AGENCY FOR INTERNATIONAL DEVELOPMENT

Washington, D. C. 20523

PROJECT PAPER

EGYPT: Canal Cities Water and Wastewater Phase II (263-0174)

September 17, 1987

U.S. AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON D.C. 20523

PROJECT PAPER
CANAL CITIES WATER AND WASTEWATER PHASE II
PROJECT NO. 263-0174

AUGUST 1987
DR/UAD
USAID/CAIRO

UNCLASSIFIED

AGENCY FOR INTERNATIONAL DEVELOPMENT

PROJECT DATA SHEET

1. TRANSACTION CODE: A = Add, C = Change, D = Delete — A | Amendment Number: | CODE: 3

2. COUNTRY/ENTITY: Egypt

3. PROJECT NUMBER: 263-0174

4. BUREAU/OFFICE: ANE | 03

5. PROJECT TITLE (maximum 40 characters): Canal Cities Water and Wastewater Phase II

6. PROJECT ASSISTANCE COMPLETION DATE (PACD): MM 08 DD 31 YY 97

7. ESTIMATED DATE OF OBLIGATION (Under "B." below, enter 1, 2, 3, or 4): A. Initial FY 87 | B. Quarter 4 | C. Final FY 93

8. COSTS ($000 OR EQUIVALENT $1 =)

A. FUNDING SOURCE	FIRST FY 87 B. FX	C. L/C	D. Total	LIFE OF PROJECT E. FX	F. L/C	G. Total
AID Appropriated Total	109,400		109,400	380,000		380,000
(Grant)	(109,400)	( )	(109,400)	(380,000)	( )	(380,000
(Loan)	( )	( )	( )	( )	( )	(
Other U.S. 1.						
Other U.S. 2.						
Host Country				120,000		120,000
Other Donor(s)						
TOTALS	109,400		109,400	500,000		500.000

9. SCHEDULE OF AID FUNDING ($000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE 1. Grant	2. Loan	D. OBLIGATIONS TO DATE 1. Grant	2. Loan	E. AMOUNT APPROVED THIS ACTION 1. Grant	2. Loan	F. LIFE OF PROJECT 1. Grant	2. Loan
(1) ESF	510	820				109,400		380,000	
(2)									
(3)									
(4)									
TOTALS						109,400		380,000	

10. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each): 826 | 541 | 700

11. SECONDARY PURPOSE CO

12. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)

A. Code	BU	ENV					
B. Amount							

13. PROJECT PURPOSE (maximum 480 characters)

To provide urgently needed water and wastewater infrastructures in the three Canal Cities of Port Said, Ismailia and Suez.

14. SCHEDULED EVALUATIONS: Interim MM 10 YY 89 | MM 04 YY 92 | Final MM 04 YY 96

15. SOURCE/ORIGIN OF GOODS AND SERVICES: [X] 000 [ ] 941 [X] Local [ ] Other (Specify)

16. AMENDMENTS/NATURE OF CHANGE PROPOSED (This is page 1 of a _____ page PP Amendment)

USAID/Egypt Controller concurs with the proposed methods of implementation and financing.

9/14/87
William A. Miller, Controller

17. APPROVED BY

Signature: [signature]

Title: Director, USAID/Egypt

Date Signed: 17 SEP 1987 (AID/W SEP 1987)

18. DATE DOCUMENT RECEIV IN AID/W, OR FOR AID/W DO MENTS, DATE OF DISTRIBUT MM DD YY

CANAL CITIES WATER AND WASTEWATER PHASE II
(PROJECT 263-0174)

TABLE OF CONTENTS

ACRONYMS AND ABREVIATIONS

A&E	Architectural and Engineering
AGI	Acute Gastrointestinal
AID	Agency for International Development
AID/W	AID/Washington
ANPAC	Asia Near East Bureau Project Advisory Committee
BVI/ATK	Black & Veatch International/A.T. Kearney
CCC	Canal Cities Consultants
CDSS	Country Development Strategy Statement
CWO	Cairo Wastewater Organization
CZWWO	Canal Zone Water and Wastewater Organization
DBC	Design/Build Contractor
DBOT	Design-Build-Operate-Train and Transfer
DIP	Ductile Iron Pipe
DO	Disolved Oxygen
DR	USAID Development Resources Directorate
ESF	Economic Support Funds
FC	Fecal Coliform
GOE	Government of Egypt
GOPP	MHPU General Organization for Physical Planning
GTZ	German foreign assistance program
HCC	Host Country Contract
IESC	International Executive Service Corps
IFB	Invitation For Bid
IU	Implementation Unit
JICA	Japan International Cooperation Agency
LDII	Local Development II Program
LOP	Life of Project
MBE	Minority Business Enterprise
MCC	Management Construction Contractor
MHPU	Ministry of Housing and Public Utilities
MOF	Ministry of Finance
MOI	Ministry of Irrigation
MOLG	Ministry of Local Government
MOU	Memorandum of Understanding
MPIC	Ministry of Planning and International Cooperation
NOPWASD	National Organization for Potable Water and Sanitary Drainage
O&M	Operation & Maintenance
ODA	(British) Overseas Development Agency
OMED	Office of Management and Economic Development
PACD	Project Assistance Completion Date
PASA	Participating Agency Service Agreement
PCCP	Pre-stressed Concrete Cylinder Pipe
PID	Project Identification Document

PS	USAID Office of Project Support
PSC	Personal Services Contract
PVO	Private Voluntary Organization
RFTP	Request for Technical Proposal
SCA	Suez Canal Authority
TA	Technical Assistance
TC	Total Coliform
TEV	Total Economic Value
TSS	Total Suspended Solids
TUB	Total User Benefit
U.S.	United States
UAD	Urban Administration and Development
UNDP	United Nations Development Program
USAID	AID Mission in Egypt
USAID/FM	USAID Financial Management Directorate
WHO	World Health Organization
WTP	Willingness To Pay
WWTT	Wastewater Department Training Team

BOD	Biochemical Oxygen Demand
FX	Foreign Currency
LE	Egyptian Pounds
M^2	Square Meter
kg	Kilogram
km	Kilometer
kwh	Kilowat Hour
l/s	liters per seconds
m^3/d	cubic meters per day
ml	milliliter
mm	millimeter
p.m.	person months
pt	Piasters
sq m	Square Meter
t	Ton
feddan	4,200 Square Meter

LIST OF TABLES

LIST OF DIAGRAMS, EXHIBITS AND FIGURES

PROJECT PAPER
ARAB REPUBLIC OF EGYPT
CANAL CITIES WATER AND WASTEWATER PHASE II
PROJECT 263-0174

SUMMARY AND RECOMMENDATIONS

1.	Grantee:	Government of the Arab Republic of Egypt
2.	Beneficiaries:	Two million residents of the three Canal Cities
3.	Implementing Agencies:	A. National Organization for Potable Water and Sanitary Drainage (NOPWASD) B. Suez Canal Authority (SCA)
4.	Grant Amount:	US $380 Million
5.	Source of Funds:	Economic Support Funds (ESF)
6.	Total Project Cost:	U.S. $380 Million in AID funding and LE 350 million from the GOE. This GOE contribution equates to approximately $120 million at projected dollar/LE exchange rates. Therefore, total project cost is considered, expressed in dollars, to be $500 million.
7.	Project Purpose:	To provide urgently needed water and wastewater infrastructures in the three Canal Cities of Port Said, Ismailia and Suez.
8.	Project Description:	AID and GOE will finance: A. Primary wastewater treatment facilities in Port Said (150,000 m^3/day), Ismailia (90,000 m^3/day) and Suez (200,000 m^3/day); B. Expansion (concrete lining of the sweetwater canal) of Port Said raw water supply; and C. An institutional development program aimed at strengthening the capacity of SCA and the Governorates to manage, operate and maintain the physical facilities. (An institutional development program for NOPWASD is being implemented concurrently under a parallel project.)

9. Project Analyses - Summary Findings:	This Project is considered economically, technically, financially, administratively feasible, and socially sound. General indications are that the overall impact of the Project upon the environment will be positive; site specific assessments will be prepared for each of the four major construction activities. The cost estimates are reasonable and the Project meets all applicable statutory criteria.
10. PACD:	August 31, 1997
11. Recommendation:	It is recommended that a grant of $380 million be authorized for the Canal Cities Water and Wastewater Phase II Project in accordance with the terms and conditions as set forth in the draft Project Authorization included as Annex N to this Project Paper.
12. USAID Project Committee:	Basharat Ali, DR/UAD (Chairperson); John C. Starnes, DR/PS; Medhat M. Wissa, DR/UAD; William G. Duncan, DR/PS; Joy S. Pollock, DR/PS; Siegbert Schacknies, DR/PS; Kevin O'Donnell, AD/LEG; Thomas Johnstone, FM/FA; John Ryan, PPP/PL; and Charles Richter, PPP/E.
13. Other Contributors:	Shanti Conly, PPP/P; Theresa Ware, PPP/PL; Robert Johnson, DR/UAD; Thomas E. Johnson, ANE/PD/ME (AID/W); John Austin S&T/Health (AID/W); Ralph Luken, EPA/W; and Members of the GOE/USAID Project Design Team.

I. PROJECT BACKGROUND AND RATIONALE

A. Background

The Canal Cities have developed as an integral part of the Suez Canal. The area was ravaged by war and consequent evacuation, but it has considerable potential for economic development. Thus the provision of the necessary infrastructure and basic utilities is a high priority with the Government of Egypt (GOE). The original Project was developed to rehabilitate and expand the water and wastewater systems of the three Canal Cities, but it only included selected elements of the system required to serve immediate critical needs and preserve public health. The Canal Cities Phase II Project proposes to complete the core components of water and wastewater systems for the three cities, as originally planned in the predecessor Phase I Project.

1. The Suez Canal and the Canal Cities

Before the construction of the Suez Canal there were only small towns serving as government outposts and catering to the caravan trade. The Canal changed all that. The capital investment and the revenues it generated required administration. The Canal infrastructure and the ships it served required maintenance. Trans-shipped goods required storage. All of these factors stimulated the emergence of commerce and industry. The Canal Cities of Port Said, Ismailia, and Suez City developed to serve these needs, and these cities are inextricably interrelated with the Canal.

a. Port Said

Port Said is located on the Mediterranean Sea at the northern entrance to the Suez Canal. It is bounded by Lake Manzala to the south and west, and faces Port Fouad across the Canal. It is situated on flat terrain, much of which is reclaimed land, only 1 to 2 meters above sea level. The population of Port Said was estimated to be 400,000 in 1986, projected to increase to 720,000 by the year 2000. Economic activity includes port operations, construction, light industry, fishing, and food processing. Commerce and tourism are developing rapidly under Port Said's Free Trade status.

b. Ismailia

The City of Ismailia lies on the west bank of Lake Timsah, approximately mid-way between Port Said and Suez City. The sweetwater canal brings a plentiful supply of fresh water from the Nile, with branches running north to Port Said and south to Suez City from a junction near Ismailia. The 1986 population of Ismailia was estimated at 266,000, projected to increase to 514,000 by the year 2000. The economy of the area is based on agriculture and agri-business, fishing, food-processing, canal administration and maintenance, light industry, and commerce.

c. Suez City

Suez City is located at the southern entrance to the Suez Canal at the top of the Gulf of Suez. The port area of Suez City is a thriving industrial and transportation center. The population of Suez City was estimated at 327,000 for 1986, projected to increase to 678,000 by the year 2000. Egyptian government policy has designated Suez, along with the other Canal Cities, as target areas for significant industrial development over the next 20 years, in order to create employment and attract migration from densely populated areas of the Nile Valley and delta.

2. Canal Cities Water and Wastewater Facilities

The water and wastewater infrastructure of the Canal Cities was developed early in this century by the consortium that built and administered the Suez Canal. The systems were expanded periodically to serve the three cities, which grew in slow, orderly fashion during the first half of the century. At the time the GOE took over operation of the Canal and its infrastructure in 1956, the water and wastewater systems of the three cities encompassed virtually all populated areas and were in relatively good operating condition.

Over the next two decades, intense warfare and inadequate operation and maintenance combined to seriously damage the infrastructure. Port Said was shelled during the 1956 Suez invasion, but the damage was minimal. It is probably inevitable that a slow deterioration of the system due to improper operation and inadequate maintenance began at this time, due both to inexperience and to difficulty obtaining spare parts. During the 1967, invasion all three cities suffered considerable damage. The 1969-70 War of Attrition caused tremendous damage from sporadic warfare and constant artillery bombardment and bombing. During the October 1973 War, there was further conflict around Ismailia, and intensive warfare around Suez City leading to a military standoff. Perhaps even worse damage was done by the evacuation of the three cities between 1967 and 1973, when the treatment plants and pump stations deteriorated badly from lack of operation, and sewers were badly clogged with dirt and the debris of warfare.

B. Canal Cities Water and Sewerage Phase I

Master Plans for the rehabilitation and expansion of water and wastewater facilities to the year 2000 in each of the three Canal Cities were developed by U.S. consulting engineers under a USAID grant and submitted in mid-1979. Before the finalization of the Master Plans, special reports identifying top priority projects for the immediate needs of each city were submitted by the consultants. After review of these reports, the GOE formally requested the assistance of the Agency for International Development (AID) in financing the foreign exchange costs of the most urgently needed improvements. These involved minor rehabilitation and expansion of water and wastewater treatment facilities, cleaning, repair, and expansion of the water

distribution and wastewater collection systems. These top priority projects formed the basis of the current Canal Cities Water and Sewerage Project (No. 263-0048), obligated in September 1978.

As the project implementation proceeded it became apparent that project funding was insufficient to complete all project elements. The Project was amended in August 1983 to focus all project resources budgeted for wastewater on the collection system, in order to eliminate the greatest public health problem in the Canal Cities -- the flooding and ponding of raw sewage in densely populated areas. The rehabilitation of wastewater treatment facilities was deleted from the project, to be considered as an activity of a Phase II follow-on project.

Current Status

The U.S. contractor responsible for the construction of 8 major wastewater pump stations, 20 kilometers of force main, and 16 kilometers of gravity interceptors, completed these Phase I activities in mid-1986. The Egyptian contractors responsible for the construction of 5 other wastewater pump stations, the rehabilitation of 7 pump stations, and the installation of 5 kilometers of force main, 11 kilometers of gravity interceptors, and 66 kilometers of gravity sewers, fell behind schedule in the early stages of implementation, but are now making satisfactory progress. About 53 percent of the total value of the work was finished by the middle of 1987, and it is anticipated that the remaining work will be completed by the latter part of 1988. The Egyptian contractors are fully funded by the GOE.

Water treatment and distribution facilities included in the Project are almost finished. The upgrading by Egyptian contractors of the existing water treatment plants has progressed extremely well, and was approximately 96 percent complete in July, 1987. It is expected to be completed soon. Expansion of the water distribution system in Port Said was completed in mid-1986. In Ismailia and Suez City, expansion of the distribution systems was 100 percent complete in July, 1987.

In related non-project activities, National Organization for Potable Water and Sanitary Drainage (NOPWASD) has filled in a portion of Lake Manzala in order to create a site for a new wastewater treatment plant to serve Port Said. NOPWASD has also constructed a new bypass channel which permits the wastewater flow from Port Said to bypass the existing treatment plant. In Suez City a new discharge connection has been built to transmit flows from the new AID-financed pump stations to an existing open channel.

Canal Cities Consultants (CCC) is currently providing operation and maintenance (O&M) assistance to the three wastewater departments, the owners and operators of the wastewater facilities in three Cities. The O&M assistance includes development of O&M manuals for the pump stations, standard operating procedures, standard maintenance procedures, standard forms, and various training procedures including video tapes. An extensive program of classroom and on-the-job training has been developed and is being conducted in each of the Canal Cities.

C. Unmet Needs

The Master Plans for the three Canal Cities specified the requirements for rehabilitation and expansion of the water and wastewater systems to meet the needs of the year 2000 population. Some of the most difficult work has been accomplished under the Phase I Project, as well as by the GOE on its own account. However, considerable work remains to be done:

1. Wastewater Collection

The present core system of primary collectors, pump stations, and force mains installed under the Phase I Project is designed to handle flows from their projected service areas up to the year 2000. The sewer network presently is extended to serve about 60 - 70 percent of the population of each city. In all three cities it will be necessary to expand the subsidiary collector system and sewer network to serve growing populations and new neighborhoods.

The Phase II Project does not propose to fund the construction of additional collectors and sewers. This task is within the capability of local private and public sector contractors, and can be accomplished by the GOE at whatever rate it chooses. The provision of wastewater treatment facilities is vital, since it is a key component without which the collection system cannot be significantly expanded without running health risks to the area residents.

2. Wastewater Treatment

The 1979 Master Plans indicated that existing wastewater treatment plants could be rehabilitated and expanded to process present flows, but warned that expansion of subsidiary collectors to serve growing neighborhoods would soon overwhelm the capacity of the existing treatment facilities. Eight years later, the rehabilitation of existing treatment plants is no longer a viable option. The expanded collector systems provided for each city by the Phase I Project currently only serve about 65 percent of their populations, but they already generate effluent flows beyond the design capacity of present plants. Expansion of these collector systems to serve new neighborhoods would be impossible unless larger plants are constructed.

The original Canal Cities Water and Sewerage Project was designed to rehabilitate existing wastewater treatment plants in each of the three cities. However, the project was amended in August 1983 to focus project resources on completing the collector system, in order to address the priority problem of flooding and ponding of sewage in the streets. The wastewater treatment facilities were deleted from the project. However, AID made a commitment to consider financing the systems by providing wastewater treatment facilities under the Phase II Project.

The Phase I Project successfully removed the sewage from the city streets as intended. However, the raw sewage is presently being discharged into waters that are used for fishing, boating, and swimming. Moreover, existing bypass channels used to discharge sewage are already dangerously close to capacity and flooding of communities adjacent to the existing plants can reasonably be anticipated as the cities expand their subsidiary collector systems to accommodate growing populations. Without treatment, the increased flows of raw sewage will result in pollution of nearby water bodies, posing health risks to the area population. The governorates of Port Said, Ismailia and Suez have thus identified the treatment of wastewater as their top priority.

Briefly, the benefits of phase I investment cannot be realized without treating the collected sewage. Given the increasing volume of sewage flows, inoperability of the existing plants, potential adverse environmental impact, perceived AID commitment to complete the wastewater facilities and the identification of wastewater treatment as a top local priority, the need for new large treatment facilities in each of the Canal Cities is urgent and cannot be over-emphasized. Further expansion of either the potable water supply or wastewater collection obviously cannot continue without first addressing the sewage treatment problem.

3. Water Supply

The sources of water supply in all three cities are the sweetwater canals that run from Cairo to Ismailia and from there north to Port Said and south to Suez City. The Ministry of Irrigation (MOI) has a phased program for enlarging the sweetwater canals in the Governorates of Ismailia and Suez, and has assured the Suez Canal Authority (SCA) that there will be adequate water to meet the water demands of the cities of Ismailia and Suez up to the year 2000 and beyond. The MOI does not have a program for the enlargement of the Qantara - Port Said segment of the sweetwater canal that runs from Ismailia to Port Said due to the lack of agricultural sites beyond the city of Qantara. SCA is responsible for the maintenance of the Ismailia - Port Said Sweetwater Canal after Qantara since the only purpose of the canal beyond Qantara is to supply water for Port Said's consumption needs.

Ismailia and Suez City have adequate raw water supplies through the year 2000 from their sweetwater canal sources. Port Said, however, already suffers from a restricted water supply which will increasingly inhibit future development of the city. The Port Said Sweetwater Canal, the only source of water, can presently deliver between 90,000 and 125,000 m^3/day, while the current average daily water demand for Port Said is estimated to be in excess of 150,000 m^3/day, projected to increase to 221,000 m^3/day by the year 2000, with a maximum day demand of 276,000 m^3/day. The Port Said Sweetwater Canal reportedly was designed for 270,000 m^3/day, but its carrying capacity has been reduced by aquatic growth, war damage, structural constrictions, seepage, and inadequate maintenance.

The expansion of water conveyance facilities for Port Said is a top priority of SCA. It is vital that Port Said's raw water supply be expanded to meet its current and projected needs to the year 2000. A restricted water supply would neutralize the upgrading of water treatment and distribution systems made under the Phase I Project, and seriously inhibit future development of the city. Thus the Phase II Project proposes to include this as a project element.

4. Water Treatment and Distribution

The Phase I Project rehabilitated and expanded the water treatment and distribution systems to meet the current needs of the three Canal Cities. The three cities will require further expansion of their water treatment and distribution systems to serve future population growth. However, SCA has advised USAID that they plan to meet all future needs for additional water treatment and distribution facilities with their own resources, with possible assistance from other donors. This will allow the Phase II Project to focus its resources on the more critical problem of providing a raw water supply for Port Said's requirements to the year 2000.

5. Availability of Trained Water O&M Personnel

SCA does an impressive job of managing the water treatment and distribution systems. It presently has training facilities and programs in place for canal operations and maintenance, and has a demonstrated capacity to develop programs and conduct classroom and hands-on training. SCA has advised USAID that it intends to develop a training capacity in the water sector for its own employees. It has the institutional capacity and physical space required, and requires only technical assistance and financial support to develop these programs.

6. Strengthening of Local Government Wastewater Departments

Although there was severe war damage to the wastewater facilities of the Canal Cities, much of the deterioration could be attributed to improper operation and inadequate maintenance of the system. Wastewater facilities in the Canal Cities are managed by local government departments. The Canal Cities engineering consultants and U.S. construction contractors provided institutional support and training in the operation and maintenance of new facilities developed under the Phase I Project. However, the capacity of local government institutions to provide the skilled staffs required to operate and maintain these facilities has been marginal. The present staffs are barely adequate to operate and maintain the new pumping stations, and do not appear to have the capacity to operate and maintain existing wastewater treatment facilities at an acceptable standard. The provision of new treatment plants by the Phase II Project will require the training of additional O&M personnel.

Direct O&M assistance for the first 3 years operation of each new wastewater treatment plant will be provided by the construction contractor. It is also essential that institutional support be provided to improve management capabilities. Training curricula and facilities must be developed and an ongoing program be instituted to assure that human resources are available to properly operate and adequately maintain the proposed water and wastewater facilities. All three Governors have expressed interest in these aspects of the Phase II Project.

In addition to management improvement in such areas as procurement, inventory control/storage, and O&M improvements, one critical need of both SCA and the wastewater departments is in the area of financial management. An assessment of the utilities' needs reveals there is no cost accounting of wastewater operations. No separate budgets identifying revenues and expenses are prepared. Governorates, and for that matter SCA as well, require a capacity to project O&M and capital costs and translate these into an equitable tariff structure. SCA currently bills and collects for water charges in the canal cities. On an ad hoc basis, SCA is also collecting a ten per cent surcharge for wastewater services and transferring these funds directly to the Governorates. A mechanism should be developed for the Governorates and consumers participation in the establishment of an adequate tariff structure. An efficient billing and collection system should be installed in support of this effort.

