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By

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THE BASIC VILLAGE SERVICES PROGRAM, EGYPT:
TECHNICAL AND FINANCIAL ASSESSMENT

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PREFACE

DAI's first involvement in rural development in Egypt began when two senior staff reviewed the prospects for AID support to decentralization, producing a report entitled Bringing Developmental Change to Rural Egypt: A Study of the Organization for the Reconstruction and Development of the Egyptian Village by Donald R. Mickelwait and Charles F. Sweet (March 1976). That project has since been implemented, but DAI's interest in rural Egypt continued and the firm was most recently asked by AID to furnish a team to review the proposed Basic Village Services project.

DAI furnished an Arabic-speaking team, headed by Abdolhossain Zahedani, an engineer with a Ph.D. in economics and more than 12 months field experience working in Egypt. He was complemented by the Louis Berger International's Chief of the Egypt Office, Steven Shepley, who has many years experience in social and economic analysis. Peter Parr and Farouk Nasser rounded out the team.

While the original scope of work was general, relating to the capacity of the Egyptian governmental hierarchy to implement the project, direction given by USAID/Cairo was specific to three particular governorates. The team was instructed to carry their inquiry to the field and to collect and analyze data as it related to the specific circumstances of village, district (markaz) and governorate capacity to identify and undertake simple infrastructure improvements. The draft report, submitted in Egypt prior to the return of the team, was a library of information organized by the provinces.

Comments on the draft report led to this revision, completed in the offices of DAI/Washington. Dr. Zahadani reviewed the comments and, working with the staff, reorganized the report to present a more general perspective that might be useful to a national Basic Village Services program.

During its 50-day assignment, the team gathered a great deal of information in the field, relative to the planning and implementation of the proposed program. The governorates visited were cooperative in supplying data and arranging visits and meetings. In addition, much the initial assistance and mapping of various Egyptian agencies was provided by

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Engineer Dakroury Thabet of the Organization for the Development of the Egyptian Villages (ORDEV). Ann Fitzcharles, Director of the Basic Village Services program committee of USAID/Cairo, was also very helpful.

DAI was pleased to be able to furnish the team and provide the home office support that made this report possible. We are hopeful that the project, when the design is completed and approved, will improve the life of rural Egyptian villagers.

Donald R. Mickelwait
President
Washington, D.C.
5 February 1980

BACKGROUND AND SCOPE OF WORK

Since 1975 the government of the Arab Republic of Egypt (GOE) has initiated an unprecedented effort to promote decentralization of the nation's administrative structure. One aspect of this effort is to encourage decentralization of the rural development process by giving village councils direct responsibility for selecting, planning, implementing and managing village service projects with coordination and technical support for these activities being provided by the governorate and district (markaz) offices.

In support of the Egyptian Government's decentralization policy, a pilot program has been launched. Using provisions of U.S. public law 480, under which debt service requirements for loan-financed food assistance can be waived in amounts equal to local currency contributions of the recipient government for rural development projects, the Government of Egypt, in conjunction with USAID, is providing village development funds to the three governorates of Sharkya, El Fayoum, and Sohag. These funds will be allocated directly to the village councils to implement service projects chosen by the elected members.

In addition to this initial pilot effort, USAID is exploring the feasibility of making grant funds available to many other governorates for the development of Basic Village Services (BVS),

such as potable water, village roads, and other publicly owned infrastructure targeted on improving the quality of rural life. The goals of the new program being contemplated are threefold:

- To finance the provision of needed services through grants to village councils;
- To support the Government of Egypt's decentralization policy; and
- To assist in the development of new capacities for planning, designing, implementing, and managing service systems for the rural population in Egypt.

The BVS program is expected to phase in the governorates selected gradually, allowing ample time to incorporate experiences gained both from the PL 480 program and from those governorates with early start-up dates. Three governorates have been selected to start the program and the local officials have been notified. Those governorates are El Beheira in Lower Egypt, and El Minya and Kena in Upper Egypt. Of the three, El Beheira is the most and Kena the least developed. While the BVS program for these governorates is still in the planning stages, the general parameters of the proposed program have been formulated and agreed upon between the Ministry of Local Development and USAID.

- USAID and the Egyptian Government would agree to a sum of money to be allocated for basic services for the first year (LE 11.5 million),
- USAID and the Egyptian Government would agree to a plan for allocating that money to several governorates (LE 3.5 million to each of the three governorates in the first year).

- This money would be allocated by the governorates to village councils for Basic Village Services projects selected from a list agreed on by USAID and the Government of Egypt.
- The village councils will hold the Basic Village Services project money in their accounts in the village banks. The village councils will be responsible for actually implementing the project. This would include selecting the contractor for bids, supervising the progress of the project, planning for the operation and maintenance of the project and collecting service charges where appropriate (for example, charges for household water connections).
- The governorates will be responsible for the overall coordination and planning of the Basic Village Services projects. The governorate technical staff will assist and advise the village councils in all technical and financial aspects of the Basic Village Services projects. The governorate will provide the financial monitoring and accounting of the village council, although the village councils themselves will actually be responsible for spending the money.
- At the central level, the program will be coordinated by the Ministry of Local Government.

Prior to final approval of the proposed program in Beheira, Minya and Kena, USAID requires information and recommendations regarding:

- A clear understanding of the Egyptian technical, administrative and managerial procedures that will permit maximum reliance on Egyptian systems in the provision of U.S. assistance to locally implemented infrastructure projects.
- Identification of those minimum additional requirements in the technical, financial and management systems that may have to be added to permit start-up of a U.S. assistance program to BVS.

- Identification of those areas of technical or procedural/organizational weakness that may require long-term project technical assistance to improve overall performance and achieve project objectives.

To obtain the required information, the U.S. Agency for International Development employed the services of Development Alternatives, Inc., in association with Louis Berger International, Inc., to prepare an assessment of local project execution capabilities with recommendations for correcting procedural managerial weaknesses identified therein.

The consultant team assembled on October 4, 1979, and, after appropriate arrangements, fieldwork was carried out in the three governorates designated by the USAID mission.

CONCLUSIONS AND RECOMMENDATIONS

This section provides a summary of the findings of the field team and offers a series of recommendations designed to enhance the prospects for a successful BVS program in Egypt. "Success" is defined in this instance as the timely implementation of needed village infrastructure, and strengthening local institutions directly involved in all phases of project activity. The conclusions summarized below are provided to allow USAID to make sound judgments concerning the future scope and direction of the Basic Village Services effort.

CONCLUSIONS

The Need

Actual inspection of existing village services throughout the study area (El Beheira, El Minya and Kena Governorates), relating particularly to availability of potable water, roads and properly functioning irrigation canals, has clearly established the need to upgrade, expand and provide regular maintenance to the system in place. The projects that have been proposed are basic and represent infrastructure that should have been constructed long ago. There is a large backlog of such projects in rural Egypt. The projects proposed represent

the highest village priorities. Perhaps for this reason, questions concerning analysis of alternative investments were seldom raised.

For most village councils, the opportunity to spend LE 25,000 on a project, such as a new potable water system, is unique. The number of BVS beneficiaries is large and, when balanced with relatively modest project costs, low cost-per-capita ratios result. Considering the high percentage of rural inhabitants without potable water, adequate farm-to-market roads, and fully functional irrigation systems, the proposed BVS program will improve the quality of life in a permanent way.

Feasibility

The BVS program is composed of many individual potable water, rural road, and irrigation canal cleaning projects. Projects of this sort are commonly carried out throughout Egypt and as such are generally understood by the authorities. As the projects are local in content and application, they are not expected to challenge existing mores and practices or have adverse environmental effects. It is fully expected that local village inhabitants will cooperate in all phases of execution and generally accept and use the benefits of the completed efforts.

The material required for implementation is either available locally or can be purchased from sources inside Egypt with minimal delay and difficulty. Some equipment may have to be purchased abroad, but it all involves standard production items for which the U.S. market is a suitable source. The people needed to design and implement the projects are readily available, though perhaps not in the required numbers.

The feasibility of the BVS program as a whole will depend largely on mobilization and coordination of government efforts, especially at the governorate level. Assuming that projects are promptly approved and funds are transferred to the proper local accounts, the governorates must be prepared to assist the village councils directly in preparation of engineering documents, bid tendering, specifications, contracting, and the very important function of securing the supply of material. This governorate support is absolutely essential and governorate-level BVS teams are recommended to satisfy this need.

Decentralization and Encouragement of Local Problem-Solving

Besides supplying needed infrastructure, the proposed program, if implemented properly, will serve the real purpose of involving local executives and decisionmakers in the development process. By providing the means and the organizational framework for local problem-solving, village officials can be expected to acquire both the motivation and the skill to help

their constituents help themselves in their pursuit of a better life. This type of experience through doing is expected to have a positive carryover effect for future problem-solving.

As a result of the project, markaz and governorates could also receive an impetus toward effective management of people, material, and equipment in support of locally selected development projects.

Systemization of Selection, Planning and Implementation Procedures

The level of proposed BVS funding for the governorates offers a unique opportunity for institutionalizing a common approach to planning, implementation and managing village-level development. Particularly since BVS funds will be at the disposal of the village councils with guidance and technical aid from the markaz and governorates staff, it can be expected to increase the degree of cooperation between these bodies and foster a sense of commonality of objectives. Various formats and procedures adapted could become standard practice. A new consciousness regarding maintenance and operation of village infrastructure systems can develop.

Varying Degree of Preparedness Among Governorates

The three governorates studied revealed varying degrees of preparedness to initiate and carry out to completion their

proposed BVS programs. This is expected to be the case among other governorates. In general those governorates with the most urgent needs for upgrading of their village infrastructure systems seem unfortunately to be the least prepared to embark upon a program. The technical assistance program must take this into consideration and plans should be made to provide more help to governorates that are deemed less organized and prepared to undertake these programs.

The Role of Key Individuals

In some governorates certain individuals were identified who could be of value to the success of the program, while in others none could be so defined. While it is gratifying to find enthusiastic and capable individuals (including governors), it is important to design the procedures for implementation of the program in a way that will minimize reliance on such key individuals and instead will encourage the utilization of proven management methods.¹

Analytical Ability of Local Officials

Few individuals are familiar with objective economic decisionmaking based on criteria such as benefit/cost or least-cost analyses. The proposed programs for the governorates

¹ In this regard it should be stated that a system of financial incentives is long overdue in Egypt. A simple method of supplementing payments to highly productive individuals must be adopted to encourage good efforts.

under study are based entirely on a straight allocation per capita for all village councils, which is viewed by the local people as a fair method of distributing BVS funds. The technical assistance program could encourage the use of least-cost methods in cases where alternatives can be identified. The use of capital-intensive methods merely on the grounds of convenience must be discouraged.¹

¹ This report contains recommendations for the use of mechanized road grading, earth and water moving and canal cleaning equipment. The rationale for capital investment in a "poor" country, given by all official levels down to the village council member, is the increasing shortage and escalating price of day labor, and the absence of a capable work force. "Migration," both to the cities and to other Arabic speaking oil-rich countries, is the most widely cited cause. This study did not address the question of the appropriate level of capital intensiveness, leaving this issue for those with far more time. See, for example, the documentation on this point in Further Mechanization of Egyptian Agriculture, a report to the Regional Operations Division, Agency for International Development, by ERA 2000, Inc., Gaithersburg, Md., April 1979.

MAJOR RECOMMENDATIONS

Program Time Span

It is strongly recommended that a prolonged time frame be adopted for the BVS program, taking into consideration the limited abilities for planning and implementation of infrastructure systems in the rural areas of Egypt. In the three governorates under study, efforts in support of BVS have resulted in a general awareness of program possibilities and implementation and funding procedures on the part of local officials. A proposed program for each of the governorates has been discussed and documented in considerable detail. The general descriptions of the governorate programs are set forth in Annex A and the details have been provided in files to USAID/Cairo for future translation and tabulation as may be required. However, even within these three governorates, there remains much to be accomplished in the areas of project management organization, activity coordination and the development of planning skills required, as well as for protection of investments through regular maintenance once projects have been completed.¹

¹ It is desirable to inform the additional governorates immediately after their selection for the program, along with the date when their program proposal may need to be submitted for examination.

It is unlikely that the governorates will complete their programs within a year from initiation. In the three governorates under study, a two- to three-year time frame seemed adequate and should be used. New governorates should begin their programs only after positive achievements of the initial governorates have been established and program safeguards adopted.

USAID Leverage

USAID/Cairo should be able to exercise some funding leverage in the governorates (perhaps by phased disbursements) to ensure that all available technical and administrative resources at various levels are mobilized for a successful BVS program. Funding levels under consideration represent substantial contributions to infrastructure expenditures and will not be taken lightly. Competition among governorates for these funds in provision of organization and technical expertise to the program can be encouraged.

Technical Assistance

Institutional development and standardization of the development process involving many disparate government agencies and organizations requires a commonality of approach. It is recommended that a consultant be engaged to work in Cairo to provide training and technical assistance to BVS teams from

various governorates in order to provide essential standardization for the project. The BVS team for each governorate should consist of a few capable individuals selected by the governor and directly responsible to him. Each BVS team would provide the following services to their program:

- Coordination of the technical and management inputs;
- Assistance in reviewing engineering design work and provision of supplementary inputs as required.
- Assistance in the preparation of project bid tender specifications and ensurance of compatibility of procurement procedures;
- Assistance in institutionalizing standard documentation for project identification and execution (described in Annex B);
- Assistance to governorates in establishing efficient workshop layouts and equipment maintenance procedures, including those for preventive maintenance and overhaul of proposed new and existing equipment;
- Assistance in preparing environmental impact statements for BVS projects;
- Monitoring of all phases of program execution, including but not limited to bid tendering, specifications, contracting, awards, project implementation and funding disbursements and furnishing of periodic reports to the governors, ORDEV, and USAID;
- Establishing a data bank at governorate level, consisting of basic local economic and project cost data for use in future planning; and
- Providing training to the Planning and Follow-Up staff in simple techniques of project evaluation and monitoring and use of concepts for standardized planning and management controls of projects.

The training of BVS teams would consist of formal lectures, seminars and guidance in practical on-the-job experience. The BVS teams and Cairo-based expatriate consultant would maintain regular contact and would meet as often as necessary to iron out problems. Details of the training program for BVS teams are presented in Annex B.

CHAPTER ONE

VILLAGE INFRASTRUCTURE IN EGYPT

The Arab Republic of Egypt is divided into 11 governorates (provinces). Each governorate is further divided into markaz (districts) and village councils. Each village council unit consists of several villages and their attachments (satellites). An executive council manages the public affairs of each village council unit under the guidance and supervision of the elected council, which is chosen by direct elections. One of the responsibilities of the executive council is the management and operation of public service facilities.

The most important public services are the provision of potable water and inter- and intravillage roads. Electricity is being provided to increasing numbers of villages and attachments from the main grid. Telephone service is limited to a few local government offices and homes. Public latrines are established in some areas, but in general there is no provision for sewerage systems.

The BVS program under consideration leaves the setting of priorities for infrastructure work to the village councils. The programs of the three governorates studied are formulated on the basis of these priorities. The finalized governorate programs demonstrate that the highest priority by far is

assigned to further development of potable water supplies, expansion and rehabilitation of village roads, and to provision for proper and regular maintenance of farm irrigation canals. A brief discussion of the general condition of these infrastructure systems will provide useful background.

POTABLE WATER SUPPLY

According to the 1976 national census, 62 percent of the rural population had no access to piped drinking water. In areas with such facilities, water is available from public taps that are spread throughout the village's main streets. The typical system where groundwater is used consists of a well of up to 65 meters in depth with steel casing of 8 to 10 inches diameter, pumps, pump housing, storage towers and pipes, valves and taps. When surface water is used, filtration plants are located at the source and either elevated towers or boosters are used to create the necessary pressure. Village water systems are designed in accordance with externally prepared standards, which are adapted to specific work sites with minor modifications to suit local conditions. Most of the existing prime movers are diesel units, which are being gradually replaced by electric motors as the rural electrification network is extended. The typical system serving up

to 10,000 people used to cost LE 10,000 in 1960, while today its costs approximately LE 25,000.

In general the potable water system of the village is operated by the village executive council and maintained by the markaz maintenance group. The maintenance is often not performed satisfactorily, which results in many breakdowns and service interruptions. Many elevated tanks are left unused, broken taps are not repaired promptly, and long noisy lines at working taps are common.

In Upper Egypt, wells are the main source of potable water. However, several provinces in need of water have difficulty with excessive mineral content. Facilities for removal of common minerals of manganese and iron are expensive and often unreliable. Wells that are close to one another may have differing groundwater quality. It is necessary to map the groundwater resources and attempt to construct new wells wherever possible in zones of low groundwater mineral content.

The construction of new water systems is a high priority for the rural inhabitants. When asked to rank the importance of more reliable village-to-market roads or potable water, many inhabitants opt for the latter. The construction of new systems is broken into four separate contracts consisting of:

- Well digging;
- Building pump housing and storage towers;
- Installing pipes, valves and taps; and
- Installing pumps, prime movers, switch boxes and transformers.

Wells are dug entirely by hand. There are drilling rigs operating in the provinces, but they are cumbersome and difficult to maneuver to the work sites and expensive to operate. Manual well digging is reliable and there are many with the necessary skills. Under current conditions, the most time-consuming elements in the construction of the systems will be the securing of pipes, pumps and prime movers.

VILLAGE ROADS

The Nile Valley is narrow and nearly all rural life in Egypt is within its walls. Most Egyptian villages are located within a few kilometers of the main paved roads. The typical village road is less than two kilometers long, about five meters wide, and some 50 centimeters above the surrounding fields. It is constructed over traditional paths by dumping and compacting dirt to elevate the bed. The dirt must be transported from outside the farming lands and represents an important input. The terrain is flat and there is minimum requirement for grading.

With no rain in Upper Egypt, the maintenance problems seem to be minimal, but in the delta with winter rains, it is necessary to top all roads with a layer of graded gravel at least 15 cm. thick after rolling to assure all weather usability. There has been a strong push in recent years for mechanical maintenance of the networks. With rising wage rates for common labor, village councils are asking for mechanization of road maintenance to keep the available labor force on the land.

FARM CANALS AND DRAINS

The responsibility of maintaining the large network of main canals and drains rests with the Ministry of Irrigation. However, the thousands of kilometers of farm canals and drains are the responsibility of the local government units, including requirements for cleaning and regular grass cutting. The canals are dried in January and February, and the cleaning is performed by hand. The grass cutting is carried out during the irrigation season in June and July. Manual cleaning of canals is difficult work, requiring the laborer to stand in soft mud up to his knees collecting debris by hand and tossing it over the edge. At present there are apparently substantial difficulties in finding enough labor to perform this slow task at LE 1.50 per day.

Many canals and drains are poorly maintained, owing to this labor shortage. The local people emphasize the crucial role of canal cleaning for sufficient and efficient irrigation. As a result there is a rapid trend toward mechanical cleaning using "Power Arm" backhoes attached to heavy farm tractors. A comparative study of canal cleaning costs using manual and mechanical methods is presented in Annex A under the proposed BVS program for Beheira.

In general all the infrastructure systems in Egypt suffer from lack of adequate maintenance. This is also true for the equipment that is to be used. Chapter Two discusses the problems of maintenance extensively, and indicates that the problem is complex and often not the result of lack of facilities or personnel. Several sections of Annex B address the maintenance problems and suggest procedures and equipment necessary to greatly improve the current condition and to provide adequately for the proper maintenance of the facilities that will be constructed under the BVS program.

CHAPTER TWO

TECHNICAL AND ADMINISTRATIVE CAPABILITIES AT THE
GOVERNORATE, MARKAZ AND VILLAGE COUNCIL LEVELS

INTRODUCTION

The chapter provides the basic information and data collected and analyzed by the DAI/Louis Berger team from the three governorates of El Beheira, El Minya, and Kena. It focuses on assessing the capability of technical personnel and existing administrative arrangements to identify, plan, and implement village infrastructure projects similar to those that have been proposed (see Annex A). The material was developed through field interviews in the governorates, markaz units and villages, inspection of documentation of previously completed projects, examination of workshops and facilities, and visits to projects under construction and those that have been completed in previous years. Current procedures for project planning and execution were examined by tracing the histories of prior projects and through extensive discussions with the officials involved.

The examination of staffing patterns, personnel assigned to the organizations involved, and past history of performance with the various categories of projects to be funded under BVS, has made possible informed judgments concerning technical capabilities at all levels, and related predictions of probable

success for the program. Judgments of this nature are conjectural at best, as there are infinite numbers of variables that could affect performance in any given period of time. One key variable that will affect the speed and thoroughness with which all governmental elements will respond to the new requirements imposed by the BVS program is the level of other concurrent activities that will place additional demands on limited staff time. In assessing capabilities and needs, an effort has been made to determine the total magnitude of input requirements for both BVS and non-BVS projects, in order to arrive at the best estimates of likely implementation periods and supplemental staff demands that BVS will place on local government project management.

In addition to determining numbers, categories and technical ability of local personnel who will be involved in various phases of BVS, particular emphasis has been given to examining the quality of the overall system for management and coordination of village-level projects that is currently in place (if it exists) in the various governorates studied. This aspect of local development is, perhaps, the most critical to successful program execution and the realistic assessment of general capabilities.

The task of planning and implementing village infrastructures such as those being considered under BVS is now being carried out by different groups in each of the three governorates

studied, and with different degrees of success. Among the three governorates, Beheira represents the most organized and best prepared to carry out the task, while Kena is assessed as far less prepared to handle the program. Minya falls between the two.

Governorate-Level Planning and Implementation Capabilities

Planning and Follow-Up

The planning and follow-up function, to the extent that it is performed, is the responsibility of the Planning and Follow-Up Unit and ORDEV in Beheira Governorate.

The Planning and Follow-Up Unit consists of 16 personnel, including draftsmen and typists. The head is a graduate of the Faculty of Arts and Science and has an institutional diploma in river transport economics. In addition, there is another university graduate in arts and sciences, one civil engineer, three agronomists and four financial analysts. None of these personnel have training or experience in project identification and planning. The only criteria currently used in ranking projects are cost per beneficiary and numbers of people served. This information is largely furnished by the village councils. No objective criteria of project worth such as benefit/cost and internal rate of return analysis are used or understood. As the Planning and Follow-Up Unit reports

directly to the Governor, the coordination role of this organization is important and considerable. It collects all project progress reports submitted by the village councils, conducts periodic site visits to verify the accuracy of reported information, and flags project management problems for the Governor's attention during the biweekly meetings of the markaz chairmen and the monthly meetings of the village council chairmen.

Project documentation, consisting of a brief description, estimated unit costs, total project cost, numbers of beneficiaries, related engineering drawings and specifications, and construction contracts, was found to be intact for previously completed projects. There is no standardization of these documents, and files tend to vary in content from project to project.

Projects are planned on an *ad hoc* basis. At the time of project identification and selection, it is not known precisely which organization and personnel will be responsible for preparation of the technical engineering work.

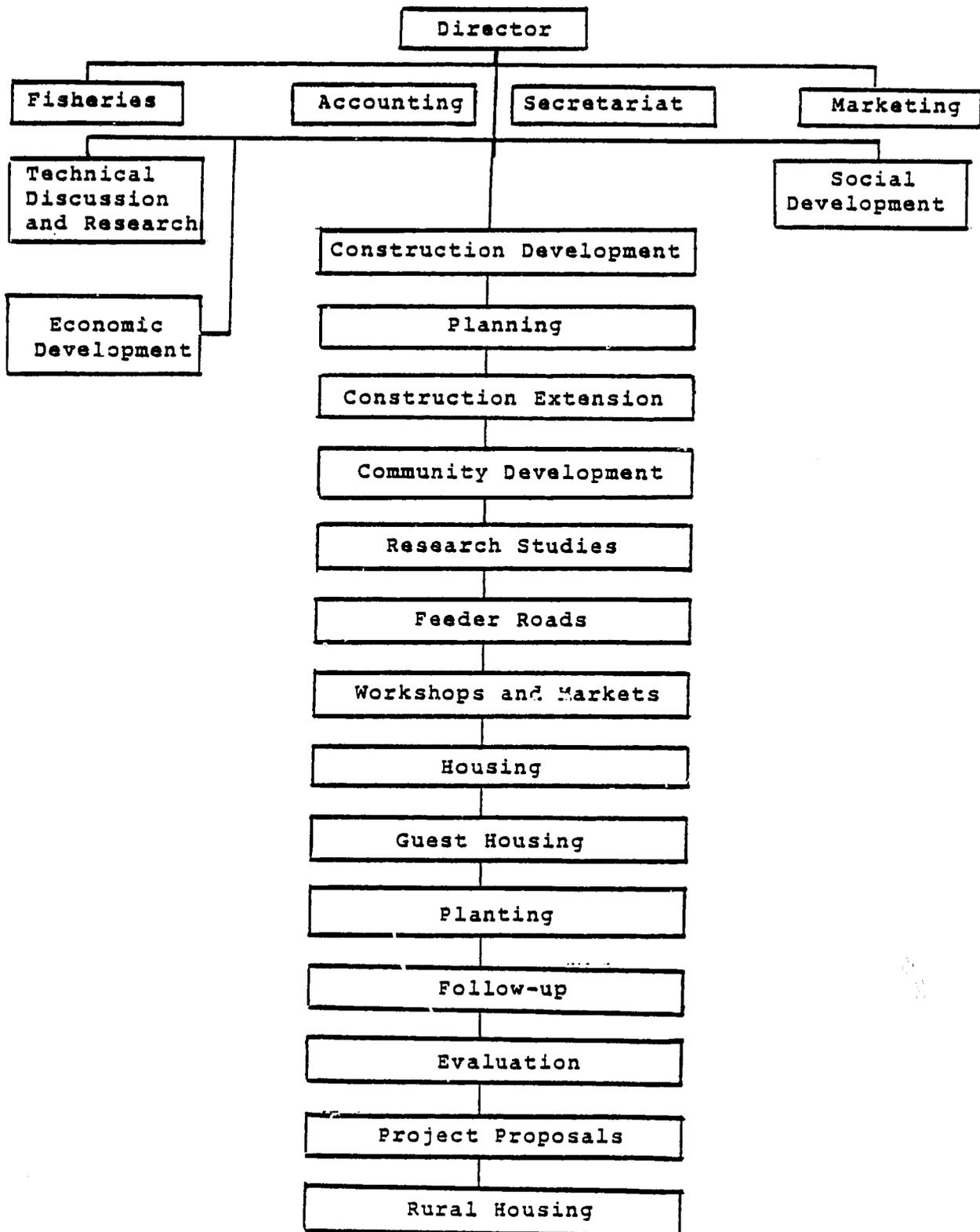
These responsibilities are clarified after project approval when the Governor examines requirements and makes assignments during the governorate level general meeting.

