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THIRD PROJECT LIST

VOLUME I

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SINAI DEVELOPMENT STUDY - PHASE I

PERFORMED FOR THE ADVISORY COMMITTEE FOR RECONSTRUCTION

OF THE MINISTRY OF DEVELOPMENT

BY DAMES & MOORE

(in association with Industrial Development Programmes SA)

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October 20, 1981

Eng. Soliman Abd El Hai, Chairman
Advisory Committee for Reconstruction
Ministry of Development
1, Ismail Abaza Street
Cairo, A.R.E.

Re: D-M 197
Sinai Development Study - Phase I
Submittal - Third Project List

Dear Sir,

We are pleased to submit herewith a Third Project List Report. This Report continues the process of developing a system which records project information for planning and implementation purposes. The First Project List Report (February 1981) was concerned primarily with establishing a system for recording project ideas, evaluating whatever information was available to the project team, and suggesting appropriate next steps. The Second Project List (May 1981) not only added to the inventory of project ideas and summaries but also provided an initial attempt at categorizing projects according to action required at that time.

This Third Report offers a formal planning approach to decisions about projects and required early actions. A methodology is presented which provides decision-makers with a framework for categorizing and prioritizing particular projects and helps identify those of particular high leverage, which are catalysts for other development activities. The system is flexible enough so that it can be used whatever relative weight is given to different development objectives; and its use is illustrated by giving equal weight to four major objectives - namely, population absorption, economic efficiency, infrastructure needs/environmental enhancement, and social equity.

Many ideas exist for development activities in Sinai. Not all of these "ideas" have been expanded to the point where they can be seen as full scale, well-documented concepts, let alone thoroughly studied projects. In this Report, project concepts have been evaluated and ranked, while project ideas are simply categorized. Consequently, some ideas which appeared to have high priority when previous lists were submitted are not ranked here. Where sufficient information is available, project concepts are evaluated; not surprisingly, projects which appear to have the potential to stimulate development, regardless of the overall strategy chosen for Sinai, generally achieve the highest priority ratings.

On the other hand, the Report does not recommend immediate action on projects whose priority will be influenced by your Ministry's choice regarding the overall strategy, i.e., after completion of the Phase I Final Report.

In closing, it is worthwhile to remember that the Study Team continued to gather information about Sinai and development possibilities there. A major purpose of the system described in this Third Report is to provide a mechanism whereby gaps in project information can be narrowed, gradually but systematically. Furthermore, in the iterative process of deciding which actions should be taken to advance various sets of projects, a formal scoring or ranking system, such as the one described in this Report, will be a most useful tool, especially when used with due regard to intangible factors, such as political considerations which must also be taken into account before final decisions are made.

We look forward to your comments on this Report and the opportunity to discuss its contents with you and your colleagues.

Very truly yours,

DAMES & MOORE

William W. Moore
Project Manager

Attachment

cc: Eng. M. Sharkawy
TAMS
AID - Mr. Gordon Wes[illegible]

WWM/pw

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1.0 INTRODUCTION

This Third Project List Report builds on work done by many members of the Sinai Development Study (Phase I). Much of the material included in the First Project List Report (February 1981) and the Second Project List Report (May 1981) has been developed further and included in this Report.

The First Project List Report was primarily concerned with establishing a system, a recording device, to allow the principal investigators to organize information about the various projects. It was designed as a "trial run" which transmitted project summaries without much emphasis on size, sector or priority; it sought to identify all proposed development activities and appropriate "next steps" or actions. As an early stage in a complex process, one of its goals was to stimulate comments on its own content and form and to raise issues to be confronted in subsequent refinements (e.g., the Initial Environmental Examinations, which were initially presented separately in Working Paper No. 6, dated May 1981).

The Second Project List Report contained information about additional projects and offered a first attempt to categorize them, albeit in an intuitive way. Gaps existed, however, and some continue into the present document. This is largely because information about the various project ideas and concepts is not uniform. The fact is that both projects themselves and information about them are evolving quickly. Moreover, the development of Sinai itself is in a very dynamic phase; and project summaries, which were prepared at various times during the last several months, need to be updated as new information becomes available.

The important element in this Third Report, which distinguishes it from the previous two, is the format, which allows for systematic review and preliminary prioritization of projects for which the Study Team has sufficient information.

1.1 Background

This Third Project List Report carries forward work done by several members of the Sinai Development Study (Phase I) Team during the last several months. When the initial Report was prepared eight months ago, it described a system for collecting and evaluating project ideas as follows:

> "The Sinai Development Study (Phase I) includes a number of interrelated tasks which are the subject of this Report. These tasks are described in Group A (Tasks 1 and 2) of the Contract and represent a type of work that permeates the spirit of all sector studies. These tasks can be summaried as follows:

"a - The Study team must collect, evaluate, coordinate and integrate information on a wide variety of projects, activities and proposals which are of development significance. This 'project' information provides building blocks for preparing development plans.

"b - From time to time, the Study Team will report to ACR/MOD whatever project information it has acquired and evaluated. Through these reports, a common information base can emerge, so that all persons and agencies contributing to development in Sinai will share the same factual context from which a common vision can emerge.

"c - The Consultant will also report periodically to MOD regarding actions recommended to expedite sound, sustainable development in the Sinai region. Many varied actions may be covered by these recommendations.....Thus, the Project Summary will generally conclude with a recommendation for Ministry consideration; and these recommendations may suggest implementation, construction, various further studies or any other appropriate action (Subtask 2.1.1).

"d - Since development activities are moving forward rapidly during the course of the Study, an iterative process is required. Thus, a project whose status is reported in one month may require a revised 'Summary' some months later, reflecting developments since the earlier report.....Furthermore, new projects are constantly being added to the inventory of Summaries, as they are brought to the attention of the Study Team for incorporation into the overall information system.....

"f - Environmental considerations, to be outlined generally in an initial working paper (Subtask 13.1), will be covered at the project level by threshold evaluations (Task 13.2)....." a/

That first Report was mainly concerned with establishing a system for recording, filing and retrieving project-related information, and it emphasized the desirability of readers playing an active role in the information system.

> "The Project Summaries themselves offer a way to share the information so far gathered by the Study Team. Readers of this Report are invited to provide whatever additional information they may have on projects being reported, so that it can be incorporated in the appropriate project file .....As a general rule, the Consultant has found it useful to identify specific 'next steps' for each project reported, either to record the team's understanding of actions being taken by sponsoring agencies or to recommend some additional step, which seems to be called for at this time in order to expedite development." b/

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a/ Extracts quoted from Pages 2-3, "Report on Project Summaries, Initial Project List, etc.," February 1981.

b/ Extract from Page 4, op.cit.

The Second Project List Report reflected early attempts to set priorities for various proposals identified up to that stage and grouped projects into several categories, such as:

- Implement Now
- Technical Assistance
- Prefeasibility Studies/Analysis
- TORs for Feasibility or Other Studies
- Monitor, Assist, Evaluate Ongoing Projects.

The present (Third) Report is a presentation of completed project summaries. Emphasis is placed on projects which should be given immediate consideration for early action.

1.2 Report Format

In this introductory section, all project ideas have been placed in categories and on appropriate lists. Lists are included, showing:

- Completed and prioritized summaries,
- Completed summaries which are not yet prioritized,
- Incomplete summaries and
- Ideas with no summaries.

Charts illustrating project linkages are also provided.

Section 2 overviews the prioritization methodology used for ranking completed project summaries and includes a list of 36 projects (out of 64 with completed summaries), requiring immediate consideration for action because of their potential impact on the development of Sinai. Comments on and recommendations for all completed project summaries which deserve review before further definition of the development strategy are included in Section 3; thus, Section 3 serves as a reference to the list of high priority projects included in Section 2. Project Summaries, including many which are revised or newly completed, can be found in Volume 2, which also contains the Initial Environmental Examination sheets. An appendix to the report describes variables used in the prioritization methodology and illustrates how projects can be scored and ranked.

1.3 Project Summary Categories

All project ideas have been categorized into one of ten groups:

- Administrative Actions (1): The study team has identified certain administrative actions which would facilitate critical development activities. The actions include the removal of administrative bottlenecks, the establishment of new institutions and the implementation of new regulations. These actions can be carried out with minimal incremental expenditure by the government authorities concerned.

- Field Studies and Data Base Work - Modest Scale (2): The study team has been restricted largely to using existing data sources, although some new data have been obtained. However, team members have identified numerous promising areas where modest data collection efforts would make a valuable supplement to existing sources. These studies could be conducted largely by Egyptian research organizations, and possibly paid for with Egyptian pounds set aside by AID or other donors for activities to encourage reconstruction and development in Sinai.

- Data Collection - Major Scale (3): In certain key areas, such as water, minerals and climate, major data collection efforts are called for which require both foreign and Egyptian experts.

- Minor Construction Works (4): Some "empirically derived" construction projects are modest enough in scale and so obviously needed that work can proceed without commissioning major feasibility studies; design work can be carried out by local groups.

- Pre-feasibility Analysis - Modest-sized Construction Work (5): Some projects are large enough to require further study justifying the expenditures involved. Where sufficient information has not been made available for the study team to recommend going ahead on a full feasibility study, pre-feasibility studies are recommended. Some of these studies could be carried out as part of the Sinai Development Study, Phase I; others might best be handled by the staff of Governorates, Sinai Development Authority or subject ministries.

- Pre-feasibility Analysis - Large-scale, Long-lead-time Construction Projects (6): Some projects are considered important to the long-term development of Sinai but have such a long lead-time that certain decisions regarding the project and requisite support facilities must be made quickly. In some cases, some pre-feasibility analysis has already been

undertaken, but the work to date is not conclusive and requires further study in order to justify going to the full feasibility study stage.

- TOR - Feasibility Studies for Modest-scale Construction Projects (7): Some modest-scale projects are too complex to be undertaken without commissioning a feasibility study but straightforward enough so that further pre-feasibility analysis is not necessary. Feasibility studies are justified when the project appears viable on the basis of preliminary estimates of costs, major technical constraints, implementation schedule, availability of labor and materials, environmental impact, commercial viability and markets and institutional mechanisms required.

- TOR - Feasibility Studies for Large-scale, Long-lead-time Construction Projects (8): For some large-scale projects, extensive pre-feasibility has already been carried out to the point where, in the judgement of the reporter, full feasibility studies are necessary. In such cases, the reporter recommends that a TOR be prepared, defining what detailed studies are required to clarify the technical, financial, economic, social, environmental and intersectoral linkage elements of a projects. A large-scale project should only reach this stage when a tentative decision has been made to implement the project, i.e., the decision is firm, barring difficulties arising during feasibility analysis that are unforeseen at this time.

- Planning Studies (9): A number of projects are so complex, given their institutional and policy requirements, that master plans or analytical studies, supportive of large-scale activities, are required. These projects have been categorized by Sector, and the need for a TOR or analytical assessment/study has been indicated. The subcategories of Planning Studies are:

    A - Regional Development (Intersectoral)
        1 - TOR
        2 - Analytical Assessment/Study
    B - Rural Development (Agriculture)
        1 - TOR
        2 - Analytical Assessment/Study
    C - Settlement Development (Infrastructure and Human Services)
        1 - TOR
        2 - Analytical Assessment/Study
    D - Industrial Development (Industry)
        1 - TOR
        2 - Analytical Assessment/Study

E - Tourism Development (Tourism)
1 - TOR
2 - Analytical Assessment/Study

- Accelerate Ongoing Projects (10): Finally, there are cases where work is already underway but deserves to be accelerated. When such projects are critical to the early reconstruction of Sinai, the status of the project and suggested actions which might speedup the completion of the project are noted.

1.2 - PROJECT LISTS AND CHARTS

Five project lists are included in this report. Their definitions are given below. As a reference to these lists, charts showing (1) linkage of one project to another and (2) backward linkages (projects which must be implemented prior to the implementation of the ones lists) are included. Whether the effect expected is local or regional is also noted on the charts.

- MASTER LIST - Project Ideas: This list is a reference for the other four lists defined below. It includes all complete and incomplete project summaries and project ideas which do not yet have summaries. Information included on this list is project serial number, project name, location and reference to one of the four other lists on which the project summary or idea is found.

- LIST A: Early Action Priorities, Completed Project Summaries: Prioritized. All summaries which are recommended for immediate consideration, prior to further definition of the development strategy, are included on this list. Each summary appears on the list in order of priority within its relevant category. A brief statement regarding status of the project is included for each, as well as a reference to the strategic goal or goals which the project's implementation would satisfy. Strategic goals are summaried in four main categories:
  (1) - Population Absorption and Diffusion within Sinai,
  (2) - Efficient and Self-sustaining Economic Growth,
  (3) - Efficient Provision of Infrastructure and Environmental Conservation, and
  (4) - Social Justice.

- LIST AA: Completed Project Summaries - Non-prioritized, Deferred Until Further Definition of the Development Strategy: The project summaries on List AA are equally important as those on List A. They have not been prioritized for one or both of the following reasons:
  - their implementation is contingent upon or would be facilitated by the implementation of a project on List A (backward linkage) or
  - they should be deferred until the development strategy for Sinai is further defined.

  Information about each project summary on List AA includes: serial number, name, location, status and category.

- LIST B: Incomplete Project Summaries - Non-prioritized: List B includes all project summaries which are incomplete due to lack of information. Information included for project summaries is the project serial number, name, location, status and category.

- LIST C: Project Ideas - Non-prioritized - No Summaries Available: List C includes all ideas with no project summaries. Many of the ideas listed are concepts proposed by the consultant, local or regional officials, or other persons interviewed during field investigations. Information included on List C is the project serial number, name, location, status and category.