D. Relationship to AID/GOE Development Priorities

There is a complete convergence of policy between AID and GOE regarding the priority for rehabilitating and expanding wastewater treatment facilities in the Canal Cities. Considerable work has been accomplished, and the present project is intended to provide adequate wastewater treatment facilities as agreed in the original project and expand their capacity to meet year 2000 needs.

1. GOE Development Priorities

In the late 1970s breakdowns in Egyptian water and wastewater systems and consequent flooding reached crisis proportions. Facing years of deferred maintenance and accumulated problems, GOE developed Master Plans for the rehabilitation and expansion of water and wastewater facilities in its major urban centers. LE 3.4 billion was allocated to undertake this work during the 1982-87 period, a 250 percent increase over the 1977-82 period. During the current 1987-92 Five Year Plan an additional LE 3.2 billion is budgeted to the water/wastewater sector to continue this work.

The Canal Zone is very important to Egypt both in economic and strategic terms, so the GOE assigns very high priority to development of the Canal Cities. Suez Canal revenues, along with maintenance needs and transportation advantages, provide the basis for a dynamic industrial economy. New factories and a growing population require adequate water supply and sanitation facilities, and development of the Canal Cities could be impeded by lack of water and wastewater infrastructure.

2. AID Development Priorities

The Near East Bureau Strategy 1983-88 ranks urbanization as the priority development problems of the decade in the Middle East. Egypt is urbanizing rapidly, and it is estimated that over 55 percent of the population will be urban by the year 2000. In recognition of this, USAID/Cairo has devoted over 60 percent of its portfolio to urban projects since 1975. An important focus of USAID's Urban Development Strategy has been to help GOE accommodate urban growth in selected cities.

The USAID portfolio has previously placed a strong emphasis on the Egyptian water and wastewater sector. Since 1977 USAID has authorized funding of about $1.5 billion for the sector. Most of this funding has been committed, and work is underway to upgrade the water and wastewater systems of Cairo, Alexandria, and selected secondary cities to serve their projected service areas up to the year 2000. Since the urban water and wastewater system have now been substantially improved, assistance for this sector will be phased down over the next five years, and USAID will fund no urban capital investment beyond those needed to finalize on-going and planned activities so as to complete our investments in these areas. The present Canal Cities Phase II Project is intended to complete the water and wastewater activities USAID originally proposed to undertake in those three cities.

The proposed Canal Cities Phase II Project will address the highest priority water and wastewater system needs in the Canal Cities of Port Said, Ismailia, and Suez City. These three cities are among the most rapidly expanding urban areas in Egypt, and their development is intended to relieve pressure on the densely populated Nile Valley and Delta. The population projections for these cities indicate that the combined populations of Port Said, Ismailia, and Suez City will substantially increase, from 1.0 million to 1.9 million or greater between 1986 and 2000. Providing the required water and wastewater infrastructure is an important contribution to the economic development and the public health of these cities.

The Canal Cities Phase II Project is the primary USAID investment in the Canal Zone. It should be noted that this region has been the focal point of much of the military conflict in the Middle East. Development of the Canal Zone contributes to stability of the area. A highly developed and profitable Canal Zone gives Egypt an increasing stake in maintaining peace in the area, while dynamic economies and modern infrastructure enhance the strength and decrease the vulnerability of the area. This is precisely what the Economic Support Fund was intended to do.

Economic development requires water and sanitation facilities as a basis for improving public health. The AID Policy Paper on "Domestic Water and Sanitation" notes that the combination of unsafe drinking water and inadequate sanitation facilities constitutes one of the major causes of death and disability among the poor in developing countries. Water-born diseases impede learning among children who are chronically ill or malnourished, and diminish productivity of adults through lethargy and chronic absenteeism.

Thus it observes that safe, convenient water supply and adequate sanitation is a fundamental component of a broad based economic growth strategy.

AID's policy on domestic water and sanitation gives high priority to the provision of adequate water supply and sanitation programs. However, it is stipulated that certain issues must be addressed in order to assure long term protection of the infrastructure provided by the project. The most crucial of these are (a) coverage of recurrent costs through adequate tariffs, which GOE is required to increase by 1990 under the Memorandum of Understanding; and (b) adequate operation and maintenance, for which extensive provisions are made under the proposed Phase II Project.

The AID Policy Paper on Health Assistance observes that economic growth and human capital development are closely related; sustained growth cannot be achieved without a healthy populace. It also notes that inadequate water supplies and/or sanitation facilities can have detrimental effects on health. This leads to higher mortality, less working time, and lower productivity among both children and adults. The Canal Cities Phase II Project implements AID policy on health assistance by providing an adequate water supply for Port Said, and wastewater treatment facilities for all three Canal Cities. This will allow expansion of the wastewater collection system to neighborhoods presently without sewer service, and avoid contamination of surface water adjacent to populated areas.

The Canal Cities Phase II Project responds to AID policy on institutional development. This policy requires that institutional development be addressed as an issue on all projects, in order to assure that benefits can be sustained after external assistance is withdrawn. In the case of this project, wastewater treatment facilities are proposed, and although the most simple appropriate technology is specified, it requires considerable institutional capability to operate and maintain. Based on careful institutional analyses and needs assessments, the Project provides institutional strengthening of all three local government wastewater departments and SCA aimed at improving their organizational effectiveness and long term financial viability of the physical facilities installed under Phase I and proposed Phase II Projects.

The AID Policy Paper on "Approaches to the Policy Dialogue" observes that a well-designed project can fail if the policy environment is not supportive. In the case of Egyptian water and wastewater projects, the Mission has from the beginning been concerned with inadequate O&M capability, and with cost recovery insufficient to finance O&M costs. The Canal Cities Phase II Project, in concert with the other Mission water/wastewater sector projects, is involved in policy dialogue with GOE to assure adequate supply of trained manpower and that tariffs are sufficient to cover most of the O&M costs of existing and new infrastructure. The Mission has also insisted that startup and direct O&M assistance be provided on every project for a period of at least two years, and that management support and O&M training sufficient to generate the required human resources and protect the considerable AID and GOE investment be provided. A substantial portion of the Mission water/wastewater

program is incrementally funded, and without progress toward complete O&M cost recovery and development of adequate O&M capabilities, further funding may not be authorized.

3. USAID and Other Related Donor Activities

AID has made substantial investments in the Egyptian water and wastewater sector in the past ten years. Since 1978 AID has authorized more than $1.5 billion in support of projects to rehabilitate and expand existing systems in Cairo, Alexandria, the Canal Cities, and the Provincial Cities. The GOE provided local currency funding which in dollar terms almost equaled the AID investment.

Foreign donors are also active in the Egyptian water/wastewater sector. The British Overseas Development Agency (ODA) is expanding and upgrading the wastewater system on the Cairo East Bank, with LOP funding of approximately $500 million. The French and German governments are each upgrading a major water treatment plant in the Cairo area, and the Japanese are providing water pipe for distribution systems. The World Bank is funding water and wastewater facilities in Beheira and Alexandria. There is a close coordination between USAID and other donors on the programming and implementation in the water/wastewater sector.

II. DETAILED PROJECT DESCRIPTION

The PID for the Phase II was processed by USAID in August, 1985 and was approved by ANPAC in December, 1985. Upon approval of the PID, USAID activated an internal Project Committee. USAID also organized a joint GOE/USAID design team which included representatives of the three Governorates, SCA, NOPWASD and MPIC. Over the next 18 months, a series of meetings were held in each of the three Governorates and in Cairo. The concept, scope and magnitude of the Project were thoroughly discussed with the representatives of the GOE. The description of the Project and the proposed implementation arrangements detailed here represent the outcome of these meetings.

The initial plan for formulation of the Project included detailed preliminary engineering studies utilizing funds remaining in the on-going Phase I Project. Due to a lack of agreement on procurement procedures, the amendment to the existing contract between CCC and NOPWASD could not be negotiated. Given the procurement difficulties, USAID in early 1987 decided to prepare the Project Paper in-house with limited assistance from AID/W. The master plan studies of 1979, the subsequent design reports of 1981 and 1982, and a number of updates and amendments to the same were carefully reviewed and analyzed. These findings were then updated and adjusted to reflect current conditions and to provide reasonable basis in the formulation of physical aspects of the Project. On the institutional side, a detailed needs assessment of the three wastewater departments was performed (on file). The results of this study, and other similar studies funded over the years in the water/wastewater sector as well as the elements and objectives of the Memorandum of Understanding of January, 1984 provided the framework for the development of the institutional aspects of the Project.

A. Goal

The goal of this Project is to improve the health and living conditions of people by increasing access to adequate water and wastewater services. The Canal Cities Water and Sewerage (Phase I) Project has contributed substantially to this sector goal by removing wastewater from the populated areas and by expanding the distribution of treated water in the three Cities. This Project is primarily designed to eliminate the adverse environmental impact and health risks of untreated wastewater which is now polluting surface water bodies adjacent to the three urban centers. Additionally, the Project addresses the problem of inadequate water supply to the city of Port Said. With subject physical facilities in place and with enhanced local capacity to operate and maintain these improvements, the goal of improving local living conditions by increasing access to critical water and wastewater services will be essentially achieved for most (80 percent) of the year 2000 population.

B. Purpose

The purpose of this Project is to provide urgently needed water and wastewater infrastructures in the three Canal Cities of Port Said, Ismailia and Suez. These include treatment facilities in each of the three cities,

expansion of raw water supply for the city of Port Said, and the strengthening of institutional capacities in support of the wastewater departments and SCA to better operate and maintain the physical facilities.

The Project Identification Document (PID) proposed a total of five (5) new wastewater facilities for the Canal Cities: two for Port Said, one to serve the principal city and the second one to serve Port Fouad, a small urban center directly across the Canal from Port Said; one treatment plant to serve Ismailia and two for Suez City (a northerly and a southerly plant). The Port Fouad facility is, for the time being, being deleted because of limited technical data, due to limitation of funds available, apparent limited benefits, and relatively high costs of building this facility. A more in-depth study of its feasibility will, however, be conducted as part of this Project. Subject to satisfactory findings of the subject study, USAID/GOE agreement on proposed options and availability of funds, this treatment facility could be included by means of an amendment to the Project. The southerly plant in Suez is being abandoned in favor of an expanded northerly plant. A technical feasibility study of the southerly plant for GOE financed future expansion is being included as part of the Project. Based on available technical data at the design stage, the Project proposes to build only three wastewater facilities at this time, one in each of the Canal Cities. The problem of adequate raw water supply to Port Said will be addressed by lining of the existing canal from Qantara to Port Said to meet the City's needs for the year 2000 population.

Lastly, in order to ensure the long term viability of the physical systems, the Project proposes to strengthen the critical municipal functions in support of the water and wastewater departments in the three Cities including the development of local capacities to provide training to O&M personnel.

C. End of Project Status

At the end of this Project, it is anticipated that the following will be accomplished:

1. Increased Wastewater Treatment and Water Supply Coverage

a. The City of Port Said with virtually no treatment will have adequate facilities to satisfactorily treat and dispose of wastewater generated by the projected service area for the Year 2000 (547,000 persons or approximately 80% of the high growth projected population within the city proper excluding Port Fouad).

b. The City of Ismailia with practically no treatment will have adequate facilities to satisfactorily treat and dispose of wastewater generated by the projected service area for the Year 2000 (411,000 persons or approximately 80% of the high growth projected population).

c. The City of Suez with limited existing treatment capacity will have adequate facilities to satisfactorily treat and dispose of wastewater generated by approximately one-half of the projected service area for the Year 2000 (543,000 persons or approximately 80% of the high growth projected population).

d. The City of Port Said will have an adequate source of water supply for the projected service area for the Year 2000, i.e., to serve at least twice as much of the current population (612,000 persons or approximately 8[illegible]% of the population with full service and 108,000 persons or 15% served by public fountains).

2. Improved water/wastewater services by instituting measures aimed at improving local management/administration, technical changes to expand the network of services, and by the provision of a system to monitor and evaluate the quality of services.

3. Improved Operation and Maintenance by strengthening plant level O&M thereby decreasing plant down time, equipment repairs and fuel costs, and by training water/wastewater personnel.

4. Increased revenue collection by strengthening the financial management of the utilities involved, including the installation of a cost accounting system and improvement in the capacity to analyze capital and O&M costs, review and adjust tariffs; and by introducing procedures to bill and collect charges efficiently from the consumers.

5. Decreased losses by strengthening the capacity of SCA and the Governorates to detect and repair water and wastewater leaks and by prompting measures to reduce wastage by higher charges and consumer education programs.

D. Project Elements

As discussed above, the activities proposed to accomplish the purpose of this Project include one treatment facility in each of the three Cities, rehabilitation and expansion of raw water supply to the city of Port Said, and the institutional development of local entities primarily in support of the wastewater and water departments including a comprehensive program of human resources development. Each of these activities is detailed below.

1. Wastewater Treatment Facilities

a. Port Said

- Size: The Port Said facility will be built to treat 150,000 cubic meters of wastewater per day. This capacity is sufficient to provide service for 80% (547,000 persons) of the total year 2000 population (684,000 persons excluding Port Fouad) projected for the wastewater service area. The size of the facility is based on per capita domestic/commercial/institutional flows of 200 liters per day with an additional allowance of 20% each for

industrial and infiltration flows. The facility will include multiple flow streams to permit operational flexibility and to facilitate staging of construction for future additions.

- Site: The treatment facility will be built on reclaimed land at Lake Manzala. The new site is about 3.5 kilometers from the existing treatment plant. The acquired site is considered adequate and suitable for the proposed facility.

- Treatment Process: The facility will provide primary level treatment consisting of screening facilities, grit chambers, primary clarifiers, sludge handling (sludge thickeners and on-site drying beds) and chlorination facilities.

- Disposal Option: Lake Manzala, a large shallow body of salt water, which serves as the current disposal point with connection to the Mediterranean Sea, is the preferred disposal site.

- Transmission/Pumping Facilities: A transmission system consisting of a pump station with four 900 litre per second pumps facility with a 3.8 kilometer force main of 1500 mm diameter will transmit wastewater from a collection point at the existing plant to the new treatment plant site. An outfall of one kilometer with a 500 meter diffuser of approximately 2000 mm diameter will be provided to discharge the primary effluent into the lake.

- Supporting Facilities: The supporting facilities at the plant site will include a workshop, a warehouse to store wastewater equipment and spare parts and an administrative building including a training facility.

- Pre-award Studies: Prior to issuance of the Invitation for Bids for a design/build contract (See Section IV Implementation Plan), an environmental assessment will be performed and basic design data and cost estimates will be reviewed. Essential soils investigation and survey work will be performed by the construction monitor or others. A detailed feasibility study for the Port Fouad treatment plant will be conducted. The study will cover technical, economic/financial, environmental and social aspects of the facility. The recommended alternatives including an implementation approach and associated costs will be delineated.

- O&M Services: Plant specific O&M assistance for a period of up to three years will be provided under the design/build contract to the wastewater personnel assigned to the plant. In addition to start-up and direct operational assistance services, a preventive maintenance program will be instituted. O&M manuals along with standard operating/ maintenance/safety procedures will be developed, and the employees will receive on-the-job training in their respective areas of responsibility.

Inputs include costs associated with the design/build contract: treatment plant ($48,451,000, LE 48,437,000); support facilities ($3,837,000, LE 3,925,000); spare parts/tools and equipment ($2,209,000, LE 1,141,000); and plant specific O&M services ($4,420,000, LE 4,685,000). USAID will finance about 74% of these costs in foreign exchange ($58,917,000) and the GOE will contribute the balance in local currency (LE 58,188,000). In addition, AID will finance all costs of an A&E firm for construction monitoring and other pre-award engineering services (U.S. 140 p.m. and Egyptian 280 p.m.) estimated at $2,816,000 & LE 2,502,000. These costs are exclusive of the contingency amount estimated at 13% over the life of the project.

b. Ismailia

- Size: The Ismailia treatment plant will be built to treat 90,000 cubic meters of wastewater per day. The facility will serve 80 percent (411,000 persons) of the total year 2000 population of 514,000 projected for the wastewater service area. This capacity is based on per capita domestic/commercial/institutional flows of 150 liters per day with an additional allowance of ten percent for industrial and a further 20 percent for infiltration flows. As in Port Said, the facility will include multiple flow streams to facilitate future additions.

- Site: The plant will be built approximately seven kilometers from the existing treatment plant to the south of the city. For environmental reasons, approximately 4,000 feddans are required for the treatment facilities whereas the Governorate has set aside a much smaller area for the purpose. Thus, the designated site may be suitable but inadequate for the proposed facility. It is anticipated that the Governorate might be able to acquire the required area prior to the project authorization. In any event, the acquisition of the site will be included as a condition precedent in the Project Agreement.

- Treatment Process: The facility will provide primary level treatment involving screening facilities followed by deep anaerobic lagoons. No special sludge handling facilities are proposed as several years of sludge storage can be accomplished within the lagoons. Partially dewatered sludge would be landfilled on the treatment site.

- Disposal Option: Primary level treatment would not satisfy requirements for safe disposal of the effluent to the surface water bodies adjacent to Ismailia because of their limited assimilative capacity to handle the wastewater flows from the city through year 2000. With no surface water disposal option, rapid infiltration basins will be used for land disposal of the primary effluent. It is anticipated that the GOE will eventually withdraw the treated effluent from the ground via shallow wells for agricultural reuse. A shallow well system for monitoring groundwater quality and for irrigation of site landscaping will be provided.

- Transmission/Pumping Facilities: This component includes re-routing of the wastewater flow from the new Abu Atwa Pump Station via 7.1 Kilometers of dual force main (1200 mm diameter) to the new treatment plant site.

- Supporting Facilities: The supporting facilities will include repair, warehousing facilities and an administrative building including a training facility.

- Pre-award Studies: Prior to the issuance of the Invitation for Bids for a design/build contract, an environmental assessment will be performed; the design data/assumptions, the suitability of the preferred alternative and the reliability of the cost estimates will be verified; and the essential soils investigations and survey work will be completed.

- O&M Services: Plant specific O&M services, as discussed before for the Port Said facility, will be provided for a period of up to three years.

Inputs include costs associated with the design/build contract: treatment plant ($67,693,000, LE 68,140,000); support facilities ($3,879,000, LE 3,991,000); spare parts/tools and equipment ($3,310,000, LE 1,500,000); and plant specific O&M services ($7,197,000, LE 7,797,000). USAID will finance about 74% of these costs in foreign exchange ($82,079,000) and the GOE will contribute balance in local currency (LE 81,428,000). In addition, AID will finance all costs of an A&E firm for construction monitoring and other pre-award engineering services (U.S. 150 p.m. and Egyptian 300 p.m.) estimated at $3,005,000 and LE 2,689,000.

c. Suez

- Size: The Suez treatment plant will be built to treat 200,000 m^3/day of wastewater. The facility will serve 80% (543,000 persons) of the total year 2000 population of 678,000. This capacity is based on per capita flow of 250 liters per day with additional allowances of 30% and 20% for industrial and infiltration flows respectively. This facility will also involve multiple flow streams to facilitate future additions.

- Site: The plant will be built at a site to the north of the city along the west bank of the sweetwater canal. It is estimated that over 4,000 feddans are required for the treatment facility. The acquisition of the site will be included as condition precedent in the Project Agreement.

- Treatment Process: The treatment plant will include screening facilities, anaerobic lagoons and other facilities similar to those proposed for Ismailia.

- Disposal Option: Rapid infiltration basins will be used for land disposal of the primary effluent. The potential land application area consists of over 33,000 feddans. The GOE may be able to withdraw the treated effluent for agriculture reuse. A shallow well system for monitoring ground water quality and for irrigation of site landscaping, but not to serve new agriculture lands, will be provided.

- Transmission/Pumping Facilities: This component includes several modifications to an existing collection system and the installation of new facilities including a screw type influent pump station at the head of the treatment plant, approximately 5.5 kilometers of Northerly Trunk Sewer of 2400 mm size from the treatment plant site towards the outskirts of the city center, and approximately 5 kilometers of force main of 750 to 900 mm size to re-route the discharge from two existing major pump stations. In addition, in order to provide satisfactory service to that region to the south of the city, a new Southwest Trunk Sewer about 5.5 kilometers long of 1200 mm size will be constructed from the vicinity of the existing treatment plant towards the industrial area to the south. A new major pump station of four 900 l/s pumps would be located at the downstream end of the collector to receive the wastewater from the collector and transport this to the new Northerly Trunk Sewer via approximately seven kilometers of 1500 mm of force main.

- Supporting Facilities: The supporting facilities will include repair and storage space and an administrative building including training space.

- Pre-award Studies: Prior to the issuance of the Invitation for Bids for a design/build contract, the basic design data, approach and underlying assumptions will be verified. An environmental assessment will be performed. Essential soils investigations and survey work will be completed. A feasibility study for a southerly treatment plant for future expansion will also be conducted.

- O&M Services: Plant specific O&M services for a period of three years will be provided.

Inputs include costs associated with the design/build contract: treatment plant ($94,113,000, LE 96,933,000); support facilities ($4,026,000, LE 4,233,000); spare parts/tools and equipment ($4,284,000, LE 1,987,000); and plant specific O&M services ($10,086,000, LE 11,413,000). USAID will finance about 74% of these costs in foreign exchange ($112,509,000) and the GOE will contribute balance in local currency (LE 114,566,000). In addition, AID will finance all costs of an A&E firm for construction monitoring and other pre-award engineering services (U.S. 200 p.m. and Egyptian 400 p.m.) estimated at $4,175,000 & LE 3,794,000.

2. Port Said Raw Water Supply

- Capacity: The Port Said raw water facility will transmit at least 370,000 and perhaps as much as 450,000 cubic meter of raw water per day. This will far exceed year 2000 population's average and maximum per day demand of 221,000 and 276,000 respectively. It is assumed that 85% of the population in Port Said (612,000 persons) will have full water service and that the remainder of the population will be served by public fountains.

- Proposed Improvements: A lining of the existing sweetwater canal, including excavation and rehabilitation work, from Qantara to Port Said is proposed. The cross section would be trapezoidal with a bottom width of

8.5 meters, side slopes of 1.5:1 and an overall depth of at least 1.75 meters. Lining would be accomplished by using precast concrete panels poured in place concrete or other appropriate materials. In addition, a lined reservoir of 1,000,000 cubic meters near El Raswa Water Treatment Plant is proposed. An open channel option is preferable to pipelines for economy of both capital and O&M costs.

- Pre-award Studies: Prior to the issuance of the Invitation for Bids for a design/build contract, a preliminary engineering study including an environmental assessment, soils investigations and survey work, will be performed.

Inputs include costs associated with the design/build contract: lining of the Canal ($47,258,000, LE 49,730,000); tools and equipment ($403,000, LE 436,000). USAID will finance about 74% of these costs in foreign exchange ($47,661,000) and the GOE will contribute balance in local currency (LE 50,166,000). In addition, AID will finance all costs of an A&E firm for construction monitoring and other pre-award engineering services estimated at $2,306,000 & LE 2,110,000.