In addition to the principal role of coordinating the monitoring performed by the Planning and Follow-Up Unit, the ORDEV

also makes some input to project monitoring. Interviews with senior personnel of ORDEV were held at the governorate level to ascertain their current role in planning and execution of village development projects. ORDEV in Beheira is organized along the lines of Figure 1.

FIGURE 1

ORGANIGRAM OF ORDEV IN BEHEIRA GOVERNORATE



Since its creation in 1973, ORDEV in Beheira has concentrated most of its efforts on providing guidance and support to villages for their income-producing projects financed by ORDEV at the central level. For this category of projects, there is no present capacity for project evaluation and identification based upon commonly accepted criteria of market demand analysis using econometric models, benefit/cost, and internal rate of return analysis. Criteria commonly used in project selection are cost per beneficiary at the village level, and very rough estimates of annual costs and revenues. ORDEV is aware of these deficiencies and is sending one of its senior officials to participate in the AID-financed participant training programs under the auspices of the Blue Grass Consortium in Kentucky.

There is little technical assistance that ORDEV can provide at the present time to village councils in the execution of proposed BVS-financed infrastructure projects. The Construction Development Section, under which this activity would fall when and if approved, is staffed with only three engineers, one draftsman and three agronomists. Most of the services provided by these personnel are devoted to the income-producing projects, and there is little if any reserve capacity for assistance in the implementation of the infrastructure projects.

ORDEV currently acts as a liaison between the villages and the various technical offices of the governorate and will most

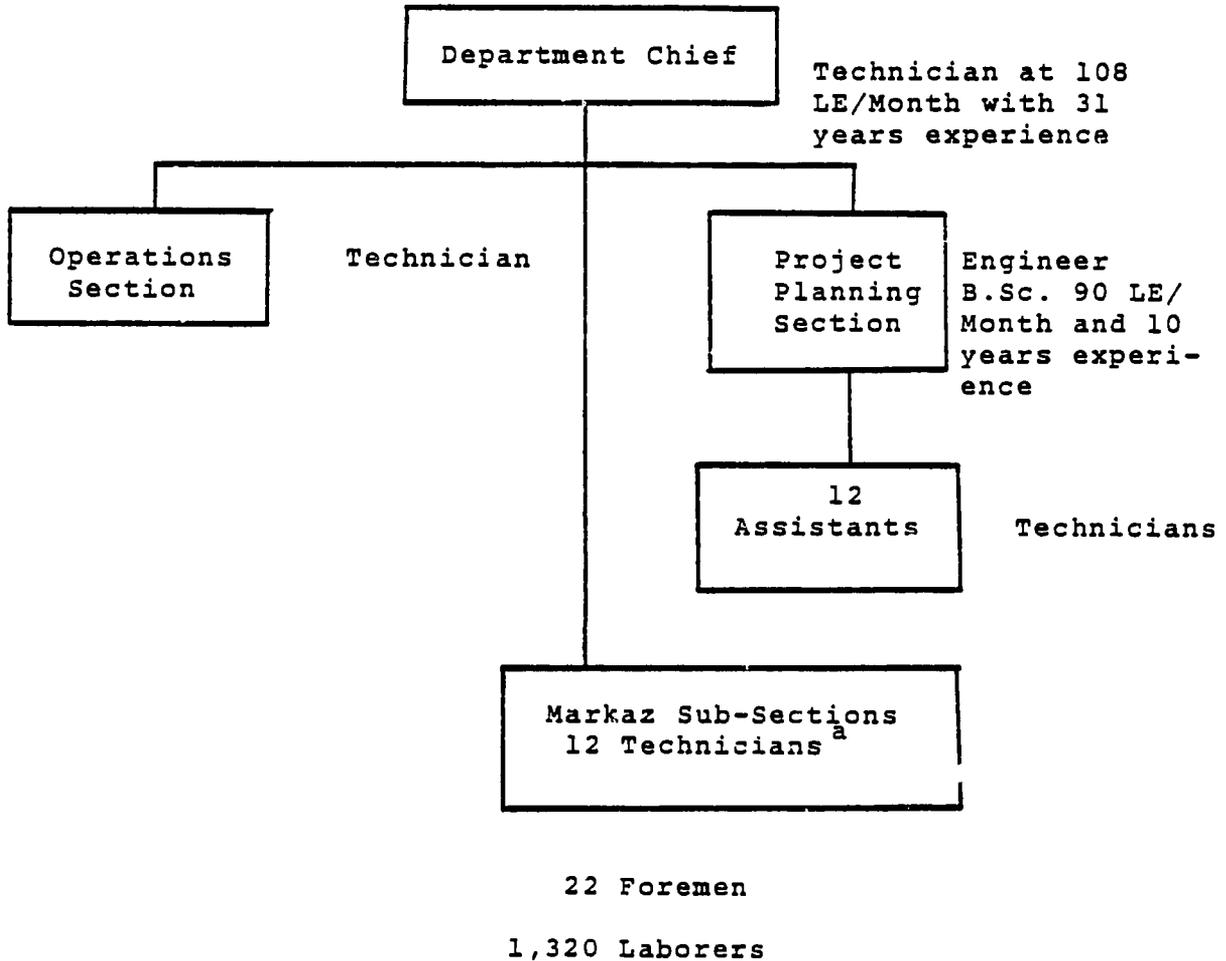
likely be able to provide only this type of coordination assistance in the foreseeable future, until the Construction Division is upgraded in both numbers and quality of personnel. Villages will rely primarily on the markaz and governorate for back-up technical assistance for projects funded under the first LE 3.5 million of BVS funds. In addition ORDEV prepares physical plans for the village and is able to provide some environmental impact assessments.

Technical Support

The three major organizations at the governorate level in Beheira that will be directly involved in providing back-up engineering services to the village councils for BVS are the Roads and Bridges Department, the Water and Sewerage Unit of the Housing Department, and to a lesser extent, the Irrigation Department. The Roads and Bridges units of the governorate and markaz are responsible for preparing designs, technical specifications, tenders documents and construction supervision and maintenance assistance to the village councils in execution of road projects. The Water and Sewerage Unit will provide similar assistance for the potable water projects. The Irrigation Department has responsibility for maintaining and operating the major irrigation canal systems and will prepare specifications and manage procurements of the proposed canal maintenance equipment for BVS funding.

Roads and Bridges Department. The Roads and Bridges department is headed by a technician with long experience (graduated from technical high school in 1943) and assisted by a deputy with similar qualifications. The department has only one graduate engineer (1968) heading the projects sections, and remaining staff are technicians and laborers as shown in the organigram in Figure 2.

FIGURE 2
BEHEIRA ROADS AND BRIDGES DEPARTMENT ORGANIZATION



^a Graduates of technical high schools.

During the past three years, the Roads and Bridges Department has designed, executed and supervised execution of the projects shown in Table 1.

The roads were designed by the Central Roads and Bridges Authority in Cairo.

Table 2 shows the current inventory of construction and maintenance equipment belonging to the Beheira Roads and Bridges Department.

TABLE 1

BEHEIRA ROADS PROJECTS 1977-1979

1. Projects Performed by Governorate Roads and Bridges Unit

<u>Year</u>	<u>Type of Work</u>	<u>Place</u>	<u>Cost LE</u>	<u>Length</u>	<u>Area Covered</u>	<u>% Com- plete</u>
	(Pavement of City (Roads	Itay El Barud	14,672	4	8000 m ²	100%
	("	Kom Hamada	12,000	2	4200 m ²	"
1977	("	Abu Homos	12,003	2	4200 m ²	"
	("	El Delengat	12,006	2	4060 m ²	"
	("	Edkou	4,470	3	3400 m ²	"
	("	Mahmoudia	5,715	2	4260 m ²	"
	("	Hosh Isa	28,667	7	14000 m ²	"
	("	Abu Matamir	23,928	5	9970 m ²	"
1978	("	Rahmania	19,505	4	7600 m ²	"
	("	Edkou	15,304	3	3830 m ²	"
	("	Mahmoudia	41,000	8	16000 m ²	"
1979	((4 meters of shoul- (ders: gravel and (bituminous surface		465,000	42	-	"

2. Projects Designed with Assistance from the Central Roads and Bridges Authority in Cairo and Executed by Contract; Construction Supervision Provided by the Governorate Roads and Bridges Department

<u>Year</u>	<u>Type of Work</u>	<u>Place</u>	<u>Cost</u>	<u>Area Covered</u>	<u>% Complete</u>
1977	Resurfacing Arab Contractors	Dessouk Shubra Khit	190.536	15 km	100%
1978	Pavement Arab Contractors	Aly Maher Road	282.265	9 km	"
1979	Construction Constr. Nile Rd. Construction Co.	Abu Matamir	107.127	1.8 km	"

3. Asphalt Roads Currently Under Construction by Contract; Supervision by the Alexandria and Beheira Roads and Bridges Departments

<u>Year Started</u>	<u>Place</u>	<u>Cost LE 000's</u>	<u>Contractor</u>	<u>Length</u>	<u>Complete</u>
July 1976	Kafr El Dawar - Abou Homos	1,180	Nile Road Co.	15 km	5 km
July 1976	Damanhour - Abou Homos	1,200	"	19 km	8.5 km
Jan. 1977	Zarkun Halk El Gamal - Kafr Ramanya - Kafr Ronim	2,000	"	27 km	16.2 km
Jan. 1977	Mahmoudia - Ramanya	1,400	"	22 km	22 km
Jan. 1979	Damanhour - Mahmoudia	600	Nasr Const. Co.	18 km	1.8 km
Jan. 1979	Damanhour - Hoshisa	800	"	24 km	2.4 km
Jan. 1979	Kafr El Dawar - Minit El Said	1,600	Nile Co. for Desert Roads	38 km	12.9 km
Jan. 1979	Alexandria - Rashid	1,240	"	39 km	0
Jan. 1979	Damanhour - Kafr El Zayat	2,500	Sami Saad Co.	39 km	0
		<u>12,720</u>		<u>241 km</u>	<u>68.8 km</u>

TABLE 2
ROAD CONSTRUCTION AND MAINTENANCE EQUIPMENT IN BEHEIRA

<u>Construction Equipment</u>	<u>No.</u>	<u>Operational Status %</u>
Asphalt Mixing Plant	1	50
Asphalt Boiler	2	50
Asphalt Tank 4 ton	1	50
Asphalt Tank 3 bls	2	50
Asphalt Finisher 2.5 m	1	75
Steel Roller 2 wheels 6/8 ton	2	65
Steel Roller 3 wheels 6/8 ton	1	45
Grader Russian	2	50
Tipper Rumanian	2	50
Tipper Japanese	4	75
Water Tank 6 m ³	1	60
Tractor 65 HP	1	55
Loader 1 m ³	1	80
<u>Road Maintenance Equipment</u>		
Grader	1	50
Water Tank Truck	1	50
Tractor	1	50
Trailer	1	50

The governor stated that expanding the rural road network in Beheira is the top priority expressed by the village councils and that special efforts are being made to address this need. This was confirmed during review of the village BVS priority lists. Specifically, the governorate is now forming its own public sector company under the jurisdiction of the Roads and Bridges Department to enhance the latter's capacity to execute new projects and maintain the existing and expanded network.

Through a recently enacted user tax on locally registered vehicles, revenues are being collected according to the following annual tariffs permitted under law:

Taxis	:	5% of assessed <u>ad valorem</u>
Lorries	:	1 LE per Annum
Trailers	:	2 LE per Annum

Revenues collected in 1979 amount to LE 700,000 and are expected to equal this amount in year 1980 and annually thereafter. In addition, LE 200,000 were raised in 1979 through a special levy of LE 20 per feddan on prime village land. These revenues are being used to pay salaries of 34 recently recruited technicians/equipment operators, and in addition 73 laborers and nine graduate engineers now being recruited.

Procurement is currently under way for the new equipment listed in Table 3.

TABLE 3
 ADDITIONAL ROAD CONSTRUCTION EQUIPMENT
 BEING PROCURED IN BEHEIRA

<u>Quantity</u>	<u>Equipment</u>	<u>Estimated LE</u>
1	Integrated asphalt mixing plant, output 60 t/hr., imported	200,000
2	Graders	45,000
1	Apparatus for spreading out asphalt, width 3 meters, with two flexible covers	90,000
6	Dump trucks 15 tonsload	150,000
3	Iron crushers, 3 wheels, 12 tons	60,000
1	Iron shaking crusher, 10/20 tons	45,000
1	Double digging crusher	10,000
1	Rubber crusher, 8 wheels	25,000
1	Tractor for transportation of equipment	65,000
3	Agricultural tractors 65 HP	189,000
2	Lorries (wagon 1 m ³)	80,000
1	Bulldozer	80,000
3	Trailers, surface 2½ m ³	15,000
1	Trailer with benzene tank, cap. 6000 lt.	6,000
3	Asphalt sprinklers, 7 bls, on rubber wheels	14,000
2	Sprinkler cistern trucks, cap. 6 m ³	34,000
3	Pick up trucks, 1,5 ton	18,000
2	Water machines moving on rubber wheels	2,000
1	Test laboratory	5,000
1	Electrical welding workshop	2,000
<u>Equipment Related to Bridges Works</u>		
1	Concrete mixer ½ m ³	0,400
1	Mechanical shaker	4,000
Total		968,400 =====

The rural road network in Beheira is not adequately maintained. The high incidence of rainfall in winter, together with frequent high velocity winds, causes considerable bed erosion, washboarding and washouts. At present, nearly all the maintenance performed is labor intensive. One laborer can perform needed spot maintenance on approximately one kilometer per year. This is done by hauling dirt and gravel on the backs of draft animals and filling in washouts and gullies by pick and shovel. As there is no soil compaction or grading used in the process, fills are temporary at best and usually require refilling after each rain or wind storm. Figure 2 shows a total of 1,342 laborers and foremen in the Roads and Bridges Department, distributed throughout the 12 markaz of the governorate. This is barely adequate to perform rudimentary maintenance on the existing 1,550 km. of existing dirt roads, and is insufficient to prevent gradual degradation of the existing network; this level of maintenance is totally inadequate for the proposed new additions under BVS. As labor availability is declining rapidly because of recent migratory trends, capital-intensive maintenance methods would appear to be needed to solve this growing problem.

The engineering documents for completed and ongoing projects prepared by the Roads and Bridges Department personnel and those prepared by temporarily recruited external engineering

personnel were found to be complete and technically sound.

The following technical material was specifically examined:

- Weights and measures;
- Detailed section drawings;
- Stress factors;
- Bills of quantities;
- Special preparation procedures (e.g., precast concrete, prestressed concrete);
- Scheduled activity diagrams for proposed construction plans; and
- Bid tender documents.

The governorate reported that the road construction capacity of the Roads and Bridges Department is 40 km. of asphalted or 90 km. of unpaved roads per year. A rough calculation of total dirt road construction capacity of the Beheira Roads and Bridges Department was made from basic productivity data. The department can reportedly move 60 MT. of earth per hour using a combination of labor- and capital-intensive methods. After procurement of the additional equipment listed in Table 3, productivity should increase to 100 MT. per hour. Minimum construction time for the 400 km. BVS road program, assuming all resources of the Roads and Bridges Department are committed to BVS construction, is therefore calculated as:

$400 \text{ km} \times 1000 \text{ meters} \times 0.50 \text{ m} \times 6 \div$
 $100 \div 1.60$ (specific gravity of road construction
 material) = 7,500 hours, or $7,500 \div 6$ (working
 hours/day) $\div 280$ (working day/year) = 4.46 years.

As the majority of the Beheira Roads and Bridges Department capacity shall be assigned to the paving of city streets and rural network maintenance during the period of BVS implementation, it is expected that most proposed new road construction will be implemented by contract. This assumption was confirmed during meetings with the governor.

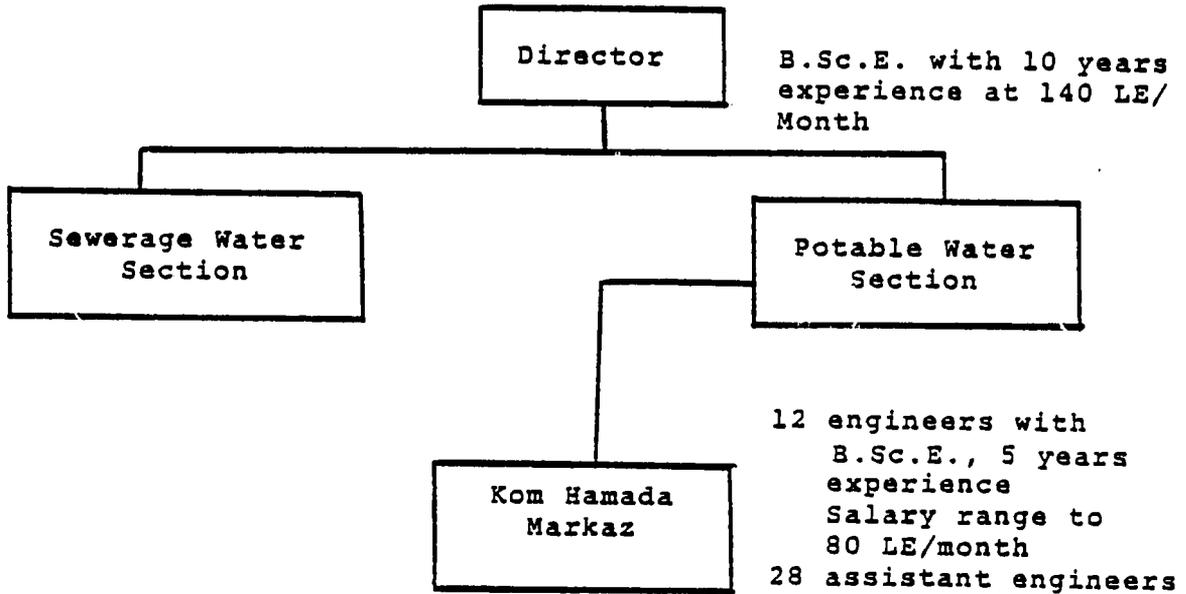
The Water and Sewerage Unit and Abou Homos Water Plant.

Most of the technical design and engineering work for village-level potable water systems is prepared by the Water and Sewerage Unit of the Beheira Housing Department. This organizational unit is now staffed by 13 graduate engineers, who prepare designs, drawings and specifications from standard plans prepared by the Central Water Authority in Cairo.

The histories of several projects were traced from inception to completion and various files, drawings, specifications and tenders were reviewed. One completed project at the village of Zbieda, 12 km. from Itay El Barud and 45 km. from Damanshour, was inspected. The engineering work was found to be complete, and the finished project was of satisfactory professional quality.

The Organization of the Water and Sewerage Unit is shown in Figure 3.

FIGURE 3
 ORGANIGRAM OF THE WATER AND SEWERAGE
 UNIT OF THE BEHEIRA HOUSING DEPARTMENT

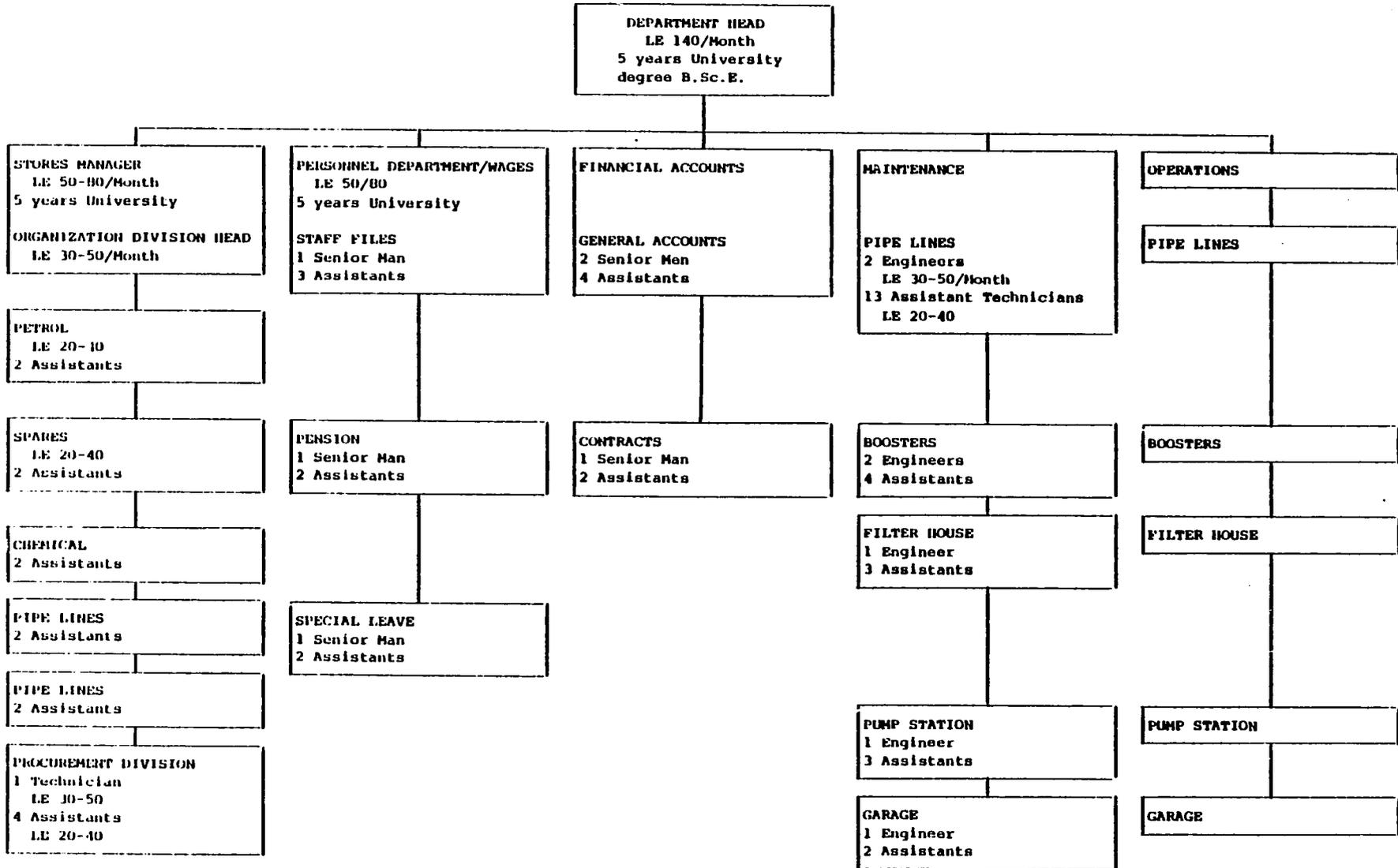


It is responsible for water system designs and construction supervision. The Water and Sewerage Unit is currently operating and maintains 80 potable water systems in the southern sector of the governorate.

In addition, the Abou Homos Water Treatment Plant has extensive professional engineering capability, which is used by the governor in potable water system design, construction supervision and system maintenance. The Abou Homos Water Treatment Plant currently serves 70 percent of the population of Beheira. Its organization is set forth in Figure 4.

FIGURE 4

ORGANIZATION OF THE ABOU HOMOS WATER TREATMENT PLANT



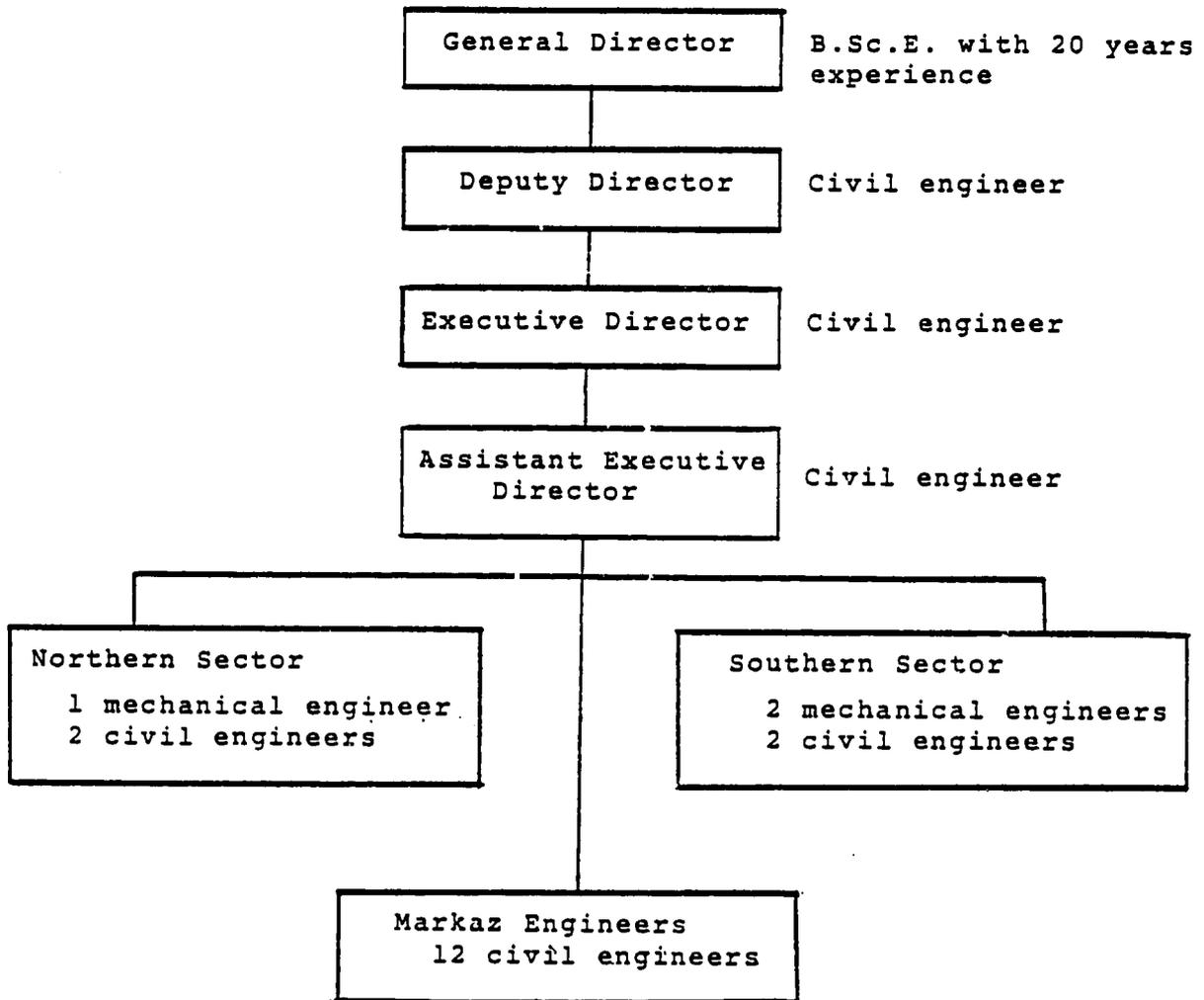
The engineering designs and specifications prepared by the Water and Sewerage Unit and the Abou Homos Plant were reviewed and found to be of adequate professional quality and completeness to provide sufficient technical support to village councils. As the level of funding for this activity is a modest LE 300,000, and involves mainly extension of existing networks, there is no need to recruit outside technical personnel for design and supervision of the proposed BVS water program in Beheira.

