

**CAIRO WATER SUPPLY**

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**ENVIRONMENTAL ASSESSMENT  
FOR THE  
DISTRIBUTION SYSTEM IMPROVEMENTS  
CAIRO, A.R.E.**

**PREPARED BY:  
CH2M HILL INTERNATIONAL  
IN ASSOCIATION WITH  
DR. AHMED ABDEL WARITH  
& UNITED CONSULTANTS**

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**AID GRANT  
NO. 263-0102**

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	<u>Page</u>
SUMMARY	1
Proposed Project	1
Alternatives	1
Major Conclusions	1
Issues to Resolve	1
PROJECT GOAL AND PURPOSE	2
ALTERNATIVES	2
Alternatives Eliminated	2
Project Description	2
AFFECTED ENVIRONMENT	4
Pipeline Routes	4
Reservoirs and Booster	5
Pump Stations	
ENVIRONMENTAL CONSEQUENCES	5
Construction and Other	5
Short Term Impacts and	
Mitigating Measures	
Operational and Other Long	19
Term Impacts and Mitigating	
Measures	
IRREVERSIBLE AND IRRETRIEVABLE	21
COMMITMENT OF RESOURCES	
LIST OF PREPARERS	22
APPENDIXS	
A. Background Paper for Public	
Scoping Session.	
B. Notes From Scoping Session.	
C. List of Scoping Session	
Attendees.	
D. List of Scoping Session Invitees	

## FIGURES

		<u>Page</u>
1	Fustat-Darassa Pipeline Path	8
2	El Gabel Al Ahmer-El Guesh St. Pipeline Path	11
3	Water Club in Abbasiya- Azbakia Gardens Pipeline Path	12
4	Shoubra Distribution Pipelines	16
5	Sharabia Distribution Pipelines	17

## PHOTOGRAPHS

	Fustat- El Darassa Pipeline Route	9
	Abbasiya Water Club-Al Azbakia Pipeline Route	13-14
	El Sharabia Distribution Pipeline Route	18
	El Darassa Site	20

### PROPOSED PROJECT

The proposed project is the second phase of an improvement program that was started under the USAID funded Cairo Water Supply I. The \$97.4 million Cairo Water Supply I project expanded and rehabilitated the Rod El Farag Treatment Plant and added six kilometers of transmission pipe. This project consists of constructing additional pipelines, storage reservoirs and booster pump stations. The proposed improvements are designed to fit into a water system Master Plan which will serve the Cairo East Bank to the year 2010 and to mesh with water system improvements being financed by other donor nations.

### ALTERNATIVES

Alternatives to the proposed project, other than the "no-action" alternative, consisted of analyzing alternative routes and sizes for the pipelines and alternative locations for the storage reservoirs and booster stations. All alternatives were designed to provide the same level of service (water quantity and pressure) to the citizens within the Rod El Farag service area. Pipeline routes were selected to avoid as much as possible disruption of traffic and the normal activities of the public and commerce in the areas of construction. The reservoir and booster pump station locations were selected where sufficient vacant land is available to avoid the necessity of demolishing existing housing units.

### MAJOR CONCLUSIONS

The adverse environmental impacts occur during construction and are short-term. The long-term impacts will have positive benefits to the health and safety of citizens in the Rod El Farag Service area.

### ISSUES TO BE RESOLVED

The major issues to be resolved are the identification of construction techniques and procedures which will mitigate the adverse impacts which will occur during construction of the project.

## PROJECT GOAL AND PURPOSE

The goal of the project is to improve sanitation and health conditions for the two million residents and three million day workers in Rod El Farag service area in the City of Cairo. The Rod El Farag service area is considered to include the sub areas of Rod El Farag, Shoubra, El Sharabiya, Abbasiya, El Sakakini, Ghamra, Geziret Badran, Bulaq, Bab El Shariya, Esbakia, El Muski, El Ghamaliya, Bab El Khalk, El Darb El Ahmar, Abdin and El Sayida Zeinab.

The project purposes are to rehabilitate and expand the central city water transmission, distribution and storage facilities.

## ALTERNATIVES

### ALTERNATIVES ELIMINATED

The alternatives relative to pipeline routing and reservoir/booster pump station locations were eliminated because of cost, constructability or inconvenience to the public. The no-action alternative was eliminated because the long-term benefits of the project out weight the short-term adverse impacts which occur during construction.

### PROJECT DESCRIPTION

#### Transmission Mains

Approximately 21 km of new transmission mains (sizes 800 to 1600 mm) will be installed to increase hydraulic capacity of the system serving the Rod El Farag service area . The proposed new mains are listed in the following table.

**TRANSMISSION MAINS TO SERVE ROD EL FARAG SERVICE AREA**

<b>From</b>	<b>to</b>	<b>diameter mm</b>	<b>length km</b>
Fostat W.T.P.	Salah Salem St.	1600/1500	5.040
Salah Salem St.	Goher El Kaed St.	1400	3.215
Goher El Kaed St.	El Galal St.	1400	1.335
Bab El Sharia Sq.	El Galal St.	1200	1.343
El Galal St.	Autobus St.	1000	0.775
Autobus St.	Abbasiya Pump St.	1400	0.337
Kantart Gamra St.	Autobus St.	1200	1.739
El Fagala St.	El Gamel St.	800	0.763
El Kamel Sudke St.	Bab El Sharia Sq.	1000	0.593
El Baydek St.	Attaba Sq.	800	0.375
Attaba Sq.	Bab El Sharaia Sq.	800	0.931
Sidi El Khafier St.	Amer Karkamash St.	1100	1.238
Bebars Sq.	Sidi El Khafier St.	800	1.960
Goher El Kaed St.	El Sultan St.	1200/800	0.924

**Distribution Pipelines**

Approximately 30 km of new distribution pipelines (sizes 100 mm to 600 mm) will be installed in Shoubra and El Sharabiya areas. These improvements are proposed for areas that are now inadequately served by an old and under sized system. The proposed improvements are listed in the following table.

**PROPOSED DISTRIBUTION PIPELINES LENGTH, M**

<b>Diameter, mm</b>	<b>Shoubra</b>	<b>Sharabiya</b>	<b>Total</b>
100	---	1,115	1,115
150	---	5,995	5,995
200	---	6,740	6,740
300	4,140	3,053	7,193
400	4,650	1,325	5,975
600	1,000	1,670	2,670
<b>Totals</b>	<b>9,790</b>	<b>19,898</b>	<b>29,688</b>

## Reservoirs and Booster Pump Stations

An additional 120,000 m<sup>3</sup> of storage is proposed to serve the Rod El Farag service area. The capacity will be provided in 4 new reservoirs of 30,000 m<sup>3</sup> each. One reservoir is proposed in Abbasiya at General Organization for Greater Cairo Water Supply's (GOGCWS) club. This reservoir will be located below the 63 metre hydraulic pressure level for the Rod El Farag service area and will, therefor, require a booster pump station to boost water to the 63 metre level during peak demand periods.

*one location!*

Three reservoirs of 30,000 m<sup>3</sup> each are proposed for the Darassa site at Al Azhar and Salah Salem Streets. These reservoirs will be located at the 63 metre level and can serve the Rod El Farag area by gravity. A booster pump station will be constructed to provide service to Menshiat Naser area which is critically short of water.

## AFFECTED ENVIRONMENT

### PIPELINE ROUTES

The proposed project is to be constructed in the densely populated urban areas of Cairo. All proposed pipeline routes are located in existing streets most of which are crowded with vehicles and pedestrians. Segments of the environment most affected by the proposed project will be the people living and working in the immediate area of construction.

Pedestrian and vehicular traffic will be severely restricted during construction. Some streets may have to be temporarily closed to vehicular traffic. Access to businesses will be restricted while trenches are open. Some street vendors will have to relocate to adjacent streets during construction. The noise level will increase where heavy equipment is used. Air pollution will increase because of dust and exhaust fumes from the construction equipment. The potential exists for disruption of other services (electric, telephone, etc) due to construction activities.

## RESERVOIRS AND BOOSTER PUMP STATIONS

Both the Abbasiya and Darassa reservoir/pump station sites are not currently accessible to the public. The Abbasiya site is property owned by GOGCWS at their Water Club and is presently used for material storage. The Darassa site is owned by the Cairo Governorate and is presently used by the police to stable and train horses, by a public sector general contractor to store equipment and by the Governorate as a plant nursery for landscaping Governorate property.

Construction activities on the sites will have little effect on the public. Noise and air pollution will increase slightly near the sites and traffic will be affected by trucks bringing materials to the site. Both sites are located near major roadways.

## **ENVIRONMENTAL CONSEQUENCES**

### CONSTRUCTION AND OTHER SHORT TERM IMPACTS AND MITIGATING MEASURES.

#### Overall Impacts:

The proposed construction will, in general, create the following impacts:

Socioeconomic. Construction activities will provide employment for both skilled and unskilled labor during the construction period. Local suppliers of construction materials will benefit from increased sales. On the other hand local shops owners may suffer from some short-term loss of business during the periods when construction makes access to their shops difficult. Construction contractors will be required to provide temporary access to businesses and homes during construction.

Noise. The equipment used for excavation and vehicles moving to and from the sites will increase the ambient noise level. Construction, in general (see Transportation below), will be limited to the period between 6:00 a.m. and 6:00 p.m. Manual excavation techniques could be used as a mitigating measure in critical areas but would result in a longer construction period.

Air Pollution. Raised levels of air pollution will be caused by dust and diesel powered equipment exhaust fumes. The impact might not be noticeable because of normally high amounts of pollution in the air. Construction contractors will be required to control dust by sprinkling with water or the other approved means.

Transportation. Construction in the streets will disrupt traffic flow and increase traffic congestion, particularly during peak traffic hours. Access to homes, schools and business will be restricted. These impacts can be mitigated by limiting the amount (length) of trench that can be open at one time and, in critical areas, limiting construction to off-peak traffic hours. Pipe delivered to the trench side will be limited to the amount that can be installed during one shift.

Potential disruption of utilities services. Excavation, particularly when within major arterial ways, creates the potential for planned or accidental disruption of utilities services that are also located within or crossing the right of way. Mitigating measures could include locating the project route to minimize the number of conflicts with existing utilities, by adhering to the construction schedule to make such conflicts and the duration of service interruptions predictable and by forewarning affected utilities operators and users.

Historic and Archaeological. It is not anticipated that construction will disturb any historic structures or archaeological sites. Where construction occurs near historic structures, special construction techniques will be required to prevent damage. If artifacts are encountered during excavation, work will be stopped and the Department of Antiquities notified. Above ground structures such as the pump stations will be treated architecturally to blend with the surrounding buildings.