MASTER LIST

PROJECT IDEAS

Serial No.	Project Name	Location	List
1.	Well Drilling Program	Sinai	A
2.	Integrated Planning: Revised Oct. 1981	Lake Bardawil	A
3.	Rural Development Project Summary incorporated into P.S.170	Wadi El Aawag	-
4.	Fruit and Vegetable Production Project Summary incorporated into P.S.169	Wadi Feiran	-
5.	Ferromanganese Plant	Abu Zenima	A
6.	Construction Material Production	El Arish	A
7.	Fishing Wharf	El Tor	A
8.	Traffic Surveys	Suez Canal Crossings	A
9.	Visitor Facilities	St. Catherine's	AA
10.	Ground Water Survey & Monitoring	El Arish	A
11.	Gypsum Mining and Processing	Ras Malaab	A
12.	Gas Turbine Power Generation	Abu Zenima	A
13.	Livestock Improvement Project Summary incorporated into P.S.166	Ras Sudr	-
14.	Solar-powered Equipment	El Arish	A
15.	Cement Plant	NW or WC Sinai	AA
16.	Suez Coast Highway	Ras Sudr & Abu Zenima	A
17.	Improvement of Ferry Crossings	Suez City	A
18.	North Sinai Development Bank	El Arish	A
19.	Airport	El Arish	A
20.	Industrial Complex/Townsite Requirements Previous Title: Industrial Complex	Abu Zenima	A
21.	Improve Vegetable Production Project Summary incorporated into P.S.169	El Arish	-
22.	Land Reclamation - 1'00 F. Project Summary incorporated into P.S.170	El Arish	-

LIST A : Early Action Priorities, Completed Project Summaries - Prioritized by Category

LIST AA : Completed Project Summaries - Non-Prioritized, Deferred Until Economic Development Strategy is Defined.

LIST B : Incomplete Project Summaries Non-Prioritized.

LIST C : Project Ideas - Non-Prioritized, No Project Summaries Available

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PROJECT IDEAS

Serial No.	Project Name	Location	List
23.	Dairy and Beef Productior Revised June, 1981	El Arish	AA
24.	Land Reclamation Project Summary incorporated into P.S.171	Bitter Lakes	-
25.	Agricultural Experimentation and Extension - Previous Title: Agricultural Research - P.S. revised August 1981	El Arish and other locations in Sinai	A
26.	Coal Mine Development	Maghara	A
27.	Kaolin	Abu Rudeis	A
28.	Glass Sand	El Khabouba	A
29.	Land Reclamation - 2500 F. Project Summary incorporated into P.S.170	El Arish	A
30.	Ground Water Authority	El Arish	A
31.	Hydrologic Basin Studies	Sinai	A
32.	Meteorological Stations Network	Sinai	A
33.	Tourist Hotel-Guest House	El Tor	A
34.	Fish as Desert Animals	Sinai	AA
35.	Solar Energy Demonstration	Sinai	A
36.	Interfaith Peace Memorial Complex Previous Title: Interfaith Complex	St. Catherine's	A
37.	Rural Development. Project Summary incorporated into P.S.25,170,171	Sinai	-
38.	Water and Fishery Data Collection Revised August, 1981	Lake Bardawil	A
39.	Marketing in Europe - Previous Title Bream Marketing - Revised August 1981	Sinai	A
40.	Inlet Design - Revised August 1981	Lake Bardawil	A
41.	Investment Company	Lake Bardawil	A
42.	Solar Powered Ice Plant - Previous Title: Ice Plant	Lake Bardawil	A
43.	Solar Salt Pond Electric Power Demonstration Project - Previous Title: Electric Power Plant	Lake Bardawil	A
44.	Tourism Planning - Previous Title: Tourism Study - Revised August 1981	Lake Bardawil	A

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PROJECT IDEAS

Serial No.	Project Name	Location	List
45.	Salt Industry	Bardawil	A
46.	Telecommunications Network	Sinai	A
47.	Cattle Fattening Stations Project Summary incorporated into P.S.23	North Sinai	-
48.	Date Processing Factory (New - 4/27/81)	North Sinai	AA
49.	Land Reclamation: Water from Suez Pipeline: Project Summary incorporated into P.S.171	Ras Sudr & Ismailia, east bank of Suez Canal	-
50.	Land Reclamation: Water from Salaam Canal: Project Summary incorporated into P.S. 171	El Tina Plains, east & northeast of Qantara & Mediterranean coastal area	-
51.	Land Reclamation: Water from Salhia Canal: Project Summary incorporated into P.S.171	Coastal area of North Sinai	-
52.	Land Reclamation Project Summary incorporated into P.S.170	Near Abu Rudeis	-
53.	Tourism Planning Study (New-October 1981)	Sinai	A
54.	Reconstruction of Safa Coal Mine	Safa	B
55.	Geological Surveys & Research	All Sinai	C
56.	Olive and Soap Factories	El Arish	B
57.	Industrial Free Zone(s)	El Arish Region and/or east bank of Suez Canal	B
58.	Detailed Plans for Specific Settlements - Previous Title: Sinai Settlement Program (New - September 1981)	All Sinai - specific locations to be determined	A
59.	Satellite Town	El Masaad	B
60.	New Road	Wadi Feiran	A
61.	Suez Canal Tunnel	Suez City	B
62.	School Feeding Program	All Sinai	C
63.	Bedouin Trading Posts Project Summary incorporated into P.S.172	Sinai	-
64.	Scrap Metal Salvage	El Qantara, El Arish , Nakhl, El Shatt and Abu Zenima	C

PROJECT IDEAS

Serial No.	Project Name	Location	List
65.	Sand Dune Fixation	Northern & Western Sinai	A
66.	Water Pumps	North Central Sinai	A
67	Housing Project Project Summary incorporated into P.S.58	El Arish	-
68	Solar Desalinization	Sinai	C
69	North Sinai Coast Tourism Master Plan Project Summary incorporated into P.S.53	North Sinai	-
70.	Rebuild Railroad Qantara - El Arish	N. Sinai	C
71.	North Highway Corridor-Protection Plan (Tourism) Project Summary incorporated into P.S.53	N. Sinai Lake Bardawil	-
72.	Develop Local Radio & Broadcasting station	El Arish & El Tor	C
73.	Border-crossing Arrangements	El Arish	B
74.	Hotel & Food Service Improvements	St. Catherines & EL Arish	A
75.	Tourist Bus Services	Sinai	B
76.	Canal Crossings - org./mgt.	Suez Canal	A
77.	Visitor Facilitation Program	Sinai	A
78.	Beach Quality Study (New - March 1981)	Gulf of Suez & Gulf of Aqaba	AA
79.	Antiquities Inventory	Sinai	C
80.	Wildlife Protection	Sinai	C
81.	Define Religious Routes (tourism)(New-3/81)	Sinai	AA
82.	Tourism Market Analysis (New - 3/81)	Sinai	AA
83.	Water Transportation Study	Mediterranean & Red Sea Coasts	B
84.	Air Service Analysis	Sinai	AA
85.	Visitor Center (New - 3/81)	El Arish	A
86.	Power Plant Siting Study (New - 4/81)	Northwest Sinai	A
87.	Fishing Pier Previous Title: Fishing Wharf	El Arish	A

PROJECT IDEAS

Serial No.	Project Name	Location	List
88.	Central Sinai Road	El Arish-Ismailia	AA
89.	Fresh Water Pipeline	North Coast	A
90.	Sample Survey (Census)	Sinai People in Delta	A
91.	Sample Survey (Census)	Sinai	A
92.	Drip Irrigation Spare Parts (New - June 1981)	El Arish	A
93.	Commercial Poultry Production (New - June 1981)	El Arish	A
94.	Land Reclamation Project Summary incorporated into P.S.170	Wadi Feiran	-
95.	Land Reclamation Project Summary incorporated into P.S.170	St. Catherine's	-
96.	Land Reclamation - 120,000 feddans Project Summary incorporated into P.S.170	Near El Tor - El Qaa Plain	-
97.	Land Reclamation - 2500 feddans Project Summary incorporated into P.S.170	El Arish - South of Airport	-
98.	Fresh Water Pipeline (New - August 1981)	Suez Tunnel to Abu Rudeis	A
99.	Fabricate Solar Equipment	El Tor	C
100.	Rehabilitate El Tor Harbor	El Tor	C
101.	Wind Wave Survey	El Tor Harbor	C
102.	Master Plan, St Catherine's	St Catherine's	C
103.	Fresh Water Well for 20,000 pop. (established by Governor)	St Catherine Village	C
104.	Rehabilitate El Tor Airport	El Tor	C
105.	Construction Material and Brick Production	Abu Zenima	C
106.	Tourist Facilities Transition	Aqaba Coast	AA
107.	Tourism Manpower Development (New-3/81)		AA
108.	Tourism Master Plan - South Sinai Project Summary incorporated into P.S.53	South Sinai	-
109.	Implementation of Nature Preserve National Parks	All Sinai	C

PROJECT IDEAS

Serial No.	Project Name	Location	List
110.	Palm Grove Regulations	El Arish	AA
111.	Training Center for Migrants to Sinai	Sinai	C
112.	Tree Nursery Project Summary incorporated into P.S.25	El Arish	-
113.	Copriferous Sandstone Resource Evaluation	Sinai	C
114.	Turquoise Resource Evaluation	Sinai	C
115.	Regional Minerals Exploration	Sinai	AA
116.	Fishing Vessels with Sonar	El Arish	AA
117.	Census in 1982	Sinai	C
118.	Brick Factory	El Arish	C
119.	New Town - related to Deminex Petroleum Development	North of Abu Rudeis	C
120.	Aerial Survey Mapping - North Coast & Southwest Coast	Gaza to Bardawil Suez to Ras Mohamed	AA
121.	Sewerage Treatment Assessment: Revised Aug. 1981	El Arish	A
122.	Desalinization Plant	El Arish	C
123.	Battlefield Sites - Tourism (New-3/81)	West Sinai	AA
124.	Marriott Hotel Construction	El Arish	A
125.	Livestock Grazing Reserves (New - June 1981)	North, Central, South Sinai	AA
126.	Road Tunnel/Bridge Study	Qantara	C
127.	School System Assessment	Sinai	C
128.	Medicinal Plant Feasibility Study	Sinai	C
129.	Beach/Hot Springs Development	Hamman Faroun	C
130.	Belayim Gas Desal/Electrical Generating Station	Southwest Sinai Coast	C
131.	Road Erosion Control	Sinai	AA
132.	Fishing Boat Dock	Lake Bardawil	A

PROJECT IDEAS

Serial No.	Project Name	Location	List
133.	St. Catherine's Museum	St. Catherine's	C
134.	St. Catherine's Bus Parking and Restroom Facilities	St. Catherine's	C
135.	St. Catherine's Hostels & Visitors Accommodations Project Summary incorporated into P.S. 9, 36, and 74	St. Catherine	-
136.	Camel Improvement Stations (New - June 1981)	North Central Sinai	AA
137.	Flood Hazard Assessment & Remedial Action Recommendation	El Arish	A
138.	T.V. Broadcasting Service (New-April 1981)	El Arish & El Tor	A
139.	Livestock Grazing Associations (New - June 1981)		A
140.	Industrial Area	El Arish	B
141.	Ready-made Clothing Factory		B
142.	Resident Regional Planner	Each Sinai Governorate	A
143.	Castor Oil & Meal Production		C
144.	Agriculture Research, Experimentation & Field Testing Master Plan Project Summary incorporated into P.S.25		-
145.	Feasibility of Increasing Fish Yield	Lake Malaha	C
146.	Wetland Inventory		C
147.	Oil Pollution & Tar Control	All Beaches	C
148.	Mammals Inventory	St. Catherine's	C
149.	Quail Netting & Hunting Study	North Coast	C
150.	Raptor Sinai Migration Routes Study - Environmental Implications		C
151.	Environmental Inventory - Base Line Assessment	All designated areas	C
152.	Lost/Endangered Animals - Rehabilitation		C

PROJECT IDEAS

Serial No.	Project Name	Location	List
153.	Mine Identification and Clearance Previous Title: Mine Clearance	Sinai	AA
154.	Local Water Supply	Sharm El Sheikh/Ofir	C
155.	Harbor Plan	Sharm El Sheikh	C
156.	Observation Tower & Underwater Trails	Sharm El Sheikh	C
157.	Bedouin Handicraft Training		C
158.	Road Planning, Marking & Mapping	All Sinai	AA
159.	Sinai Tourism Guidebook		AA
160.	Sinai Activities - International Publicity		C
161.	Animal Health Clinics (New - June 1981)	Sinai	AA
162.	Health Delivery Systems		C
163.	Stud Ram Breeding Stations (New - June 1981)	Sinai	AA
164.	Wind Generators for Rural Electricity		C
165.	Livestock Watering Windmills		C
166.	Goat Improvement Stations New Project Summary, June, 1981	Sinai	AA
167.	Enhanced Olive Production New Project Summary - August, 1981	El Arish, N. Sinai	A
168.	Enhanced Date Production New Project Summary - August, 1981	N. Sinai and Gulf of Suez	A
169.	Vegetables for Population Centers New Project Summary - August, 1981	El Arish, other centers throughout Sinai	A
170.	Land Reclamation Using Well Water New Project Summary - August, 1981	El Arish, El Qaa Plain, other areas in Sinai	A
171.	Land Reclamation Using Nile Water New Project Summary - August 1981	East of Bitter Lakes & possibly other areas in NW Sinai	A
172.	Livestock Producer Markets New Project Summary, September 1981	Sinai	A
173.	Controlled Environment Agriculture New Project Summary - August, 1981	El Arish, Abu Rudeis, St. Catherine	A

MASTER LIST

PROJECT IDEAS

Serial No.	Project Name	Location	List
174.	Fertilizer Quotas for Desert Soils New Project Summary - June, 1981	Sinai	A
175.	Land Titles to New Lands Settlers New Project Summary - June, 1981	Sinai	A
176.	Limited Range Improvement New Project Summary - September, 1981	North & South Sinai	AA

LIST A - EARLY ACTION PRIORITIES

TEGORY 1 - ADMINISTRATIVE ACTIONS

ORITY RANK WITHIN CATEGORY	SERIAL NO.	PROJECT NAME	LOCATION	STATUS	STRATEGIC GOALS TO WHICH PROJECT IS RELATED*
1	76	Canal Crossings Organization and management	Suez Canal	rec. action to be taken to better facilitate the movement of traffic across the canal. Rudimentary traffic observations are now being undertaken (P.S. 8)	1,2,3,4
2	18	N. Sinai Development Bank	North Sinai	rec. technical assistance (banking management) to speed implementation	1,2,3,4
3	41	Lake Bardawil Investment Company	Lake Bardawil	rec. action to be taken to establish company. Prop. by the Central Committee for Integrated Popular Development/ N. Sinai Governorate	2,4
4	142	Resident Regional Planners	Each Sinai Governorate	rec. further discussions with governors to define funding options, recruitment of personnel, and implementation of position	1,2,3,4
5	30	Groundwater Authority	El Arish	rec. detailed organizational definition and implementation subsequent to clearer definition of groundwater resources (PS10)	2,3,4
6	139	Formation of Livestock Associations (New - April 1981)	Sinai	New proposal. rec. further discussion with tribal sheikhs, Bedouin political councils, and governors of N. & S. Sinai	2,3,4
7	92	Drip Irrigation (New - June 1981)	El Arish	New propcsal, rec. discussion regarding acceptability with PBDAC.	2,4

Strategic Goals, as stated previously, are: (1) Population Absorption and Diffusion within Sinai, (2) Efficienty and Self-sustaining Economic Growth, (3) Efficient Provision of Infrastructure and Environmental Conservation and (4) Social Justice.