3. Institutional Development

The long term viability of the physical systems installed under the Phase I and those to be built under the Phase II Project is not possible without the expansion of the institutional capacity of the municipal organizations responsible for managing, operating and maintaining these facilities. The ultimate objective of the institutional support effort is that the systems are properly managed and maintained without continuing dependence on various central agencies and foreign consultants. One significant aspect of the self-sufficiency question is to recover initially the O&M cost and eventually the capital costs by raising and collecting tariffs from the beneficiaries of the improved urban services. The second equally important aspect of this equation is the effective utilization of available resources in the delivery of a quality product, i.e. improved water and wastewater services. This requires instituting changes aimed at improving the overall organizational effectiveness of the concerned utilities and all aspects of their financial management.

The signatories to the Memorandum of Understanding (MOU) of January, 1984 recognized "the need for certain management and administrative actions to strengthen Egyptian water and wastewater institutions", and in particular the need for: "Tariff increases adequate to cover the cost of water and wastewater operations, maintenance, debt service, and routine improvements, as well as appropriate increases by the GOE in the size of operations, maintenance and investment budgets provided to fund the sector"; and "Establishment of autonomous local water and wastewater organizations, with the authority to retain service revenues for their own operating needs". Other provisions of the MOU called for adequate facilities, technical services, and appropriate incentives in support of personnel, training and completion of project construction activities. Thus the objectives and

elements laid down in the MOU, and later adopted as a series of "benchmarks", provide the framework and sufficient guidance for structuring the institutional development component of the proposed project. Moreover, a number of studies aimed at assessing the institutional needs of utilities involved (the latest being the CCC's report of February, 1987) allude to the same areas of concern outlined in the MOU. Therefore, the institutional support component is designed to assist the GOE in accomplishing the objectives of the MOU.

a. Tariff Increases:

Subsequent to the signing of the MOU, the GOE issued guidance in 1985 for tariff increases to cover 100% of water O&M and 50% of wastewater recurrent costs by 1991. A study of financial viability of USAID assisted water and wastewater systems, conducted in early 1987, shows that the SCA recovers 87% of the water recurrent O&M costs in the Canal Cities from tariff increases as compared to 62% for Cairo, 42% for Alexandria and projected 30%, 28% and 20% for the three Provincial Cities of Fayoum, Beni Suef and Minia respectively. The 10% wastewater surcharge collected by SCA on behalf of the three local bodies contributes 17% towards wastewater recurrent costs as compared to 2.5% for Cairo, 5% for Alexandria and none for the three Provincial Cities. While the Canal Cities in comparative terms are recovering a greater percentage of the recurrent expenses for water and wastewater services, further steps must be taken to recover 100% of the recurrent O&M costs and 50% of the wastewater costs by 1991. It is proposed that a condition precedent be included in the project agreement which requires the GOE, prior to the issuance of an RFTP/IFB for any of the design/build facilities, to: (1) increase tariffs to meet 100% of the current water recurrent O&M costs and 50% of the current wastewater recurrent O&M costs; (2) furnish a plan to increase tariffs to recover future O&M costs associated with the proposed new facilities; and (3) to provide increases in the GOE O&M budgets to cover shortfalls in the interim period.

A number of institutional development activities will be initiated in support of the GOE efforts aimed at increased revenue collection through proposed tariff increases. These include:

i. Financial Management: An improved system specific cost accounting mechanism at both SCA and the three Governorates will be installed; a capacity to prepare a separate budget identifying income and expenses of water and wastewater services will be developed; a system to accurately project O&M costs will be instituted; and a system to audit water/wastewater accounts on a regular basis will be introduced.

ii. Tariff Formulation and Revenue Collection: With the collaboration of SCA and the full participation of the three Governorates, a mechanism will be developed to establish an equitable tariff structure; a system will be devised to estimate water consumption by unmetered individual households; for those large consumers served by meters, an efficient system of meter installation and repair will be instituted; a cost-effective system of billing and collection of tariffs will be put in place.

iii. Consumer Education: A comprehensive program of consumer education to improve public awareness, to promote conservation, and to control waste will be developed, field tested and adopted; and a permanent mechanism to interact and coordinate these activities with other public/private agencies will be installed.

iv. Network Improvements: It is reported that over 21% of treated water in the Canal Cities remains unaccounted for. In addition to measures discussed earlier, a system of water/wastewater leak detection and repairs will be instituted; and a system of network expansion to extend water and wastewater services, including the possibility of extending credit for hook-up services, will be established. In addition, a number of covenants are proposed which require the GOE to institute and implement laws prohibiting disposal of garbage in manholes, requiring industry to treat its own waste prior to its introduction to the cities sewers, and requiring a building permit for water/wastewater services prior to the start of construction of the building. The Phase I Project Consultant (CCC), in their assessment of local wastewater departments needs (of February, 1987 - on file), recommended the enactment of certain laws/regulations to ensure proper functioning of the existing wastewater collection and the proposed treatment facilities. For example, dumping of garbage in manholes be prohibited as it could possibly clog sewer lines. Similarly, the introduction of industrial waste will keep the plant from providing treatment for the domestic waste for which these facilities will be designed/built. The building permit mechanism would help the local authorities plan and meet the requirements for water/wastewater services on cost-effective and timely basis. The technical assistance contractor will assist the GOE in meeting these requirements.

b. Organizational Autonomy:

The question of autonomy requires clarification of legal mandates and jurisdictional responsibilities of various organizations involved in the provision of quality water and wastewater services. Specifically, clarifications will be sought concerning the temporary or permanent nature of the legal mandate of SCA and the fiscal relationship between SCA and the three wastewater organizations. A review of existing codes, decrees and ordinances to environmental standards, industrial waste, quality of surface and ground water will be conducted. Appropriate amendments/revisions to the existing legal and organizational framework will be proposed. Strategies will be developed to encourage exchange of ideas and in the facilitation of change(s) considered appropriate for the area and acceptable to the GOE decision makers.

c. Administrative and Management Improvements:

- The automation of a series of administrative tasks such as inventory control, billing and collection of revenues, record keeping, etc. will be instituted. The hardware, software and user training will be provided.

- Adequate space for storage of equipment and spare parts at each proposed wastewater facility will be provided as part of the design/build contract; an inventory control program will also be established as part of the design/build contract; the improvements instituted in storage/inventory control area at each treatment facility will be integrated with the larger municipal systems under the TA contract; and finally, the procurement procedures for non expandable/expendable and for emergency needs, from local and foreign sources, will be reviewed and appropriate modifications will be introduced.

- Performance standards for various units and equipment, to be carried out as part of plant specific O&M assistance, will be developed and an effective performance monitoring system for individual water and wastewater systems will be established.

d. Human Resources Development:

The Canal Cities Phase II project will finance two major training activities to upgrade the water and wastewater personnel skills to properly manage, operate and maintain the newly-constructed and proposed systems. The leading activity will be the development of organizational-specific operations and maintenance training systems, followed by facility-specific start-up training and operations assistance for the new wastewater treatment systems in the three cities.

i. Development of Organizational Specific Operations and Maintenance Training Systems

Wastewater

Prior to the initiation of project training activities, each of the three governorates will be required to identify at least four permanent wastewater training counterparts to work full-time in counterpart relationships with the Technical Assistance (TA) Contractor's training staff in the development of comprehensive wastewater operations and maintenance training systems. Governorate counterparts will include a wastewater training manager and technical O&M instructor trainees representing the treatment, pump station and collection divisions in each of the three cities. Training system development will be conducted within each city in hands-on, training team, apprentice relationships between the expatriate training specialists and the identified instructor trainees. Limited twinning and observational training opportunities will also be programmed as is deemed appropriate. The wastewater training systems development program will involve at least six major activities, to include: Trainer Training, Program Planning and Identification, Program Development, Program Implementation, Monitoring and Evaluation, and Program Modification and Follow-Up.

- Trainer Training

The initial activity will involve trainer training for the identified training staff. This activity will introduce and acquaint training staff to operation and maintenance training methodology and skills. During subsequent project activities, governorate trainers will have sufficient opportunities in which to implement, test, and develop these skills.

- Program Planning and Identification

As part of the second activity, program planning and identification, the training team will conduct personnel skill testing and evaluation to determine training needs for the new treatment facilities. The team will also test those functions not adequately addressed during the Phase I Project, and subsequently, and develop a comprehensive training development plan and schedule.

- Program Development

Based on the identified field training needs and priorities, the TA Contractor/Wastewater Department Training Team (TA/WWTT) will develop appropriate supervisory, operations, maintenance and safety training curricula. Since the primary training needs focus on wastewater treatment, it is envisioned that the majority of the training modules developed will also focus on wastewater treatment topics. The course curriculum developed will include an appropriate mix of pre-service training modules to introduce the assigned personnel to wastewater treatment skills as well as in-service training modules to develop and enhance these skills over a period of time. This phase of the program will train the wastewater trainers in the development of course modules, supporting manuals/handbooks, standard procedures, maintenance checklists, training aids, models and cutaways and audio-visual aids. The training materials will be developed in the colloquial Arabic dialect and will be supported with sufficient graphic illustrations to reflect the literacy skills of the wastewater department trainees. During the program development phase, the TA Contractor will coordinate with both MCC, and more closely with the design-build contractor to ensure that the training curriculum adequately reflects the operational needs of the treatment facilities, and carefully integrates the contractors' facility-specific standard operating/safety procedures, preventive maintenance programs and O&M manuals.

- Program Implementation

During this phase, training delivery will begin. The TA/WWTT will initiate training delivery as appropriate at the time during the 12-month period prior to the completion of the wastewater facilities and prior to the pre-start-up and start-up hands-on training by the DBC for the treatment plants, and simultaneously for other facility/equipment training. Following start-up of the treatment facilities, the TA/WWTT will work closely

with the DBC to coordinate all training activities. During this phase, trainer skills and the developed curriculums and supporting materials will be field tested. The consultant will assist the wastewater trainers in the revision/refinement of the curriculums and training materials.

-Monitoring and Evaluation

With the completion of the initial training course deliveries, the TA/WWTT will develop performance evaluation systems based on performance indicators to test the skills of the newly-trained personnel, and the O&M performance of facilities/equipment with trained personnel. The performance evaluation systems will be implemented as required, and the results will be translated into appropriate follow-up training responses.

- Program Modification and Follow-up

Training follow-up activities, course modifications and refresher training curriculums will be designed, developed and implemented as are required based on evaluation and system needs.

Water

Prior to the initiation of project training activities in the Canal Cities, SCA will be required to create a water training division within the Authority's Training Department, and appoint at least ten permanent instructors for water training activities. It is envisioned that the division will include a director, instructor trainees, and support personnel, and that the SCA will provide adequate building space in the completed Port Fouad training facility to house pre-service training activities and adequate space at the primary water treatment facilities in the three cities for in-service training activities. Instructor trainees will be selected from amongst SCA's current water sector personnel resources, or will be new hires. The SCA instructor trainees will work full-time in counterpart training relationships with the TA consultants' training staff in the design and development of a pre-service training for skilled technicians, and a comprehensive in-service training for supervisors, operations, maintenance and support personnel assigned to the treatment and distribution divisions. Training system development will be conducted primarily in hands-on training team, apprentice relationships with the expatriate training specialists in Egypt. Selected, short-term nonacademic and observational training/twinning opportunities in the US will also be programmed to complement the development program. The water systems training development program will include similar major activities and follow the same sequence of events as proposed for the wastewater training development.

ii. Facility-Specific Operations Training

The wastewater treatment plant design-build contractor(s) (DBC) will be responsible to provide on-site facility-specific training to the permanent staff assigned to the wastewater treatment facility in each city.

Prior to start-up, each city will be required to designate/hire staff for the wastewater facility in accordance with DBC staffing recommendations. Likewise, the DBC will be required to closely coordinate with the TA/TWI team during the development of the operations training program to ensure standardization of methodology, and during implementation, to cooperate in joint training objectives and activities.

- Start-up Training

Start-up training will include equipment testing with manufacturers' representatives, and during this phase, staff will be introduced to the DBC's developed standard procedures. Training will acquaint staff to the equipment/processes in the facility primarily through formal hands-on and limited classroom training. During the start-up training phase, the DBC will work closely, on-site with plant management, technical and monitoring staff to apply proper operations, maintenance and safety procedures.

- Direct Operational Assistance

For a period of approximately 36 months, the DBC will maintain plant operations and maintenance specialists on-site to assist plant staff with operations. The DBC specialists will assist staff in trouble-shooting, in the application of standard operation and safety procedures, in the application and use of preventive maintenance programs, and in the application of effluent monitoring systems.

Major inputs in support of the institutional development component include U.S. 428 p.m. and Egyptian 826 p.m. of technical assistance (estimated costs $9,599,000 and LE 10,183,000); various types of equipment and commodities (estimated costs $3,130,000 and LE 2,119,000); study tours (estimated costs $524,000 and LE 670,000); and such indirect costs as GOE staff time devoted to this activity. All foreign exchange costs ($13,253,000) and local currency costs (LE 12,972,000) in support of this component will be financed by USAID. These figures exclude those costs associated with the DBCs and contingencies.

III. SUMMARY OF FEASIBILITY ANALYSES

A) Technical Analysis

1. Identified Needs

The major wastewater facilities (pump stations, force mains, and interceptors) financed by the original project are designed to handle flows of their projected service areas up to the Year 2000. These new major facilities plus the laterals constructed under the original project will substantially increase the quantities of wastewater flows to the existing treatment facilities. Since these existing facilities provide virtually no treatment, significantly larger quantities of raw wastewater will be discharged to the surface waters that are used for fishing, boating, and swimming.

The current maximum day water demand for Port Said is estimated to be in excess of 130,000 m^3/d. It is projected that the maximum day demand will increase to 276,000 m^3/d by the Year 2000 with an average daily demand of 221,000 m^3/d. AID-financed improvements to the city's water treatment plants have increased their capacity to 220,000 m^3/d. However, the source of supply, the Port Said Sweetwater Canal, can only deliver between 90,000 m^3/d and 125,000 m^3/d.

2. Basis of Technical Evaluation

Master Plans were previously prepared for each of the three Canal Cities in the summer of 1979. These Master Plans were followed by Design Report No.1 in 1981 and Design Report No. 2 in 1982 for the wastewater facilities. In addition, there were a number of updates and amendments to same as well as various supplemental reports. These various studies examined a number of alternatives for serving each of the three cities. The major alternatives which remained after extensive screening exercises were reviewed and updated as a part of the technical evaluation prepared for the Canal Cities Water and Wastewater Phase II Project. Where appropriate, the Mission has included additional alternatives that developed as part of the joint GOE/Mission project design process.

As part of the Mission technical review, sizing of facilities was revised to reflect preliminary information obtained from the 1986 census. Per capita flows were revised as appropriate based upon the limited data available in the three cities. Percentage of population served was also reviewed and modified as appropriate. This technical review has resulted in proposed facilities which will be approximately 2/3 the size of those facilities recommended in the Master Plans for the Year 2000 population in each city. The sizing will remain somewhat conservative as it is based upon a continued high rate of growth in each of the cities; however, we believe that there is a strong likelihood that growth will moderate during the coming years.

3. Evaluation of Technical Alternatives

a. Port Said Wastewater

Four potential areas for disposal of wastewater effluent in Port Said were identified. These were land disposal by irrigation, discharge to the Mediterranean Sea, discharge to the Suez Canal, and discharge to Lake Manzala. Land disposal was rejected because of inadequate suitable land near Port Said and the high levels of dissolved solids in the wastewater which would require fresh water dilution. The Advisory Committee on Reconstruction rejected the concept of an outfall to the Mediterranean Sea due to the potential harm to bathing beaches. Detailed studies of the assimilative capacities of the Suez Canal and Lake Manzala performed by Hazen and Sawyer indicate that the shallow water of Lake Manzala could serve the entire city through the Year 2000, whereas the Suez Canal could safely serve only a small portion of the city.

The following major alternatives were evaluated:	Const. Cost 1987 $ (000)	Annual O&M Cost 1987 $ (000)	Present Worth 30 years @6% 1987 $ (000)
P-1 NO ACTION;	000	000	000
P-2 NEW PRIMARY TREATMENT PLANT WITH DISCHARGE TO THE MEDITERRANEAN SEA;	95,668	1,350	114,251
P-3 NEW PRIMARY TREATMENT PLANT WITH DISCHARGE TO LAKE MANZALA	53,415	1,350	71,998
P-4 NEW SECONDARY TREATMENT PLANT WITH DISCHARGE TO LAKE MANZALA;	85,282	2,188	115,399
P-5 ANAEROBIC LAGOONS AND OXIDATION PONDS TO BE BUILT IN LAKE MANZALA;	55,880	1,438	75,674
P-6 CONVERSION OF EXISTING PLANT TO PRIMARY PLANT AS WELL AS THE CONSTRUCTION OF A NEW PRIMARY PLANT WITH DISCHARGE FROM BOTH PLANTS TO LAKE MANZALA.	50,912	1,731	74,739

A cost-effectiveness analysis indicates (see Table III-1) that Alternative P-3 is the most appropriate alternative for Port Said. The main advantages of this alternative were that it has the lowest present worth other than no action, the proposed facilities have a high degree of reliability, minimal operation and maintenance skills are required, land requirements are reasonable, and the environmental impact upon the lake is minimal.

The major disadvantage of Alternative P-3 is that the requirements of Law 48 will not be met in regard to the quality of the plant effluent; however, there is no technical justification for the provision of secondary level treatment as the lake has sufficient assimilative capacity to handle primary effluent for the projected Year 2000 service area.

b. Ismailia Wastewater

Four potential areas for disposal of wastewater effluent in Ismailia were identified. These were land disposal by irrigation, discharge to the Suez Canal, discharge to Lake Timsah, and discharge to El Mahsama Drain. Detailed studies of the assimilative capacities of the Suez Canal, Lake Timsah, and El Mahsama Drain performed by Metcalf & Eddy indicate that all three surface water bodies under consideration could safely assimilate the entire wastewater flow from the city through the Year 2000 if secondary treatment is provided. Primary treatment was not judged to be suitable for use before discharge to any of the surface water bodies due to the adverse affect of such discharge on Lake Timsah. The SCA has indicated its opposition to any discharge to the canal system.

The following major alternatives were evaluated:	Const. Cost 1987 $ (000)	Annual O&M Cost 1987 $ (000)	Present Worth 30 years @6% 1987 $ (000)
I-1 NO ACTION;	000	000	000
I-2 REHABILITATION OF EXISTING PLANT TO SECONDARY PLANT WITH DISCHARGE TO EL MAHSAMA DRAIN AND CONSTRUCTION OF NEW LAND APPLICATION SYSTEM FOR REMAINDER OF FLOW;	42,149	1,683	63,315
I-3 REHABILITATION AND EXPANSION OF EXISTING PLANT TO SECONDARY PLANT WITH DISCHARGE TO EL MAHSAMA DRAIN;	38,463	1,466	58,642
I-4 REHABILITATION AND EXPANSION OF EXISTING PLANT TO PRIMARY PLANT WITH DISCHARGE TO A NEW LAND APPLICATION SYSTEM;	63,493	1,085	78,428
I-5 NEW LAND DISPOSAL SYSTEM.	76,396	1,515	97,250

A cost-effectiveness analysis indicates (see Table III-1) that Alternative I-5 is the most appropriate alternative for Ismailia. The main advantages of this alternative were that it would have virtually no impact on surface water bodies, reliability is extremely high, construction is relatively simple, potential exists for reuse of treated wastewater on agricultural lands, public acceptance is high, and operation and maintenance requirements are relatively simple.

The major disadvantages of this alternative are that it has the highest present worth and the large area of land required.

c. Suez Wastewater

Six potential areas for disposal of wastewater effluent in Suez were identified. These were land disposal by irrigation, discharge to the Suez Canal, discharge to Suez Creek, discharge to Suez Bay, discharge to the Gulf of Suez, and discharge to the air via evaporation. Detailed studies of the assimilative capacities of the Suez Canal, Suez Creek, Suez Bay, and the Gulf of Suez performed by Pirnie-Harris indicate that only the Gulf of Suez could safely assimilate the entire wastewater flow from the city through the Year 2000 with primary treatment. The Suez Bay could assimilate up to 185,000 m^3/d with secondary treatment. Discharges to the Suez Canal or Suez Creek would require sophisticated treatment facilities.

The following major alternatives were evaluated:	Const. Cost 1987 $ (000)	Annual O&M Cost 1987 $ (000)	Present Worth 30 years @6% 1987 $ (000)
S-1 NO ACTION;	000	000	000
S-2 NEW PRIMARY PLANT IN SOUTH WITH DISCHARGE TO GULF OF SUEZ;	116,902	1,755	141,059
S-3 NEW PRIMARY PLANT IN SOUTH WITH DISCHARGE TO GULF OF SUEZ AND NEW LAND APPLICATION SYSTEM IN NORTH;	112,230	2,406	145,348
S-4 NEW LAND APPLICATION SYSTEM IN NORTH;	110,625	2,588	146,248
S-5 NEW EVAPORATION SYSTEM IN SOUTH.	235,038	4,330	294,640

A cost-effectiveness analysis indicates (see Table III-1) that Alternative S-4 is the most appropriate alternative for Suez. The main advantages of this alternative were that it has a low present worth compared to the other alternatives, there is virtually no impact on surface water bodies, reliability is extremely high, construction is relatively simple, some limited potential exists for reuse of treated wastewater on agricultural lands, public acceptance is high, and operation and maintenance requirements are relatively simple.

The major disadvantages of the proposed alternative are the large land requirements, major re-routing of the existing wastewater collection/ transmission system is required, and the limited technical studies available regarding the use of land application in Suez.

d. Port Said Raw Water

As a result of various studies prepared by others, it has become evident that the Nile River is clearly the best source of raw water for the city. Local surface and underground sources are brackish or saline and would require sophisticated treatment facilities. Since 1862, Port Said has received water from the Nile River via Canal; today, the Ismailia Sweetwater Canal carries water from the Cairo to Ismailia and then branches to both Suez and Port Said.

The following major alternatives were evaluated:	Const. Cost 1987 $ (000)	Annual O&M Cost 1987 $ (000)	Present Worth 30 years @6% 1987 $ (000)
W-1 NO ACTION;	000	000	000
W-2 DUAL 1500 MM PIPELINE WITH BOOSTER STATION;	74,628	894	86,934
W-3 DUAL 1200 MM PIPELINE WITH TWO BOOSTER STATIONS;	64,746	2,391	97,658
W-4 FOUR LOW LIFT STATIONS IN EXISTING CANAL;	25,051	1,004	38,871
W-5 LOW LIFT STATION WITH RETAINING WALLS IN EXISTING CANAL;	37,081	400	42,587
W-6 LINING AND REHABILITATION OF EXISTING CANAL.	40,140	57	40,925

A cost-effectiveness analysis indicates that Alternative W-6 is the most appropriate alternative for raw water for Port Said. The main advantages of this alternative were that it has a low present worth compared to the other alternatives, operation and maintenance is extremely simple, and system reliability is high.

The major disadvantages of the proposed alternative are that SCA has indicated a strong preference for a dual pipeline with booster stations alternative and that additional feasibility studies are required to confirm the viability of the lining alternative.