### Site Specific Impacts:

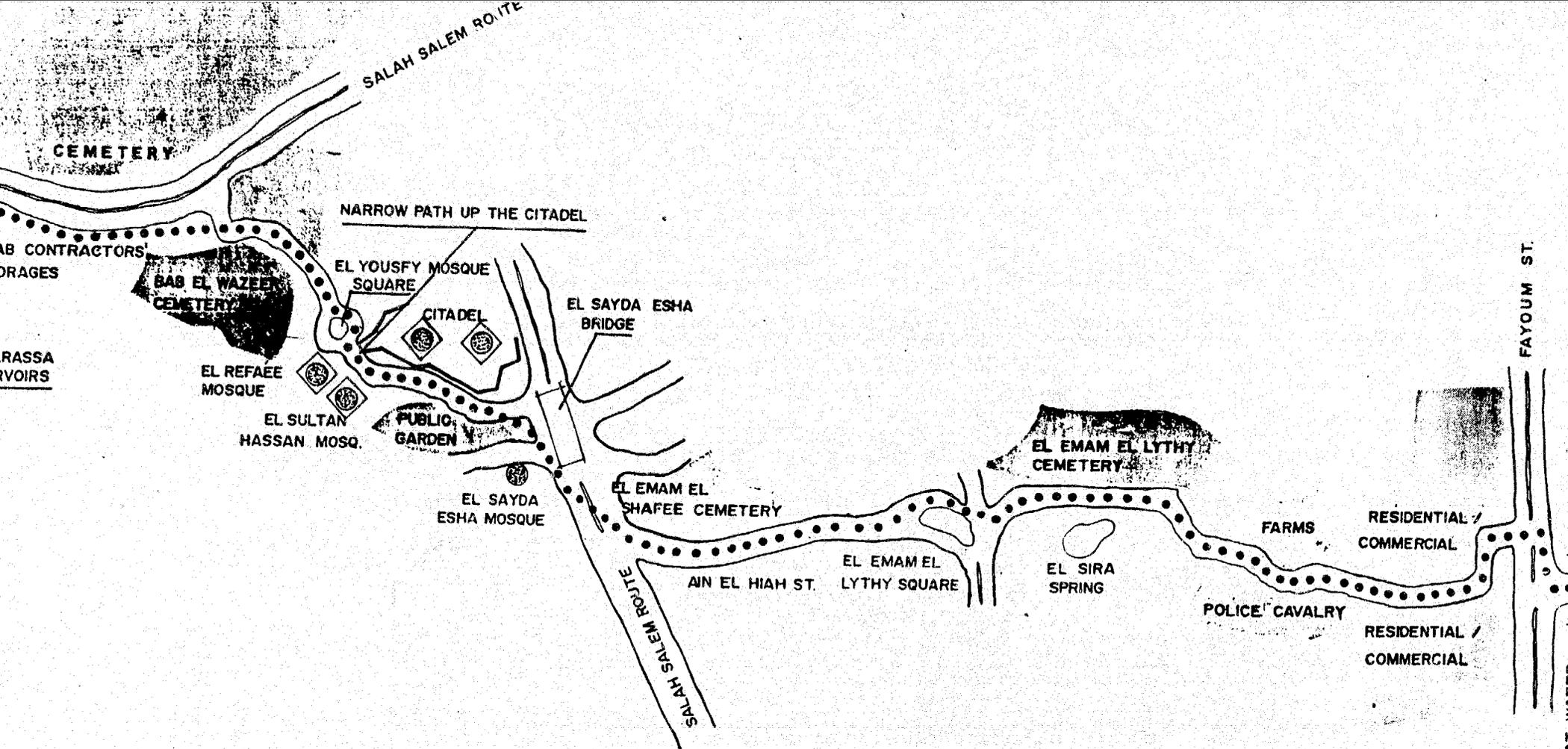
Site specific short-term impacts and mitigating measures are identified below.

#### El Darassa-El Fostat Pipeline Route. (Figure 1)

- \* Construction of the Salah Salem pipeline route at El Saida Easha Square may be constructed at night with trench excavation covered at the end of each night's work to allow the day-time traffic to flow normally.
- \* The bus stop terminal in Mastabet El Mahamal Street will be temporarily relocated during construction in that area.
- \* Construction in El Mahgar Street will require complete closure to traffic during the period of construction, blocking the back entrance to the Citadel. Normal, relatively moderate, traffic volume in El Mahgar Street will be routed to other streets. Visitors to the Citadel will be required to use the Salah Salem Street entrance.
- \* The inconvenience of reaching commercial and residential premises, will be mitigated by providing temporary walkways across the trenches.
- \* The safety of existing buildings such as the historic building in Babel Naser Street will be protected by requiring manual excavation and bracing of the trench and/or building. In the case of historic structures the Department of Antiquities will be notified prior to construction.

#### El Gabal Ahmar - El Gueesh Street Pipeline Route. (Figure 2)

- \* The crossing of Salah Salem Street to Ahmed Said Street will be constructed at night to mitigate disruption of traffic in Salah Salem. The trench will be covered during the day to allow normal traffic flow.
- \* To mitigate traffic congestion in Ahmed Said Street, the contractor will be required to limit the amount of open trench at any one time.



SKETCH NOT TO SCALE FOR :  
 FUSTAT-DARASSA PIPELINE PATH

( FIGURE 1 )

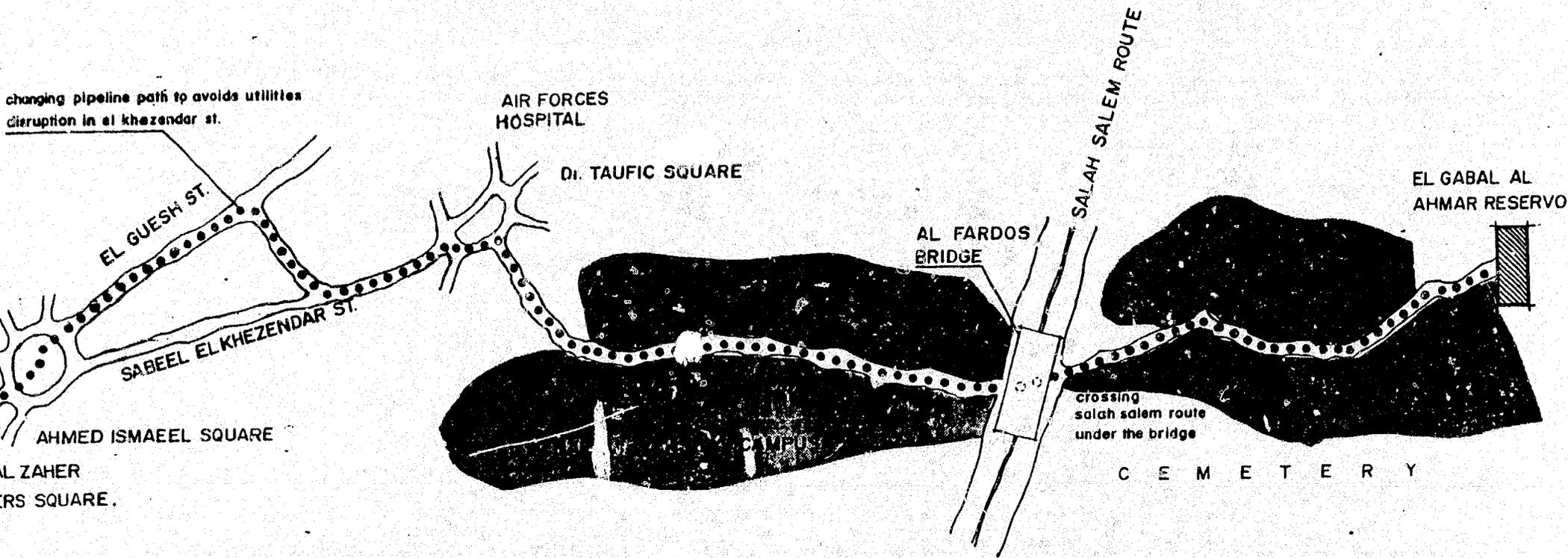


Construction at El Sayda Easha Square may be at night to mitigate the effect on traffic.



Old Cairo wall at the eastern end of Al Darassa site, to be cleared and Landscaped as part of Al Azhar park.

changing pipeline path to avoid utilities  
disruption in el khezendar st.



SKETCH NOT TO SCALE FOR :

EL GABAL AL AHMAR - EL GUESH ST. PIPELINE PATH

- \* The existing sewer line at the intersection of Ahmed Said Street with El Gueesh Street will be relocated to avoid conflict with the proposed water main.

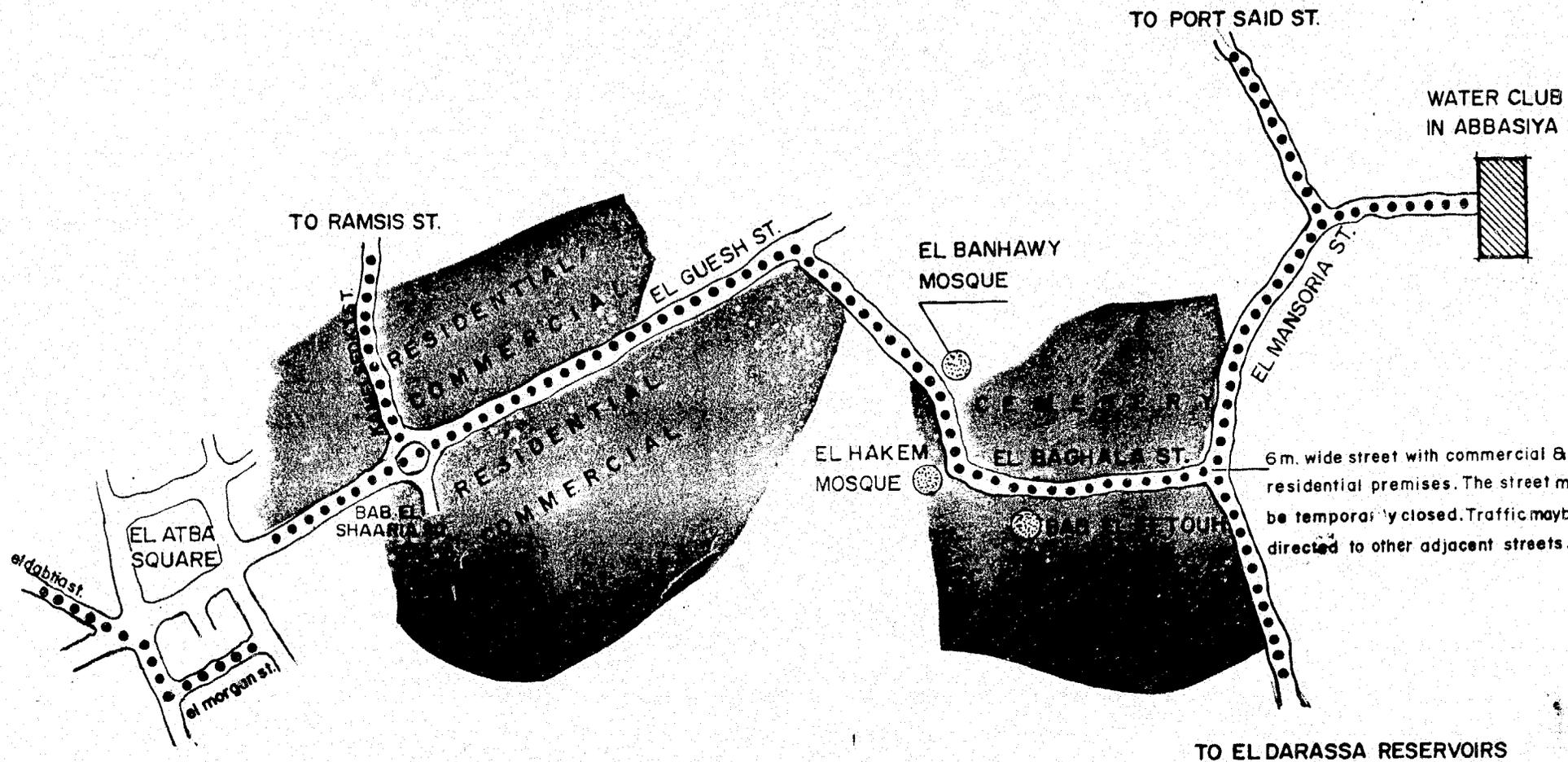
**Abbasiya Water Club-Al Azbakia Pipeline Route.** (Figure 3)