)TE: Chart A, which shows linkages of List A projects to other projects if on Page .

LIST A - EARLY ACTION PRIORITIES

EGORY 1 - ADMINISTRATIVE ACTIONS - CONTINUED

ORITY RANK WITHIN ATEGORY	SERIAL NO.	PROJECT NAME	LOCATION	STATUS	STRATEGIC GOAL TO WHICH PROJECT IS RELATED
8	175	Land Titles to New Lands Settlers (New-June 1981)	Sinai	New proposal. rec. discussion with MOD regarding acceptability	1,2,4
9	174	Fertilizer Quotas for Desert Lands (New - June 1981)	Sinai	New proposal. rec. discussion with PBDAC regarding acceptability	2,4
10	77	Visitor Facilitation Program	Sinai	rec. discussion with Ministry of the Interior regarding acceptability	1,2 (Tourism)

GORY 2 - FIELD STUDIES & DATA BASE WORK

RITY RANK ITHIN TEGORY	SERIAL NO.	PROJECT NAMES	LOCATION	STATUS	STRATEGIC GOAL TO WHICH PROJECT IS RELATED
1	90	Sample Survey - (Census)	Sinai People in Delta	rec. survey	1,2 (Skills)
2	91	Sample Survey - (Census)	Sinai	rec. Survey, rudimentary information has been collected (D & M)	1,4

LIST A - EARLY ACTION PRIORITIES

ATEGORY 3 - DATA COLLECTION/MAJOR SCALE

IORITY RANK WITHIN CATEGORY	SERIAL NO.	PROJECT NAME	LOCATION	STATUS	STRATEGIC GOAL TO WHICH PROJECT IS RELATED
1	1	Well Drilling Program	Sinai	Proposal submitted to MOD: matter referred to MILR	1,2,3,4
2	10	Groundwater Survey & Monitoring Program	El Arish	rec. discussions with donors concerning funding, preparation of detailed survey and monitoring program	1,2,3,4
3	38	Water Quality Analysis & Fishery Data (Revised August 1981)	Lake Bardawil	Prop. submitted to Gov. of N. Sinai by the Institute of Sea Sciences and Fisheries/ Suez Canal University	2,3

EGORY 4 - MINOR CONSTRUCTION WORKS

ORITY RANK WITHIN ATEGORY	SERIAL NO.	PROJECT NAME	LOCATION	STATUS	STRATEGIC GOAL TO WHICH PROJECT IS RELATED
1	137	Flood Hazard Assessment and Remedial Action Recommendation	El Arish	rec. preliminary assessment. Repairing the El Arish Valley is apparently now under study by the Green Revolution Society.	2,3,4
3	40	Inlet Design (Revised - 8/81)	Lake Bardawil	Suez Canal Authority is presently carrying out dredging to reopen clogged inlets; proper configuration of inlets needs study.	,3,
2	132	Fishing Boat Dock	Lake Bardawil	rec. technical assistance to Lake Bardawil fishing authorities to help determine dock requirements & possible design, definition of cost.	2,4

ATEGORY 4 - MINOR CONSTRUCTION WORKS - CONTINUED

RIORITY RANK WITHIN CATEGORY	SERIAL NO.	PROJECT NAME	LOCATION	STATUS	STRATEGIC GOAL TO WHICH PROJECT IS RELATED
4	33	Guest House	El Tor	MISR/Sinai Company established, rec. funding to facilitate construction	2
5	17	Improvement of Ferry Crossings	Suez City	Proposal by Consultant, rec. construction of engineered ramps on banks	1,3
6	85	Visitor Center (New - March 1981)	El Arish	Proposed by Consultant, N. Sinai Governor requests its construction prior to completion of any tourism master planning.	3

TEGORY 5 PRE-FEASIBILITY ANALYSIS/MODERATE-SIZED CONSTRUCTION

IORITY RANK WITHIN CATEGORY	SERIAL NO.	PROJECT NAME	LOCATION	STATUS	STRATEGIC GOAL TO WHICH PROJECT IS RELATED
1	7	Fishing Wharf	El Tor	rec. Prefeasibility Study	2,3,4
2	87	Pier at El Arish	El Arish	N. Sinai Gov. has already initiated funding - ongoing effort. rec. prefeasibility study	2,3,4
3	12	Gas Turbine Power Generation	Abu Zenima	rec. prefeasibility study	1,2,3
4	42	Solar Powered Ice Plant	Lake Bardawil	rec. prefeasibility study	2,3

ATEGORY 5 - PRE-FEASIBILITY ANALYSIS/MODERATE-SIZED CONSTRUCTION - CONTINUED

RIORITY RANK WITHIN CATEGORY	SERIAL NO.	PROJECT NAME	LOCATION	STATUS	STRATEGIC GOAL TO WHICH PROJECT IS RELATED
5	43	Solar Salt Pond Electric Power Demonstration	Lake Bardawil	rec. prefeasibility study	2,3

ATEGORY 6 - PRE-FEASIBILITY ANALYSIS/LARGE SCALE, LONG-LEAD-TIME CONSTRUCTION

RIORITY RANK WITHIN CATEGORY	SERIAL NO.	PROJECT NAME	LOCATION	STATUS	STRATEGIC GOAL TO WHICH PROJECT IS RELATED
1	28	Glass Sand	El Khabouba	rec. prefeasibility study	1,2
2	27	Kaolin	Abu Rudeis	rec. prefeasibility study	1,2
3	5	Ferromanganese Plant	Abu Zenima	rec. prefeasibility study	1,2
4	11	Gypsum Mining	Ras Malaab	rec. prefeasibility study	1,2
5	26	Coal Mine Development	Maghara	rec. prefeasibility study	1,2
6	45	Salt Production	Lake Bardawil	rec. prefeasibility study	1,2

ATEGORY 7 - TOR - FEASIBILITY MODEST SCALE, LONG-LEAD TIME CONSTRUCTION

lo Project Summaries in this Category on List A.

ATEGORY 8 - TOR - FEASIBILITY LARGE SCALE, LONG-LEAD TIME CONSTRUCTION

RIORITY RANK WITHIN CATEGORY	SERIAL NO.	PROJECT NAME	LOCATION		STATUS	STRATEGIC GOAL TO WHICH PROJECT IS RELATED
1	6	Construction Materials Production	El Arish	rec. TOR		2,3,4

ATEGORY 9 - PLANNING STUDIES

.A. REGIONAL DEVELOPMENT (INTERSECTORAL)

.A.1 TORS

RIORITY RANK WITHIN CATEGORY	SERIAL NO.	PROJECT NAME	LOCATION		STATUS	STRATEGIC GOAL TO WHICH PROJECT IS RELATED
1	31	Hydrological Basin Studies	Sinai	rec. TOR		1,2,3,4
2	2	Lake Bardawil Integrated Development (Revised Oct. 1981)	Lake Bardawil	rec. TOR		1,2,3,4
5.	32	Network of Meteorological Stations	Sinai	rec. TOR		2,3

CATEGORY 9 PLANNING STUDIES - CONTINUED

9.A. REGIONAL DEVELOPMENT (INTERSECTORAL) - CONTINUED

9.A.2 ANALYTICAL STUDIES/ASSESSMENTS

PRIORITY RANK WITHIN CATEGORY	SERIAL NO.	PROJECT NAME	LOCATION	STATUS	STRATEGIC GOAL TO WHICH PROJECT IS RELATED
3	39	Marketing in Europe (Revised Aug. 1981)	Lake Bardawil	rec. study/assessment	2
4	65	Sand Dune Fixation	Northern and Western Sinai	rec. study/assessment	3

9.B. RURAL DEVELOPMENT (AGRICULTURE)

TORS

PRIORITY RANK WITHIN CATEGORY	SERIAL NO.	PROJECT NAME	LOCATION	STATUS	STRATEGIC GOAL TO WHICH PROJECT IS RELATED
1	25	Agricultural Experimentation and Extension (Revised Sept. 1981)	Sinai	rec. TOR	2,4
2	171	Land Reclamation Using Nile Water (New August 1981)	N.W. Sinai	rec. TOR	1,2,4
3	170	Land Reclamation Using Well Water (New August 1981)	Sinai	rec. TOR	1,2,4

9.B. RURAL DEVELOPMENT (AGRICULTURE) - CONTINUED

9.B.2 ANALYTICAL STUDIES/ASSESSMENTS

PRIORITY RANK WITHIN CATEGORY	SERIAL NO.	PROJECT NAME	LOCATION	STATUS	STRATEGIC GOAL TO WHICH PROJECT IS RELATED
4	169	Vegetables for Population Centers (New - August 1981)	El Arish	rec. study/assessment including water availability data (PS 1,10)	2,4
5	93	Commercial Poultry Production (New - June 1981)	El Arish	rec. study/assessment to move production up to target levels. Plans for expanding existing operation are now under consideration by the N. Sinai Governorate	2,4
6	168	Enhanced Date Production (New - August 1981)	N. Sinai & W. Sinai	rec. study/assessment to improve quantity & quality of date production. TOR in preparation	2,4
7	167	Enhanced Olive Production - N. Coast (New - August 1981)	N. Sinai	rec. study/assessment of olive production, processing and marketing. TOR in preparation	2,4

9.C - SETTLEMENT DEVELOPMENT (INFRASTRUCTURE AND HUMAN SERVICES)

9.C.1 TORS

PRIORITY RANK WITHIN CATEGORY	SERIAL NO.	PROJECT NAME	LOCATION	STATUS	STRATEGIC GOAL TO WHICH PROJECT IS RELATED
1	121	Sewerage Treatment Assessment (Revised Sept. 1981)	El Arish	rec. TOR	3
4	58	Detailed Plans for Specific Settlements (New - September 1981)	Specific Settlements Sinai	rec. TOR	1,3,4

9.C SETTLEMENT DEVELOPMENT (INFRASTRUCTURE AND HUMAN SERVICES) - CONTINUED

9.C.1 ANALYTICAL STUDIES ASSESSMENTS

PRIORITY RANK WITHIN CATEGORY	SERIAL NO.	PROJECT NAME	LOCATION	STATUS	STRATEGIC GOAL TO WHICH PROJECT IS RELATED
2	98	Fresh Water Pipeline (New - August 1981)	Suez Tunnel to Abu Rudeis	rec. analytical assessment including evaluations of alternative water sources	3,4
3	20	Industrial Complex Townsite Requirements	Abu Zenima	rec. reconnaissance survey & study & generation of concepts	1,3
5	35	Solar Energy Demonstration	Mit Abul Kom, El Arish, or El Tor	rec. study assessment to consolidate MOEE efforts, investigate securing equipment & training personnel/operations and maintenance	1,3

9.D INDUSTRIAL DEVELOPMENT (INDUSTRY)

NOTE: ALL PROJECT SUMMARIES INCLUDED IN CATEGORY 6 ARE CONSIDERED INDUSTRIAL DEVELOPMENT PROJECTS

TOR

PRIORITY RANK WITHIN CATEGORY	SERIAL NO.	PROJECT NAME	LOCATION	STATUS	STRATEGIC GOAL TO WHICH PROJECT IS RELATED
1	86	Power Plant Siting Study (New - April 1981)	N.W. Sinai	rec. TOR	1,2,3

9.E. TOURISM

PRIORITY RANK WITHIN CATEGORY	SERIAL NO.	PROJECT NAME	LOCATION	STATUS	STRATEGIC GOAL TO WHICH PROJECT IS RELATED
9.E.1 TOR					
1	53	Tourism Planning Study (Revised - October 1981)	Sinai	rec. TOR, in preparation	1,2,3
9.E.2 ANALYTICAL ASSESSMENT/STUDY					
2	44	Tourism Planning (Revised August 1981)	Lake Bardawil	rec. Study/assessment	3