4. Proposed Actions

a. Port Said Wastewater

It is recommended that a 150,000 m^3/d wastewater treatment plant be constructed in Port Said. It is suggested that screening facilities, grit chambers, conventional primary settling tanks, and chlorination facilities would provide an appropriate level of treatment considering the level of skills realistically obtainable in the near future and the large assimilative capacity of Lake Manzala. The provision of sludge thickeners and adequate sand drying beds are necessary to ensure that sludge is frequently removed from the settling tanks. Chlorination facilities are proposed even though the original Master Plan concluded that they are not necessary to protect the water quality of the lake. The reasoning behind this is that they will serve as a safety precaution in the event that the primary facilities are not operated at a satisfactory level.

Essential facilities related to the proposed treatment plant at the new site reclaimed from Lake Manzala are a new pump station at the existing plant site and approximately 3.8 kilometers of force main to transport the raw sewage plant site to the new site. A 1.5 kilometer outfall with diffuser into Lake Manzala is also an essential element of the plan.

Complementary project elements necessary to ensure the effective and efficient utilization of the proposed facilities are as follows:

- Spare Parts;
- Warehouse;
- Maintenance Shop;
- Tools and Equipment;
- O&M Manuals, Standard Procedures, Video Tapes, and Equipment Mock-Ups;
- 2 years of O&M Assistance;
- Inventory Control Program;
- Flow Conservation Program.

b. Ismailia Wastewater

It is recommended that a 90,000 m^3/d wastewater treatment plant be constructed in Ismailia. It is suggested that screening facilities and anaerobic lagoons would provide an appropriate level of treatment considering the level of skills realistically obtainable in the near future and the proposed use of a land application system. The land application system would consist of a number of rapid infiltration beds for discharging the wastewater to the existing groundwater table, Several years of sludge storage could be accomplished within the anaerobic lagoons; a multiple cell lagoon system would permit taking one lagoon out of service for de-sludging. Partially dewatered sludge would be landfilled on the treatment plant site; landfill area for 20 years accumulation of sludge would be provided. An alternate concept would be to use conventional primary clarifiers in lieu of anaerobic lagoons; such an alternative would require the use of somewhat more sophisticated sludge handling facilities.

Essential facilities related to the proposed treatment plant at the new site are approximately 7 kilometers of dual force main to re-route the discharge from the Abu Atwa Pump Station at the existing treatment plant site to the new site. The original design of the pump station took this proposed re-routing into consideration when the pump units were selected.

Complementary project elements necessary to ensure the effective and efficient utilization of the proposed facilities are as follows:

- Spare Parts;
- Warehouse;
- Maintenance Shop
- Tools and Equipment
- O&M Manuals, Standard Procedures, Video Tapes and Equipment Mock-Ups;
- 3 Years of O&M Assistance;
- Inventory Control Program;
- Flow Conservation Program;
- Groundwater Monitoring Program;
- Industrial Users Survey;
- Industrial Waste Monitoring.

c. Suez Wastewater

It is recommended that a 200,000 m^3/d wastewater treatment plant be constructed in the northwest area of Suez. The wastewater treatment facilities and disposal system proposed for Suez are identical to those previously presented for Ismailia. Screening facilities, anaerobic lagoons, and rapid infiltration beds would compose the main elements of the treatment plant.

Essential facilities related to the proposed treatment plant at the new site are a screw type influent pump station at the head of the treatment plant, approximately 5.5 kilometers of Northerly Trunk Sewer from the treatment plant site towards the outskirts of the city center, and approximately 5 kilometers of force main to re-route the discharge from two existing major pump stations. In addition, if satisfactory service is to be provided to that region to the south of the city, it is recommended that a new Southwest Trunk Sewer about 5.5 kilometers long be constructed from the vicinity of the existing treatment plant towards the industrial area to the south. A new major pump station would be located at the downstream end of the collector to receive the wastewater from the collector and transport this wastewater to the new Northerly Trunk Sewer via approximately 7 kilometers of force main.

Complementary project elements necessary to ensure the effective and efficient utilization of the proposed facilities in Suez are identical to those presented for Ismailia with the following additions:

- Sewer Infiltration Survey;
- Sewer Rehabilitation;
- Salinity Survey.

d. Port Said Raw Water

It is recommended that the existing Sweetwater Canal from Qantara to El Raswa be dressed up and lined with concrete. The anticipated carrying capacity of the canal after the improvements are completed is 370,000 m3/d. It is also recommended that a raw water reservoir with a volume of about 1,000,000 m^3 be constructed in the vicinity of El Raswa to serve as a source of emergency supply.

B) Economic Analysis

Cost/benefit analyses are not usually performed for urban water and wastewater projects due to the extreme difficulty in accurately quantifying the benefits derived from these projects. The primary benefits associated with the proposed interventions are significant improvements in environmental quality and public health. Secondary benefits are numerous and include improvements in commercial fishing, increased recreational opportunities, enhanced property values, development of new agricultural lands, and improved life styles. Most authorities long ago recognized the futility of attempting a realistic assessment of the economic benefits associated with such interventions.

Cost-effectiveness analyses and affordability studies are normally used to justify urban water and wastewater projects. A cost-effectiveness analysis includes an assessment of a number of alternative solutions to a problem and identifies that solution which most effectively addresses the problem. The technical analysis (Annex H) includes a present worth analysis for the major alternatives identified for each of the four major construction activities proposed. Present worth was one of a number of factors that were ranked for each alternative in order to identify the most cost-effective solution to the problem. The financial analysis (Annex J) establishes the affordability of the proposed facilities.

Cost estimates were reviewed and updated in the technical analysis. For the purposes of evaluating alternatives, costs were presented in terms of 1987 U.S. dollars. Original costs were escalated using appropriate cost indices for dollar and pound components. A number of these escalated costs were then compared to new cost estimates prepared in-house, and adjusted as appropriate. A cost effectiveness criteria as opposed to a least cost method was used in recommending the preferred alternative. The cost effectiveness included cost as well as several other important factors. The criteria are performance level (1), complexity of O&M, (2) construction complexity (1), sludge handling requirements (2), local acceptiveness (3), environmental impacts (2), land requirements (2), reliability (3) and cost (present worth) (5). Each alternative is evaluated on a scale of 1 to 5 and the score for each criteria is weighted by the multiplier in (). For detailed technical analysis, please see Annex H.

Cost-effectiveness analyses indicate (see Table III-1) that the most appropriate alternative for each of the four major construction activities are as follows:

Port Said - P-3 - NEW PRIMARY TREATMENT PLANT WITH DISCHARGE TO LAKE MANZALA - $53,415,000 Construction Cost (1987 $).

Ismailia - I-5 - NEW LAND DISPOSAL SYSTEM - $76,396,000 Construction Cost (1987 $).

Suez - S-4 - NEW LAND APPLICATION SYSTEM IN NORTH - $110,625,000 Construction Cost (1987 $).

Port Said Raw Water - W-6 - LINING AND REHABILITATION OF EXISTING CANAL - $40,140,000 Construction Cost (1987 $).

Annual operation and maintenance costs per user were estimated for the recommended alternatives in an attempt to determine the affordability of the proposed systems. Annual operation and maintenance costs for each system were also factored into the present worth analysis of the alternatives. Combined water and wastewater user charges per household are anticipated to be in the range of LE 40 to LE 70 per household (year 2000 populations) for the three cities. Income levels in the three cities indicate that most (over 80%) households should be able to pay the increased costs of adequate water and wastewater systems.

TABLE III-1
SUMMARY OF COST EFFECTIVENESS AND EVALUATION OF ALTERNATIVES

Port Said Wastewater Treatment

Criteria	Multiplier	Alternatives P-1	P-2	P-3	P-4	P-5	P-6
Performance Level	1	1x1=1	4x1=4	4x1=4	5x1=5	5x1=5	5x1=4
Complexity of O&M	2	2x2=4	4x2=8	4x2=8	1x2=2	3x2=6	3x2=6
Construction Complexity	1	5x1=5	3x1=3	4x1=4	1x1=1	2x1=2	2x1=2
Sludge Handling Requirements	2	3x2=6	3x2=6	3x2=6	2x2=4	4x2=8	3x2=6
Local Acceptiveness	3	1x3=3	1x3=3	3x3=9	5x3=15	2x3=6	1x3=3
Environmental Impact	2	1x2=4	4x2=8	4x2=8	5x2=10	5x2=10	4x2=8
Land Requirements	2	5x2=10	4x2=8	4x2=8	3x2=6	2x2=4	5x2=10
Reliability	3	0x3=0	5x3=15	5x3=15	3x3=9	4x3=12	4x3=12
Cost (Present Worth)	5	5x5=25	1x5=5	4x5=20	1x5=5	3x5=15	3x5=15
TOTALS		58	60	82	57	68	66
RANKING		6	4	1	5	2	3

Ismailia Wastewater Treatment

Criteria	Multiplier	Alternatives I-1	I-2	I-3	I-4	I-5
Performance Level	1	1x1=1	4x1=4	4x1=4	5x1=5	5x1=5
Complexity of O&M	2	2x2=4	4x2=8	3x2=6	4x2=8	5x2=10
Construction Complexity	1	5x1=5	2x1=2	2x1=2	3x1=3	5x1=5
Sludge Handling Requirements	2	3x2=6	2x2=4	2x2=4	3x2=6	4x2=8
Local Acceptiveness	3	0x3=0	2x3=6	2x3=6	4x3=12	5x3=15
Environmental Impact	2	0x2=0	3x2=6	2x2=4	5x2=10	5x2=10
Land Requirements	2	5x2=10	3x2=6	4x2=8	2x2=4	2x2=4
Reliability	3	0x3=0	2x3=6	2x3=6	4x3=12	5x3=15
Cost (Present Worth)	5	5x5=25	3x5=15	4x5=20	2x5=10	1x5=5
TOTALS		51	57	60	70	77
RANKING		5	4	3	2	1

Suez Wastewater Treatment

Criteria	Multiplier	Alternatives S-1	S-2	S-3	S-4	S-5
Performance Level	1	1x1=1	4x1=4	4x1=4	5x1=5	5x1=5
Complexity of O&M	2	2x2=4	4x2=8	8x2=8	5x2=10	5x2=10
Construction Complexity	1	5x1=5	4x1=4	2x1=2	3x1=3	5x1=10
Sludge Handling Requirements	2	3x2=6	2x2=4	3x2=6	4x2=8	4x2=8
Local Acceptiveness	3	1x3=3	0x3=0	3x3=9	5x3=15	3x3=9
Environmental Impact	2	0x2=0	3x2=6	4x2=8	5x2=10	3x2=6
Land Requirements	2	5x2=10	5x2=10	2x2=4	1x2=2	0x2=0
Reliability	3	0x3=0	4x3=12	4x3=12	5x3=15	5x3=15
Cost (Present Worth)	5	5x5=25	4x5=20	3x5=15	3x5=15	0x5=0
TOTALS		54	63	68	83	63
RANKING		5	3	2	1	3

Port Said Water Supply

Criteria	Multiplier	Alternatives W-1	W-2	W-3	W-4	W-5	W-6
Performance Level	4	1x4=4	4x4=16	4x4=16	3x4=12	4x4=16	4x4=16
Complexity of O&M	2	4x2=8	3x2=6	2x2=4	3x2=6	3x2=6	5x2=10
Construction Complexity 5x1=5	1	5x1=5	3x1=3	2x1=2	2x1=2	2x1=2	
Local Acceptiveness	4	0x4=0	5x4=20	5x4=20	2x4=8	2x4=8	3x4=12
Environmental Impact	2	3x2=6	3x2=6	3x2=6	4x2=8	4x2=8	5x2=10
Land Requirements	2	5x2=10	3x2=6	3x2=6	4x2=8	4x2=8	5x2=10
Reliability	3	3x3=9	3x3=9	3x3=9	4x3=12	4x3=12	5x3=15
Cost (Present Worth)	4	5x4=20	1x4=4	0x4=0	4x4=16	3x4=12	4x4=16
TOTALS		62	70	63	72	72	94
RANKING		6	4	5	2	2	1

C) Financial Analysis

This analysis (Annex I) addressed the issue of financial viability in terms of the GOE's ability to meet the recurrent costs.

The local coverage of O&M costs for water systems is high, but is low for wastewater systems. Whereas there is almost complete local coverage (87%) of recurrent costs for water systems, there is only between 10 and 23 percent local coverage for recurrent costs for wastewater systems.

The requirements for local coverage will increase significantly, by a factor of 5 to 7, when the new wastewater treatment plants come into operation. Most households, if they are required to, should have the ability to pay for the improved service. And, the lowest income households will not pay because most do not have household connections.

The financing approach most consistent with securing local coverage of O&M costs would be an adequate water surcharge. Other approaches consistent with the principle of local coverage are property taxes and a surcharge related to electricity consumption. All of these approaches will require the GOE to accelerate its effort to implement full self-financing of local services.

D) Administrative Analysis

This analysis (Annex K) was aimed at assessing the capacity of various agencies with regard to functions considered critical to the successful implementation of the Project. Secondly, it was designed to assess the adequacy of the proposed implementation arrangements given the relative strengths and weaknesses of concerned GOE agencies.

1. Selection of GOE Implementing Agencies

GOE agencies included in the analysis are SCA, NOPWASD, Canal Zone Water and Wastewater Organization (CZWWO), and the three local wastewater departments. SCA was the implementing agency for all water activities while NOPWASD was responsible for the implementation of all wastewater components under the Phase I Project. The three local wastewater departments, which are responsible for the operation and maintenance of wastewater facilities, played virtually no role in the design and construction of Phase I physical facilities. CZWWO was established by the Ministry of Housing and Public Utilities (MHPU) to facilitate and expedite the implementation of residual Phase I activities and the planning and management of Phase II Project components.

Each organization was analyzed with regard to its legal authority, its management capabilities including delegation of authority and the adequacy of managerial/supervisory staff, its contracting capacity including award and management of contracts with international firms, its financial management including ability to resolve payment disputes and process payments on timely basis, and its capacity to monitor, evaluate and satisfy typical USAID reporting requirements. The results indicate that there is limited or no capacity within the three Governorates to manage large projects. The three Governorates virtually played no role in the design and construction of the Phase I facilities. The local authorities have expressed a strong desire to actively participate in the implementation of Phase II Project without assuming the responsibility of its management.

a. Suez Canal Authority

USAID/FM conducted an independent study of SCA to assess the adequacy of its contracting and voucher examination procedures (see Appendix 1 and 2 to Annex K). The assessment confirms the generally held view that SCA is the best run organization in the GOE and has the required capacity and experience in managing many types/sizes of projects. For example, SCA was able to complete all of its Phase I design and construction activities as planned and as scheduled. Therefore, SCA is proposed as the GOE agency for implementing the water component of the Phase II Project.

b. National Organization for Potable Water and Sanitary Drainage

i. History and Mandate

NOPWASD was created in 1981, by amalgamating two then existing independent general organizations, one for potable water and one for sanitary drainage, with the mandate to prepare national policies and plans for potable water and sanitary drainage (see Appendix 3 to Annex K). In addition, it was charged with the necessary planning, design and construction of projects that exceed the capacity of local entities or which serve more than one governorate. Within this general mandate, NOPWASD was specifically given responsibilities to prepare general plans for the water and wastewater sectors at the national level, to conduct studies and research, to establish quality standards, to provide advice at the national level, to establish training centers, to help governorates, and to enter into national and international contractors to carry out its activities.

ii. Organization

NOPWASD's organizational structure consists of six major departments: training, research, planning and follow-up, design, execution (implementation), and administration and finance. It also includes a number of smaller staff departments such as legal, information, public relations, security, etc. The organizational chart for NOPWASD is shown in Annex K. Despite the formal amalgamation of the two previous organizations into NOPWASD, they continue to exist informally with considerable autonomy particularly in the project sector.

The main form of conducting business in NOPWASD is through intra-departmental committees. Such committees exist for all major and minor activities. For example, there is a committee for setting the annual budget and another for the five year investment plan. There are also committees for procuring anything and for hiring new personnel and promoting personnel already in service. This diffusion of responsibility leads to poor decision-making and is a fundamental weakness of NOPWASD.

iii. Staffing

NOPWASD is staffed with engineers, accountants, procurement specialists, lawyers, administrative personnel and technicians. NOPWASD's authorized strength is currently 30 top management positions and 1,337 authorized and funded lower-echelon positions. Although most of the 30 top executives are in place, only 890 positions of the authorized 1,337 are currently filled. This total (890) consists of approximately 160 engineers and 80 other professionals, 250 lab technicians and construction inspectors, 260 clerical positions, and the rest in support services. Turnover is large in the lower-paying position and NOPWASD faces difficulties in recruiting and keeping personnel due to relatively low pay, cumbersone recruitment procedures, long waits for promotions, poor personnel administration practices, and a poor working environment (crowded offices, dilapidated building, safety and fire hazards).

iv. Experience in the Implementation of Donor Projects

NOPWASD was charged with the implementation of the first Canal Cities Water and Wastewater project financed by AID. It is also implementing the AID-financed Provincial Cities Development and the Water and Wastewater Institutional Development Projects. In addition, NOPWASD has implemented projects financed by other donors, primarily the French and German governments.

v. Weaknesses

NOPWASD's weaknesses are outlined in details within the analysis of each department shown in Annex K. However, this section will focus on NOPWASD's weaknesses as discerned by USAID during the implementation of the Canal Cities Water and Wastewater I.

As the detailed Administrative Analysis (Annex K) points out, NOPWASD, as it exists today, is burdened with a bureaucratic system in which an action on even the smallest of the task gets bogged down in a complex review and approval process. All of the decision making authority is centered in the position of its Chairman. USAID experienced numerous difficulties during the implementation of the existing project. NOPWASD designated Project Manager did not have the authority to make even minor decisions. The amendment to provide for O&M services, experienced delays of about three years, and another contract amendment for engineering studies, remains without signature after more than 18 months. NOPWASD frequently misinterpreted or misunderstood contract provisions resulting in scores of disputes. Virtually every contract experienced payment disputes and/or delays. The execution of simple change orders was a lengthy and difficult process. The negotiation and settlement of claims and other disputes was an excruciating experience. The source of most of these difficulties could be attributed to the fact that the implementation responsibility was spread all over NOPWASD through inter-departmental Committees without any delegation of authority.

The local authorities in the Governorates and USAID complained for almost three years about implementation delays and other problems to the Minister of Housing, Reconstruction and Utilities (MHPU). In response to these complaints the Minister established the Canal Zone Water and Wastewater Authority (CZWWO) in December, 1986. The ministerial decree provided for an executive board comprised of the representatives of the three Governorates, MHPU and other concerned agencies. It was anticipated that the MHPU will provide the new entity with the required human, financial and physical resources to support its mission. For a while, CZWWO appeared as a viable alternative (see the detailed annex) to NOPWASD. After six months of existence the Minister dismantled CZWWO in early July, 1987 and decided to focus on strengthening NOPWASD operations instead.

vi. Proposed Remedies

As mentioned above, NOPWASD is proposed as the GOE agency responsible for the wastewater component of the Project. However, without addressing the problem of its complex internal review/approval process which involves a large number of committees and relies on the central authority of its Chairman, Phase II implementation will most certainly experience expensive delays of several years and face other problems. It appears, that at a minimum, NOPWASD should be required to establish within NOPWASD a small implementation unit staffed with qualified personnel and with reasonable delegation of authority from its Chairman. It is proposed that all of NOPWASD's concerns such as engineering, contracting legal, financial and others be represented in the implementation unit. The implementation unit should report directly to NOPWASD Chairman. The actions/decisions of the implementation unit should not be subjected to the review/approval of any other official/committee of NOPWASD. The establishment of the unit will bring focus to the implementation process, and make an identifiable group accountable for delays and other unresolved difficulties.

The establishment of a unit is, however, no guarantee that the implementation will proceed smoothly and not experience any difficulty. To make sure that NOPWASD is doing all it can, it is proposed that a project steering committee comprising of the three Governors, or their designees, SCA representative (for coordination of proposed activities), NOPWASD Chairman and the representatives of MHPU, MPIC and MOF be established. The role of Project Steering Committee will be policy guidance, monitoring progress, problem solving, and decision making during implementation. The Project Steering Committee will meet periodically to review progress and resolve problems as reported by the head of the implementation unit and the contracting personnel. The Project Steering Committee mechanism assures local participation/ control. The institutional development aspects of the project will get proper attention they deserve which otherwise could be ignored. In the process, the local authorities will gain a useful experience in the implementation of large projects. These outcomes in turn contribute, to a certain extent, towards the attainment of another key objective of the Project, i.e., the eventual autonomy and self-sufficiency of the local utilities.

In addition, NOPWASD will benefit greatly from technical assistance and training that will be provided its personnel under the on-going Water and Wastewater Institutional Development Project. This project was designed with NOPWASD especially in mind, and will include specific inputs intended to relieve constraints inherent in NOPWASD's current structure. NOPWASD expects to have the technical assistance contractor on board within three months after the obligation of the proposed project.

2. Lessons Learned and Proposed Implementation Arrangements

Based on lessons learned from others and specifically from USAID's Phase I experience, several improvements to implementation arrangements enhance the administrative feasibility of the Project. A major source of problems on NOPWASD implemented Phase I Project activities was the decision to do separate procurements for engineering services (design and construction supervision), equipment and construction services. One design/build contract, including design/equipment/construction, for each individual physical facility is proposed as an implementation approach in the Phase II Project. Secondly, during Phase I, the construction work was awarded to one U.S. and eight Egyptian firms under nine separate contracts. While the AID financed U.S. contractor completed construction activities on time, construction work by Egyptian Contractors experienced significantly delays. While the selection criteria for design/build contracts under Phase II will encourage the participation of qualified Egyptian firms as subcontractors, the contracts will be awarded only to U.S. design/construction firms. Thirdly, the design and construction supervision services under Phase I were rendered to SCA and NOPWASD by a joint venture of U.S. consulting firms under two separate host country contracts. Despite clear contract provisions, the Consultant's authority was questioned, which hampered the former's ability to exercise his

professional judgment on a timely basis. USAID's involvement in the resolution of these disputes was time consuming. To avoid similar problems and to ease the implementation burden in the Phase II Project, a single overall construction monitoring firm for all water and wastewater activities under AID Direct Contracting procedures is proposed. Fourthly, under Phase I, SCA and NOPWASD negotiated overall contract agreements with the consultants to be performed during the life of the Phase I Project. The specific scope of work, corresponding level of effort and associated costs were left to be negotiated in the form of subsequent work orders within the scope of the overall agreements. This contracting option posed considerable difficulties when NOPWASD, for instance, chose to ignore and delay negotiation with the Consultant for O&M services to the Governorates. To avoid this problem in the Phase II Project, the entire scope of work, corresponding level of effort and associated costs will be negotiated upfront and included in the contracts. Lastly, recommendations made by the American Contractors in Egypt to avoid problems will be incorporated in the tender/contract documents.

