation in system management at the Irrigation district level.	✓		IV *III*	C4 *C3* C4	39 47 17 18	• Report 17: "Establishment of Branch Canal Water User Associations in the Egyptian Irrigation System" June 1999.
3.1.3	To study the feasibility of formation of water boards at the irrigation district level with representatives from the various water use sectors to participate in laying out the general strategy for system management and operations.	✓		IV *(Phase II*	C4	47	• Report 18: "Institutionalization of the Irrigation Advisory Service in the MWRI". June 1999 • Report 39: "Irrigation Management Transfer Public Awareness Campaign Phase 1: Strategy". June 2001. • Report 47: "MWRI Policy on Irrigation Management Transfer" December 2001
3.1.4	To help MPWWR organize and facilitate a workshop to discuss the results and recommendations of the above three feasibility studies. The workshop will be attended by the senior officials, directors of the three pilot areas, and local and expatriate experts.	✓		II III IV	C6 C2 C4	9 16 36	

TABLE 3-1 (CONTINUED)

Activity No. 3.1: User Involvement in Decision-Making							
Task No.	**Task Description**	**Accomplished**		**Reference**			**Notes**
		Yes	**No.**	**Tranch No.**	**Benchmark No**	**Deliverable (Report No.)**	
3.1.5	To help MPWWR train farmers to join WUAs in non-IIP command areas, existing in the pilot areas.	✓		II	C6	9	
3.1.6	To help MPWWR establish WUA federations, water boards and WUAs for non-IIP command areas, in the three pilot areas.	✓		IV (Phase II)	C4	47	
3.1.7	To carry out evaluation studies for the performance of WUAs in non-IIP areas, WUA federations and water boards.	✓		IV (Phase II)	C4 Study	47 59	Report 59: "IMT-Proposed Framework for Monitoring and Evaluation". July 2002
3.1.8	To help MPWWR develop replication plans for WUAs in non-IIP areas, WUA federations and water boards.	✓		IV (Phase II)	C4	47	

Activity No. 3.2: Localized Planning and Decision-making							
Task No.	**Task Description**	**Accomplished**		**Reference**			**Notes**
		Yes	**No.**	**Tranch No.**	**Benchmark No**	**Deliverable (Report No.)**	
3.2.1	To carry out an assessment and evaluation of the present planning, operation and maintenance procedures of the Nile system, at the national, directorate and district levels.	✓		IV *IV* (Phase I)	C2 C4	46 36	• Report 36: "MWRI Policy on Irrigation Management Transfer (Phase I)" December 2000.

TABLE 3-1 (CONTINUED)

Activity No. 3.2: Localized Planning and Decision-making							
Task No.	**Task Description**	**Accomplished**		**Reference**			**Notes**
		Yes	**No.**	**Tranch No.**	**Benchmark No**	**Deliverable (Report No.)**	
3.2.2	To develop recommendations for better system management, operation and maintenance via decentralization at the district level, avoiding any constraints will be addressed and solutions will be proposed.	✓		IV (Phase II)	C5	48	• Report 48: "Revised Law 12/1984 on Water Resources and its Executive Regulation" November 2001
3.2.3	To help MPWWR organize and facilitate a workshop to discuss the findings of the study and the recommendations. The workshop is to be attended by MPWWR senior officials, directors of the three pilot areas, district engineers in these areas as well as other selected director and district engineers.	✓		V IV (Phase I)	C1 C4	49 36	
3.2.4	To help MWWR apply the findings of this workshop for the irrigation districts of the three pilot areas.	✓		V	C2	50	• Report 50: "Public Participation in Decision Making" December 2001.

TABLE 3-2

TASK ORDER MODIFICATION SCOPE OF WORK
ASSESSMENT OF ACCOMPLISHMENT

Modification Number	Task Description	Accomplished		Reference	Notes
		Yes	No		
3	Water Resources Policy Reform Benchmarks	✓		Reports 34, 35, 36, 45, 49, 50 and 51	Seven policies adopted subsequent to Modification No. 3
3	Public Awareness and KAP Survey	✓		Report 54	
3	APRP Impact Assessment	✓		Report 58	
6	Study of Market Based Instruments	✓		Report 57	
7	Conduct up to three studies related to Institutionalizing water policy adjustments	✓		Reports 59, 60, 61 and 62	Four studies actually conducted
7	Design and implement a project completion conference	✓		National Conference on Water Policy held in Alexandria during 24/25 June	
7	Conduct two analytical studies identifying policy areas leading to improved water resources management	✓		Reports 64 and 65	

4. Program Impacts

4.1 General

Policy reform is a long process in any society. Even when reform is formally adopted, inertia in the economic and political system often creates long lags before measurable impacts are observed. For a river system like the Nile, changes in operations and policies in scattered locations may not have measurable consequences for the system as a whole. Therefore, very few significant quantifiable impacts on the physical or economic systems in Egypt as a result of WPRP could be discerned at the time of program termination. Only long-term monitoring and evaluation programs will be able to detect these kinds of impacts.

Given the paucity of data regarding general impacts on the physical and economic systems, an alternative approach was taken. A set of proposed specific measures of accomplishment, consistent with both the major results and the objectives of the task order, was developed in an effort to assess impacts. The specific measures used in assessing impacts are as follows:

- Agricultural production and irrigation efficiency (agricultural production per unit of water)
- Privatization / participatory management (private water user associations).
- Water quantity management.
- Water quality management.
- Institutional reforms.

4.2 Agricultural Production and Irrigation Efficiency

Two of the most water-consuming crops in Egypt are rice and sugarcane. These crops were specifically identified in the scope of work for the EPIQ program as targets for improved water use. Two activities were developed and implemented jointly with MALR to reduce water use and increase productivity in both those crops. For rice, short duration rice varieties that require from 120 to 130 days to mature were substituted for long duration varieties, which require about 160 days. The intent was to investigate the impact on water use and productivity. The rice water rotations (4 days on and 5 days off) were changed to the traditional rotation (5 days on and 10 days off) for the last 30 – 40 days of the traditional rice-growing season.