LIST A - EARLY ACTION PRIORITIES

CATEGORY 10 - ACCELERATE ONGOING PROJECTS

PRIORITY RANK WITHIN CATEGORY	SERIAL NO.	PROJECT NAME	LOCATION	STATUS	STRATEGIC GOALS TO WHICH PROJECT IS RELATED
1	66	Water Pumps for Nakhl Freshwater Pipeline	Nakhl	ongoing project. rec. immediate additional funding	3,4
2	89	Freshwater Pipeline	Qantara to El Arish	rec. acceleration of pipeline installation	3,4
3	46	Telecommunications Network	Sinai	proposed implementation by ARETO	1,2,3,4
4	74	Upgrade Hotel and Food Service	El Arish St. Catherine's	rec. technical assistance to estimate cost of bringing accommodations up to standard and subsequent funding to accomplish upgrading.	2,3
5	60	Construction of Wadi Feiran Road	Wadi Feiran	rec. technical assistance to improve existing efforts, additional funding for construction of flood control elements, embankments, etc.	2,3
6	16	Suez Coastal Highway	SW Sinai	ongoing project. rec. donor support to expand project.	1,2,3
7	36	Interfaith Peace Memorial Complex	St. Catherine's	design has been prepared by local architects and firm is now proceeding with detailed construction drawings. rec. improved fund raising.	1,3
8	19	Airport	El Arish	ongoing/supervised by Ministry of Defense. Plan to finish this year. rec. assistance through funding if required and that the airport be reopened for civilian use.	3

CATEOGRY 10 - ACCELERATE ONGOING PROJECTS - CONTINUED

PRIORITY RANK WITHIN CATEGORY	SERIAL NO.	PROJECT NAME	LOCATION	STATUS	STRATEGIC GOAL TO WHICH PROJECT IS RELATED
9	138	Television Broadcasting (New - April 1981)	El Arish & El Tor	ongoing effort - El Arish. rec funding assistance for both El Arish and El Tor	1,4
10	124	Marriott Construction	El Arish	ongoing project. rec. funding to complete project	2
11	8	Traffic Surveys	Suez Canal Area	rec. survey, rudimentary efforts are now underway (D & M)	1,2,3
12	14	Fabrication of Solar Powered Equipment	El Arish	rec. evaluation of existing facility, market assessment, estimation of expansion costs.	2

THIRD PROJECT LIST

SEPTEMBER 1981 . CHART A - CORRESPONDS TO LIST A

PROJECT LINKAGE & EFFECTS

LINKAGE — Number after serial number
BACKWARD LINKAGE — Underlined number after serial number
PROJECT EFFECT — L. Local; R. Regional; N. National

ADMINISTRATIVE ACTIONS (1)	FIELD STUDIES & DATA BASE WORK MODEST SCALE (2)	DATA COLLECTION MAJOR SCALE (3)	MINOR CONSTRUCTION WORKS (4)	PREFEASIBILITY ANALYSIS MODERATE-SIZED CONSTRUCTION (5)	PREFEASIBILITY LARGE-SCALE LONG-LEAD-TIME CONSTRUCTION (6)	TOR FEASIBILITY STUDIES MODEST-SCALE CONSTRUCTION (7)	TOR FEASIBILITY LARGE-SCALE LONG-LEAD-TIME CONSTRUCTION (8)	PLANNING STUDIES (9)										ACCELERATE ONGOING PROJECTS (10)
								REGIONAL DEVELOPMENT Intersectoral (A)			RURAL DEVELOPMENT Agriculture (B)			SETTLEMENT DEVELOPMENT Infrastructure & human services (C)			INDUSTRIAL DEVELOPMENT Industry (D)			TOURISM DEVELOPMENT Tourism (E)			
								TOR	Supportive analytical studies		TOR	Supportive analytical studies		TOR	Supportive analytical studies		TOR	Supportive analytical studies		TOR	Supportive analytical studies	
(76) RN, ALL PROJECTS PROPOSED (18) R, 6,23,41, 48,56,58,59,74, 87,112,121,122, 140,141,142,167, 168,169,170,171, 172 (41) R, 2,18 (142) R, ALL REGIONAL DEVELOPMENT PROJECTS (30) LR, 1,10, 53,58,170 (139) R, 125, 156,161,163,166, 172,176 (92) L, 169,171 (175) R, 58,170, 171 (174) R, 25,169, 170,171 (177) RN, ALL REGIONAL DEVELOPMENT PROJECTS	(90) R, 5,11,25, 26,27,28,53,58, 170,171 (91) R, 25,53, 58,170,171	(1) R, 10,20,23, 25,31,53,58,98, 102,154,163,166, 168,169,170,173 (10) L, 1,25,31, 32,137,170,176 (58) LR, 2,40, 132,170	(137) L,25,31, 32,53,58,120, 131,170 (40) LR, 2,38, 132 (132) L,2,38, (33) LR, ALL DEVELOPMENT PROJECTS SW SINAI (17) R, ALL DEVELOPMENT PROJECTS (85) L, 53	(7) LR, 16,32, 58,100,101 (87) L, 53,58, 83,132 (12) L, 5,20,58 (42) LR, 2,18, 38,40,41,58,132 (43) R, 18,41 45	(28) RN,12,16,20 46,57,58,61,76, 83,100,105, 111 (27) RN, 12,16,20, 46,55,57,58,61,76, 83,105,111,142 (5) RN, 12,16,20 46,76,83,100,105 111,142 (31) RN, 12,16,20 28,46,55,58,61,76, 83,100,105,111, 115,142 (26) RN, 18,46,57, 70,76,85,115,126 (46) RN, 2,18,41, 43,46,76,126		(6) LR, 8,53, 58,65	X X		(31) R, 1,10,25, 32,34,58,139, 154,169,170,176 (2) LR, 12,38,39, 40,41,42,43,44, 45,53,58,75,78, 80,83,89,107,120, 131,132,142,160 (35) RN, 2,18, 38,41 (65) R, 16,19,32, 40,58,59,120,151, 142,158,176 (32) R, 14,31,35, 40,55,58,65,68, 83,84,100,101, 102,103,109,122, 142,155,158,164, 165,176	X X X X X		(25) LR, 1,10,30, 31,32,58,169,170, 171,176 (171) LR, 10,16, 25,58,174,175 (170) LR, 1,10, 16,25,30,31,58, 174,175 (169) LR, 1,10, 25,30,31,53,58, 170,171 (95) LR, 1,10,25, 53,53 (169) LR, 1,10, 25,58 (167) LR, 1,10, 25,31,58,170, 171	X X X	X X X	(121) L, 10,53, 58,128 (98) LR, 1,5,23, 25,27,28,58 (58) LR, ALL PROJECTS (20) L, 1,5,25,27 28,58 (35) LR, 58,169, 170,171	X		(86) R, 17,15, 32,46,58,88,114, 142,170,171	X X		(53) RN, 1,2,6,8, 9,10,16,18,32,33, 36,44,46,52,60, 61,74,75,76,77, 78,79,81,82,83, 84,85,100,102, 104,106,107,109, 110,111,120,123, 124,126,129,133, 134,135,155,159, 157,158,159,160, 169 (44) LR, 2,53	(66) L, 1, 25, 31, 52 (89) LR, 53, 58 (46) LRN, ALL PROJECTS, PARTICULARLY INDUSTRIAL, SETTLEMENT AND TOURISM DEVELOPMENT. (74) L, 18, 36, 53, 77 (60) LR, 9, 16, 33, 36, 53, 58, 74, 77, 131, 158 (16) R, 5, 8, 15, 20, 27, 28, 36, 46, 58, 75, 105, 119, 131, 142, 158 (36) RN, 53, 159, 160 (19) LRN,46, 53, 58, 59, 84, 85, 140 (153) LR, 46, 58 (124) L, 19, 46, 53, 58, 73, 75, 77, 82, 85, 121, 126, 159, 160 (8) RN, ALL COMMERCIAL PROJECTS AND 53, 58, 131 (14) LR, 18, 58

DAMES & MOORE

LIST AA - PROJECT SUMMARIES, NON-PRIORITIZED

DEFERRED UNTIL DEVELOPMENT STRATEGY IS FURTHER DEFINED

SERIAL NO.	PROJECT NAME	LOCATION	STATUS	CATEGORY
9	Visitor Facilities	St. Catherine's	rec. improvement of access to (P.S.60) and upgrading of facilities (P.S.74)	Minor Construction Works (4)
15	Cement Plant	NW or WC Sinai	rec. prefeasibility study & then TOR preparation	Prefeasibility Analysis, Large-scale, Long-Lead-Time Construction (6)
23	Dairy & Beef Production	El Arish	Feed supply capacity needs investigation, quality and quantity of well water to sustain activity must be ascertained	Planning Study/ Rural Development, Analytical Assessment (9B2)
34	Fish as Desert Animals	Sinai	More soil and water data is needed	Planning Study Rural Development, Analytical Assessment (9B2)
48	Date Processing Factory (New-April 1981)	N. Sinai	date production needs improvement (P.S.168), rec prefeasibility study and then TOR prepared	Prefeasibility Analysis, Large-scale, Long-Lead-Time construction
78	Beach Quality Study (New-March 1981)	Gulf of Suez & Gulf of Aqaba	rec. study; should precede detailed tourism planning	Planning Study/ Tourism Development Analytical Assessment (9E2)
81	Define Religious Routes (Tourism;New-3/81)	Sinai	rec. definition of religious routes for tourism purposes	Field Studies & Data Base Work (2)
82	Tourism Market Analysis (New-3/81)	Sinai	rec. study to precede detailed tourism planning (P.S. 53)	Planning Study/ Tourism Development; Analytical Assessment (9A2)
84	Air Service Analysis	Sinai	rec. transportation study	Planning Study Regional Development; Analytical Assessment (9A2)
88	Central Sinai Road	El Arish, Gifgafa, Esmailia	rec. prefeasibility, traffic surveys & road condition observations are underway (P.S. 8)	Prefeasibility - Large-Scale, Long-Lead-time construction (6)

LIST AA - Project Summaries, Non-Prioritized, Deferred until Development Strategy is Further Defined

SERIAL NO.	PROJECT NAME	LOCATION	STATUS	CATEGORY
106	Tourist Facilities Transition	Aqaba Coast	rec. further discussion with appropriate officials	Administrative Action (1)
107	Tourism Manpower Development	Sinai	rec. study to precede or be undertaken in early stages of tourism Planning (P.S.53)	Planning Study/ Tourism Development/ Analytical Assessment (9E2)
110	Palm Grove Regulations	N. Sinai	rec. further investigation of ownership by Bedouin of trees, delay regulation until tourist areas are more clearly defined (P.S.53)	Administrative Action (1)
115	Regional Minerals Exploration	All Sinai	rec. scope of work (DM) and take appropriate action	Data Collection - Major Scale (3)
120	Aerial Survey Mapping of North Coast and South-West Sinai	North Coast & Gulf of Suez	rec. aerial survey to serve as a base for settlement planning	Data Collection - Major Scale (3)
123	Battlefield Sites (New-3/81)	West Sinai	rec. identification of sites for tourism purposes	Field Studies Data Base Work (2)
125	Livestock Grazing Reserves (New-June 1981)	Sinai	rec. study to identify areas and determine management requirements; rec. establishment of Livestock Associations (P.S.139) to coordinate implementation of activity	Planning Study/ Rural Development, Analytical Study (9B2)
131	Road Erosion Control	Sinai	rec. this action be taken as part of existing road repairs (P.S.16,60) and expanded when road planning (P.S.158) defines specific areas to be repaired	Minor Construction Works (4)
136	Camel Improvement Stations (New-June 1981)	Central Sinai	New project suggested by Bedouin, rec. (1) feasibility study, (2) formation of Livestock Assn. to coordinate activity when implemented (P.S.139), (3) work out plan and detailed budget	Planning Study/ Rural Development Analytical Assessment (9B2)

LIST AA - Project Summaries, Non-Prioritized, Deferred until Development Strategy is Further Defined

SERIAL NO.	PROJECT NAME	LOCATION	STATUS	CATEGORY
153	Mine Identification and Clearance	All Sinai	rec. action be taken in areas where studies, projects, and surveys are to be undertaken or where settlement is expected	Administrative Action (1)
158	Road Planning, Marking and Mapping	Sinai	rec. TOR	Planning Study/ Regional Development, TOR (9A1)
159	Sinai Tourism Guidebook	Sinai	rec. data collection preparation of text, and publication	Field Study & Data Base Work (2)
161	Animal Health Clinic (New-June 1981)	Principal towns and villages/ Sinai	rec. establishment of animal health clinic network to expand existing veterinary services offered in Sinai	Administrative Action (1) and Planning Study/ Rural Development/ Analytical Assessment (9B2)
163	Stud Ram Breeding Stations (New-June 1981)	Sinai	rec. (1) further discuss improvement of traditional livestock sector with Bedouin council tribes, Desert Institute and MOD; (2) formation of livestock Association to coordinate activity; (3) work out detailed plan and budget	Administrative Action (1) and Planning Study/ Rural Development/ Analytical Assessment (9B2)
172	Livestock Production Markets (New-Sept. 1981)	Sinai	rec. further discussion with Bedouins and North and South Sinai Governors to enable their review of (P.S.172) proposed budget	Administrative Action (1)
176	Limited Range Improvement (New-August 1981)	(To be determined)	New project. rec. soil survey, pilot planning, evaluation and expansion	Planning Study/ Rural Development Analytical Assessment (9B2)

THIRD PROJECT LIST

SEPTEMBER 1991 . CHART AA - CORRESPONDS TO LIST AA

PROJECT LINKAGE & EFFECTS

LINKAGE — Number after serial number
BACKWARD LINKAGE — Underlined number after serial number
PROJECT EFFECT — L. Local; R. Regional; N. National