- \* Bab El Nasr Street (6 m wide) will be closed during construction and traffic routed to adjacent streets. Requiring the contractor to work longer shifts or multiple shifts could accelerate the work and reduce the time the street would be closed.
- \* To mitigate disruption to the heavy traffic at Ataba Square and on El Gueesh Street the following measures or combination of measures could be used:
  - 1) Perform construction at night and cover the trenches during the day;
  - 2) Accelerate construction by working longer days;
  - 3) limit the length of open trench;
  - or 4) Reroute part of the traffic to adjacent streets.
- \* Mitigate the difficulty for people to gain access to businesses and residences along Bab El Nasr Street by providing temporary walkways across the trench.
- \* To mitigate the potential for damage to the El Banhawy Mosque and other old structures along Bab El Nasr Street the following measures may be implemented:
  - 1) manual excavation near the structures;
  - 2) bracing of the trench and/or building facade.

The Department of Antiquities will be notified prior to construction near historic structures.

**Shoubra Distribution Pipelines:** (Figure 4)

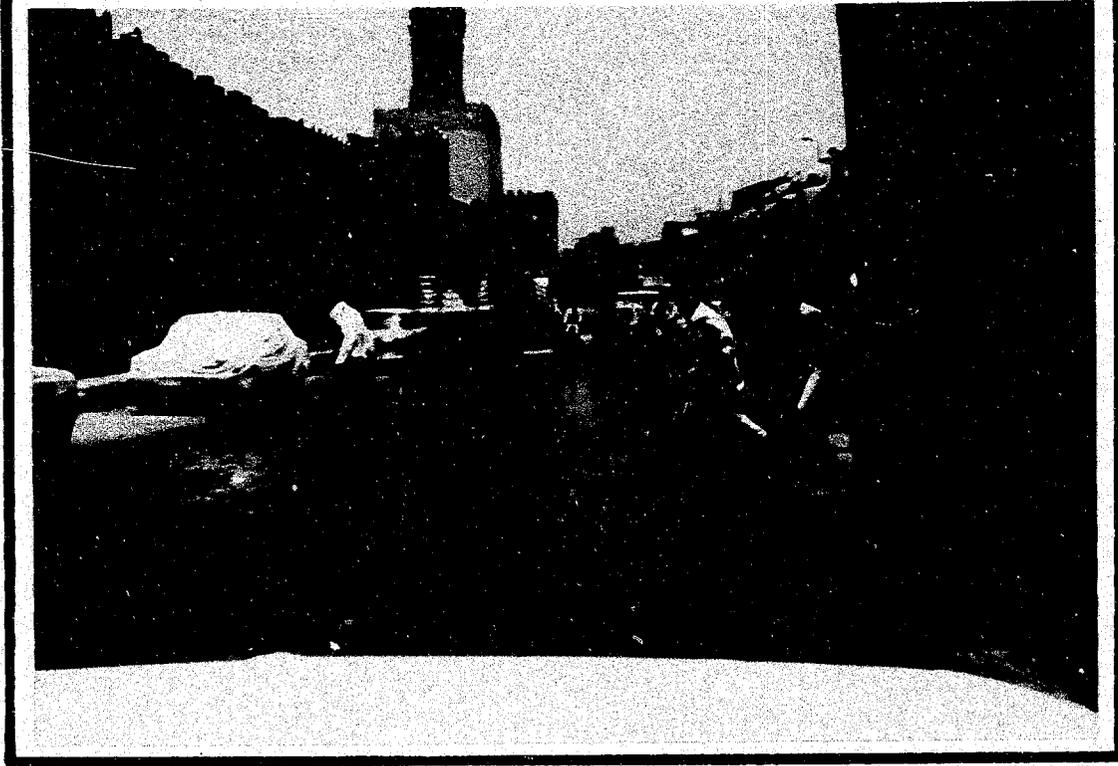
Because the distribution pipelines are of smaller diameter the excavations are shallower and narrower changes in routing changes can more easily be made. Therefore the environmental consequences are less severe than for the larger transmission mains. However there are certain areas where special mitigating measures should be considered.



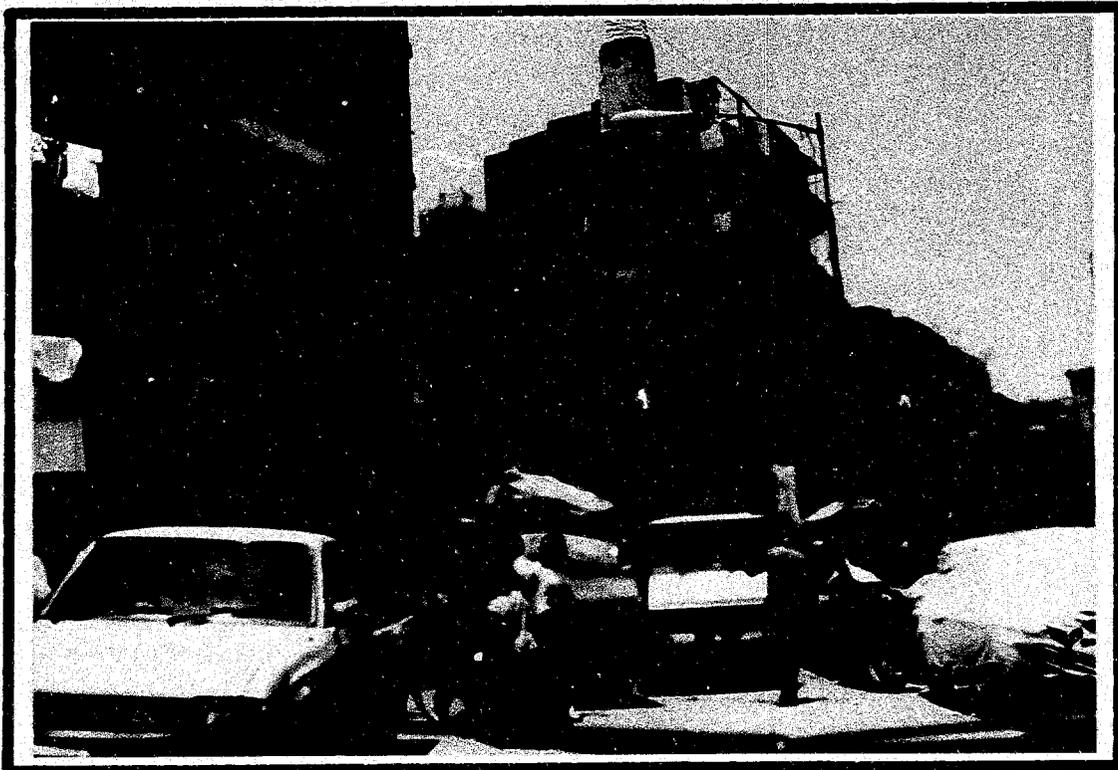
SKETCH NOT TO SCALE FOR :

WATER CLUB in abbasiya - AZBAKIA GARDEN PIPELINE PATH

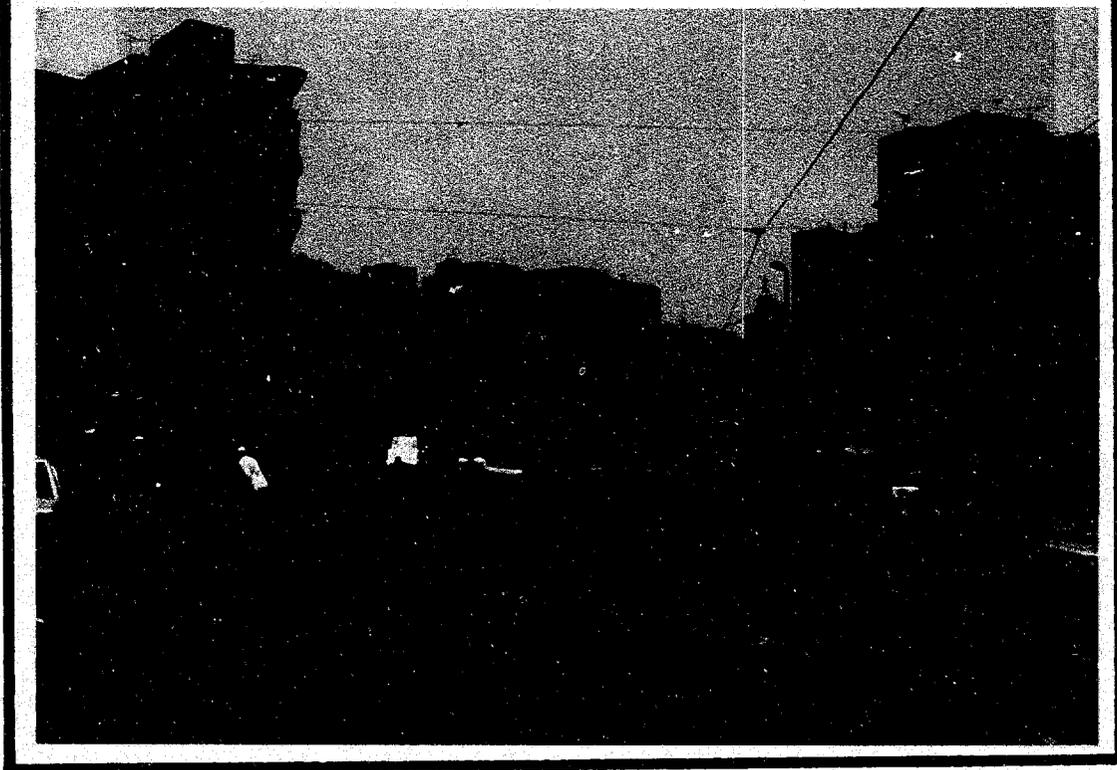
( FIGURE 3 )



The Cairo walls at Bab El Nasr with overflow of sewers. Water line construction should be coordinated with sewer upgrading.