For sugarcane, MWRI and MALR jointly investigated the application of improved irrigation techniques in the form of laser leveling and gated pipe delivery of water to reduce the water required to irrigate fields compared to traditional flood irrigation. It was expected that these improvements would not only control over-application but they would increase yields in two ways. The area of cultivation could be increased by reducing the number and size of open field ditches, and reducing water pooling in low areas would increase productivity and reduce water logging.

The results from the rice and sugarcane activities are:

For rice:

- All (100%) of the branch canals in rice growing areas had changed from the traditional rice water rotation to the short duration water rotation by the end of August, 2001, reducing the amount of applied water to irrigate the rice crop by approximately 25%. Overall applied water reduction in the pilot areas for the May through September growing season was estimated at about 13%, taking into account cropping during September after the rotation is changed.

- Eighty-three (83) percent of all rice grown was a short duration variety in 2000, an increase of 51.7% from 1997. An estimated 91% of all rice grown was a short duration variety in 2001.

- Productivity of rice per feddan increased from 3.54 metric tons per feddan (mt/fd) in 1997 to 3.82 mt/fd in 2000, a gain of about 8%, primarily due to the higher yielding short duration varieties.

- Rice productivity per unit of water applied rose approximately 25% over the period, due primarily to the adoption of short duration varieties and the reduction in applied water (calculated from the above data).

For sugarcane:

- 1,095 feddans of sugarcane were under improved surface irrigation in 2002, an increase of 982 feddans from 1998, the beginning of the pilot policy implementation.
- Yield of sugar cane under improved irrigation increased between 4 and 7 mt/fd, or about 25%, although rather wide ranges of productivity changes were reported (from 2 to 10 mt/fd).
- Applied water was reduced by 15 to 20 percent on most of the sugarcane pilot areas.
- In May 2002, the Minister of MWRI and the Minister of Military Production signed a protocol for joint cooperation to produce irrigation inputs – pumps and gated pipes – for 2,000 feddans of sugarcane, at a cost of 12 million LE. This protocol will result in low cost irrigation inputs that are expected to result in an increase in sugarcane areas under improved surface irrigation in the future.

4.3 Privatization/Participatory Management

Privatization of irrigation systems requires an organization capable of financing, managing and maintaining those systems. Many water user associations at the mesqa level have been organized in Egypt in association with irrigation improvement projects, but the transfer of management of tertiary or secondary canals will require associations of larger scope and capacity.

EPIQ and personnel from the IAS worked together to create Branch Canal Water User Associations (BCWUAs) in pilots that demonstrated both the feasibility and the requirements for formation of those associations. The next step was to use the BCWUA model to develop irrigation management transfer mechanisms and to apply them to pilot areas. The achievements are as follows:

- Inclusion of Articles 33 and 34 in the revision of Law 12/1984 which permits the formation of water user associations and private sector management entities at all levels of the irrigation system
- A Ministerial announcement that Water User Associations can be formed in non-IIP areas
- The number of farmers that had knowledge of water user associations increased from 3% to 6% from 1998 to 2001. However, once the concept was explained to those who had no knowledge, 75% of farmers indicated a willingness to join a water user association if it were formed in their area.
- Nine initial Branch Canal Water User Associations have been formed in the Nile Basin by Ministerial decree. Four of these BCWUAs were formed as a part of a pilot program to demonstrate the concept at a level higher than the mesqa level, four are a part of the Irrigation Management Transfer activities and are presently in pilot stages, and one (under the title of a Water Users Federation of Water User Unions [WUUs]) was formed in free-flowing deep groundwater area. The area covered by each association varied between 2,000 and 12,000 feddans, with an average of about 7,000 feddans.
- MWRI Ministerial and Governorate decrees establishing the policy for irrigation management transfer.
- Memoranda of understanding between MWRI and BCWUAs regarding IMT signed.
- MWRI has committed LE 4.8 million for rehabilitation of the IMT pilot areas canal system prior to full transfer to the BCWUA in accordance with the terms defined in the MOU.
- The pilot program in public participation resulted in a significant portion of farmers reporting the following:

    - Reduction in delivery problems at the tail end of both pilot canals
    - Reduction in number of complaints related to cleaning and maintenance
    - Recommendations by farmers to expand the pilot

- Inclusion of Articles 34 and 117 on cost sharing as a part of the revision of Law 12/1984.
- A Ministerial decree requiring the MWRI to develop and implement plans for public participation in decision making, following the procedures used in the WPRP pilot program.
- A 10 percent increase in farmer willingness to share costs for improvements in the canal and drainage systems was reported in the KAP survey.

- Increase in awareness of MWRI activities at the District level by stakeholders, particularly farmers
- A manual for implementing public participation activities (English and Arabic versions) was provided by EPIQ and adopted by the MWRI [WPAU/EPIQ/WPRP Manual for Public Participation; Ministerial Decree No. 432/2001]
- Both farmers and the Undersecretary of Irrigation indicated a desire to see public participation extended in both area covered and in the number of issues considered
- Three WUUs for wells established in deep groundwater areas in Farafra in Tranche III. Six additional WUUs established after completion of the Tranche III benchmark .

4.4 Water Quantity Management

The water quantity management activities were targeted at the objective of decentralizing decision making in the MWRI. There were three distinct activities contributing to that goal. These were: (1) developing an information transfer system that will provide better water management in the short term, and be a basis for demand management in the longer term; (2) using volumetric releases and telemetry capability in the main system management; and (3) creating a pilot in which surface water, drainage, and groundwater is managed in an integrated water management district. Note that all three objectives relate to volumetric control of water at the Directorate, Inspectorate, and District levels.

Although the Irrigation Improvement Project (IIP) was considered in one early benchmark, it was not targeted for implementation by the EPIQ project. Therefore, the impacts of WPRP on IIP are expected to be limited. The installation of telemetry equipment in the Nile irrigation system took place under the Main System Management (MSM) program, which was administered separately from the EPIQ project until it terminated in 1997. MSM activities under WPRP from 1998 to 2000 included the calibration of flow measurements at the Directorate and Inspectorate level with the objective of a switch from water level releases to volumetric releases using telemetry.