The implementation of the Phase I Project also suffered for lack of meaningful participation of the Governorates, the ultimate owners/managers of wastewater facilities, in the design and implementation of Phase I activities. One important reason for this exclusion was their extremely limited managerial and technical capacity in these areas. An important program of institutional development is being proposed to address these constraints for the future in the new Project. Additionally, the Phase II Project was designed in collaboration with the Governorates. The final Project Paper incorporates ideas generated in a series of GOE/USAID Project Design Committee and other meetings with the local authorities. Being knowledgable of what is included herein and their representation on the proposed Project Steering Committee enhances the chances of successful implementation of the Project. Finally, a series of workshops aimed at expediting implementation have been planned over the life of the Project.

3. Conclusion

Given the existing status of NOPWASD, as discussed above, the creation of an implementation unit and the Project Steering Committee as proposed, and modifications to implementation arrangements based on lessons learned from our Phase I experience, the implementation of wastewater component of the Phase II Project is most likely to proceed as planned. In summary, it can be concluded that the organizational and implementation arrangements proposed for the Phase II Project are reasonable, and that the Project is administratively feasible.

E) Social Soundness Analysis

The existing Canal Cities Water and Sewerage Phase I Project focused on, among other things, the collection of wastewater that was flooding and ponding into the streets. Because of lack of functioning treatment facilities, large quantities of collected raw sewage are now being discharged into adjacent surface water bodies, directly affecting those urban poor who

rely on these waters for their needs and those who engage in recreational activities. As the flows of wastewater increase, the problem affects the entire population because further pollution of the environment makes the three Cities less desirable places to live. In other words, the full benefits of the Phase I effort cannot be realized without the treatment of the collected wastewater. Consequently, the main thrust of the Project to build treatment facilities is compatible with the socio-cultural environment.

The Project also proposes to address the problem of inadequate raw water supply which inhibits the future development of Port Said. The sweetwater canal cannot deliver enough water to meet current needs. The proposed improvements expand the raw water supply to meet the demand of at least the population of year 2000, i.e., almost double the coverage of the existing population. The improved operation, maintenance and management of water/wastewater facilities, as a result of institutional development efforts under the Project, will ensure present/future consumers the delivery of improved services at increased but reasonable cost.

While one can easily perceive the socio-cultural compatibility, spread effects, positive consequence and higher ratio of benefit incidence of the Project, it is not possible to identify and accurately describe these variables at this time, primarily for lack of information. The need for an elaborate monitoring and evaluation system and a series of small impact studies to resolve this problem is indicated. For detailed analysis, please refer to Annex L.

F. Environmental Analysis

1. Background:

The 1979 Master Plans prepared for the three cities addressed a number of environmental considerations related to wastewater treatment facilities in each city and water supply in Port Said. Each of the Master Plans included detailed analyses of the potential receiving waters for wastewater effluent.

2. Anticipated Benefits:

Anticipated benefits to be derived from Phase I and Phase II wastewater improvements in each city include significant improvements in environmental quality and public health in the project area. These improvements are to be obtained by provision of the backnone of a wastewater collection system and a treatment facility in each city capable of serving 80 percent of the Year 2000 population. Benefits of the Phase I improvements had their primary focus on public health whereas Phase II improvements have their primary focus on environment.

Anticipated benefits to be derived from Phase II raw water supply improvements for Port Said include protection of public health through provision of a continuous supply of safe water.

3. Environmental Issues:

There are a number of environmental issues which have not yet been adequately addressed regarding the proposed Canal Cities Water and Wastewater Project -- Phase II. These include:

. Benefits to be derived from the wastewater system improvements may not be fully realized if the GOE does not contribute adequate resources to expand the collection systems in the coming years.

. Increased water consumption in Port Said can be anticipated as a result of increased water supplies from an improved Sweetwater Canal; this increased water consumption will result in higher wastewater flows within the city.

. It has been reported that in the past the Ministry of Irrigation has used herbicides for weed control in the Sweetwater Canal. Continued use of herbicides in the source of supply could have public health implications for consumers in Port Said.

. Large land requirements are associated with the proposed land application systems for wastewater treatment in Ismailia and Suez. The cities appear reluctant to provide adequate buffer zones around the proposed wastewater treatment/disposal facilities.

. Sludge handling facilities have not been fully investigated. The technical analysis favors landfilling of sludge in Ismailia and Suez. In Port Said, the dewatering of sludge on drying beds with disposal of the sludge to agricultural lands was favored. In the Master Plans for Port Said and Suez, composting was not recommended; yet, the Ismailia Master Plan favored composting of sludge.

. For Ismailia and Suez, two viable treatment alternatives exist -- anaerobic lagoons and conventional clarifiers. Anaerobic lagoons would be the simpler and more reliable alternative; however, the cities have expressed a strong preference for conventional clarifiers.

The technical analysis recommends chlorination facilities for Port Said even though the original Master Plan concluded that they are not necessary to protect the water quality of Lake Manzala. The reasoning behind this is that they will serve as a safety precaution in the event that the primary treatment facilities are not operated at a satisfactory level. Consideration should be given to the need for dechlorination facilities.

The impact of industrial wastes on the two land application systems has not been fully evaluated.

Salinity may severely restrict reuse of wastewater in Suez and possibly even in Ismailia.

The proposed discharge of treated wastewater to the ground may adversely affect groundwater levels in Ismailia and Suez. This is especially true if agricultural reuse does not occur.

The proposed treatment facilities for Port Said will provide only primary level treatment. GOE law requires secondary level treatment.

In Suez, there have been indications that the city does not fully support a land application facility to the north of the city. Local officials have stated a very strong preference for a land application system in the south. Unfortunately, existing technical studies do not support the feasibility of such a system to the south of the city.

Both SCA and MOI prefer the abandonment of the Sweetwater Canal as a source of water supply for Port Said. The technical analysis concludes that lining of the existing canal is the most cost-effective source of supply for Port Said.

The magnitude of the proposed intervention in the Canal Zone is so large that there are grave doubts regarding the capacity of the wastewater departments to operate the facilities in an effective manner. The environmental assessments will have to address scenarios in which facilities function at efficiencies substantially below design conditions.

4. Recommended Environmental Plan of Action:

It is the opinion of the Mission that a considerable amount of data exists regarding the environmental impacts of the proposed wastewater treatment facilities and minimal data is available regarding the proposed canal improvements. General indications are that the overall impact of the project upon the environment will be positive. Project design has placed strong emphasis on the selection of environmentally sound alternatives and project design has taken into consideration all of the above issues. However, many of these environmental issues have still neither been adequately addressed in the existing studies nor sufficiently studied within the context of the Project Paper.

It is proposed that site specific environmental assessments be prepared for each of the four major construction activities. To the extent possible, these assessments will incorporate information included in previous studies. These assessments are to be prepared in accordance with AID environmental procedures. The assessments would address those issues identified herein as well as any other significant issues that may be identified as a result of the scoping sessions to be held in each city.

As the exact locations of sites have not been identified for Ismailia and Suez and the treatment processes are not precisely defined, it is imperative that the environmental assessments be performed in conjunction with the performance of preliminary engineering activities or immediately following same.

The project includes funding for the preparation of environmental assessments by qualified consultants. These assessments will review the proposed action(s) as well as alternatives to the proposed action(s), and identify cost-effective and implementable mitigation actions. The assessments will also review the environmental reliability of proposed interventions under Egyptian conditions. Each assessment shall specifically address potential impacts to rare and/or endangered plant and animal species or their critical habitat.

The assessment for each major construction activity will be submitted to the ANE Bureau Environmental Coordinator for review and approval prior to the final design of that activity.

5. Environmental Clearances:

AID Environmental Procedures require that an Environmental Assessment or Environmental Impact Statement, as appropriate, be prepared for all water and wastewater projects. The Bureau Environmental Coordinator is responsible for the review and clearance of Environmental Assessments even when, as in this case, project approval authority is delegated to the field.

The ANE Bureau Environmental Coordinator has concurred with the concept of approving the Project Paper and signing the Project Agreement prior to the completion of the Environmental Assessments (State 065279).

G) Energy Analysis

Over the life of the Project, the preponderance of energy required will be electricity required for operation of the facilities. Electricity is produced by large efficient generating plants which are fed into the national power system which will supply the requirements of the facilities being financed under the Project. Service from the national power system is the most energy efficient and least cost solution. Due to the size and power requirements, the only feasible sources of power for the equipment involved are by direct engine drive, electric motor drive with electricity being

supplied by engine driven generators and electric motor drive with electricity being supplied by the national power system. The latter is, by far, the best solution.

It is noted that designers consistently oversize electric motors and transformers which contribute to excess capital and operating costs and impair efficiency. Proper sizing and evaluation of losses or efficiency will help to achieve the optimum mix of capital and operating energy cost over the life of the Project. There are motors available which are more energy efficient than standard motors and the efficiency of transformers is dependent on design which can be optimized to lowest total evaluated costs.

It appears to be a standard practice in Egypt for consultants to specify standby generation which may not be the best solution except in unusual situations. A recommended alternative is that the possibility and comparative costs of obtaining electric feeds from two different sources be investigated. In many cases, this will be a better alternative, even at higher capital costs, than a standby diesel generator because at some future time, the diesel engine will require a major overhaul which will necessitate the unit being out of service for an extended period of time, possibly several weeks.

The specific technologies employed for the utilization of energy by the Project are time tested, proven standard energy conversion methods. Appropriate comments are that efficiency of equipment should be evaluated, equipment should be properly sized and various sources of back-up power investigated. The processes to be used are covered in the TECHNICAL ANNEX which adequately demonstrates and documents that the most efficient and economical processes are to be utilized considering the given conditions, limitations and state of the technology.

IV. IMPLEMENTATION PLAN

A. GOE Project Management Responsibilities

SCA and NOPWASD will be the two GOE agencies responsible for the implementation of the proposed Project. SCA was the implementing agency for the water and NOPWASD was responsible for the wastewater component of Phase I Project. As the Administrative Analysis points out, SCA is probably the best run organization in Egypt. The Phase I implementation experience amply proves this point. SCA accomplished the design and construction, and institutional aspects of the Project without delays or cost over-runs. No major modifications, other than those proposed in this plan to reduce SCA management burden, to SCA existing implementation arrangements are proposed.

NOPWASD implemented Phase I activities experienced numerous delays and other difficulties as summarized in Section III D. Considering these difficulties, USAID explored various alternatives but concluded that NOPWASD was the only practical agency to implement the wastewater component. Several modifications to NOPWASD project management and implementation arrangements are, however, necessary to avoid difficulties experienced during Phase I. It is proposed, in the form of a condition precedent, that NOPWASD establish a unit specifically to implement the proposed Project. It is expected that the unit will be staffed with qualified personnel representing all of NOPWASD's concerns, properly equipped and delegated sufficient authority to implement the Project. The unit will be directly responsible to the Chairman, and its actions will not be subjected to the review and approval of various committees within NOPWASD. In addition, it is proposed, again in the form of a condition precedent, a Project Steering Committee will be established to monitor project progress. At a minimum, the Project Steering Committee will include the three Canal Zone Governors, NOPWASD's Chairman, and the representatives of SCA and MPIC. The role of PSC is policy guidance, problem solving and decision making during implementation.

NOPWASD and SCA will be assisted by an American A&E firm in the monitoring of construction activities. A technical assistance contractor will provide support in the implementation of the institutional development component of the Project.

B. USAID Project Management

The office of Urban Administration and Development (UAD) in the Development Resources (DR) Directorate will be responsible for monitoring project activities on behalf of AID. A U.S. direct hire employee will be assigned to this project. The UAD Office Director will also monitor project progress, and the DR Associate Director will provide needed guidance and support to the UAD team as and when required. In addition, two full time local hire engineers will be assigned to the Project. Also, approximately 25 percent of the time of a direct hire U.S. Engineer assigned to the DR Project Support Staff is expected to be devoted to the Project. The project plans, project reports, contractor reports, financial reports, consultations with

NOPWASD, SCA and wastewater department heads and other GOE officials, site visits and evaluations will be the Project Officer's tools for monitoring project activities. A monitoring checklist detailing responsibilities will be developed by the Project Officer in the earlier stages of implementation. UAD will seek the support and assistance of others such as the legal, contracting and financial offices within USAID as and when necessary.

C. Implementation Approach by Activity

The Project essentially consists of three discreet activities; design and construction of three wastewater treatment plants, one in each of the three Canal Cities; design and construction of raw water transmission facilities from Qantara to Port Said (a distance of approximately 46 kilometers); and the institutional development of utilities involved including a major human resources development effort to address existing and future needs.

1. Construction of Wastewater Treatment Facilities

The administrative analyses prepared for the Project Paper recommend that the treatment plants in each of the three cities be constructed under individual design/build (turn-key) contracts (DBC) by experienced American contractors. The contracts will be AID-financed Host-Country contracts with the NOPWASD for the treatment plants and SCA for the raw water transmission facility as the Egyptian contracting parties. Each DBC will be fully responsible for engineering design of the facilities, procurement and furnishing and delivery of all materials and equipment (including reasonable quantities of essential spare parts), construction of the facilities, testing and commissioning of the plants, operation and maintenance of the plants for three years following completion of construction, development of operations and maintenance manuals, and training of city wastewater department personnel in maintenance and operation of the plants. The contractors will also design and conduct an initial ground water monitoring and nearby surface water body monitoring programs for each land disposal system.

2. Construction of Water Transmission Facilities

The technical analysis contained herein recommends concrete lining of the Port Said Sweetwater Canal as the most cost-effective means of meeting Port Said's water supply needs through the year 2000. A single American DBC is again proposed given the complexity of continuous pour horizontal slip forming of the concrete works and other alternative construction techniques necessitated by the need to maintain the current canal flows while the construction progresses.

3. Institutional Development

Considering the magnitude of construction activities and the complexity of institutional issues, a separate TA contract in support of the institutional development component is proposed. The TA contractor will be responsible for coordinating all institutional development and training

activities with the Governorates, NOPWASD, SCA, DBCs, MCC and other concerned entities. Twinning arrangements between the local bodies and a municipal authority in the U.S. will also be the responsibility of the TA contractor. As indicated in the implementation schedule (Section H) and explained in Annex M, the selected twinning institution will serve as the training ground for the local GOE officials. In addition, the twinning institution will provide the services of its personnel both in the U.S. and Egypt as identified. In several such situations, the role of the TA contractor is limited to the coordinator of resources inputs. The TA contractor will closely work with other U.S. technical assistance firms, under other AID financed projects, and several inter-ministerial committees and task forces, previously established and those to be established in the future, in support of strengthening the capacities of local organizations.

4. Human Resource Development (Training Plan)

The detailed Training Plan for the Project is set forth in Annex N. In essence, the purpose of the proposed training activities is to increase the institutional capacity of the SCA and the three Suez Canal Governorates to operate and maintain the water and wastewater systems under their respective jurisdictions in a cost-effective manner. The training activities, other than those that are plant specific, under the Project will be carried out under the direction of the TA contractor. However, maximum use of Egyptian trainers and other local capabilities is encouraged.

All operations and maintenance training related to the wastewater treatment plant facilities, including spare parts and inventory control, will be carried out by the respective DBCs at each of the plant sites. While classroom and generic skills training is contemplated, much of the O&M training will be in the nature of side by side hands on training between contractor operating personnel and counterpart assigned wastewater departments staff. Assignment of treatment plant staff and development of O&M training programs and materials should commence at least one year prior to plant start-up. Trainees should participate in plant commissioning and benefit from equipment vendor installation and start-up training experience. Training should continue throughout the three years period for which the contractors have operating and maintenance responsibility. A total of 345 O&M personnel will receive plant specific training under the Project.

Each DBC will be responsible for the provision of training space as part of support facilities at each treatment facility. The same contractor will be responsible for furnishing the training facility with the required audio-visual and technical equipment in consultation with the MCC and especially the TA contractor. The training/technical equipment required in support of SCA training facility will be procured by the TA contractor. The TA contractor will be responsible for developing detailed training plans, preparing all training materials, training instructors and help in delivering a comprehensive skills training program. The TA contractor will also arrange study tours for SCA training personnel as indicated.

D. Procurement Plan

All services, materials and equipment procured under the Project will be of U.S. or Egyptian source and origin. Standard AID and GOE procurement procedures will be followed.

1. A&E Contractor

The administrative analysis prepared recommends that all engineering services, other than those provided under the respective DBC, be provided by a single long term contract with a qualified professional engineering firm with considerable experience. Services to be performed include monitoring of construction, and the development and carrying out of various technical studies and surveys, etc. as outlined elsewhere in this Paper.

The Host Country Contracting has been the standard AID vehicle for contracting of technical and professional services. This mechanism, in theory at least, transfers the management burden from AID to the host country assuming that the implementing agency has the required capacity to contract for and to manage technical assistance contracts. In practice, however, this mode requires considerable involvement from AID. This indeed has been USAID's experience in the implementation of projects in Egypt. During Phase I, USAID had to mediate between the implementing agency and the consultant in order to resolve a series of implementation, contracting and payment problems. As a result, GOE has clearly indicated in a number of recent instances that it prefers an AID Direct Contract to mitigate disagreements regarding the appropriateness, cost and expertise of U.S. engineering consultants. Given the complexity of proposed activities and the involvement of two separate implementing agencies, one overall contract under AID Direct Contracting procedures appears to make the best implementation sense. This contracting alternative may appear to place a slightly greater staff burden, but with the elimination of past difficulties in the case of HCCs, the workload may actually be less. A direct contract also gives USAID greater management control of project scheduling and implementation, and assures the contractor's independence of action.

The contract will include any local professional services required or merited. Because of the length of the Project, the contractor will be permitted, with the approval of NOPWASD, SCA and USAID, to select small sub-contracts subsequent to initial contract execution to ensure that the appropriate breadth of skills is available. Use of minority owned, small and/or economically and socially disadvantaged sub-contractors will be encouraged through appropriate incentives to be applied in the selection process. However, a set-aside for Section 8(a) small business enterprise is not considered appropriate under the circumstances and given the size, complexity and demonstrated expertise required.

Given the necessity to proceed with certain actions (i.e. Environmental Assessments), expressions of interest will be sought from interested firms as soon as reasonable assurance is in hand that the Project will indeed receive necessary GOE and AID approvals. The Federal Acquisition Regulations "FAR" procedures will be followed in the selection and contracting of the A&E firm. Under the FAR, expressions of interest and qualifying information will be sought from interested U.S. firms through a notice to be published in the Commerce Business Daily. Qualifying information thus received will be evaluated and the firms will be ranked. Formal interviews, whether in Cairo or the U.S., will be conducted with at least three of the most qualified firms prior to final selection. Final contract negotiations will be conducted in Cairo and the contractor is expected to be mobilized and working by July, 1988.

2. Design/Build Contractors - Wastewater Treatment Plants

USAID experience in the implementation of similar projects, including Canal Cities Phase I, indicates that the GOE has the required administrative/engineering capacity to contract and manage the most complex of the infrastructure projects. The physical facilities of Canal Cities Phase I were completed under the most difficult circumstances. An A&E firm was contracted to design the facilities and monitor construction activities. The equipment was procured separately under 93 different contracts and the construction work was contracted with one U.S. and nine Egyptian firms under host country contracting arrangements. These separate procurements were the source of major difficulties during the construction phase. In spite of these complexities, AID-financed physical facilities were completed on schedule with little or no cost over-runs.

Based on lessons learned from USAID's previous experience, a design/build implementation approach to construction under host country contract arrangements is proposed. This alternative approach is most efficient and cost-effective because one contractor is responsible and has control over both design and construction. DBCs will be individually procured for each of the wastewater treatment plants to be constructed in Port Said, Ismailia and Suez, respectively. Pre-qualification of American construction firms experienced in construction and start-up of similar scale and process treatment plants will be initiated as soon as possible after Project start; namely as soon as reasonable assurance can be obtained that adequate plant sites and title and access to them will be available and that the environmental assessments are indicated to be positive (USAID approval of final negotiated contracts will be withheld until there is satisfactory evidence of clear title to the respective sites and the environmental assessments have been completed). Although a single prequalification exercise is contemplated, issue of IFBs to prequalified firms for each site will be staggered at two month intervals so as to assure greater participation by interested firms and to allow adequate and proper time for evaluation of proposals. Individual contracts will be awarded for each site. However, a single U.S. firm could be awarded more than one contract if qualified and if it were be to the advantage of the Project.

The DBCs will be procured only from U.S. firms given the size, complexity and the design/build approach contemplated. However, construction firms with in-house engineering design capability are encouraged to make prime/sub-contractor arrangements with experienced Egyptian A&E firms. Prime/sub-contractor arrangements with local construction firms are acceptable for civil works construction. However, the U.S. prime contractor will be held responsible for the quality and performance of all works. Design/build services will be procured using a two-step procurement process (Invitation for Bids - IFB, evaluation, submittal of price proposals, selection, contract negotiation) following AID Handbook 11, Chapter 2 host country contracting procedures. NOPWASD will develop the terms of reference with the assistance of the MCC and forward these to USAID for review and approval. Utilization of minority and/or section 8(a) small/disadvantaged and firms will be encouraged. NOPWASD will publish Requests for Expressions of Interest, issue IFBs to qualified firms and establish IFB deadlines. Following the receipt of technical bids, NOPWASD will evaluate the same with the assistance of the MCC and ask the technically responsive firms to submit commercial bids. Contract award will be made to the lowest qualified bidder on a lump-sum basis. Included in the lump-sum contract price will be the costs of all commodities and equipment, commissioning and start-up expenses, costs of plant operation and maintenance by contractor staff for a period of up to three years following completion of construction, and the costs of O&M training for the respective wastewater staffs. Mobilization of the first DBC is expected by October, 1990 and construction of the first wastewater treatment plant is scheduled for completion June 30, 1994. Departure of the last of the contractor O&M personnel and final project completion should be by June 30, 1997.

3. Design/Build Contractor - Water Transmission Facilities

Implementation of the 46 Kilometer raw water transmission facility will be carried out following similar procedures to those outlined above for implementation of the wastewater treatment facilities. A single DBC will be selected following AID Handbook 11, Chapter 2 two-step procedures as above, who will enter into a lump-sum host country contract with the SCA to design all works and perform the lining of the canal. The MCC will review all designs and assist the SCA by performing monitoring of construction services. Design/Build contractor mobilization is scheduled to be completed by September, 1991 and construction completion should be by October, 1994.

4. Institutional Development Contractor

As in the case of MCC, one TA contract in support of all water/wastewater institutional development activities under AID Direct Contracting arrangement is proposed. The firm to be selected from the U.S. is expected to have considerable expertise and successful experience in the area of institutional development. While the use of minority owned, small and economically and socially disadvantaged sub-contractors is encouraged, no set aside for Section 8(a) is considered appropriate given the complexity of the institutional issues and the magnitude of activities. The services for the TA contractor will be advertised and the selection process will follow the same

course as is proposed for the MCC. Upon selection, the TA contractor will assist in the selection and execution of a cooperative agreement between the Canal Cities and a U.S. municipality in support of twinning activities.