A review of the documentation and history of previously completed projects revealed that files are complete and well organized. The projects inspected were in good condition and operating.

The existing potable water system was generally found to be adequately maintained. In some areas, particularly in the southern part of the governorate served by the 80 wells under the supervision of the Water and Sewerage Unit, some faucets and pipes were found to be leaking.

Irrigation Department. The primary task of the Irrigation Department is to design and maintain the hundreds of kilometers of primary and secondary canals serving the 700,000 feddans of El Beheira (one-tenth of the total cultivated land area in Egypt). The department is currently understaffed and overworked in relation to its primary responsibilities. A skeletal organization of the Irrigation Department is shown in Figure 5.

FIGURE 5
ORGANIZATION OF THE BEHEIRA IRRIGATION
DEPARTMENT



The role of the department in the BVS program will be to prepare bid tender specifications for the procurement of proposed canal maintenance equipment. The department has experience in procuring similar types of equipment and has actually procured some of the types scheduled for purchase.

As the department staffs are already preoccupied with their primary duties, no assistance can be provided for equipment maintenance. This will have to be performed by the markaz and village maintenance personnel in various private sector workshops. These facilities appear to be adequate for routine maintenance of engines, but specialized facilities will be required for maintenance of the hydraulic systems and major overhauls.

Markaz-Level Planning and Implementation Capabilities

The markaz administrative unit has traditionally been actively involved in the planning and execution of projects in its jurisdiction. With the promulgation of Decree Laws 52 of 1975 and 43 of 1979, there has been a clear direction of policy toward administrative and fiscal decentralization to the village level. Beheira Governorate and village-level officials have taken substantial measures to implement the provisions and spirit of the law as decentralization has proceeded at a rapid pace.

During site interviews with markaz officials, it was observed that markaz administrations within the governorate have relegated some of their previously exercised responsibilities to the village councils. According to officials contacted, the markaz currently provides backup technical support to village councils and monitors progress as required for successful project planning and execution, but does not directly supervise the councils. In fiscal affairs, the only vestigial authority retained by the markaz is approval of village-level contracts exceeding LE 5,000.

The role of the markaz, then, is one of coordinating technical support and monitoring progress. Village councils enjoy the same degree of administrative autonomy within their respective jurisdictions as the governor or the head of any governmental department, and are only required to keep the markaz informed of their activities for reporting purposes. Village officials state that they submit their lists of BVS projects directly to the governorate, and an information copy to the markaz.

Villages now have the authority to communicate directly with the governorate on all administrative and technical matters. In Beheira, this authority is widely exercised by the village councils. The markaz officials contacted stated categorically that they had no authority to alter project proposals prepared

by the village councils. In the area of fiscal management, village financial affairs divisions are completely autonomous from the markaz finance units and are solely responsible for the maintenance and management of their own accounts and financial records. The markaz no longer audits the village accounts.

The markaz is generally endowed with a high degree of engineering and technical skills for providing technical support to village projects, but there is some limitation on the degree and level of support that can be provided from markaz units as they are understaffed and allocate a large proportion of staff time to technical servicing of projects in the towns where the markaz offices are located, and in markaz area projects. Organizationally, the markaz usually has a full range of service offices in the various infrastructure areas, similar to those of the governorate but on a smaller scale. The basic organization of the markaz is shown in Figure 6.

The villages will probably have to rely on the governorate technical offices for some of the external technical support required for BVS-funded projects. Typically, the markaz in Beheira have five or six mechanical and civil engineers. In addition technical personnel are assigned by the Roads and Bridges Department, Water and Sewerage Unit and the Abou Homos Water Plant to provide assistance in engineering designs and maintenance. These externally provided personnel are listed in Table 4.

FIGURE 6

MARKAZ ORGANIZATIONAL STRUCTURE IN BEHEIRA

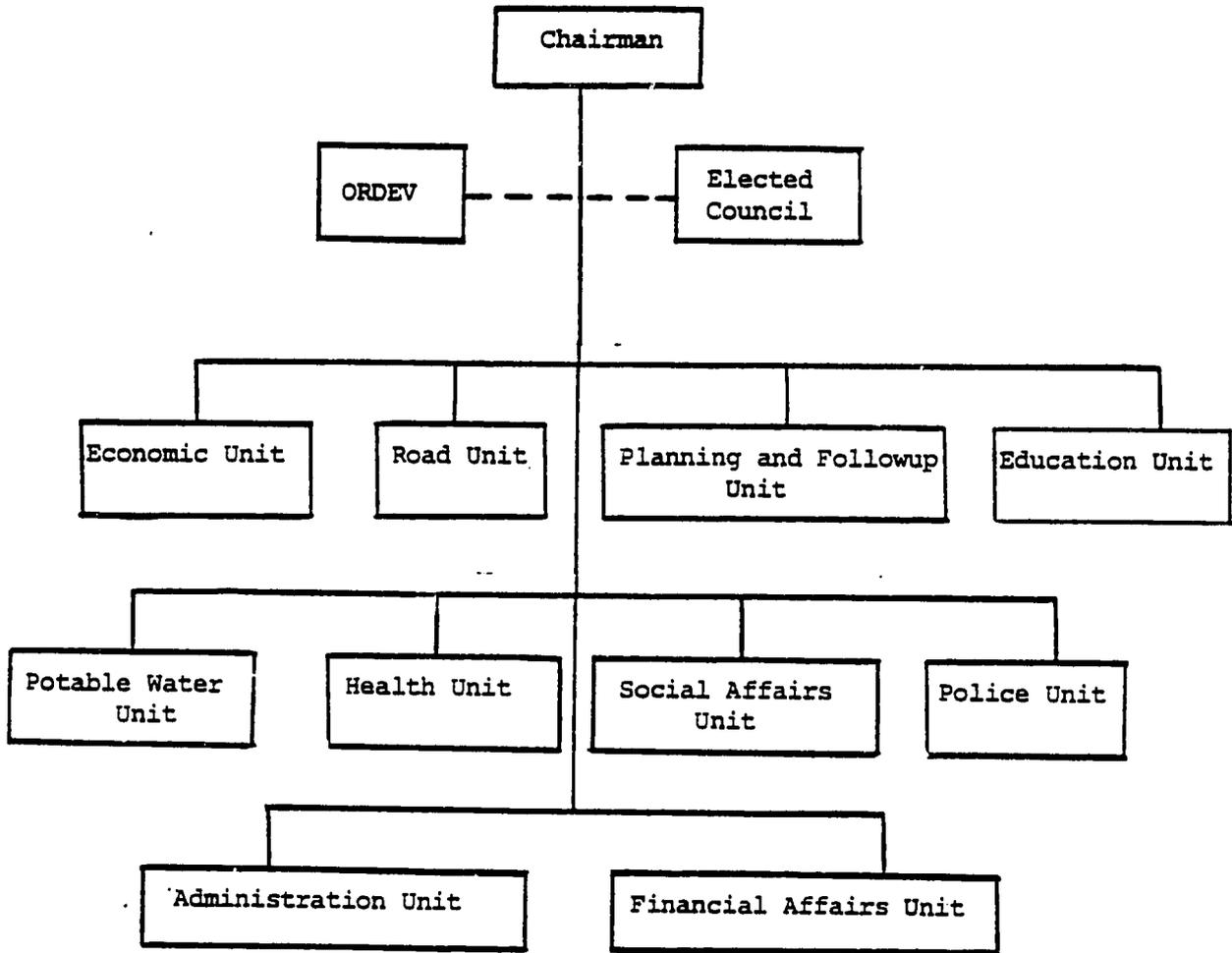


TABLE 4

ADDITIONAL TECHNICAL MARKAZ PERSONNEL

<u>Markaz</u>	<u>Roads and Bridges</u>	<u>Water and Sewerage</u>	<u>Abou Homos Plant</u>	
Rasheed	1 technician, 1 foreman, 70 laborers	-	-	a
Kafr El Dawar	1 technician, 22 foremen, 82 laborers	-	5 technicians 18 laborers	
Abu Matamir	1 technician, 16 foremen, 61 laborers	-	3 technicians 21 laborers	b
Mahmoudia	1 technician, 10 foremen, 49 laborers	-	2 technicians 18 laborers	c
Abou Homos	1 technician, 21 foremen, 146 laborers	-	1 engineer 6 technicians 18 laborers	
Hosh Isa	1 technician, 13 foremen, 32 laborers	-	3 technicians 21 laborers	b
Damanhour	1 technician, 15 foremen, 32 laborers	-	2 technicians 18 laborers	c
Shubrakhit	1 technician, 18 foremen, 135 laborers	-	3 eng., 6 tech. 55 laborers	d
Ramanya	1 technician, 5 foremen, 54 laborers	-	1 eng., 3 tech. 17 laborers	d
Itay El-Barud	1 technician, 32 foremen, 234 laborers	-	2 tech., 18 laborers	
Kom Hamada	1 technician, 38 foremen, 250 laborers	10 engineers 26 technicians 243 laborers	-	

a Technical assistance and maintenance for water systems in Rasheed Markaz is provided by the Fawwa Water Plant in Kafr El Sheikh Governorate. As this governorate was not visited, the extent of water system personnel availability is not known.

b The workshop at Kom El Akhdar serves the Hosh Isa and Abou Matamir Markaz.

c The workshop at Damanhour serves the Damanhour and Mahmoudia Markaz.

d The workshop at Lacane serves the Shubrakhit and Ramanya Markaz.

Markaz chairmen are involved extensively in monitoring project progress as they participate in governorate-level meetings and hold biweekly meetings of village council chairmen and flag implementation problems for higher level attention.

At the present time there are no accepted criteria for project ranking and evaluation, such as benefit/cost and internal rate of return analysis employed by markaz personnel in project planning.

Village-Level Planning and Implementation Capabilities

Several village council areas in Beheira Governorate were visited, and officials of the village executive and elected councils participated in extensive discussions.

There are 62 village council areas within the governorate. All currently have functioning councils and operative village banks. The villages are divided into two basic categories according to the level of services currently available.

Category I, including 26 council areas having a complete range of services (education units, social affairs units, health units, agricultural and animal production units), includes:

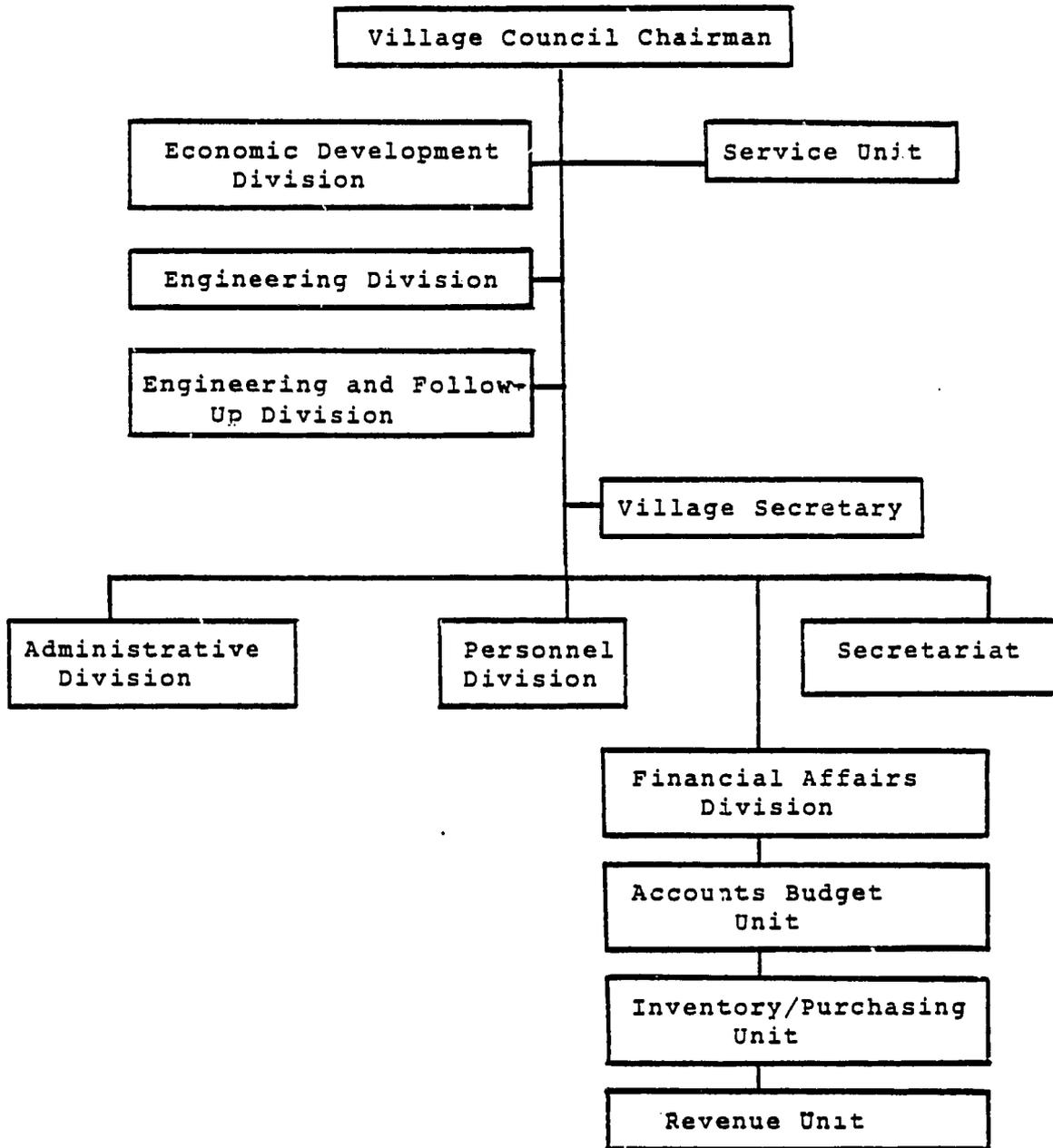
El Negila	Kom Zamhran
Kishn	Sheist El Anaam
Dawad Hosny	Shabour
Nabira	Mehallet Beishura
Mehallet El Amir	Saft El Hareiya
El Kom El Akhdar	El Wafaya
Manya	Sidi Razi
Zawiyat Rahzel	El Brigaat
Monshaad Damisna	Tobayba
El Dahrya	Armania
Dest El Asraf	Nekla El Reneb
Sharnub	Aizab Defshu
Mehallet Franawi	Kom Sherik

Category II, including 36 council areas, has functioning village councils but not a full range of services so far:

Desouynis Omdinar	Batrous	Zahran
Kom El Kanater	Anemrya	El Sahel
Zawiyat Sakr	Dayrout	Saft El Enab
Lacana	Kom El Birket	Morcos
El Omarat	Kafr Boulil	
Altoud	Al Kardoud	
El Khatartyba	Sanour	
Nadiba	Besentouai	
Samokhrad	Al Masin	
Balkatr Al Gharbiya	Menshaad Bouli	
Kom Al Farag	Edfina	
Fisheir	Warket	
Kom Baneit Abu Kir	Bouait	
Kafr Dawud	El Abaidya El Gedida	
Abu Sheikh Hof	Aridan	
Birket Rataas	Kom El Nasr	

All villages surveyed were organized according to Figure 7, and the governor stated that villages not surveyed are similarly organized.

FIGURE 7
 ORGANIZATIONAL OF VILLAGE EXECUTIVE COUNCIL



The duties and responsibilities of the various village organizational units are described briefly below.

The Chairman. Directs implementation of all village-level projects and supervises the general planning effort. Presides over biweekly council meetings, arranges for technical support when required, and manages the planning and technical support of projects approved by the elected village council. Approves general administrative and technical plans for proposed development projects and formally presents annual development plan to the governorate.

The Engineering Division. Issues building permits and business licenses and is responsible for maintaining building facilities.

The Economic Development Division. Develops a list of proposals for income-producing projects and exercises implementation authority over those projects. Maintains status records and financial records for each of the approved projects. Provides for regular ongoing evaluation of income-producing projects and prepares progress reports.

The Village Secretary. Coordinates activities of various council technical units and maintains records.

The Service Unit. Prepares project designs and technical specifications. Responsible for site selection and implementation supervision of infrastructure projects, since villages

councils have no professional engineering personnel at present.

The Secretariat. Schedules committee meetings, notifies members, keeps minutes of meetings and maintains current organization charts.

The Financial Affairs Division. Maintains all village accounts according to legal and fiscal requirements, maintains disbursement and income records and inventories, prepares balance sheets and books and maintains village financial records. Prepares budgets.

The Personnel Division. Prepares budget for salaries, administers social insurance program, and maintains personnel files.

The Administrative Division. Determines office space and equipment requirements, provides cleaning, telephone service and general facilities security.

In the villages surveyed, key officials of the executive and elected councils were interviewed collectively and individually. There appeared to be a close working relationship between the executive and political decisionmakers, as both sides offered identical views and understandings of the BVS program, funding levels available to the village council area and development priorities to be financed by BVS. Council

offices were clean and orderly, and all had comprehensive wall-mounted charts showing some basic economic data for the village areas, services currently provided, and listings of upcoming priorities for the coming fiscal year.

During visits to the village banks, the team was shown the major financial records, balance sheets and current status of all accounts. The banking offices were neat, with accounting records maintained and displayed in an orderly fashion.

Interviews went into detail about the project identification and approval process, and a number of points emerged that should be highlighted.

Village councils in Beheira are familiar with the BVS program. The governorate has informed all village councils of the nature of the proposed AID project. In Beheira, the governor held a meeting of all village council chairmen and briefed them. This was followed by a formal letter requesting that each council submit a list of priority infrastructure projects, and giving guidelines for unit costing. General project priorities established by the governorate included canal maintenance, road maintenance and new construction, potable water systems and biogas facilities. Starting from the governorate's mandated guidelines, the village executive councils drew up a list of proposed projects for the review and approval of the

elected councils. It appears that the elected councils generally accepted without change the lists drawn up by the village executive councils.

While the village councils were not given the option of selecting projects outside the parameters of the general priorities mandated by the governorate, they were granted the latitude to decide which projects and what priority ranking they desired for their own specific area.

All village councils were informed of the magnitude of funding that would be made available for their areas. The basis for determining how much each council area would receive was a formula that allocated a specific amount per person.

The lists of village priority projects were submitted in *pro forma* fashion to the governorate by category (i.e., canal maintenance, equipment, water system), and included the rationale for selection and total cost. As the governorate furnished unit cost data in its general guidelines, no detailed cost estimates were required from the village councils. The most common criteria used for selection were numbers of beneficiaries and, in some instances, the cost per beneficiary. No other evaluation criteria appeared in the submissions. The village councils stated that they had sent their approved project listings directly to the Planning and Follow-Up Department of the governorate, with an information copy to the markaz.

When asked whether the markaz might revise their project listings, both executive and elected council members responded strongly that the village councils have final authority to select their own projects from within the mandated guidelines, and that the markaz had no authority whatsoever to make any amendments. Both elected and appointed officials also stated categorically that the governor had no authority to make any changes in the list of projects or priorities approved by the village councils. The same general comments regarding village approval autonomy within the guidelines were echoed by various officials of the governorate.

Village officials stated and reiterated provisions of Law 43 of 1979 that the village has sole discretion to select its development projects and let contracts for their execution. Village officials acknowledged, however, that they would probably require technical assistance in preparing specifications and engineering designs for more sophisticated projects.

When asked where they could obtain such assistance, the officials responded that they could request help from the markaz and governorate when required. They preferred to design and implement projects using their own technical resources and standard plans and specifications prepared by the governorate for similar projects, but admitted that they needed considerable guidance from the markaz and governorate technical

offices in preparation of engineering and bid tender documentation. They were quick to add, however, that they required no outside help for income-producing projects, and were perfectly competent to plan and organize common projects such as carpet weaving, woodworking and furniture manufacture. There were numerous projects of this sort, so these comments seem to be essentially correct. It should be noted that the technology, profitability, and marketing structure of these traditional cottage industries are well understood at the village level. For income-producing projects of a more sophisticated nature, such as tile manufacturing, considerable outside assistance in feasibility study preparation would be required.

Finally, village officials indicated that the Village Services Account would provide maintenance funds as required from locally generated revenues to cover these costs and that they could also request funding assistance from the Governorate Service Accounts when required. Current regulations and procedures governing the Service Account at all levels allow for use of account funds for maintenance.

It should be noted that considerable progress has been made in implementing the spirit of Law 43 of 1979 in the area of project planning and administration at the village level in Beheira. The basic nucleus of an administrative and fiscal apparatus has been formed in all villages. Village councils

appear to be well motivated and focused on the development tasks ahead. The functional job descriptions of the various organizational units are misleading however, as they reflect a more desirable level of organizational capability than what is actually available. Most of the various technical units are staffed with single individuals with somewhat limited experience. The financial affairs divisions are the most capable, and staffed by relatively experienced government accounting personnel who have received regular training and guidance from the governorate finance unit in the requirements and techniques of maintaining the village accounts. The senior accountants and the managers of the village banks are graduates of the Faculty of Commerce with 10 to 15 years of experience. In other functional areas of the village councils, skills are less well developed.

The village councils surveyed have only three or four technicians with on-the-job experience with small-scale projects rather than formal engineering education. An abundance of agronomists are working at village level (sometimes as many as 50 to 100 per council area). These personnel provide guidance and training to farmers for income-producing projects such as beekeeping and basic agriculture. No objective planning criteria such as benefit/cost or internal rate of return analyses are used in project identification. There is little capacity to

prepare engineering work for small-scale BVS type projects, such as farm-to-market roads and potable water systems. Councils will need extensive help initially from the markaz and governorate technical offices.

Perhaps the greatest reservoir of strength at the village level, after financial management, is in the area of project implementation and monitoring after contracts have been let and work has commenced. The proposed level of BVS financing for each village council area is sufficiently small that, with guidance, village councils should have little difficulty monitoring project performance.

In the area of routine equipment maintenance, there is a sizable reservoir of mechanical talent at the village level for dealing with basic engine and pump repair in both the public and private sectors. Most of these skills have been acquired through the apprentice system, whereby local youngsters receive practical on-the-job training at private and government-operated workshops.

The major government owned workshops serving Beheira Governorate are the Damanhour Training Center (located in Damanhour), the Technical Workshop for Maintenance and Repair (also in Damanhour), and the Ministry of Agriculture Training Center in Kafr El Sheikh.

The first two of these facilities were visited. A broad range of functions are being performed there, such as foundry work, welding, engine repair, body work, agricultural machinery and spare parts manufacture, lathe work and blacksmithing. In addition, the Tractor and Engineering Company in Damanhour has a complete shop for repair and maintenance of excavation and earth moving equipment. There are also numerous private entrepreneurial workshops operating at all levels. The quality of maintenance skills throughout the governorate is high, and most village council areas support from 100 to 150 privately and publicly owned farm tractors and related agricultural machinery. Many of these units were inspected and found to be in good working order. The basic problem in equipment maintenance is not the availability or quality of personnel, which is judged sufficient and competent, but the lack of adequate shop tools and equipment to perform required tasks. Tools examined were obsolete, degraded and in short supply.

Methods of Appointing or Removing Project Personnel

Government personnel are appointed to positions and perform throughout the civil service in the same fashion.

University and technical school graduates are guaranteed and must accept employment with the government upon graduation from their respective institutions. The choice of assignments is usually arbitrary on the part of each respective government

agency. There are many to place each year and they are placed throughout the system where they can be squeezed in. Once appointed, a person cannot be arbitrarily removed for any reason whatsoever. Personnel are sometimes transferred between posts, but never dismissed.

Often there is little correlation between a person's training and the job he is ultimately required to fill. Civil engineers are often assigned to fill posts requiring mechanical engineers, and arts majors are assigned to perform planning and managerial tasks.

In theory, personnel must serve in government positions for a minimum of ten years. In practice, many disappear into the domestic market or gravitate toward more lucrative job opportunities in the Arab world without notice or explanation. Retaining highly qualified technical personnel for any length of time is difficult because of the low salaries paid by the government and the attraction of higher salaries offered in the private sector and abroad.

Less qualified and less motivated personnel tend to hang on to their guaranteed low salaries paid by the government as insurance of a monthly income, but must also work on the outside to secure an adequate living. As they are not required to perform to retain tenure, their office hours tend to be shorter than the theoretical working day and more time is spent

socializing and drinking tea than in actual job related work. As their primary income is from outside jobs, their real talents are displayed there rather than in government employment. These are general observations, but there are exceptions as some employees whose family situations offer additional income in Beheira are dedicated to their work. Officials contacted generally stated that they would be more willing to work harder and longer on their assigned government tasks if their current salaries (which are low) were doubled.

Village officials must originate from the villages where they serve. This is a possible explanation of the higher level of motivation found among the village councils than in other organizational sections observed.

BVS Program Execution Capabilities in Beheira

Role of the Governor

The key factor for the ultimate success of the planned BVS program in the governorate is the supervisory role that will be played by the governor in directing technical planning and periodic problem solving. As the governor has personally taken charge of the program, he is able to direct the input of available technical staff and ensure that work is performed on schedule. Past history of village-level income-producing projects clearly demonstrates that the personal role played by

the governor has been crucial in ensuring that projects are completed expeditiously and correctly. Should any lower ranking official take charge of the program, it is doubtful that coordination and follow-up of implementation activities could be maintained with the same degree of thoroughness and expeditiousness. The governor is aware of the importance of his role in village development and commented that these activities would not proceed effectively without his direct and personal intervention at all levels.