The three activities identified the specific actions necessary to achieve the goals of water quantity management. For matching supply and demand, data collection and computer software were developed to permit agricultural and irrigation personnel to exchange information on cropping patterns and water availability at the District level. The telemetry and volumetric delivery required the calibration of water levels to volumetric flows at each of 53 points of diversion between directorates and 113 points of division between Districts. Integrated water management requires substantial support, since it includes realignment of the four water districts (Irrigation, Drainage, Mechanical [pumped water] and Groundwater), as well as a restructuring of personnel and financial functions. Because time was limited, pilot integrated districts could only be formed during the project and implementation could only be initiated. The following are the measures of achievement of these APRP/WPRP activities:

- Approximately 2.94 million feddans (39% of the total 7.95 million feddans) are covered by the fully implemented MISD program at present and expansion of the program is proceeding at a rapid rate.

- The pilot MISD studies showed potential significant decreases in the over- and under-supply of water after the full application of the MISD program.
- Farmer complaints in the pilot areas have fallen by an average of 44%, from 137 per year to 60. The minimum decrease in complaints was 15% in the East Isna pilot (from an average of 44 per year from 1995 to 1998 to 29 per year from 1999 to 2001). The maximum decrease in complaints was 77% in the Abou Hummos pilot (from an average of 57 per year from 1995 to 1998 to an average of 13 per year from 1999 to 2001).
- All 53-division points between Directorates are calibrated and using volumetric distribution.
- Fifteen Directorates have completed the process of calibrating water level releases to determine volumetric flows at 113 locations that have telemetry capability. Water deliveries are being made on a volumetric basis at the locations.
- A Ministerial decree stating that water distribution for all locations that separate districts within all Directorates will be based on volumetric flows as well as water levels beginning July 1, 2002.
- A policy that all new wells implemented by the MWRI will be controlled in the Farafra area. All wells in the investor area are capped.
- A Ministerial decree establishing two pilot areas for integrated water management.

4.5 Water Quality Management

Water quality is a very serious problem in Egypt. Municipal, industrial and agricultural effluent have made drainage water so polluted in some areas that it cannot be mixed with fresh water for use in the irrigation of consumable crops. Seven of the 23 Ministry mixing stations in the Delta have been closed as a result. The WPRP undertook several initiatives related to water quality management and environmental control. There are several ministries that have improving water quality as a target, including MWRI, the Ministry of Health and Population (MOHP), Ministry of State for Environmental Affairs (MEA), and MALR, all of whom were involved in discussions led by WPRP.

Several different working groups associated with the water quality issue were formed. Initially, the primary activity of the WPRP was a pilot for the use of drainage water for irrigation before municipal and industrial effluents precluded even mixing. The potential for controlling urban wastewater became the second area of interest. Finally, the revision of environmental law and the inclusion of an environmental impact assessment was determined to be a critical policy for water quality maintenance. The WPRP accomplishments in water quality management are:

- The Minister has allocated enough funds to install intermediate water reuse on at least 20 sites, based on the pilot results on the Bahr Bagar.
- Revisions of Law 48 of 1982 have been approved by the Steering Committee.
- The Minister signed a policy statement indicating that the MWRI will "integrate the environmental dimension to all activities of the MWRI…beginning 1 January 2002".

- A source book for EIA procedures was completed and provided to the MWRI in Arabic and English.
- Ministry adoption of 11 policy reforms for urban wastewater management.
- A prioritization for urban wastewater treatment facility construction and improvement was developed and adopted by the MWRI and NOPWASD.

4.6 Institutional Reform

Almost all of the benchmarks and measures of accomplishment are some form of institutional reform. This over-arching indicator reflects the MWRI official recognition of that reform through its actions to establish offices within the ministry, have staff participate in training, by conducting workshops to inform both professionals and the public, and change the laws and regulations under which it operates. Moreover, the WPRP itself has had recognizable impacts on other donors' existing efforts and plans for the future.

The institutional reforms that were undertaken by MWRI with WPRP technical assistance were usually a part of one of the other specific categories. The specific measures addressed below, however, are more reflective of the increasing capacity of the MWRI to make and create policy reforms now and in the future. Within this category are included changes in the legal environment, creation of administrative agencies, and training. The specific accomplishments of the WPRP are:

- A Ministerial decree establishing the Central Department and the Governorate Directorates (Upper and Lower Egypt) of the IAS.
- The IAS is now a recognized department of the MWRI, and has line item budget allocation.
- Ministerial letter of transmittal of the revised Law 12 to the People's Assembly dated 12 December 2001.
- Adoption of the management transfers strategy.
- Adoption of the Integrated Water Management District model.
- MISD inter-ministry coordinating groups and committees.
- Nine training study tours under DT2 involving 125 individuals to the United States, Jordan, Mexico and Turkey.
- 113 Workshops or training meetings on specific water management problems or approaches involving approximately 3,000 individuals.
- Established bases on which other donors developed and expanded programs

5. Staff Resources Utilized

The EPIQ WPRP team consisted of long-term resident staff (both expatriate and local), short-term technical staff (both expatriate and local), and local support staff. Expatriate staff were provided by Winrock Int. and International Resources Group while the local staff was provided by Nile Consultants. In addition, the USAID funded Water Policy Advisory Unit supplied technical staff to supplement the EPIQ staff as needed.

Table 5-1 identifies the expatriate staff utilized throughout the project duration while Tables 5-2 and 5-3 provide the same data for local staff.