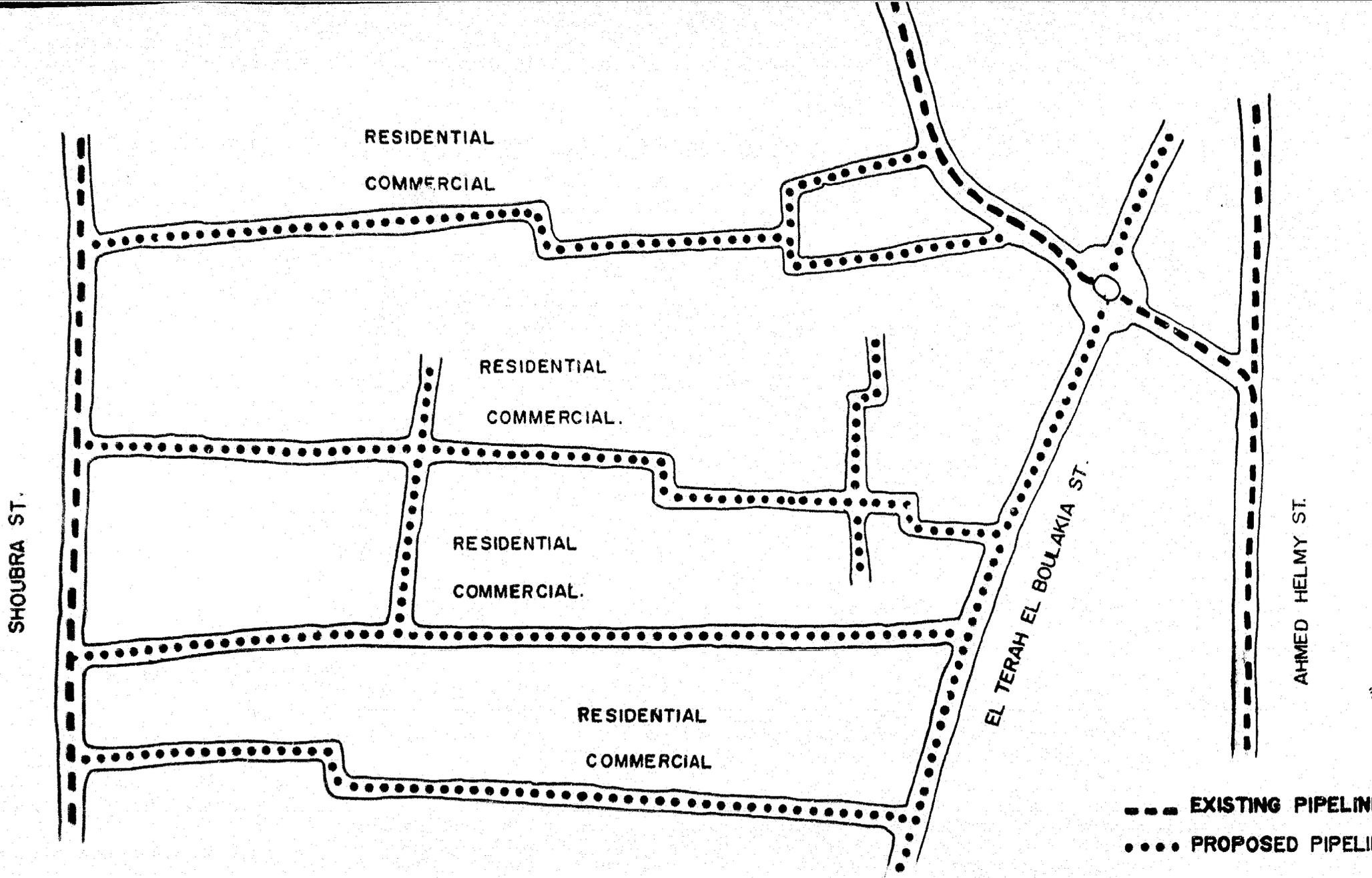
El Banhawey historical mosque where special consideration should be given during construction to protect the structure.



El Guesh Street towards El Ataba Square, highly congested traffic area. Night time construction may be required.



El Guesh Street with electric tramway from El Ataba Square.



SKETCH NOT TO SCALE FOR.

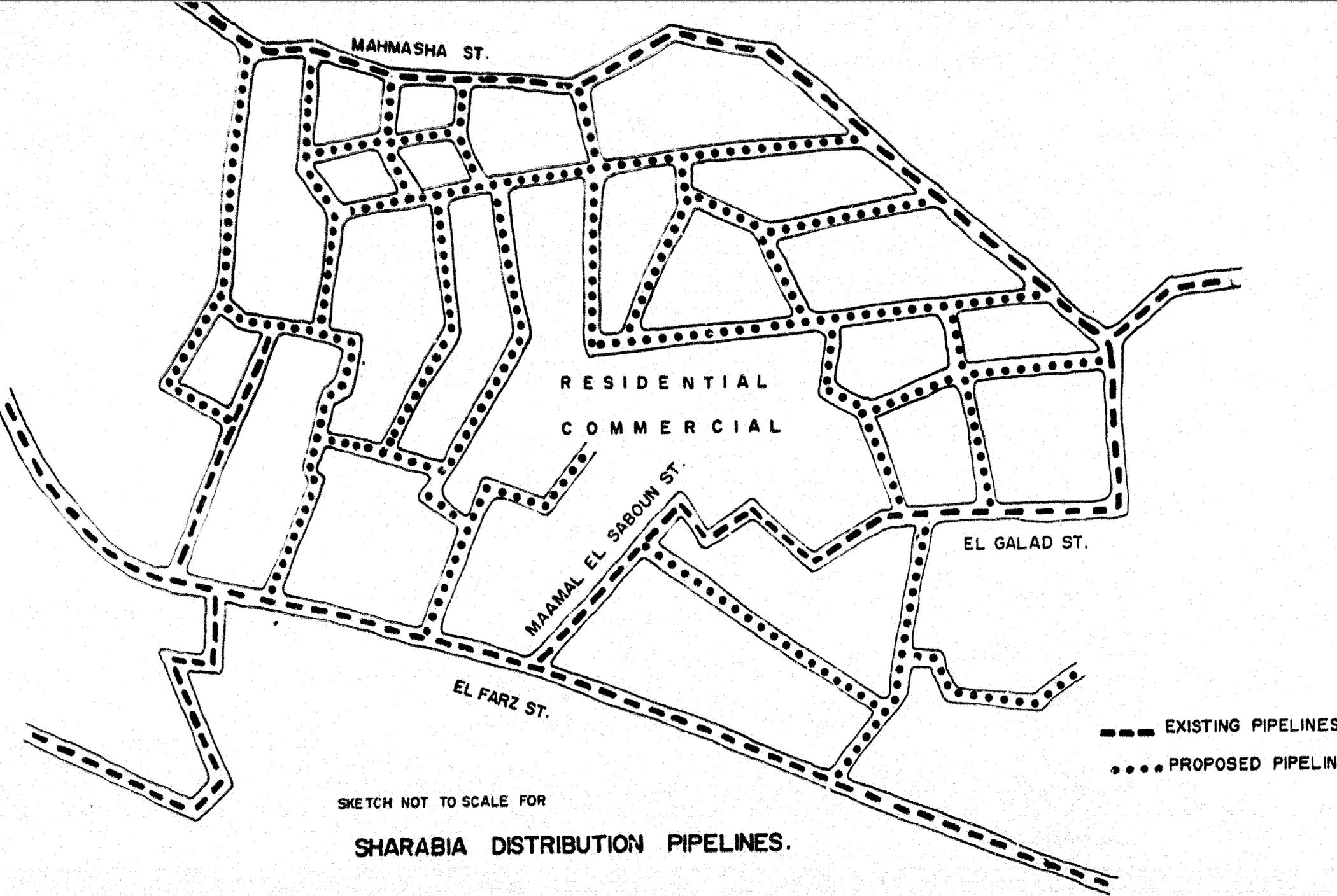
## SHOUBRA DISTRIBUTION PIPELINES

- \* Pedestrian access to commercial and residential premises along Krakul Street, Mestauset in the Kuraymet, El Genena Street, Kashbush Street and Hussein Shaarawy Street will be difficult because the streets are narrow (4 to 8 m). Temporary walkways along and across the trenches will be provided as a mitigating measure. Vehicle parking along these same streets will not be possible during construction. Vehicles will have to be parked on adjacent streets.
- \* Dust generated during construction, particularly in unpaved streets such as Kashbush, will worsen air pollution. This impact can be mitigated by periodically sprinkling the area with water.

**El Sharabiya Distribution Pipelines:** (Figure 5)

Like the Shoubra area El Sha rabiya pipelines consist of the smaller diameters and thus the environmental consequences are less severe. The following areas will require special mitigating measures.

- \* Pedestrian access to commercial and residential premises along El Emam El Hussein Street, Hekr El Sakakiny Street and Kamel Sadek Street will be restricted by the construction. Temporary walkways along and across the trenches will be provided as a mitigating measure.
- \* Parking in El Fagala Street and Kamel Sadek Street will not be possible during construction. Vehicles will have to be parked in adjacent Streets.
- \* Air pollution will worsen because of dust generated during construction in unpaved streets such as Hekr El Sakakiny. This impact can be mitigated by periodically sprinkling the construction area with water.



( FIGURE 5 )



Vendors in open market  
will have to be relocated  
to adjacent streets during  
construction.

Narrow street will be  
closed during construction  
period. Access to premises  
shall be provided.



OPERATIONAL AND OTHER LONG TERM IMPACTS AND MITIGATING MEASURES.

