ARAB REPUBLIC OF EGYPT
MINISTRY OF HOUSING AND RECONSTRUCTION
ADVISORY COMMITTEE FOR RECONSTRUCTION

TERMS OF REFERENCE
FOR A
REGIONAL PLAN FOR
THE RED SEA GOVERNORATE

JANUARY 1978

DRAFT TERMS OF REFERENCE
REGIONAL PLAN FOR THE RED SEA GOVERNORATE

1.0 INTRODUCTION

1.1 General

In accordance with the concepts set forth by President Sadat in his October Working Paper for a "New Map of Egypt", the Egyptian Government is placing increasing emphasis upon development of the desert areas that constitute some 95% of Egypt's land mass. This move away from the traditional centers of population is prompted by the growth in Egypt's population and the need to preserve the agricultural lands of the Nile Valley and Delta, as well as the desire to develop the natural resources that exist in the more remote desert areas.

The Eastern Desert, representing roughly 20% of Egypt's land area, is a relatively mountainous area lying between the Nile Valley and the Red Sea coast. While essentially undeveloped at the present time, the Eastern Desert has considerable potential for minerals extraction and processing, tourism and fisheries. The bulk of this area lies within the Red Sea Governorate, which covers 190,000 sq.km. but has a population of less than 60,000. From a development standpoint, therefore, the Red Sea Governorate represents an asset that, as yet, is virtually untapped and an area where development efforts may logically be concentrated.

1.2 Study Objectives

In order to develop a framework for more detailed studies of specific settlement areas and projects, the Egyptian Government intends to commission a study for the development of a Regional Plan for the Red Sea Governorate. The major elements of this study will comprise the following:

1. Analysis of potential economic activities in the Governorate, approximation of future additions to national income that may be realized from these activities and estimation of the scale of investment required.

2. Establishment of a general settlement pattern and future ranges of population in the Governorate.
3. Determination of the regional transportation network required to support development and the regional infrastructure needed, with particular emphasis upon water supply requirements and means to fulfill these requirements.
4. *Identification and definition of individual projects and localities for* further, more detailed, study.
5. Elaboration of suitable development approaches - type of organization required, initial investment decisions, (particularly early, high - impact, small-scale investments) and appropriate means to attract migrants.

It is intended that the study findings be incorporated in a series of periodic reports and a final report to the Government, which will provide the basis for further actions leading to development of the Governorate's potentials.

1.3 Responsible Agency

The Ministry of Housing and Reconstruction is the responsible agency within the Egyptian Government for this work. The Ministry had delegated authority for development of these Terms of Reference, solicitation of proposals, negotiation of a contract and monitoring the Consultant's work to the Advisory Committee for Reconstruction, *Dr. Hassan Marie, Chairman.*

Accordingly, all communications concerning these Terms of Reference should be addressed to:

Dr. Hassan Marie, Chairman
Advisory Committee for Reconstruction
Ministry of Housing and Reconstruction
1, Ismail Abaza Street
Cairo, Arab Republic of Egypt

The Consultant will be required to have a core staff in Egypt within thirty *days after the signing of an agreement for the study.*

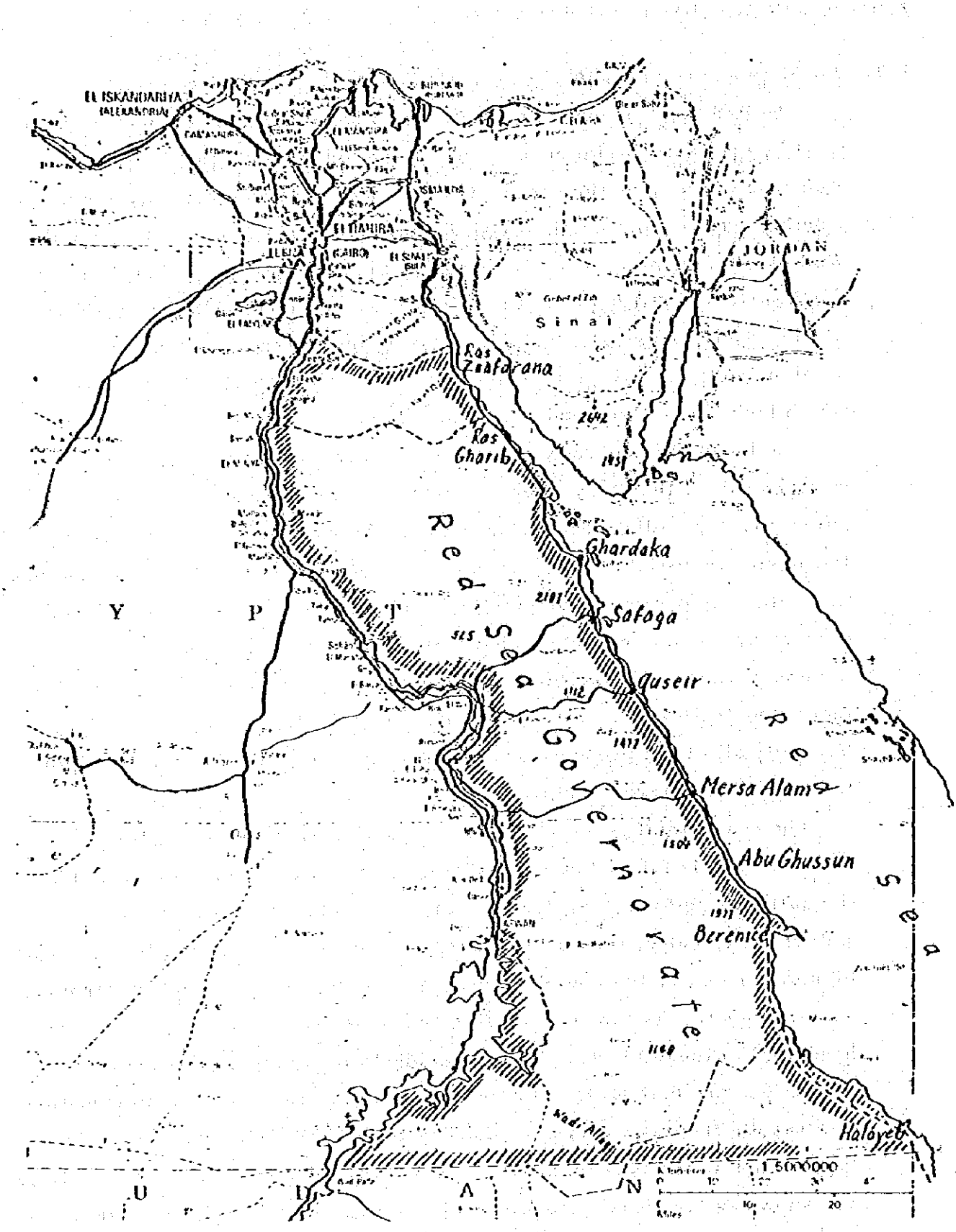
2.0 BACKGROUND

2.1 Location and Geographical Features

The Red Sea Governorate (Study Area) covers the area bounded on the west by the eastern rim of the Nile Valley, on the south by the Egyptian - Sudanese border, on the east by the Red Sea and on the north by a line running from a point north of Ras Zaafarana (on the Red Sea) through the Wadi Araba, turning westerly through a broad plateau area and then northwesterly until it meets the Nile Valley again about 25 km northeast of Beni Suef (Figure 1). The Governorate includes also a number of small islands near the southern end of the Gulf of Suez, all but one of which lack fresh water and are uninhabited.

The landform generally slopes upwards from west to east. The western half of the Study Area consists of a plateau that is broken by numerous dry wadis meandering towards the Nile Valley and occasional low mountain chains. The eastern half is dominated by rugged mountains that rise to more than 2,000 meters. This mountain wall is, however, pierced by a number of east-west valleys that afford channels for communications. A narrow coastal plain, varying from a few hundred meters up to 35 kms. in width extends along the Red Sea Coast itself. Virtually all of the present population of the Study Area is located within this relatively narrow strip.

The coast itself is quite irregular, particularly in the southern reaches, and is fringed by extensive coral reef communities fostered by the salinity, uniform temperatures and great clarity of the Red Sea waters. Typically, the coast consists of a number of shallow bays, called bights, formed by the combined effects of wave action and erosion from surface runoff. The most extensive reef formations may be found at the headlands of these bights. Within the bights themselves, the reef formations are discouraged by the reduction in salinity and sedimendation that results from the very occasional runoff from adjacent wadis. The larger gaps in the reef formations, located at the mouths of major wadis, are known as "mersas" - leading to place names such as Mersa Alam and Mersa Halayeb.


EL ISKANDARIYA
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CAIRO
Sinai
Ras Zafarana
Ras Gharib
Ghardaka
Safaga
Quseir
Mersa Alam
Abu Ghussun
Berenice
Halâyeb
Red Sea
Governorate
EGYPT
SUDAN
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Figure 1

2.2 Population Centers

The Red Sea coast and the adjacent study area was known to the Egyptians of the Pharaonic period and a number of their early gold mines were located in the eastern mountains. The ancient port of Berenice, on roughly the same latitude as Aswan, was linked by road to the Nile Valley and was a center for trade between Pharaonic Egypt and other states bordering the Red Sea. During the Christian and Arab eras, however, even the site of Berenice was lost (it was rediscovered in the 19th Centry) and human habitation of the area was confined to scattered Bedouin groups.

At the present time, there are four main areas of settlement - the Ras Gharib/Ras Shukeir area, Ghardaka (or Hurghada), Safaga and Quseir.

Ras Charib and the nearly workers settlement of Ras Shukeir have been developed primarily to serve the nearby land based and offshore oilfields of the Egyptian Petroleum Co. At present this activity is confined to direct servicing of these fields and petroleum storage. There is no processing of petroleum in the area. The population of these two settlements is currently about 15-20,000; a high proportion of whom live in company housing. Somewhat fewer than 300 dwellings have also been built by the Governorate but much of the population is living in rather crude huts with no public services.

Water is a major problem. Residents of Ras Gharib obtain drinking water from wells in the Shagar valley, which have a lower salinity than others in the area. A condenser with a capacity of 300 cu.m./day is used to sweeten the well water and the end product is distributed twice a week to those few houses that have storage tanks and to public fountains, where other residents queue up to carry water home.

Ghardaka,[1] the capital of the Governorate is located about 150 kms down the coast from Ras Gharib. The city has a population of about 15,000, largely engaged in administrative activities, fishing and support of the Biological Institute. In earlier days the city had some tourist trade but most of the hotel facilities are closed at present and in need of renovation. In January, 5 chalets, containing a total of 30 rooms were

1 Also known as Hurghada.

were opened in Ghardaka. The city extends along about 20 kms of coastline and consists of three distined clusters - the port area, which also has the Biological Institute, the government area and the hotel section. Ghardaka receives its water supply from a pipeline extending from Qena in the Nile Valley. The capacity of the line from Qena to the coast is 1,400 cu.m./day but half of this goes to Safaga. Of the remaing 700 cu. m./day, about 300 to 400 cu.m. are consumed by the military and the rest is available for distribution to residents of the city. Rooftop storage tanks are a common sight because of the limited supply.

The growth of the port town of Salaga, roughly 60 kms south of Ghardaka, has paralleled that of exports of phosphate and imports of grain and bauxite. It also serves as the main outlet for trade between Upper Egypt and ports lying east of the Suez Canal. The port itself faces a sheltered deepwater harbor formed by the islands lying offshore and has a current capacity of about 1 million tons annually - mainly in bulk cargos. The existing facilities are, however, obsolete and quite congested.

Phosphate mines in the vicinity of Safaga include those in the Abu Shgeila area, which produce about 65,000 tons annually and those in the Hamrawein area some 60 kms to the south, which currently produce about 15,000 tons annually. Far more important for the future of the port, however, is the projected rail line from Abu Tartur (near Kharga Oasis in the New Valley) and Qena to Safaga. This line will be used to carry up to 7 million tons annually of beneficiated phosphates from existing mines near Qena and proposed mines in the Abu Tartur plateau to the port of Safaga for export. New facilities, away from the present port, are to be developed to accommodate this traffic.

Because of the port operation, Safaga has grown rapidly in recent years and now has a population of 7-9000. It is linked to Qena by a paved 2-lane highway and is also served by the water line noted above, which provides about 700 cu.m/day to the port and to public fountains in the town. A portion of this water is also shipped by truck to Quseir and by barge to communities further down the coast.

The city of Quseir, lying about 80 kms south of Safaga, is the oldest existing settlement in the Red Sea Governorate. It is the center for a

number of phosphate mining areas, which together produce about 90,000 t tons of raw phosphate annually, in addition to the 15,000 tons produced at the nearby area of Hamrawein mentioned above. Port facilities for the export of phosphate are located in both Quseir and Hamrawein. The population of Quseir is about 15,000, most of whom live with only minimal public services. The major problem in the area is water supply. Water trucked from Safaga is distributed at the rate of half a "can" per capita per day, six days a week. A 350 mm dia. pipeline from Qena to Quseir has been started but only about 57 km of the total 240 km length have been completed so far. Also, the installation of two condensers with a total capacity of 1,000 cu.m/day is currently being studied. Quseir is linked to the town of Qitt in the Nile Valley by means of a paved road 200 kms in length.

South of Quseir there are few permanent settlements. There is a small town at Mersa Alam which acts as a base for the prospecting activities of the Egyptian Geological Survey and Mining Authority and also serves the various mining camps in the area. Also, a rest house has been built at Mersa Alam that is equipped with several boats for deep-sea fishing. The town is accessible from the Nile Valley by means of a paved road extending 220 kms. from the vicinity of Edfu. About 90 kms south of Mersa Alam is the settlement and port facility at Abu Ghussun. The port, designed only for loading small ships and unloading barges, has fallen into disrepair and is no longer being used. Elsewhere, the only concentrations of populations are mining camps, which are occupied for only a portion of the year, and the temporary settlements of nomads who roam over much of the southern part of the Study Area following their herds of sheep through the sparse grazing lands of the region. The nomadic population has been estimated at 5 to 10,000. These people lead a very marginal existence and, outside of modest assistance from the Governorate, have no source of sustenance other than their herds.