TABLE 5-1 EXPATRIATE STAFF UTILIZATION

POSITION	NAME	WORKDAYS USED
Long Term Resident Staff		
Chief of Party	John Priest	54
Chief of Party	Jeffery Frederick	634
Chief of Party	Andrew Tczap	423
Sr. Irrigation Eng.	Thomas Ley	418
Water Research Mgt. Specialist	Zhongping Zhu	1,003
Water Resource Economist	Dennis Wichlen	108
Water Resource Economist	John Keith	492
Water Resource Economist	Adrian Hutchens	352
Sr. Irrigation & Drainage Eng.	Larry King	442
Sr. Sociologist	Robern Cardinalli	1,122
Administrator	Thomas Burola	460
Administrator/Training Coord.	Gregory Olson	593
Short Term Technical Assistance:	Various	1,201

TABLE 5-2 LOCAL PROFESSIONAL STAFF UTILIZATION

POSITION	NAME	WORKDAYS USED
Long Term Resident Staff:		
Acting Chief of Party	Mohamed Allam	112
Co-Team Leader	Ahmed Fakhry Khattab	1,029
Water Research Mgt. Specialist	Ibrahim Elassiouti	1,044
Hydrogeologist	Saleh Nour	424
Sr. Irrigation Eng.	Ragab Abdel Azim	916
Sr. Economist	Sayed Mahdy	873
Short Term Tech Assistance	Various	4,213

TABLE 5-3 LOCAL SUPPORT STAFF UTILIZATION

POSITION	NAME	PERIOD EMPLOYED
Executive Secretary	Faoz El Mona Fouad	Sept. 1997 – Sept. 2002
Tech. Secretary	Amira Serry	Dec. 1997 – May 2000
Admin. Secretary	Mona Zakhary	June 1998 – Oct. 2001
Secretary	Susan Nemr	May 1999 – July 1999
Tech Secretary	Hala Hegazy	March 2001 – March 2002
Secretary	Zeinab Hassan	Sept. 2001 – Sept. 2002
Admin Assistance	Karim Abdel Razik	Oct. 1997 - Oct. 1998
Financial Assistance	Jacqueline Rizk	Oct. 1998 – Sept. 1999
Accountant	Nesreen Aly	Jan. 2000 – March 2000
Accountant	Nermeen Mokhtar	March 2000 – Sept. 2002
Admin. Assistance	Mahmoud Saeed	Feb. 2001 – Sept. 2002
Driver	Saeed Kheir	Feb. 1998 – Sept. 2002
Driver	Adel Hassan	Feb. 1998 – July 2002
Driver	Sherif Sayed	Oct. 1999 – Jan. 2000
Driver	Yasser Aly	Jan. 2000 – Aug. 2002
Office Orderly	Ahmed Hassan	Oct. 1997- Sept. 2001
Office Orderly	Khaled Mokhtar	Sept. 1998 – Sept. 2002
Office Orderly	Islam Aly	Aug. 2001 – Aug. 2002

6. Financial Resources Utilized

6.1 General

The EPIQ Task Order 807 contract was entered into on 7 May 1997 in the amount of $7,999,054 and with a termination date of 30 September 1999. The original task order was amended seven times extending the final completion date to 30 September 2002 and increasing the total obligated amount to $11,181,010. This amount consists of $7,340,866 for Labor and $3,840,174 for Other Direct Costs.

Based on actual expenditures through 31 August 2002 plus an estimate of September expenditures, the total amount expanded under EPIQ Task Order 807 is $11,030,953. Therefore, the total budget was under spent by $150,057.

Figure 6-1 depicts the total cumulative expenditure versus time in graphical form. Figure 6-2 depicts the cumulative expenditure with time for the two budget components; Labor and Non-Labor (Other Direct Costs). The total budget surplus of $150,057 consists of $100,696 of unspent labor budget and $49,361 of unspent non-labor budget.