Adequacy of Technical Expertise for Project Engineering Planning

Should the engineering planning for the proposed dirt road construction be left entirely to the available Roads and Bridges Departments of the governorate and markaz, it is doubtful that the necessary site surveys, materials quantification and construction supervision of the 400 km. proposed for BVS could be accomplished expeditiously, as there is only one graduate engineer in the department, and the numerous technicians appear not to have sufficient education or experience to prepare detailed engineering drawings and specifications for the proposed work program. Since engineers can be and have been seconded from outside public and private sector sources on a temporary basis, and there is adequate funding provided for these services in the proposed budget, adequate engineering support will probably be available for the planned road program.

The Irrigation Department has considerable experience in writing specifications and bid tender documents for the type of equipment to be procured for engineering support to the proposed canal excavation program. There should be little difficulty in initiating the necessary procurement. A number of units of the types being proposed have already been procured in Beheira.

The majority (95 percent) of the activities planned for BVS water systems consist of extending existing systems by adding pipes, booster pumps and public fountains. There are 44 graduate engineers available from the Water and Sewerage Unit and the Abou Homos Water Plant to participate in designing the proposed system expansion. As the governor exercises the authority to assign engineering planning tasks to these organizations, and the total project level is a modest LE 300,000, it is believed that there will be little difficulty in completing the design work for this part of the program.

The remaining program elements are biogas and solar desalination projects, and the levels contemplated are a modest LE 150,000 for each. Projects to be funded will be experimental and constructed from existing prototype designs that have been implemented successfully in Fayoum Governorate and elsewhere in developing countries. There should be no problem with

these projects in Beheira, as the engineering work has been done and the current governor pioneered this work when he was governor of Fayoum.

Project Implementation Timing and Capabilities

A total of 178.5 km. of paved roads has been completed in Beheira, using public and private sector facilities during the past three years. The ratio between paved and unpaved road capacity is 1:2.28, based on past experience. Using the Roads and Bridges Department, expanded through creation of the public sector company described earlier and a combination of private contractors, the governorate should easily be able to complete $2.8 \times 178.5 = 406.99$ km. of dirt roads over the next three years. No additional roads are contemplated during this period, but four major national contractors currently work in Beheira and could conceivably expand their volume of work if more funding became available through BVS. Furthermore, many of the proposed road projects consist of putting soil and rock on existing road beds to raise the road level 50 cm. above the agricultural land. This type of work can be done by the villages, using labor-intensive methods with draft animals for transport, which is the plan of some village councils. For these reasons, past performance probably does not provide an accurate assessment of capability for the proposed program. The best estimate

at this time for completion of the proposed road program in Beheira is 18 months to three years (See Table 5).

It is expected that the design work for water system extensions and actual construction of the proposed infrastructure can be completed in six to twelve months. Ten public and private sector contractors in Beheira are looking for work and, while previous program history is not extensive due to lack of funds, it is believed that the available capacity is sufficient to complete the small program proposed in one year or less, as shown in Table 5 (page 61).

Procurement time for the proposed equipment for canal maintenance is currently 12 months from advertisement to receipt, outlined in Table 5. Local public and private sector firms are fully capable of constructing units for the proposed biogas and solar energy programs from locally available materials using the already prepared phototype designs.

Program Management

There are 53 engineers and 334 technicians available to the governorate departments and local government units, who will be directly involved in the BVS program. There is good and frequent communication among all responsible echelons, and the governor receives constant feedback on progress. Village governments in Beheira are well organized and motivated.

TABLE 5

PROJECT FUND DISBURSEMENT SCHEDULE FOR
MAJOR ACTIVITIES IN BEHEIRA

(in LE)

Roads

1st 3 Months A&E Preparat.	2nd 3 Months Mobilization	Next 6 Months Construction	Next 6 Months Construction	Last 6 Months Completion
135,000 8%	337,600 20%	523,280 31%	523,280 31%	168,800 10%

Canal Excavation Equipment

1st 2 Months Specifications	2nd 2 Months Invitation for Bid	3rd 2 Months Bid analysis and Award	Next 6 Months Delivery	Next 2 Months Inspection and Acceptance
0	0	0	756,900 90%	84,100 10%

Water Systems

1st 2 Months Design	Next 3 Months Mobilization	Next 3 Months Construction	Next 3 Months Construction	Last 2 Months Completion 10%
15,900 5%	68,200 20%	101,050 32.5%	101,050 32.5%	31,800

Infrastructure and Equipment Maintenance

Roads. The planned expansion of the rural dirt network will exceed the governorate's current maintenance capacity, which relies on labor-intensive methods. If the existing and planned network is to be maintained satisfactorily, mechanical methods are required. The Governor is proposing that, in addition to the LE 3.5 million proposed for projects, funds be made available for purchase of enough new graders, costing LE 50,000 each, and sprinkler cistern trucks, costing LE 20,000 each, so that one grader and one truck can be assigned to each markaz. The current inventory of road maintenance equipment, shown in Table 2, lists one grader and one tank truck on hand. In addition, two more graders and two tank trucks are now being procured as shown in Table 3. As there are 12 markaz, nine new graders and nine additional cistern trucks will have to be procured to ensure satisfactory maintenance of the existing and planned new network for EVS. Without this equipment, it is unlikely that any maintenance will be performed on the expanded network, as all available personnel are fully occupied in performing spot maintenance on the existing network and the available labor force is dwindling. Capital-intensive road maintenance methods have been shown to be more economical and more efficient than labor-intensive methods. There are enough operators and funding at both the governorate and village levels to cover costs of operating the proposed new equipment.

Therefore it is likely that the proposed program will be managed effectively to ensure reasonably timely and quality execution.

Improvements could be made in the monitoring format to include information concerning actual project execution status in addition to information on project funding disbursements currently submitted. Also, project documentation could be standardized. Low morale and personnel turnover are endemic in the governorate technical offices. Some consideration should be given to providing cash incentives to personnel working directly with BVS, to further ensure that required work is completed in a timely and professional manner.

Financial Administration

Fiscal personnel are well trained, in place and have four years of experience in administering village-level development projects. Procedures are streamlined and involve basically one echelon (the village government for contracting, disbursements and record keeping). As the law requires that all contracts above LE 5,000 be approved by the markaz, it would be desirable to raise the level of the village councils' approval authority as most proposed projects fall in the range of LE 10,000 to 15,000.

Canal Maintenance Equipment. Routine engine maintenance is and can be performed by local public and private sector workshops. As there is only one private sector distributor (Tractor and Engineering Company in Damanhour) with workshop facilities and spare parts for the proposed hydraulic excavators, one of the governorate workshops would be upgraded with a full complement of shop tools and spare parts to ensure a full range of maintenance services for the proposed new equipment. The governorate would like to upgrade the Damanhour Training Center for this purpose, which is appropriate since the center is fully staffed with a broad range of skilled personnel. There are some trained operators for this type of equipment currently working throughout Beheira, but it is evident that some additional operator training will be required to work the new machines to the fullest capacity.

Road Maintenance Equipment. The Roads and Bridges Department has enough trained staff to maintain the proposed new equipment, but tools and spare parts are inadequate. The procurement should be complemented with 10,000 working hours worth of spare parts, so that maintenance can be performed at the markaz and department workshops and at the upgraded Damanhour Training Center.

Water System Extensions. The level of effort proposed represents an insignificant addition to the existing systems, which were found to be adequately maintained by the Water and

Sewerage Unit and the Abou Homos Plant. There should be no difficulty in maintaining the proposed pipe extensions and booster pumps, and both organizational units have good programs of preventive and overhaul maintenance for all existing networks. Taps and faucets in most areas are and will be maintained by the village councils.

Biogas and Solar Energy Projects. The level of engineering required in the construction of these pilot projects is simple, unsophisticated and virtually maintenance free. The requirements for patching mud walls and metal conduits used in the system designs are fully within the capabilities of the village public and private sectors.

Project Planning and Identification Capabilities

None of the organizations involved in village development programs have any experience or knowledge of objective criteria such as discounted cash flow, benefit/cost, or internal rate-of-return analysis for project evaluation and ranking. The Planning and Follow-Up Department personnel contacted and the governor are aware of these deficiencies and anxious to develop these more sophisticated capabilities in the future. While all projects proposed for BVS have obvious economic merit, the actual impact these projects will have on the regional economy of the governorate or on national income has not been evaluated in the current planning and selection process. Training in the use of these concepts would be beneficial and successful.

MINYA GOVERNORATE

Governorate-Level Planning and Implementation Capabilities*Project Planning and Evaluation*

The responsibility for planning and evaluation rests with the ORDEV and the Planning and Follow-Up Department. The basic organization of these two units in Minya is similar in composition and quality to those in Beheira. Planning criteria used in preparing guidelines for villages are population served and least cost per beneficiary. No other criteria, such as benefit/cost or internal rate-of-return analysis, are presently used or understood.

General governorate priorities such as roads and water systems are determined from surveys of village council areas and discussions with local officials. Project documentation on file with the governorate contains simple pro forma information such as brief project descriptions, i.e., construction of 5 km. of unpaved road in village council area "X," cost per kilometer, numbers of people served, cost per beneficiary and engineering designs. There is no attempt to rank projects according to an objective quantification of economic merit. Personnel in both ORDEV and the Planning and Follow-Up Department are bright and trainable in the use of these more sophisticated criteria. ORDEV also prepares physical plans of all villages and assesses the environmental impact of projects.

Technical and Engineering Support of Approved Village-Level Projects

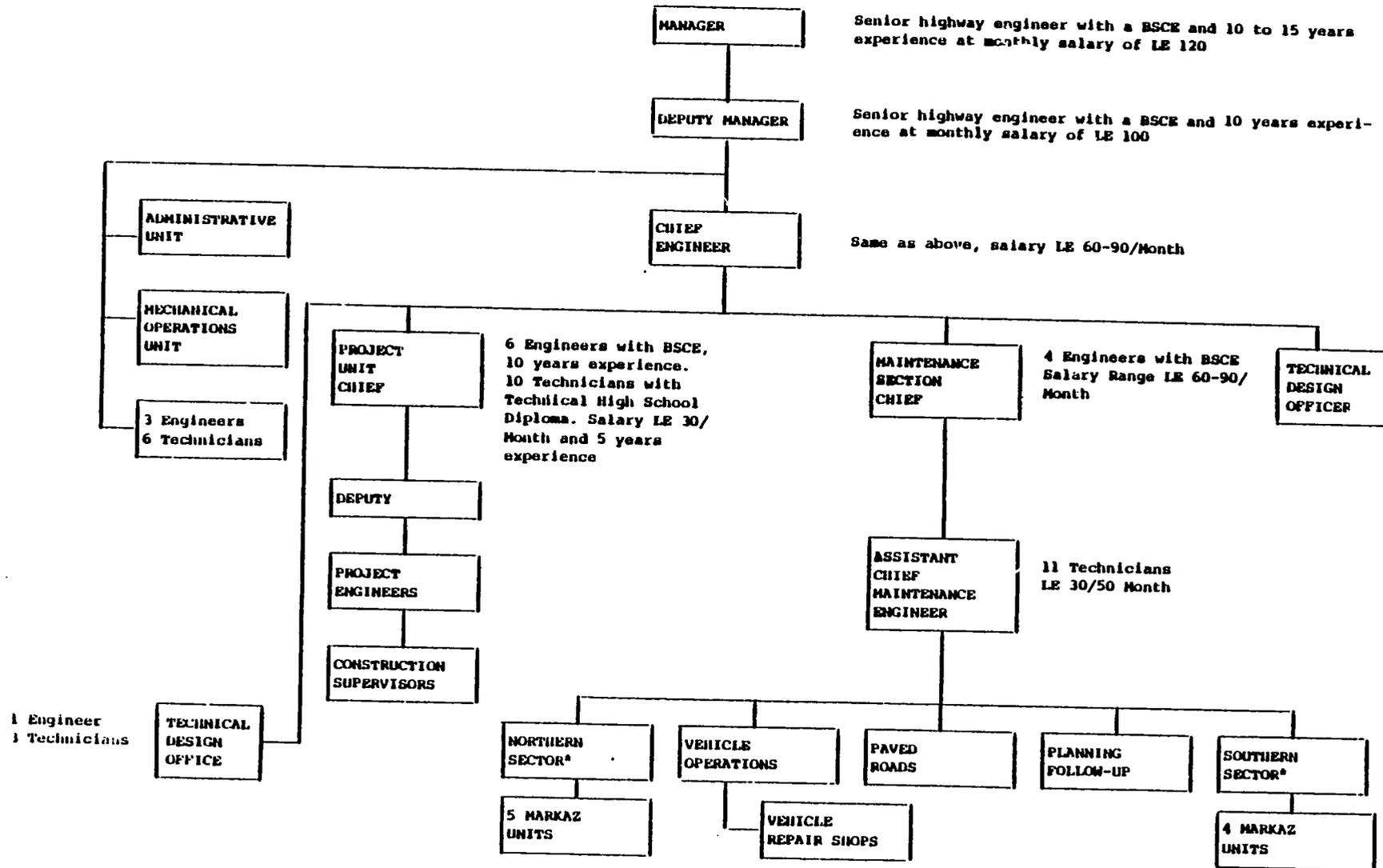
Basic responsibilities for providing technical assistance in the preparation of drawings, bills of quantities and bid specifications for approved BVS projects is shared by the Roads and Bridges Department and the Mechanical Division of the Governorate Housing Department.

The Roads and Bridges Department. The Roads and Bridges Department of the governorate and its extended sub-units at the markaz level prepares all designs and technical specifications for village-level roads according to standard plans and specifications used throughout Egypt. These standards have been developed by the Central Roads and Bridges Authority in Cairo. Major road maintenance is performed by the Roads and Bridges Unit at the markaz level, and minor maintenance is performed by laborers assigned to the village council areas¹

Organizationally, the Roads and Bridges Unit is established along the lines in Figure 8.

¹ Some 1,300 laborers are also on the permanent roles of the roads and bridges unit. Laborers are assigned to the village councils areas to fill in holes and perform routine surface repair for unpaved roads. Salaries of these employees are paid from the village budgets.

FIGURE 8
 ORGANIZATION OF THE ROADS AND BRIDGES DEPARTMENT IN MINYA



* Responsible for road maintenance in five northern markaz and four southern markaz.

Discussions were held with managerial and technical personnel of the Minya Roads and Bridges Department, and engineering designs and specifications of previous projects undertaken by the department were examined. The quality of the engineering design work prepared for these projects was of adequate professional caliber. Personnel interviewed were well informed and gave in-depth technical answers to the questions posed.

Over the past five years, the Roads and Bridges Department designed and completed 34 roads projects throughout the governorate. Projects completed are shown in Table 6. The two limiting factors observed are equipment and labor for both construction and maintenance. Table 7 shows a list of currently available Roads and Bridges Department equipment. As most of this equipment is old and frequently down for maintenance and repair, a large part of the construction work planned will have to be implemented by contract.

TABLE 6

HISTORY OF PREVIOUS ROAD CONSTRUCTION IN MINYA

<u>Year</u>	<u>Planned (km.)</u>	<u>Completed (Est.) (km.)</u>	<u>Amount in LE 000's</u>
1979	161	120	1,585
1978	37	37	368
1977	38	38	380
1976	35	35	350
1975	<u>20</u>	<u>20</u>	<u>197</u>
	291	250	2,880

TABLE 7

CURRENT ROADS AND BRIDGES DEPARTMENT EQUIPMENT
IN MINYA^a

<u>TYPE</u>	<u>NUMBER OF UNITS</u>
Motorcycles	14
Pickups	3
Trailers	10
Trucks	1
Dump Trucks	4
Water Tanks	11
Track Tractors	2
Wheeled Tractors	13
Asphalt Tanks	1
Boilers (Asphalt)	2
Mixers (Asphalt)	2
Rollers	3
Scrappers	1
Bulldozers	3 ^b
Graders	5

^a All units have 60% serviceability.

^b One new and two undergoing complete overhaul.

In the markaz where agricultural production is high, there is an extensive rural feeder road network and there has been a strong push in recent years for mechanical road maintenance. Labor is in generally short supply throughout the year because of extensive labor-intensive farming practices, rural-urban migration, a growing tendency toward schooling for children

(particularly sons), and labor migration to neighboring Arab countries, following the lure of high wages and other benefits.

The consequence is that village councils have asked for mechanization of road maintenance in order to devote the available labor force to the land. Almost all proposed BVS road projects will be put up for bid to private contractors who have the equipment, technical skills and labor force required.

The major deficiency is in the area of equipment for road maintenance. The Roads and Bridges Department, as shown in Figure 8, has a subdepartment for road maintenance in each of the nine markaz. The subdepartments appear to be adequately staffed for the requirements of the BVS program, but lack sufficient equipment, particularly in four of the markaz. The five motor graders belonging to the Roads and Bridges Department are currently deployed to five of the markaz subdepartments, and there is an urgent requirement for four additional machines so that each markaz will have a grader department at its disposal to maintain the existing and planned new roads. In addition, nine water trucks (one per markaz) are required to complete the maintenance equipment package.

In discussions with Roads and Bridges Department personnel, it was determined that the department will prepare complete

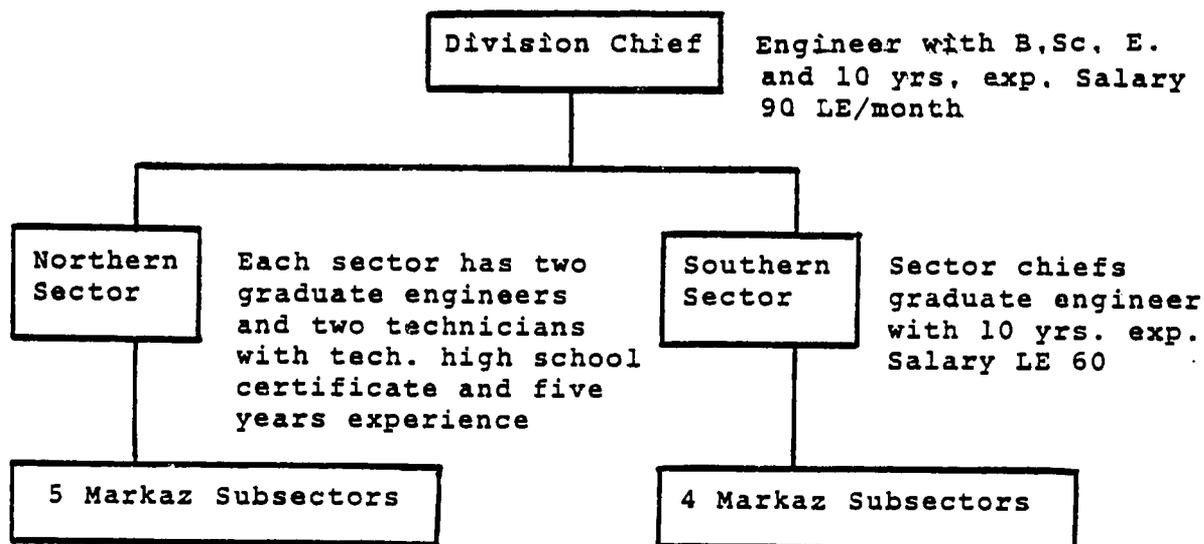
engineering designs and specifications for all projects submitted in the village priority lists and provide technical supervision of the construction. Once the projects are completed, the maintenance subdepartment will maintain the network, as the village councils do not have sufficient expertise, personnel or equipment to carry out these functions.

Mechanical Division of the Department of Housing. Design and construction supervision of the proposed village potable water systems for BVS will be under the jurisdiction of the Mechanical Department. The principal offices of the department are located within the governorate compound with subsector offices in each markaz. All engineering designs are prepared by the governorate-level office, with responsibility for maintenance relegated to the markaz offices and village councils. The Mechanical Division of El Minya is organized according to Figure 9.

The Mechanical Division prepares all engineering designs and specifications for the proposed village water systems, using standard plans prepared by the Central Potable Water Authority in Cairo, and the markaz subsectors are responsible for their maintenance. A mechanic is assigned to each of the villages, but the training and experience of the village-level mechanic is judged inadequate.

FIGURE 9

ORGANIZATION OF THE MECHANICAL DIVISION IN MINYA



four of the markaz subsectors are headed by graduate engineers; five are headed by technicians. In addition, each markaz subsector has six junior engineers and 40 technicians

As with the Roads and Bridges Department, the quality of the design and construction of the completed water projects implemented by the Minya Governorate's Mechanical Division is adequate to the needs of projects proposed under the BVS program. Two areas of deficiency were noted however. Village water systems are not satisfactorily maintained, and the markaz subsector workshops lack even the most basic tools and transport equipment for carrying out field maintenance. Most of the maintenance of the diesel prime movers for pumps is contracted

out locally under the supervision of the markaz sub-departments. Taps and pipelines are generally not maintained at all.

The maintenance issue was discussed with senior officials of the Mechanical Division, who are aware of the problem and proposed a plan for remedial action. Previous systems had been designed with too few public taps and, as a consequence, too many people crowd around existing taps with full buckets, causing damage to tap stems and valves. In addition, the engineers noted that the village-level mechanics have insufficient training in basic plumbing to be of value in maintaining the water works.

Plumbing skills are in short supply due to the growing demand for such skills in other areas of Egypt, where salaries and benefits are more attractive. Markaz subsectors have enough skilled personnel, but lack the tools and transport for regular inspection and routine maintenance of the prime movers.

To correct these deficiencies, the Mechanical Division will incorporate in plans for future projects provisions for increasing the number of available taps; the outlets will be fitted with automatic spring-operated faucets of sturdy construction to minimize water wastage and overworking of pumps, and the village-level mechanics will be trained in basic plumbing at

the two new Ministry of Development and New Communities technical training centers at Minya town and in Mallawi. Costs of the training will be borne by the governorate, and the proposed self-closing faucets can be procured locally. Tools and mobile workshops are proposed under BVS funding to enable the subsectors to provide regular maintenance of the electric prime movers that will replace existing diesel engines and be installed at new sites. A letter of intent concerning this plan was prepared and given to the ORDEV representative, and was to be followed by a detailed plan that would be sent to ORDEV in Cairo.

Once contracts are let by the village councils for a new BVS Project, the Mechanical Division subsector at the markaz level will provide construction supervision and maintain prime movers through a regular system of inspection and spot repair. They will also monitor the work of the village-level mechanics and plumbers to ensure regular maintenance of taps and lines,

The Mechanical Division hopes to upgrade general plumbing skills through training at governorate workshops, training at the two new training centers at Minya and Mallawi, and on-the-job training at project sites.

Positive steps are being taken to support village councils in the implementation of the proposed water projects. With the implementation of the proposed design changes, provision

of shop and transport equipment, training of village-level mechanics and regular inspection by the markaz, maintenance of the new systems may be better than in the past.

Over the past five years, some 39 water supply projects have been implemented in Minya under the direct supervision of the Mechanical Division (see Table 8).

TABLE 8
VILLAGE-LEVEL WATER PROJECTS COMPLETED
IN MINYA

<u>Year</u>	<u>Number of Projects</u>	<u>Gross Value in LE 000's</u>
1979	5	13
1978	10	125
1977	9	113
1976	4	32
1975	<u>11</u>	<u>116</u>
	39	399

Markaz-Level Planning and Implementation Capabilities

Unlike the situation in Beheira, the markaz in Minya plays a pivotal role in the planning and implementation of the BVS program. This is due to several fundamental differences in administrative and technical capacities and traditions between the two governorates. In Beheira, the village councils are generally well organized and have had several years of experience in planning and implementing numerous village-level

income-producing projects. As the process of administrative decentralization to village level in Beheira has been under way since 1975, the role of the markaz as a planning, administrative and coordinating unit for village development activities has gradually eroded with the growing organizational strength of the village councils. During visits to Beheira, it was observed that markaz level technical departments did not generally have sufficient staff for technical assistance to both markaz and village-level projects. In Beheira there is far more direct communication between village council and governorate, in both planning and coordinating of technical support inputs to village-level projects. The markaz function in this instance has receded to one of providing some technical coordination and liaison services to villages and project activity monitoring.

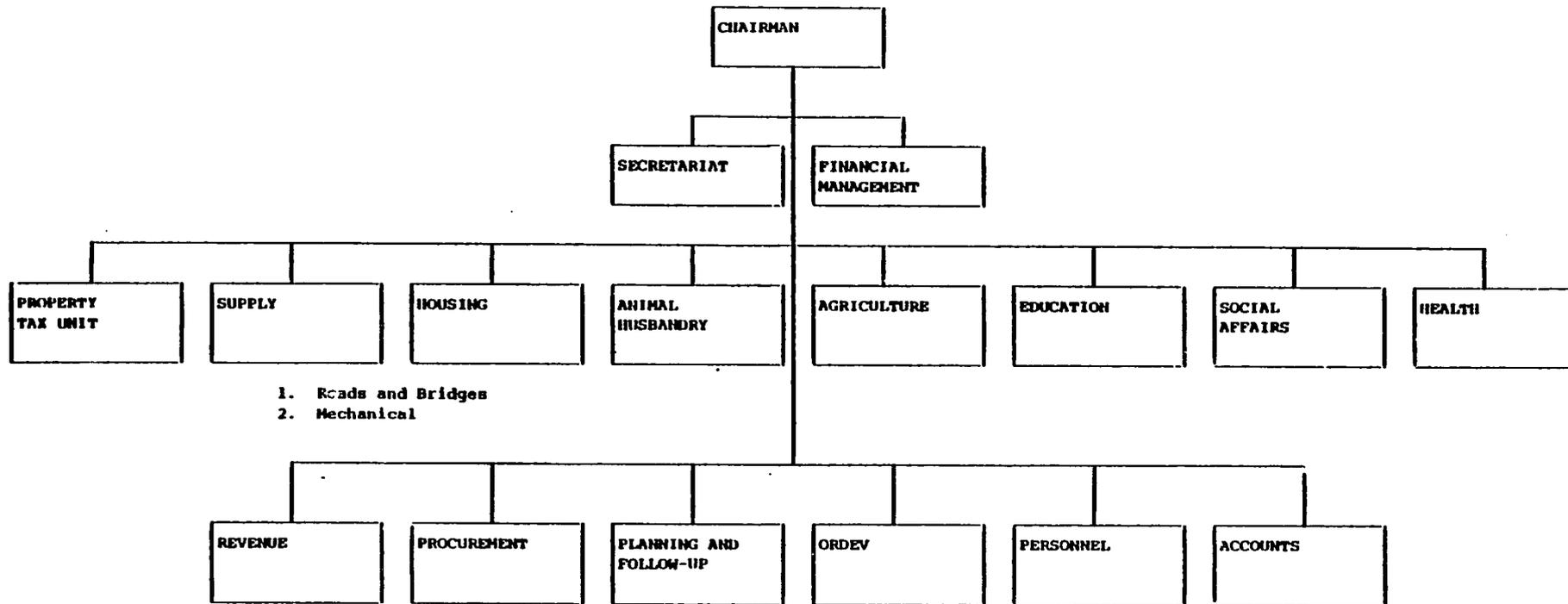
As efforts to promote decentralization of administrative and fiscal authority to the village level have been initiated more recently in Minya, the village councils there were less sure of their roles and responsibilities and less well organized than in Beheira. Consequently, the markaz chairmen and administrative and technical departments in Minya are more involved in providing day-to-day guidance and coordination for village-level project and fiscal management. This general observation should not be construed, however, to suggest management of village affairs by the markaz, as all markaz officials who were

contacted specifically confirmed the authority of the villages to select and administer their own development activities. In no instance did markaz officials alter or modify village decisions or usurp village authority and prerogatives. Village councils frequently ask the markaz for guidance in project planning, contract administration and fiscal management, as the village officials appear to recognize their limitations and appreciate the technical and administrative assistance provided to them by the various markaz departments. The relationship is similar to that of a parent guiding a child in the initial awkward attempts to walk.