Overall Impacts

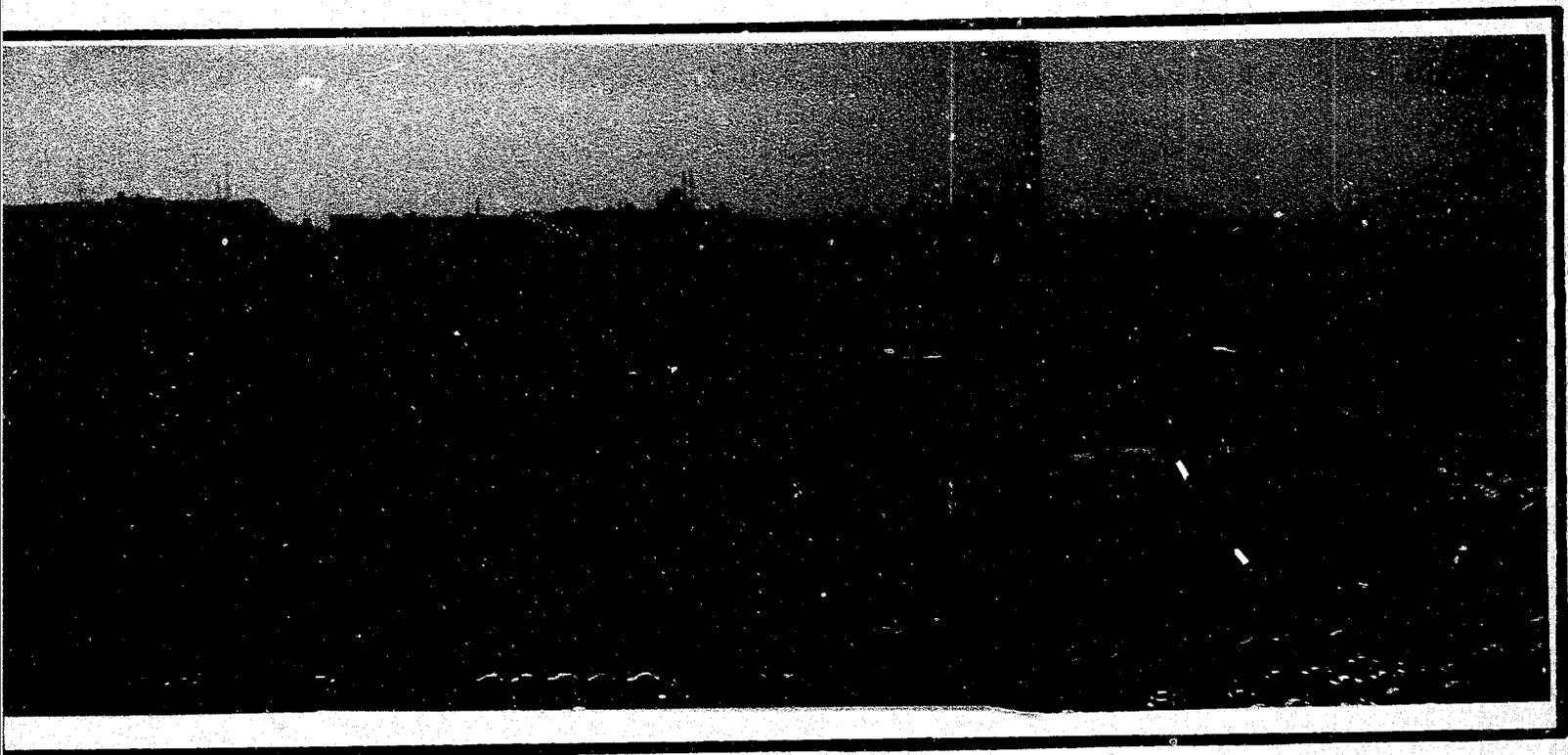
The proposed distribution system improvements will have positive benefits to public health and safety in three main areas.

- 1- Supplying water to areas which are short of water to meet people's basic needs for drinking, cooking, bathing, and washing. Servicing public areas will greatly enhance the few open spaces in central Cairo and thus benefit both the inhabitants and commerce.
- 2- Replacement of leaking water lines will reduce the potential for the introduction of contaminated ground water into the potable water system and thus the potential for transmission of water borne diseases.
- 3- Additional storage and increased pressures due to pipeline improvements will enhance fire protection capability in Rod El Farag service area. It will also improve service to the inhabitants in the upper floors of high-rise buildings.

Reservoirs and Booster Pump Stations.

The proposed reservoir construction at the Abbasiya and Darassa sites, along with existing storage, will meet the projected needs for equalization and fire storage in the Rod El Farag service area to at least the year 2000.

\* The Abbasiya reservoir site is presently owned by GOGCWS and is readily obtainable. The 80-meter diameter reservoir (30,000 m<sup>3</sup>) will be buried (one meter extending above the ground surface) and thus will be unobtrusive to the surrounding community. The booster pump station will be architecturally designed to blend with the buildings in the area. The roof of the reservoir will be designed for passive recreational use and the area around the reservoir landscaped to provide a park like setting for use by patrons of the Water Club. The reservoir is situated on relatively high ground (elevation 43 meters) compared to Rod El Farag service area (about elevation 20 meters) thus reducing



The site indicating the boundaries as well as the topography. The site will be landscaped to include Al Azhar park and the three underground reservoirs.



El Darassa site indicating its contours, towards Salah Salem road with the Citadel in the background.

the peak hour demands.

The Darassa reservoir site is presently owned by the Cairo Governorate and is planned for development as a public park. The total area is about 65 acres, 15 acres will be used for the three 30,000 m<sup>3</sup> reservoirs, pump station and associated underground piping. The entire reservoir area including the roof surfaces will be designed as part of the park layout and will be available for use by the public. The site is at such an elevation that the reservoirs can be located at the maximum hydraulic gradient for the Rod El Farag service area (63 meters) thus avoiding the need to pump water back into the system during peak demand periods. A booster pump station is proposed to serve the higher level and critically water-short Manshiet Nasr area to the east.

The Darassa site contains barren mounds of rubble which contribute considerable amounts of dust to the area. Development of the area as a park would mitigate the existing dust problem. The site overlooks the old medieval, Islamic part of Cairo. One of the proposed park's functions would be to provide views of this historic area. The pump station architectural features will be designed to fit into this setting.

#### **IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES.**

The proposed project represents an irretrievable commitment to capital and natural resources, including money, manpower, sand and gravel, cement, steel, labor and fuel which are necessary for construction. Manpower and electrical energy are required for the operation and maintenance of the project.

The commitment of land to the proposed project is in practice, though not in theory, irreversible. Theoretically, structures and pipe could be removed in the future and the sites returned to their present condition. In practice, however, land is irreversibly committed.

## LIST OF PREPARERS

This environmental assessment was prepared by:  
Dr. Salah Zaki Said, Architect / Urban Planner.  
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Eng. Sherif Waly, Architect  
Dr. Daa El Moniery, Geotechnical  
Thomas S. MacBriar, Civil Engineer  
Moustafa Hasseeb, Sanitary Engineer

**APPENDIX A**

**AGENDA**  
**PUBLIC MEETING**  
**FOR THE**  
**ENVIRONMENTAL ASSESSMENT**  
**FOR**  
**ROD EL FARAG DISTRIBUTION SYSTEM IMPROVEMENTS**  
**27 September 1989, 9.30 A.M.**  
**CAIRO WATER CLUB**

<u>Time</u>	<u>Subject</u>	<u>Speaker</u>
9:30-9:35	Quraan Karim	
9:35-9:45	Welcome	Chr. Hegab
9:45-9:55	Governor's Speech	Dr. M. El Sherif
9:55-10:00	Break	---
10:00-10:15	Purpose of Meeting	Chr. Hegab
10:15-10:25	Purpose of Environmental Assessment	USAID
10:25-10:45	Project Description	CH2M Hill
10:45-11:15	Environmental Issues	CH2M Hill
11:15-12:45	Questions & Comments	Audience
12:45-13:00	Summary & Closing	Chr. Hegab

**PUBLIC MEETING**  
**ROD EL FARAG**  
**DISTRIBUTION SYSTEM IMPROVEMENTS**  
**ENVIRONMENTAL ASSESSMENT**  
**PRESENTATION**

**1- PROJECT DESCRIPTION**

- a- Scope of Project
  - 1- Rod El Farag Service Area
  - 2- Planning Stages
  - 3- System Demands
  
- b- Project Elements
  - 1- Transmission Mains
  - 2- Distribution Pipelines
  - 3- Reservoirs
  - 4- Pump Stations

**2- SIGNIFICANT ENVIRONMENTAL ISSUES**

- a- Public Health & Safety
- b- Socioeconomics
- c- Topography & Soils
- d- Air Quality & Odors
- e- Noise
- f- Traffic
- g- Utilities

ENVIRONMENTAL ASSESSMENT  
ROD EL FARAG DISTRIBUTION SYSTEM IMPROVEMENTS

PURPOSE OF AN ENVIRONMENTAL ASSESSMENT

Since 1976, AID has required the preparation of Environmental Assessments for all projects which could potentially affect the environment. The purpose of an Environmental Assessment is to ensure that the environmental consequences of AID-financed activities are identified and considered by AID and the host country, in this case Egypt, prior to a final decision to proceed and that appropriate environmental safeguards are adopted.

Environmental Assessments have been prepared by interdisciplinary teams of specialists from a variety of fields, including environmental science, engineering, public health, social science, and economics for many large-scale capital projects in Egypt.

Environmental Assessments are technical analyses prepared to inform decision makers, the public and project designers of the potential environmental impacts of proposed projects, to evaluate technical alternatives, and to identify possible mitigations to eliminate or reduce negative impacts and to take actions to enhance secondary benefits. Environmental Assessments do not recommend a specific course of action nor do they determine whether a project should or should not be undertaken. Rather, they provide the decision maker with information on environmental aspects of the project so they can be evaluated in conjunction with other aspects, such as engineering, economics, financing, etc., in making decisions on project design.

Public Scoping Meetings

The environmental scoping meetings are held in order to draw upon the insights of knowledgeable individuals to help determine the potential environmental benefits and adverse impacts that might result from the implementation of the project.

Purpose of Background Paper

The Background Paper provides interested parties with a basic understanding of the project, as well as a preliminary listing of the major environmental issues which are to be addressed in the environmental assessment. Interested parties can review this document to determine whether or not the environmental assessment will address those issues which are of particular concern to the individual or agency. Included in the Background Paper is the plan of work for preparing the environmental assessment.

## Goal and Purpose

The goal of the project is to improve sanitation and health conditions for the people living and working in the Rod El Farag service area in the City of Cairo. The Rod El Farag service area is considered to include the sub-areas of Rod El Farag, Shoubra, El Sharabiya, Abbasiya, El Sakakini, Ghamra, Geziret Badran, Boulaq, Bab El Shariya, El Esbekiya, El Muski, El Gamaliya, Bab El Khalq, El Darb El Ahmar, Abdin and El Saiyida Zeinab.

The project's purpose is to rehabilitate and expand the central city water transmission, distribution and storage facilities to fully benefit from the recent expansion of Rod El Farag Water Treatment Plant.

## Project Elements

### **Transmission Mains**

Approximately 20 km of new transmission mains (sizes 800 to 1400 mm) will be installed in the Rod El Farag service area to increase hydraulic capacity and/or replace existing transmission mains that are badly corroded and/or leaking. The proposed new mains are shown on Figure (1).

### **Distribution Pipelines**

Approximately 28 km of new distribution pipelines (sizes mm 100 to 600 mm) will be installed in the Shoubra and El Sharabiya areas. These improvements are proposed for areas that are now inadequately served by an old and under sized system. The proposed improvements are shown on Figures (2) and (3).

### **Reservoirs and Booster Pump Stations**

An additional 120,000 m<sup>3</sup> of storage is proposed for the Rod El Farag service area. The capacity will be provided in four new reservoirs of 30,000 m<sup>3</sup> each. One reservoir is proposed in Abbasiya at GOGCWS's Water Club. This reservoir will be located below the 63 meter hydraulic pressure level for the Rod El Farag service area and will, therefore, require a booster pump station to boost water to the 63 meter level during peak demand periods.