2.3 Transportation and Communications

The major artery tying together the larger settlements in the Red Sea Governorate is the road extending down the coast from the city of

Suez to Ras Gharib, Ghardaka, Safaga, Quseir, Mersa Alam, Berenice and thence to the locality of Mersa Halayeb on the Sudanese border, some 1,085 km from Suez. Between Ras Zaafarana and Ghardaka the road is a 3rd Class facility, with a crude oil stabilized surface in poor condition. From Ghardaka to Berenice the road is a 1st Class, 6 m wide road, albeit south of Safaga the pavement has been damaged by military traffic. Beyond Berenice the road is unpaved but has a hard surface to the Sudanese border. There are four paved roads extending from the Nile Valley, portrating the eastern mountains to connect the Red Sea to the Valley. One of these roads, from Karimat (So. of Helwan) to Ras Zaatarana is in very poor condition because of heavy traffic. The other three links, the road from Qena to Safaga, that from Qift to Quseir and the one from Edfu to Mersa Alam are 1st Class facilities. The paved width varies from 6 m to 8 m on all these roads. Two other roads, one from the town opposite Minia in the Nile Valley to Ras Charib and another from Kom Ombo to the settlement of Abu Ghussun on the Red Sea Coast, are little more than desert tracks at the present time.

There are no rail links between the Red Sea Governorate and the Nile Valley, although, as noted earlier, a line is proposed between Qena and Safaga. This would be used primarily for the movement of dry bulk cargos by means of unit trains.

The towns of Ras Gharib/Ras Shukeir, Ghardaka, Safaga and Quseir are linked to the city of Suez by means of telephone and telegraph lines. Regular postal service is also provided to these centers. At Mersa Alam, communication is by a radio link.

2.4 Petroleum Resources

With the exception of a few small fields in the Western Desert, virtually all of Egypt's known petroleum resources are located beneath the Gulf of Suez and the adjacent coasts of the Sinai peninsula on the east and the Red Sea Governorate on the west. Thus, Ras Gharib and Ras Shukeir, as noted earlier, have gained a degree of pre-eminence ad service centers for the nearby oil fields.

In the Ras Gharib/Ras Shukeir area there are about 7 oil fields, which have a relatively long production history. The more important fields,

however, are those found offshore in the Gulf itself. These include the major fields of Morgan, July, Ramadan and the more recent Discovery 382. At the present time Egypt has some 32 agreements in force with major international oil companies for the exploration and development of the country's oil reserves.

Prior to 1976 Egypt spent more for petroleum imports that it received for exports. However, total production has risen rapidly in recent years, from 11.7 million tons in 1975 to 16.6 million tons in 1976 and an estimated level of more than 20 million tons in 1977. As a result Egypt has become a net petroleum exporter, earning a surplus of LE122 million in 1976 and an estimated LE 200 million in 1977. Egypt's current production rate is about 450 barrels of crude oil per day (equivalent to 23.4 million tons per year) and by 1980 this is expected to reach between 750,000 and 1 million barrels per day. Thus, a surplus approaching LE 1 billion may be achieved by that year. The impact of this growth upon the adjacent communities in the Red Sea Governorate is likely to be confined largely to a greater demand for oilfield services. This alone, however, will bring a greater degree of prosperity to these communities

Gas discoveries in Egypt have also been significant during the last few years but these have generally been in the Western Desert and along the Mediterranean coast. Thus they would have little direct effect upon the Red Sea Governorate.

2.5 Mineral Resources (Other than Petroleum and Gas)

The Red Sea Governorate has perhaps the largest number of mineral sites in Egypt and a wide variety of metallic ores and other minerals have been identified. In only a few cases, however, have explorations been carried out to the point where the extent of reserves and their suitability for economic exploitation can be determined. Some of the latter group are being actively mine at the present time.

Mining activities are regulated by the Egyptian Geological Survey and Mining Authority in accordance with Law No. 86 of 1956. The Authority issues licenses for prospecting (in addition to carrying out such activity itself) and negotiates all contracts for actual exploitation. Since 1974, prospecting licenses and exploitation contracts have been extended to

private individuals and private sector companies, in addition to the established public sector firms, which were nationalized in 1963. As of June 1977, a total of 91 prospecting licenses were currently active, 58 for public sector firms and 33 for the private sector. At the same ti a total of 133 exploitation contracts were in force, 116 with public sector firms and 17 with private individuals or groups.

The Mines Inspectorate, within the Authority, has established offices in Quseir, Mersa Alam and the mining area of Baramya, for the purpose of controlling mining activities in the Red Sea Governorate. Some of the more important minerals in the Study Area and the present status of mining and quarrying activities are as follows:

Metallic Ores

Gold - Within the Eastern Desert there are about 95 sites where gold may be found. Most of those sites were, in fact, exploited during Pharaonic times, when Egypt was renowned for its wealth in gold. The sites are found in five clusters:

Northern Group - sites at Fetira, Aida Atalla, Samna I'awakhir
Northwestern Group - sites at Om Mankal, Om Balad & Wadi El Deb
Central Group - sites at Om El Rouss, El Baramya, Atoud, Sokkari, Mangalya and Om Oud
Southern Group - site at Om Garayat
Southeastern Group - sites at Aliga and Hutit

The economic feasibility of re-opening any of these sites has not yet been established. Studies are underway, however, in view of the recent increases in the price of gold.

Copper, Nickel, Lead and Zinc - Those minerals are widespread in the Red Sea Governorate but, to date, no deposits have been found that would clearly warrant exploitation under current world market conditions.

Lead and zinc bearing minerals are found in the stretch of Red Sea coast between Quseir and Mersa Alam. Total reserves are estimated to be about 2.5 million tons, containing 7 to 13% zinc and 1.9 to 6% load, but no studies have been made as yet to determine the feasibility of extracting these minerals.

Copper, lead and zinc over are found also in the locality of Om Samiuki, about 40-50 kms inland from Abu Ghussun on the coast. Reserves amount to less than 200,000 tons containing about 1.15% copper, 10 to 12% zinc and 1.5 to 2.3% lead. They are not considered sufficient to warrant exploitation.

Deposits of copper and nickel ores have recently been found at two localities called Gaber and Akarem not too distant from Om Samiuki. Reserves have been estimated at about 700,000 tons of low-grade ore (0.93% copper, 0.75% nickel). Well to the south, about 80 kms north of the Sudanese border, there exists a much smaller quantity of copper and nickel ore. Studies to be carried out in similar formations in the Governorate may lead to discovery of other reserves. It may be that none of these deposits would be large enough individually to justify development but that taken as a group they might be economically exploited.

Titanium - A substantial body of ilmenite, $FcFiO_3$, exists at a location called Abu Chlaga - about 20 kms from the Red Sea coast at Abu Ghussun. This ore boday has been the subject of several studies during the last 20 years and total reserves are estimated to be about 60 million tons. At the present time the Governorate is holding discussions with various international mining concerns for the purpose of forming a joint venture company to undertake the mining of this mineral.

Manganese - Prior to the 1967 war, the main source of manganese for local consumption and export was a site on the Sinai peninsula. Since that time the only production has been that from two areas in the Red Sea Governorate. The main source is in the Alba area near the Sudanese border where the Nasr Phosphate Co., another public sector firm, extracted over 4,00 tons in 1976. A secondary source is in the Mialak area on the coast south of Mersa Alam, where the same company mined less than 200 tons in 1976. Total reserves in these areas are rather low and production goes entirely for local consumption.

Iron - In the coastal mountains south of Quseir, iron ore has been found at a number of sites. Estimated reserves total about 40 million tons. There are no plans at present to assess the feasibility of exploiting these

ores, largely because of the isolated location and the fact that larger reserves are already being mined in the northern oases of Egypt, only 340 km from Helwan.

Some iron oxides are mined in this area by the Nasr Phosphate Co. for use as coloring agents. Total 1976 production was about 100 tons.

Tin and Rarer Metals - Tin, plus tantalum, niobium and other less common metals are occasionallyffound in combination in granite formations of the eastern mountains. Sites identified to data are Noeba, Abu Diab and Agaba in the mountains behind Mersa Alam. These sites have been studied in detail recently and the following tonnages estimated:

Tantalum oxide at Noeba & Abu Diab	7,000 tons
Niobium oxide at the same sites	4,400 tons
Tin at Agaba and Abu Diab	13,600 tons
Beryllium oxide at Agala	9,100 tons

These studies have indicated, however, that under current world market conditions exploitation of these reserves would not be economically feasible.

Chromium - Twelve different companies, all but one in the private sector, are engaged in the extraction of chromium ores in the mountains behind Mersa Alam (six sites). Total 1976 production was slightly more than 500 tons.

Molydenum - Ores of this metal are found at a number of sites in the Governorate, west of Ghardaka in the north and midway between Aswan and the coast in the south. No detailed studies have been made of these deposits, however, and little is known of their economic prospects.

Other Minerals

Phosphate - As noted earlier, phosphate is currently mined at a number of sites in the central area of the Red Sea coast. Raw phosphate is transported from the individual mines by truck or short rail lines to the conters of Safaga, Hamrawein and Quseir, where it is processed and loaded aboard ship. The mining operations are carried out by two public-sector companies - Red Sea Phosphate Co. in the Safaga and Quseir areas and Misr Phosphate Co. in the Hamrawein area. Total reserves in these

areas are estimated at about 370 million tons. Current production in the Red Sea Governorate totals about 170,000 tons annually or about half of the 330,000 tons produced annually in the Nile Valley near Saba iya (b (between Luxor and Edfu). A project to expand production in the Hamrawein area is nearly complete, which is expected to allow a final production level of about 600,000 tons annually. Even at this level, however, production in the Red Sea Governorate is likely to be dwarfed by the Abu Tartur project in the Western Desert, which is targeted for a production level of 7 million tons annually by the early 1980's. Safaga is destined to be the port for the exportation of this tonnage and major improvements, away from the existing facilities, will be required if it is to fill that role.

Fluorspar - This mineral is found at a number of istes in the Governorate, including those sites where tin and rarer metals are found. The Nasr Phosphate Co. and two private sector companics are currently mining fluorspar at seven sites in the eastern mountains, generally in the Mersa Alam area. Production is quite small, however, totalling some 1,560 tons in 1976.

Feldspar - The Nasr Phosphate Co. also mines feldspar in the mountains west of Mersa Alam (three sites). The Egyptian Co. for Gypsum, Quarries & Marble also has feldspar mining activities in the Governorate, in this case at two sites located east of Aswan Total production in 1976 from all these areas was about 2,250 tons.

Quartz - Both of the companies mentioned above mine quartz in the Governorate; the Nasr Phosphate Co. in the mountains of the Eastern Desert and the Egyptian Co. for Gypsum, Quarries and Marble about 70 kms east of Aswan. Total production in 1976 was 8,100 tons.

Talc - Talc is found in two separate areas of the Governorate: Darhib, Om Suliman and Hamata in the southern part of the eastern mountains and Tawakhir and Om Hekab in the area west of Quseir. Two public sector companies, Nasr Phosphate Co. and Sandbricks Co. are engaged in the extraction of this mineral and produced a total of 994 tons in 1976.

Asbestos and Vermiculite - These minerals are currently being exploited

at two sites in the central portion of the Governorate. The Nasr Phosphate Co. and two private sector companies are involved in the operations, which yielded about 1,400 tons in 1976.

Magnesite - The Egyptian Copperworks Co. is currently extracting magnesite from the Mahgara and Gebel El Mait areas of the Governorate. Production in 1976 was 640 tons.

Barite - Barite is found at a number of sites in the southern reaches of the Governorate. The Nasr Phosphate Co. mines of this mineral at two sites near Mersa Alam and another on the coast near Abu Ghussun. It is also extracted by the Egyptian Co. for Gypsum, Quarries and Marble at a site 30 kms east of Aswan. Production figures are not available, however.

Graphite - A private sector company is engaged in the mining of graphite in the mountains west of Mersa Alam and produced a total of 140 tons in 1976.

Ornamental Stone - Quarries in the Study Area, including those for ornamental stone, come under the purview of the Red Sea Governorate rather than the Egyptian Geological Survey and Mining Authority. Regulation and control of quarrying activity is carried out in accordance with a Vice-Presidential decree, (No. 38 of 1963). At the present time, both marble and serpentine (green marble) are quarried at several sites on the coast of the Gulf of Suez (Zaafarana) and the central Eastern Desert (Wadi Miah, Scifin and Fawakhir).

Salt Flats - The Governorate also supervises and organizes the exploitation of salt flats within the Study Area. This responsibility, originally exercised by the Ministry of Industry and Mining under Law 151 of 1956, was delegated to the governorates in 1974 by means of Ministerial Decree 874 of that year.

At the present time, common salt (Na Cl) is being extracted from flats in two locations in the Study Area. One, at Ras Shukeir is the site of two operations: the Egyptian General Petroleum Co. has an area of 80 hectares from which it extracts about 2,000 tons annually for its own use and the Gulf of Suez Petroloum Co. has another area of 80 hectares from

which a similar tonnage is extracted. Well to the south in the vicinity of Hamrawein the Fishermen's Cooperative of Ouseir has a small salt flat about 150 sq. m. in area from which salt is obtained for use in drying fish.

The Egyptian Geological Survey and Mining Authority has undertaken field and laboratory studies for a large scale operation in the area of Sharm El Louli, south of Mersa Alam. The quality of the product meets acceptable standards and the Authority believes the potential may exist for a production of up to 250,000 tons annually.

2.6 Fisheries

The waters of the Red Sea contain an immense variety of deep-sea and reef fish but these resources have only been partially surveyed so far. Surveys undertaken so far have covered, on a limited basis, the Gulf of Suez and the northern portion of the Red Sea itself and the far south, off the coast of Saudi Arabia near Jeddah.

The largest shall areas, and apparently the most productive areas, are located in the northern reaches of the Red Sea and the far south. A narrower shelf in between these two arcas suggests a relatively less productive area. Research activity in the Red Sea has been on a reduced scale since 1967. However, the laboratories of the Institute of Oceanography and Fisheries at Suez are being rebuilt and the Institute's research effort at Ghardaka is being revitalized. The Red Sea Branch of the Institute has a small staff of 8 professionals and 41 non-technical personnel that is currently changing its orientation from academic endeavors towards problem - oriented research. There are also plans at the present time for the undertaking of a cooperative survey of the Red Sea's re ources, involving all of the countries bordering the Sea, but as yet these plans have not advanced very far. A program to obtain more detailed data from Red Sea fishermen on catches and effort is to begin shortly, however, which will be of considerable help in assessing the potentials of the Sea.