While there is considerable guidance in planning and administration of projects from the markaz to the village, villages with this assistance do exercise their prerogatives of tendering, contract award and funding disbursements. Markaz administrative departments are making a conscious effort to promote organizational capabilities at the village level by providing on-the-job training to village administrative and financial personnel during this period of transition from a highly centralized administration to the intended decentralized village-level responsibilities and capabilities.

As a coordinating and supporting entity, the markaz in Minya are able to provide the administrative and technical support required by the village councils in their initial attempts at self-government. Typically, the markaz in Minya is organized along the lines of Figure 10.

FIGURE 10
TYPICAL MINYA MARKAZ ORGANIZATION



The markaz organizational entities most directly involved in assisting village councils with BVS projects are the chairman, who ensures that village officials understand the intent and planning parameters of the program; the housing units, whose roads and bridges and mechanical sections prepare technical designs and specifications and supervise construction and maintenance of approved village councils projects; and the finance departments, who guide the council in fiscal administration and service fund account management.

Each housing unit has a roads and bridges maintenance section and a mechanical division subsector, which provide engineering design and maintenance services for roads and water systems. Technical staff of the housing unit of the markaz of Beni Mazar are divided into two sections. Each has the following staff components, which is fairly typical of the other markaz visited.

ROADS AND BRIDGES

2 Civil Engineers

3 Technicians

MECHANICAL

4 Mechanical Engineers

5 Mechanical Technicians

5 Electrical Technicians

As the program BVS planned for Beni Mazar is extensive, the markaz chairman recently assessed his technical support requirements, concluded that two additional technical staff would be required and forwarded his request to the governorate.

One additional civil engineer has already been made available to the markaz housing unit, and arrangements are being made for the assignment of another technician. This type of request and response between government levels in Minya is illustrative of the working linkages between various local governmental institutions and the support and flexibility that decentralization allows.

Each roads and bridges department has a section for the maintenance of 150 to 200 km. of road, except for Mallawi, which has two sections to maintain the 220 km. of that particular markaz. All maintenance sections have adequate buildings and some tools, but graders and water trucks are required to upgrade the capability of all markaz to assure maintenance of the proposed new BVS funded roads. The mechanical sections appear to have sufficient staff to design and provide construction and supervise the planned BVS funded water program, but they require shop tools.

The markaz chairman and planning and follow-up departments satisfactorily communicate planning guidelines and priorities to the village councils and ensure that the general guidelines issued by the governorate are followed, but have no capability in project planning criteria such as ranking projects according to benefit/cost, internal rate-of-return and other objective measures of project worth. Markaz planning officials could be

trained in the use of these techniques and encouraged to use such measures in project planning, with the establishment of adequate collection of basic village-level economic and project costing data that are not currently available or recorded to any substantial degree.

As village councils do not yet have functioning financial affairs divisions, the markaz finance departments in these areas administer village accounts and countersign funding disbursements authorized by the village executive council chairmen. The finance departments of the markaz were found to be staffed with trained and qualified accountants, and were making progress in training of village financial affairs division personnel and in setting up new divisions where none exist.

Village-Level Planning and Implementation Capabilities

Altogether there are 57 village council areas in Minya Governorate. The village council organizational structure in the governorate is similar to that in Beheira.

All areas have functioning executive and elected councils and village banks. Although the managerial and some fiscal elements required for successful implementation of the BVS program are currently in place, the organizational capabilities at the village level within the governorate appear to be less well developed than in Beheira. Offices visited were run down,

floors in many offices were strewn with cattle and donkey droppings and records were poorly maintained. In the village banks it was observed that records, while available, contained erasures, and ledgers were not stamped and signed by responsible authorities as required by GOE fiscal regulations.

In contrast village councils demonstrated awareness of the BVS program, as they acknowledged receipt of program guidance from the governorate and the markaz and had already prepared and submitted their lists of priority projects. Village officials understood their authority to select, approve and administer projects within their respective areas without having to seek approval from higher echelons. They acknowledged, however, that they required technical assistance from the markaz.

As the village councils visited did not yet have functioning financial affairs divisions, all disbursements from local accounts in these particular villages are made on the signature of the elected council chairmen after countersignature of the markaz finance department head.

At present there is little technical capability in the village council areas. Many village councils have one or two technicians (technical high school graduates) with limited

practical experience. Mechanics assigned by the mechanical division to maintain water systems lack training in basic plumbing, and the road personnel assigned by the roads and bridges department from the governorate or markaz are usually unskilled and semi-skilled laborers.

With present organization and staffing, the majority of the villages in Minya will require extensive assistance from the markaz in the preparation of engineering drawings and specifications for approved projects and will require assistance from the governorate technical departments for project implementation and supervision. It is also probable that technical personnel of the markaz will have to assist the village council in the bid evaluation process.

Several village councils in Minya demonstrated relatively poor administrative capabilities, and the field team asked markaz officials to explain the criteria for selecting village executive council officials and to indicate what steps could be taken to replace officials whose performance was inadequate.

General qualifications for selection include number of years in government service, and years of service in one of the specialties of the council (i.e., education, social affairs, finance).

Well motivated but undertrained officials receive on-the-job training from the markaz or the National School of Administration or both. In instances where the level of ability and motivation are both considered inadequate, the officials can be transferred to less critical positions in the local government structure.

Analysis of BVS Program Execution Capabilities in Minya

In general the proposed BVS program consists of projects with which the governorate departments and local contractors are thoroughly familiar, as they have had extensive experience with similar projects over the past several years,

The Potable Water Projects

The proposed potable water projects have four basic components:

- Well digging;
- Pump housing and storage towers;
- Pipes, valves and taps; and
- Pumps, prime movers, switch boxes and transformers.

These systems are designed from externally prepared standards adapted to specific work, sites, with minor modifications to suit local conditions. The actual engineering design work required is minor, consisting mainly of surveying network layouts and calculating lengths and diameters of pipes, pump

capacities and horse power requirements, and cement sand and reinforcing rod quantities needed for buildings and towers. As standard plans are used, most of the quantity and cost calculations have already been completed and only require simple multiplication to arrive at total quantities to be procured.

Currently the mechanical division organization in the governorate and the markaz has nine graduate engineers and seven technicians, who will be available to work almost exclusively on BVS projects as there is little funding available for additional projects outside of BVS. From 1975 to 1979, the division has designed and supervised the execution of some 39 small village water projects of the types proposed, costing some LE 400,000. There are currently 25 private sector water contractors working in the governorate, who are judged to have greater capacity that could not previously be utilized because of limited funding for water projects in Minya. In addition contracts for the proposed new projects will be let for components (i.e., water towers, well digging and pipe laying) rather than for individual projects. This will mean that all 82 wells required for the BVS program will be combined into a single tender. The same procedure is expected for the other components of the water projects, greatly simplifying project preparation tasks and reducing personnel time for engineering, specifications

writing and tendering. All equipment and material procurement for the projects, including motors, pumps and construction materials will be detailed in the preparation of a common bill of materials for all projects. Procurement will be on a governorate-wide basis to supply all program needs for the planned BVS water activities.

In light of these considerations, there is reason to believe that Minya has adequate and sufficient professional staff within the various levels to design, tender and supervise the planned BVS potable water projects within 12 to 18 months of approval.

With respect to the endemic maintenance problem, the contemplated upgrading of the maintenance capabilities through the addition of more public fountains of the self-closing type, training of village-level plumbers, and equipping the markaz maintenance centers with shop tools and mobile repair will, if implemented, largely solve previous prime mover and pipeline maintenance difficulties. It would also be desirable for village council chairmen to use village-level service account funds for maintenance of taps and outlets. Continuous follow-up to ensure that this is done is important.

Roads

Most of the proposed roads program consists of making substantial improvements to already existing links. These

include construction of bridges where none exist, improving foundations, raising the road beds above the agricultural land, compacting and grading. This work is also prepared from standard designs with essentially no new engineering technology required. In the previous five years, the Roads and Bridges Department, with contractor assistance, has successfully completed some 230 km. of roads with bridges of the type to be built under BVS. Over 100 km. of this number have already been completed in the 1979 program. There are now 17 graduate engineers and 11 technicians of the department at the governorate and markaz levels, who will be making inputs to the BVS program. In addition the governorate will be executing some 163 km. of village dirt roads, funded from other sources, during the BVS execution period.

While it is conceivable that the 17 road contractors currently working in Minya will be able to expand their activities to cover both the planned BVS and governorate road programs for 1980, this would require that they execute a total of 263 km. (120 for BVS and 163 for other funding sources). The maximum amount of work completed in any one year (1979) is some 100 km. In light of past performance, it is conceivable that the total planned program, including BVS and other roads, could take two and one-half years to complete. It is likely that external engineering support, hired on a temporary basis from outside sources (universities, local consulting firms, construction

companies), will be needed for design work and supervision if this timetable is to be accelerated.

Road Maintenance

The 1,392 km. of existing dirt roads fully absorb the maintenance capacity of the 1,300 laborers assigned to the Roads and Bridges Department markaz units. One laborer, as in Beheira, can perform routine spot maintenance such as filling in holes and gullies for one kilometer per year. This type of work is expedient at best, and does not address the long-term problem of keeping the network in good general repair. As the supply of labor is short and getting shorter, capital-intensive methods will be needed to ensure adequate maintenance of the existing network and all maintenance of the planned BVS expansion. Without inputs of equipment, it is unlikely that there will be any maintenance of the proposed road infrastructure. The governorate's request for the nine graders and cistern trucks to be deployed to the markaz is in line with this need. Operators for this equipment are available and the departments can be maintained by the markaz maintenance centers with an appropriate infusion of required shop tools and equipment. Preparation of specifications and tender documents for the required road maintenance and shop equipment should pose no problem, as Roads and Bridges personnel have previous experience in these matters.

The most important aspect of the governorate's real capacity for BVS program execution is not so much the numbers and technical ability of available professional staff, but the integrated coordination and management of all of the various inputs and procedures that are required. Unless all those responsible are aware of their assigned tasks and responsibilities and given specific deadlines, it is unlikely that the program will proceed expeditiously, as departments will have to contend with conflicting priorities and may be inclined to devote time and energy to activities they consider important from their own perspectives.

In Beheira the governor personally and systematically provides the necessary supervision and coordination of village-level project activities. In Minya there is no single individual performing this function. During two separate field team visits to the governorate, the governor was not present. Discussions with key officials revealed that the day-to-day administration of the governorate is left to the general secretary who, in addition to having overall coordination responsibilities for projects, also supervises all functions performed by this level of administration. It appears that the general secretary is too preoccupied with other administrative matters to devote sufficient time and attention to BVS, and the governor is either unavailable or unable to involve himself in the level of detail required for effective program management. None of the other personnel contacted

have the personal prestige, authority or overview required for this important function. Nor is there any regular follow-up and project monitoring system to determine progress or to solve identified problems.

Present capabilities for project evaluation at all levels of government are generally weak to nonexistent. Objective criteria for project ranking and evaluation are not used. Personnel of the Planning and Follow-Up Department are aware of these deficiencies and are willing to receive training in the use of these techniques and standardization of feasibility documentation. Personnel who would be assigned to do this work appear to be trainable, and this process could be institutionalized through outside technical assistance. A more simplified training program stressing basic methods of benefit and cost quantification, discounted cash flow analysis and calculation of the benefit/cost ratio of proposed village-level projects could be successfully provided at the local level and produce measurable improvements in the quality of project evaluation and selection upon completion. Planning personnel at the local government level appear eager to learn and use new techniques in their work.

KENA GOVERNORATE

Governorate-Level Planning and Implementation Capabilities*Planning and Follow-Up*

There is little evidence of planning and none of follow-up in Kena Governorate. This function is theoretically the responsibility of the Office of Planning and Follow-Up, organized into planning, follow-up and monitoring and statistics units. The head of the office is an agronomist recently transferred from a city management position in one of the markaz. He is unfamiliar with even rudimentary requirements of BVS type planning, and his assistant, who has some experience, lacks technical education. Within the office there is an additional agronomist with college training and some 15 clerks, draftsmen and tea servers. None of these personnel have had any experience with project planning and activity progress monitoring.

Technical Support

All phases of technical management, from engineering and specifications preparation to construction supervision for BVS projects in Kena, will be managed by the Roads and Bridges Department, the Utilities Department of the Housing Directorate, and the Irrigation Department. The extent and quality of technical expertise in Kena are more limited and less adequate than in either Beheira or Minya.

Many of the technical staff personnel contacted were aged technical assistants with poor motivation and little interdepartmental coordination. Decisions were based more often upon political exigencies than on technical realities. Existing staff and capabilities are summarized below:

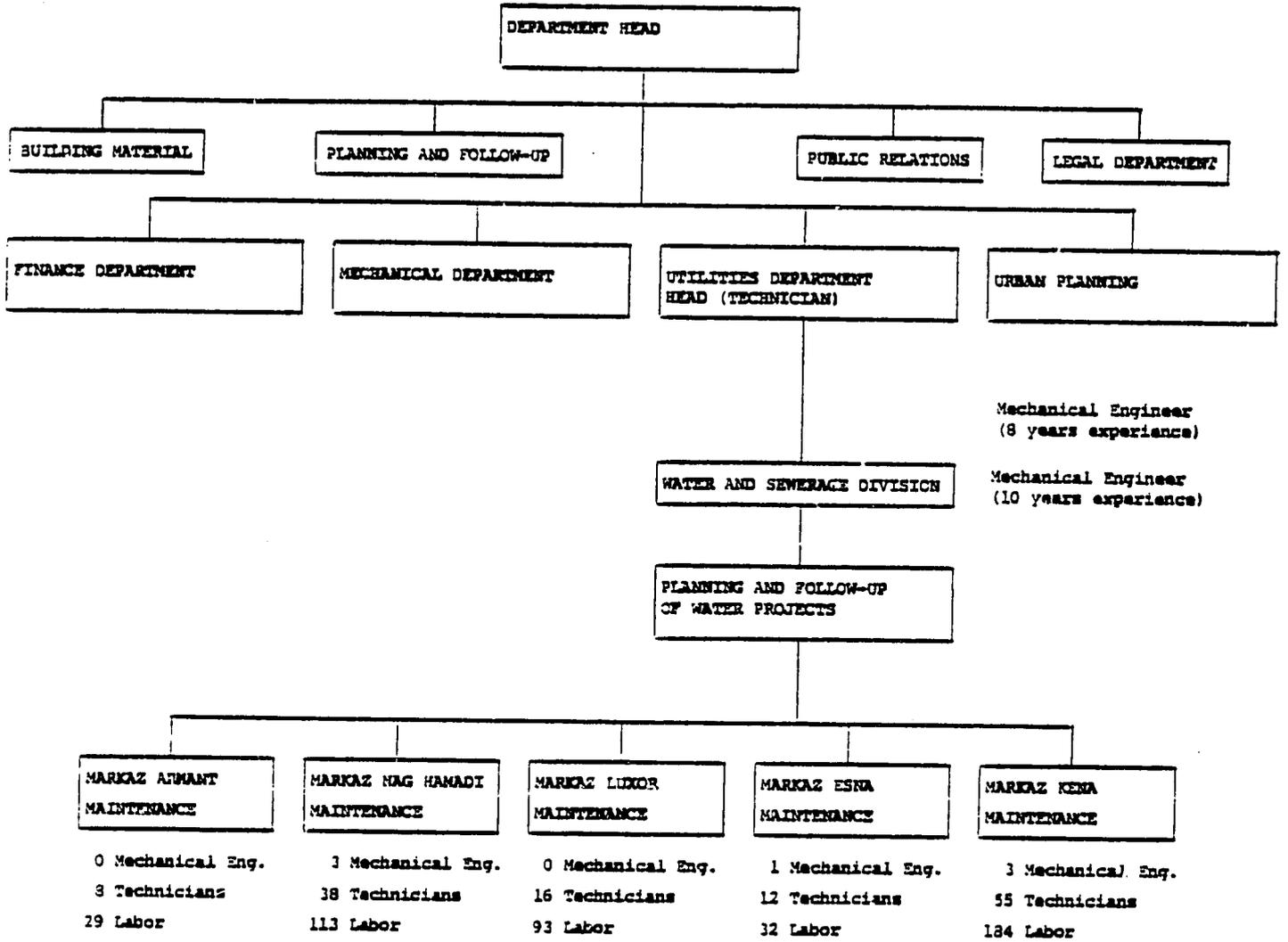
Housing Directorate. This office also is responsible for rural and urban drinking water and, as such, is the crucial organization in the Kena BVS program, which has a sizable potable water component. The organigram of the directorate, as well as the number of personnel and their qualifications, is presented in Figure 11.

The Water and Sewerage Division of the Utilities Department within the Kena Housing Directorate consists of a division head with long experience but no university degree, and two qualified engineers with limited experience.

The division also has seven engineers, 129 technicians and 452 laborers performing maintenance work in five markaz units. The Utilities Department has been in charge of all drinking water project identification, preparation, execution and operation.

During the past two years, the Utilities Department in Kena has implemented 13 small water projects, costing a total

FIGURE 11
ORGANIZATION OF KENA HOUSING DIRECTORATE



of LE 287,600. These are listed in Table 9. When compared with the 128 separate projects costing LE 2.3 million proposed for BVS, the level of previous effort is decidedly small.

TABLE 9
WATER PROJECTS COMPLETED IN KENA, 1978-1979

<u>Type</u>	<u>Amount LE</u>
Network expansion	40,000
Well digging	24,000
Replacement and reconstruction of wells	12,000
Completion of Tramsa project	14,000
Network expansion	10,000
Network expansion	50,000
Replacement and renewal of wells	25,000
Expansion of wells and pumping units	15,000
El Elikat Project (Markaz Koos)	13,000
Well digging and pump unit purchase	25,000
Purchase of two vehicles	12,000
Expansion and network maintenance	23,500
Pump unit purchase	6,000
Network maintenance	
Purchase of spare parts and pipes	2,500
Network maintenance, including equipment and pipes	5,000
Purchase of tools	3,000
Purchase of spare parts and maintenance of diesel engines	7,500
	<hr/>
	LE 287,500

Maintenance facilities and tools belonging to the Utilities Division in the markaz are primitive and degraded. Tools and mobile workshops are urgently needed for maintenance of the

proposed BVS water projects. The numbers and quality of department personnel assigned to maintain water systems are considered adequate for periodic maintenance of the proposed new projects.

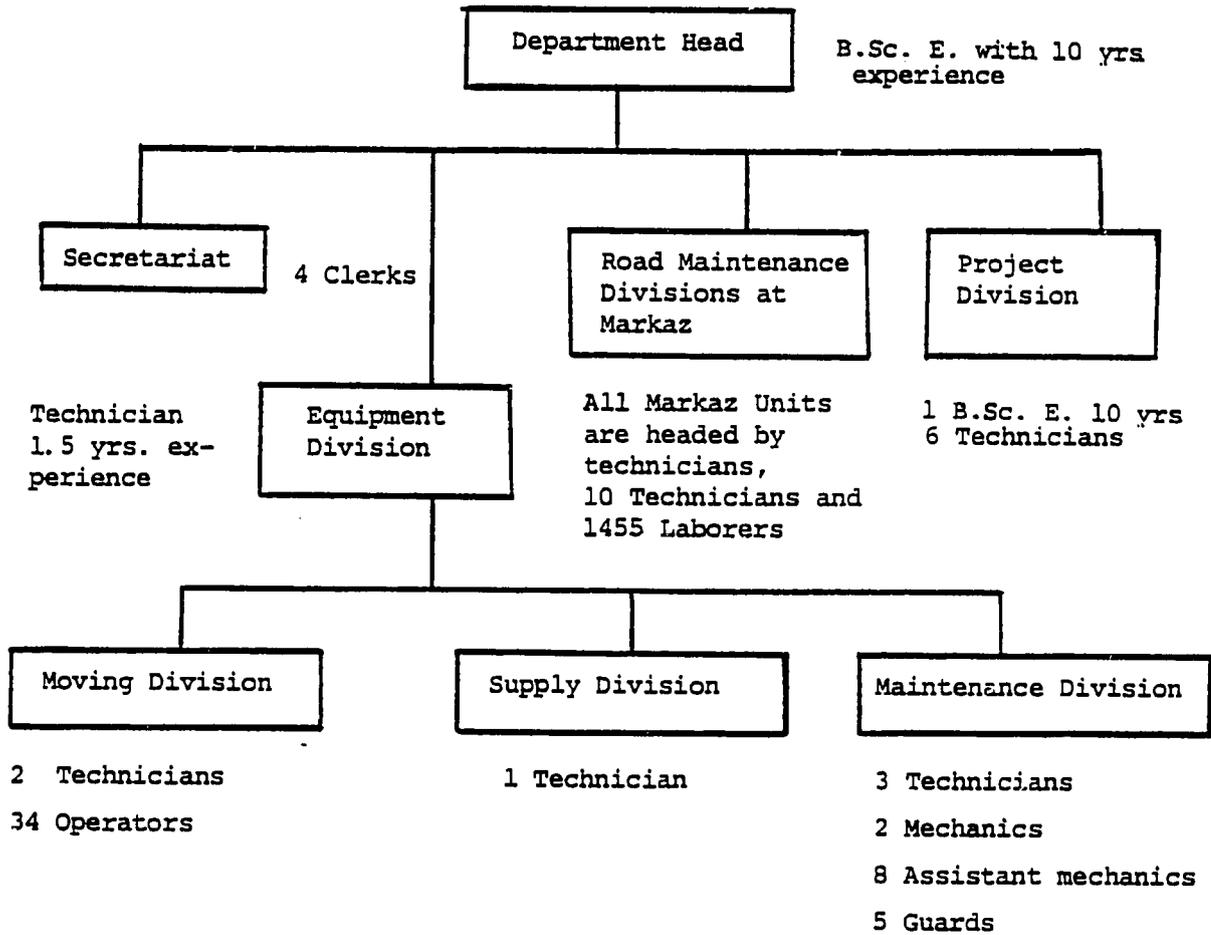
Roads and Bridges Department. This unit is responsible for engineering design, specifications and construction management for the proposed BVS road program. At present the department has only three qualified engineers. The department head, who is an engineer, has ten years experience. The three engineers are assisted by 22 technicians and 1,570 laborers, only 42 of whom can be classified as skilled. The personnel of the department have identified village-level road needs and priorities after little or no consultation with the village councils. The projects proposed are standard dirt roads, which can be prepared according to standards plans developed by the Central Roads and Bridges Authority in Cairo.

The previous level of road construction effort in Kena has consisted of shoulder preparation and some upgrading of road beds using draft animals and labor-intensive methods. The budget for 1979 was LE 1.6 million with LE 2.5 million proposed for 1980 in addition to BVS.

Altogether there are 712 km. of rural dirt roads in Kena, which are poorly maintained as the department labor force is inadequately managed and the department has little serviceable

road construction and maintenance equipment. The organization chart of the department is shown in Figure 12.

FIGURE 12
 ORGANIZATION OF THE KENA ROADS AND BRIDGES DEPARTMENT



Irrigation Department. This organization will be responsible for specifications and bid tendering for the proposed canal maintenance equipment. As the department is seriously understaffed, with only three engineers for the entire

governorate, it can provide little assistance in the management of the equipment. This responsibility will be under the jurisdiction of the markaz, whose engineers and workshops will provide routine maintenance. Major overhauls will be performed at a governorate-level workshop to be upgraded. The department has adequate capacity and talent to prepare the procurement specifications.

Markaz-Level Planning and Implementation Capabilities

The majority of markaz level technical capabilities and operations in support of BVS in Kena are limited to infrastructural maintenance. All available technical staff, in addition to those assigned by the governorate Roads and Bridges and Utilities Departments, come under the general supervision of the Engineering Department. The organizational structure of Kena Markaz is typical of the Markaz Armant, shown in Figure 13. A summary of the technical staff currently available to each markaz is provided in Table 10.

Markaz have workshops for both roads and utilities departments, but they are poorly equipped and badly managed. There is little available transport and maintenance equipment.