Three reservoirs of 30,000 m<sup>3</sup> each are proposed for the Darassa site at Al Azhar and Salah Salem Streets. These reservoirs will be located at the 63 meter level and can serve the Rod El Farag area by gravity. A booster pump station will be constructed to

provide service to the Mansheit Nasser area which is critically short of water. The Darrassa site will be landscaped and developed to provide a public park for use primarily by the citizens in the immediate area.

The purpose of the public scoping meeting is to elicit information on the possible positive or negative environmental effects of the proposed distribution system improvements. The environmental issues which are believed to be significant are described in this Background Paper. Participants in this meeting are invited to comment on the relative importance of the following issues or identify other environmental concerns that should be included in the Environmental Assessment.

### Public Health and Safety

The proposed distribution system improvements will have positive benefits to public health and safety. Replacement of leaking water lines will reduce the potential for intrusion of contaminated ground water into the potable water system. The additional storage and increased pressures will enhance fire protection capability in the Rod El Farag service area.

### Socioeconomics

The proposed construction will have both positive and adverse socioeconomic impacts. The construction work will provide employment for both skilled and unskilled labor during the construction period. Local suppliers of construction materials and construction industry in general will benefit from increased sales. On the other hand, local shop owners may suffer some short-term inconvenience during the period when construction makes access to their shops difficult. Construction can be arranged to have the minimum amount of trench open at one time and the contractor can provide temporary access over the trench.

### Topography and Landscape

The proposed activities will have only short-term effects on the topography and landscape during construction except at the Darrassa reservoir site. The Darrassa site topography will be maintained as much as possible consistent with the reservoir construction. The entire site will be developed into a public park including green spaces, a children's area and view points of historic Old Cairo. The net impact will be positive by improving the aesthetics of the area and provide badly needed open green space in density populated area of Cairo. The site will be checked for the possible presence of hazardous waste and for possible archeological importance.

### Air Quality and Odors

The air quality and odors will have adverse impact during construction due to increased dust and equipment exhaust fumes. However, the impacts will be short-term and may not be noticeable because of the normally high amounts of contaminants in the air.

## Noise

Construction equipment will increase the localized noise levels but may not be too disturbing because of normally high ambient noise level. Some work may be at night because of traffic conflicts and noise could be disturbing to residents near construction activity.

## Traffic

Traffic transporting construction materials to the sites will increase traffic congestion near the construction sites. Pipeline construction in the streets will restrict traffic and increase congestion. This can be mitigated by limiting the length of trench that can be open at one time and, in some cases, (for main streets) limiting construction to night time hours and requiring the street to be restored to traffic at the end of each work shift. Also the contractor should arrange with the Traffic Department of the Ministry of Interior to provide citizens with alternative roads instead of those having construction work.

## Utilities

The potential for disruption of buried utilities exists during excavations. Increased supply of water could add to an already overloaded sewer system in portions of the central city and to the presently unsewered Manshiet Nasser area until planned sewer improvements are complete. Improvements to the water system will be coordinated with the Sewerage Agency and the other entities operating underground utilities.

## Historic & Archaeological Sites

It is not anticipated that construction will disturb any historic structures or archaeological sites. Where construction occurs near historic structures, special construction techniques will be required to prevent damage. If artifacts are encountered during excavation work will be stopped and the Department of Antiquities notified.

Based on information obtained at this scoping session, a final scope of work will be prepared for the environmental assessment and will be carried out by a team of experts consisting of Urban Planners, Engineers, Architects, Landscape Architects, Transportation Specialist, and Geotechnical Specialist furnished by CH2M Hill. The environmental assessment team will prepare a technical analyses of the potential environmental impacts of the proposed projects.

The work will be accomplished during the months of April, May and June, 1989 and a draft environmental assessment will be submitted for review in July 1989. Copies of the draft may be obtained if requested in writing from:

General Organization for Greater  
Cairo Water Supply  
42 Ramses Street  
Cairo, Egypt

الهدف من تقييم تأثير المشروع على البيئة ومناقشته في اجتماع عام:-

لما كانت المشروعات التي تمويلها هيئة المعونة الامريكية في أنحاء العالم لها تأثير على البيئة بوجهة عام ومنعا لوجود اثار جانبية سلبية لأي من هذه المشروعات، فقد الزم القانون الامريكى منذ عام ١٩٧٦ هيئة المعونه الامريكية ، ان تتضمن هذه المشروعات تقييم لتأثير المشروع على البيئة سواء على المدى الطويل او خلال فترة انشاء المشروع .

وبناء على لوائح هيئة المعونة الامريكية الان ، فأنه يلزم توضيح تأثير هذه المشروعات على البيئة والانسان بوجهة عام في دراسته تقدم بهيئة المعونة الامريكية والدوله صاحبها المشروع وذلك قبل اتخاذ القرار النهائي بالاستمرار بالمشروع . على ان توضح هذه الدراسة اسلوب تفادى اي اضرار جانبية قد يكون لها تأثير سلبى على البيئة . وتوضح كذلك هذه الدراسة للمستولين ومتخذى القرار التاثيرات الايجابية للمشروع والبدايل التي قام الفنيون بدراستها لتقليل او منع اي اثار سلبية على البيئة بوجه عام .

هذا ولا توضح هذه الدراسة او توصى باتخاذ قرار معين اذاء القيام بالمشروع او عدم القيام به . ولكنها توضح لمتخذى القرار بعض المعلومات عن جوانب تأثير المشروع على البيئة لتكون هذه الاعتبارات بالاضافة للاعتبارات الفنية والاتحادية مأخوذه في الاعتبار في فترة تصميم المشروع .

هذا وتحقيقا لتقييم التأثير على البيئة بواسطة المشروعات يلزم عرضها في اجتماع عام يحضره بعض الشخصيات العامة والعلمية ليسانع ذلك في شرح الفوائد التي يحققها المشروع من النواحي البيئية ويوضح اي اثار جانبية سلبية وكيف تم التعامل معها ومعالجتها للتجفيف من حدتها او إلغاء تأثيرها .