ADMINISTRATIVE ACTIONS (1)	FIELD STUDIES & DATA BASE WORK MODEST SCALE (2)	DATA COLLECTION MAJOR SCALE (3)	MINOR CONSTRUCTION WORKS (4)	PREFEASIBILITY . ANALYSIS MODERATE-SIZED CONSTRUCTION (5)	PREFEASIBILITY LARGE-SCALE LONG-LEAD-TIME CONSTRUCTION (6)	FOR FEASIBILITY STUDIES MODEST-SCALE CONSTRUCTION (7)	FOR FEASIBILITY LARGE-SCALE LONG-LEAD-TIME CONSTRUCTION (8)	PLANNING STUDIES (9)									ACCELERATE ONGOING PROJECTS (10)
								REGIONAL DEVELOPMENT Interregional (A)			RURAL DEVELOPMENT Agriculture (B)			SETTLEMENT DEVELOPMENT Infrastructure & human services (C)			INDUSTRIAL DEVELOPMENT Industry (D)			TOURISM DEVELOPMENT Tourism (E)			
								TOR	Supportive analytical study		TOR	Supportive analytical study		TOR	Supportive analytical study		TOR	Supportive analytical study		TOR	Supportive analytical study	
(108) RN, 53,77 (110) LR, 53,124 (153) R, ALL PROJECTS (161) R, 125, 136,139,163,166 (172) R, 125, 133,161,163, 166,176	(123) R, 53 (159) RN, 53	(115) RN, 5,26, 27,28,55,113,114 (120) R, 53,58, 78,83,84,104,158	(9) LR, 53,60, 74 (131) LR, 6,16, 18,60,65,75,158		(15) R, 16,20,28, & 28,30,104, 105,113,118,119, 131 (48) R, 1,10,25 152,171 (88) R, 6,8,15 58,131,158				X	(84) RN 53,58, 85 (116) LR 87 (158) RN, 16,17, 20,53,58,60,65, 75,83,84,86,88, 100,102,104,119, 120,126,1..140, 155		X	(23) LR, 25,53, 58,161,175 (34) LR, 25,31, 55,58 (125) R, 25,136, 139, 163,165, 166,172,176 (136) R, 125,139 161,165,166,172, 176 (153) R, 125,139, 161,165,166,172, 176 (178) R, 125,136, 139,161,163,165 166,172							X X X	(78) LR, 53,120 (82) RN, 36,53, 74,77 (107) RN, 44,53, 111

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LIST B - INCOMPLETE SUMMARIES

NON-PRIORITIZED

ERIAL NO.	PROJECT NAME	LOCATION	STATUS	CATEGORY
54	Reconstruction of Safa Coal Mine	Safa	rec. prefeasibility study incl. analysis of economic relationship of the mine at Maghara (P.S.24)	Prefeasibility Analysis/Large-Scale, Long-Lead-Time Construction (6)
56	Olive & Soap Factories	El Arish	rec. study of olive production (P.S.167) and market studies, then prefeasibility study for construction	Prefeasibility Study, Large-Scale, Long-Lead Time Construction (6)
57	Industrial Free Zone (5)	El Arish region and/ or East Bank of Suez	rec. study of concept and evaluation in terms of areas served	Planning Study Industrial Development, Analytical Assessment (9D2)
59	Satellite Town	El Masaad	rec. assessment of service requirements, in relation to El Arish's (P.S.121,58), and groundwater situation	Accelerate Ongoing Project (10)
61	Suez Canal Tunnel	Suez City	rec. accelerated construction effort	Accelerate ongoing project (10)
73	Border Crossing Arrangements	El Arish	rec. policy definition regarding this issue	Administrative Action (10)
75	Tourist Bus Services	Tel Aviv to Cairo	rec. policy definition regarding this service	Administrative Action (10)
83	Water Transportation Study	Mediterranean & Red Sea Coast	rec. transporation study	Planning Study/ Regional Development, Analytical Assessment (9A2)
40	Industrial Area	El Arish	rec. planning study to precede preparation of detailed master plan for El Arish (PS 58)	Planning Study/ Industrial Development, Analytical Assessment (9D2)
41	Ready-Made Clothing Factory	-	rec. marketing study	Planning Study/ Industrial Development, Analytical Assessment (9D2)

THIRD PROJECT LIST

SEPTEMBER 1981 , CHART B - CORRESPONDS TO LIST B

PROJECT LINKAGE & EFFECTS

LINKAGE — Number after serial number
BACKWARD LINKAGE — Underlined number after serial number
PROJECT EFFECT — L. Local; R. Regional; N. National

ADMINISTRATIVE ACTIONS (1)	FIELD STUDIES & DATA BASE WORK MODEST SCALE (2)	DATA COLLECTION MAJOR SCALE (3)	MINOR CONSTRUCTION WORKS (4)	PREFEASIBILITY ANALYSIS MODERATE-SIZED CONSTRUCTION (5)	PREFEASIBILITY LARGE-SCALE LONG-LEAD-TIME CONSTRUCTION (6)	TOR FEASIBILITY STUDIES MODEST-SCALE CONSTRUCTION (7)	TOR FEASIBILITY LARGE-SCALE LONG-LEAD-TIME CONSTRUCTION (8)	PLANNING STUDIES (9)										ACCELERATE ONGOING PROJECTS (10)
								REGIONAL DEVELOPMENT Intersectoral (A)			RURAL DEVELOPMENT Agriculture (B)			SETTLEMENT DEVELOPMENT Infrastructure & human services (C)			INDUSTRIAL DEVELOPMENT Industry (D)			TOURISM DEVELOPMENT Tourism (E)		
								TOR	Supportive analytical study		TOR	Supportive analytical study		TOR	Supportive analytical study		TOR	Supportive analytical study		TOR	Supportive analytical study	
(73) RN, 53 (75) RN, 53					(54) RN, 26,86, 142,158 (56, RN, 25,167				X	(83) RN, 5,11,20, 27,29,44,53,57, 58,61,87,110,142							X	(57) LP, 5,6,11, 12,15,16,18,19, 20,27,28,46,56, 58,59,61,62,83 84,86,100,104, 105,111,118,119, 122,130,140 (140) L, 53,57, 58 (141) RN, 18,58					(59) L, 58 (61) RN, MOST RE-GIONAL DEVELOPMENT PROJECTS.

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LIST C - PROJECT IDEAS - NO SUMMARY

NON-PRIORITIZED

SERIAL NO.	PROJECT NAME	LOCATION	STATUS	CATEGORY
62	School Feeding Program	Sinai	rec. consideration of school feeding program	Administrative Action (1)
64	Scrap Metal Salvage	El Qantara, El Arish, Nakhl, El Shatt, and Abu Zenima	rec. monitoring and assistance of ongoing activities	Accelerate Ongoing Project (10)
68	Solar Desalinization	Sinai	rec. study to determine possibilities for and benefits of solar desalination	Planning Study/ Regional Development/ Analytical Assessment (9A2)
70	Rebuild Railroad Qantara El Arish	N. Sinai	rec. feasibility study and if appropriate TOR	TOR - Large Scale, Long-Lead-Time Construction (8)
79	Antiquities Inventory	Sinai	rec. multi-disciplinary preliminary survey of archaeological sites which will take into account terrain and human settlement	Field Study and Data Base work Modest Scale (2)
80	Wildlife Protection	Sinai	rec. decision as to whether or not a program of wildlife protection for Sinai is desirable	Administrative Action (1)
99	Fabricate Solar Equipment	El Tor	rec.(1) study to determine extent to which solar equipment could be utilized for domestic and industrial use, and (2) possibilities for fabrication	Planning Study/ Industrial Development, Analytical Assessment (9D2)
100	Rehabilitate El Tor Harbor	El Tor	rec. by FAO Study	TOR-Feasibility Study, Large-Scale, Long-Lead-Time Construction (8)
101	Wind-Wave Survey	El Tor	rec. survey to collect wind-wave data which would be required to rehabilitate El Tor harbor	Field Study and Data Base Collection (2)

LIST C - Project Ideas - No Summary, Non-Prioritized

SERIAL NO.	PROJECT NAME	LOCATION	STATUS	CATEGORY
102	Master Plan St. Catherine's	St. Catherine's	rec. detailed planning after town concept is defined and population growth and requirements can be realistically estimated	Planning Study/ Settlement Development, TOR (9C1)
103	Fresh Water Well for 20,000 pop. (established by Governor)	St. Catherine's	rec. establishment of well after P.S.1 is undertaken and planning for St. Catherine's is more clearly defined (P.S.102)	Accelerate On-going Project (10)
104	Rehabilitate El Tor Airport	El Tor	rec. feasibility study and TOR	TOR - Feasibility, Modest-Scale Construction (7)
105	Construction Material and Brick	Abu Zenima	rec. assessment of demand for materials. Assessment should take into consideration construction requirements for potential industrial towns (P.S.20 & 119)	Planning Study/ Industrial Development, Analytical Assessment (9D2)
109	Implementation of Nature Preserve national Parks	Sinai	rec. consideration of this concept by officials	Planning Study/ Tourism Development, TOR (9E1)
111	Training Center for Migrants to Sinai	Sinai	rec. consideration of this concept by officials	Administrative Action (1)
113	Copriferous Sandstone Evaluation		rec. assessment regarding potential use of sandstone	Planning Study Industrial Development, Analytical Assessment (9D2)
114	Turquoise Evaluation	SC Sinai	rec. assessment to determine quantity and quality of turquoise and potential for mining and sale	Planned Study/ Industrial Development, Analytical Assessment (9D2)
117	Census in 1982	Sinai	rec. survey	Data Collection Major Scale (3)
118	Brick Factory	El Arish	rec. prefeasibility survey	Prefeasibility, Large-Scale, Long-Lead-Time Construction (6)

LIST C - Project Ideas - No Summary, Non-Prioritized

SERIAL NO.	PROJECT NAME	LOCATION	STATUS	CATEGORY
119	New Town - Related to Deminex Petroleum Dev.	N. of Abu Rudeis	rec. assessment of townsite requirements and then possibly TOR	Planning Study/ Settlement Development, Analytical Assessment (9C2)
122	Desalinization Plan	El Arish	rec. assessment to determine the viability of such a facility as compared to conventional water sources (P.S.1,10)	Planning Study/ Settlement Development, Analytical Assessment (9C2)
124	Road Tunnel/ Bridge Study	Qantara	rec. assessment to determine actual need for and feasibility of constructing a bridge or tunnel at El Qantara (related to P.S.8)	Planning Study/ Regional Development, Analytical Assessment (9A2)
127	School System Assessment	Sinai	rec. consideration of this concept by officials	Administrative Action (1)
128	Medicinal Plant Feasibility Study		rec. feasibility study	TOR-Feasibility Large-Scale, Long-Lead-Time Construction (8)
129	Beach/Hot Springs Development	Hammam Faroun	Misr Sinai Travel Co. has initiated proposals to develop a village for medical tourism. rec. acceleration of project and improved access to area	Accelerate On-going project (10)
130	Belayim Gas/ Desal/Electrical generating station	SW Sinai Coast	rec. prefeasibility study	Prefeasibility Analysis/Moderate-Sized Construction (3)
131	Road Erosion Control		rec. study to estimate cost of this action in relation to various technologies which may be used (P.S.65) and possibility of using vegetation in certain areas as a preventative measure.	Prefeasibility Analysis/ Moderate-Sized Construction (5)
133	St Catherine's Museum	St. Catherine's	rec. assessment of establishing museum and identification of concept for museum. (Should be coordinated with P.S.36,53,79)	Planning Study/ Tourism Development, Analytical Assessment (9E2)

LIST C - Project Ideas - No Summary, Non-Prioritized

SERIAL NO.	PROJECT NAME	LOCATION	STATUS	CATEGORY
134	St. Catherine's Bus Parking and Restroom Facilities	St Catherine's	rec. upgrading parking and restroom facilities. Tourist volume should be estimated prior to this action (P.S.53)	Minor Construction Works (4)
143	Castor Oil and Meal Production		rec. agricultural productivity study to precede planning study (P.S.25)	Planning Study/ Industrial Development, Analytical Assessment (9D2)
145	Feasibility of Increasing Fish Yield	Lake Malaha	rec. assessment of fishing conditions and proposals for improving fishing yield	Planning Study/ Rural Development, Analytical Assessment (9B2)
146	Wetland Inventory		rec. field survey to identify, map out, and report condition of wetlands.	Field Study and Data Base Collection Modest Scale (2)
147	Oil Pollution & Tar Control	Sinai Beaches	rec. action to control offshore oil discharge by ships	Administrative Action (1)
148	Mammals Inventory	St. Catherine's	rec. survey to identify mammals in the St. Catherine's area	Field Study and Data Base Collection Modest Scale (2)
149	Quail and Hunting Study	N. Coast	rec. discussions with Bedouins to determine the viability of undertaking such a study	Planning Study/Rural Development/Analytical Assessment (9B2)
150	Raptor Sinai Migration Routes Environmental Implications		rec. analytical assessment	Planning Study/ Regional Development/ Analytical Assessment (9A2)
151	Environmental Baseline Assessment	All designated areas	rec. that the baseline assessment be closely coordinated with all sectoral projects	Data Collection Major Scale (3)
152	Lost Endangered Animals Rehabilitation		rec. discussions with officials regarding the acceptability of a rehabilitation program	Administrative Action (1)
154	Local Water Supply	Sharm El Sheikh	rec. feasibility study and TOR preparation for harbor development	TOR-Feasibility, Large-Scale, Long-Lead-Time construction (8)

LIST C - Project Ideas - No Summary, Non-Prioritized

SERIAL NO.	PROJECT NAME	LOCATION	STATUS	CATEGORY
155	Harbor Plan	Sharm El Sheikh	rec. feasibility study and TOR preparation for harbor development	TOR-Feasibility, Large-Scale, Long-Lead Time Construction (8)
156	Observation Tower and Underwater Trails	Sharm El Sheikh	rec. assessment of this idea which should be considered in planning tourism for Sinai (P.S.53)	Planning Study/ Tourism Development, Analytical Assessment (9E2)
157	Bedouin Handicraft Training	Sinai	rec. support of efforts underway by Ministry of Social Affairs, MCC	Accelerate Ongoing Project (10)
160	Sinai Activities International Publicity	Sinai	rec. consideration of this idea by officials	Administrative Action (1)
162	Health Delivery System	Sinai	rec. consideration of this idea by officials	Administrative Action (1)
164	Wind Generators for Rural Electricity		rec. field testing and analytical assessment	Planning Study/ Rural Development, Analytical Assessment (9B2)
165	Livestock Watering Windmills		rec. field testing and Analytical assessment	Planning Study/ Rural Development, Analytical Assessment (9B2)