FIGURE 13
LOCAL COUNCIL FOR MARKAZ ARMANT IN KENA GOVERNORATE

ORGANIZATION CHART

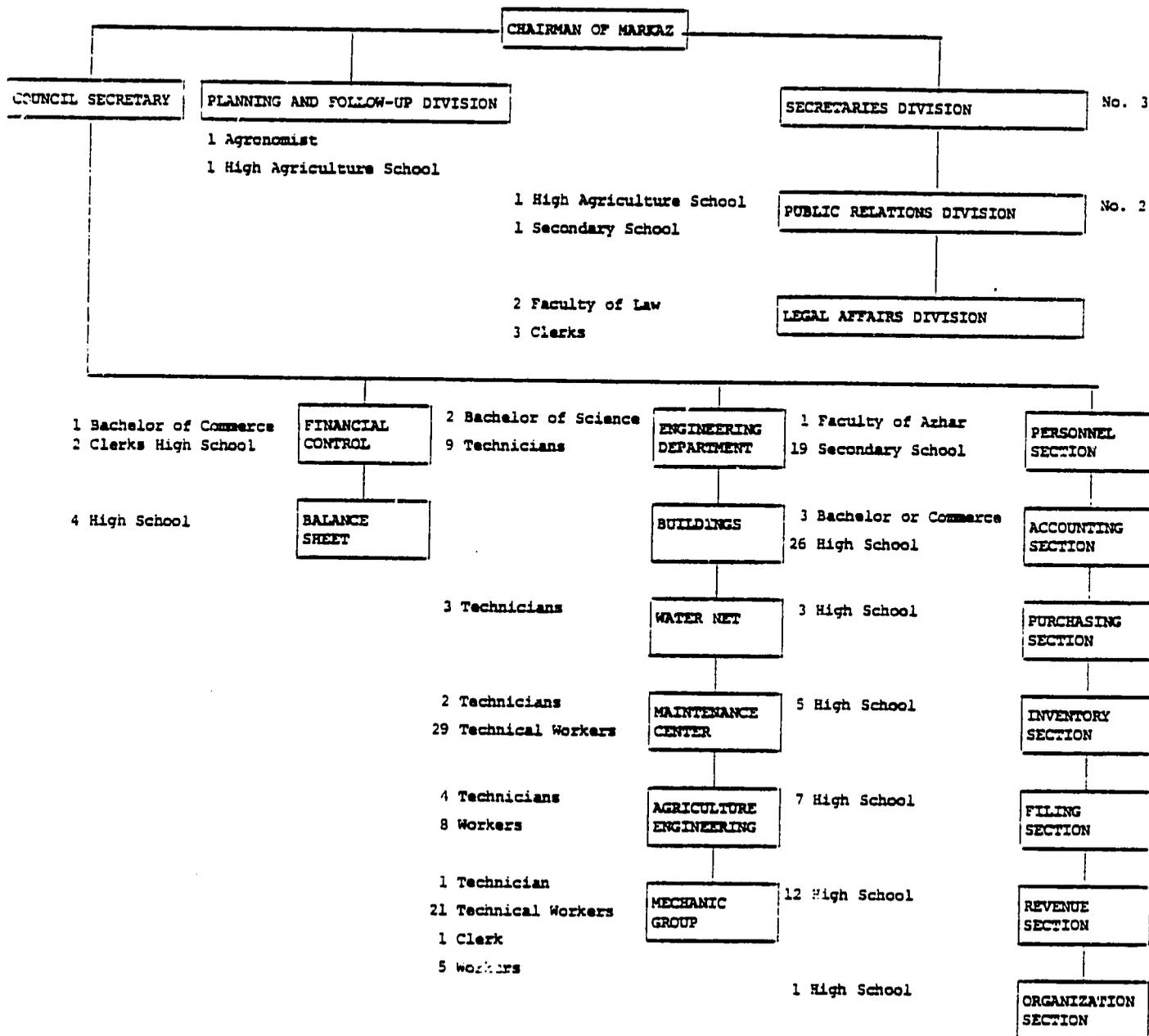


TABLE 10
MARKAZ LEVEL TECHNICAL STAFF IN KENA

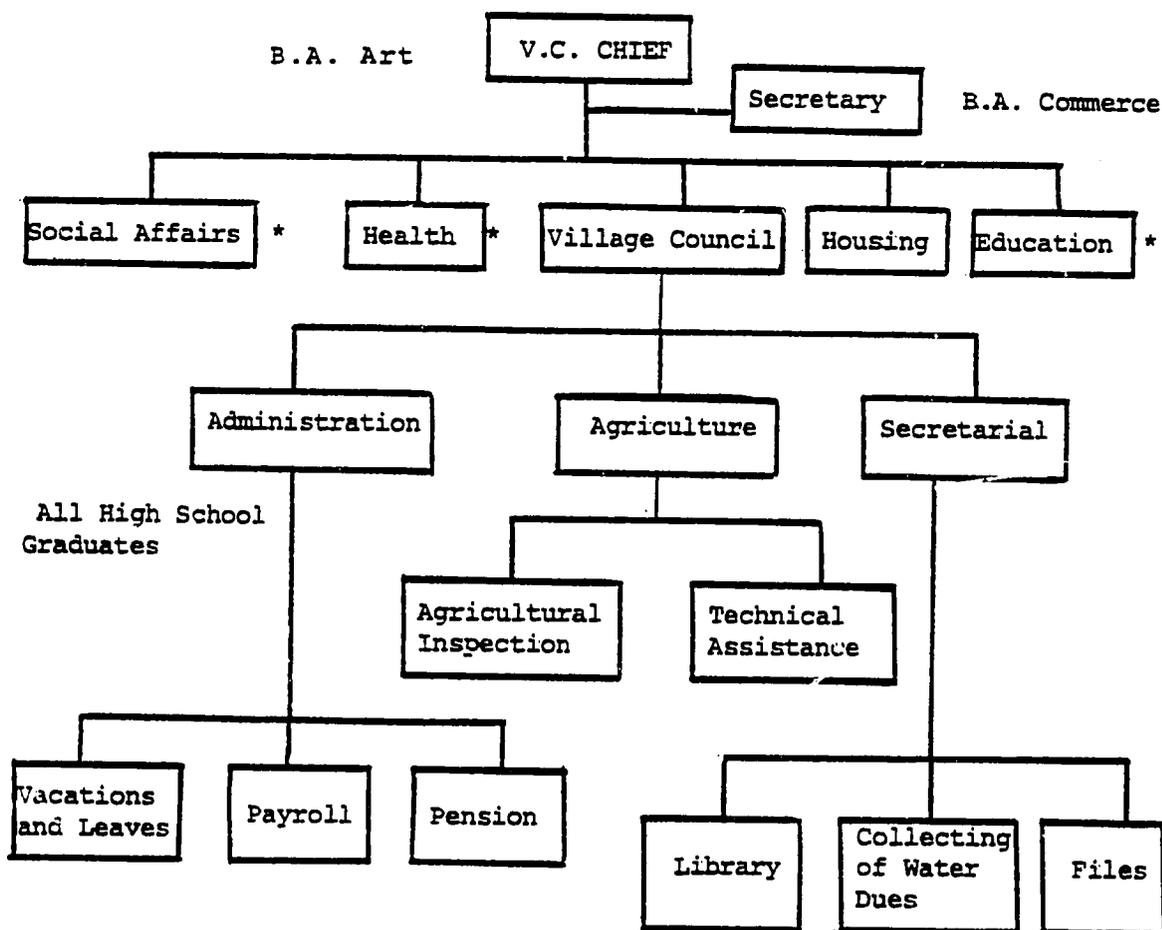
<u>Council</u>	<u>Number of Engineers</u>	<u>Number of Technicians (Tech. High School)</u>	<u>Technical Workers</u>
Abu Tesht	3	29	81
Naga Hamady	4	93	46
Farshoot	3	32	29
Deshna	4	48	34
Koos	4	51	73
Keft		46	40
Nakada	1	46	40
Luxor	4	90	143
Armant	2	39	39
Esna	3	64	117
Total	28	538	642

Village-Level Planning and Implementation Capabilities

In general there is very little technical ability at the village level. The chairman of the executive council is usually an agricultural engineer; a few are aware of the economics of their villages, including sources of funds and fiscal requirements, but that is an exception to the rule. Most have never handled sums such as those that may be granted

under the BVS program. There are some educated people with college degrees in the elected councils, but they are not expected to be involved in BVS as their time is counted on for management of income-producing projects. A well organized village council in Kena Governorate is structured along the lines of Figure 14.

FIGURE 14
TYPICAL VILLAGE COUNCIL STRUCTURE IN KENA GOVERNORATE



* These are appointed officials at markaz level that attend only periodically. All others are high school graduates.

Approximately half of the villages in Kena do not have functioning village banks and keep their accounts at the nearest branch of Banque Misr.

Analysis of BVS Program Execution Capabilities in Kena

The most critical deficiency in the ability to execute the planned BVS program is the virtual absence of any organized management and coordination structure in Kena. The governor is occupied with other activities and appears unable to become involved in details of scheduling activities and monitoring progress. There are currently no other officers or offices performing this function. This lack of management attention to project planning and executive detail is considered the most serious impediment to a successful program. It is not clear which officials of organizations will be able to assume this important role of coordination and management overview of the program.

The proposed level of program activity is considered technically feasible using existing technical staff, available contractors and externally procured consulting services. Following is an analysis of requirements by functional area.

Water Projects

The Utilities Department will encounter difficulty designing and executing the proposed level of activity without

substantial outside assistance in the preparation of engineering designs, specifications, tender documents and construction supervision. They will be attempting to implement some 128 separate projects spread throughout the governorate, which is substantially more than has ever been undertaken in the past. However, some 60 percent of the proposed program funding is for procurement of pumps, pipes and electric motors. If procurements are handled on a governorate-wide basis in single contracts for similar commodities, rather than on a project-by-project basis, the level of effort required can be reduced considerably and limited technical staff time can be devoted to design, specifications preparation and supervision. The department will require assistance from externally supplied engineers, and will need reliable means of transport for supervising this extensive project area.

Maintenance of the water system has, in the past, been sporadic and incomplete. This responsibility is currently vested in the markaz utilities department units and funded through the governorate housing directorate budget (Bab Thany).

The LE 480 per year allocated during the past three years indicates that this is more symbolic than real. Directorate officials often had to reprogram funds from other budget line

items to cover their real maintenance needs, amounting to some LE 3,000 per year to cover minimum requirements. They indicated that their needs after implementation of planned water projects under BVS might come to LE 5,000 per year. LE 8,000 per year is likely to be a more realistic figure.

The markaz utilities department units are also severely hampered by lack of adequate transport and basic shop tools to carry out their assigned responsibilities for maintenance of the water systems. An appropriate solution to this problem would be provision of four-wheel drive pickup trucks and tools for mobile workshops. The trucks would also serve as basic transport for construction supervision personnel during the project implementation stage.

Finally, water quality surveys will be needed in each of the proposed project areas to determine the most suitable locations for wells and pumping stations.

Roads

It currently takes about one person-week per kilometer to prepare necessary engineering drawings and specifications for road projects of the type to be funded under BVS. As there are 19 engineers and technicians available to the Roads and Bridges Department, or 988 person-weeks per year, to design and write specifications for some 157 person-weeks required for the program, the level of technical support available should be adequate.

However, the level of skills and motivation of the department are visibly lacking in that LE 1.6 million in 1979 and LE 2.5 million in 1980 for road construction from GOE resources are currently planned over the next two years. For this reason it is doubtful that the Roads and Bridges Department will be able to plan and execute the BVS program without outside assistance.

Maintenance of the Existing and Expanded Road Network

The existence and expanded road network will not be maintained if responsibility is left to the discretion of the understaffed and poorly equipped maintenance units of the markaz. As with the other governorates surveyed, the Roads and Bridges Department of Kena should move from current inefficient labor-intensive to mechanical methods of network maintenance. Equipment, consisting of graders and cistern sprayer trucks, should be provided and deployed to each of the markaz for this purpose. In Kena, there are 34 trained equipment operators with little equipment to operate. Twenty of this number could be usefully employed if detailed to the markaz to operate the graders and cistern trucks needed to solve the maintenance deficiencies. Maintenance of the proposed equipment can be carried out at a centrally located workshop, upgraded through provision of modern shop tools and equipment. As elsewhere, there are sufficient numbers of

experienced mechanics in both the private and public sectors to provide basic vehicle and equipment maintenance.

Canal Maintenance

There should be no difficulty in management of the procurement proposed for canal maintenance, but training of the required 20 operators is essential for effective equipment utilization.

SUMMARY AND CONCLUSIONS

Among the three governorates, a wide range of technical and administrative abilities have been observed. In Beheira the governorate-level Roads and Bridges Department, Water and Sewerage Unit and the Housing Department can be expected to provide adequate technical assistance to the BVS program. The Irrigation Department can be relied upon to prepare specifications and to manage procurement of the proposed canal maintenance equipment. The degree and level of support of the markaz units is expected to be limited as they concentrate their efforts in towns. Village councils visited indicated that they needed considerable guidance in preparation of engineering and bid tender documentation.

In Minya Governorate the responsibility for provision of technical assistance for the proposed BVS projects will be

shared by the Roads and Bridges Department and the Mechanical Division of the Governorate Housing Department. However, substantial problems exist in provision of maintenance for current facilities, and steps are being taken to remedy the situation. On the other hand markaz units are expected to provide far more guidance and assistance to the proposed village-level projects. At present there is little technical capability in the village council areas, and the majority of the village councils in Minya will require extensive assistance from the markaz units in the preparation of technical documents and supervision of construction.

In Kena Governorate, the Office of Planning and Follow-Up is theoretically responsible for providing technical and administrative assistance to the BVS program. However, none of the personnel interviewed appeared to have adequate experience with project planning and management. There is also little technical ability at the village level in Kena, making the prospects for a successful program totally dependent upon formation of an active and complete BVS team, the members of which must likely be drawn from outside the governorate.

CHAPTER THREE

ASSESSMENT OF CONSTRUCTION CAPACITY

Meetings were organized in the three governorates studied with small groups of private and public sector construction companies to explain the BVS program construction needs and to invite comments regarding the companies' readiness to handle such needs.¹

In general the local contractors were considered familiar with BVS-type projects, having performed them in the past. According to the contractors, with the governorates cooperating in securing some of the material currently in short supply, such as water pipes, there would be no difficulty in completing the projects planned in the timespan desired. However, none were willing to provide a detailed list of equipment, staff and material resources currently under their control.

It was suggested that whatever equipment was necessary could be brought into the governorate from outside and that their technical staff requirements could easily be met. The governorate officials generally corroborated such claims, indicating that, with advance planning, crucial materials in

¹ This chapter is presented in response to Part C of the Statement of Work.

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short supply can be ordered through government supply channels with a good chance of having them available when needed.

The following data were collected on construction capacity in the three provinces.

BEHEIRA

There is considerable unused private sector water system construction capacity within the governorate of Beheira and nearby areas. Previous invitations to bid have usually elicited five or six technical offers from this sector. Engineers of the Water and Sewerage Unit and with the Abou Homos Plant management revealed that local contractors regularly visit the governorate to inquire about new projects. As funding for new projects has been limited strictly in the past, contractors report that they have far more capacity than the volume of available work. Table 11 is a partial listing of the major available private sector contractors specializing in potable water systems. Projects are usually completed on time and take approximately one year from date of start-up to completion.

TABLE 11

WATER SYSTEM CONTRACTORS CURRENTLY WORKING IN BEHEIRA

<u>Name</u>	<u>Address</u>	<u>Size of Projects Undertaken</u>	<u>Remarks</u>
Awad Mahmoud Kobou Den	42 Abu Rish Damanhour	LE 100,000	Specializes in tanks and pipes
Abd Samot El Ostr	Abu Homos Beheira	LE 100,000	Pipes only
Abdel Moneim Abdel Kader Ibrahim	Mazgid Wasf Tanta	LE 200,000	Pipes only
Samir Suiden	3 Biblos St. Alexandria	LE 200,000	Tanks, pipes
Ali Abdel Hamid Morsi Meguid Tolba	Damanhour	LE 100,000	Pipes only
Ibrahim Mohamed Hassan	32, Abdel Ha- lim El Mazon, Damanhour	LE 50,000	Pipes only
Philippe Wassef	30 Midan Ram- sis Ramsis Bld., Cairo	LE 2,000,000	Offices in Cairo but works ex- clusively in Lower Egypt. Specializes in tanks.
Dessouki Abdel Moneim Ahmed Zoukil	Damanhour	LE 100,000	Tanks only
Mahmoud Ramadan	Midan Sidi Ahmed El-Ba- dawi Tanta	LE 100,000	Tanks and pipes
Mahmoud Ahmed	Haret El Be- lasi Tanta	LE 50,000	Tanks only

MINYA

There are 17 contractors who have worked and are currently working on roads and bridges projects in Minya. These contractors have more capacity than current and projected requirements for road construction, and it is believed by the Roads and Bridges Department and several contractors interviewed that the level of proposed BVS activity can be absorbed without difficulty by the locally available construction industry. The Roads and Bridges Department at the markaz and governorate levels will supplement the private sector with equipment inputs to the extent of its limited availability. A list of roads and bridges contractors currently working in Minya is shown in Table 12.

Private and public sector construction capacity in the governorate is more than adequate to handle the proposed level of BVS financing, as there are 25 contractors specializing in water system construction currently working within the governorate (see Table 13).

TABLE 12

ROADS AND BRIDGES CONTRACTORS WORKING IN MINYA

<u>Name</u>	<u>Status</u>	<u>Annual Volume of Business in LE 000s</u>
El Nil Road Const. Co.	Public	800
Helwan Contracting Co.	Private	500
Hassan Mohamed Hassan & El Manairi	Private	500
Abdel Aziz Mohamedine Ali	Private	500
Gamal Abdel Rahman El Magdi	Private	500
Regay Abdel Malik	Private	500
Tamir Salim Mikhai	Private	300
Adly Youssef Darwish	Private	300
Vagi Abdel Faril Abdel Ghani	Private	300
Mohamed Mohamed Said Habibi	Private	300
Mohamed Hamid Ali	Private	200
Motobali Mohamed Nasr	Private	200
Youssef Nasim Hendy	Private	200
Ali Mohamed Ali El Din	Private	100
Sabet Fam Soliman	Private	100
Mahmoud Abdel Azim	Private	50
Maurice Daniel Gris	Private	50

TABLE 13

WATER PROJECT CONTRACTORS IN MINYA

<u>Specialty and Contractor Names</u>	<u>Annual Volume of Business</u>
1. <u>Pipelines</u>	
Mahmoud Saber Saad	LE 250,000
Ahmed Esmail Dasoughi	20,000
Abdul Aziz Abdul Jarad	50,000
2. <u>Wells</u>	
Nassef Beyaree & Kamel Maslahee	700,000
Abdul Hadi Mohamed Sadaree	20,000
Hejko Engineering Company	100,000
3. <u>General Construction for Pumphouses</u>	
Abdul Rahab Hamed	1,000,000
Saad Ghandeel	50,000
Naser Construction Company	Large
Hejko Construction Company	Large
4. <u>Wells, Pumphouses, Pipelines</u>	
Kamel Abdul Rahman	100,000
Hamdi Mohamed Saleh	250,000
Esmail Mohamed Daher	50,000
5. <u>Engines or Electrical Units, Pumps</u>	
Mohamed Mahmoud Salama	200,000
Anwar Ghods Beharee	1,000,000
Mechanical Company	200,000
Haj Hussein Gaber & Sons	100,000
Etco Egyptian Engineering Co.	100,000
Middle East Electrical Works Co.	100,000
Technical and Engineering Contractors	100,000

KENA

There is a large supply of contractor capability available to the governorate of Kena for water system construction. These contractors, shown in Table 14, have more capacity than was needed by funds available in the past, and it is expected that most of the proposed BVS projects will be implemented by contract and that there is sufficient contractor capability in Kena. Interviews with some of the contractors fully support this conclusion.

Table 15 sets forth the roads and bridges contractors currently working in Kena. Road contractors that were available for interviews stated that they would have no difficulty in completing the modest program proposed of 30 km. of new construction and 127 km. of upgrading of existing roads.

TABLE 4

CONTRACTORS SPECIALIZING IN WATER SYSTEM WORK IN KENA

<u>Name</u>	<u>Type</u>	<u>Project Size Undertaken in LE</u>
Arab Contractors	Public Sector	No limit
Egyptian Construction Co.	Public Sector	No limit
Industrial and Engineering Project Co.	Public Sector	No limit
Zafhlool Fouad and Mohamed Abd El Mageed	Private Sector	LE 500,000
Abd Alla Khalaf	Private Sector	LE 500,000
Mohamed Abd El Naby Youssef	Private Sector	LE 200,000
Hassan Osman	Private Sector	LE 200,000
Thabet Gragyous	Private Sector	LE 200,000
Abd El Aziz Abd El Gawad	Private Sector	LE 200,000
Fayez Tanyous	Private Sector	LE 200,000

TABLE 15

ROADS AND BRIDGES CONTRACTORS WORKING IN KENA

<u>Name</u>	<u>Type</u>
Arab Contractors	Public Sector
Nile Co. for Roads and Bridges	Public Sector
Nile Co. for Construction	Public Sector
Abou El Magd Ibrahim	Private Sector
Yehya Ibrahim Ahmed	Private Sector
Mohamed Abd El Latif	Private Sector
Sayeed Mohamed Ali	Private Sector
Gad El Karim Abd El Rady	Private Sector

CONCLUSION

Construction capacities and work sites in all three governorates were investigated by visiting contractors. An asphalt making setup was visited in Beheira, where sand, gravel and tar were being mixed and transported to nearby sites. A well construction project was visited in Minya. However, construction companies were generally reluctant to open their records or show their shops and equipment. Local officials of the governorates explained that BVS construction requirements are often met by shifting capacities from other areas when necessary, and that contracts can be broken into components, thus bringing in still other contractors not listed. Many contractors present at the meetings claimed that BVS needs are not so extensive as to create any shortfalls.

The field team concludes that existing construction capacity, if not overtaxed by beginning BVS programs in all governorates simultaneously, is adequate to perform the core village-level infrastructure projects proposed by this project.

CHAPTER FOUR

FINANCIAL ARRANGEMENTS, CONTROL AND AUDITING

Fiscal procedures for handling public funds are followed uniformly in all governorates, and in the three governorates studied no significant deviations was observed. Fiscal controls were observed and necessary audits were conducted regularly. At all levels of local government, books were checked and documents and vouchers were found to be in order on items of expenditure investigated at random. The team visited many village banks where BVS funds are expected to be deposited to village council accounts.

FISCAL PROCEDURES

Procedures and requirements for the fiscal administration of village-level development projects are established in Law 43 of 1979.¹ According to the statutory provisions of the law (Article 70), a special account shall be opened in each village bank, called the "Account for Services and Local Development" (to be referred to as the service account). Deposits to this account are derived from local fees collected by the village council, revenues derived from village income-producing projects,

¹ Law 43 supersedes Law 52 (1975), Article 73, which required village councils to obtain approval of the markaz and the governorate for projects to be funded by the services account.

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revenues derived from village-owned buildings, revenues of the village cooperative association, and grants to the village from all sources.

According to Article 72 of Law 43, funds deposited into this account may be used for:

- Financing productive projects and local services that have been approved by the village council;
- Completing village-level budgets of the governorate projects requiring additional funding; and
- Raising the standard of local services.

Funds deposited into and disbursed from the service account are subject to the general audit system of the Arab Republic of Egypt, and all funds so deposited remain at the village level until disbursed. According to Article 72 of Law 43, the chairman of the village council is invested with full discretionary powers for the fiscal administration of the village accounts, similar to those powers that are exercised by a department head.

In accordance with the legal base established in Law 43, and actual practice in Beheira, the chairman of the village council is empowered to advertise, negotiate and execute contracts for village-level service projects that have been approved by the elected village council. Under current limitations the village council chairman is authorized to negotiate and

disburse monies in payment for services financed from the service account, up to LE 5,000. Contracts between LE 5,000 and LE 50,000 require approval of the markaz chairman. The only general restriction on disbursements is that payments are limited to the total amount available in the fund. Project selection and disbursement approvals are not required from any higher authority. Funds from the account are released from the village bank upon the signature of the village council chairman, with the countersignature of the village financial affairs division chief.

As the village bank is only authorized to keep up to LE 10,000 in cash on hand at the village level, required disbursements exceeding this amount must be drawn from the village account in the bank at the markaz level. To withdraw funds from village accounts outside the village, 24 hours advance notice must be given. Funds can either be drawn in cash or by check from the external banks upon signature of the village council chairman and endorsement of the village bank.

Prior to initiating disbursements, the village finance unit prepares Form 50 (pp. 122-123), certifying availability of funds in the accounts, correctness of the invoice to be paid, entry of the disbursement in the village account books, and showing check number and date.

Form 50

ARAB REPUBLIC OF EGYPT

Form for Endorsement of Disbursement

(A) Invoices Particulars Administration _____
 No. _____ LE m/ms Date No. Division _____
 Dated Seal _____ Sum due to _____
 Reviser _____ by virtue of { attached applications on:
 Division Chief _____ Checked and found correct to be submitted for
 197 _____ Total _____ administrative approval and disbursement of the
 amount by:
 { Voucher on _____
 { Check on the Central Bank in _____
 Check abroad
 To be drawn in the name {he who has the right to
 of { or:
 To be sent to him at the following address:

Dated Seal	Administrative Endorsement and Kind of Deduction		No. of Attachments
	Kind of Deduction	Particulars	
	LE m/ms Div. Branch Section Item		
Checked _____	Total _____		
Chief of Administration	LE m/ms	Particulars of Amounts Deducted	
		Ordinary	Additional Stamp duty on Signature
	Stamp duty	LE m/ms	LE m/ms m/ms
	Net Amount required to be disbursed		

- (1) Acknowledgment of the Clerk of Record of Distrains & Waivers _____
 Signature _____
- (2) Acknowledgment that the amount is correlated with the credit allocated and that the concerned item is permissible and has not priorly been disbursed Sign. _____
 or that the amount added in a current account _____ on _____
 revenues account _____ Signature _____

Form 50 (Cont'd)

Dated Seal (C) Entered in the Register No., D5 under No. _____ Signature of the Clerk in charge of the Register _____

Checked on _____ 197 _____

Deputy Accountant _____

(Marks of the Controller and Administration Chief)

Approved withdrawal Check _____ Voucher _____

Director or Chief Accountant _____

on _____ 197 for the sum of _____

(D) (1) No. of the document (is the number of registration in the book No. 224) _____ Signature of the Clerk in Charge _____

(2) Entered in the accounts books _____ Signatures of Employees of Deletion _____

(3) withdrawal Check No. _____ Signature of Clerk in charge Voucher _____

Dated Seal

(4) Entered in the Register of Checks under No. _____ Money-Orders Signature of Clerk in Charge _____

(5) Entered in the list of Checks under No. _____ Money-Orders Signature of Clerk in Charge _____

(6) Received Check Signature of the Applicant Voucher _____ or Clerk of Shipment _____

Date _____ 197

FISCAL CONTROL AND AUDIT

Audits are of the post-audit rather than pre-audit type, so there are no audit constraints to disbursement. At the village level, payments are reviewed for correctness and conformity to contract; no pre-reviews are required at higher levels prior to disbursement. Audits are performed at three levels. These are the governorate finance unit, the Ministry of Finance governorate representative, and the Central Organization for Accounts of the National State Council. Auditors review the budgets, all records of receipts and disbursements, invoices and vouchers and bank statements of all accounts to check for accounting errors, legality of disbursements and correctness of procedures followed. The finance unit of the governorate prepares a monthly audit and provides continuing guidance to the village financial affairs division in preparing and maintaining records.