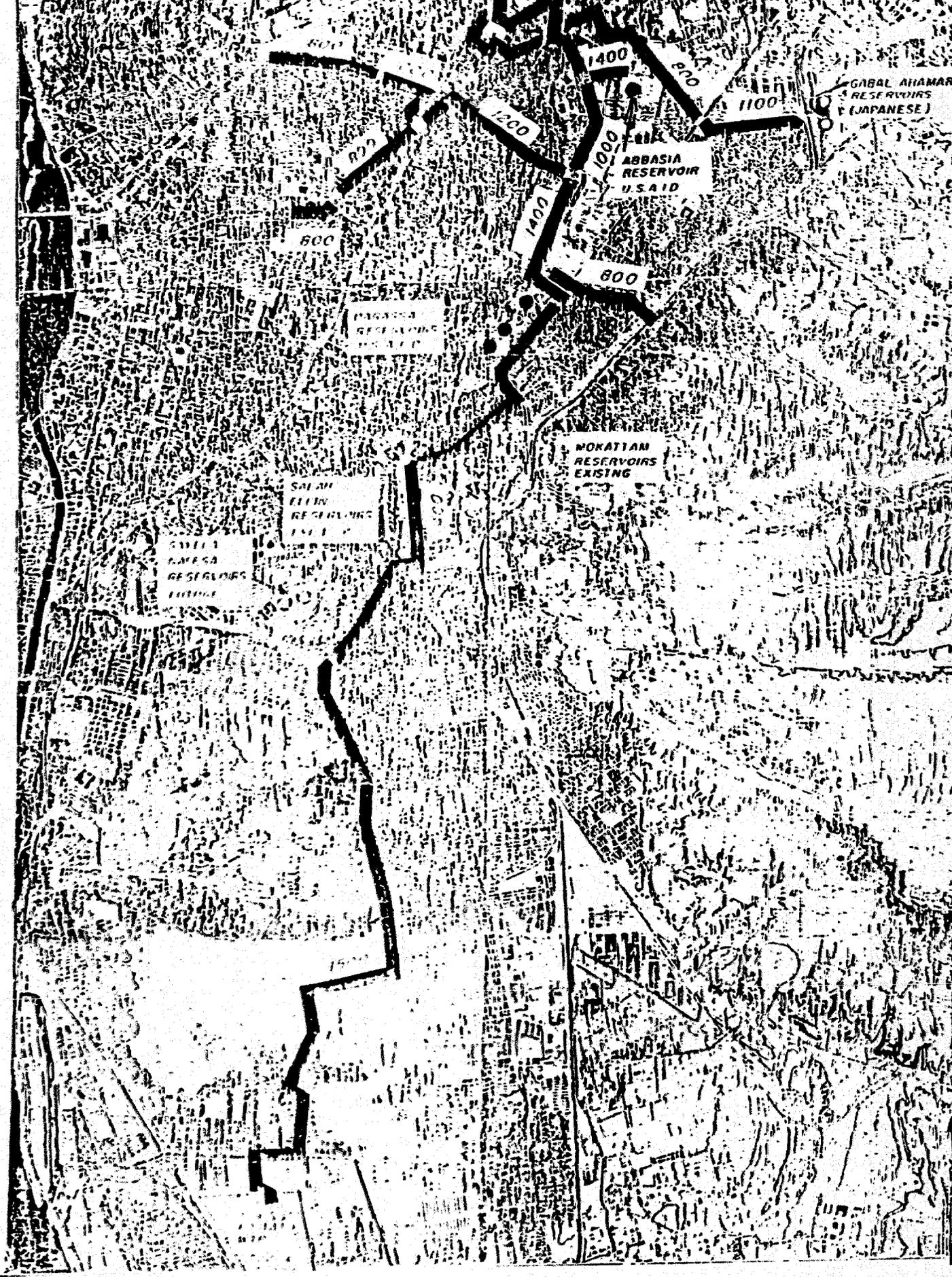


FIGURE 1  
TRANSMISSION MAINS  
LOCATION MAP

22

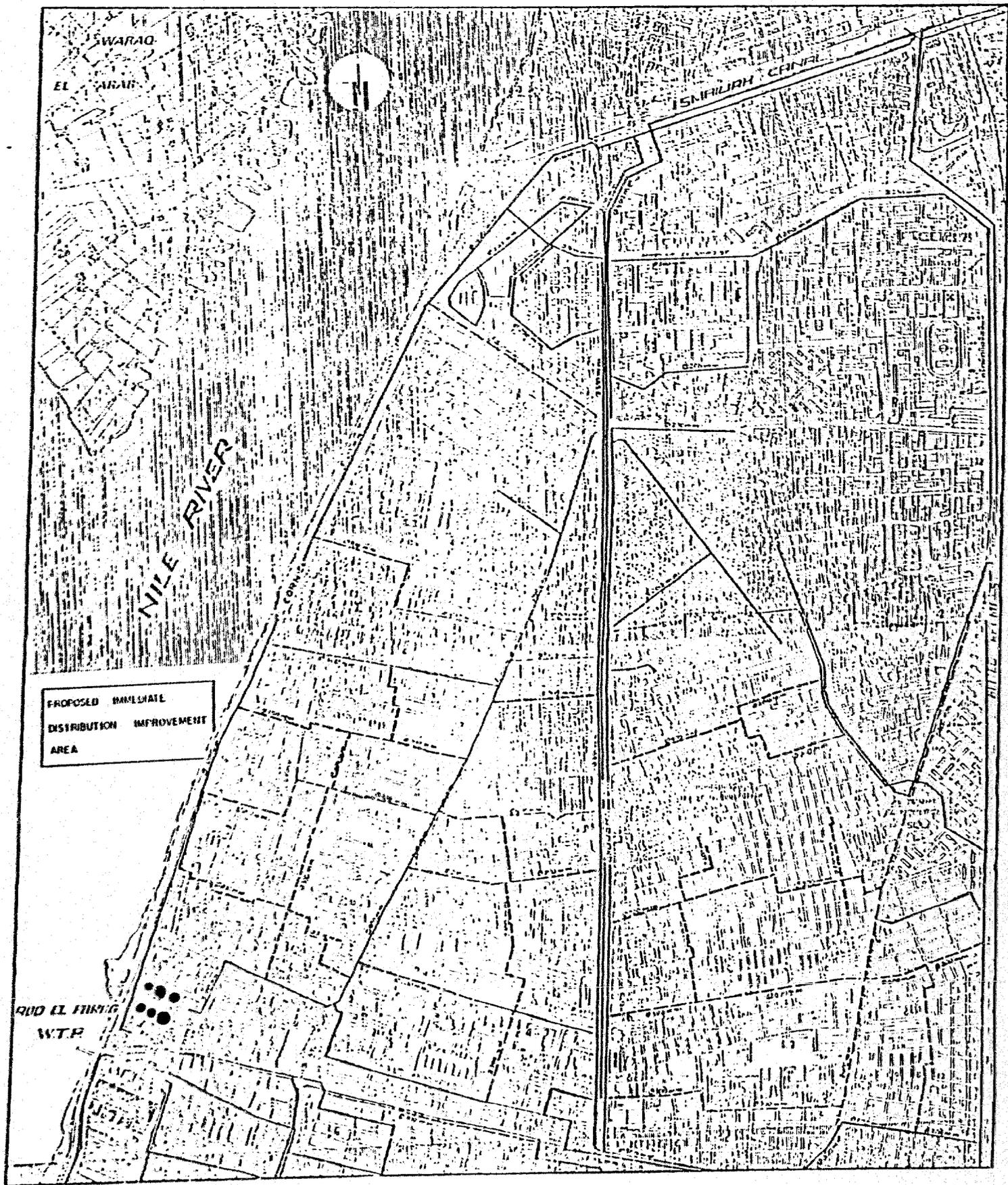
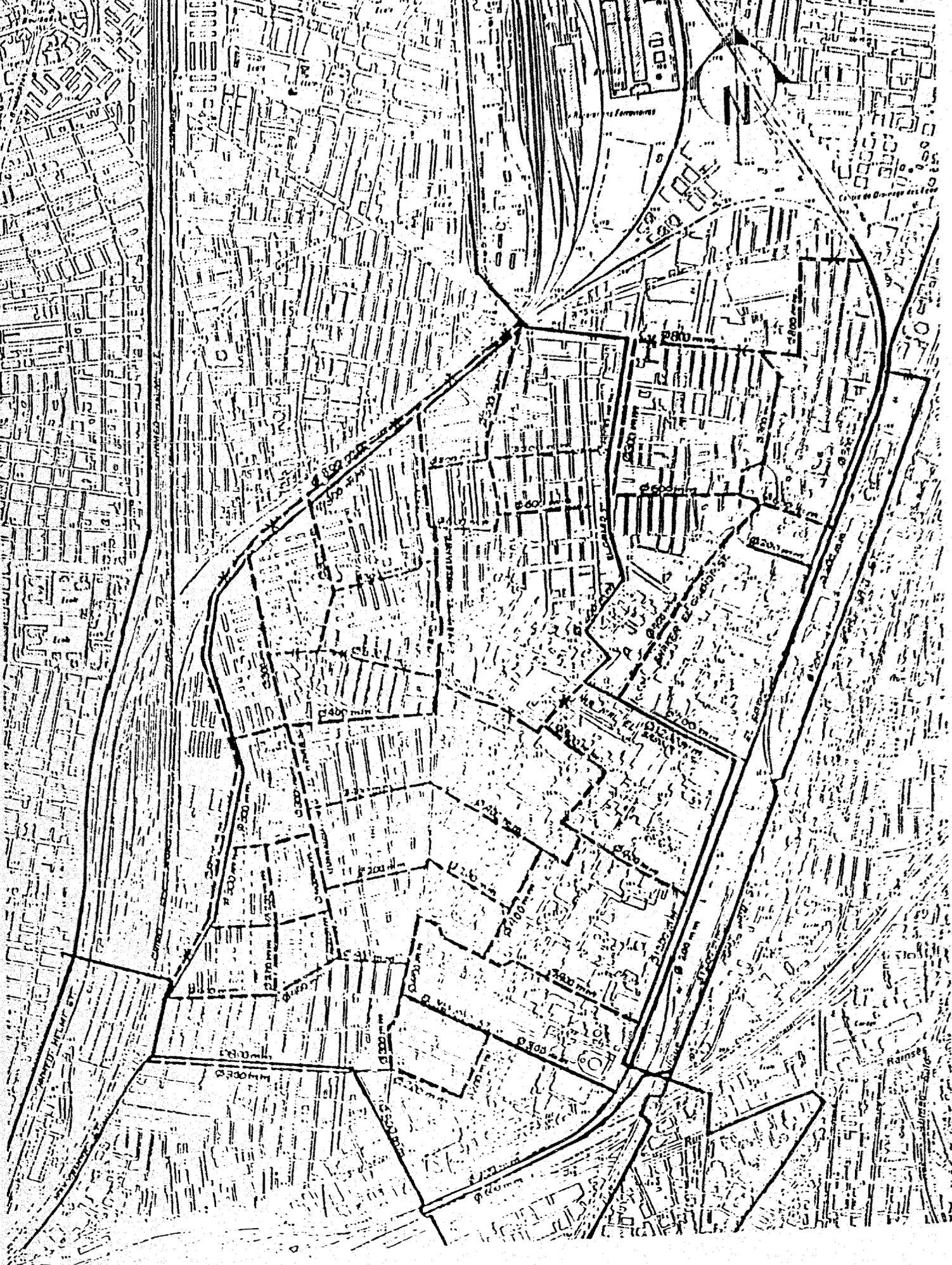


FIGURE 2  
 SHOUBRA AREA  
 PROPOSED DISTRIBUTION IMPROVEMENTS

LEGEND  
 ———— EXISTING PIPELINES  
 - - - - - PROPOSED PIPELINES

33



**LEGEND**

— EXISTING PIPELINES

— PROPOSED PIPELINES

**FIGURE 3**

**APPENDIX B**

**FOR THE  
PUBLIC MEETING  
FOR THE  
ENVIRONMENTAL ASSESSMENT  
FOR  
ROD EL FARAG DISTRIBUTION SYSTEM IMPROVEMENTS  
Held on  
27 September 1989 at 9:30 a.m.  
at  
Cairo Water Club.**

The meeting opened with The Quraan Karim followed by:

**Gen. Eng. Kamal Hegab, Chairman GOGCWS.**

Chairman Hegab welcomed the audience and explained the purpose of the meeting. He described "Cairo Water Supply II" which has been granted by US A.I.D. and is being designed and will be supervised by CH2M HILL International. Chairman Hegab emphasized the complimentary elements of the Cairo Water Supply II Project. The Institutional Development, which includes training, updating auditing systems and improved laboratories, will enhance the competence of the Egyptian organization. He urged the audience to question CH2M HILL and USAID about the project and the issues that will be presented in the meeting.

**Ms. Sally Patton, USAID.**

Ms. Patton thanked Chairman Hegab and the audience for their participation in the environmental process. She added that USIAD has required the preparation of an environmental assessment for all projects that could potentially affect the environment since 1976. The purpose of the environmental assessment for AID Financed projects is to identify and consider, by AID and Egypt (host country), the potential impacts of the proposed project and to insure that appropriate safeguards are adopted. Environmental assessments are technical analyses prepared to inform decision makers, the public and project designers of the potential environmental impacts of the proposed project, to evaluate technical alternatives, to identify possible mitigation measures to eliminate or reduce

benefits. Environmental assessments do not recommend a specific course of action nor do they determine whether a project should or should not be undertaken. They are to provide the decision maker with information on environmental aspects of the project, so they can be evaluated in conjunction with other aspects, such as engineering, economics, financing... ect. in making decisions on project design.

Mr. Dale King, CH2M Hill:

Mr. King described the "Background Paper" that was distributed at the meeting and explained that the presentation would be in two parts; the project description and the environmental issues. The project description will be presented by Mr. Tom MacBriar (English) and Dr. Diaa El Moniery (Arabic). The environmental issues will be present by Mr. King (English) and Dr. Salah Said (Arabic). He stressed the importance of obtaining the ideas and concerns of the audience.

Mr. Tom MacBriar and Dr. Diaa El Moniery

The project was described briefly by Mr. MacBriar in English and expanded upon by Dr. Diaa in Arabic. (See Background Paper in the Appendix).

Mr. D. King and Dr. Salah Said

The environmental issues and mitigating measures were presented by Mr. King (English) and Dr. Salah (Arabic).

Audience Comments/Questions

1. Dr. Helmy El Zonfully National Center for Research.

Water should not be supplied to unsewered areas of the City. A scanning electro microscope is needed for monitoring to avoid problems arising from the old network. Better maintenance procedures are also needed.

## Response by Chairman Hegab.

The question of coordinating water, sewer, electrical utilities and building construction is being considered by a committee (Chrm. Hegab is a member). The committee is reviewing the five year plans for the various utilities for coordination among the various departments.

Chrm. Hegab emphasized that he did not agree that water should not be supplied to unsewered areas<sup>1</sup>. He pointed out that water is a basic need of the human body and needed for health reasons. The amount of water available can be regulated until such time as sewers are available. He pointed out that overall coordination between water and sewage will, at best, be 8 to 10 years away.

He agreed that proper maintenance of the system is important. Proper maintenance is more cost effective than replacing, existing pipelines. Several companies are in the business of rehabilitating existing pipelines. The issue of acquiring a scanning electro microscope will be considered.

### 2. General Fouad Khalil, Giza District Council.

Why is the water department still using asbestos-cement pipe with their negative effects on the human body?

### Response by Chairman Hegab.

As yet we have never heard any side effect of using the asbestos-cement pipes in water supply. I believe that the side effects emerge only during manufacturing the pipes. Nevertheless we have started using PVC pipes instead of asbestos-cement; example in the Kerdasa quarter.

<sup>1</sup>. Cairo Water Supply II project has LE 2.5 million budgeted for a revolving fund to assist home owners in financing connections to the water and sewer systems.