THIRD PROJECT LIST

SEPTEMBER 1983 , CHART C - CORRESPONDS TO LIST C

PROJECT LINKAGE & EFFECTS

LINKAGE — Number after serial number
BACKWARD LINKAGE — Underlined number after serial number
PROJECT EFFECT — L. Local; R. Regional; N. National

ADMINISTRATIVE ACTIONS (1)	FIELD STUDIES & DATA BASE WORK MODEST SCALE (2)	DATA COLLECTION MAJOR SCALE (3)	MINOR CONSTRUCTION WORKS (4)	PREFEASIBILITY ANALYSIS MODERATE-SIZED CONSTRUCTION (5)	PREFEASIBILITY LARGE-SCALE LONG-LEAD-TIME CONSTRUCTION (6)	TOR FEASIBILITY STUDIES MODEST-SCALE CONSTRUCTION (7)	TOR FEASIBILITY LARGE-SCALE LONG-LEAD-TIME CONSTRUCTION (8)	PLANNING STUDIES (9)										ACCELERATE ONGOING PROJECTS (10)
								REGIONAL DEVELOPMENT Intersectoral (A)			RURAL DEVELOPMENT Agriculture (B)			SETTLEMENT DEVELOPMENT Infrastructure & human services (C)			INDUSTRIAL DEVELOPMENT Industry (D)			TOURISM DEVELOPMENT Tourism (E)		
								TOR	Supportive analytical study		TOR	Supportive analytical study		TOR	Supportive analytical study assessment		TOR	Supportive analytical study		TOR	Supportive analytical study	
(62) R, 58 (80) R, 146,148, 149,151,152 (111) RN, 2,5,6, 11,15,18,26,27, 28,35,45,46,48, 53,54,88,99,100, 104,105,118,131, 155 (MOST WILL REQUIRE HIGH QUALITY LABOR) (127) R, 56 (147) LR, 53,78, 120 (152) R, 109,142 148,149,150,152 (160) RN, ALL DEVELOPMENT PROJECTS, PARTICULARLY TOURISM 53 (162) LRN, 58	(79) RN, 53,58, 133,159,160 (101) L, 7,100 (146) R, 80,109, 151,152 (148) R, 80,109, 151,152	(117) RN, 58 (151) R, 109,146, 148,150,152	(134) L, 53,74, 75,102	(130) LR 5,12,20, 27,28,86 (131) LR, 8,16, 58,60,137,158	(118) LR, 6,15,18 (119) LR, 16,20, 32,58,98,105,111	(104) LRN, 16,53, 58,60,75,83,84, 100,105,158	(70) RN, 2,4,8, 26,46,53,58,65 83,84,88,110, 118,120,126,142, 158 (100) LRN, 7,16, 33,46,53,58,60, 83,101,104,142 155,158 (128) RN, 27,46, 55,61,76		X	(68) LR, 20,58, 119,130 (124) R, 8,18, 61,75,83,70 (150) R, 80,151		X X X	(146) LR (149) LR, 80,150, 151 (164) LR, 25,32, 142,165,170,171, 173 (165) LR, 125, 136,139,161,163, 164,166,176	X		(102) LR, 1,9,25, 35,36,46,53,55, 56,60,74,79,103, 133,134,135,142, 151,158,170,173, 176 (122) L, 25,58 (143) R, 25 (154) L, 1,53,58		X X X X X X X	(99) LR, 14,20,28, 35,58,105,164 (105) LR, 5,7,11, 15,16,20,46,55, 58,100,104,131 (109) RN, 53,146, 147,148,151,157 (113) R, 28,115 (114) R, 115 (133) LR, 79,102, 53,159,160 (156) L, 53,155			(64) LR (103) L, 102 (129) RN, 53 (157) LR, 53,58

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2.0 - METHODOLOGY FOR PRIORITIZATION OF COMPLETED PROJECT SUMMARIES

2.1 - STRATEGIC GOALS AS THE BASIS FOR PRIORITIZING PROJECTS

The regional development of the Sinai Peninsula is a dynamic process whose achievement will only be realized by the balanced integration of complementary projects from within different sectors. Formulation of strategic and related objectives (which are guidelines for development) is an initial step in the planning process which provides a framework from which decision-makers can orient their activities. Once goals and objectives have been agreed and weighted by policy-makers, a range of alternatives can be generated which provide planning scenarios or options. The following list of strategic goals and objectives for Sinai has evolved from the ongoing dialogue between the client and the consultant. Further clarification and amplification of goals and objectives can be expected as the planning process continues:

Goal 1 - Population Absorption and Diffusion Within Sinai

Objectives:
- National and international security.
- National decentralization, settlement improvement and rural development.

Goal 2 - Efficient and Self-sustaining Economic Growth

Objectives:
- Support and facilitation of national growth efforts.
- Establishment of economic activities which are self-supporting and basic to the establishment of additional activities with strong regional multiplier effects.

Goal 3 - Efficient Provision of Infrastructure and Environmental Conservation

Objectives:
- Provision of basic services and regional infrastructure.
- Utilization of national resources in a rational manner without production of environmental degradation.

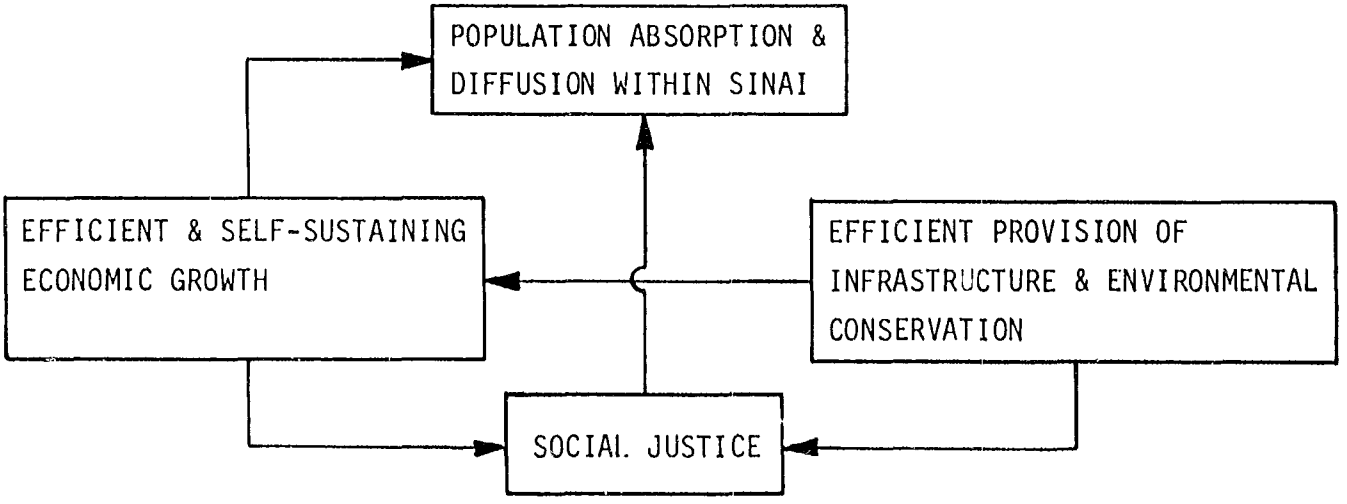
Goal 4 - Social Justice

Objectives:
- Development of Sinai with respect for the indigenous population.
- Increased food availability by improvement of agricultural productivity and food distribution.
- Improvement of income distribution through creation of additional employment opportunities, especially for households whose income is now very low.

- Improvement of living conditions through provision of basic shelter, infrastructure and human services.

It is important to keep in mind that such goals and objectives are not separate and unrelated. Moreover, they must be considered within the context of national development goals which give high priority to the re-integration of Sinai with the rest of Egypt.

FIGURE 1 - INTERACTION OF STRATEGIC GOALS



The development of Sinai is contingent upon improvement of local and regional economies. Infrastructure provision supports regional economic development and upgrades living conditions in existing settlements and rural areas. Together, economic development and infrastructure provision contribute to achieving social justice. The improvement of general conditions in Sinai will serve as an incentive for population in-migration and diffusion. Economic development itself will serve as the principal incentive for population migration to Sinai, once basic services are provided for persons already living in the Peninsula.

2.2 - PRIORITIZATION CRITERIA

Seven sets of criteria, including indicators showing satisfaction of strategic goals and objectives, have been used to evaluate project summaries. The criteria sets and definitions of each are listed below. Indicators related to each set are included in the appendix, along with a scored project summary, which illustrates how the scoring system contributes to prioritization.

1 - High Development Impact (Related to Goals 1, 2, 4)
Implementation of project can be undertaken immediately, thus the ratio of output to investment is high. The desired effect of implementation is the improvement of the local and/or regional economic base and employment generation (short- and long-term effects pronounced).

2 - Quick General Acceptance (Related to Goals - 1, 2, 3, 4)
Implementation of the project should not require unnecessary institutional development, i.e., the creation of ad hoc institutional units. The cost should be within limits set by current budgetary allocations or the project should demonstrate potential to attract funds from donor sources. The project should provide institution-building components (if appropriate), utilize local administrative and management skills and optimally include training elements to upgrade skills of employees of existing institutions or establishments (short- and long-term effects pronounced).

3 - Early Realization (Related to Goals 2, 3)
Implementation of the project can be undertaken immediately, but the effects may not be immediate (short- and long-term effects pronounced, long-term effects emphasized).

4 - Essential Infrastructure (Related to Goals 1, 2, 3, 4)
Implementation of the project should result in the satisfaction of (1) basic service requirements and/or (2) provision of regional infrastructure components, improving accessibility to Sinai from the rest of Egypt as well as an infrastructure base within Sinai (short- and long-term effects pronounced).

5 - Environmental Impact (Related to Goals 3, 4)
Implementation of the project (1) should utilize natural resources rationally and possibly improve environmental conditions and (2) should not result in adverse environmental effects,i.e., damage to the natural resource base.

6 - Critical to Life (Related to Goal 4)
Implementation of the project should improve the potable water source and/or food supply, promote shelter provision, enhance social programs and promote self-reliance of the indigenous population (short-term effects pronounced).

7 - Satisfaction of Government and Public Priorities (Related to Goals 1, 2, 3, 4)
Implementation of the project is considered to be of high priority by

Ministry officials, North and South Sinai Governors, and/or citizens and local informal and formal organization representatives and/or the Sinai Development Authority. The product of implementation is consistent with goals and objectives articulated in the Five-Year Plan (short- and long-term effects pronounced).

2.3 - SCORING AND RANKING OF COMPLETED PROJECT SUMMARIES - LIST A

Each of the seven sets of criteria has a score range from 1 (low/poor) to 3 (high/good), the seven sets together having an aggregate score range of 1-7 (low/poor), 8-14 (moderate/fair) and 15-21 (high/good). After project summaries were scored, they were ranked according to their relative scores within categories. The study team performed this exercise to test the system. Other weighting and scoring could be used within the same framework of evaluation (for instance, by making a wider range of scores available for some items, considered most important, than for others which are given lesser weight. Thus, the system can be used favorably by the Steering Committee.. Scoring presented here is merely an illustration, based on the consultant's best preliminary judgement.

While the majority of project summaries were assigned scores within the 15-21 (high/good) range, others which the study team considers as potentially important to the development of Sinai fell into lower ranges. These include:

- Projects which could not be considered high priorities because of low linkage to other projects, their relative importance and/or low expected impact (e.g., P.S. 91 - Sample Survey - Sinai).
- Projects (1) requiring high capital inputs, (2) having economic returns which were not yet proven or (3) having the potential of producing adverse environmental effects (examples: P.S. 11 and 26 - industrial/mining projects still requiring prefeasibility analysis).
- Scientific projects which are supportive sectoral development but taken alone lack guaranteed tangible development effects (example: P.S. 32 - A Network of Meteorological Stations in Sinai).

These "exceptions"are clearly important to regional development, particularly the industrial/mining projects which could potentially provide a strong regional economic base, because of the positive secondary effects their implementation may yield. This is one reason for not prioritizing projects between categories. If this approach were taken, projects of major development potential, e.g., industrial/mining, would appear lower than is justified by their merit. Consequently,

the definition of which of the sixty-four project summaries are of highest priority depends on the development strategy chosen. Sector-leading strategies will call for a priority of regional development projects, while a local-resource-base strategy will call for a priority of smaller-scale economic development projects and location-specific infrastructure projects. The following list shows project summaries that deserve immediate consideration. In Section 3, an overview is given for all List A projects. Linkages and the order in which related projects should be implemented are stressed as well as the recommended action. It is suggested that readers refer to Section 3, while reviewing the list.