The Red Sea fishery is based mainly in Suez (outisde the Study Area) and Ghardaka, though there are also smaller numbers of fishermen in Quseir and Mersa Alam. The fishery is dominated by seining with lights

for sardines (55% of the catch). This fishery is generally concentrated in the Gulf of Suez. A trawl fishery for demersal fish also exists but trawling can be difficult because of rocky grounds and extensive coral reefs. Also, a reef hand line fishery operates from smaller boats, many of which are unpowered. This fishery generally produces larger, higher-value fish.

The Fishermen's Cooperative at Ghardaka has about 300 members who operate 30 power launches (25 HP±), 40 local sailboats and 40 larger sailing vessels. These larger vessels may range as far south as Somalia and Yemen. The Southern Fishing Co. also operates out of Ghardaka, but only has about three operational vessels and the operation is nearly defunct. Cold storage at Ghardaka and marketing services are provided by the Fish Marketing Company. The cold stores have a capacity of only about 35 tons, in addition to an ice-making capacity of 12 tons, which is used by local fishermen plus these out of Suez who re-ice their catch at Ghardaka. The Company buys all fresh fish and ships it to Cairo in refrigerated vans.

Records dating from 1973 indicate that about 250 tons of fresh fish were landed in Ghardaka, with a value of about LE 1,000 per ton. Salted fish is sold through the private sector and no record is kept of actual tonnages. Information from the Fishermen's Cooperative indicates, howeve however, that total catch (both fresh and salted) varies from 25 to 50 tons per month, or roughly 400 to 500 tons per year. Since the total catch in the Red Sea fishery has varied from 4,100 to 9,400 tons in the last ten years, it means that fish landed at Ghardaka account for less than 10% of the total yield of the fishery.

Little is known of the organization of fishermen in Queseir and Mersa Alam and they have few facilities for producing fish for other than local consumption. The major fisheries, of course, operate out of Suez, where a more modern fleet of seiners and trawlers, 18 to 24 meters length (180 to 300 HP) is based.

2.7 Touristic Development and Potentials

There is very little tourism in the Red Sea Governorate at the present time: the small traffic that existed prior to 1967 having been curtailed

by security restrictions. The chief hotel in Ghardaka, containing 98 rooms in the main building and adjacent chalets is still closed and in need of renovation. In January of this year, however, five chalets, each containing two, 3 bedroom apartments were opened and are being operated by a large international chain. About 25 kms south of Ghardaka the Government built several rest houses at a site considered to be excellent for fishing. These are now isolated, however, because of deterioration of the access road and may no longer be usable. In addition to the facilities found in the Ghardaka area, the Egyptian Fishing Club has a rest house and some fishing craft in Mersa Alam, as noted earlier, but these represent little in the way of tourist trade.

A distinct potential exists, however, for tourism development. The distance from Europe and the large investment necessary to accommodate direct flights make the prospects for capturing the mass market based upon sand and sun rather problematic. However, the extensive and, in many ways, unsurpassed coral reefs and the wide variety of fish species in the Red Sea indicate that a significant potential may exist for specialized touristic development i.e. skin diving, sports fishing etc. This may be linked to the unique combination of desert, mountains and islands to provide a very attractive package for tourists. The ruins of the ancient port of Berenice may also prove to be an altraction, depending upon further archcological findings and the proximity of the tourist developments that are ultimately undertaken.

3.0 CONSULTANT"S TASKS

As noted at the outset, the Government of Egypt has established the goal of reaching out beyond the confines of the Nile Valley and developing the desert areas that comprise so much of the country. In the light of this national goal, the following regional goals are seen as appropriate to the Red Sea Governorale:

1. Rapid economic development based upon effective exploitation of the Governorate's natural resources.
2. Absorption of a substantial additional population from the over-

crowded areas of the Nile Valley.

3. Improvement of the economic and social circumstances of the existing population and future migrants to the Governorate.

Progress towards these goals may be measured in terms of the following, more specific, set of objectives for the Governorate:

Economic objectives:-

(a) Rational exploitation of the Governorate's natural resources in order to develop an appropriate economic base for the area capable of supporting all services and providing a net addition to the income of Egypt.

(b) Development of feasible industries based upon these resources through investment by Egyptian public and private sector firms and overseas investors.

(c) Creation of a pool of skilled manpower in the Governorate to serve the needs of industry, tourism and commerce.

(d) Establishment of the Governorate as Egypt's window facing the Arabic world to the east.

Social Objectives:-

(a) Development of opportunities for residents and migrants to acquire modern job skills consistent with the needs of industries.

(b) Improvement in standards of health care, better access for all population groups to medical care and maternity services and creation of a more sanitary environment.

(c) Provision of opportunities to members of all income groups to obtain adequate housing.

Environmental Objectives:-

(a) Protection of the Governorates' land, water and air resources (particularly the Red Sea waters and coastline) from pollution and misuse.

(b) Development of the full potential of the Governorates' environment through the multiple use of resources and the rational allocation of land.

(c) Improvement of the harsh living environment of the desert through appropriate urban and local design to increase natural levels of amenity.

The major purpose of the study described below is to develop a set of detailed, phased programs of action designed to achieve the above objectives and covering the years 1978-2005. Within this framework, the study will identily and assess the component projects of each program and develop a time frame for their completion.

The specific services to be provided for this study shall include, but not necessarily be limited to the following tasks:

3.1 Task 1: Collection of Data

Irom the relevant ministries and agencies, the Consultant shall obtain, and codify for further use, currently available data on the following:

- Historic and current population, compisition and distribution of population, occupations, skill levels, household size etc. These data shoudl cover both the Red Sea Governorate and adjacent governorates which may be potential source areas for migrants.
- Data on the economy of the Governorate, including regional accounts, sectoral employment, production and income, existing and proposed investments in each sector or sub-sector, individual and household incomes, industry charactaristics, etc.
- Data on regional and local infrastructure, including roads and road traffic, mining railways, port facilities, water supply systems, sewage disposal methods, electric power systems and teelecommunication facilities. Data should cover such elements as capacity, physical condition and bunds allocated for expansions.
- Data on public services, including facilities for education, health and security, extent and quality of service in these areas and the funding for service improvements.
- Data on physical features, geology and natural resources, including petroleum, metallic ores, other minerals and fresh water. These data should cover location, reserves, metallic content and current status of exploitation.

- Information on Red Sea characteristics and resources, including phy physical aspects (bathymetry, tides, water characteristics etc.) ecosystems (marine communities, reef formations etc.) and fisheries.
- Information on flora and fauna of the Governorate and their relationships with human settlements.
- Data on the organization of the Governorate, its powers and responsibilities.

The Consultant shall assemble these data in a coherent fashion, so as to form a reasonable data base for his further studies and permit the identification of major gaps in existing data.

3.2 Task 2: Establishment of Additional Data Requirements

The planning work covered by these Terms of Reference shall be undertaken on the basis of data that are currently available from various ministries and agencies or are obtained from the Consultant's own field studies. For subsequent, more detailed study of specific projects and localized areas within the Governorate by others, more detailed information may be required.

It is highly desirable, therefore, that as soon as the more detailed studies are identified, special data requirements should also be identified and described. This description should include a draft program for obtaining the data and the estimated cost of this program. This procedure will enable the Government to undertake the work necessary to obtain these data in advance of the time they are actually needed in the later studies.

3.3 Task 3: Water Studies

The Government believes that the key to long-term development of the Red Sea Governorate lies in the effectiveness of various measures to provide adequate quantities of good quality water at a reasonable cost to potential residents and industries. Thus, a very great stress is placed upon the study of potential water supply and delivery systems and upon the additional investigations that may be warranted in various parts of the Governorate.

3.3.1 Assessment of Groundwater Potentials in the Governorate:-

The Consultant shall review and analyze in detail all available data on the following:

- Physical forms, geological structures and lithologies
- Meteorogical and hydrological data (rainfall intensity and duration, run off, evaporation, recharge potential etc.)
- Data from exisitng wells, where they exist, indicating aquifer characteristics, water quality etc.

A two-step process is suggested in which the Consultant, on the basis of his preliminary review of these data and interpretation of available ERTS (LANDSAT) imagery, will delineate areas of greater interest (either as potential sources or as areas of significant demand), within which he will analyze the existing data in greater detail and supplement these efforts with field studies of a limited nature.

The results of the analyses made under this task should include a preliminary concept of the origins and possible flow patterns of groundwater systems in the Governorate, a detailed and costed program of field investigations to be undertaken by others and recommendations, where possible, on actual exploitation of groundwater. The purpose of the program of field investigations by others would be to develop sufficient information on groundwater sources to determine the feasibility of exploitation.

3.3.2 Review of Current Water Supply Proposals:-

At the present moment, some 57 kms of a second pipeline to Safaga (which will be extended to Quseir) have been completed. In addition, more condenser units are being considered for Quseir and elsewhere. Other proposals have been made by various ministrics and the Governorate Council for additional pipelines Irom the Nile Valley.

The Consultant shall review these various proposals and determine their appropriateness and approximate cost. Subsequently, in connection with the work described in Sub-section 3.3.5, he shall review these proposals within the context of a comprehensive water plan for the Governorate and water demands in specific localities. He may at that time determine their usefulness in serving short-term and long-term needs and their comparative feasibility, as opposed to other alternatives.

3.3.3 Review of Potentials for Desalination of Water:-

Given the distance that water must be transported from the Nile Valley and the uncertainly surrounding possible groundwater sources, the Government believes that the water needs of various communities and industries in the Red Sea Governorate may be more economically met through the application of recent technological concepts in desalination.

The Consultant shall, therefore, consider a range of desalination processes which are suitable for the higher-than-normal salinity of the Red Sea and for which the technology is well-established. Among the alternatives to be considered will be combining desalination with the generation of electric power and solar distillation for smaller isolated communities. As with more conventional approaches, the use of desalination as a possible source of water also shall be considered within the context of a comprehensive regional water plan for the Governorate and in light of specific water demands. Estimates of the costs of these installations shall be prepared taking into consideration the difficulties of transport and the lack of materials and labor for construction.

3.3.4 Delineation of Water Service Areas and Quantities Required:-

Based upon the analyses described in Task 8 (Section 3.8) on settlement patterns and future locations of population and industry, plus the results of the proceding water supply studies, the Consultant shall delineate a recommended set of water service areas in the Governorate. These areas must cover all populated sections of the Governorate and those expected to be populated in the future.

For each area so delineated, the Consultant shall prepare estimates of demand for water in 1978 through 1984 and five-year intervals between 1985 and 2005. These estimates will be developed separately for domestic, industrial and other uses with a degree of accuracy that is consistent with the quality of information developed on future activities in the Governorate. It is expected that the estimates will be in the form of ranges that will depend upon varying assumptions on future development and the rate at which current constraints on consumption can be removed.

3.3.5 Comparison of Alternative Sources of Supply and Delivery Systems and Preparation of Comprehensive Water Plan:-

In light of the demand estimates prepared under the preceding Sub-task and the studies described in Sub-sections 3.3.1 through 3.3.3, the Consultant shall compare alternative systems of water supply in the various service areas. These comparisons shall be made in terms of technical feasibility (incl. reasonable assessments of the probability of groundwater sources being realized), total capital and operating costs (net present value or annual cost basis) and the timing of the alternative systems. Following these comparative analyses the Consultant shall prepare a comprehensive water plan for the Governorate, which would set forth the recommended service areas and for each service area would establish the following:

(1) Current and future population and water demand

(2) Staged program for the investigation and exploitation of new water sources

(3) Staged program for the expansion of existing supply and distribution systems and the provision of new facilities.

3.4 Task 4: Animal Husbandry Studies

Note: To date the Government has identified little in the way of existing agricultural activity or potential for future agricultural development other than the grazing of sheep and cattle in the southern portion of the Governorate.[1] Should the Consultant find in the course of his studies that such potentials may exist, in connection with new water sources or recycling of industrial water, he shall develop possible approaches in outline form, which may serve as the basis for modification of this present task description.

1 In the far sourthwestern portion of the Governorate, near the shores of Lake Nasser, a limited agricultural potential exists in the Wadi AJ lagi. Agricultural development of the areas immediate adjacent to Lake Nasser (below Elev.240) must be considered in conjunction with the regime of the Lake and is, therefore excluded from this study.

3.4.1 Review of Current Herds and Practices:-

The Consultant shall undertake such field studies as may be necessary to determine the present size and composition of herds, the ratios of animal units to land area, the extent of evergrazing or underutilization of resources in various parts of the Governorate and the relationships between the herds and the people drawing their livelihood from these herds. While these field studies shall be directed towards the quantification of various factors that are currently unknown, the social aspects, life styles of the bedouin groups and the potential for significant changes in these life styles should not be ignored.

3.4.2 Assessment of Potentials:-

From his analyses of the information obtained from his field studies, currently available data and other sources such as ERTS (IANDSAT) imagery, the Consultant shall prepare a detailed assessment of possible means to increase the opportunities open to the bedouin peoples and their incomes. This may include physical measure to improve grazing lands and provide food concentrates, other measures to increase herd productivity and possible markets for surpluses or it may point up the need for resettlement or development of handicrafts and coltage industries.

3.4.3 Preparation of Recommendations and Project Proposals:-

Following from his assessment of the potential for significantly modifying existing grazing lands, the use of these lands and the lifestyle of the bedouin population that is dependent upon the raising of animals, the Consultant shall formulate a detailed set of recommendations and set forth specific projects he considers to be worthy of further pursuit. In some cases the Consultant's recommendations may include a call for further studies and outline Terms of Reference for such studies or they may include administrative actions or small projects that can be carried out directly at little cost. A rough estimate of the cost of recommended projects and a schedule for their implementation between 1978 and 2005 should be provided. Both the estimates and the schedule should be more detailed for early years whereas this

information will be in more genralized form for the years following 1985.

3.5 Task 5: Fisheries and Marine Life Studies

3.5.1 Compilation of Data on Oceanography and Marine Biology and Field Studies:-

The Consultant shall review and analyze all data collected under Task 1 relating to the oceanography and marine biology of the Red Sea. From this review he shall prepare a program of field studies directed towards answering specific questions that may arise. These field studies should be of a nature that they may be carried out without sophisticated equipment or specialized vessels. (Locally available launches and fishing craft would be used.) They may be carried out within a single period of several weeks or at several intervals during the course of the overall study. The field studies should include also direct observation of reefs in areas considered to have a potential for tourism by means of at least five explorations with "SCUBA" gear.