28

### 3. Mohmoud Abu Khalaf, Water Department

We appreciate having the public meeting. We want a way to reduce the amount of waste in the supplied water. It is around 40 percent.

#### Response by Chairman Hegab.

I too agree that we have been pleased with the meeting and to have it on T.V like the western world and I agree also we have to reduce the amount of the waste in water, which could be met by a number of ways:

- \* Advertising for wise consumption
- \* Speedy repair
- \* Maintenance
- \* Producing long life sanitary appliances (fixtures)
- \* Acquiring & training skilful workers for maintenance
- \* Training the public for repairing techniques.
- \* The local councils have to have "Emergency Repair Teams"

We are already directing the public towards effective use of water, as the water department adopted ideas for teaching schools' pupils lessons for that purpose with more advertising through the media.

#### Final Comments By Chairman Hegab

The department believes that water is right for everyone and we work for this principle.

The department budget is LE 500 Million yearly for water supply. The proposed project has been technically studied with USAID and CH2M Hill and we have been particularly pleased with the environmental assessment part of the project.

We will send this study to Dr. Atef Ebeed the Minister of the Administrative Development Ministry who is heading the Environmental Department concerned with "water, air, land and noise" the things which CH2M HILL has already consider during their study.

the improvements which are not under consideration, implemented by other grants from West Germany and Japan, based on the master plan which has been studied by CH2M HILL up to year 2000-2010.

I have been particularly pleased with the idea of a park and green spaces and the effect of noise during construction, odor and air quality, the effect of the project on traffic and the need for coordination among the concerned utilities. I am also pleased with the concern for construction near the historical buildings.

Really, I felt I'm not in Egypt, because the project will take everything into consideration even noise. This is the first project I have ever heard about since my appointment in the department which includes an environmental assessment; the thing which attracted me strongly. And I'm raising my voice to everyone responsible for other projects to consider these issues during implementing their projects. Moreover we have to coordinate with the concerned utilities, and departments.

This project will lead us to adopt the aspect of an environmental assessment in every project being thought about. By this aspect we will be able to control everything either underground or over it for human benefits. I'm always saying we have to put water pipes on the right side of the street, the sewer line on the left side, electricity & telephone lines on the center.

I take this opportunity to learn one lesson, i.e. any project should be assessed positively and negatively on the surround environment.

Thanks to AID and CH2M HILL.

**APPENDIX C**

41

FOR THE  
**ENVIRONMENTAL ASSESSMENT**  
 FOR  
**ROD EL FARAG DISTRIBUTION SYSTEM IMPROVEMENTS**  
 27 SEPTEMBER 1989, 9.30 A.M.  
 CAIRO WATER CLUB

Name & Position ( الاسم و الوظيفة )	Organization ( المكتب / الهيئة )
Gen. Eng. Kamal Hegab, Chairman	General Organization for Greater Cairo Water Supply (GOGCWS)
Eng. Tawfik Yehia	GOGCWS
Eng. Hossin Kamal	GOGCWS
Eng. Mohamed Abdalla	GOGCWS
Eng. Bahi El Gmal Zaki	GOGCWS
Eng. Saad El Deeb	GOGCWS
Eng. Zakaria Moustafa	GOGCWS
Eng. Theresa Hanaa	GOGCWS
Dr. Ragaa Goda	GOGCWS
Eng. Abdel Aziz Mahmoud	GOGCWS
Eng. Omar Darwish	GOGCWS
Eng. El Sayed Hafez Adam	GOGCWS
Eng. Mohamed Roshdi Sadek	GOGCWS
Dr. Helmi Tawfik	Searches Soudia Center
Mr. Mohamed Diaa El Din	GOGCWS
Mr. Sfaa Taha El Sdik	GOGCWS - labs
Searches Dep. Manager	GOGCWS - labs
Mr. El Farid Aiad	GOGCWS - Labs
Mr. Ismail Mohamed	GOGCWS - Technical Truning
Eng. Bahia El Mahrosi	GOGCWS - Projects
Eng. Afaf Awad	GOGCWS - Projects
Eng. Reda Mohamed Kamel	GOGCWS - Projects
Eng. Azza Mohamed	GOGCWS - Projects
Eng. Anis Fahim Gad	GOGCWS - Projects

FOR THE  
**ENVIRONMENTAL ASSESSMENT**  
 FOR  
**ROD EL FARAG DISTRIBUTION SYSTEM IMPROVEMENTS**  
**27 SEPTEMBER 1989, 9.30 A.M.**  
**CAIRO WATER CLUB**

<b>Name &amp; Position</b> ( الاسم و الوظيفة )	<b>Organization</b> (المكتب / الهيئة)
Eng. Magdi Fouda	GOGCWS - Projects
Eng. Ashref Mohamed Kamel	GOGCWS - Projects
Eng. Macarious Labib	GOGCWS - Projects
Eng. Mohamed Khalil	GOGCWS - Network
Eng. Adel El Twairy	GOGCWS - Plants
Eng. Sherif Waly	United Consultants
Eng. Tarik Bekhiet	U.S.AID
Ms. Sally Patton	U.S.AID
Mr. Ken Lue Phang	U.S.AID
Mrs. Wdad Mahmoud Ahmed	Housing General Manager - Planning Minis.
Mrs. Shadia El Barbary	Planning Ministry
Mr. Salah El Din Metwaly	General Manager - Planning Mini.
Mr. Mahmoud El Belbisi	GOGCWS
Mr. Mosad Nwar	El Ahaly Newspaper
Eng. Hazem El Sayed	Sabor Office. Con. Eng.
Eng. Mosa El Sayed Sakr	General Organization for Plann.
Eng. Sami Saad Atia	Sabor Office
Eng. Ibtesam Anwar	El Canal Company
Eng Saeed El Hariri	El Canal Company
Eng. Salah Ebrahim	El Canal Company
Eng. Saeed Nassar	El Canal Company
Mr. Nashat Abdel Aziz	Rod El Farag Lab
Eng. Abdalla El Rafee	Rod El Farag Lab

FOR THE  
**ENVIRONMENTAL ASSESSMENT**  
 FOR  
**ROD EL FARAG DISTRIBUTION SYSTEM IMPROVEMENTS**  
 27 SEPTEMBER 1989, 9.30 A.M.  
 CAIRO WATER CLUB

Name & Position ( الاسم و الوظيفة )	Organization ( المكتب / الهيئة )
Mr. Abdel Hamid Ypssef	GOGCWS - Roda Lab
Mr. Shehata Ahmed	GOGCWS - Roda Lab
Eng. Hamouda Hanafi	Net Work Information Center
Eng. Hassan El Gamal	GOGCWS - Net Work
Eng. Farouk Kamel	GOGCWS Project
Eng. Safa Dagher	Cairo Radio
Mr. S.H. Bouch	Aluminium Solphatic Co.
Mr. Madkour M. Bakr	Aluminium Sulphatic Co.
Mr. Tom MacBriar	CH2M Hill
Mr. Dale King	CH2M Hill
Dr. Salah Said	CH2M Hill
Dr. Diaa El Moniery	Ahmed Abdel Warith
Eng. Mahmoud Khalaf	Cairo Water
Eng. Abdel El Baghdadi	GOGCWS
Eng. Khaled Mohamed	GOGCWS
Eng. Afif Ibrahim	GOGCWS
Mr. Salah El Maked	El Ahram Newspaper
Mr. Aly El Dakhakni	GOGCWS - Public Relation
Mr. Osama El Raff	GOGCWS - " "
Mr. Mohamed Salah	GOGCWS - " "
Mr. Reda Rezk	GOGCWS - " "
Mr. Ahmed Morsi	GOGCWS - " "
Mr. Osama Abdel Hamid	GOGCWS - " "
Mr. Abdel Naser Ahmed	GOGCWS - " "
Mr. Mohamed Kamal El Din	GOGCWS - " "
Mr. Fouad Kamal El Din	Giza City Chief
Mr. Ahmed Afet	Soubra El Khima City Chief

**APPENDIX D**

## SCOPING MEETING

ROD EL FARAG

## DISTRIBUTION SYSTEM IMPROVEMENTS

<u>NAME</u>	<u>ORGANIZATION/POSITION</u>
Dr. Mohamedy Eid	Environmental affairs Agency, Chairman
Dr. Ahmed El Gamal	Environmental Affairs, Agency, Consultant
Eng. Amina Maher	General Organization for Physical Planning, Chairman
Dr. Fathi Shiba El Hamd	Ministry of Health, Vice Minister.
Eng. Abdel Salam Awad	Ministry of Housing, Vice Ministr.
Gen. Abdel Rouf Abdel Rahman	Ministry of Housing, Vice Minister.
Gen. Ahmed Hassan	Southwest Area Vice Governor
Gen. Abdel Rahman Abdel All	West Area Vice Governor
Gen. Mostafa Sadek	North Area Vice Governor
Ms. Sally Patton	USAID, Project Officer
Roger Russell	USAID, Envir. Officer
Shankur Gupta	USAID
Tarek Bekheet	USAID , Project Eng.
Gen. Mohamed Sowallem	Sewage Organization, Chairman.
Eng. Mostafa Rezk	Ministry of Housing, Vice Minister.
Eng. Abdel Hamid Ismail	Electric Distr. Co, Chairman
Eng. Wagdi Abdel Hamid	Wire & Wireless Organization, Chairman
Gen. Mostafa El Beially	Cairo Traffic Organization, Chairman

46

Gen. Eng. Kamal Hegab

Mr. Abdel Fatah Noseir

Eng. Saad El Deeb

Eng. Adel El Twairy

Eng. Zakaraya Mostafa

Eng. Mohamed Abdel Karim

Mr. Bahi El Gamal

Mr. Hossam Awn

Mr. Aly Adham

Mr. Salem El Feki

Eng. Omar Rouf

Eng. Abdel Aziz Mahmoud

Eng. Therese Hanna

Mr. Dale King

Mr. Tom MacBriar

Eng. Stephen Kebbe

Eng. Ahmed Badr

Dr. Said El Kholly

Dr. Diaa El Monayery

Eng. Hossam Gad El Hak

Dr. Salah Said

General Organization for  
Greater Cairo Water Supply  
(GOGCWS), Chairman

GOGCWS, Vice Chrm. Finance

GOGCWS, Vice Chrm. Technical

GOGCWS, Stations Dept, Chief

GOGCWS, Projects Dept, Chief

GOGCWS, Network Dept, Chief

GOGCWS, Admin Dept, Chief

GOGCWS, Finance Dept, Chief

GOGCWS, Legal Dept, Chief

GOGCWS, Security Dept, Chief

GOGCWS, Project Gen. Manager

GOGCWS, Project Gen. Manager

GOGCWS, Member Rod El Farag

Committee.

CH2M Hill, Project Manager

CH2M Hill, Design Manager

CH2M Hill, Task Manager

Dr. Ahmed Abdel Warith,

Dr. Ahmed Abdel Warith,

Dr. Ahmed Abdel Warith,

Dr. Ahmed Abdel Warith,

United Consultants