Figure 6-1: Cumulative Total Expenditure During Life of Project

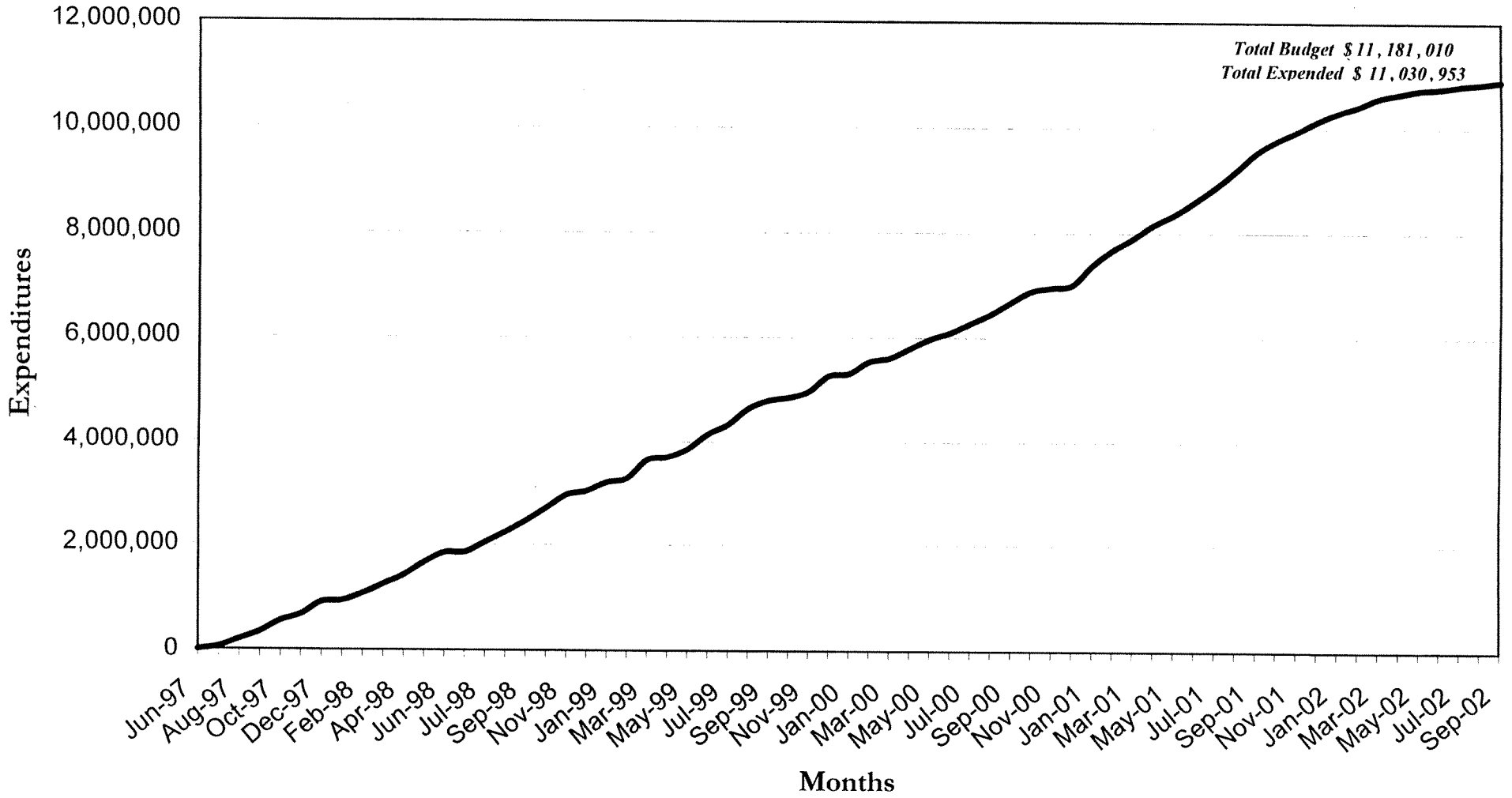
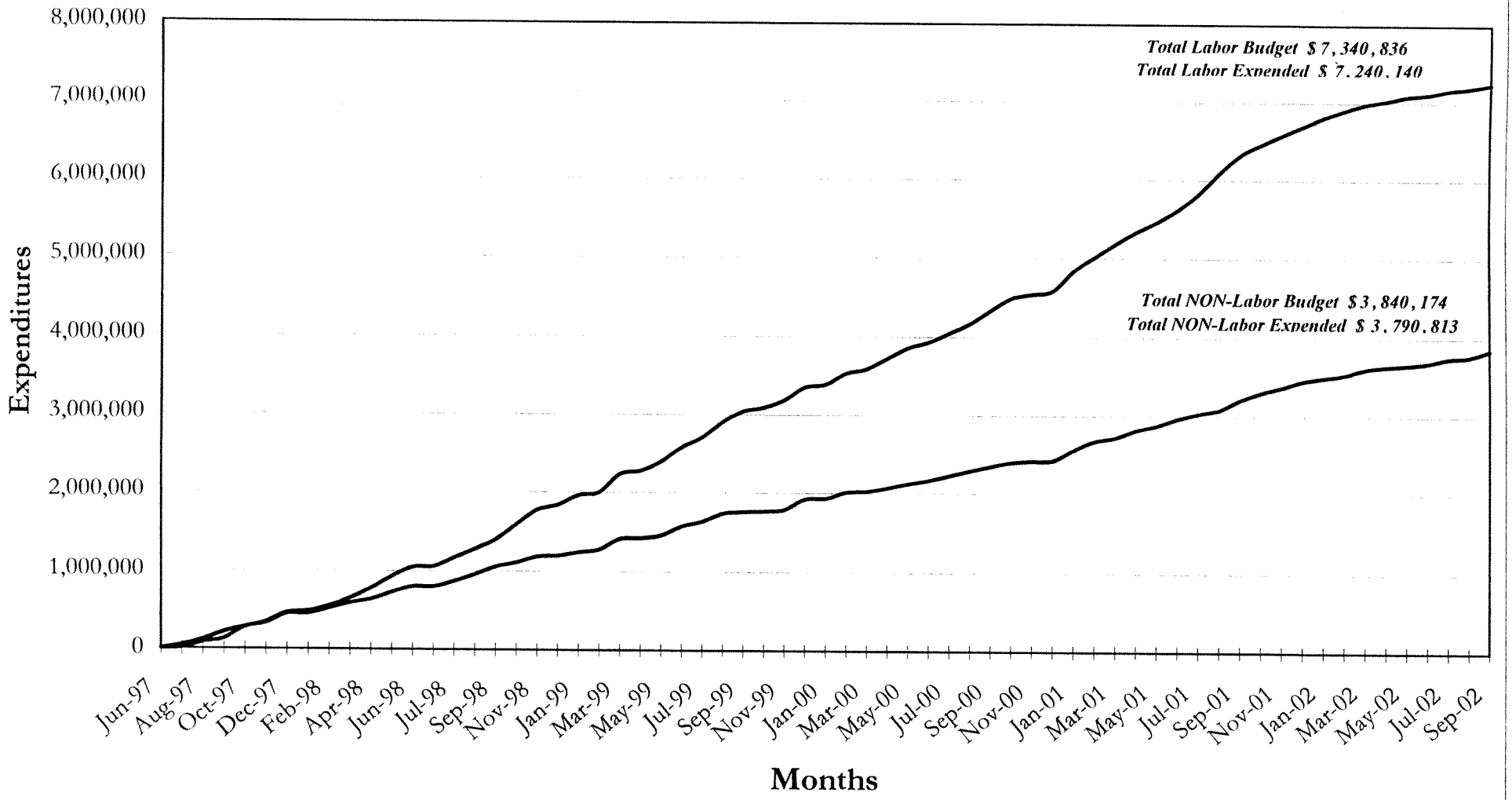


Figure 6-2: Cumulative Labor and Non Labor Expenditure During Life of Project



7. Problems Encountered & Lessons Learned

7.1 Problems Encountered

No major problems were encountered during the contract period that adversely affected program execution. Minor disruptions and distractions occurred but were dealt with and progress was not significantly affected. Several of the most noteworthy will be mentioned in order to provide a complete account of contract execution activities.

- Start-up. Several disruptions were experienced during project startup. USAID was delayed in awarding the contract due to having initiated negotiations using one contracting mechanism and then switching to a different mechanism. The MOU for the Tranche I benchmarks was signed while contract negotiations were underway resulting in assigning implementation of Tranche I to MWRI and WPAU with no TA support.

  Once negotiation of Task Order 807 was finalized, the TA contractor mobilized staff in a timely manner. However, the Chief of Party departed the project several months after mobilization and the project functioned with an Acting Chief of Party of almost five months.