The Ministry of Finance representative conducts frequent and annual audits, and the General Organization for Accounts conducts an annual audit. Copies of all audits and findings are provided to the village council and to the governor. Any errors detected must be examined and corrected at the governorate level. In the event of discovered malfeasance, the village council and governorate must provide a full report and legal action is taken as appropriate. Financial regulations

governing contracts and procurements for the Arab Republic of Egypt are detailed in the GOE Handbook on Procurement and Contracts, prepared by USAID/Cairo. All financial records remain at the village level.

These fiscal controls and auditing procedures have been reviewed for their applicability to the proposed AID-financed Basic Village Services program in the governorates. The services account meets the fiscal administration needs of the BVS program. The system is understood and used by the village councils of the governorates, and provides for expeditious disbursement of program funding while offering an adequate system of safeguards and controls. Use of the services account for AID-funded programs offers the added advantage of promoting fiscal management autonomy at the village level.

Discussions with officials of the governorates and villages, and with ORDEV at the central and governorate levels, revealed that AID-supplied BVS funds would be deposited in the Central Bank of Egypt. Funds earmarked for each governorate would be allocated by the Interagency Committee to the governorates' Accounts for Services and Local Development and reallocated in check form by the governorate directly to the services accounts in the village banks. It is clearly understood, both in statutory regulations and according to the officials involved, that funds will pass directly to the

villages and be administered by the villages without supervisory overview from the markaz, except for the audits already described.

While AID funds will be managed concurrently with other funds in the village Services Accounts, transactions involving these funds will be listed separately in the village financial records. Village councils have full authority to advertise and let contracts for approved projects costing up to LE 5,000. For projects exceeding this level of funding, approval from the markaz is required prior to contract award. All contracts, once approved by the village council, and the markaz for larger projects, are negotiated and signed by the village council chairman and administered directly by the village executive council. Payments for all jobs, small and large, are disbursed directly from the village bank.

In the case of intervillage council area projects (i.e., roads serving several council areas), contracts are usually let at the governorate level through the appropriate technical office. Disbursements to the contractor are then made by each of the concerned village banks for the segment of the project within the council area boundary. In the proposed road programs to be financed by BVS, approximately 15 percent of the projects are in the intervillage council area category, and 85 percent are in the intravillage areas.

SUMMARY OF MONTHLY AUDIT PROCEDURES

The audit procedures established at the governorate, markaz and village levels for maintaining accountability of funds disbursed under the BVS program are:

- All expenditure vouchers are examined to ensure that quantities purchased are consistent with bills of quantities in engineering designs, and that vouchers have been stamped and contain no erasures, in accordance with legal requirements.
- Village account books are reviewed to ensure that all expenditure vouchers have been entered and that books are serially numbered and all pages are officially stamped.
- All project records are reviewed, including the contract, start-up dates, previous disbursements and disbursements during current month, as well as consistency of expenditures with project budget and percentage of completion to date.
- The cash book is examined to determine cash on hand, verification of this amount, and general review of expenditures and receipts.

Any deficiencies or questions are noted in the report and require response and/or remedial action on the part of the village council.

CONCLUSION

The review of existing fiscal regulations, controls and audits shows that the procedures and their implementation are

satisfactory for proper handling of BVS funds. The only restriction that needs modification is the limit on the village councils' contract approval authority, which should be raised from LE 5,000 to LE 20,000 to correspond with typical contract values for the BVS projects.

CHAPTER FIVE

PROJECT BUDGETING AND IMPLEMENTATION

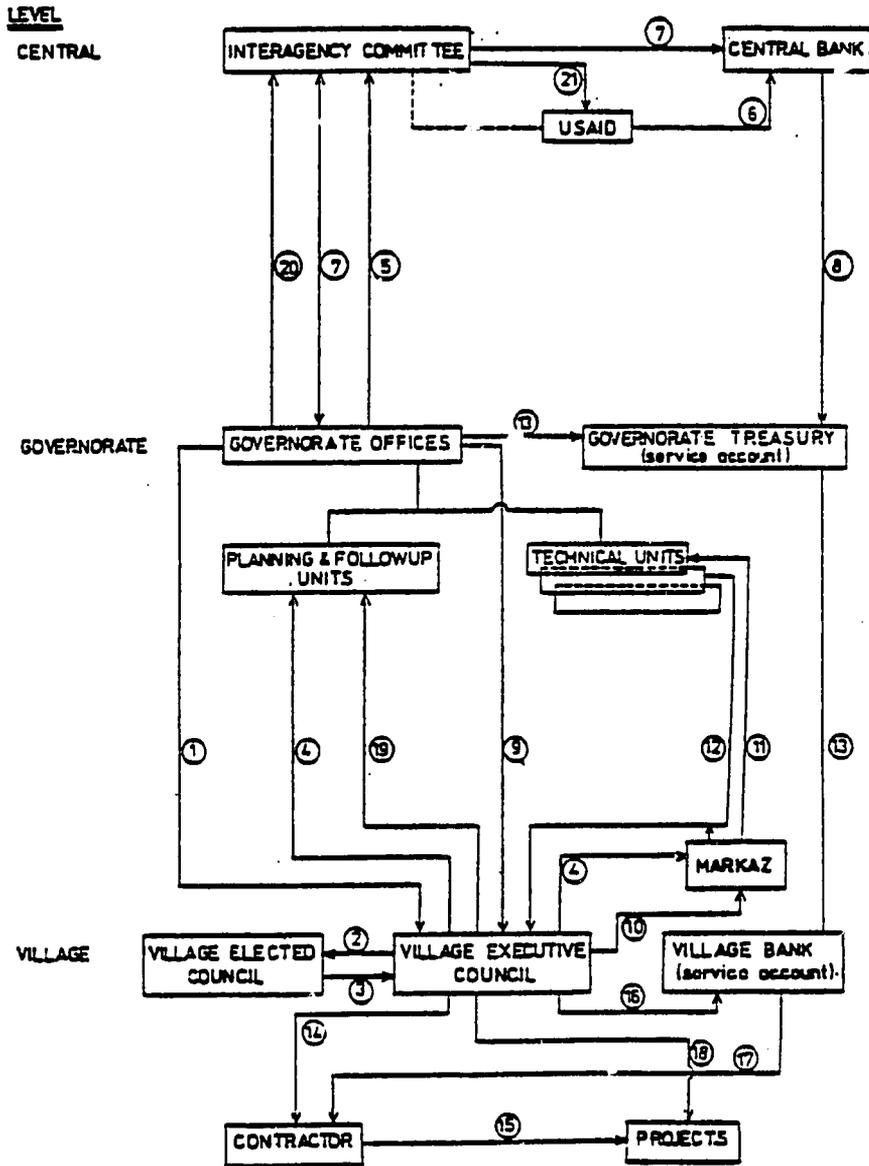
This chapter provides the outline of a simple system, based on forms and procedures already used in Egypt, for identifying, appraising, reviewing, approving and implementing village infrastructure projects. The steps outlined were submitted to USAID and ORDEV officials in Cairo, and their comments were incorporated in this version. In addition, the standard practice used previously in Beheira Governorate for village-level projects was examined, and those initial project start-up steps are given as a format that seems to work well.

PROJECT SELECTION, BUDGETING, IMPLEMENTATION
AND MONITORING FOR BVS IN GOVERNORATES

A flow diagram showing procedures for planning and financial management of village-level projects is presented in Figure 15. The steps that are followed in the process are:

1. The governorate sends priority parameters and funding level based upon pounds per person to the village executive council.
2. The village executive council prepares a list of proposed village priority projects and submits it to the elected village council for approval.
3. The elected village council approves and communicates its approval to the executive council.

FIGURE 15
PROJECT SELECTION IMPLEMENTATION AND
MONITORING PROCESS FOR BVS IN GOVERNORATES



EGYPT: BASIC VILLAGE SERVICES
 PROGRAM IMPLEMENTATION DIAGRAM

4. The village priority list is sent to the Planning and Follow-Up Unit of the governorate, with an information copy going to the markaz.
5. The governorate consolidates all village priority lists and sends them to an inter-agency committee under the chairmanship of ORDEV. The committee and USAID/Cairo approve.
6. USAID deposits the needed funds in the Central Bank.
7. ORDEV authorizes the Central Bank to transfer approved BVS funds to the governorate service account and formally notifies the governorate of approval.
8. Funds are transferred from the Central Bank to the governorate service account.
9. The governorate officially notifies the village executive council of interagency approval.
10. The village council requests markaz assistance in preparing engineering drawings, bills of quantities and tender specifications as required.
11. The markaz passes on requests for technical assistance to governorate-level technical units as required.
12. Technical documents are prepared by governorate or markaz technical units and sent back to the village executive council.
13. Upon completion of engineering documents and bid specifications by the designated technical unit, the governor authorizes a transfer of funds to the service account in the village bank.
14. The village executive council advertises the tender, evaluates bids with assistance from the markaz or governorate as required, and awards the contract.

15. The contractor mobilizes and executes the project.
16. The village council authorizes progressive payments against contractor invoices.
17. The village bank disburses funds to the contractor.
18. The village executive council monitors construction progress.
19. The village executive council sends monthly status reports to the governorate Planning and Follow-Up Unit showing details of fund disbursements for each project and percentage of completion.
20. Monthly and quarterly status reports are sent by the governorate to the interagency committee.
21. The interagency committee transmits copies of monthly and quarterly status reports to USAID.

Basing allocations on pounds per capita as the guiding formula for BVS programs has to date been agreed upon by ORDEV, USAID and governorate staffs as a simple, easy and "fair" method of allocations. It is simple to apply and theoretically allows the program benefits to spread to everyone in the rural areas of the governorates that are selected for BVS. The role of the interagency committee in this process is somewhat contrary to the decentralization attempt and is expected to slow the process. However, the committee seems to fulfill the needs of USAID and the GOE to be actively involved in the program and was therefore left in the process.

Implementation of the BVS program in the governorate is expected to follow the sequence outlined in Figure 15, with coordination of the program by the governors. The coordination procedures in Beheira, where the governor is expected to be actively involved, can be useful in other governorates as well, and is detailed below.

COORDINATION PROCEDURES WITHIN GOVERNORATES

It is useful to remember that the Nile Valley is compact, distances are short, and continuous communication exists among villages, markaz, governorates and Cairo. Upon notification by the Interagency Committee of BVS project approval, the governorate might follow the standard practice used previously for village-level projects in Beheira. Village council and markaz chairmen are convened at a general meeting at governorate headquarters. Technical division heads (i.e., housing, roads and bridges, water and sewerage and irrigation) also attend. The governor (or his appointed representative) chairs the meeting and coordinates all phases of project planning and execution. The convocation assesses the technical requirements of all approved projects and determines which level of local government should be responsible for preparing the engineering designs, bills of quantities and bid tender specifications for all approved projects. The village councils are encouraged to prepare their own technical documentation with assistance as required from the markaz and governorate technical staffs. Village council chairmen identify their

technical assistance requirements and the governor orders the appropriate technical unit of the markaz or governorate to complete the technical studies for each project, specifying a deadline, usually the shortest possible. When a designated unit does not have sufficient qualified personnel to accomplish its assigned technical support work, the governor obtains personnel for the tasked units from one or a combination of sources:

- Mandating a detail of engineers and technicians from other governorate offices;
- Asking the chairmen of central authorities (i.e., roads and bridges, and potable water) to assign engineers temporarily to work under the direction of the counterpart governorate technical units for a specified time to complete specific tasks;
- Temporarily hiring full-time employees of Arab Contractors, Nasr Construction Company, Sami Saad Company or Hassan Heba Company. All of these public sector construction firms are giants in the Egyptian construction industry, with over 500 to 1,000 full-time professional employees, and do an annual volume of business ranging from four million to several hundred million pounds.
- Temporarily hiring engineering professors from the universities in Alexandria and Cairo.
- Letting short-term contracts from among the several hundred nationwide Egyptian consulting firms.

The governor of Matruh states that, because of the favorable central location of the governorate between Cairo and Alexandria, he has no difficulty in obtaining all of the

technical assistance he requires to prepare documentation for specific projects. The only constraint is the availability of funds for procuring help from these sources of professional expertise.¹ While temporary technical help is available in unlimited numbers, subject to the availability of funds, the governor stressed that it is a difficult problem to obtain additional permanent staff from central organizations.

In the process of executing village-level projects, governorate or markaz technical units, temporarily augmented from external sources, are instructed to go to the villages and work directly with the village councils in their preparation of the required technical documentation. Monitoring of project progress is close and involves all levels of local government. All markaz chairmen are required to meet every two weeks with the village council chairmen to discuss project progress and implementation problems and find solutions where required. The governor also meets biweekly with all markaz chairmen to discuss the status of each project and to find solutions to problems that require governorate-level intervention.

Five days prior to the end of every calendar month, each village council is required to submit a project status report to the governorate Planning and Follow-Up Unit. The report is submitted in the format shown in Figure 16.

¹ Cost estimates for all proposed BVS projects in Beheira include 2 ½ percent of construction costs for temporary engineering consulting services.

FIGURE 16

PROJECT STATUS REPORT CURRENTLY USED IN BEHEIRA

Project Name	Total Budgeted Cost	Completion to Date		Funds Budgeted for current year	Actual Current		Cost of Work	
		% complete	Amount		%	Amount	Total	%

At the end of the month the governor convenes a meeting of all markaz chairmen, village council chairmen and technical division chiefs, and reviews the status of every project. Instructions for speeding up the work are issued as appropriate.

CONCLUSIONS

The steps outlined here have been taken from procedures now used within the Beheira governorate. Other governorates are neither staffed nor organized to pursue this level of coordinated effort, and will need both time and training before the implementation of the identified procedures will be possible. However, the model is now working in Egypt. Given resources and staff a team working under the authority of the governor, with a clearly defined set of tasks, as well as training, and backstopping by technical assistance, should be able to maintain the necessary coordination that is critical to the success of the BVS program.

ANNEX A

PROPOSED BVS PROGRAM IN THE STUDY AREA

ANNEX A
PROPOSED BVS PROGRAM IN THE STUDY AREA

INTRODUCTION

Prior to the arrival of the study team, other consultants under contract to USAID/Cairo had approached the governorates and asked for lists of projects under the still-to-be-designed BVS program. When the present team arrived, village lists were available, which provided a basis for the team to assist the governorates in formulating an overall program. This annex reports on the details of the program by governorate.

THE PROPOSED BVS PROGRAM IN BEHEIRA

Proposed BVS Projects

The Governorate of Beheira has made a detailed assessment of its village development needs and has compiled a list of five major categories of projects. These are unpaved rural roads, canal dredging, potable water systems, solar energy and biogas projects.

Roads

El Beheira has 1,030 km. of paved roads (including the Cairo-Alexandria road and roads to new irrigation projects), 1,550 km. of unpaved roads, and 100 km. of canal berms used as roads. Climatic conditions (winter rains) make it necessary

to top all roads with a layer of graded gravel, at least 15 cm. thick after rolling to assure all weather transitivity. Road graders and cistern trucks are urgently required to prevent unpaved roads from degrading. Unit cost estimates used in the governorate are as follows:

- Road elevating to 50 cm. above field level, LE 6,500/km.
- Road elevating and widening to 6 m., LE 7,000/km.
- New access roads LE 8,500/km. (including LE 2,000/km. right of way).
- Lining canal sides to prevent erosion of adjacent roads LE 8/m².

Altogether 410 km. of new unpaved roads are proposed for BVS funding at a cost of LE 1,688,000 plus LE 630,000 for graders and water trucks to be used in maintaining the new roads.

Maintenance of Farm Canals and Drains

After a review of canal maintenance, the following description of maintenance requirements in Beheira as described by Dr. Itil Asmon was applicable.¹

Beside the 3,200 km. of main canals and drains in El Beheira Province, which are maintained by the Ministry of Irrigation, there are about 20,000 km. of farm canals and drains. The latter need an annual cleaning plus an annual grass cutting. The canals are dried in January - February and the cleaning performed by hand;

¹ I. Asmon, "Extension of the Basic Village Services Program to Qena, Minya and El Beheira Governorates," report prepared for USAID/Cairo, May 1979.

the grass cutting is carried out during the irrigation season in June - July. At present, there reportedly exist difficulties in finding labor for the comparatively difficult work of canal cleaning at the current wages of about LE 1.50 per day, since local labor has alternative agricultural employment. Many canals and drains are poorly maintained owing to labor shortage. Consequently, government officials and elected village council members place a high priority on the acquisition of implements for mechanical clearing of farm canals and drains.

Public canals and drains are maintained by the General Irrigation Company for Mechanical Clearing and by the Beheira Corporation, under contract with the Ministry of Irrigation. The former company has a volume of operations amounting to about 20 million m³ dredged annually in Egypt, of which 3.5 million m³ in El Beheira Province. The (Alexandria-based) Beheira Company has a volume of operations totaling about 5.5 million m³ annually, mostly in Beheira Province. These companies, although in the Public Sector, apparently operate much like private profit-making enterprises. Reportedly, they work only for cash, charge high prices (0.26 LE/m³, compared with operation, maintenance and capital costs of 0.10 LE/m³), pay high incentive wages (on the order of 150 LE/month per operator, compared with a base salary of about 30 LE/month), keep their equipment in good condition and are able to import additional equipment as necessary. Farm canals and drains are maintained by the village level agricultural cooperatives (which hire the labor and charge the members' accounts LE 1.5 per feddan), or by the farmers individually. Cost of hand clearing: estimating an average of 3 m³ daily per worker at a daily wage of LE 1.5, the cost of hand cleaning is on the order of 0.50 LE per m³.

The public canals and drains are maintained with heavy equipment, such as the Poclign excavator with a 0.65 m³ bucket or crawler mounted equipment. For the larger farm canals (over 2 m² section) the Soil Improvement Service of El Beheira has introduced eight months ago three JCB excavator/loader units, with satisfactory results. They are 2.45 m. wide, have a 5 m. long arms with an approximately 0.20 m³ bucket, and can excavate to a depth of 3.5 m. For

the smaller farm canals and drains, the Agrarian Reform Directorate of El Beheira has recently imported two McConnel "power arm 6" backhoe excavators. This backhoe is mounted on a 50 to 65 HP agricultural tractor and is powered by the tractor engine. Its current cost is about LE 5,000 (including attachments for canal clearing, trenching and ditching). The arm is 4.2 m. long (a 4.9 m. long arm is available) and can reach to a depth of 1.7 m. The "power arm" backhoes are robust all-hydraulic implements which require comparatively little maintenance; they are mounted on agricultural tractors, which have existing maintenance systems. On the other hand, the excavator/loaders require specialized maintenance; their satisfactory operation will necessitate a special maintenance workshop at the governorate level.

Of the 20,000 km. of farm canals and drains in El Beheira Province, about 15,000 km. can be mechanically cleaned. Estimating an average cleaning requirement of 2000 m³ per km. every three years implies an excavation volume of 10 million m³ annually. Unlike hand clearing of canals, mechanical clearing can be carried out year-around. It is expected that the bulk of canal clearing will be performed by backhoes mounted on existing agricultural tractors, which at present are employed only about 4 months of the year. At the rate of 100 m³ per day, a backhoe-equipped tractor could excavate about 15,000 m³ if it works 6 months annually. Thus, the potential requirement for a fairly complete mechanization of farm canal maintenance in El Beheira Province amounts to over 500 machines. Consequently, deployment of 57 units, as currently proposed, will have a perceptible but only a partial effect on the problem of canal maintenance.

It is proposed that control of the implement be at the markaz level: this is scale-appropriate for the tractor-mounted backhoes. However, ownership of tractors by local government units has often been beset by problems of ineffective management, inadequate maintenance and low profitability.

A recent study prepared by Louis Berger International, Inc.,¹ to evaluate the technical and economic feasibility of providing canal maintenance equipment to the public sector dredging companies has shown a direct correlation between agricultural productivity and water availability in cultivated areas. In light of the conclusions in the Berger report, USAID has signed a \$30,000,000 loan agreement with the Ministry of Irrigation (AID Loan 263-k-040) to upgrade the general maintenance of primary and secondary canals throughout Egypt. Since the tertiary and quaternary canals are not included in this program adequate maintenance of the farm-level network is essential if full productivity is to be realized. Labor-intensive cleaning practices are no longer adequate as the rural labor supply is dwindling due to rural-urban and interregional migration. Capital-intensive canal cleaning at the village level would appear to be a viable solution, provided that tools, workshops and operator training complement any procurement package. Altogether 41 track-type backhoes, costing LE 18,000 per unit, and 16 hydraulic bucket attachments costing LE 5,000 per unit are proposed for BVS funding in Beheira.

Potable Water Supply

From the Asmon report, it is noted that 1,863,834 of the 2,517,292 inhabitants of Beheira Governorate (1976 census), or

¹ Louis Berger International, Inc., Canal Maintenance Project, report to the Ministry of Irrigation, Arab Republic of Egypt, under AID Loan # 263-k-040, May 1977.

74 percent, are rural dwellers. These reside in 414 villages belonging to 63 village councils, which are organized in 12 markaz. Of the 285,737 rural families, 75,953 families, or 27 percent, do not have access to piped water. Groundwater is potable only in the southernmost corner of Beheira Governorate. Thus over 79 percent of water consumption depends on filtration of surface water. The northern part of the governorate is served by three systems in the General Organization of Potable Water (Abou Homos, Fawwa and Buseili), with a total capacity of 98,000 m³/day. Three other systems (Shubra Khit, Mahallet Abu Ali and Kafr El Dawar), with a total capacity of 79,000 m³/day, are under construction. There are also three municipal systems (Damanhour, Kafr El Dawar, and Kom Hamada) with a total of 32,000 m³/day. The rural areas of southern Beheira are served by 80 small groundwater systems with a total capacity of about 23,000 m³/day.

The IBRD has sponsored a detailed study of provincial water requirements in Beheira, prepared by the consulting firm of Binnie and Taylor, as a basis for future water supply projects in Beheira and Kafr El Sheikh.¹ As the governorate expects considerable IBRD investment in potable water projects in Beheira, the program for BVS funding is a modest LE 318,000 to extend existing systems to include service to outlying attachment villages that can be reached economically through

¹ Binnie and Taylor, "Provincial Water Supply in Egypt," preliminary report prepared by IBRD, March 1979.

installation of branch pipelines and installation of simple booster pumping units. For a few areas not reachable by extension of existing networks, pilot projects in solar desalination of brackish water, costing a modest LE 150,000, are contemplated.

The solar desalination projects proposed are small-scale units located in the northern sector of the governorate. The targeted populations live in small isolated villages without fresh water and too far away to be served by the extension of existing systems. These 60 settlements are located about three to five kilometers from each other. Table A-1 gives the proposed basic parameters of the solar desalination units:

TABLE A-1

BASIC SOLAR DESALINATION PROJECT PARAMETERS

Number of Settlements	60
Houses per Settlement	10
Number of persons per house	8
Fresh water required for household facilities in liters	80
Solar energy desalination module type	Greenhouse
Area of the saline basin of the still m ²	25
Estimated average production of fresh water per module in liters per day	75-100
Place of manufacture	Egypt
Design of the prototype	Sel and others
Material used for the project	available in Egypt
Maintenance and repair for each module	will be financed by village councils

Biogas

The final category of projects proposed in Beheira will allocate LE 150,000 for small village-level biogas units to generate energy for lighting and cooking. Project models for these units were developed from prototype designs used in the People's Republic of China and India, composting animal and human wastes to generate methane gas, which in turn is distributed from small collection centers to individual households. Composted material from which methane has been extracted is then added to agricultural soil for fertilization. The basic cost of a unit is LE 5,000 and can be constructed from readily available local materials.

The proposed budget for BVS financing in Beheira is shown in category in Table A-2. Details of the proposed road and water projects are included in the Arabic language material collected by governorate and turned over to USAID/Cairo.

BVS Project Selection Procedures in Beheira

The governor convened a meeting of all village executive council chairmen in May 1979, and briefed them on the broad outlines of the program and general priorities of the governorate. The governor then circulated a letter to all village councils, reiterating the general priorities, informing them of the funding level available to each village council area.¹ and

¹ Funding is based upon a per capita distribution of the LE 3,5 million to be allocated to the governorate.

TABLE A-2
LIST OF PROPOSED BVS PROJECTS IN BEHEIRA

Markaz	No. of Vill.	Population 000	Roads	Canal Maintenance	Water	Solar Energy	Bio-gas
Damanhour	6	227	224	108	20	15	15
Kafr El Dawar	7	268	297	105	-	20	15
Itay Barud	8	197	139	95	40	25	15
Rashid	3	71	60	15	120	5	10
Delengat	4	124	110	54	43	10	10
Shubra Khit	4	120	124	64	20	5	15
Hosh Isa	3	55	50	28	-	5	10
Abou Homos	7	199	168	126	-	15	15
Rahmania	7	56	60	36	20	5	10
Abu Matamir	3	116	110	33	-	5	10
Mahmoudia	3	102	69	54	20	5	10
Kom Hama	11	319	277	123	35	35	15
			1,688	841	318	150	150

providing unit cost guidelines. Village councils were asked to formulate their requests and priorities from among the general guidelines and forward them to the governorate with estimated costs. Village executive councils prepared the tentative list of council priorities and submitted them to the councils for approval. The approved village council priority lists were sent directly to the governorate with an information copy to the markaz.

THE PROPOSED BVS PROGRAM IN MINYA

The Basic Village Services program proposed for Minya Governorate has two main components. LE 1,964,500 have been programmed for village drinking water projects, and LE 1,241,500 for village roads. It is proposed to allocate LE 380,000 to purchase graders and water trucks for road construction and maintenance, and LE 240,000 for procurement of trucks and tools to be used in maintenance of the water projects. These general priorities have been established by the governorate through a survey of existing potable water infrastructure and road requirements within nine markaz and 57 village councils units of the governorate.

Proposed BVS Projects

Roads

The current roads system in Minya Governorate includes 110 km. of paved roads (excluding the Cairo-Aswan link) and 1392 km. of unpaved roads. Many rural areas of Minya are currently without adequate intravillage council area and farm-to-market communications. Altogether 120 km. of new unpaved rural roads are proposed for BVS funding. Current unit costs calculated by the Roads and Bridges Department of Minya Governorate are LE 10,000/km. for unpaved roads constructed to 50 cm. above field level with a width of 6 meters. For asphalt roads

constructed to a width of 5 meters, at a thickness of 25 cm. with a double asphalt layer, the current cost is LE 30,000/km.

In prior years road construction and repair have been labor intensive, but increasing trends in migration of the productive rural labor force to urban areas or to other Middle East countries have so depleted the available labor force that labor-intensive construction and repair methods are no longer efficient or practical. Construction is currently carried out by motor graders and the use of tractor-driven tank trailers of 3 to 4 m³ capacity with pump and sprayer. The current cost of the motor graders of the type used in Minya is LE 50,000 while the cost of the tank truck is between LE 15,000 and 20,000. The amount of funding requested from BVS for rural road projects is LE 1,241,500 and LE 380,000 for four motor graders and nine water trucks.