2.4 - PROJECTS REQUIRING IMMEDIATE CONSIDERATION (NOT IN ORDER OF PRIORITY)

Projects Facilitating Local and Regional Development and Sectoral Projects

SECTION 3	SERIAL NO.	NAME	LOCATION	CATEGORY
3.1.1	76	Canal Crossings - Organization and Management	Suez Canal	1
3.1.2	18	North Sinai Development Bank	North Sinai	1
3.1.4	142	Resident Regional Planner	Sinai	1
3.1.6	139	Formation of Livestock Grazing Associations	Sinai	1
3.1.7	92	Drip Irrigation Spare Parts	El Arish	1
	(WATER)			
3.9.15	98	Fresh Water Pipeline	Suez to Abu Rudeis	9C2
3.10.2	89	Fresh Water Pipeline	North Coast	10
3.10.1	66	Water Pumps for Nakhl	Nakhl	10
	(ROADS)			
3.8.1	6	Construction Material Production	N. Sinai	8
3.10.6	16	Suez Coastal Highway	Ras Sudr and Abu Zenima	10
3.10.5	60	Wadi Feiran Road	Wadi Feiran	10
	(COMMUNICATIONS)			
3.10.3	46	Telecommunications Network	Sinai	10
3.10.9	138	TV Broadcasting	El Arish and El Tor	10

SECTION 3	SERIAL NO.	NAME	LOCATION	CATEGORY
	(POWER)			
3.9.18	85	Power Plant Siting	NW Sinai	9E1
	(SEWERAGE)			
3.9.13	121	Sewerage Treatment Assessment	El Arish	9C2
	(INVESTIGATION OF INFRASTRUCTURE OR PROTECTION OF INFRASTRUCTURE)			
3.3.1	1	Well Drilling Program	Sinai	3
3.3.2	10	Groundwater Survey & Monitoring	El Arish	3
3.4.1	137	Floor Hazard Assessment and Remedial Action Program	Sinai	9A2
Intersectoral /Regional Development Projects and Studies				
3.9.1	31	Hydrological Basin Investigations	Sinai	9A1
3.9.2	2	Integrated Development	Lake Bardawil	9A1
Agricultural Development - Regional Projects				
3.9.6	25	Agricultural Experimentation and Extension	Sinai	9B1
3.9.7	171	Land Reclamation Using Nile Water	East of Bitter Lakes & other possible locales	9B1
3.9.8	170	Land Reclamation Using Well Water	El Arish, El Qaa Plain , other Sinai locales	9B1
Fishery Development				
3.3.3	38	Water Quality Analysis & Fishery Data	Lake Bardawil	3
3.4.2	40	Inlet Design	Lake Bardawil	3
Industry - Regional				
3.6.1	28	Glass Sand	El Khabouba	6
3.6.2	27	Kaolin	Abu Rudeis	6
3.6.3	5	Ferromanganese Plant	Abu Zenima	6

SECTION 3	SERIAL NO.	NAME	LOCATION	CATEGORY
3.6.4	11	Gypsum Mining & Processing	Ras Ma'laab	6
3.6.5	26	Maghara Coal Mine Development	Maghara	6
3.6.6	45	Salt Production	Lake Bardawil	6
Tourism - Local and Regional				
3.9.19	53	Tourism Planning Study	Sinai	9E1
3.10.4	74	Upgrade Hotel & Food Service	El Arish & St. Catherine's	10
3.10.7	36	Interfaith Peace Memorial Complex	St. Catherine's	10
Settlement Development				
3.9.14	58	Detailed Plans for Specific Settlements	Sinai	9C1

3.0 - OVERVIEW OF PROJECT SUMMARIES - LIST A

3.1 - CATEGORY 1 - ADMINISTRATIVE ACTIONS

3.1.1 - P.S. 76 - Canal Crossings Organization and Management

Delays of canal crossings at Qantara, Ismailia and Suez City significantly inhibit the flow of goods to and from Sinai from the rest of Egypt. Merchants and building contractors in both North and South Sinai are bewildered by delays and complain that their businesses suffer greatly because of this problem. (Settlement Survey of Social and Economic Activity in Sinai, August 1981) When development activities proceed in Sinai, this problem will be exacerbated greatly; without early effective relief, development is being discouraged.

Recommendations: Additional action should be taken to better facilitate canal crossing, initially by greatly expanded ferry service with improved landings on both sides of the Canal. Dames & Moore is currently collecting traffic data informally and proposes that a more extensive survey is needed to assist canal authority officials in providing more efficient and regular crossings (P.S. 8).

Cost: To be determined.

3.1.2 - P.S. 18 - North Sinai Development Bank

Financial institutions are virtually non-existent in Sinai. They are prerequisites to investment management of industrial, agricultural and commercial development of the magnitude envisioned for Sinai. Initial steps have been taken by a number of Egyptian commercial and investment banks to establish such an institution. This action has the support of the Governor of North Sinai and a number of people in the commercial community.

Recommendations: Technical assistance should be offered to speed implementation and to coordinate bank activities with project planning efforts.

Cost: LE 5 million/Governorate share 50%, bank and individuals 50%.

3.1.3 - P.S. 41 - Lake Bardawil Investment Company

The establishment of an investment company to promote extensive

commercial activities at Lake Bardawil would provide the financial institutional apparatus required for any type of development of the area. The company would complement, not duplicate, the function of a regional development bank (P.S.18).

Recommendations: The establishment of an investment company could serve immediate needs of fishing operations in Lake Bardawil. However, the project as envisaged includes diverse management and investment problems which would pose major difficulties in the organization of a single company. If integrated development of Lake Bardawil is opted for and current fishing activities expanded, this proposal should be considered of high priority. Otherwise, its function may be subsumed by an institution outlined in P.S.18.

Cost: To be determined.

3.1.4 - P.S.142 - Resident Regional Planner

If the Sinai is to be developed holistically as a region, consistent planning and evaluation of existing and proposed projects must be accomplished. Governorate activities will have to be coordinated through a Sinai information facility to attain regional and national socio-economic advancement. Qualified regional planning personnel should be recruited before major industrial, agricultural, touristic and settlement development projects commence.

Recommendations: Each Sinai Governor should seriously consider advantages of creating positions for regional planners. It is unlikely that local government personnel will be able to carry out regional development coordination, which requires the expertise of a qualified and experienced regional planning staff. Funding possibilities should be explored, qualified people recruited and positions in each governorate implemented.

Cost: To be determined.

3.1.5 - P.S.30 - Groundwater Authority - El Arish

El Arish is the most populated settlement in Sinai and is now in a critical state in regard to groundwater resources. Commercial and touristic development have already begun to accelerate in a town which

may not have enough groundwater to satisfy the needs of the existing population. Demands on already scarce groundwater will undoubtedly escalate as development of El Arish proceeds.

Recommendations: Hydrogeological investigations should precede or be closely coordinated with the establishment of the Authority (P.S.1,10). An organization and function plan for the Authority should be detailed to suit local conditions in El Arish.

Cost: To be determined.

3.1.6 - P.S.139 - Formation of Livestock Associations - Sinai

Livestock ownership has provided a subsistence for the Bedouin for centuries, and any attempt to increase livestock productivity lies with the cooperation of the Bedouin. A local-based and controlled institution is required to coordinate efforts at livestock improvement.

Recommendations: This project summary was discussed with the Bedouins. Further discussions should be initiated to better define the organization and creation of a livestock association.

Cost: Initial technical assistance would probably not to exceed LE 50,000.

3.1.7 - P.S.92 - Drip Irrigation Spare Parts - El Arish

Stabilized and increased agricultural productivity in El Arish can partially be achieved through maintenance of the existing irrigation systems and the increased availability of spare parts for irrigation. The existing irrigation system is greatly dependent upon the importation of spare parts. Farmers are consequently barred from obtaining off-the-shelf replacement of equipment.

Recommendations: Domestically-produced parts of adequate quality should be introduced whenever available. Discussions should be initiated with the Principal Bank for Development and Agricultural Credit in El Arish, as to whether or not it is possible and acceptable to create a stock of spare parts which could be sold to farmers on a cash basis.

Cost: Approximately LE 100,000 (Replacement parts LE 100/FD).

3.1.8 - P.S.175 - Land Titles to New Lands' Settlers (All Land Reclamation Areas)

Under the current system, beneficiaries of public irrigation projects hold only a certificate of land ownership, instead of full title, until individual members and the entire land reclamation cooperative complete payment on land. This limits individuals severely to restricted medium-term credit available through land reclamation cooperatives.

Recommendations: The Ministry of Development should consider offering reclaimed land for cash sale to beneficiaries at 20% its assessed value. This would allow beneficiaries to place their land as collateral for livestock and farm improvement and would hopefully serve as an incentive for participation in land reclamation.

Cost: Little or none (the proposal would generate an immediate positive cash flow to the MOD).

3.1.9 - P.S.179 - Fertilizer Quotas for Desert Lands

Agricultural productivity could be increased in North Sinai by adjusting fertilizer quotas upward to a sufficient quantity to obtain higher yields. Currently, farmers in North Sinai receive similar to those quotas allowed for areas in the Nile Delta which has richer soils.

Recommendations: Obtain support from the Principal Bank for Development and Agricultural Credit (PBDAC), convene in North Sinai, Ismailia (East Bitter Lakes) and other land reclamation areas, and define zone-specific fertilizer quotas, which could be introduced into PBDAC norms.

Cost: Little or none.

3.2 - CATEGORY 2 - FIELD STUDIES AND DATA BASE WORK - MODEST SCALE

3.2.1 - P.S.90 - Sample Survey - Delta

Discussions with individuals in Sinai indicate that a number of people, who moved to the Delta during the occupation, are interested in returning to Sinai to participate in planned development efforts. Currently, a sizeable proportion of skilled labor in Sinai seems to be originating from the Delta region (Settlement Survey of Socio-Economic Activity in Sinai, August, 1981).

Recommendations: Undertake a sample survey of Sinai people in the Delta to obtain accurate information on the proportion of those people who actually would like to return to Sinai and the contributions which they might make to regional development.

Cost: LE 35,000

3.2.2 - P.S.91 - Sample Survey - Sinai

No in-depth or comprehensive information has been collected via a sample survey. Information yielded by such a survey would contribute to the implementation of development plans, particularly settlement and rural developmement.

Recommendations: This type of survey would be useful only if coordinated closely with specific development schemes; therefore, it could be deferred until more detailed planning efforts commence.

Cost: LE 45,000 - see P.S. for details of survey goals)

3.3 - CATEGORY 3 - DATA COLLECTION - MAJOR SCALE

3.3.1 - P.S.1 - Well Drilling Program - Sinai

Groundwater resources are critical prerequisites for all sectoral development in Sinai, and public water provision is dependent upon these resources and their rational management.

Recommendations: The proposed program presented to ACR/MOD should be funded and implemented immediately.

Cost: Refer to D-M 103 and 104; May 6, 1981

3.3.2 - P.S.10 - Groundwater Survey and Monitoring Program - El Arish

Groundwater resources identification and analyses are prerequisites for maintenance and development of settlements within Sinai. Public water provision and all sectoral development are dependent upon these resources and their rational management (P.S.30). The water situation

in El Arish, coupled with the envisioned development of that settlement, mandates careful study of the condition of the coastal acquifier, the major component of the groundwater system.

Recommendations: Full assessment of the coastal acquifier at El Arish that would be provided by this proposed program.

Cost: LE 120,000 - 170,000

3.3.3 - P.S. 38 - Water Quality Analysis and Fishery Data Collection - Lake Bardawil

Improved conditions for potential fishery at Lake Bardawil are dependent upon a study of water circulation from the Mediterranean through inlets. The salinity of the lake's water is already prohibitive to fishing shrimps and many sea fishes. A baseline study of this type would clarify the true fishery potential of Lake Bardawil, thereby providing more information to determine what type of development is viable for the area (P.S.2)

Recommendations: In late 1980, the Institute of Sea Sciences and Fisheries, Suez Canal University submitted a proposal to undertake the study. This study should precede any further dredging efforts of Lake Bardawil (P.S. 40).

Cost: To be determined.

3.4 - CATEGORY 4 - MINOR CONSTRUCTION WORKS

3.4.1 - P.S.137 - Flood Hazard Assessment and Remedial Action Recommendation - El Arish

The major built-up area of El Arish is situated on the west bank of Wadi El Arish and is vulnerable to seasonable flooding. Last year's floods damaged infrastructure and homes. Erosion of agricultural land on the Wadi's east bank has been severe.

Recommendations: Reduce flood hazard by undertaking a preliminary assessment, which should be coordinated with the Governorate. Recommend and construct flood control devices to prevent future destruction caused by flooding.

Cost: To be determined.

3.4.2 - P.S.40 - Inlet Design - Lake Bardawil

The Suez Canal Authority is currently undertaking dredging operations to re-open clogged inlets. Lake Bardawil and adjacent areas comprise a delicately-balanced ecosystem which could be extremely altered or destroyed if inlets are dredged prior to environmental impact analysis.

Recommendations: A water quality and fishery data collection base study should be undertaken immediately before dredging efforts accelerate (P.S.38), as recommended in Paragraph 3.3.3 above. The base study would yield information on the chemical state and water circulation of the lake. Improper dredging could render the lake useless and remove the economic base that fishery provides for fishermen. If dredging continues without a base study being performed, an experienced beach engineer and environmental analyst should be brought together with the Authority to ensure the optimum configuration of inlets and sand control structures.

Cost: $6,000 and LE 1,500.

3.4.3 - P.S.132 - Fishing Boat Dock - Lake Bardawil

Increased fishing productivity could be partially facilitated by construction of small docking facilities. Estimates indicate that there are currently 2500-3000 fishermen working the lake, providing food for themselves and approximately 15,000 people in the vicinity of the Lake. Regardless of the type of comprehensive development that will take place at Lake Bardawil, the fishery efforts underway should be supported, because they provide an economic base for the existing population around the Lake.

Recommendations: Provide technical assistance to Lake Bardawil fishing authorities to help determine size, location and preliminary design of dock.

Cost: Undetermined.

3.4.4 - P.S.33 - Guest House - El Tor

There are no appropriate accommodations south of Abu Zenima, which could serve as a guest house for experts and officials working on upcoming development efforts. El Tor will be developed as the capital of

South Sinai within the next year and is centrally located between the Abu Zenima/Abu Rudeis area, St. Catherine's and Sharm El Sheikh, making it an excellent location for such a facility. Construction of a 500-bed hotel at St. Catherine's, which will be undertaken in two phases, is scheduled to begin later this year (Interview with South Sinai Governor - Settlement Survey of Social and Economic Activity in Sinai, August 1981); however, the construction of the hotel will probably not be completed in time to serve the needs of development project personnel, and use of it will require a substantial detour for travellers whose business is in the coastal areas.