The TA contractor will procure under the contract project support vehicles and equipment required to carry out his work and appropriately equip the SCA training facility. The contractor will procure, one 18 to 25 seat mini-bus for each of the cities and the SCA (total 4) under the contract to facilitate the transport of trainers to various training sites. In addition, the contractor will procure and equip a vehicle for SCA's mobile training unit. It is anticipated that the services will be performed under direct contract with USAID. Therefore, procurement will be carried out following "FAR" procedures.

E. Implementation Workshops

A frequent source of implementation difficulties is the lack of a common understanding as to how a project is to be implemented. This is partially due to inadequate understanding of AID bureaucratic procedures, partly because the key design and key implementation people are not the same, and in great part due to lack of communication and coordination among different offices within a given GOE entity and among various agencies directly and indirectly involved in the implementation of a project. The regularly scheduled implementation workshops help to resolve all of these difficulties as they develop and before they become major bottlenecks.

It is proposed that implementation workshops are held on a quarterly basis over the life of the Project. Anyone in the implementing agencies, others in the GOE and USAID who will play a direct/indirect or present/potential role in the implementation of the Project as well as the representatives of various contractors will be invited to attend. These workshops lasting two days will be held at a site away from the implementing agencies, USAID and the Project site. This is considered essential to minimize routine work place distractions and to encourage total concentration on detailed project implementation. All costs (L.E. 735,000) incidental to the implementation workshops have been included in the proposed financial plan.

F. Data Collection, Monitoring and Evaluation Plan

1. Introduction

The physical improvements planned under the project - the expansion of basic wastewater treatment and raw water supply infrastructure in the Canal Cities - are clearly defined and their progress is easily monitored. Supportive institutional and manpower development activities, and the relatively indirect anticipated social impacts, however, present a greater challenge from an evaluation standpoint. Moreover, their diversity requires a variety of evaluation approaches.

Defining an evaluation strategy for this project is therefore not an easy task. Evaluation activities must of necessity emphasize certain aspects of the project over others, if they are to be manageable in terms of scope, effort and cost. All these considerations have shaped the evaluation framework described below. The financial plan provides sufficient funds for relavent studies ($91,000; L.E. 193,000) and evaluation ($295,000; L.E. 664,000) activities.

2. Monitoring and Evaluation Strategy

At the core of this project is the construction of new infrastructure facilities. Day-to-day project monitoring will primarily focus on the physical progress of these activities, and the delivery of technical services. Evaluation efforts - as distinguished from monitoring - will emphasize institutional and manpower development activities, since these are vital to the long-term sustainability and effective operation of physical facilities. Social and environmental impacts will be given somewhat lesser attention.

Key evaluation issues, approaches to data collection, mechanism for analysis and review, and special resource requirements for major monitoring and evaluation activities are described below.

3. Information Gathering and Evaluation Activities

a. Construction Activities

Issues: The bulk of project funds will support construction of new facilities, and USAID, the Ministry and NOPWASD will closely monitor progress and quality of construction.

Data Sources: Information on construction progress will be gathered through project records; the quarterly implementation workshops (see section IV.E); periodic reports from the implementing agencies and the design-build contractor; and periodic site visits by USAID engineers. Once construction is completed, plant operations data on effluent quality and water flow will provide feedback on the adequacy of the design and construction.

Analysis and Review: The quarterly implementation workshops and the annual review process described below will address major implementation problems with construction activities.

b. Institutional Development Activities:

Issues: The key issue related to the delivery of these services is whether they are successful in effecting desired institutional changes. To answer this question, the project must have an information system to track these changes.

Data Sources: As part of the detailed design of institutional development activities, USAID and the implementing agencies, with the assistance of the technical assistance (TA) consultant, will develop annual

performance benchmarks and targets for these activities. The TA consultant will provide the short-term advisory services of an evaluation and information specialist to assist the implementing agencies in establishing agency-specific information systems to document and measure progress against these benchmarks and targets. Table IV-1 provides an illustrative listing of areas in which benchmarks will be developed and data collected on an ongoing basis.

Analysis and Review: Progress against these benchmarks will be reviewed, as appropriate, during the quarterly implementation workshops. However, the primary forum for be a high-level annual review including the NOPWASD and SCA Water Authority Chairmen, senior Ministry officials, and USAID senior management. The TA contractor will prepare an annual report for the review, describing progress against institutional benchmarks and targets, and identifying major issues and problems that need to be addressed.

An initial external mid-term evaluation will take place once institutional development activities have been underway for approximately three years. The purpose of this mid-term evaluation will be to review the effectiveness of institutional development activities and implementation arrangements, and to recommend changes and adjustments as appropriate.

An external evaluation in the final year of the project will assess the outcomes and impacts of institutional development activities, i.e., the extent to which the project has contributed to improved financial viability and to more reliable and efficient water and sewerage services.

c. Manpower Development

Issues: Special emphasis will also be given to manpower development activities. Benchmarks for implementation of these activities will be established and monitored through the annual project review process. In addition, evaluation efforts will focus on the effectiveness and sustainability of training units established by the various implementing agencies. Towards the end of the project, evaluation will focus on the adequacy of start-up training for project facilities.

Data Sources: Project records, the quarterly implementation workshops, and the report prepared by the TA consultant for the annual project review will yield information on progress in training of trainers as well as in start-up training for plant operators. In addition, when start-up training begins, each training unit will establish a trainee follow-up system and a system for monitoring O&M performance at each facility.

Analysis and Review: A second mid-term evaluation will take place soon after the facilities are completed, and will focus on project training activities. The evaluation will assess the effectiveness of individual agency training units, and the adequacy of staffing and financial arrangements for the continued operation of training units beyond the life of the project. The evaluation will also assess the adequacy of plant-specific start-up training and O&M technical services, and determine whether any additional assistance in these areas is necessary.

d. Social and Environmental Impacts:

Issues: A whole host of potential socio-economic issues lend themselves to further study and analysis:

- Unlike the Phase I project, Phase II does not directly finance expansion of water distribution and wastewater collection services. Nevertheless, expansion of household sewage hook-ups and water connections is needed for the project is to achieve its stated goal.

- Beneficiaries of anticipated environmental improvements are not well defined. It is unclear to what extent local residents, owners and employees of tourist facilities and tourists themselves will benefit from reduced pollution and increased availability of water.

- Local residents' willingness and ability to pay more for better services is an important assumption underlying the design of the institutional development component. Implementing agencies need a better understanding of politically acceptable and economically feasible tariff levels prior to revising current tariff structures.

Evaluation will focus on expansion of coverage and willingness/ability to pay for services, because of their immediate relevance and utility to project design and implementation.

Data Sources: As soon as the TA consultant team is mobilized, the team will subcontract a local consulting firm to conduct a special baseline social study, working closely with USAID and NOPWASD to define the detailed scope of the study. The study will assess current coverage of the water and sewage networks; identify currently unserved populations by geographic location and socio-economic characteristics; evaluate their willingness and ability to pay increased tariffs, and customer perceptions of needed service improvements.

The TA consultant will assist the implementing agencies in developing improved, automated, information systems to track the expansion of household water and sewerage hookups. This information system should be the basis for evaluating expansion of services and determining whether end-of-project population coverage is sufficient to ensure a significant impact.

(N.B. If the data base is not adequate, it may be necessary to supplement these data with a follow-up special study, towards the end of the project, to assess the extent the extent to which new services have been extended to populations unserved at the time of the baseline study.)

TABLE IV-1
DATA COLLECTION, MONITORING AND EVALUATION PLAN: SUMMARY

ACTIVITY	KEY ISSUES	DATA SOURCES	MECHANISM FOR ANALYSIS/REVIEW
1. CONSTRUCTION	o Physical Progress	Project records Implementing Agency and Contractor Reports, Site Visits	Quarterly Implementation Workshops; Annual Project Reviews
	o Adequacy of Design and Construction - Effluent Quality - Volume of Raw Water Supply (Pt. Said)	Plant operations data and physical measurement	Annual Reviews; External Evaluation (#3)
2. INSTITUTIONAL DEVELOPMENT	o Effectiveness of TA institutional devpt. activities and implementation arrangements	Project Records; Interviews with key Agency and contractor personnel	Annual Reviews; External evaluation (#1)
	o Progress against benchmarks in the following areas: - Improved financial management and cost recovery - Strengthend legal framework - Improved management information systems - Improved commodity management - Improvements in O&M and network efficiency - Increased consumer awareness and reduced wastage	Agency-specific performance monitoring systems; TA consultant's reports for annual review	Annual Reviews
	o Institutional Outcomes and Impacts (Areas identified above)	Agency-specific benchmarks monitoring systems; interviews with key personnel	External evaluation (#3)

TABLE IV-1 (CONT'D)

ACTIVITY	KEY ISSUES	DATA SOURCES	MECHANISM FOR ANALYSIS/REVIEW
3. MANPOWER DEVELOPMENT	o Establishment and Sustainability of Training Units	Project Records; Contractor Reports; Interviews with key personnel	Annual Reviews; External Evaluation (#2)
	o Effectiveness and adequacy of start-up training and O&M TA services; Plant O&M performance during start-up phase.	Facility specific trainee follow-up and O&M performance monitoring systems	Annual Reviews; External Evaluation (#2)
4. SOCIAL IMPACTS	o Expansion of water and sewerage hook-ups to adequate number of households to ensure significant project	Social Study to identify baseline coverage and unserved populations; MIS systems to track new hook-ups	Annual Review; Development of strategy and target groups for expansion of services. External Evaluation (#3)
	o Willingness/ability of currently served and unserved populations to pay more for improved services and new hook-ups of needed services improvements.	Baseline social study	Annual Review; Design of new tariff structure; Design of network improvement program.

Review and Analysis: The baseline study should yield information of direct relevance to project institutional development activities. The Steering Committee and individual agencies will use this information to formulate and implement higher water/wastewater tariffs; and to expand service to unserved populations.

G. Reports

1. Progress

Progress reports will be prepared and submitted by NOPWASD and SCA to concerned GOE agencies (copies to USAID) on a monthly, quarterly and an annual basis. These reports will summarize all on-going Project activities, indicating their status, degree of completion, their achievement of Project objectives, problems and proposed method for resolving problem areas. Annually, progress reports will contain a summary of the historical and planned performance indicators. The progress reports are to be prepared in Arabic and English and will be used for monitoring the Project.

2. Contractors

NOPWASD and SCA are to require their contractors to submit quarterly reports to them with copies to USAID. These reports are expected to summarize the contractors' progress towards accomplishing the stated scope of work, including delivery of inputs, tasks accomplished, anticipated actions in the next quarter, problems encountered and their proposed resolution. Similar reports will be submitted to the USAID by the MCC on a monthly basis with copies to NOPWASD and SCA.

3. Financial

NOPWASD and SCA are to submit financial reports on a semi-annual basis summarizing the Project financial status by Project input. These reports will be compiled by NOPWASD and SCA in accordance with the reporting formats to be provided by USAID.

4. Other Donors Activities

NOPWASD and SCA are to keep USAID informed of all existing and proposed activities that will affect this project. On an annual basis, SCA will submit to USAID an updated summary report of such activities by other donors.

5. Special Reports

NOPWASD and SCA will prepare and forward to USAID in a timely fashion, and as requested, special reports summarizing extraordinary events which potentially may affect achievement of Project objectives.

H. Conditions Precedent and Covenants

1. First Disbursement

Prior to any disbursement or to the issuance of any commitment documents under the Grant, the Cooperating Country shall, except as the Parties may otherwise agree in writing, furnished to A.I.D., in form and substance satisfactory to A.I.D.:

a. A statement of the names and titles of the persons who will act as representatives of the Cooperating Country under the Grant, together with a specimen signature of each person specified in such statement;

b. A statement, with supporting detail, to the effect that adequate staff, physical facilities and financial resources either have been, or on a timely basis will be, made available to the Suez Canal Authority (SCA) and the National Organization for Potable Water and Sanitary Drainage (NOPWASD) to carry out their Project-related implementation responsibilities.

2. Disbursements for Construction Activity - General

Prior to any disbursement or to the issuance of any commitment documents under the Grant for the purpose of financing construction activity, the Cooperating Country shall, except as the Parties may otherwise agree in writing, furnish to A.I.D., in form and substance satisfactory to A.I.D.:

a. Concerning water and wastewater facilities previously financed by A.I.D. under the Canal Cities Water and Wastewater Phase I Project (263-0048), evidence that tariff increases have been implemented so as to meet 100 percent of the recurrent (operating and maintenance) costs of the water facilities and 50 percent of the recurrent costs of the wastewater facilities; and

b. Concerning water and wastewater facilities to be financed under the Phase II Project, evidence of the Cooperating Country's intention and planning both (i) to increase tariffs, over time, so as to cover the recurrent costs to be associated with these facilities and (ii) during the interim, to cover deficits through additions to the recurring costs budget of SCA and the three Governorates.

c. Evidence that a Project Implementation Unit has been established within NOPWASD; that such Unit either has been fully staffed or will be fully staffed on a timely basis; and that such Unit has an appropriate degree of autonomy to expedite award and implementation of construction contracts; and

d. Evidence that a Project Steering Committee has been established; that such Committee includes representatives of the three concerned governors, NOPWASD, SCA, the Ministry of Planning and International Cooperation and the Ministry of Housing and Public Utilities; and that such Committee will meet regularly for the purposes of reviewing construction and other Project activity and providing guidance and direction as appropriate.

3. Disbursement for Individual Construction Contracts

Prior to any disbursement or to the issuance of any commitment documents under the Grant for the purpose of financing individual construction contracts, the Cooperating Country shall, except as the Parties may otherwise agree in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D.:

a. Evidence that clear title to all land necessary to construct and operate such individual facility has been obtained or will be obtained on a timely basis;

b. Evidence that an Environmental Assessment has been completed for such individual facility, together with the Cooperating Country's statement as to how the results of that Assessment will be incorporated into final design of such facility; and

c. Confirmation that adequate Egyptian pound resources will be available, according to then current estimates, to meet the local currency costs of each such contract within the Cooperating Country's contribution to the Project.

4. Disbursement for Certain Training Activities

Prior to any disbursement or to the issuance of any commitment documents under the Grant for the purpose of financing training of SCA personnel in the operations and maintenance area, the Cooperating Country shall, except as the Parties may otherwise agree in writing, furnish to A.I.D., in form and substance satisfactory to A.I.D., evidence that a Water Training Division has been established within SCA's Training Division and that appropriate plans exist to staff the Water Training Division at a level, and within a schedule, consistent with Project requirements.

5. Covenants

The Grant Agreement will contain in substance the following covenants:

a. Role of Engineer. Construction contracts financed under the project shall contain a delegation to the U.S. engineering consultant of the authority to carry out certain duties as specified for "the Engineer" in Parts I and II of standard "FIDIC" terms 1/.

b. Provisional Sums. Construction contracts financed under the Project shall call for provisional sum arrangements acceptable to A.I.D.

1/ "Conditions of Contract for Works of Civil Engineering Construction", published by the Federation Internationale des Ingenieurs Conseils (FIDIC); 3rd Edition (March 1977).

c. Social Insurance. Egyptian social insurance premiums assessable on any construction contracts financed under the Project shall be cost-reimbursable expenditures to each such contractor and shall be payable within the Cooperating Country's contribution to the Project.

d. Financing Mechanism. The financial contributions of the Cooperating Country to the local currency costs of construction contracts shall be met through use of Egyptian pound letters of credit.

e. Collection Systems. The Cooperating Country will exert its best efforts, over time, and through use of its own resources, to expand sewerage collection systems to cover at least 80 percent of the population of the Canal Cities by the year 2000 and thereby to realize the full benefit of the infrastructure being funded under the Project.

f. Exemption from Decennial Liability. Contractors, architects, consultants and subcontractors, regardless of nationality, working on the Project shall be exempt from the provisions of the Egyptian civil code imposing decennial liability.

g. Consideration of Legislation or Regulatory Change. The Cooperating Country will give full consideration based inter alia on Project-funded consultants' recommendations, to maximizing project benefits through the passage of new legislation or regulations in the areas of (i) requiring industry to treat its own waste prior to introduction into sewer systems; (ii) prohibiting disposal of garbage in manholes; and (iii) requiring a building permit for water/wastewater services prior to the start-up of construction.

I. Implementation Schedule

An illustrative implementation schedule is proposed in Annex D. Given the diverse nature of the Project activities, it is assumed that the actual implementation, task/activities and schedule or sequence of events, may significantly vary from what is projected herein. Several measures have been proposed to expedite the Project implementation to keep it reasonably on course as planned.

The schedule presupposes that the Project Agreement will be signed this fiscal year. The request for expressions of interest for the services of a technical assistance contractor will be advertised on or about the same time, and the construction monitoring contractor will be selected and mobilized within approximately the next twelve months, i.e. before the end of June, 1988. A period of approximately one year, from MCC mobilization, will be required to perform and complete such preliminary engineering activities as soils investigations, and surveys, environmental assessments, and IFBs for each of the physical facilities. Expressions of interest will be sought and shortlisting of firms for all design/build contracts will be accomplished during the same period. It is anticipated that many of these preliminary tasks can be accomplished utilizing funds available under the Phase I

Project. A contract amendment for these activities, among others, is currently being negotiated with the Consultant. Should this amendment not be executed as anticipated, initial activities in the proposed schedule will take approximately additional 12 months to complete (see Annex H).

Upon completion of shortlistings, the issuance of IFBs will be staggered over a period of about eight months. A period of approximately 18 month is required from the issuance of each IFB to the award of the contract. The first DBC is anticipated to be selected and mobilized by September, 1989. A period of three to three and one-half years for completion of design and construction activities, four months for commissioning/start-up of facilities, and two to three years for direct O&M assistance have been allowed to complete each of the four major construction activities. In other words, a period of about eight years has been built into the schedule for the completion of all activities at each treatment plant site. Due to the special pilot plant study required for the Suez treatment facilities and the lack of a firm commitment from the City of Suez regarding the plant site, it is quite likely that the implementation of the project will require more than ten years. These considerations quite likely will be offset somewhat by the possibility that a number of preliminary tasks will be performed as part of the Phase I Project, thus accelerating the schedule by as much as a year. On the balance, it appears reasonable to assume a ten-year schedule at this time. Accordingly, August 31, 1997 is proposed as the PACD.

Institutional development and training activities are proposed to commence six months after the TA contractor mobilization and selection of the twinning institution and scheduled to be accomplished approximately one year after the completion of the construction of the last design/build facility.

Significant events as shown in the illustrative implementation schedule are as follows:

Project Agreement Signed	August, 1987
Advertise for MCC (A&E Contractor)	September, 1987
Initial CPs met	November, 1987
A&E Contractor Mobilized	June, 1988
Shortlisting of Design/Build Contractors Accomplished	January, 1989
TA (Institutional Development) Contractor Mobilized	June, 1989
Port Said Design/Build Contractor Mobilized	September, 1989
Ismailia Design/Build Contractor Mobilized	November, 1989
Suez Design/Build Contractor Mobilized	January, 1990
Raw Water Design/Build Contractor Mobilized	March, 1990
Port Said Treatment Plant Construction Completed	June, 1993
Ismailia Treatment Plant Construction Completed	August, 1993
Suez Treatment Plant Construction Completed	October, 1993
Sweetwater Canal Lining Completed	December, 1993
Institutional Development Activities Completed	December, 1994
Plants Specific O&M Assistance Completed	January, 1997
Project Assistance Completion Date	August, 1997

V. COST ESTIMATES, FINANCIAL PLAN AND DISBURSEMENT PROCEDURES

A. Cost Estimates

In developing the Project cost estimates, the design team heavily relied on AID's recent experience on similar projects and contracts. The cost estimates are based on a thorough analysis of cost estimates in the master plans, various design reports and were adjusted to account for current conditions (See Annexes H, M and N). All costs were first developed in terms of 1987. A disbursement plan was developed based on the proposed implementation schedule. The disbursement figures thus derived were then adjusted for inflation. The rates used for inflating foreign exchange and local currency costs represent the best judgment of USAID's Program Office. The 13% contingency built into the life of the project totals is considered by the design team as reasonable considering the nature of proposed activities and the implementation plan. The cost estimates were reviewed by others not associated with the Project formulation in USAID and were judged to be reasonable. The requirements of Section 611 (a) have been satisfied.

B. Summary Financial Plan

AID's contributions over the life of the Project will be $380 million. GOE cash contributions to the Project will not exceed the equivalent of US $120 million in local currency estimated to be LE 350 million. In addition, GOE in kind contributions towards the Project in 1987 costs include land for the treatment plants in the Cities, staff time and support facilities. The proposed financial plan, however, does not include GOE in-kind contributions. The plan also does not provide for any salary supplements. Table V-1 provides a summary of the cost estimates while Table V-2 provides a disbursement schedule for the life of the Project. The detailed financial data may be found in Annexes H, M and N.

C. Funding Responsibilities

AID Grant funds will finance foreign exchange costs of the design/build activities, all foreign exchange and local currency costs of the construction monitoring contract, the technical assistance contract in support of the institutional development and the costs associated with monitoring and evaluation activities in support of the Project. In addition to the land and other in-kind contributions in the form of staff time and facilities, the GOE will finance all local currency costs (equivalent of US $120 million) of the design/build contracts.

As discussed earlier, the total costs estimated for the Project represent maximum AID and estimated GOE contributions. These costs are based on presumed 5 percent inflation rate for the dollar financed costs and 8 to 15 percent inflation rates for the local currency financed costs of the Project. In dollar equivalent terms, GOE's contribution is anticipated to remain constant. Depending upon inflation rates, the figure for GOE contributions in absolute terms could conceivably go up. The requirements of Section 611 (e) of FAA have been satisfied, and a certification to this effect has been included as Annex E to this document.

D. Disbursement Procedures

The construction monitoring/engineering services and technical assistance services in support of the institutional development component will be performed under AID Direct Contracting arrangements on a cost reimbursement basis. Both of these contracts will be 100% AID financed. The direct reimbursement procedures will be used to effect payments under these contracts. The design/build contracts will be jointly financed by AID and the GOE under the Host Country Contracting arrangements. USAID will establish AID Direct L/Comms to pay foreign exchange costs. NOPWASD will establish appropriate local currency Letters of Credit in favor of the wastewater design/build contractors. Similarly, SCA will do likewise in support of the design/build contract for the raw water supply project. USAID will directly reimburse for the monitoring/evaluation activities without an involvement of any of the contractors or that of the concerned GOE implementing entities. The requirements of the Mission Order 3-31 pertaining to cost estimates, in-kind contributions and disbursement procedures have been satisfied.

E. Financial Reviews and Audits

Sufficient project funds ($172,000 and L.E. 573,000) have been provided for periodic financial reviews and routine audits in support of the financial aspects of the Project. An initial financial review of NOPWASD is planned soon after it becomes operational to verify the adequacy of its procedures. Audits of the project accounts will be conducted every two years utilizing the services of a qualified accounting firms(s).