- Contract Format. The contract completion date was amended four times. The TA contractor could only make commitments to project staff to the contract completion date in force at the time of mobilizing staff. This had several impacts on project staffing. In some cases, highly qualified candidates refused to accept vacant positions due to the "short duration" of the assignment (no guarantee that an option period would be approved). In two other cases, individuals with leadership roles in benchmark implementation activities left the project prior to completion of the activity. Despite the fact that the project completion date was extended, they decided to move on to new long-term assignments rather than extend for a short period to complete the benchmark activity.

- Four of the seven contract modifications attributable to the contract format (base period with short duration option periods) required budget and scope negotiations. These negotiations required input from the field staff resulting in distractions and minor disruptions to project activities.

7.2 Lessons Learned

Identification of lessons learned from any endeavor are extremely valuable if prepared objectively and factually. WPRP has attained a number of highly significant achievements, fallen short of fully capitalizing on achievements in some cases, and learned how to overcome some obstacles that commonly plague policy reform programs. The following lessons learned are the result of an attempt to objectively identify items worthy of consideration when designing and/or implementing future policy reform programs.

- Stakeholders Truly Desire Participation. Stakeholders and the public contributed beneficially and expressed sincere gratitude when given the opportunity to participate in activities undertaken by the WPRP. Participatory management has been recognized as beneficial, in fact necessary by numerous institutions worldwide. Despite that fact, there remain many governmental decision makers who believe farmers, stakeholders and the public are not sufficiently knowledgeable to participate in the process of making "important" decisions. The WPRP experience is that stakeholder participation is generally beneficial and worth the time and resources required to achieve it.
- Implementation Support is Necessary. Successful policy reform is built on successful outputs. Once a new policy is adopted, implementation with demonstrated benefits to stakeholders and the government will ensure sustainability. Therefore, implementation should be aggressively pursued and if necessary, supported by the donor that supported adopted of the reform until measurable success has been achieved.
- Identify and Support Policy Reform Champions. A "Champion" is defined as a senor official who is willing to put resources (including his time) into a policy reform and take certain risks to implement it. The WPRP reforms where a champion came forward achieved success more quickly and more completely than policy reforms where no champion existed.
- The Value of Pilot Programs. Pilot programs were used in WPRP to test policy reforms and define their final form. The use of pilot programs proved very useful in demonstrating the potential benefits and in justifying adoption to decision makers.
- Direct Participation of GOE Officials. The process adopted by WPRP included formation of Working Groups to study, analyze and formulate policies. These groups were composed of EPIQ TA team members, MWRI officials and, where appropriate, officials of other Ministries and stakeholders. The group members were required to actively participant and contribute to a number of group outputs; they were not merely committee members invited to attend meetings. Therefore, being a member of the group required a significant investment of time. In light of the GOE officials' heavy schedules, and in order to achieve effective participation, an incentive program was designed whereby GOE officials participated after normal working hours and on weekends (Thursday) and were compensated for their efforts. The benefits received from the participation of these GOE officials far outweighed the cost.

- Linkage Between Participating Parties. Effective and efficient linkages between the TA Team, the host government and USAID are critical to success. In the case of WPRP, the Water Policy Advisory Unit was formed by MWRI to function as an advisory body to the Minister of Water Resources and Irrigation on policy and also to function as a counterpart to the TA Team. In addition, MWRI established a WPRP Steering Committee consisting of the Head of each MWRI Department with the Head of WPAU as Chairman. WPAU provided an effective link to the highest levels in MWRI and the Steering Committee ensured that all Department Heads in MWRI were fully appraised on WPRP activities. The existence of these linkages to the Ministry is considered a major contributor to the success of the program.

APPENDIX A

LIST OF WPRP REPORTS

No.	NAME	DATE
1	APRP Tranche II Policy Benchmark Background Documentation	August 1997
2	Project Implementation Plan	October 1997
3	Annual Technical Progress Report (7 May-31 Dec 1997)	January 1998
4	Annual Work Plan (Jan.-Dec 1998)	April 1998
5	Quarterly Report (Jan.-March 1998)	April 1998
6	Assessment of Egypt's Rice Policy and Strategy for Water Management	June 1998
7	Egypt's Irrigation Improvement Program I. Performance Assessment II. Proposed National Strategy	June 1998
8	National Policy for Drainage Water Reuse	June 1998
9	Water User Association Formation Outside the Irrigation Improvement Program Area	June 1998
10	Hydrogeology of Deep Aquifers in the Western Desert and Sinai	August 1998
11	Quarterly Report (April-June 1998)	August 1998
12	WRRP Tranche III Benchmark Work Plan	November 1998
13	Quarterly Report (July-September 1998)	December 1998
14	Quarterly Report (October-December 1998)	January 1999
15	Quarterly Report (January-March 1999)	May 1999
16	Policies and Procedures for Free-Flowing Groundwater Management in Egypt's Western Desert	June 1999
17	Establishment of Branch Canal Water User Associations in the Egyptian Irrigation System	June 1999
18	Institutionalization of the Irrigation Advisory Service in the Ministry of Public Works and Water Resources	June 1999
19	Water Saving Through Utilization of Short Duration Rice Varieties: National Policy Package, 1999-2000	June 1999
20	Intermediate Drainage Reuse in Bahr Bagar Drain Basin	June 1999
21	Revision of Law 48 of 1982 for the Protection of the Nile River and its Waterways from Pollution	June 1999
22	Short Duration Rice Variety Pilot Program Results	July 1999
23	Quarterly Report (April– June 1999)	August 1999
24	Tranche IV Water Policy Benchmark Implementation Plan (FY 99/00)	November 1999
25	Quarterly Report (July - September 1999)	November 1999
26	Rice Water Use Policy Phase1: Water Monitoring and Evaluation Program with Appendices	December 1999
27	Review of the Agricultural Sector Model of Egypt (ASME97): 1999 Version	December 1999
28	Quarterly Report (October-December 1999)	January 2000
29	Annual Report (January – December 1999)	February 2000
30	Quarterly Report (January- March 2000)	May 2000