Upon completion of the portion of the work, the Consultant shall prepare a descriptive report on the physical aspects of the Re Sea, the various eco-systems and marine communities to be found there, the environmental factors that must be considered in subsequent planning work and the features of the reefs that are relevant to tourism. This description should also include the existing statiin of the institute of Occanography and Fisheries, covering staff, facilities and adequacy for its present research mission.

3.5.2 Assessment of Present Fishing Practices and Potentials for Capture Fishing and Aquaculture:-

The Consultant shall supplement available data on Red Sea fisheries based within the Governorate with information gained from direct observation and interviews with fishermen. He shall look into the present fleet, and support facilities ashore, their condition and suitability for current fishing practices. He shall review the seine, trawl and handline fisheries in terms of the species caught, type of equipment used, catch rates, manpower requirements, storage and

transfer methods, condition of catch, etc. for the purpose of determining possible means of increasing present yields where reasonable, and the tonnage of fish actually reaching the final consumen.

With respect to the various capture fisheries, the Consultant shall in the light of the studies described in the previous paragraphs and available data on fish resources, prepare an assessment of their future potential and determine the types of improvements that may be carried out. This assessment shall be consistent with the quality of currently available data on resources and may not be completely definitive. Appropriate ranges of costs and means for recovering these costs shall be developed for the types of improvements considered, as well as their impact upon employment, etc.

Aquaculture does not exist at the present time within the Governorate but some potential may exist for fish cultivation in enclosed bodies of salt or brackish water, particularly in areas where inductrial processos may result in effluents that will modfy the existing natural conditions. In conjunction with his other studies the Consultant shall consider whether this potential does indeed exist, the order-of-magnitude of costs that may be involved and possible benefits to be gained from aquaculture.

3.5.3 Preparation of Recommendation and Project Prooosals:-

On the basis of the above assessment of the potentials lot improving present fisheries and the types of improvements that may be undertaken, the Consultant shall formulate a detailed set of recommendations and set forth specific projects he believes to warrant further study and possible implementation. In addition, he may propose administrative actions on projects involving little expenditure, which could be implemented without further review. In addition to projects linked directly to fisheries exploitation, the listing may include items such as improvements in research capability. In the case of projects requiring data base studies or studies of feasibility, the Consultant shall prepare outline Terms of Reference for such studies. A rough estimate of the cost of proposed projects and a schedule for their implementation between 1978 and 2005 should be provided. This

information would be more detailed for the early years, whereas it would be in more generalized form for years following 1985.

3.6 Task 6: Mineral and Industry Studies

3.6.1 Petroleum Sector Studies:-

Responsibility for the development of the petroleum sector is hsared by the Ministry of Potroleum and Industry, related public sector companies and major international firms. Plans for the future growth of the sector during at least the next decade are reasonably well established. Therefore, the primary concern of the Consultant will be to review various aspects of the current plans and determine their impact upon existing settlements in the Governorate and the demand for possible supporting industries, housing and household services. He may also consider the potential, if any, for spin-off industries within the Governorate.

For this purpose the Consultant shall review current plans for development of the petroleum sector and on the basis of this review and subsequent analyses he shall develop specific information on the following:

- capital expenditures and the proportion likely to remain within the Governorate.
- methods for storage and transfer of crude oil and gas and extent of processing to be undertaken in the Governorate.
- type of industrial support services that may be required and plans for providing them.
- direct and indirect employment resulting from development of the sector and the location of this employment.

The Consultant shall develop this information in a coherent form for use in his later study of industry potentials, settlement patterns and infrastructure needs.

3.6.3 Assessment of Mineral Potentials (Reserves, Costs of Extraction etc.):-

a number of surveys and studies have been made of mineral resources

in the Red Sea Governorate by the Egyptian Geological Survey and Mining Authority. These have ranged from reconnaissance surveys to detailed assessment of mineral reserves. The Consultant shall review all currently available data on mineral resources in the Governorate and supplement this review with analyses of ERTS (LANDSAT) imagery, discussions with appropriate officials of the Egyptian Geological Survey and Mining Authority and the companies operating in the area and field visits to sites of the greatest interest.

It is recognized that definitive information on reserves and the feasibility of economic exploitation can only be obtained from detailed field studies that are beyond the scope of this planning effort. What is required, however, is a review and assessment of studies carried out to data and a "pulling together" of these studies within a single, overall context. For each major area of the Governorate, a set of priorities for exploration and development should be prepared, plus a well-reasoned assessment of the probability of certain levels of mining activity being achieved and the impact of possible mineral discoveried and their exploitation upon the pace of development and the planning appropriate to this development. This assessment shall be based upon marketing factors and overall value to the Egyptian economy in addition to local conditions and prospects for finding minerals of economic value.

3.6.3 Review of Existing Industries:-

The Consultant shall review and analyze available information on industries that are already established in the Governorate. (These are largely involved in the extraction and processing of minerals). His analyses should over the type and scale of operation, investment level, output, current plactices, employment and, it possible, financial aspects and organizational structure. The results of this work shall include, for the larger industries and appropriate groupings of the smaller industries, recommendations on possible means to improve output and productivity, the supporting services and facilities neede to permit this improvement and the organizational environment necessary to foster this improvement and provide the needed facilities.

3.6.4 Assessment of Potentials for New and Expanded Industrial Development and Possible Linkages:-

On the basis of the foregoing analyses of the petroleum sector, mineral potentials and existing industries the Consultant shall prepare a detailed assessment of the potentials of the Governorate for the further development of industrial enterprises. This assessment shall include the proparation of a reasonably definitive list of possible industrial projects (These may be new extractive or processing industries, new service or spin-off industries or expansion schemes for existing industries) and an analysis for each major area within the Governorate of the possible industries, relationships among industries, external relationships and supporting infrastrcture needs during the 1978-2005 period.

3.6.5 Definition of Industries for Further Study:-

Under this Sub-task, the Consultant shall set forth specific recommendations for minerals and industry development in the Governorate. For his purpose he shall develop order-of-magnitude estimates of cost and the possible net additions to Egyptian income that would be associated with each project or set of allied projects. Upon the basis of these estimates and other judgements, he shall establish a rough order of priorities and set forth one or more programs for development of industries in the Governorate during the 1978-2005 period. (Infrastructure requirements during this same period shall be considered separately under Task 8, below). Within the context of these programs he shall define the studies he deems necessary for implementation of early projects and provide outline Terms of Reference for these studies.

3.7 Task 7 : Tourism Studies

3.7.1 Study of Foreign and Domestic Tourist Markets:-

The Consultant shall consider in detail the following segments of the tourism market:

a) International Tourists (Western Europe & U.S.)
International Tourists (Eastern Europe)

Pleasure travel-sightseeing, destination (mass and specialized)
Business travel-business cum pleasure (tud to area development)

b) Domestic Tourists
   Vaction travel
   Weekend travel
   Business travel

c) Regional Tourists (Arab countries)
   Pleasure travel
   Business travel

d) Local recreational demand (This is virtually nil at present but may later become significant).

The Consultants' review of these segments of the tourism market shall be based in large part upon recently completed studies in Egypt[1] with supplementary analyses as needed. (Supplementary analyses may be particularly useful for specialized markets, such as skin-diving and sports-fishing.) This review shall cover existing patterns of tourism in Egypt and destinations that are potentially competitive with the Red Sea coast and the potential for growth of the relevant market segments. Of special interest for each market segment are origins, seasonal patterns, expenditure levels, type of trip or tour and transport mode and areas of interest. The review of competitive areas should cover type and number of facilities, accommodation costs, natural attractions and future plans.

3.7.2 Analysis of Tourism Potentials and Estimated Demand:-

The Consaltant shall visit and evaluate the existing tourist facilities in Ghardaha, Mersa Alam and elsewhere, noting such items as the type and number of accommodations, other facilities, price levels, staff, condition, access etc. Based upon the results of Sub-task 3.5.1 and other studies the Consultant shall also prepare an assessment of the potential of the reef formations and sports fisheries for attracting tourists to the Red Sea coast. This assessment should include a

1 National Tourism Study - Steigenberger Consulting, GMBH Tourism Plan for Suez Canal Region - ILACO, Dr. Hassan Ismail.

description of the reefs and the underlying formations, a comparison with reefs in other areas of the world that are recognized destinations for divers and an indication of the number of divers that may be accommodated simultaneously in the reef areas adjacent to Ghardaka, Mersa Alam and other areas identified as having major potential. It should also include a review of possible hazards to reefs and sports fisheries and recommendations on protective measures.

On the basis of the Consultant's studies of the various segments of the market and the foregoing assessment of facilities and attractions, he shall prepare a detailed forecast of future tourism traffic to each major destination in the Governorate during the 1978-2005 period. This forecast shall indicate ranges of the number of tourists and number of bednights for each major market segment, plus and indication of salient features, such as areas of interest and anticipated levels of expenditures. This forecast will, of necessity, be tied to specific actions that must be taken if any given level of traffic is to be realized.

3.7.3 Definition of Projects for Further Study:-

In light of the tourism forecasts he has developed, the Consultant shall prepare one or more programs for investment in the tourism sector. These programs shall comprise a staged series of tourism projects, including hotels and hotle improvements, holiday villages campsites, etc., plus the supporting facilities and actions necessary to achieve touristic development. Estimates of the approximate costs of building and operating these projects and the net additions to income that may be realized from their development shall be developed. As in other sectors, these programs shall be set forth in a detailed manner for the early years of touristic development and in more general terms for the years following 1985. The technical infrastructur needed to support this development will be considered in the following task.

3.8 Task 8 : Study of Settlement Patterns

3.8.1 Studies of Existing Regional Intrastructure

These studies shall cover all elements of intrastructure, exclusive of water supply and transmission which are covered under Task 3 above. For the purpose of determining the adequacy of the existing infrastructure to sustain development efforts, the Consultant shall review the available data on the Governorate's external links (ports, roads and power transmission) and internal systems (roads and power systems) and spend sufficient time in the field to fully evaluate their capacity, current usage and condition. In addition, information on existing budgets for operation and maintenance and proposed capital expenditures shall be developed. (In the case of ports, the necessary analyses shall include cargo types and volumes, shipping patterns and port operation, in addition to physical features). The final product of these analyses shall be an evaluation of the extent to which existing infrastructure has affected present settlement patterns and an analysis of the restraints to growth imposed by this existing infrastructure or the lack thereof.

3.8.2 Studies of Population and Estimates of Future Population:-

The Consultant shall analyze available data on the existing population - numbers, distribution, composition, family and age stuructures, background, skills, income, etc. and shall supplement these data with limited surveys of selected population samples. The same studies may also extend to potential migrant groups in the Nile Valley. On the basis of these studies he shall evaluate the impact of regional development upon the existing population and their capacity to benefit from this development. These findings shall form the bases for specific recommendations on supplementary education, job training and access to jobs, loans (e.g. for fishermen) etc. They shall also be incorporated into estimates of future population, insofar as such estimates must consider changes in family status, family size etc.

Utilizing the results of the foregoing studies of the various economic sectors in each major area of the Governorate and following analyses

of the future demand for business and household services within each area, the Consultant shall prepare delailed estimates of future employment (or ranges of employment) in the Governorate. Using the results of the foregoing studies of population characteristics, the Consultant shall prepare estimates of future population (or ranges of population) and income distribution in each area of the Governorate and each major population center. (For the purposes of Sub-task 8.4 below, additional parameters, such as future vehicular ownership shall also be developed.) The assumptions upon which each estimate is based shall be clearly set forth. These estimates shall be prepared in concert with the studies of settlement patterns described below and shall reflect the results of these studies.

3.8.3 Study of Migrant Policies and Means to Increase the Altractiveness of the Governorate:-

If the development of the Red Sea Governorate is to be achieved it is likely that a substantial proportion of the future population will be composed of migrants from elsewhere in Egypt and their offspring. Development efforts, therefore, must include those that are directed to serving migrant needs. These may include centers in source areas for dissemination of information about opportunities in the Governorate, reception centers in the Governorate to assist migrants in finding housing and jobs, special incentives to encourage middle - income people to put down roots in the area and efforts to increase the overall attractiveness of the area. On the basis of his calier population studies and his assessment of existing attractions, the Consultant shall set forth a definitive policy for migrants and a program of recommended government actions designed to encourage a flow of migrants to the area that is consistent with the development of job opportunities. The cost of undertaking this program shall be included in the material that is presented.

3.8.4 Delineation of Settlement Pattern and Establishment of Regional Infrastructure Needs:-

Pulling together the threads of the foregoing studies and analyses, the

Consultant shall articulate a physical pattern of towns and cities in the Governorate. At the same time, he shall define the specific role of each population center, its future economic base, its physical and economic links with other centers in the Governorate and its links to regions outside the Governorate. Prime determinants of this pattern will include, among others, the location of resources, existing population distribution, natural attractions and development costs. To the extent that future mineral prospects and possibly other potentials cannot be fully established, the pattern set forth shall be sufficiently flexible to accommodate alternative futures.

Regional infrastructure needs shall be determined on the basis of the settlement pattern that is established:

For roads and railroad(s) a model of the future land transport network shall be prepared and used to establish the needed capacity and standard for each major transport link[1] and to provide a timetable for undertaking the necessary improvements.

It is intended that the Governorate be fully tied into the unified national power system and for this purpose the Consultant shall estimate the demand in each major load center and determine the most cost-effective network for serving this demand. Additional generating capacity, unless it is to be developed in connection with desalination proposals, shall be as determined by the Ministry of Electricity's current program.

A program for improved telecommunications within the Governorate and with outside areas shall be established in accordance with a well-defined set of priorities for users and current policies of the Ministry of Transport, Communications and Maritime Transport.

1 The capacity of the Abu Tartur-Qena-Safaga rail line will be a product of detailed studies of unit-train movements, storage capacities etc, in connection with the Abu Tartur project. These are outside the scope of this Regional Plan Study. What is desired, however, is an assessment of the impact on this rail line should the Consultant recommend that it also be used for general goods and passenger movements.