TABLE V-1
SUMMARY COST ESTIMATES AND FINANCIAL PLAN
(US $000)

PROJECT INPUTS	USAID FX	USAID LC	GOE (LC)	TOTAL
Design/Build				
Port Said	58,917	-	19,951	78,868
Ismailia	82,079	-	27,920	109,999
Suez	112,509	-	39,282	151,791
Subtotal	253,505	-	87,153	340,658
Construction Monitoring/Engineering				
Port Said	2,816	858	-	3,674
Ismailia	3,005	922	-	3,927
Suez	4,175	1,301	-	5,476
Subtotal	9,996	3,081	-	13,077
RAW WATER FACILITIES				
Design/Build	47,661	-	17,201	64,862
Construction/Monitoring/Eng.	2,306	723	-	3,029
INSTITUTIONAL DEVELOPMENT	13,253	4,448	-	17,701
CONTINGENCY	42,474	1,073	15,653	59,200
MONITORING AND EVALUATION	558	742	-	1,300
TOTAL	369,753	10,067	120,007	499,827
ROUNDED TOTAL	370,000	10,000	120,000	500,000

Note:

Local currency contributions are based on life of project average rate of $1.00 = LE 2.916501

TABLE V-2
SUMMARY CASH FLOW PROJECTION
(THOUSANDS OF $ AND LE)

Canal Cities Water and Wastewater Project - Phase II

Year	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	Total
Cash Flow $	1,569	2,460	3,391	48,338	94,988	108,821	85,561	25,154	5,082	4,636	380,000
Cash Flow LE	1,211	2,244	2,926	42,908	86,705	100,465	79,133	24,306	5,194	4,908	350,000

TOTAL DOLLAR EQUIVALENT PROJECT COST — $500,000,000 (based upon a life of project average exchange rate of $1.00 = LE 2.916501)

ANNEX A

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY 87 to FY 97
Total U.S. Funding $180,000,000
Date Prepared August 12, 1987

Project Title & Number: Canal Cities Water and Wastewater Phase II (263-0171)

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Program or Sector Goal: The broader objective to which this project contributes: (A-1) To improve the health and living conditions of people by increasing access to adequate water and wastewater services	Measures of Goal Achievement: (A-2) 1. Reduction in enteric diseases 2. Improved human environment	(A-3) 1. Ministry of Health records 2. Visual Inspection	Assumptions for achieving goal targets: (A-4) 1. Camp David still "on". 2. Internal political stability 3. Water and Wastewater services improve health living conditions
Project Purposes: (B-1) To provide urgently needed water and wastewater infrastructures in the three Canal Cities of Port Said, Ismailia and Suez.	End-of-Project status: (B-2) 1) Increased population coverage: A) Treatment of wastewater generated by 80% or 576,000 pers. in Port Said, 411,000 pers. in Ismailia and 543,000 in Suez—adequate facilities to meet the Canal Cities' needs at least for the Yr. 2000. B) Expansion of raw wastewater supply to meet 100% (720,000 pers.) of Port Said needs at least for the Yr. 2000, ie, doubling the coverage of the existing population. 2) Improved w/ww services. 3) Improved O&M of existing & future facilities. 4) Increased revenue collection through tariff increases. 5) Decrease water losses and infiltration of water into sewers.	(B-3) 1. Contractors reports 2. SCA/Governorates Records 3. Monitoring and Evaluation Reports 4. Other GOE documents	Assumption for achieving purpose: (B-4) 1. Timely GOE/AID financial contributions. 2. Facilities are properly designed and built. 3. Proposed facilities are properly maintained. 4. GOE meeting of agreed upon policy reforms and specific "benchmarks" within the framework of the January, 1984 Memorandum of Understanding
Project Outputs: (C-1) 1. Wastewater Treatment Facilities A. Port Said B. Ismailia C. Suez 2. Rehabilitation and Expansion of Qantara to Port Said Sweetwater Canal. 3. Institutional Development of A. Suez Canal Authority in Support of water Operation B. Governorates in support of wastewater operations.	Magnitude of Outputs: (C-2) 1)A. 150,000 m^3/d; 1)B. 90,000 m^3/d; 1.C. 200,000 m^3/d. 2) 370,000 m^3/d (at least). 3) -Tariff increased; -Cost accounting system in place; -Improved revenue collection system installed; -Consumer education program instituted; -Leak detection/repair system in place; -Expansion of services to unserved/unhooked areas/clients accomplished; -Legal mandates/jurisdictional respons. clarified; -Automation of admin. tasks accomplished; -Improved procurement, storage inventory control procedures instituted; -Performance monitoring system in place; -Local training capacity developed; -System specific O&M training completed.	(C-3) 1. Site visits 2. Progress Reports 3. Official and unofficial Project and other records	Assumptions for achieving outputs: (C-4) 1. Timely availability of GOE human and other resources in support of the Project. 2. Project specific conditions and covenants are met. 3. Willingness to and cooperation of local authorities to proposed institutional changes.
Project Inputs (D-1) AID 1. Design Engineering and Construction Services; 2) Construction Monitoring Services; 3) Other Technical Assistance; 4) Commodities; 5) Training; 6) Monitoring and Evaluation; 7) Contingency (15%). GOE 1) Design Engineering and Construction Services; 2) Contingency (15%); 3) land sites for treatment facilities; 4) Staff, facilities and other Physical Resources.	Implementation Target (Type and Quality)(D-2) AID 1. $301,166 (Design/Build Construction) 2. $ 16,106 (Construction Monitoring) 3. $ 17,701 (Institutional Development) 4. $ 1,300 (Monitoring & Evaluation) 5. $ 43,547 (Contingency) $380,000 (Total GOE 1. LE 304,348 (Design/Build Construction) 2. LE 45,652 (Contingency) LE 350,000 Total	(D-3) Project Documents	Assumptions for providing inputs: (D-4) Contract costs do not exceed estimated amounts.

ACTION: AID-6 INFO: DCM ECON /8

VZCZCCR0690
RR RUEHEG
DE RUEHC #1309/01 3502103
ZNR UUUUU ZZH
R 262101Z DEC 85
FM SECSTATE WASHDC
TO AMEMBASSY CAIRO 1935
BT
UNCLAS SECTION 01 OF 02 STATE 391309

LOC: 37 740
27 DEC 85 0621
CN: 58422
CHRG: AID
DIST: AID

DPPE
DD

ACTION TO DR DIR
ACTION TAKEN DATE 12/3
MAN X INITIALS

AIDAC

E.O. 12356: N/A
TAGS: N/A
SUBJECT: ANPAC REVIEW - CANAL CITIES WATER AND SEWERAGE II PID (263-0174)

REF: (A) STATE 288553, (B) CAIRO 26087, (C) CAIRO 27383

1. THE ANPAC FOR SUBJECT PID WAS HELD ON DECEMBER 10, 1985 WITH MISSION REPRESENTED BY FRED ZOBRIST. THE PID WAS APPROVED AND THE MISSION MAY PROCEED TO DEVELOP THE PP AND AUTHORIZE THE PROJECT TAKING INTO ACCOUNT THE ISSUES AND ANPAC REQUESTS AND RECOMMENDATIONS DISCUSSED BELOW. MISSION WILL NOTE THAT SEVERAL OF THESE ISSUES ARE PROGRAMMATIC RATHER THAN PROJECT-SPECIFIC.

A. URBAN DEVELOPMENT STRATEGY: THE ANPAC ACKNOWLEDGED MISSION'S DECISION NOT TO SUBMIT AN URBAN DEVELOPMENT STRATEGY OR SECTOR GAME PLAN. IT WAS NOTED THAT THIS ISSUE WAS MORE RELEVANT TO THE URBAN DEVELOPMENT SUPPORT PID AND WOULD BE ADDRESSED BY AID/W IN THAT CONTEXT. NOTWITHSTANDING, THE ANPAC SUGGESTS THAT THE MISSION SET FORTH THE RELATIVE PRIORITY OF BOTH ONGOING AND PROPOSED URBAN-RELATED PROJECTS (I.E. RELEVANT WATER/WASTEWATER PROGRAMS, URBAN DEVELOPMENT SUPPORT, LOCAL DEVELOPMENT,

ETC.) AND THE STATUS OF SHELF PROJECTS IN RELATION TO OVERALL MISSION PROGRAMMING IN ITS UPCOMING PROGRAM WEEK SUBMISSIONS.

B. CONDITIONALITY: THE ANPAC DISCUSSED, IN GENERAL TERMS, THE GOE'S PERFORMANCE ON MOU OBJECTIVES AND BENCHMARKS SINCE THE SECOND ANNUAL REVIEW OF THE WATER/WASTEWATER SECTOR. ZOBRIST PROVIDED UPDATE ON TARIFF INCREASES AND INDICATED THAT MISSION WOULD PROVIDE AID/W WITH A COPY OF A MISSION REPORT ON THE TARIFF BENCHMARK. ANPAC NOTED THAT, PER REF. C, MISSION DOES NOT PLAN TO PERFORM AN OVERALL ANALYSIS OF PROGRESS UNTIL NEXT ANNUAL REVIEW SCHEDULED FOR MARCH 1986. MISSION IS REQUESTED TO SUBMIT THIS ANALYSIS FOR DISCUSSION AT PROGRAM WEEK, OR AS SOON AS POSSIBLE THEREAFTER. IT WAS ALSO AGREED THAT THE CANAL CITIES II PP WOULD CONTAIN A DESCRIPTION OF BENCHMARKS RELATED TO THE CANAL CITIES AND PROJECT-SPECIFIC CPS OR COVENANTS

RELATED TO THEIR EXECUTION. IN ADDITION, THE ANNUAL REVIEW SHOULD SPECIFICALLY ADDRESS THE CANAL CITIES' PERFORMANCE IN THIS REGARD.

C. MORTGAGE/PLANNED OBLIGATIONS: THE ANPAC DISCUSSED THE MORTGAGE REQUIREMENTS OF VARIOUS WATER/WASTEWATER SECTOR PROJECTS AND REQUESTS THAT THE MISSION'S ACTION PLAN ALSO PROVIDE A PROPOSED OBLIGATION SCHEDULE FOR WATER/WASTEWATER PROJECTS THROUGH 1990.

D. COST/BENEFIT ANALYSIS: THE ANPAC ACCEPTED MISSION STATEMENTS PROVIDED IN PARA 2D, REF. C.

E. PROJECT FOCUS/COMPOSITION: WHILE ANPAC ACCEPTED MISSION'S JUSTIFICATION FOR THE PHASE II FOCUS ON WASTEWATER TREATMENT, CONCERN WAS EXPRESSED OVER:

- THE APPROPRIATENESS OF THE PROPOSED TECHNOLOGIES FOR WASTEWATER TREATMENT;

- ADEQUACY OF THE PROJECT'S PROPOSED BUDGET FOR TRAINING/O AND M ASSISTANCE AND MPIC'S CURRENT RESTRICTIONS ON EXPATRIATE TRAINING AND TA CONTRACTS;

- ABILITY OF THE GOE TO MEET RECURRENT O AND M COSTS OF NEW WASTEWATER TREATMENT FACILITIES; AND

- THE TECHNICAL AND MANAGERIAL CAPABILITIES OF WASTEWATER DEPARTMENTS IN THE THREE CANAL CITIES.

APPROPRIATE TECHNOLOGY: ZOBRIST EXPLAINED THAT VARIOUS

ALTERNATIVE TREATMENT TECHNOLOGIES WOULD BE EXAMINED DURING PRELIMINARY DESIGN TO ENSURE THE PROPOSED TECHNOLOGIES WERE MOST APPROPRIATE GIVEN GOE O AND M CAPABILITIES.

TRAINING/O AND M ASSISTANCE: ZOBRIST ASSURED ANPAC THAT THE PROJECT WOULD PROVIDE ADEQUATE FUNDS FOR TRAINING/O AND M ASSISTANCE AND THAT MISSION WOULD CONTINUE TO RESIST PRESSURE FROM MPIC TO REDUCE AMOUNT OF FUNDS ALLOCATED TO THIS COMPONENT.

O AND M COSTS: IT WAS AGREED THAT THE PP WOULD CONTAIN A FINANCIAL ANALYSIS THAT WOULD INCLUDE A THOROUGH EVALUATION OF THE O AND M COSTS OF NEW FACILITIES.

INSTITUTIONAL CAPABILITIES: IT WAS FURTHER AGREED THAT THE PP WOULD CONTAIN AN INSTITUTIONAL ANALYSIS THAT WOULD BOTH ASSESS CURRENT STAFFING, RESPONSIBILITIES AND CAPABILITIES OF WASTEWATER DEPARTMENTS IN THE CANAL CITIES AND DETAILED PLANS FOR PROVIDING NEEDED

MANAGEMENT AND STAFF SKILLS AND INFORMATION SYSTEMS.

F. FULL AUTHORIZATION/FAA 511 CONSIDERATIONS: THE ANPAC WAS CONCERNED THAT DETAILED ACCURATE COST ESTIMATES MAY NOT BE AVAILABLE PRIOR TO PROJECT AUTHORIZATION. CONCERN WAS ALSO EXPRESSED AT THE PID'S SUGGESTION OF A ROLLING DESIGN/OBLIGATION APPROACH. ZOBRIST EXPLAINED THAT THE MISSION WAS PLANNING TO AMEND CANAL CITIES CONSULTANTS' CONTRACT TO COMPLETE PRELIMINARY DESIGNS, REVISE THE ENGINEERING COST ESTIMATES AND PERFORM ENVIRONMENTAL ANALYSES. THEREFORE, IT WAS THE MISSION'S EXPECTATION THAT DECISIONS ON TECHNOLOGY, ENVIRONMENTAL QUESTIONS AND PRELIMINARY DESIGNS AND COST ESTIMATES NECESSARY TO MEET 511(A) WOULD BE ADDRESSED PRIOR TO AUTHORIZATION. ALSO DISCUSSED WAS THE POSSIBILITY THAT PRELIMINARY DESIGNS FOR SUFZ WASTEWATER FACILITIES MAY NOT BE READY PRIOR TO PROJECT AUTHORIZATION DUE TO CONTROVERSY OVER A DISPOSAL SITE (LAND VS SEA) AND THE REQUIREMENT TO PERFORM AN ENVIRONMENTAL IMPACT STATEMENT. ZOBRIST ASSURED THE ANPAC THAT MISSION WILL AUTHORIZE FUNDS FOR ONLY THOSE PROJECT ELEMENTS THAT HAVE MET 511(A). WHITEHEAD
PT
#1309

NNNN

APPENDIX 1
ANNEX B

SUMMARY OF PROJECT PAPER'S RESPONSE TO ANPAC PID REVIEW CABLE

In the cable (85 State 391309) authorizing USAID to proceed with the preparation of a Project Paper (PP), several issues/concerns were raised. The following comments are keyed to points, relevant to the PP development, covered in the cable.

1.B. CONDITIONALITY

Various sections of the PP (II.S.3.D, IIIC. and Annex J) cover the Canal Cities performance on tariffs. It is stated that 87% of the water O&M and 17% of the wastewater O&M costs are currently being covered by tariff increases. Section IV.H. in the implementation plan includes specific conditions and covenants specific to the Canal Cities. The monitoring and evaluation plan, Section IV.F, includes an illustrative list of benchmarks to monitor the GOE performance in this regard.

1.E. PROPOSED TECHNOLOGIES

The technical analysis (Annex H) explored in detail various alternatives to each of the four physical facilities proposed under the Project. Considering the O&M capabilities of the local wastewater departments, only the most simple technological alternatives have been proposed. To ensure proper O&M of these facilities, a facility specific training and direct assistance program is proposed for a period of three years.

- ADEQUACY OF PROJECT BUDGET FOR TRAINING/O&M ASSISTANCE

In addition to O&M assistance and training for a period of three years as part of the design/build contracts (Section II.D.1), the financial plan, section V, provides over $17 million, exclusive of 15% contingency, in support of the wastewater and water operations.

- GOE ABILITY TO MEET O&M RECURRENT COSTS

In the selection of preferred alternatives for the proposed facilities (Section IIIA and Annex H, Technical Analysis), the projected O&M costs were carefully considered and the alternatives with least long term O&M costs were selected. The recurrent costs of the proposed facilities (Sections IIIA, IIIC and Annexes H and J, Technical and Financial Analyses) were analyzed. It has been concluded that the beneficiaries of the improved water/wastewater services, i.e., the residents of the three Cities, have the financial capacity to pay for these costs. Appropriate conditions and covenants have been included in the PP (Section IV.H) to ensure the availability of financial resources to cover the anticipated O&M costs.

- ANALYSIS OF TECHNICAL/MANAGERIAL CAPABILITIES OF WASTEWATER DEPARTMENTS

A detailed assessment of strengths/weaknesses and the needs of local wastewater departments was performed by the Canal Cities Consultants (CCC). The institutional development and training component of the Project is largely based on their recommendations. Because of its size, the CCC's report has not been included as an annex to the PP, However, Annex M on institutional development and particularly Annex N on training heavily draw on CCC's findings.

1.F. FAA 611 CONSIDERATIONS

At the time of ANPAC review of the PID, USAID advised AID/W that CCC's existing contract will be amended to include primary engineering studies to formulate definitive project plans and establish firm cost estimates. Due to procurement difficulties, USAID decided to design the project in-house. As described in the introductory paragraph under Section II, Section III.A and the detailed technical analysis (Annex H), the available plans, various design reports and their amendments were carefully reviewed and updated. A number of alternatives for each of the proposed facility so generated were subjected to a comprehensive cost-effective criteria. This process led to the

identification of the preferred (proposed) alternatives and firm cost estimates for the same. Therefore, ANPAC concerns to this effect have adequately been addressed. As pointed out in the environmental analysis section (IIIF), no environmental impact statement will be performed. Environmental assessments will, however, be performed prior to the issuance of IFBs for each of the four construction activities (Section IIIF). The performance of these assessments has been included as a condition precedent (Section IV.H). The ANE Bureau Environmental Officer has agreed to these proposed arrangements.

ARAB REPUBLIC OF EGYPT

MINISTRY OF PLANNING AND INTERNATIONAL COOPERATION

DEPARTMENT FOR ECONOMIC COOPERATION

WITH U.S.A

Sept. 17 , 2987 742

Mr. Marshal D. Brown
Director
USAID / C

Sub.: Canal Cities Water and Wastewater Phase II
Project No. 263-0174

Dear Mr. Brown:

We are writing this letter to request USAID assistance in the amount of US $380 million to finance Phase II of the Canal Cities Water and Wastewater program. The Egyptian contribution towards the Project will be an equivalent of US $120 million, in Egyptian pounds. The total costs of all activities under the subject Project is estimated to be $500 million.

The goal of the Phase II Project, like its predecessor, is to improve the living conditions of people by increasing access to adequate water and wastewater services. The purpose of this project is to provide urgently needed water and wastewater infrastructures in the Canal Cities. As you know, the problems of water treatment/distribution and wastewater collection were addressed under the first phase of Canal Cities Water and Sewerage Project. The main thrust of the proposed activity is to build wastewater treatment facilities in each of the three cities. The expansion of raw water supply for the city of Port Said is also proposed as part of the Phase II. In addition, a program to strengthen the capacity of local authority to better manage, operate and maintain the physical facilities, to ensure the long term financial viability of the proposed systems, has also been incorporated in the Project.

The benefits of GOE and USAID investments in the Phase I Project cannot be fully realized without the resolution of remaining problems which are proposed to be addressed under the Phase II. Our continuing involvement in the Phase II Porject is essential, and your timely assistance in the amount requested will be appreciated.

Sincerely yours

Ahmad Abdel Salam

~~Ahmad Abdel Salam Zaki~~
Administrator.

ILLUSTRATIVE
IMPLEMENTATION SCHEDULE
CANAL CITIES WATER AND WASTEWATER PHASE II
PROJECT 263-0174

ACTIVITY	RESPONSIBLE AGENT	1987	YEAR (1) 1988	YEAR (2) 1989	YEAR (3) 1990	YEAR (4) 1991	YEAR (5) 1992	YEAR (6) 1993	YEAR (7) 1994	YEAR (8) 1995	YEAR (9) 1996	YEAR (10) 1997
		1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
A. Design/Build Activities												
I. Start-up Activities												
Advertise for Mgmt. Const. Contr. (MCC)	AID		8.1/87 ** 9/30/87									
Sign Agreement	AID, MPIC		8/15/87 * 9/15/87									
Meet Initial CPs	MPIC,CZ&WD,SCA		8/15/87 **** 11/15/87									
Shortlist MCC Firms	AID		10/1/87 *** 12/31/87									
Issue RFIP	AID		1/1/88 * 1/15/88									
Select Most Qualified Firm	AID		1/1/88 *** 3/31/88									
Negotiate/Execute Contract	AID		4/1/88 * 4/30/88									
Establish L/Comm	AID		5/1/88 * 5/15/88									
Contractor Mobilization	MCC		5/15/88 * 6/15/88									
II.Pre-Design Engineering Activities for All Facilities												
Review Existing Design Data	MCC		5/15/88 **** 9/15/88									
Conduct Soils Investigations/Surveys	MCC		5/15/88 **** 9/15/88									
Conduct Environmental Assessment	MCC		5/15/88 **** 9/15/88									
Request Expressions of Interest	MCC, NOPWASD, SCA		7/1/88 *** 9/30/88									
Shortlist Desing/Build Contr. (DBC) Firms	MCC, NOPWASD, SCA		10/1/88 **** 1/15/89									
Conduct Port Fouad Feasibility Study	MCC		5/15/88 **** 9/15/88									
Conduct Suez South Feasibility Study	MCC		5/15/88 ********** 5/15/89									
III. Port Said Wastewater Treatemt Plant												
Meet Additional CP	NOPWASD		10/15/88 * 10/31/88									
Issue IFB DBC1	MCC, NOPWASD		11/15/88 *** 1/31/89									
Review DBC1 Technical Bid	MCC, NOPWASD		2/1/89 ** 3/15/89									
Select DBC1 Contractor	MCC, NOPWASD		3/15/89 ** 4/30/89									
Request DBC1 Commercial Bid	MCC, NOPWASD		5/1/89 ** 6/30/89									
Approve DBC1	MCC, NOPWASD, AID		7/1/89 *** 9/15/89									
Establish L/Comm	AID		8/15/89 * 8/31/89									
Mobilization DBC1	DBC1		9/1/89 * 9/30/89									
Complete & Approve Designs 1	DBC1,MCC,NOPWASD,AID		10/1/89 ********* 6/30/90									
Construct WWTP1/Monitor Construction	DBC1, MCC				7/1/90 ********** 6/30/93							
Develop & Do O&M Training 1	DBC1, MCC						7/1/92 ********** 6/30/93					
Commission/Start-up WWTP1	DBC1							7/1/93 *** 9/30/93				
Direct O&M Assistance WWTP1	DBC1							10/1/93 ********** 9/30/96				
IV. Isaailia Wastewater Treatment Plant II												
Meet Additional CP	NOPWASD		10/15/88 * 11/30/88									
Issue IFB DBC2	MCC, NOPWASD		1/15/89 *** 3/31/89									
Review DBC2 Technical Bid	MCC, NOPWASD		4/1/89 ** 5/15/89									
Select DBC2 Contractor	MCC, NOPWASD		5/15/89 ** 6/30/89									
Request DBC2 Commercial Bid	MCC, NOPWASD		7/1/89 ** 8/31/89									
Approve DBC 2	MCC, NOPWASD, AID		9/1/89 ** 10/15/89									
Establish L/Comm	AID		10/15/89 * 10/31/89									