Potable Water Projects

The Asmon survey noted that 139,320 rural families out of a total 329,269, or 42 percent lack potable water. The governorate has 216 rural water systems in various states of repair, with a total delivery capacity of 147,000 m³/day. The existing systems, two of which were examined by the field team during its field visit to Minya, are of the standard Government of Egypt design prepared by the Central Water Authority. These

consist of elevated concrete storage tanks into which ground-water is pumped by diesel driven units, and from which water is distributed by means of steel and concrete pipes and drawn from public taps at various points along the network. The condition of the existing rural water systems in Minya is visibly poor. Many of the taps are broken and permanently running, while some taps are missing altogether. Most of the diesel prime movers are old and experience frequent breakdowns requiring stopgap overhaul and parts replacement. The total level of requested BVS funding for rural water systems in Minya is LE 1,964,500 plus LE 240,000 for transport and workshop equipment.

A complete list of the proposed BVS program is shown in Table A-3.

BVS Project Selection Procedures in Minya

On May 14, 1979, a circular letter was sent to all village councils requesting them to rank in descending order of priority their proposed BVS projects according to the governorate priorities of potable water systems and unpaved road. The governorate priorities were determined from an earlier survey of village needs, which showed that 60 percent to 70 percent of the villages require potable water and that 30 to 40 percent require unpaved roads. In the same circular, villages were provided unit cost information and information concerning the level of

TABLE A-3
 SUMMARY OF PROPOSED BVS PROGRAM IN MINYA
 GOVERNORATE
 (in LE 1000)

Markaz	Village Water Projects	Village Road Projects	Markaz TOTAL
El Adwa	119.0	5.0	124.0
Beni Mazar	258.0	114.0	372.0
Maghabha	158.5	114.5	273.0
Mataee	126.0	61.0	187.0
Samalu	261.0	216.0	477.0
Minya	281.0	150.0	431.0
Abu Qurqas	256.0	188.0	444.0
Malawi	344.0	242.0	586.0
Deiramoos	161.0	151.0	312.0
TOTAL	1964.5	1241.5	3206.0

Note: The details of each markaz projects are provided in the file that has been left with USAID/Cairo.

funding that each village council area would receive. The budget formula was determined by dividing the LE 3,000,000 to be allocated to the village by the total village population. The per capita allocation for each village thus arrived at was LE 1,847.

Concurrent with the dispatch of the circular, the BVS program priorities and general parameters were discussed in meetings of the governorate's elected council (in which all village councils are represented). The markaz executive councils also held their own meetings of village council chairmen to explain and discuss the BVS program.

Village elected councils prepared lists of project priorities from among the general guidelines and parameters and submitted them to the village elected councils, which forwarded the village lists and costs to the markaz chairmen. The markaz chairmen convened a second meeting of the village council chairmen to review the village project lists to ensure that the proposed projects were within the general governorate guidelines and priorities as presented in the circular and explained during previous meetings of the governorate elected councils and the village council chairman at the markaz.

During this entire process, the ORDEV chief in the governorate attended all meetings and visited village council areas to ensure that local officials understood and adhered to the general priorities and guidelines.

Completed lists were forwarded by the markaz chairmen to the general secretary of the governorate for final review and approval. The markaz and governorate officials tended to approve all projects that were within the general guidelines and governorate priorities.

THE PROPOSED BVS PROGRAM IN KENA

Proposed BVS Projects

Potable Water

According to statistics compiled in 1976, of the 264,328 rural families in the governorate, 57 percent are without piped potable water. Of the families receiving piped water, many have unreliable supplies because the systems serving them are overloaded due to inadequacies in the number and condition of available wells, pumping equipment and storage tanks. New wells fitted with pumping equipment have to be added to existing networks in many areas to satisfy existing system demands.

Another problem facing Kena is the difficulty in finding suitable groundwater sources and water of satisfactory quality. At present there are no maps of the groundwater table and no available water quality analyses.

In recognition of the critical need to extend the potable water supply throughout the rural areas, the governorate has

developed a list of projects for BVS funding totaling LE 2.3 million which, when completed, will satisfy 26 percent of the rural water needs.

Details of the program, which were provided by governorate officials, have been left with USAID/Cairo and include the following basic information:

- Project location (markaz, village and attachment);
- Description of engineering needs (i.e., pipes, pumps, wells, pump housing, motor);
- Numbers of people expected to benefit from the project; and
- Approximate cost of the proposed work based upon estimated unit costs provided in Table A-4.

TABLE A-4
UNIT COSTS USED IN DETERMINATION OF PROJECT COSTS

	<u>Cost in LE</u>
Sinking a deep well, with steel casing 10" diameter, up to 65 meters deep	4000.
Supply and installation of electric borehole pump, and accessories	6000.
Supply and installation of power trans- former	2000.
Construction of a pump room and control panel	3000.
Supply and installation of cables and accessories as connectors between the motor, the control panel, and the trans- former	5000.
Supply and installation of one km. of pipes	5000.
Contingencies -- normally 10 percent of costs	

The proposed water projects consist of 128 separate systems. Many are simple and require only replacement of existing diesel engines with electrical units. However, many of the projects require more engineering and geological investigations than similar programs in Minya or Beheira, mainly due to the less certain groundwater situation of the Kena Governorate.

Requests have been made to map the groundwater availability and quality, but much of such information is not likely to be available in time for BVS planning. Accordingly, the technical staff will be required to examine each separate project carefully to establish feasibility of proposed engineering work before expenditure of funds.

Roads

The proposed BVS program for roadwork included 29.6 km. of new dirt road construction plus rehabilitation of 127 km. of existing rural roads. This level of effort represents 22 percent of the total dirt road network in Kena.

The proposed road projects are typical of village road links throughout Egypt, consisting of bed elevation, grading and surface compaction. The majority of projects cover short distances of 1 km. or less. There are relatively few bridges required. Details of the projects are included in the material left with USAID/Cairo, which includes:

- Project location;
- Lengths and widths; and
- Cost estimates by project.

Canal Maintenance

Included in the proposed BVS package is a program for cleaning and dredging of tertiary and quarternary irrigation canals, which require regular attention. In the past, this task, which is outside the regular maintenance work of the Ministry of Irrigation, has been performed by labor supplied by various villages and has been accomplished manually. The neglect of this job, due to increasing unavailability of labor, has caused a shortage of irrigation water and loss of crops. It is now proposed to perform the cleaning of such canals by mechanical arms attached to tractors. Equipment of this kind commonly used in Egypt is the McConnel Power Arm 5, which is priced at about LE 5,000. It is proposed that two power arms be assigned to each markaz to perform regular maintenance work of these canals. The purchase price of the equipment and the cost of training operators has been estimated at LE 200,000. Presumably, the maintenance and operation costs are to be borne by various local government entities.

The proposed BVS program had not been clearly formulated at the time of the field team's visit to Kena. The visit itself was a catalyst for clarifying both the nature and scope of the

effort to be undertaken. Project proposals from the village councils reflected general wishes of the local population, but, as there were no priority or funding guidelines provided by the governorate, village lists tended to be conflicting and disorganized.

A circular was forwarded to all village councils on March 1979, asking them to set up their own priorities in the area of basic village infrastructure development. The circular presented only a guideline for basic unit costs of rehabilitation of village roads (LE 4,000/km.), establishment of new dirt roads (LE 7,000/km.), and the cost of an electric unit, i.e., motor and connection to replace old diesel engines used for pumping water (LE 15,000/unit). The village councils' replies to this circular were received by the governorate and subsequently by various technical departments (roads and water) before May 10, 1979. No evaluation or analysis was carried out on these replies. It was during the mission's visit that these responses were discussed and examined and found to be at variance with one another and with existing cost estimates. It was then requested that an examination of each case be made by the Roads and Bridges Department and the Water and Sewerage Unit, focusing on the feasibility of the proposed work, and on estimation of approximate costs using the departments' current data. It was decided to use simple per capita allocations for BVS financing of projects, to be applied uniformly. Together with village

replies, the general distribution of BVS projects in the governorate began to emerge.

The team helped to make order out of what had been hasty planning process, and the Housing Department arranged for analysis of all proposed potable water projects. The costing of these proposed projects is based upon data collected for an IBRD study of rural and urban drinking water needs of Kena Governorate. The estimates are specific, taking into consideration the requirements for expansion of capacities of existing systems, as well as extension of the lines. The cost estimates are still rough, but are far more reliable, reflecting actual needs, than the village-generated cost data. For example, the drinking water project for the village council area of Abu Shoosha was estimated at LE 177,000 by the council. This was subsequently revised to LE 72,000. The latter set of estimates, prepared during the team's visit, were almost consistently lower and more detailed. The cost estimates finally arrived at are shown in Table A-5.

The final section of BVS road projects, also formalized during the visit, were based upon replies received from various councils. The head of the Roads and Bridges Department for Kena incorporated all such requests and arrived at a global cost figure. In doing so, he eliminated all major works that are currently handled under the governorate budget and limited the BVS projects to those dirt roads serving villages and attachments.

TABLE A-5

OVERALL FUNDING REQUIREMENT FOR PROJECTS TO BE
EXECUTED UNDER BVS PROGRAM IN KENA

No.	Name of Markaz	Dirt Roads in the Villages	Drinking Water in the Vil- lages	Canal Main- tenance	Remarks
1	Abu Tesht	82,000	227,500	200,000	
2	Farshoot)	144,300	407,000		
3	Nag Hamadi)				
4	Deshna	99,100	264,000		
5	Kena)	179,600	312,000		
6	Gheft)				
7	Ghoos)	179,600	391,000		
8	Naghada)				
9	Luxor	123,100	280,000		
10	Armant	73,500	106,000		
11	Esna	93,600	320,000		
TOTAL		974,800	2,307,500	200,000	

BVS Project Implementation Procedures in Kena

Complementing the unsystematic planning process, personnel at all three governorate levels had no clear idea of the implementation and financial procedures that were to be used in village-level projects. Some thought the funds would be given directly to the governorate; others thought the markaz would receive the money. Almost no one understood that BVS is supposed to be a village-level program, selected and administered by the village councils. As with the planning, the team helped governorate officials to understand the methods and procedures that could be used in BVS implementation. A detailed explanation was provided of the procedures required by law and currently followed in Beheira for village-level projects. The officials were unaware of these, but indicated a willingness to follow the system described in the Chapters Four and Five of this report.

ANNEX B

TRAINING, TECHNICAL ASSISTANCE AND PROJECT SUPPORT

ANNEX B

TRAINING, TECHNICAL ASSISTANCE AND PROJECT SUPPORT

TRAINING OF GOVERNORATE-LEVEL BVS TEAMS

An expatriate consultant team should be contracted to train governorate-level BVS teams before the program is initiated, and to help the teams in the early stages of their actual work. The technical assistance personnel might consist of a development economist, a project engineer, a groundwater hydrologist and one equipment specialist.

Training would be oriented to the particular circumstances of each governorate and would concentrate on those actions that must be taken at the governorate level to ensure the forward progress of the BVS program. The steps in the procedure have been outlined in Chapter Five. The training would focus on means for identifying and overcoming obstacles to the systematic movement through those steps. This would call for information flow and schedule tracking, regular coordination meetings and management systems that would define and solve problems as they arise. While some governorates would have minor training requirements, others would need lengthy introductory work before the staff of the BVS team could internalize the concepts and techniques necessary to make the program viable.

In keeping with the differences among governorates, it might be possible for ORDEV or some other national-level organization to develop several categories of training program needs. Since some village councils are active and capable and some are just getting organized, the assistance needed from the BVS team and the interactions between the team and the markaz and between the team and the village councils might be significantly different. This would call for tailored training curriculae.

The best training might involve observation sessions in governorates where the BVS program is operating smoothly, if such visits are acceptable to all parties. In this way, prior to having to undertake their own organization and systems planning, officials would have seen operating models, and identified problem-solving mechanisms and feedback loops to and from village councils, contractors, and accounting and review bodies.

Training should also include instruction in cost and benefit quantification, methods of equilibrium pricing, discounted cash flow analysis, calculation of benefit/cost ratios and financial and economic internal rates of return, and, for income-producing projects, methods of demand forecasting using simple regression models. Training would also include methods of assessing and preparing environmental impact statements. Each governorate BVS team may be provided with a Texas Instruments Model 58 programmable calculator, costing about \$80, and a Business Decision Module costing \$35. With this equipment, which

is simple to use and maintain, the governorate BVS teams will be able to perform quickly and simply all of the mathematical calculations required for project analysis and demand forecasting.

The basic texts to be used in the training for the latter subject matter will be left behind as ready reference materials. These include the World Bank Manual on Economic Development Projects and the IBRD Economic Analysis of Agricultural Projects. Both of these texts have been used successfully in previous training programs in Egypt.

With the training programs, the BVS teams would collect, collate and assemble basic socioeconomic data and project unit cost information to be used in analysis of future projects. These data would be organized in metal filing cabinets in an easily retrievable manner according to subject headings, together with detailed written instructions for periodic update of the material collected. Training in data collection methods and statistical sampling would also be provided.

The BVS teams would physically inspect each publicly owned facility in their governorate, recommend a layout plan and develop comprehensive manuals for preventive maintenance scheduling and workshop procedures to be followed for the type of equipment to be procured.

An important task of the technical assistance team will be to train and encourage the BVS teams to standardize project

documentation and to develop a degree of uniformity in project activity tasking and reporting. It is recommended that standard document formats be used throughout. These formats, appearing in the following section, would be institutionalized by the BVS teams, which would receive training in completing these recommended forms for all projects currently proposed for BVS funding.

PROGRAM DOCUMENTATION, COMMUNICATION FLOWS AND PERMANENT RECORDS

Recommended program documentation, which should be standardized in each of the three governorates, consists of a Project Identification Form (Form I), an Activity Assignment Form (Form II) and a Project Monitoring Form (Form III).

In the initial project identification and evaluation stage, village councils would complete Items 1 through 5 of Form I and forward them to the markaz chairman for review and signature. They would then be sent to the governorate BVS teams for preparation of Items 6 through 11, and then to the governor for final review and endorsement. When completed, this document would provide the basis for rank ordering of project priorities according to economic merit. Final selection of projects proposed at the village level would be made from those that show the highest benefits to the regional economy, incur the lowest cost per beneficiary and benefit the largest number of people.

Following the phase of project identification, the governor, in general meetings of the village council chairmen, technical division chiefs, and markaz chairmen, would assign all required executive activity tasks to appropriate agencies and complete Form II (Items 1 through 4) to serve as a basic tasking order. As activity managers proceed through the various steps from engineering designs to tender awards, they would fill in Items 5 through 12 and this form, together with Form I, would become a permanent part of the project file.

Project monitoring and Follow-Up Forms (Form III) would be prepared monthly by the village councils and forwarded to the markaz and to the governorate BVS team for review and signature. The governor would convene monthly meetings of the village council chairmen to review implementation status and assign actions for accelerating progress as required. Form III, when completed after the monthly meetings, would also become a permanent part of the project file.

It is proposed that complete files for all projects be maintained at the village, markaz and governorate levels. These files, identified by project name and number, would contain the following:

- Form I
- Form II
- Form III
- Environmental Impact Statement

- Engineering Drawings
- Bid Tender Specifications
- Invitation for Bid Notice
- Actual Bid Tenders Submitted
- Notification of a ward
- Copy of Awarded Contract
- Copies of Monthly and Annual Audit Reports
- Copy of Final Project Acceptance Notification

Form I

PROJECT IDENTIFICATION FORM

Brief Description of Project: _____

1. Project Identification Number

2. Name of Village: _____

3. Name of Markaz: _____

4. Number of Beneficiaries

5. Initial Cost Estimate

6. Cost/Beneficiary

7. Benefits: _____

8. Benefits Beneficiary

9. Present Value of Benefits

10. Present Value to Cost

11. Benefit Cost Ratio

12. Internal Rate of Return

Remarks: _____

Prepared By:

Village Executive Council
Chairman

Governorate EVS Team

Reviewed By:

Village Elected Council
Chairman

Markaz Chairman

Form II

ACTIVITY ASSIGNMENT FORM

Name of Project: _____

1. Project ID Number 2. Location: _____

3. Organization Responsible for Engineering Documents and Specifications 4. Date Responsibility Assigned

5. Due Date For Completion 6. Date Actually Completed

7. Due Date For Issuance of Invitation For Bid 8. IFB Issued On

9. Bids Due On 10. Due Date For Completion of Evaluation

11. Evaluation Completed On 12. Date of Tender Award

Mobilization Award: _____

Signed:	_____	BVS
	Governor	Team
	_____	_____
	Responsible Technical Department Chief	_____
	Village Executive Council Chairman	_____

Form III

PROJECT MONITORING AND FOLLOW-UP FORM

Name of Project: _____		Month Covered in Report: _____	
Project Identification Number: _____		1. Total Budgeted Cost <input type="text"/>	
2. Contractor: _____	3. Date of Mobilization _____		
4. Cumulative Disbursements To Date <input type="text"/>	5. Disbursements During Current Month <input type="text"/>		
6. Percent of Work Completed To Date <input type="text"/>	7. Percent of Work Completed During Current Month <input type="text"/>		
8. Planned Completion To Date (Percent) <input type="text"/>	9. Planned Completion During Coming Month (Percent) <input type="text"/>		

Reason for Delays:
(If Appropriate)

Action Assigned to Accelerate Project (What and Agency Responsible)

Signed: _____

Governor

Responsible Technical Division Chief

Markaz Chairman

Village Executive Council Chairman

BVS Team: _____

FISCAL PROCEDURES AND AUTHORITIES

The fiscal procedures and level of decisionmaking authority for village-level projects, as described in Chapter Four, should be used in all of the governorates as they are workable, simple and further the Government of Egypt's policy of fiscal and administrative decentralization.

The only current requirement that should be modified is the limitation on the village councils' contract approval authority, which is set at LE 5,000. As most projects fall within the range of LE 7,000 to LE 15,000, it is recommended that village councils be authorized to approve contracts up to LE 20,000. The exercise of obligation authority is inherent in the process of strengthening village administrations since village council chairmen cannot fully exercise their intended responsibilities unless given the full legal base to do so.

COORDINATION AND MANAGEMENT

When village-level planning and project execution management requirements are regularly brought to the attention of a senior official with authority to command and direct required activities (the governor in the case of Beheira), projects are implemented more expeditiously and with greater quality than in other instances. Consequently, it is strongly recommended (when feasible)

that other governors assume the same sort of periodic project management role that is currently performed in Beheira by the governor. In the absence of regular personal attention by a senior official with the stature and command of a governor, the BVS team must have well defined responsibilities and authority or it is doubtful that consulting services and recommended documentation will have much impact on the manner in which projects are executed. Improving governorate-level attention to village project planning and execution will not hinder performance of village councils, but will ensure that all required inputs are made in a timely manner.

EQUIPMENT

The following items are recommended for immediate procurement to support the proposed BVS program (see Table B-1).

Shop Tools

All governorates lack adequate shop tools for maintenance of the recommended equipment procurement package. It is proposed to equip one workshop in each governorate with a full complement of shop tools to allow for regular maintenance of all of the new and existing equipment. In Beheira, the tools would be allocated to the Damanhour Training Center, which would have sufficient equipment after allocation to maintain the canal

TABLE B-1
RECOMMENDED EQUIPMENT PROCUREMENT FOR THE STUDY AREA

Item	Quantity			Purpose
	Beheira	Minya	Kena	
Crawler Excavator with hydraulic, back hoe attachment and 1/2 yd. ³ bucket.	41	-	-	Canal maintenance
Back hoe excavator arms with 0.20 m ³ bucket capacity	16	-	20	Canal maintenance
Pickup truck, 4 x 4, 1T	-	4	5	For mobile workshops and project construction supervision to maintain water systems.
Flatbed truck, cargo, 29,000 GVW	2	-	-	Transport of canal maintenance equipment.
Wheel tractor scrappers, 9 cy struck	9	4	10	For road maintenance.
Cistern sprayer truck with 5 m ³ tank capacity	9	9	10	For road maintenance.

excavating equipment, graders and water trucks. The shops to receive equipment in Minya and Kena have not yet been designated. The tools recommended for each governorate are presented in Table B-2.

TABLE B-2
SHOP SUPPORT AND FIELD MAINTENANCE EQUIPMENT

Item	Quantity		
	Beheira	Minya	Kena
Air compressor, 85 c.f.m.	1	1	1
Valve refacing machine	1	1	1
Valve seat grinding set	1	1	1
Automatic welding machine	1	1	1
Portable jet-steam cleaner and pressure washer	1	1	1
Tire demounter	1	1	1
Battery charger, 8 to 24 volt	1	1	1
Brake drum lathe for drums up to 30" diameter	1	1	1
Hydraulic in-line tester	1	-	-
Hydraulic gear and bearing puller, capacity 17.5 tons	1	1	1
Transmission repair stand	1	1	1
Universal motor repair stand	1	1	1
Lubrication unit stationary, electric drive	1	1	1
Portable sprocket puller and installer for track type tractor with attachment, capacity 40 tons	1	-	-
Hydraulic engine cylinder sleeve puller and installer, capacity 12.5 tons	1	1	1
Universal fuel injector tester and pump calibrating stand for diesel engine, 2 to 12 cylinder engine	1	1	1
Fuel pump tester for diesel engine	1	1	1

(continued)

TABLE B-2 (continued)

Item	Quantity		
	Beheira	Minya	Kena
Water pump tester for diesel engine	1	1	1
Torque wrench, 1/2 inch square drive	1	1	1
Torque wrench, 3/4 inch square drive	1	1	1
Air impact wrench, 1/2 inch square drive, with impact socket set and 50-foot air hoses with each wrench	1	1	1
Air impact wrench, 3/4 inch square drive, with impact socket set	1	1	1
Shop master tool set for general automotive service, and tool chest	1	1	1
Mechanic general purpose tool set, chest	1	1	1
Heavy duty socket wrench set, 3/4 inch square drive, and box	1	1	1
Hand hoist ratchet-action type, cap 1.5T with 10-foot lift	1	1	1
Ignition timing light	1	1	1
Swivel grip oil filter wrench	1	1	1
Ring compressor piston engine rebuild	1	1	1
Ring spreader piston engine rebuild, 2 - 5 inch	1	1	1
Giant adjustable wrench, 24 inches long jaw capacity 1-3/8 to 2-15/16 inches	1	1	1
Giant adjustable wrench, 36 inches long, jaw capacity 2-35/16 to 4-3/4 inches	1	1	1
Heavy-duty surface grinder disc, minimum 7-inch diameter, with 100 coarse grit and 100 fine grit disc with each grind	1	1	1
Electric drill 1/4 inch, with 2 sets drills in 64ths, and index case with each drill	1	1	1
Electric drill, 1/2 inch with 2 sets drills in 64ths, index case with each drill	1	1	1
Electric drill, 3/4 inch with 2 sets drills in 64ths, index case with each drill	4	3	7

(continued)

TABLE B-2 (concluded)

Item	Quantity		
	Beheira	Minya	Kena
Easy tool socket wrench, 7/16 straight, retap 1/8 inch	8	8	16
Wire metal spraying machine single head type for crank-shaft rebuild with two ton wire	1	1	1
Cylinder honing machine for vehicle hydraulic brake repair with 3 sets of stone for each machine	1	1	1
Portable cylinder boring machine for cylinder 2 to 5 inches diameter	1	1	1
Connection rod honing machine	1	1	1
Heavy-duty hydraulic cylinder honing machine for cylinders 3 - 6 inches diameter, 48 inches long, with 4 extra sets of stone, expanding type honer	1	1	1
Ridge reamer engine cylinder for 2 - 5 inch diameter cylinder	1	1	1
Fluid lubricant gun with hydraulic coupler	1	1	1
Electric welders, 400 amp, with electric drive skid mounted with leads 100 feet.	1	1	1
Dynamometer engine tester, 60 - 250 HP, single-head unit	1	1	1
Bench grinder, minimum 6 inch diameter, grinding wheels 60 and 36 grit, 3 each extra 60 and 36 grit grinding wheels with each	1	1	1
Heavy-duty hook spanner wrench	1	1	1
Power hacksaw, minimum 10 inch	1	1	1
Gear cutting machine with attachment	1	1	1
Motorite for diesel and gasoline engines compression tester with adapters	1	1	1
Radial drill press with 72-inch arm	1	1	1

Spare Parts

Sufficient spare parts for 10,000 hours of operation should be provided with each item of equipment purchased. The approximate cost of these spares is 6 percent of the equipment's CIF value.

Operator Training

Additional trained operators are required for the new canal excavation equipment proposed for Beheira and Kena. Altogether, training of some 71 operators will be needed. The Egyptian Dredging Company in Cairo and the General Irrigation Company for Mechanical Excavation at Delta Barrages train operators for their own equipment and are willing to train governorate-level operators for BVS-financed equipment. The governors of Beheira and Kena showed their requests for training and lists of trainees to Engineer Ahmed Gaber Barakat, Chairman of the Egyptian Dredging Company.

VILLAGE BUDGETS AND MAINTENANCE

To correct the endemic problem of inadequate maintenance of infrastructure at the village level, the team recommends that each of the governorates make a great effort to explain regulations governing use of the service accounts. Many villages

When, in the course of your inspections, you observe that water pipes are leaking, pumps are not operating, buildings need painting, roads are developing holes, etc., you must take immediate action to correct the problem. You can either use personnel and equipment belonging to your council area to undertake this work or you can hire private individuals and companies within your area to do this work for you. In instances where you require funds to pay for the maintenance services, you are authorized under the law to disburse funds from the village service account for this purpose. In the event that an item of maintenance exceeds your available funds, you should request additional funding from the governorate service account. To help you in carrying out these instructions, you are request to complete the following form and sent it to the Planning and Follow-Up Department of the Governorate every month.

The BVS team should review reports from each village on a monthly basis. Reports from village councils showing no activity should be examined in greater detail with a site visit to the village council.

VILLAGE INFRASTRUCTURE MAINTENANCE REPORT

List of Infrastructure	Inspected*	Describe problem, if any	Month	Describe Measures taken to correct problem	Funds Spent

A) Roads					
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
B) Water Work					
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
C) Buildings					
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
D) Electric Networks					
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
E) Other					
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

* Put an "X" next to each infrastructural item inspected during month.

Signed: (village council chairman) Date: _____