Port requirements shall be determined from the foregoing studies of the various sectors in the Governorate and, in the case of Safafa (and possibly a port in the south) on the basis of national traffic projections.[1] The Consultant shall prepare an outline port plan for the Governorate, indicating the ports to be developed, the general type and extent of improvements required at each and the timing for those improvements.

The Consultant's recommendations on regional infrastructure improvements (highway, rail, power, telecommunication and ports) shall be set forth in the form of one or more programs, including the following elements:

Approximate cost
Time schedule covering 1978-2005
Identification of high priority projects for detailed study and outline Terms of Reference.

These programs shall be presented in detailed for the years 1978-1985 and in more generalized fashion for years following 1985.

The recommended pattern of settlement and the accompanying regional infrastructure shall be illustrated at a scale of no less than 1:500,000 (and larger scales if necessary).

3.8.5 Development Programming and Sketch Planning for Major Centers:-

For the major population centers, as determined from the recommended pattern of settlement, the Consultant shall prepare a program for the provision of all elements composing the urban fabric, i.e.: housing, public facilities, commercial centers, service industries and local infrastructure. (It is anticipated that about six or seven cities or towns may be involved). Each program should set forth initial and final standards for the provision of various services, the type and scale of facilities required, the phasing for all elements, the sectors

1 It is not intended that this Consultant be responsible for national traffic estimates. Sources for these estimates are recent studies prepared under the auspices of the Ministry of Transport, Communications and Maritime Transport and the Ministry of Housing and Reconstruction.

responsible for their provision and rough estimates of cost. (These costs may be developed on an investment per capita basis or similar, relatively gross, measure.) General guidelines shall be furnished, setting forth the most appropriate means to provide various elements within the urban fabric and delining the extent of government involvement (e.g. for housing a given income group - creation of the environment for private building efforts vs delivery of complete dwelling units).

General concepts for the physical ordering of land uses and major elements in each major population center shall be developed. To illustrate these concepts, the Consultant shall prepare a sketch structure plan at a scale of 1:10,000 for the early phases of development. This plan would also indicate areas of possible future growth and the direction this growth may take.

3.9 Task 9 : Preparation of a General Approach on Development

3.9.1 Recommendations on Administrative Structure and Practice:-

Through his review of available data and discussions with Governorate, the Consultant shall thoroughly familiarize himself with the powers, responsibilities, fiscal resources and staff capabilities of the Governorate and its administrative subdivisions. He shall also review the relationship between the Governorate and the various Central Government agencies that initiate and control programs within the Governorate and the respective capabilities of these agencies, He shall take into consideration possible changes in the existing structure that may result from the recent legislation establishing planning regions within Egypt.

In light of these reviews, the Consultant shall evaluate the adequacy of the existing administrative structure and agencies to sustain the programs he is recommending for development of the Governorate. Based upon this evaluation, the Consultant shall prepare specific recommendations for possible improvements in the existing administrative budgeting processes as these affect the initiation, planning, construction and operation of new projects and the expansion

or services in a development area, should such improvements be warranted. The term "improvement" may also encompass new organizational structures or the creation of a development agency, if these approaches are found desirable. If recommendations of this nature are made, the manner in which they could be phased-in should be stated.

3.9.2 Early Action Recommen

Recommendations for early action on the part of the Government will fall into two

(a) Administrative actions and small-scale projects which may be undertaken with relatively little capital investment but may have high early returns.

(b) More detailed feasibility studies, planning studies and data-base studies which are required before large-scale development can proceed or before specific high-priority projects can be undertaken.

Most of these early actions will be identified during the course of the earlier studies. Under this sub-task, the Consultant shall bring them together into a single framework, with a clearly define set of priorities.

As noted earlier, detailed studies which can be identified at an early point in this study should be set forth in the interim Report which is due at the end of six months (Section 4-below). Outline Terms of Reference for these studies may also be required at that time.

3.9.3 Assessment of Overall Investment Requirements:-

The Consultant shall prepare a summary of the investments required to undertake development of e Governorate during the 1978-2005 period. This summary should indicate the anticipated levels of investment in each major sector annually to 1985 and by 5 year increments in the years following 1985. Because of uncertainties, particularly in the area of mineral development and downstream industries, it is fully anticipated that several possible levels, or

ranges, of investment will be set forth, each based upon a specific set of assumptions.

The Consultant shall review these summaries in light of anticipated growth rates for the economy of gypt as a whole and the local economy of the Governorate, the general levels of investment set forth in the 1978-1982 Five-Year Plan and other documents of the Ministry of Planning and the priority given to development of the Red Sea Governorate by the Government of Egypt. He shall consider whether the investments proposed are reasonable and consistent with Egypt's investment resources and its current goals. The Consultant shall adjust the scale or phasing of the programs he has prooosed if major inconsistencies are found Furthermore, to the extent that investment resources form a restraint, the Consultant may set forth alternative paths for development in which certain sectors or localities would be emphasized at the expense of others. These may subsequently be compared in order to determine the development approach that will make the most elfective use of the investment resources that are available.

3.9.4 Rough Quantification of Benefits from Development:-

Considering only the base sector, (i.e. fisheries, stock raising, mining and non-service industries and tourism) the Consultant shall develop rough estimates of the net additions to national income (value-added or similar measure) that may be realized from the development of the Governorate along the alternative paths noted above and under various assumptions concerning mineral wealth. Considering base-sector investments, the economic value of the alternative paths for development may then be compared in terms of standard measures, such as net present value or benefit-cost ratios, and in terms of non-quantifiable elements.

To simplify the analysis spillover benefits and multiplier effects are not specitically included. The Consultant may, however, deem it advisable to consider whether a given development approach may have a potentially greater multiplier than another alternative approach; or whether infrastructure costs for a certain development path are

much higher for a comparable level of first-order benefits.

It is anticipated that this analysis will form an integral part of the planning process foreseen in this study and that the recommendations described earlier on suitable programs for each sector and priority projects within these programs will, in their final form, reflect this analysis; and the conclusions drawn therefrom on the best overall approach to development of the Governorate.

4. REPORTS, PRESENTATION:

4.0 General

All reports and presentations will be in English and will use the metric system. In addition, the main recommendations of the Interim Report and the entire Final Report shall be translated into Arabic.

The Consultant will be expected to present the findings and recommendations of the Interim Report, the Draft Final Report and the Final Report at meetings of appropriate officials of the Government.

In addition to the required reports the Consultant shall be prepared to turn over either the original or a true copy of all maps, tracings, sketches and computations, interview schedules, or other back up material required to explain the conclusions or recommendations; this applies to all material not otherwise specified. All mapping included in, or accompanying, reports will be at standard scales. Odd scales used for convenience in filting page sizes will not be acceptable.

4.1 Monthly Reports (10 copies)

The Consultant will submit at the end of each month a letter type report that will outline his activities for the past month and the tasks scheduled for the next month. A standard form for reporting the planned and actual level of professional effort will be furnished to the Consultant by the Ministry. In this report, the Consultant will call attention to any problem areas and any recommended revisions to the schedule established by his agreement with the Ministry.

4.2 Interim Report (50 copies)

At the end of 6 months from the start of work, the Consultant will

submit a report summarizing his findings to date, setting forth those proje ts or areas which the Consultant's work to date has identified as being of particular importance to the development of the Governorate and outlining the detailed studies necessary for their implementation. The Arabic summary of this report and the Consultant's recommendations will be submitted at the same time. Comments by

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TERMS OF REFERENCE
FOR A
REGIONAL PLAN FOR
THE NEW VALLEY GOVERNORATE

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12 MARCH 1978

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TERMS OF REFERENCE
REGIONA PLAN FOR THE NEW VALLEY GOVERNORATE

1.0 INTRODUCTION

1.1 General

In accordance with the concepts set forth by President Sadat in his October Working Paper for a "New Map of Egypt"*, the Egyptian Government is placing increasing emphasis upon development of the desert areas that constitute some 95% of Egypt's land mass. This move away from the traditional centers of population is prompted by the growth in Egypt's population and the need to preserve the agricultural lands of the Nile Valley and Delta, as well as the desire to develop the natural resources that exist in the more remote desert areas.

The Western Desert, representing roughly two-thirds of Egypt's land area, in a broad plateau that ranges from 100 to 500 meters (m) above sea level. The center of this plateau contains a series of depressions that generally parallels the Nile Valley, about 250 kms to the west. These depressions are roughly 300 meters deep and groundwater is close enough to the surface to have created oases that have been settled at various times during the history of Egypt. It is only recently, however, that the true dimensions of the groundwater reservoir underlying the Western Desert have become known. Thus, while it is largely undeveloped at present, the area does have potential for agricultural reclamation; in addition to the extraction and processing of minerals.

The southern 60% of the Western Desert, roughly 450,000 sq. km., is contained within the New Valley Governorate. The name "New Valley" refers collectively to the oases of Farafera, Dakhla and Kharga, plus a dry valley that extends southward from Kharga oases to the shore of Lake Masser. The present population of these oases and the surrounding desert is less than 60,000. Thus, the vast expanses of the New Valley Governorate represent an asset that is virtually untapped but may prove to be a logical area for major development efforts.

* 1974

1.2 Study Objectives

In order to develop a framework for more detailed studies of specific settlement areas and projects, the Egyptian Government intends to commission a study for the development of a Regional Plan for the New Valley Governorate. The major elements of this study will comprise the following:

1. Analysis of potential economic activities in the Governorate. Approximation of future additions to national income that may be realized from these activities and estimation of the scale of investment required.
2. Establishment of a general settlement pattern and future ranges of population in the Governorate.
3. Determination of the regional transportation network required to support development and the regional infrastructure needed.
4. Identification and definition of individual projects and localities for further, more detailed study.
5. Elaboration of suitable development approaches - type of organization required, initial investment decisions, (particularly early, high-impact, small scale investments) and appropriate means to attract migrants.

It is intended that the study findings be incorporated in a series of periodic reports and a final report to the Government, which will provide the basis for further actions leading to development of the Governorate's potentials.

1.3 Responsible Agency

The Ministry of Housing and Reconstruction is the reponsible agency within the Egyptian Government for this work. The Ministry has delegated authority for development of these Terms of Reference, solicitation of proposals, negotiation of a contract and monitoring the Consultant's work to the Advisory Committee for Reconstruction, Dr. Hassan Marie, Chairman.

Accordingly, all communications concerning these Terms of Reference should be addressed to:

Dr. Hassan Marie, Chairman
Advisory Committee for Reconstruction
Ministry of Housing and Reconstruction
1, Ismail Abaza Street
Cairo, Arab Republic of Egypt.

2.0 BACKGROUND

2.1 Location of Geographical Features

The New Valley Governorate covers the area bounded on the west by the Libyan border, on the south by the Egyptian-Sudanese border, on the east by the shore of Lake Nasser and the western rin of the Nile Valley and on the north by a line starting just south of Minya and extending in a west by west-southwest direction for about 150 km before turning due west to the Libyan border (Figure 1). The Study Area includes all of the Governorate except for potential agricultural areas immediately adjacent to Lake Nasser and lying generally below Elev. 240 m. It shall, however, include the Tushka depression and South New Valley areas, plus the locale of the canal and headworks needed to convey Lake Nasser waters to these areas, as further elaborated below.

The plateau that comprises most of the Governorate ranges generally from 200 m to 500 m in elevation. Only in the far southwestern corner of Egypt does it rise to about 1000 m on the slopes of Jebel Uweinat, a mountain 1893 m high located in Sudan. The desert is almost uniform in character and the surface of the plateau consists of gently sloping areas of the bare rock, sand and gravel. Only at edges of the depresions that wind their way through the desert does the plateau drop off steeply the lower levels. Separated by stretches of sterile desert lie to oases of Kharga, Dakhla and Farafra, which are found within these depressions. These oases are fed from a large groundwater reservoir that is under sufficient artesian pressure to raise the water above ground level in the Dakhla oasis. The origin of the groundwater is in the Erdi and Ennedi region on the border of Chad and Sudan. The water is flowing generally to the north-east and eventually discharges into a chain of lakes and depressions in the north, including Siwa oasis, Qattara Depression and the Faiyoum.

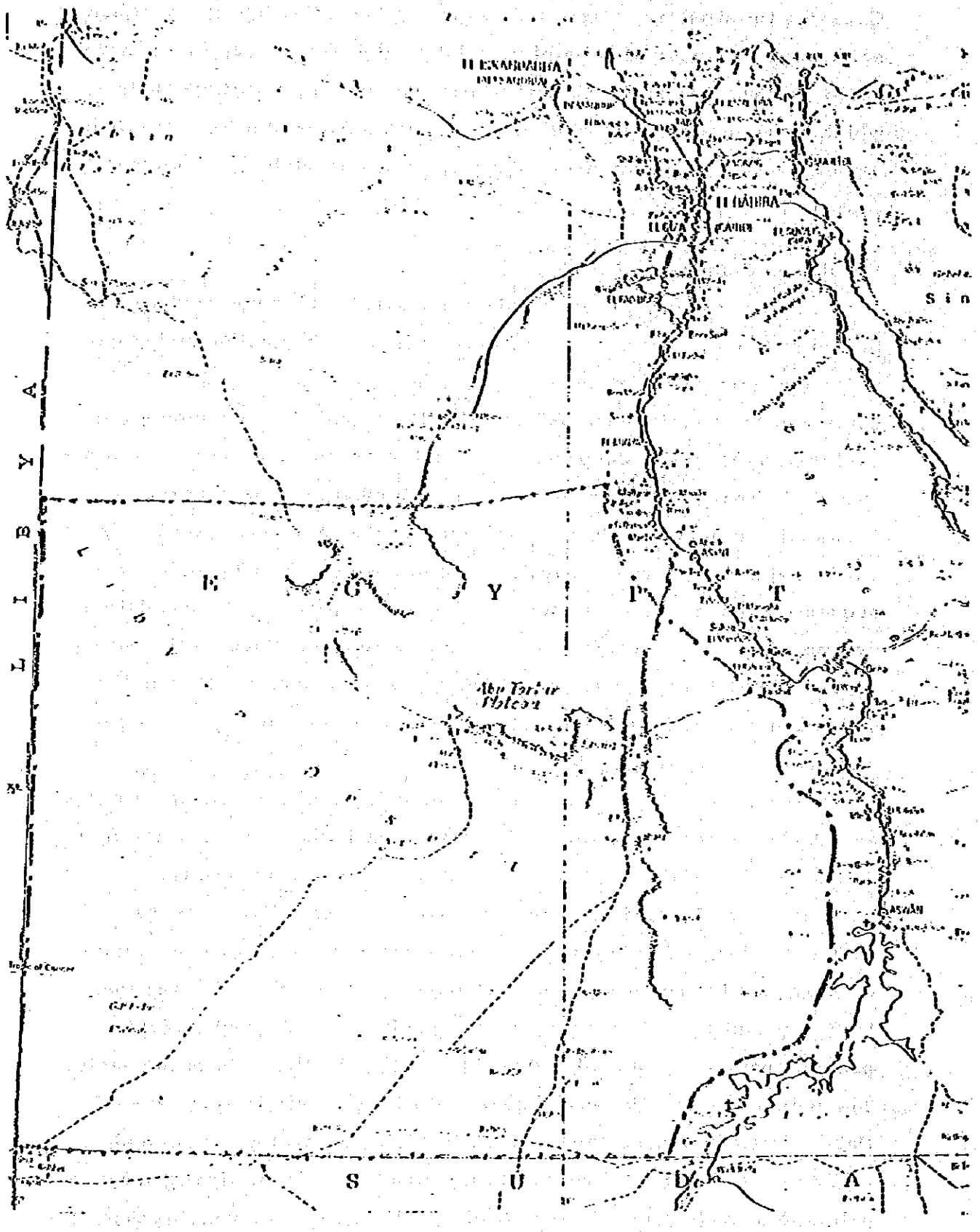

Figure 1

(NOTE: This Figure indicative only - To be redrawn for final TOR)

Crossing the Western Desert and passing through the depressions themselves are a number of belts of parallel sand dunes that lie in a general north-northwest to south-southeast direction of the prevailing wind, which is from slightly west of north and may move as much as two feet per day. As such, they form a distinct design problem for transport routes.