ANNEX D

ILLUSTRATIVE
IMPLEMENTATION SCHEDULE
CANAL CITIES WATER AND WASTEWATER PHASE II
PROJECT 263-0174

ACTIVITY	RESPONSIBLE AGENT	YEAR (1) 1987	YEAR (2) 1988	YEAR (3) 1989	YEAR (4) 1990	YEAR (5) 1991	YEAR (6) 1992	YEAR (7) 1993	YEAR (8) 1994	YEAR (9) 1995	YEAR (10) 1996	YEAR (11) 1997
		1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
Mobilization DBC2	DBC2			11/1/89 * 11/30/89								
Complete and Approve Designs 2	DBC2, NOPWASD, AID			12/1/89 ******** 8/31/90								
Construct WWTP 2/Monitor Construction	DBC2, MCC				9/1/90 **********							
Develop and Do O&M Training 2	DBC2, MCC						7/1/92 **********					
Commission/Start-Up Assistance WWTP 2	DBC2							9/1/93 ***				
Direct O&M Assistance WWTP 2	DBC2							12/1/93 **********				
V. Suez Wastewater Treatment Plant III												
Meet Additional CP	NOPWASD		12/15/88 * 12/31/88									
Issue IFB DBC3	MCC, NOPWASD			3/15/89 *** 5/31/89								
Review DBC 3 Technical Bid	MCC, NOPWASD			6/1/89 ** 7/15/89								
Select DBC 3 Contractor	MCC, NOPWASD			7/15/89 ** 9/31/89								
Request DBC 3 Commercial Bid	MCC, NOPWASD			9/1/89 ** 10/31/89								
Approve DBC 3	MCC, NOPWASD, AID			11/1/89 ** 12/15/89								
Establish L/Coms	AID			12/15/89 * 12/31/89								
Mobilization DBC 3	DBC3			1/1/90 * 1/31/90								
Complete and Approve Designs 3	DBC3, NOPWASD, AID			2/1/90 ******** 7/31/90								
Construct WWTP 3/ Monitor Construction	DBC3, MCC				11/1/90 **********							
Develop and Do O&M Training 3	DBC3, MCC						11/1/92 **********					
Commission and Start-Up WWTP 3	DBC3							11/1/93 ***				
Direct O&M Assistance WWTP 3	DBC3							2/1/94 **********				
VI. Port Said Raw Water Supply												
Meet additional CP	SCA		1/15/89 * 1/31/89									
Issue IFB DBC 4	MCC, SCA			5/15/89 *** 7/31/89								
Review DBC 4 Technical Bid	MCC, SCA			8/1/89 ** 9/15/89								
Select DBC 4 Contractor	MCC, SCA			9/15/89 ** 10/31/89								
Request DBC 4 Commercial Bid	MCC, SCA			11/1/89 ** 12/31/89								
Approve DBC4	MCC, SCA, AID			1/1/90 ** 2/15/90								
Establish L/Coms	AID			2/15/90 * 2/28/90								
Mobilization DBC 4	DBC4			3/1/90 * 3/31/90								
Complete and Aprove Design 4	DBC4, SCA, AID			4/1/90 *********	12/31/90							
Construct Water Transmission/Monitor Const	DBC4, MCC				1/1/91 **********							
B. Institutional Development												
I. Start-up Activities												
Advertise for TA Contractor	AID		8/1/88 ** 9/30/88									
Shortlist TA Firms	AID		10/1/88 *** 12/31/88									
Issue RFTP	AID			1/1/89 * 1/15/89								
Select Most Qualified Firm	AID			1/1/89 *** 3/31/89								
Negotiate/Execute Contract	AID, TAC			4/1/89 * 4/30/89								
Establish L/Coms	AID			5/1/89 * 5/15/89								
Contractor Mobilization	TAC			5/15/89 ** 6/15/89								
II. Twinning Arrangements												
Request for Expressions of Interest	TAC			6/15/89 *** 8/15/89								
Shortlist Municipalities	TAC			8/15/89 *** 10/15/89								

ANNEX D

ILLUSTRATIVE
IMPLEMENTATION SCHEDULE
CANAL CITIES WATER AND WASTEWATER PHASE II
PROJECT 263-0174

ACTIVITY	RESPONSIBLE AGENT	1987	YEAR (1) 1988	YEAR (2) 1989	YEAR (3) 1990	YEAR (4) 1991	YEAR (5) 1992	YEAR (6) 1993	YEAR (7) 1994	YEAR (8) 1995	YEAR (9) 1996	YEAR (10) 1997
		1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
Select Municipalities	GOV., NOFWASD, TAC			10/15/89 *** 12/15/89								
Sign Cooperative Agreements (Sister Cities)	TAC,GOV.,US CITIES NOFWASD,AID			12/15/89 *** 2/15/90								
III. Financial Management												
Review Existing Systems & Formulate Plans	TAC, TWIN					11/1/91 ****** 4/30/92						
Observational Tours (4 Persons x 2 trips)*	TAC,TWIN						5/1/92 * 5/31/92	12/1/93 * 12/31/93				
Finalize & Approve Proposed Improvements	TAC,TWIN						6/1/92 ******* 5/31/93					
Mobilize Resources & Procure Commodities	TAC						12/1/92 ****** 5/31/93					
Implement/Institute Improvements	TAC,TWIN						6/1/93 ****** 11/30/93					
Follow Up	TAC,TWIN							12/1/94 * 12/31/94				
IV. Tariff Formulation/Revenue Collection												
Review Existing Systems Formulate Plans	TAC,TWIN			2/15/90 ******* 8/15/90								
Observational Tours (4 Persons x 2 trips)	TAC,TWIN			8/15/90 ** 9/15/90 2/15/92 ** 4/15/92								
Finalize and Approve Proposed Improv.	TAC,TWIN			9/15/9[illegible] ******* 2/15/91								
Mobilize Resources & Procure Commodities	TAC			2/15/91 ******* 9/15/91								
Implement/Institute Improvements	TAC,TWIN			9/15/91 ******* 3/15/92								
Follow up				2/15/93 ** 4/15/93								
V. Consumer Education												
Develop a Mass Media Public Education Plan	TAC,LOCAL SUBCONT.			2/15/90 ******* 8/15/90								
Implement Proposed Plan	TAC,PUB.RELAT.DEPT.			8/15/90 ********** 8/15/92								
Follow Up	TAC+SUBCONT.						6/1/92 *** 8/31/92	5/1/93 *** 8/31/93				
VI. Net Work Improvements												
- Formulate W/WW Leak Detection Prog.	TAC,MCC			2/15/90 **** 5/15/90								
- Implement Leak Detection Prog.	MCC,SCA,GOV.			5/15/90 **** 8/15/90								
- Develop a Plan for Expansion of Serv.	TAC,TWIN			8/15/90 **** 11/15/90								
- Implement Proposed Plan "Installation of Small Interceptors and Hook Up Serv."	SCA,GOV.,TAC,MCC			11/15/90 ******* 5/15/91								
VII. Clarification of Legal Mandates												
- Review Exist. Rules & Regul. Mandates	TAC			2/15/90 **** 5/15/90								
- Propose Revisions and Amend. to Exist. Framework	TAC			8/15/90 ******* 2/15/91								
- Arrange Meetings, Workshops, Seminars,etc.	TAC			2/15/91 ******* 8/15/91								
- Implement Proposed Changes	SCA,GOV.			8/15/91 ********** 5/15/92								
VIII. Automation of Administrative Tasks												
- Conduct Needs Assessment	TAC			9/1/90 ****** 2/28/91								
- Procure Commodities & Develop Prog.	TAC			3/1/91 ********* 11/30/91								
- Observational Tours (4 persons x 2 trips)	TAC,TWIN			9/1/91 ** 9/30/91				9/1/93 ** 9/30/93				
- Install and Train Automated Systems	TAC,SCA,GOV.			12/1/91 ********** 11/30/93								
- Follow Up	TWIN								12/1/94 * 12/31/94			
II. Procurement, Storage, Inventory Control												
- Review Existing Procedures	TAC							6/1/93 ****** 9/30/93				
- Observational Tour (4persons x 2trips)	TAC,TWIN							9/1/93 * 9/30/93				
- Proposed Improvements	TAC							9/1/93 ***** 12/31/93				

ANNEX D

ILLUSTRATIVE
IMPLEMENTATION SCHEDULE
CANAL CITIES WATER AND WASTEWATER PHASE II
PROJECT 263-0174

ACTIVITY	RESPONSIBLE AGENT	YEAR (1) 1988	YEAR (2) 1989	YEAR (3) 1990	YEAR (4) 1991	YEAR (5) 1992	YEAR (6) 1993	YEAR (7) 1994	YEAR (8) 1995	YEAR (9) 1996	YEAR (10) 1997
		1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4	1 2 3 4
- Implement/Institute Improvements	TAC,SCA,GOV.						1/1/94 ********** 12/31/98				
I. Career Development Program											
- Devise Program for Local Dept. Heads	TAC,TWIN				1/1/91 ****** 6/30/91						
- Observational Tours (16pers.x2trips)	TAC,TWIN				7/1/91 * 7/31/91 * 7/1/92 - 7/31/92						
- Observational Tours (3pers.x2trips)	TWIN				1/1/91 * 1/31/91 * 1/1/92 - 1/31/92						
II. Performance Monitoring Program											
- Develop Performance Standards	TAC,TWIN		1/1/90 ****** 6/30/90								
- Institute Proposed Standards	TWIN,GOV.,SCA					12/1/92 ****** 5/31/93					
- Devise & Implement Monitoring/Testing Prog.	TWIN,GOV.,SCA					6/1/93 ****** 11/30/93					
- Follow Up	TWIN					12/1/93 * 12/31/93 * 12/1/94 - 12/31/94					
III. Human Resources Development	TAC, SCA, GOV										
A. TRAINING CAPACITY DEVELOPMENT											
(1) - Start-up Activities											
- Mobilize TA Team			6/1/89 * 6/30/89								
- Locate W/WW Needs Assessment			7/1/89 ** 6/31/89								
- Develop TOT Courses & Workshops			8/1/89 **** 12/31/89								
- Feedback/Debriefing Workshop with SCA and Wastewater Trainers			2/1/89 * 12/31/89								
(2) Trainer Training											
- TOT in Basic Training Methods				1/1/90 ** 2/28/90							
- TOT in Intermediate Training Methods				3/1/90 ** 6/30/90							
- TOT in Advanced Training Methods Based on Needs Assessment of Staff Skills				5/1/90 ** 5/31/90							
(3) Program Planning & Identification											
- Complete Needs Assessment				7/1/90 * 7/31/90							
- Finalize Wastewater Training Curriculum Plan				8/1/90 ** 8/30/90							
- Finalize SCA Preservice & In-service training Curriculum Plans				8/1/90 ** 8/30/90							
- Develop Equipment Procurement Plans				8/1/90 ** 8/30/90							
- Initiate Equipment Procurement				9/1/90 ********** 8/31/91							
- Finalize Program Development Schedules				8/1/90 ** 9/30/90							
- Coordinate w/SCA on Development of Water Training Facilities				9/1/90 ********** 8/31/91							
- Coordinate w/DBC on Development of WW Training Facilities				9/1/90 ********** 3/31/92							
(4) Program Development											
- Conduct Skill Development Workshops				10/1/90 **** 12/31/90							
- Observational Training											
- Develop Water/Wastewater Curriculums					1/1/91 ********** 3/31/92						
- Training Module Development					1/1/91 ********** 3/31/92						
- Materials Development					1/1/91 ********** 3/31/92						
- Standard Procedures Development					1/1/91 ********** 3/31/92						
- Maintenance System Development					1/1/91 ********** 3/31/92						
- Training Aids Development					1/1/91 ********** 3/31/92						
- Models/Cutaways Development					1/1/91 ********** 3/31/92						
- Audio/Visual Aids Development					1/1/91 ********** 3/31/92						

ANNEX D

I L L U S T R A T I V E
IMPLEMENTATION SCHEDULE
CANAL CITIES WATER AND WASTEWATER PHASE II
PROJECT 263-0174

ACTIVITY	RESPONSIBLE AGENT	YEAR (1) 1987 / YEAR (2) 1988 / YEAR (3) 1989 / YEAR (4) 1990 / YEAR (5) 1991 / YEAR (6) 1992 / YEAR (7) 1993 / YEAR (8) 1994 / YEAR (9) 1995 / 1996 (quarters 1 2 3 4)
(5) Program Implementation		
- Wastewater Treatment Introductory Training Delivery		4/1/92 ************ 3/31/93
- In-Service Wastewater Training Delivery		7/1/91 ****************************** 12/31/93
- Pre-Service Water Technical Training Delivery		9/1/91 ***************************** 12/31/93
- In-Service Water Training Delivery		4/1/92 ******************** 12/31/93
(6) Monitoring & Evaluation		
- Develop Performance Evaluation Systems		9/1/91 ***************************** 12/31/93
- Implement Performance Evaluation Systems		11/1/91 *************************** 12/31/93
(7) Program Modification & Follow-up		
- Redesign/Modify Modules		4/1/92 ********************* 12/31/93
- Deliver Modified Modules		6/1/92 ******************** 12/31/93
b. TREATMENT PLANT SPECIFIC O&M TRAINING	OBC, SOV	
(1) Mobilize O&M Training Staff		10/1/92 * 10/31/92
(2) Program Development		10/1/92 ****** 3/31/93
(3) Prestart-up Training Delivery		4/1/93 ******* 10/31/93
(4) Commissioning/Start-up Training		7/1/93 ******* 1/31/94
(5) Direct O&M Assistance		10/1/93 **************************** [illegible]
C. Monitoring and Evaluation Plan		
I. Baseline Data, Special Studies		4/1/88 *** 6/30/88 4/1/90 *** 6/30/90 *** 4/1/91 - 6/30/91 4/1/94 *** 6/30/94
II. Evaluations		10/1/89 ** 11/30/89 4/1/92 *** 6/30/92 [illegible] *** [illegible]
III. Financial Audits		3/1/88 * 3/31/88 3/1/90 * 3/31/90 3/1/92 * 3/31/92 3/1/94 * 3/31/94 3/1/96 * [illegible]
IV. Implementation Workshops		* *

CANAL CITIES WATER AND WASTEWATER PHASE II
PROJECT 263-0174

CERTIFICATION PURSUANT TO SECTION 611(e) OF FAA 1961 AS AMENDED

I, Marshall D. Brown, Director, the Principal Office of the Agency for International Development in Egypt, having taken into account, among other things, the maintenance and utilization of projects in Egypt previously financed or assisted by the United States, do hereby certify that in my judgment Egypt has both the financial capability and the human resources to effectively install, maintain and utilize the capital assistance to be provided for the Canal Cities Water and Wastewater Phase II Project.

This judgment is based upon general considerations discussed in the Project Paper to which this certification is to be attached.

Marshall D. Brown
Director

9/17/87
Date

CANAL CITIES WATER AND WASTEWATER PHASE II
PROJECT 263-0174

CERTIFICATION PURSUANT TO
GRAY AMENDMENT

As Director and Principal Officer of the Agency for International Development in Egypt, I certify that full consideration has been given to the potential involvement of small and/or economically and socially disadvantaged enterprises, historically black colleges and universities and minority controlled private and voluntary organizations covered by the Gray Amendment.

The attached Project Paper discusses the efforts that will be undertaken in connection with each element of the procurement plan to maximize the participation of minority-owned and small and disadvantaged organizations. At the time of each procurement action, every effort will be made to encourage the participation of these organizations and draw upon their knowledge and expertise.

Marshall D. Brown
Director

6/17/87
Date

PROJECT AUTHORIZATION

Name of Country: Arab Republic of Egypt

Name of Project: Canal Cities Water and Wastewater Phase II

Number of Project: 263-0174

1. Pursuant to Section 531 of the Foreign Assistance Act of 1961, as amended (the "Act"), I hereby authorize the Canal Cities Water and Wastewater Phase II Project (the "Project") for the Arab Republic of Egypt ("Cooperating Country") involving planned obligations not to exceed Three Hundred and Eighty Million United States Dollars ($380,000,000) in grant funds over five years from the date of authorization, subject to the availability of funds in accordance with the A.I.D. OYB/allotment process, to help in financing the foreign exchange and local currency costs of goods and services required for the Project.

2. The Project will assist in providing urgently needed water and wastewater facilities in the Canal Cities of Port Said, Ismailia and Suez. Project components will include primary wastewater treatment facilities at Port Said, Ismailia and Suez; expansion of raw water supply at Port Said; and an institutional development program aimed at strengthening the Cooperating Country's capacity to operate and maintain Project-related infrastructure.

3. The Project Agreement, which may be negotiated and executed by the officer to whom such authority is delegated in accordance with A.I.D. regulations and delegations of authority, shall be subject to the following essential terms and covenants and major conditions, together with such other terms and conditions as A.I.D. may deem appropriate.

a. Source and Origin of Goods and Services

Goods and services, except for ocean shipping, financed by A.I.D. under the Project shall have their source and origin in the Cooperating Country or in the United States, except as A.I.D. may otherwise agree in writing. Ocean shipping financed by A.I.D. under the Project shall, except as A.I.D. may otherwise agree in writing, be financed on flag vessels of the United States.

b. Conditions Precedent to Disbursement

(1) First Disbursement

Prior to any disbursement or to the issuance of any commitment documents under the Grant, the Cooperating Country shall,

except as the Parties may otherwise agree in writing, furnish to A.I.D., in form and substance satisfactory to A.I.D.:

(a) A statement of the names and titles of the persons who will act as representatives of the Cooperating Country under the Grant, together with a specimen signature of each person specified in such statement;

(b) A statement, with supporting detail, to the effect that adequate staff, physical facilities and financial resources either have been, or on a timely basis will be, made available to the Suez Canal Authority (SCA) and the National Organization for Potable Water and Sanitary Drainage (NOPWASD) to carry out their Project-related implementation responsibilities.

(2) Disbursements for Construction Activity - General

Prior to any disbursement or to the issuance of any commitment documents under the Grant for the purpose of financing construction activity, the Cooperating Country shall, except as the Parties may otherwise agree in writing, furnish to A.I.D., in form and substance satisfactory to A.I.D.:

(a) Concerning water and wastewater facilities previously financed by A.I.D. under the Canal Cities Water and Wastewater Phase I Project (No. 263-0048), evidence that tariff increases have been implemented so as to meet 100 percent of the recurrent (operating and maintenance) costs of the water facilities and 50 percent of the recurrent costs of the wastewater facilities;

(b) Concerning water and wastewater facilities to be financed under the Phase II Project, evidence of the Cooperating Country's intention and planning both (i) to increase tariffs, over time, so as to cover the recurrent costs to be associated with these facilities and (ii) during the interim, to cover deficits through additions to the recurring cost budgets of SCA and the three Governorates;

(c) Evidence that a Project Implementation Unit has been established within NOPWASD; that such Unit either has been fully staffed or will be fully staffed on a timely basis; and that such Unit has an appropriate degree of autonomy to expedite award and implementation of construction contracts; and

(d) Evidence that a Project Steering Committee has been established; that such Committee includes representatives of the three concerned governors, NOPWASD, SCA, the Ministry of Planning and International Cooperation and the Ministry of Housing and Public Utilities; and that such Committee will meet regularly for the purposes of reviewing construction and other Project activity and providing guidance and direction as appropriate.

(3) Disbursement for Individual Construction Contracts

Prior to any disbursement or to the issuance of any commitment documents under the Grant for the purpose of financing individual construction contracts, the Cooperating Country shall, except as the Parties may otherwise agree in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D.:

(a) Evidence that clear title to all land necessary to construct and operate such individual facility has been obtained or will be obtained on a timely basis;

(b) Evidence that an Environmental Assessment has been completed for such individual facility, together with the Cooperating Country's statement as to how the results of that Assessment will be incorporated into final design of such facility; and

(c) Confirmation that adequate Egyptian pound resources will be available, according to then current estimates, to meet the local currency costs of each such contract within the Cooperating Country's contribution to the Project. To this effect, the Egyptian Investment Bank by letter will assume that funds have been deposited in the Egyptian contracting entity's account and are available for disbursement.

(4) Disbursement for Certain Training Activities.

Prior to any disbursement or to the issuance of any commitment documents under the Grant for the purpose of financing training of SCA personnel in the operations and maintenance area, the Cooperating Country shall, except as the Parties may otherwise agree in writing, furnish to A.I.D., in form and substance satisfactory to A.I.D., evidence that a Water Training Division has been established within SCA's Training Division and that appropriate plans exist to staff the Water Training Division at a level, and within a schedule, consistent with Project requirements.

c. Covenants. The Grant Agreement will contain in substance the following covenants:

(1) Role of the Engineer. Construction contracts financed under the project shall contain a delegation to the U.S. engineering consultant of the authority to carry out certain duties as specified for "the Engineer" in Parts 1 and II of standard "FIDIC" terms as amended from time to time.1/

1/ "Conditions of Contract for Works of Civil Engineering Construction", published by the Federation Internationale des Ingenieurs Conseils (FIDIC); 3rd Edition (March 1977).

(2) Provisional Sums. Construction contracts financed under the Project shall call for provisional sum arrangements acceptable to A.I.D. and the GOE contracting agency.

(3) Collection Systems. The Cooperating Country will exert its best efforts, over time, and through use of its own resources, to expand sewerage collection systems to cover at least 80 percent of the population of the Canal Cities by the year 2000 and thereby to realize the full benefit of the infrastructure being funded under the Project.

(4) Exemption from Decennial Liability. Contractors, architects, consultants and subcontractors, regardless of nationality, working on the Project shall be exempt from the provisions of the Egyptian civil code imposing decennial liability.

(5) Consideration of Legislative or Regulatory Change. The Cooperating Country will give full consideration, based inter alia on Project-funded consultants' recommendations, to maximizing project benefits through the passage of new legislation or regulations in the areas of (i) requiring industry to treat its own waste prior to introduction into sewer systems; (ii) prohibiting disposal of garbage in manholes; and (iii) requiring a building permit for water/wastewater services prior to the start-up of construction.

(6) Salary Supplements and Incentives. At the present time, the Project does not provide for salary supplement or incentives to employees of the Grantee. If, at some future time, the parties agree that grant proceeds or funds derived from the Special Account may be used to pay such supplements and incentives, such payments will be made only in accordance with mutually agreed guidelines.

Director, USAID/Egypt

9/17/87
Date

Clrs:

DR/PS:JStarnes		Date: 14 SEP 87
OD/UAD:HHasan		Date: 9/14/87
AD/DR.FZobrist		Date: 9/15/87
LEG:MWilliams		Date: 9/14/87
AD/FM:WMiller		Date: 9/14/87
AD/PPP:JPatterson		Date: 9/14/87
DD:GLaudato		Date: 9-15-87