No.	NAME	DATE
31	Quarterly Report (April- June 2000)	August 2000
32	Quarterly Report (July-September 2000)	
33	Reducing Mismatch of Irrigation Deliveries, Phase I: Pilot Program	November 2000
34	Policies and Procedures for Improved Urban Wastewater Discharge and Reuse	November 2000
35	Water Management at the Directorate Level	November 2000
36	MWRI Policy on Irrigation Management Transfer (Phase I)	December 2000
37	Analysis and Review of Modifications in Law 12 of 1984 on Irrigation and Drainage	December 2000
38	Quarterly Report (October-December 2000)	May 2001
39	Irrigation Management Transfer Public Awareness Campaign Phase 1: Strategy	June 2001
40	Quarterly Report (January-March 2001)	July 2001
41	Quarterly Report (April-June 2001)	August 2001
42	IMT Public Awareness Campaign: Phase II	
43	PPDM User's Manual	October 2001
44	Quarterly Report (July – Sept 2001)	Nov. 2001
45	Matching Irrigation Supplies and Demands	Nov. 2001
45 a	Matching Irrigation Supplies and Demands (Pilot District Data Report) Abou Hummus District	February 2002
45b	Matching Irrigation Supplies and Demands (Pilot District Data Report) Abou Kebir District	February 2002
45c	Matching Irrigation Supplies and Demands (Pilot District Data Report) Beba District	February 2002
45d	Matching Irrigation Supplies and Demands (Pilot District Data Report) East Esna District	February 2002
45e	Matching Irrigation Supplies and Demands (Pilot District Data Report) Luxor District	February 2002
46	Application of Policies and Procedures for Improved Urban Wastewater Discharge and Reuse with Appendices	Nov. 2001
47	MWRI Policy on Irrigation Management Transfer with Appendices	Dec. 2001
48	Revised Law 12 of 1984 on Water Resources and its Executive Regulation with Appendices	Nov. 2001
49	Integrated Water Management District with Appendices	Dec. 2001
50	Public Participation in Decision-Making with Appendices	Dec. 2001

No.	NAME	DATE
51	Environmental Management at MWRI with Appendices	Dec. 2001
52	Quarterly Report (October-December 2001)	Jan. 2002
53	Annual Report 2001	March 2002
54	Knowledge, Attitudes and Practices of Egyptian Farmers towards Water Resources, National Survey 2001	March 2002
55	Matching Irrigation Supplies and Demands – Potential Impact on Water Conservation	March 2002
56	Quarterly Report (January-March 2002)	April 2002
57	Economic Instruments for Improved Water Resources Management in Egypt	April 2002
58	Assessment of Impacts of the Water Policy Reform Project	*July 2002*
59	IMT – Proposed Framework for Monitoring & Evaluation	July 2002
60	Public Participation Policy Implementation Study	August 2002
61	IMT – Transfer of Assets and Infrastructure: A Review and Recommendation	May 2002
62	IWMD – Plan for Pilot Implementation	September 2002
63	Quarterly Report (April – June 2002)	June 2002
64	Survey of Nile System Pollution Sources	September 2002
65	Policy Review and Integration Study	September 2002
66	Final Report	September 2002

APPENDIX B
APRP WATER POLICY REFORM PROGRAM

BENCHMARK DESCRIPTION BY TRANCHE

TR.	BENCHMARK	VERIFICATION INDICATORS	OUTCOME
II	C4. The GOE (MPWWR and MALR jointly) will establish a strategy for the optimal water use for rice production.	1. Development of a strategy regarding water use on rice, which is embodied in a document giving the objectives of the strategy, the background information considered, and a statement of the proposed new policies. 2. The strategy is presented to both Ministers.	Fully Accomplished
	C5. The GOE (MPWWR and MALR jointly) will establish a strategy for the optimal water use for sugarcane production.	1. Development of a strategy regarding water use on sugarcane, which is embodied in a document giving the objectives of the strategy, the background information considered, and a statement of the proposed new policies. 2. The strategy is presented to both Ministers.	Fully Accomplished
	C6. The GOE will develop a policy to allow the formation of water user associations in areas that have not participated in the Irrigation Improvement Program, and begin to promote such associations.	1. MPWWR develops a policy to allow the formation of water user associations in areas that have not participated in the Irrigation Improvement Program. Evidence of a policy is a document specifying the background to the development of the policy, the objectives of the policy, and the proposed new policies. 2. The strategy is presented to the Minister of Public Works and Water Resources. 3. MPWWR staff promotes water user associations by meeting with farmers and explaining the benefits of, and procedures for establishing, water user associations.	Fully Accomplished

TR.	BENCHMARK	VERIFICATION INDICATORS	OUTCOME
	C7. The GOE will develop a national strategy for improving water use efficiency and agricultural productivity through irrigation improvement projects. This strategy will include priorities for implementing the desired improvements.	1. Development of a strategy for improving water use efficiency and agricultural productivity through irrigation improvement projects. Evidence of a strategy is a document giving the objectives of the strategy, the background information considered, and a statement of the proposed new policies. The strategy will include priorities for implementing the desired improvements. 2. The strategy is presented to the Minister of Public Works and Water Resources	Fully Accomplished
	C8. The GOE will develop and approve new policies, regulations, and criteria to promote drainage water reuse with appropriate incentives and technical support.	1. MPWWR develops a policy to promote drainage water reuse. Evidence of a policy is a document specifying the background to the development of the policy, the objectives of the policy, and the proposed new policy (s). The policy will include the provision of appropriate incentives and technical support. 2. The Steering Committee for Coordination and Monitoring of Water Resources Development through Agricultural Policies Reform approves the policy. 3. MPWWR identifies procedures required for the application of the policy.	Fully Accomplished
III	C1. GOE (MPWWR) will implement policies and procedures to shift from distributing Nile River water based on water levels to distributing water based on water volumes using the Main System Management Telemetry System at Main Canal intakes, barrages on the River Nile and division points between Directorates for enhanced irrigation operations and decision-making.	1. Calibrate regulators located on the River Nile, at intakes to main canals and at points dividing Directorates where telemetry exists (53 regulators) and enter the calibration relationships into the telemetry system software to achieve volumetric flow measurements at these locations. 2. MPWWR approve a policy that water management will be based on volumetric flow and that telemetry data will be used for water management decision at points where telemetry stations exist.	Fully Accomplished