2.2 Population Centers

As noted earlier, Kharga Oasis was settled during the predynastic period of Egypt. There is no evidence of human occupation during most of the dynastic period of ancient Egypt, however. It was only with the coming of the Persians (ca 525 BC) that the artesian water supply was exploited by means of deep wells and subterranean aqueducts. A temple outside of Kharga dates from the time of Cambyses*. During the Ptolemaic, Roman and Byzzantine periods, the oasis was intensively cultivated and supported a population of upward of 40,000 people. Subsequently, the irrigation systems felt into disrepair and the population drifted away. Kharga Oasis remained as a stopping place on the caravan route called El Arbayeen, or forty days, which leaves the Nile in the Sudan and rejoins it at Assiut. It was not until this century that significant numbers of people returned to the area.

At the present time there are two main areas of settlement - Kharga and Dakhla Oases. Smaller settlements exist in the vicinity of the Abu Tartur mining project and near Qasr Farafra in Farafra Oasis.

Kharqa Oasis contains cultivated areas and small settlements scattered along a 120 km length of paved highway passing through the town of Kharga in the north and ending at Baris in the south. Kharga, the chief town and capital of the Governorate, contains about 10,000 - 15,000 people; another 5,000 - 10,000 reside in other settlements in the oasis. The primary occupation of the people of Kharga oasis is agriculture. Date palms are successfully grown, in addition toa range of ropical fruits and food crops. The typical farming pattern is to first grow data palms to provide some shade to protect other crops from the intense heat

* The earliest Persian conqueror.

of the summer months. Expansion of the agricultural area in Kharga Oasis is currently proceeding on the basis of recent soils classification studies funded by the UNDP.

Dakhla Oasis is also a series of cultivated areas that stretch over a distance of about 120 kms. It is separated from Kharga Oasis by over 100 kms of barren desert at a higher elevation. The cultivation of land in Dakhla Oasis is more widespread than in Kharga Oasis though the crops are similar. As noted earlier, artesian pressure in the groundwater basin is sufficient to bring water to the surface without pumping. A significant problem does exist, however, with respect to drainage and there is currently a large drainage scheme currently underway with assistance from West Germany. The total population of the oasis is roughly 30,000 to 35,000 people living in scattered villages.

Farafra Oasis is roughly 150 kms northwest of Dakhla Oasis. This is virtually unsettled at the present time though preliminary studies indicate that it may have significant agricultural potential. A number of springs are located in the vicinity of Qasr Farafra but the oasis is very sparsely populated at the present time.
Preliminary studies, however, indicate that a significant agricultural potential may exist within the Farafra Oasis.

The only other settlement of note within the New Valley Governorate, other than scattered fishing villages, along the shore of Lake Nasser, is the mining camp at the foot of Abu Tartur Plateau, roughly 60 kms from the town of Kharga. This has been recently established in connection with a major phosphate mining project that is discussed subsequently.

2.3 Transport and Communications

The only paved road linking Kharga and Dakhla Oases to the rest of Egypt is a 228 km long road from Assiut to Kharga. This is a two-laned first-class road that continues another 70 kms to the town of Baris at the southern end of Kharga Oasis. Branching from the main road in the town of Kharga in the road leading to the district town of Dakhla 197 kms distant. This is a narrower, second class road and the surface is in generally poor condition. Road repair works are currently being carried out along much of its length. One feature of note on this road is that it

crosses a 20 km wide belt of sand dunes moving from north to south. In this stretch a temporary detour is provided around each dune which allows the passage of vehicles until the dune passes over the permanent road. As a result travel speeds are very low.

An unpaved desert track joins Dakhla Oasis with Farafra Oasis to the northwest. However, from Gasr Farafra a paved road extends up to Bahriya Oasis (outside the Study Area), where the ore that supplies the steel complex at Helwan is mined. Other unpaved tracks link Kharga Oasis with the Nile Valley and also to Sudan.

Until a number of years ago a railroad line ran from the Nile Valley, near the town of Tarshut to Kharga. However, the line carried little traffic and the cost of maintaining the trackage through areas of shifting sand dunes became excessive, and the line was finally abadoned. If current studies prove the viability of the Abu Tartus phosphate mining venture, another rail line with much greater capacity will be built in the same corridor.

The New Valley airport was built only a few years ago to replace the earlier Kharga Oasis airfield. It is a modern facility capable of handling two engine transports and possible larger aircraft. While there are no regular flights to the New Valley at present, Egypt Air is actively considering the inauguration of such a service.

2.4 Groundwater Source

The existence of a major groundwater basin underl ing much of the Western Desert has been known for a long time; the earliest studies of the Dakhla and Farafra Oases date from 1901. The source of water and its direction of flow were first hypothesized in 1927 and further studies of the area were conducted in the 1930's and 1940's. It wasn't until the early 1960's that a large scale program of groundwater development was undertaken. As a result of this program, the characteristics of the groundwater basin in the New Valley are reasonable well established.

Having fallen as rain in the border region of Erdi and Ennerdi water in the basin is moving gradually to the northwest, north and northeast. In the New Valley area this flow is towards the northeast, as noted above. The water encountered in the oases of the area is estimated to be 25,000

years old. The water flows in a confined aquifer of Nubian sandstones, interbedded with shale layers, under artesian pressure and therefore uses in wells and boreholes. In Dkhala oasis the artesian rise is sufficient to bring the water to the surface without pumping.

The water in the Western Desert groundwater basin is relatively warm (about 43°C) and contains a high concentration of hydrogen sulfide, which is highly corrosive.

Upon exposure to the atmosphere, however, the hydrogene sulfide dissipates rather rapidly and the water quality is quite good once this impurity is removed.

2.5 Agricultural Activity and Potentials

At the present time agricultural activities in the New Valley Governorate are mainly confined to Kharga and Dakhla Oases. Some subsistence agriculture exists near Qasr Farafra and well to the south, on the shores of Lake Nasser is a pilot farm established by the UNDP at Abu Simbel.

As noted earlier, the pattern of cultivation in Kharga Oasis is one of scattered areas. Many of these are watered from traditional wells, albeit some larger projects have been established in recent years under the auspices of the General Authority for Desert Development (GADD) in the Ministry of Agriculture which utilize high capacity wells. Supplementing the growth of orchand and field crops are various poultry raising schemes and bee keeping. The UNDP has been assisting the GADD in recent years and soil classification, ranging from the reconnaissance level to detailed surveys, has identified an additional 13,300 feddans* of arable land within Kharga Oasis. Sandy-silt soils predominates within 7,000 feddans while heavy clay and clayey silt make up another 6,300 feddans. The presence of heavy clay soils is believed to be a relic of a period in pre-historic times when water was much more abundant within the oasis than it is at the present time.

In Dakhla Oasis farming areas are not so widely scattered as in Kharga Oasis and villages surrounded by continuous belts of cropland are frequently found. As noted earlier, artesian pressure in the groundwater basin is sufficient to raise the water level in boreholes above ground elevation in many areas. A problem that does exist in the oasis, however, is inadequate drainage and the consequent loss of cropland to salinity.** A major scheme to improve drainage is currently underway not too far from the district town, for which active assistance is being received from the West German government. With respect to the expansion of the cultivated area in the oasis, an additional 64,200 feddans has been suggested for reclamation following preliminary studies in the area. About 35,000 of these feddans contain heavy clay and clayey silt, while the remaining 29,200 feddans are in areas of sandy silt. On the basis of more detailed soils surveys, the General Authority for the Cultivation and Development of Reclaimed Land (EACDRL) has designated a 10,000 feddan area west of El Qasr for reclamation by 1980.

While it is not cultivated to any significant extent at the present time, the oasis that has perhaps the greatest potential for irrigated agriculture fed by groundwater is Farafra oasis. On the basis of preliminary studies, a total of 97,600 feddans has been proposed for reclamation. This area is roughly broken down as follows:

Soils	Area
Heavy clay to clayey silt -	40,000 feddans
Silt to silty sand -	27,600 feddans
Coarse sand and pebble -	30,000 feddans

In the Abu Menhar and Qasr Farafra areas, the EACDRL has designated an area of 1,500 feddans for reclamation by 1980 on the basis of more detailed soil studies.

The depression in which Kharga Oasis is found actually extends southward until it reaches the shore of Lake Nasser in the locality of Tushka. The largest potential reclamation area in the Governorate is

** Salinity is a product of residual salts resulting from the evaporation of irrigation water.

is located within the valley south of the oasis - some 200 to 300 kms from the town of Kharga. Known now as the New South Valley, the area is devoid of water at the present time but a unique feature is that north of a low ridge line much of the valley is below elevation 180, which is the maximum pool elevation of Lake Nasser. Conssquently, a canal from the Wadi Tashka on Lake Nasser has been proposed to irrigate lands within the South New Valley with water from the Nile*. Because of fluctuations in the level of Lake Nasser (approximately 10 to 12 meters in a typical year within the land between elev. 160 and 180 but in years of extreme drought the Lake could drop below 150 meters) pumping would still be necessary to bring water to the New South Valley but the proposal has substantial attractions. Thus, a potentially irrigable area of probably about 500,000 feddans, but ranging as high as 1,300,000 in some reports, has been identified. In February of this year, the Ministry of Housing and Reconstruction retained a U.S. firm of agricultural consultants for the purpose of preparing a pre-feasibility review of the scheme. A report containing the consultant's findings is to be submitted at the end of May and will form one of the sources of information for the New Valley Regional Plan.

2.6 Mineral Wealth

Virtually all of the Western Desert consists of sedimentary formations and, therefore, does not have the wide variety of metallic ores and other mineral found in the granitic mountains of the Eastern Desert. Within the New Valley Governorate, however, there are several deposits of economic value and one of major significance, phosphate, for the development of the region. Furthermore, the southwestern portion of

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* This proposal is distinct from another scheme that may be undertaken in the same area and which may entail common use of some facilities. That scheme dates from the early studies of the High Dam itself and would involve the diversion of peak floods (perhaps every 7 years or so) into the Tushka Depression, 100 kms west of the South New Valley. This scheme stemmed from concern that discharging such peak flows downstream would cause excessive erosion of the Nile's banks. The water thus diverted would simply percolate into the ground or evaporate.

the Governorate is largely unexplored and may contain additional minerals, as yet unknown.

Mining activities are regulated by the Egyptian Geological Survey and Mining Authority in accordance with Law No. 86 of 1956. The Authority issues licences for prospecting (in addition to carrying out such activity itself) and negotiates all contracts for actual exploitation. Since 1974, prospecting licences and exploitation contracts have been extended to private individuals and private sector companies, in addition to the established public sector firms, which were nationalized in 1963*.

Some of the more important minerals in the Governorate, and the present status of mining and quarrying activities are as follows:

Kaolin Clays - The Egyptian Company for Gypsum, Quarries and Marble currently quarries kaolin clays from two sites within the Governorate - one is in the Wadi Kalabsha, about 105 kms southwest of Aswan and not too far from Lake Nasser, and the other is at Bir El Shebb, some 300 kms further to the southwest along the old Arbayeen caravan route to Sudan. Total production from these two sites, plus a third site on the Gulf of Suez, in 1976 was nearly 40,000 tons.

Phosphate** - Beneath the Abu Tartur Plateau, some 60 kms west of the town of Kharga, the Egyptian Geological Survey and Mining Authority (EGSMA) has discovered a major deposit of good quality phosphate which may enable Egypt to move to a completely different scale of production and become a major international supplier.

Detailed studies of the Abu Tartur deposits have been undertaken in recent years under the auspices of the EGSMA and total reserves in the

* Nationally, as of June 1977, a total of 91 prospecting licences were currently active, 58 for public sector firms and 33 for the private sector. At the same time a total of 133 exploitation contracts were in force, 116 with public sector firms and 17 with private individuals or groups.

** Up to the present time the mining of phosphate in Egypt has been confined to sites near Qena in the Nile Valley and along the Red Sea Coast. Total production from these areas has been in the range of half a million tons per year.

area are currently estimated at about 1.4 billion tons. At the present time detailed feasibility studies are continuing and a pilot mining operati is being carried out by the Iron and Steel Authority to determine the mos appropriate mining methods and to test means for separating various trace minerals from the phosphate rock. Current plans call for the extraction of about 10 million tons annually, of raw phosphate, once the final production level is achieved in the mid-1980's. This tonnage would yield about 7 million tons of marketable product after beneficiation. Movement of this volume of rock to markets will require construction of a new railway to link Abu Tartur with the port of Safaga on the Red Sea Coast, where new stores and shiploading facilities are to be constructed Design studies for this railway are currently being undertaken under the auspices of the Ministry of Transport. Communications and Maritime Transport. There is the possibility that, as a result of these studies, a decision may be made to stage the construction of the railway; initially completing only the line from Safaga to Qena to serve the phosphate mine in the Nile Valley and later extending it to Abu Tartur when the economic justification becomes even stronger.

While the above describes the general outlines of the project as currently received, it could be modified in light of these regional plan studies; if, for example, supporting industries are found to be viable or if further processing in the Abu Tartur area were found to be feasible.

Other Mineral Deposits - Elsewhere in the New Valley Governorate smal deposits of other minerals have been discovered - iron, ores, alum, magnesium salts and coal in Dakhla Oasis, limestone and marble west of Sohag, near the road between Kharga and Assiut - but none of these, it is believed, have any economic significance.

3.0 CONSULTANT'S TASKS

As noted at the outset, the Government of Egypt has established the goal of reaching our beyond the confines of the Nile Valley and developing the desert areas that comprise so much of the country. In the light of this national goal, the following regional goals are seen as appropriate to the New Valley Governorate:

1. Rapid economic development based upon effective exploitation of the Governorate's natural resources.
2. Absorption of a substantial additional population from the overcrowded areas of the Nile Valley.
3. Improvement of the economic and social circumstances of the existing and future population and migrants to the Governorate.

Progress towards these goals may be measured in terms of the following, more specific, set of objectives for the Governorate:

Economic objectives:-

(a) Rational exploitation of the Governorate's agricultural and mineral resources in order to develop improvements in the economic base of the area capable of meeting the aspirations of the existing and potential populations and of providing a net addition of the income of Egypt.

(b) Development of economically and financially feasible industries based upon these resources through investment by Egyptian public and private sector firms and external investors.

(c) Creation of a pool of skilled manpower in the Governorate to serve the needs of agriculture, industry and commerce.

Social Objectives:-

(a) Development of opportunities for improvement incomes and for residents and migrants to acquire modern job skills.

(b) Improvement in standards of health care, education and other social services.

(c) Provision of opportunities to members of all income groups to obtain adequate housing.

Environmental Objectives:-

(a) Protection of the Governorate's land, groundwater and air resources from pollution and misuse.

The major purpose of the study described subsequently is to develop a set of detailed, phased programs of action designed to achieve the above objectives and covering the years 1980 - 2005. Within this framework, the study will identify and assess the component projects of each program

and develop a time frame for their completion.

The specific services to be provided for this study shall include, but not necessarily be limited to the following tasks:

3.1 Task 1 : Collection of Data

From the relevant ministries and agencies, the Consultant shall obtain, and codify for further use, currently available data on the following:

- Historic and current population, composition and distribution of population, occupations, skill levels household size etc. These data should cover both the New Valley Governorate and adjacent governorates which may be potential source areas for migrants.
- Data on the economy of the Governorate, including regional accounts, sectoral employment, production and income, existing and proposed investments in each sector or sub-sector, individual and household incomes, industry characteristics, etc.
- Information on the agricultural sector, including area under cultivation, cropping patterns, agricultural practices, irrigation methods, present markets and land-owning patterns.
- Data on regional and local infrastructure, including roads and road traffic, water supply systems, sewage disposal methods, electric power systems and telecommunication facilities. Data should cover such elements as capacity, physical condition and funds allocated for expansion.
- Data on public services, including education, health and security; extent and quality of service in these areas and funding.
- Data on physical features, geology and natural resources including the groundwater system (extend and thickness, pressures, flows, water quality, etc.), ores and other minerals (location, reserves, metallic content and current status of exploitation).
- Information on flora and fauna of the Governorate and their relationships with human settlements.
- Data on the organization of the Governorate, its powers and responsibilities.

The Consultant shall assemble these data on a coherent fashion, so as to form a reasonable data base for his further studies and permit the identification of major gaps in existing data.

3.2 Task 2: Establishment of Additional Data Requirements

The planning work covered by these Terms of Reference shall be undertaken on the basis of data that are currently available from various ministries and agencies or are obtained from the Consultant's own field studies. For subsequent, more detailed study of specific projects and localized areas within the Governorate by others, more detailed information may be required.

Jit is highly desirable, therefore, that as soon as the more detailed studies are identified, special data requirements should also be identified and described. This decription should include a draft program. This procedure will enable the Government to undertake the work necessary to obtain these data in advance of the time they are actually needed in the later studies.

3.3 Task 3 : Water Resources Studies

3.3.1 Complilation and Assessment of Groundwater Data

As noted, a substatial body of literature dating from 1927 and even earlier, exists on the groundwater system that underlies much of the New Valley Governorate. In recent years, more detailed studies have been undertaken and, on the basis of the well-drilling and testing program that was carried out in the 1960's a computer model of the groundwater system in the Governorate has been developed by the GADD.

Under this sub-task the Consultant shall review all current and pertinent data on the groundwater system, including:

- Physical forms, geological structures and lighologies, plus avaliable ERTS (LANDSTAT) imagery).
- Meteorogical and hydrological data.
- Data from existing wells, where they exist, indicating aquifer characteristics, water quality etc.

- Boundary assumptions, other parameters and input data for the model of the groundwater system
- Output data from the model from runs made to data.

On the basis of the material thus compiled and analyzed, the Consultant shall develop a series of withdrawal schemes - indication rates and patterns for each of the three oasis under varying conditions and varying degrees of interaction. These schemes shall be set forth in such a format, and contain such information, as is necessary to permit them to be evaluated against the agricultural potentials of various areas within the three oasis in a later sub-task. The ultimate purpose will be to develop a plan for water extraction and use that will provide for maximum efficiency in the use of water and in its allocation among agricultural and urban and other demands.

3.3.2 Review of Information and Studies on the South New Valley Canal

Under this sub-task, the Consultant shall review the material that has been developed on the South New Valley Project over the decade, including the future regime of Lake Nasser (particularly expected lake levels), water quality studies, soil surveys undertaken to date and finally the pre-feasibility report on the Project submitted in the latter half of May 1978 by Hawaiian Agronomics Company. The primary purpose of this review will be twofold - (1) to assess the volume of water that will be entering the valley by means of the South New Valley Canal, to outline the details of the canal system and determine the intended uses of this water for agricultural, domestic and other purposes; and (2), under a later task, to fit this Project into the overall framework of the Regional Plan.

3.3.3 Delineation of Water Service Areas and Quantities Required

Based upon the analyses described in Task 4 (Section 3.4) on agricultural studies and Task 6 (Section 3.6) on setttlement patterns and future locations of population and industry, plus the results of the preceding water supply studies, the Consultant shall delineate a recommended set of water service areas in the Governorate. These areas must cover all populated sections of the Governorate and those expected

to be populated in the future.

For each area so delineated, the Consultant shall prepare estimates of demand of water in 1978 through 1984 and five-year intervals between 1985 and 2005. These estimates will be developed separately for domestic, industrial and other uses with a degree of accuracy that is consistent with the quality of information developed on future activities in the Governorate. It is expected that the estimates will be in the form of ranges that will depend upon varying assumptions on future development and the rate at which current constraints on consuption can be removed.

3.3.4 Comparison of Alternative Sources of Supply and Delivery Systems and Preparation of Comprehensive Water Plan

In light of the demand estimates prepared under the preceeding sub-task and the studies described in Sub-sections 3.3.1 and 3.3.2, the Consultant shall compare alternative systems of water supply in the various service areas. These comparisons shall be made in terms of technical feasibility, total capital and operating costs (net present value or annual cost basis) and the timing of the alternative systems. Following these comparative analyses the Consultant shall prepare a comprehensive water plan for the Governorate, which would set forth the recommended service areas and for each service area would establish the following :

(1) Current and future population and water demand

(2) Staged program for the investigation and exploitation of new water sources.

(3) Staged program for the expansion of existing supply and distribution systems and the provision of new facilities.

3.4 Task 4: Agricultural Policies and Studies*

3.4.1 Development of Parameters for Agricultural Policies

Agricultural development has the greatest potential for initial impacts in the development of the Governorate. The Consultant shall cast a set of parameters for agricultural policies based on national

needs and the potentiality of the Governorate to meet those needs.

As examples only, policies or aspirations at national levels may include (but not be limited to) the following:

- Containment of Rural Populations in Rural Areas and Envisagement of Inter-Regional Migration

  In view of a medium population projection of 47,000,000 by 1985; of whom 47.4 percent will be under 15 years a national policy to contain rural population and to prevent urban migration while promoting inter-regional migration of rural populations may be realistic. In terms of agricultural projects this goal may be translated into labor intensive crops, providing maximum emplyment, or very small acreage individual, or communal or cooperative type farms.

- Import Substitution of Agricultural Products.

- Export of Agricultural Products for Foreign Exchange.

  These two potentials aspirations or goals could be translated into their labor intensive or labor extensive agricultural activities. A communal plantation, as an example, could utilize labor intensive crops, while a cattle or mechanized agro-industry operation could be labor extensive. Costs, would perhaps be subsidized, if significant national benefits accrue from such projects.

- Creation of an Agricultural Middle Class.

  Here income, infrastructure and services would dominate other considerations and would determine both crop types and acreage. (This goal was indeed used in Malaysia, rubber and oil palm was the vehicle to meet income requirements and to pay for social infrastructure and improved services).

The Consultant shall discuss the implications of these and other proposals.

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* In the southeastern portion of the Governorate, near the shores of Lake Nasser, a definite agricultural potential exists in the Waai Kurkur, Wadi Kalabha and elsewhere. Agricultural development of the areas immediate adjacent to Lake Nasser (below elev. 240) must be considered in conjunction with the regime of the Lake and with the exception of the South New Valley Project, these areas are exluded from this study.

3.4.2 Study of reclamation, irrigation and drainage techniques

Review literature and work done to date by UNDP and others field studies of current practices in the New Valley. Consider potentials for newer irrigation concepts. Define possible pilot studies for their introduction.

3.4.3 Study of agro-industries and linkages

Review potentials for industrial type crops-cropping areas needed, location of processing units, market location etc. For those that may have some potential, prepare rough estimates of costs of developing and operating the complexes and the ranges of potential returns. Define those that may warrant further study.

3.4.4 Analyses of potential markets and marketing needs

Categories of markets - domestic and international - standards for each, transport costs from New Valley and other relevant factors. Impact of possible improvements in transport and distribution.

3.4.5 Determination of suitable cropping patterns

Review of soils surveys undertaken at various levels. Development of alternative cropping patterns based on analyses in 3.4.1-3.4.4, soils potentials and possible policy decisions.

3.4.6 Definition of reclamation policies and areas

Define areas to be improved or reclaimed and prepare staged program for undertaking this work.

3.4.7 Review of current Herds and Practices

The Consultant shall undertake such field studies as may be necessary to determine the present size and composition of herds, the ratios of animal units to land area, the extent of overgrazing or under-utilization of resources in various parts of the Governorate and the relationships between the herds and the people drawing their livelihood from these herds. While these field studies shall be directed towards the quantification of various factors that are currently unknown, the social aspects, life styles of the bedouin groups and the potential for significant changes in these life styles should not be

ignored.

3.4.8 Assessment of Potentials

From the analyses of the information obtained from the field studies, currently available data and other sources (such as ERTS (LANDSAT) imagery), the Consultant shall prepare a detailed assessment of possible means to increase the opportunities open to the badouin people and their incomes. This may include physical measure to improve grazing lands and provide feed concentrates, other measures to increase herd productivity and possible markets for surpluses or it may point up the need for resettlement or development of handicrafts and cottage industries.

3.4.9 Preparation of Recommendations and Project Proposals

Following from the assessment of the potential for significantly modifying existing grazing lands, the use of these lands and the life-style of the bedouin population that is dependent upon the raising of animals, the Consultant shall formulate a detailed set of recommendations and set forth specific projects he considers to be worthy of further pursuit. In some cases the Consultant's recommendations may include a call for further studies and outline Terms of Reference for such studies or they may include administrative actions or small projects that can be carried out directly at little cost. A rough estimate of the cost of recommended projects and a schedule for their implementation between 1980 and 2005 should be provided. Both the estimates and the schedule should be more detailed for early years, whereas this information will be in more generalized form for the years following 1985.

3.5 Task 5 : Mineral and Industry Studies

3.5.1 Assessment of Mineral Potentials (Reserves, Costs of Extraction etc.)

A number of surveys and studies have been made of mineral resources in the New Valley Governorate by the Egyptian Geological Survey and Mining Authority. These have ranged from reconnaissance surveys to detailed assessment of mineral reserves. The Consultant

shall review all currently available data on mineral resources in the Governorate and supplement this review with analyses of ERTS (LANDSAT) imagery, discussions with appropriate officials of the Egyptian Geological Survey and Mining Authority and the companies operating in the area and field visits to sites of the greatest interest.

It is recognized that definitive information on reserves and the feasibility of economic exploitation can only be obtained from detailed field studies that are beyong the scope of this planning effort. What is required, however, is a review and assessment of studies carried out to date and a "pulling together" of these studies within a single, overall context. For each major area of the Governorate, a set of priorities for exploration and development should be prepared, plus a well-reasoned assessment of the probability of certain levels of mining activity being achieved and the impact of possible mineral discovered and their exploitation upon the pace of development and the planning appropriate to this development. This assessment shall be based upon marketing factors and overall value to the Egyptian economy in addition to local conditions and prospects for finding minerals of economic value.

3.5.2 Review of Existing Industries

The Consultant shall review and analyze available information on industries that are already established in the Governorate. His analyses should cover the type and scale of operation, investment level, output, current practices, employment and, if possible, financial aspects and organizational structure. The results of this work shall include, for the larger industries and appropriate groupings of the smaller industries, recommendations on possible means to improve output and productivity, the supporting services and facilities needed to permit this improvement and the organizational environment necessary to foster this improvement and provide the needed facilities.

3.5.3 Assessment of Potentials for New and Expanded Industrial Development and Possible Linkages

On the basis of the foregoing analyses of the mineral potentials

and existing industries the Consultant shall prepare a detailed assessment of the potentials of the Governorate for the further development of industrial entreprises. This assessment shall include the preparation of a reasonably definitive list of possible industrial projects (these may be new extractive or processing industries, new service or spin-off industries or expansion schemes for existing industries) and an analysis for each major area within the Governorate of the possible industries, relationships among industries, external relationships and supporting infrastructure needs during the 1980-2005 period.