TR.	BENCHMARK	VERIFICATION INDICATORS	OUTCOME
	C2. The GOE (MPWWR) will adopt policies and procedures for reducing water loss and land degradation due to improper operation and management of free-flowing groundwater in the reclaimed areas of the Western Desert.	1. MPWWR will approve a policy package for free flowing groundwater in reclaimed areas. 2. Initiated the formation of a groundwater user association in a selected reclaimed area in the western Desert.	Fully Accomplished
	C3. GOE (MPWWR) will decree a policy and initiate an action program for formation of water user organizations at the distributaries and branch canal levels.	1. A Ministerial decree allowing the formation of water user organizations above the mesqa level. 2. Process Documentation reports that organizations were formed on two branch canals (one in an IIP and one in a non-IIP community). 3. A cost sharing plan prepared for two branch canals in consultation with the stakeholders.	Fully Accomplished
	C4. GOE (MPWWR) will institutionalize an Irrigation Advisory and Support Service in the MPWWR.	1. Ministerial decree establishing the Irrigation Advisory and Support Services Central Directorate under the MPWWR. 2. Submittal of necessary documents to the Central Authority for Organization and Management to establish an Irrigation Advisory and Support Services Central Directorate.	Fully Accomplished
	C5. GOE (MPWWR and MALR jointly) will designate two areas of private commercial sugarcane growers and promote improved sugarcane water management efficiency in Upper Egypt.	1. Improved irrigation technologies installed, including laser leveling and gated pipe delivery systems; water application monitoring program established; and training provided to farmers in the use of improved irrigation methods in two pilot sugar cane areas in Upper Egypt.	Fully Accomplished
	C6. GOE (MPWWR and MALE jointly) will adopt policies for the substitution of short duration rice varieties for long duration rice varieties among private commercial growers and for changing water scheduling to achieve optimal use of water for rice production.	Approval by the two Ministers (MPWWR and MALR) of a national policy package, including a timetable for adoption, provision of seeds, farmer training, and changes in water scheduling, for the substitution of short duration rice varieties for long duration rice varieties.	Fully Accomplished

TR.	BENCHMARK	VERIFICATION INDICATORS	OUTCOME
	C7. GOE (MPWWR) will establish an intermediate drainage water reuse program for the Bahr Bagar Drain as a model for other areas.	Establishment of an intermediate drainage reuse program for Bahr Bagar Drain in at least one representative district to include preparation of an operations plan and tender documents for the pumps.	Fully Accomplished
	C8. GOE (MPWWR) will revise Law 48 of 1982 governing water quality management to more effectively control discharge of wastes and wastewater into the Nile and its waterways.	Adraft revision of Law 48 of 1982 and its by-laws to be presented to the Ministers.	Fully Accomplished
IV	C1. The GOE (MWRI and MALR jointly) will establish a system that improves the flow of real-time information between the Ministries with respect to irrigation demands and supplies.	1. A pilot program will be initiated by the MWRI and MALR in one irrigation district in each of two governorates for mutual information transfer for cropping patterns and calendars and water supplies by December 31,2000. 2. A joint MALR/MWRI national policy for the application of the pilot program will be approved by the two Ministries by December 31, 2001.	Fully Accomplished
	C2. The GOE (MWRI) will adopt polices for improves management of discharge and reuse of urban wastewater in agricultural drains.	1. The MWRI will approve a policy and procedures for management and reusing urban wastewater discharges in agricultural drains and submit them to the Cabinet by 31 December 2000. 2. The MWRI in coordination with other ministries and authorities will apply the policy and procedures in one selected pilot area in the Delta by 31 December 2001.	Fully Accomplished
	C3. The GOE (MPWWR) will establish a policy for allocating, distributing, and controlling water on a volumetric basis at the directorate and inspectorate levels.	1. A pilot program will be conducted by MPWWR in two directorates by 31 December 2000, to provide the basis for implementing volume-based water management policy at the directorate and inspectorate levels. 2. A policy document that includes a plan and instructions for volume-based water management in the Nile Irrigation System will be approved by MPWWR and distributed to all directorates by 31 December 2000.	Fully Accomplished
	C4. The GOE (MWRI) will adopt a policy and strategy for transferring management of selected sections of the irrigation system to stakeholders and/or the private sector.	1. The MWRI will develop a policy on irrigation management transfer, to include a plan for phased implementation and to identify legal requirements, by 31 December 2000. 2. Application of the policy will be initiated in tow selected pilot areas by 31 December 2001.	Fully Accomplished

TR.	BENCHMARK	VERIFICATION INDICATORS	OUTCOME
	C5. The GOE will prepare revisions to Law 12 of 1984 on irrigation and drainage and its supplementary laws, to improve effective water resource management.	1. MWRI will complete an analysis and review with stakeholder's participation, of the modification needed for law 12 of 1984 on irrigation and drainage and its supplementary law by 31 December 2000. 2. A draft revision of law 12 of 1984 on irrigation and drainage and its supplementary laws will be approved by MWRI by 31 December 2001.	Fully Accomplished
V	C1. The GOE (MWRI) will adopt a policy to integrate all water management functions at the district to support decentralized management.	1. MWRI will approve a policy to integrate all water management functions at the district level. 2. MWRI will designate two pilot districts and initiate activities in these districts to show how the policy is to be implemented.	Fully Accomplished
	C2. The GOE (MWRI) will adopt a policy to facilitate public participation in decision-making regarding planning, development, and management of Egypt's water resources.	1. MWRI will approve a policy addressing mechanisms and procedures for interactive participation by stakeholders in water resource development and management decision-making. 2. MWRI will conduct at least one public participation activity on a selected issue to identify implementation mechanisms and procedures.	Fully Accomplished
	C3. The GOE (MWRI) will approve a policy to improve environmental management of water resources in MWRI operations.	An approved MWRI policy that addresses procedures, mechanisms, and a plan to assure environmental concerns are addressed in MWRI activates by requiring environmental impact assessments be conducted for proposed new projects.	Fully Accomplished