3.5.4 Definition of Industries for Further Study

Under this Sub-task, the Consultant shall set forth specific recommendations for minerals and industry development in the Governorate. For this purpose he shall develop order-of-magnitude estimates of cost and the possible net additions to Egyptian income that would be associated with each project or set of allied projects. Upon the basis of these estimates and other judgments, he shall establish a rough order of priorities and set forth one or more programs for development of industries in the Governorate during the 1980-2005 period. (Infrastructure requirements during the same period shall be considered separately under Task 6). Within the context of these programs, he shall define the studies he deems necessary for implementation of early projects and provide outline Terms of Reference for these studies.

3.6 Task 6: Infrastructure, Population and Migration Studies

3.6.1 Studies of Existing Regiona Infrastructure:-

These studies shall cover all elements of infrastructure. For the purpose of determining the adequacy of the existing infrastructure to sustain development efforts, the Consultant shall review the available data on the Governorate's external links (roads and power transmission) and internal systems (roads, tracks and power systems) and spend sufficient time in the field to fully evaluate their capacity, current usage and condition. In addition, information on existing budgets for operation and maintenance and proposed capital expendi-

tures shall be developed. The final product of these analyses shall be an evaluation of the extent to which existing infrastructure has affected present settlement patterns and an analysis of the restraints to growth imposed by this existing infrastructure or the lack thereof.

3.6.2 Studies of Population and Estimates of Future Population:-

The Consultant shall analyze available data on the existing population - numbers, distribution, composition, family and age structures, background, skills, income, etc. and shall supplement these data with limited surveys of selected population samples. The same studies may also extend to potential migrant groups in the Nile Valley. On the basis of these studies he shall evaluate the impact of regional development upon the existing population and their capacity to benefit from this development. These findings shall form the bases for specific recommendations on supplementary educations, job training and access to jobs, loans (e.g. for farmers) etc. They shall also be incorporated into estimates of future population, insofar as such estimates must consider changes in family status, family size etc.

Utilizing the results of the foregoing studies of the various economic sectors in each major area of the Governorate and following analyses of the future demand for business and household services within each area, the Consultant shall prepare detailed estimates of future employment (or ranges of employment (or ranges of employment) in the Governorate. Using the results of the foregoing studies of population characteristics, the Consultant shall prepare estimates of future population (or ranges of population) and income distribution in each area of the Governorate and each major population center. (For the purposes of sub-task 6.4* additional parameters, such as future vehicular ownership shall also be developed.) The assumptions upon which each estimate is based shall be clearly set forth. These estimates shall be prepared in concert with the studies of settlement patterns described below and shall reflect the results of those studies.

* i.e. sub-section 3.6.4

3.6.3 Study of Migrant Policies and Means to Increase the Attractiveness of The Governorate:-

In the development of the New Valley Governorate is to be achieved it is likely that a substantial proportion of the future population will be composed of migrants from elsewhere in Egypt. Development efforts, therefore, must include those that are diracted to serving migrant eneeds. These may include centers in source areas for dissemination of information about opportunities in the Governorate to assist migrants in finding housing and jobs, special incentives to encourage middle-income people to put down roots in the area and efforts to increase the overall attractiveness of the area. In addition, cooperative, or communal farming communties, may be required (see Task 4). These may require special services. On the basis of earlier population studies and the assessment of existing attractions, the Consultant shall set forth a definitive policy for migrants and a program of recommended government actions designed to encourage a flow of migrants to the area that is consistent with the development of job opportunities. The cost of undertaking this program shall be included in the material that is presented.

3.6.4 Delineation of Settlement Pattern and Establishment of Regional Infrasturcutre Needs:-

Pulling together the threads of the foregoing studies and anal the Consultant shall articulate a physical pattern of towns and cities in the Governorate. At the same time, he shall define the specific role of each population center, its future economic base, its physical and economic links with other centers in the Governorate and its links to regions outside the Governorate. Prime determinants of this pattern will include, among others, the location of resources, existing population distribution, natural attractions and development costs. To the extent that future mineral prospects and possibly other potentials cannot be fully established, the pattern set forth shall be sufficiently flexible to accommodate alternative futures.

Regional infrastructure needs shall be determined on the basis of the settlement pattern that is established:

For roads and railroad(s) a model of the future land transport network shall be prepared and used to establish the needed capacity and standard for each major transport link* and to provide a timetable for undertaking the necessary improvements.

It is intended that the Governorate be fully tied into the unified national power system and for this purpose the Consultant shall estimate the demand in each major load center and determine the most cost-effective network for serving this demand. Additional generating capacity, unless it is to be developed in connection with desalination proposals, shall be as determined by the Ministry of Electricity's current program.

A program for improved telecommunications within the Governorate and with outside areas shall be established in accordance with a well-defined set of priorities for users and current policies of the Ministry of Transport, Communications and Maritime Transport.

The Consultant's recommendations on regional infrastructure improvements (highway, rail, power and telecommunication) shall be set forth in the form of one or more programs, including the following elements:

Approximate cost

Time schedule covering 1980-2005

Identification of high priority projects for detailed study and outline Terms of Reference

These programs shall be presented in detailed for the years 1980-1985 and in more generalized fashion for years following 1985.

3.6.5 Structure Map

The recommended pattern of settlement and the accompanying regional infrastructure shall be illustrated at a scale of no less than 1:500,000.

* The capacity of the Abu Tartur-Qena-Safaga rail line will be a product of detailed studies of unit-train movements, storage capacities etc., in connection with the Abu Tartur Project. These are outside the scope of this Regional Plan Study. What is desired, however, is an assessment of the impact on this rail line should the Consultant recommend that it also be used for general goods and passenger movements.

3.6.6 Development Programming and Sketch Planning for Major Centers

For the major population centers, as determined from the recommended pattern of settlement, the Consultant shall prepare a program for the provision of all elements composing the urban fabric, i.e.: housing, public facilities, commercial centers, service industries and local infrastructure. (It is anticipated that about four cities or towns may be involved). Each program should be set forth initial and final standards for the provision of various services, the type and scale of facilities required, the phasing for all elements, the sectors responsible for their provision and rough estimates of cost. (These costs may be developed on an investment per capita basis or similar, relatively gross, measure). General guidelines shall be furnished, setting forth the most appropriate means to provide various elements within the urban fabric and defining the extent of government involvement (e.g. for housing a given income group - creation of the environment for private building efforts vs delivery of complete dwelling units).

General concepts for the physical ordering of land uses and major elements in each major population center shall be developed. To illustrate these concepts, the Consultant shall prepare a sketch structure plan at a scale of 1:10,000 for the early phases of development. This plan would also indicate areas of possible future growth and the direction this growth may take.

3.7 Task 7 : Preparation of a General Approach on Development

3.7.1 Recommendations on Administrative Structure and Practice

Through review of available data and discussions with Governorate, the Consultant shall be required to be thoroughly familiarize with the powers, responsibilities, fiscal resources and staff capabilities of the Governorate and its administrative subdivisions. The Consultant shall also review the relationship between the Governorate and the various Central Government agencies that initiate and control programs within the Governorate and the respective capabilities of these agencies. The Consultant shall take into consideration possible changes in the existing structure that may result from the recent legistlation establish-

ing planning regions within Egypt.

In light of these reviews, the Consultant shall evaluate the adequacy of the existing administrative structure and agencies to sustain the programs he is recommending for development of the Governorate. Based upon this evaluation, the Consultant shall prepare specific recommendations for possible improvements in the existing administrative budgeting processes as these affect the initiation, planning, construction and operation of new projects and the expansion of services in a development area, should suc improvements be warranted. The term "improvement agency, if these approaches are found desirable. If recommendations of this nature are made, the manner in which they could be phased-in should be stated.

3.7.2 Early Action Recommendations:-

Recommendations for early action on the part of the Government will fall into two categories:

(a) Administrative actions and small-scale projects which may be undertaken with relatively little capital investment but may have high early returns.

(b) More detailed feasibility studies, planning studies and data-base studies which are required before large-scale development can proceed or before specific high-priority projects can be undertaken.

More of these early actions will be identified during the course of the earlier studies. Under this sub-task, the Consultant shall bring them together into a single framework, with a clearly defined set of priorities.

As noted earlier, detailed studies which can be identified at an early point in this study should be set forth in the Interim Reprot which is due at the end of six months (Section 4). Outline Terms of Reference for these studies may also be required at that time.

3.7.3 Assessment of Overall Investment Requirements

The Consultant shall prepare a summary of the investments required to undertake development of the Governorate during the

1980-2005 period. This summary should indicate the anticipated levels of investment in each major sector annually to 1985 and by 5 year increments in the years following 1985. Because of uncertainties, particularly in the area of mineral development and downstream industries, it is fully anticipated that several possible levels, or ranges, of investment will be set forth, each based upon a specific set of assumptions.

The Consultant shall review these summaries in light of anticipated growth rates for the economy of Egypt as a whole and the local economy of the Governorate, the general levels of investment set forth in the 1980-1982 Five-Year Plan and other documents of the Ministry of Planning and the priority given to development of the New Valley Governorate by the Government of Egypt. He shall consider whether the investments proposed are reasonable and consistent with Egypt's investment resources and its current goals. The Consultant shall adjust the scale or phasing of the programs he has proposed if major inconsistencies are found. Furthermore, to the extent that investment resources form a restraint, the Consultant may set forth alternative paths for development in which certain sectors or localities would be emphasized at the expense of others. These may subsequently be compared in order to determine the development approach that will make the most effective use of the investment resources that are available

3.7.4 Rough Quantification of Benefits from Development

Considering only the base sector, (i.e. agriculture, mining and non-service industries and possibly, tourism) the Consultant shall develop rough estimates of the net additions to national income (value-added or similar measure) that may be realized from the development of the Governorate along the alternative paths noted above and under various assumptions concerning mineral wealth. Considering base-sector investments, the economic value of the alternative paths for development may then be compared in terms of standard measures, such as net present value or benefit-cost ratios, and in terms of non-quantifiable elements.

To simplity the analysis spillover benefits and multiplier effects are not specifically included. The Consultant may, however, deem it advisable to consider whether a given development approach may have a potentially greater multiplier than another alternative approach; or whether infrastructuer costs for a certain development path are much higher for a comparable level of first-order benefits.

It is anticipated that this analysis will form an integral part of the planning process forseen in this study and that the recommendations described earlier on suitable programs for each sector and priority projects within these programs will, in their final form, reflect this analysis; and the conclusions drawn therefrom on the best overall approach to development of the Governorate.

4. REPORTS, PRESENTATIONS

4.0 General

All reports and presentations will be in English and will use the metricsystem. In addition, the main recommendations of the Interim Report and the entire Final Report shall be translated into Arabic.

The Consultant will be expected to present the findings and recommendations of the Interim Report, the Draft Final Report and the Final Report at meetings of appropriate officials of the Government.

In addition to the required reports the Consultant shall be prepared to turn over either the original or a true copy of all maps, tracings, sketches and computations, interview schedules, or other backup material required to explain the conclusions or recommendations; this applies to all material not otherwise specified. All mapping included in, or accompanying, reports will be at standard scales used for convenience in fitting page sizes will not be acceptable.

4.1 Monthly Reports (10 copies)

The Consultant will submit at the end of each month a letter type report that will outline his activities for the past month and the tasks scheduled for the next month. A standard form for reporting the planned and actual level of professional effort will be furnished to the

Consultant by the Ministry. In this report, the Consultant will call attention to any problem areas and any recommended revisions to the schedule established by his agreement with the Ministry.

4.2 Interim Report (50 copies)

At the end of 4 months from the start of work, the Consultant will submit a report summarizing his findings to date, setting forth those projects or areas which the Consultant's work to date has identified as being of particular importance to the development of the Governorate and outlining the detailed studies necessary for their implementation. The Arabic summary of this report and the Consultant's recommendations will be submitted at the same time. Comments by the Ministry and other agencies of the Government will be given to the Consultant within 30 days. It is expected, however, that the Consultant will proceed with the study during this period.

4.3 Draft Final Report (50 copies)

At the end of 9 months from the start of work, the Consultant will present the Final Report in draft form for review. The draft summarize all work done in Tasks 1 through 7, set forth the recommended approach to development and detail the programs and actions necessary for the development of the Governorate. Comments by the Ministry and other agencies of the Government will be given to the Consultant within 30 days.

4.4 Final Report (100 copies)

At the end of 12 months from the start of work, the Consultant will present the Final Report. This Report will take into consideration comments on the Draft Final Report by the Ministry and other agencies of the Government. The Arabic translation of this Final Report shall be submitted one month after the English versions.

4.5 Interim Approvals

In the interest of expediting the work the Consultant is encouraged to seek interim approvals from the Ministry of any aspect or element of the work as soon as it is completed and the Ministry will use its best efforts to expedite review and/or approval by its own staff or others.

エジプト政府関係者リスト

1.	MOP (Ministry of Planning)	Minister	Dr. Abd. El Razak Abd El Meguid
		Vice Minister	Dr. Saad El Hanafy
		Under Secretary	Dr. Saft
		Agriculture Engineer	Mr. Kamal Dawoud Yassa
		"	Mr. Refaat Khalil El Rid
		"	Mr. Salak
2.	MOC (Ministry of Construction and New Connunities)	Minister	
		First Under Secretary	Mr. M. Nadih El Menshawy
		Under Secretary	Mr. M. El Naggar
		"	Mr. Wagdy Saabaan
		"	Mr. Abdel Rashid Mansour
3.	MOI (Ministry of Irrigation)	Under Secretary First Under Secretary	Mr. Abdel Ghannie Hassan
4.	INP (Insttitute of National Planning)	Director	Dr. Kamal El-Ganzoury
	Ministry of Land Reclamation	Vice Minister	Mr. Adel Azy
5.	Lake Nasser Development Authority	Chairman of Lake Sasser Development Authority	Ald El-latif M. Rashwan
		Director of the Agricultural Section	Ahmed Taha Mohamed
		Director of Fisheries Section	Safwat Ghattas
		The Chief of Public Relation	Mrs. Aisha Saied

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	" (Volume II)	Ministry of Overseas Development
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