Recommendations: Facilitation through donor funding of the tourism village proposed by the Sinai Development Authority at El Tor (cost US$150,000 - 200,000) or of the proposal referred to above, in order to speed implementation of that project.

3.4.5 - P.S.17 - Improvement of Canal Crossings - Suez City

Improvement of this very basic infrastructure component could better facilitate ferry crossings and increase turn-around time dramatically. It would also support better management and organization of canal crossing, which is crucial to the facilitation of transport from central Egypt to Sinai.

Recommendations: Initiate discussions with the Suez Canal Authority regarding the overall plan for improvement of canal crossings, and proceed with construction of an engineered concrete ramp on each canal bank.

Cost: LE 10,000 (non-professional estimate of materials required).

3.4.6 - P.S.85 - Visitor Center - El Arish

The establishment of a visitor center located adjacent to an area of historic significance (abandoned railroad station) or one which exemplifies the town's character (market/town center) would provide an element for tourist attractions.

Recommendation: The Governor of North Sinai has responded positively to this idea and believes it would promote tourism in El Arish. The viability of constructing such a facility requires further discussion with Ministry officials and donors. A possible funding source may be investors

in tourist facilities (e.g. Marriott Corporation and owners of small-scale tourist establishments) who would benefit indirectly from the establishment of such a facility.

3.5 - CATEGORY 5 - PREFEASIBILITY ANALYSIS/MODERATE-SIZED CONSTRUCTION

3.5.1 - P.S.7 - Fishing Wharf - El Tor

The development of El Tor, as the capital of South Sinai, St. Catherine's as a religious tourist center, and Abu Zeneima and Abu Rudeis as industrial areas, will benefit from the improvement and expansion of fishing. Fisherman cooperatives in El Tor exist, and fishermen believe the installation of a fishing wharf would greatly benefit their fishing efforts. Such a facility would provide easy access by fishing vessels to lesser-fished stocks, thus saving fuel and time in the southern portion of the Gulf of Suez. The Food and Agricultural Organization has recommended the development of port facilities at El Tor, as a result of their Red Sea Fisheries Study.

Recommendation: A preliminary analysis should be undertaken to estimate potential usage and advantages of new port facilities as well as to determine size, type and function. Wind/wave information should also be gathered (P.S.101).

Cost: To be determined.

3.5.2 - P.S.87 - Docking Pier at El Arish

The construction of a pier at El Arish would constitute a major infrastructure component, providing access to light material and supply freighters as well as enhanced fishing fleet operation from El Arish. Water transport of materials would bypass many of the essential problems of overland transport, i.e. canal crossings; and El Arish could be a distribution point for materials in North Sinai. Fishermen to the East of El Arish complain that sand bar formations are inhibiting their fishing productivity. A facility at El Arish would allow others better access to lesser-fished stocks.

Recommendations: A prefeasibility study should be performed and the project

immediately implemented. The Governor of North Sinai has indicated that a report providing necessary wave and current action and coring data is available. Money has already been allocated for a fishing wharf in El Arish by the North Sinai Governorate.

Cost: Rough guestimate: $10 million

3.5.3 - P.S.12 - Gas Turbine Power Generation - Abu Zenima/Abu Rudeis

The Abu Zenima/Abu Rudeis area provides an excellent location for an industrial complex that could include glassmaking, kaolin, gypsum, cement and other potential industries, in addition to the ferromanganese plant (P.S. 28, 11, 27, 5). Additional power sources to those planned for industrial use will be required for the development of an industrial community. Economies of scale dictate that a desirable plan would be to furnish fresh water and electricity from a central facility, presumably making use of associated gas from the Belayim fields for consumption by the industrial complex and community.

Recommendations: The Ministry of Development may wish to consider making use of the gas turbine power generator. Cost of rehabilitating the facility has been estimated as ranging from $11-12.9 million. A prefeasibility analysis is required to ascertain (1) a solid estimate of the cost of rehabilitation of equipment, (2) cost of re-establishing gas supply and (3) financial and economic cost/benefit analysis of rehabilitation and/or replacement of the existing power stations.

Cost of prefeasibility analysis: Approximately $42,150.

3.5.4 - P.S.42 - Solar-Powered Ice Plant - Lake Bardawil

If the future development of Lake Bardawil includes expanded fishery, this facility should be given serious consideration because it does not rely on conventional energy sources and would support fishery greatly. Expanded fishery at Lake Bardawil will require an additional ice plant. The ice plant, opened at Bir El Abd in mid-July 1981, would not have the capacity to accommodate expanded fishing aimed at regional and export markets.

Recommendations: This project should be deferred until a decision is made

as to the development of Lake Bardawil. If continued and possible expanded fishing is considered a prime development option, a prefeasibility analysis should proceed.

Cost: $19,000 (prefeasibility analysis)

3.5.5 - P.S.43 - Solar Salt Pond Electric Power Demonstration Project - Lake Bardawil

This project is contingent upon the type and scale of development preferred for the Lake. A demonstration project of this type could provide an innovative alternative to conventional power sources and satisfy power requirements of residential and touristic uses and fish processing.

Recommendations: Until a development concept for Lake Bardawil is defined, action on this project should be deferred. In order to perform a trade-off analysis determining optimum sizes of the pond and generation capability, prospective electricity demand in the Bardawil area will have to be ascertained. Once a development concept is agreed upon consideration should be given to performing a prefeasibility analysis, in order to evaluate issues outlined in the project summary.

Cost: $36,750 (prefeasibility study)

3.6 - CATEGORY 6 - PREFEASIBILITY ANALYSIS, LARGE-SCALE, LONG-LEAD-TIME CONSTRUCTION

3.6.1 - P.S.28 - Glass Sand - El Khabouba

According to the Central Desert Mining Company, the sand at El Khabouba meets chemical and sizing criteria for glass making better than any other source in Egypt. The El Khabouba concession was previously held by the Sinai Manganese Company. The concession is now open to a new company.

Recommendations: Reconnaissance evaluation and market analysis are first steps towards prefeasibility analysis. Despite claims regarding quality and marketability, the potential for international marketability is believed to be limited. El Khabouba products may succeed in supplanting a portion of the glass sand now being mined in the East Desert for domestic use.

Cost: $6,000 (prefeasibility analysis)

3.6.2 - P.S.27 - Kaolin - Abu Rudeis

Kaolin development is principally contingent upon the tonnage and grade of definable ore and either (a) domestic demand or (b) ability to capture a portion of the international market. Domestic demand is presently satisfied by mines in the Eastern Desert (which yield a clay substitute for kaolin which is of lower quality) plus an unknown import tonnage. Sinai kaolin, because of quality, should be able to supplant a portion of the Eastern Desert production. Entry into the export market might require development and production participation by one of the few large cartels, and attracting such a participant would demand exploration and testing of the kaolin deposits.

Recommendations: Reconnaissance evaluation and market analyses, followed by ore reserve mapping, measurement and metallurgical testing, leading to mine development.

Cost: LE 350,000 (prefeasibility analysis)

3.6.3 - P.S.5 - Ferromanganese Plant - Abu Zen

Egyptian demand for ferromanganese is projected to increase 100% during the period between 1981 and 1984, and this implies major growth in domestic specialty steel fabrication industries and product markets. Ferromanganese mining and processing will require (1) major input requirements regarding infrastructure (townsite development for an industrial community, development of the Suez coastal highway, and completion of the Ahmed Hamdi Tunnel - P.S.20,16,61), and (2) continued government subsidies for diesel fuel for product transport (Kaiser Engineers, proposed incentives). Evaluation of this project has required careful review in terms of the cost/benefits of further mine development. There is no question that a domestic source of ferromanganese is highly desirable.

Recommendations: When project was evaluated in February 1981, the following portions of the Phase 2 prefeasibility analysis needed to be completed: (1) better documentation to support projected increases in domestic demand and (2) better substantiation of mine development cost with preliminary mine plans, etc. Phase C Exploration and Analysis to upgrade or increase ore reserves should be undertaken as soon as possible.

Cost: LE 30 -50 million, plus LE 16-20 million for infrastructure (project cost). Prefeasibility Analysis - Undetermined.

3.6.4 - P.S.11 - Gypsum Mining and Processing - Ras Malaab

The establishment of gypsum mining and processing as a major industry in Egypt could potentially enhance the agriculture and construction sectors. The Mckee-Keary prefeasibility report's supply and demand analysis does not justify immediate implementation of a full feasibility study

Recommendations: Prefeasibility study to include (1) a more accurate market analysis, (2) capital costing outlined in greater detail and inclusive of infrastructure costs, (3) transportation analysis, (4) conclusive information regarding usage of plant waste gypsum as agricultrual gypsum, and (5) cash flow analyses.

Cost: Undetermined (prefeasibility analysis).

3.6.5 - P.S.26 - Coal Mine Development-Maghara

The diversification of domestic energy sources could be partially accomplished by mining coal. For regional planning purposes, the Maghara field should be regarded as a tentative source of coking coal, possibly meeting 50% of domestic demand or as a potential export within the region. Until substantive data are made available from the Egyptian Geological Service, this source can only be described as tentative.

Recommendations: Current development planning may well result in prefeasibility analysis. A prefeasibility analysis should be undertaken and include further metallurgical tests and a comprehensive analysis on the economic benefits of mine development. Because this potentially large project is of considerable natural importance to energy development plans as well as to regional plans for Sinai, it might be useful for the ministries in charge to prepare frequent (monthly or bimonthly) reports on status of studies, proposals and other aspects of their work.

Cost: To be determined.

3.6.6 - P.S. 45 - Salt Production - Lake Bardawil

Salt production is a potential industrial development for Lake Bardawil. Economic viability depends upon the competitive position of other domestic producers, domestic demand and nearby markets, if any. If the decision is made to abandon dredging operations over the long-term, due to the natural silting and decreasing water level of the lake, a salt industry may prove to be a major development alternative to fishery.

Recommendations: A prefeasibility analysis should be performed to (1) assign capital and operating costs for comparison with market values and (2) assess domestic and export demand prices. Could be included in larger studies for development of entire Bardawil zone.

Cost: LE 5,000,000 (project), prefeasibility cost is undetermined.

3.7 - CATEGORY 7 - NO SUMMARIES INCLUDED

3.8 - CATEGORY 8 - TOR - FEASIBILITY, LARGE-SCALE, LONG-LEAD-TIME CONSTRUCTION

3.8.1 - P.S. 6 - Construction Material Production - El Arish Area

Development of the construction industry depends upon durable and quality materials. Building and highway contractors in and near El Arish now rely upon several small, poor quality pits around Kisan Aneiza and the El Guarir area for sand, concrete aggregate and base rock. The economic viability of development construction material in the El Arish area is, of course, dependent upon infrastructure and industrial development plans for the area.

Recommendations: Terms of reference have been drafted for reconnaissance evaluation, identification, sampling and testing of aggregate source areas within a reasonable haulage distance of El Arish. A concurrent market analysis of present and future demand and competitive pricing is included.

Cost: LE 50,000 (Studies).

3.9 - CATEGORY 9 - PLANNING STUDIES

3.9.1 - P.S. 31 - Hydrological Basin Studies - Sinai

This study is crucial to the evaluation of alternative methods of "runoff farming" and would greatly aid the management of the Peninsula's water resources. An alternative to the Nile diversion and well-water, dependent farming must be identified, if the agricultural sector is to be expanded in Sinai. A study of hydrological basins could very well yield such alternatives, as well as serve as a base for the study of upgrading traditional dam techniques utilized by the Bedouin.

Recommendations: Terms of reference should be prepared after the formulation of a detailed project plan and the development of a cost estimate. The project plan should be formulated in conjunction with the Water Resources Institute (Ministry of Irrigation).

Cost: To be determined.

3.9.2 - P.S.2 - Lake Bardawil Integrated Development - Lake Bardawil

Development of Lake Bardawil is extremely important for the development of North Sinai. The existing state of the lake and possibilities for improving salt water inlets may allow for the expansion of current fishing efforts and entry into European markets. However, the decline of the lake is a result of a natural process of silting. The question is whether or not the Arab Republic of Egypt wants to invest in maintenance of inlets over the long-term. Fish production will never be comparable to that in other Egyptian lakes. However, at least 2500 fishermen depend on the lake for their livelihood; and if the inlets are not improved, the fishermen could lose their economic base.

Recommendations: This project should be given careful consideration. The proposed study should not be undertaken with tunnel-vision, focussed upon limited development alternatives. Instead, it should yield several alternatives, based upon the complex trade-offs that exist because of the Lake's condition and possible limitations. Current dredging operations and the consideration of several projects related to Lake Bardawil add an element of urgency, regarding the decision to undertake this study. (P.S.38,39,40,41,42,43,44,132).

Cost: $400,000 plus LE 200,000, phased over a 2-year period.

3.9.3 - P.S.32 - Network of Meteorological Stations - Sinai

The long-term management of water resources, wind power and solar energy would be greatly facilitated by the establishment of meteorological stations throught Sinai. Agricultural, industrial, and settlement development could draw on data provided by these stations.

Recommendations: Requirement for these stations can be discussed further with

the Egyptian Meteorological Organizations and Ministries of Development, Agriculture, Irrigation, Electricity and Energy. A detailed program has been drafted, including cost estimates and terms of reference prepared.

Cost: $3.5 million (long-term) and $94,000 (short-term).

3.9.4 - P.S.39 - Marketing in Europe - Lake Bardawil

During the Occupation it is reported that 2-3 tons of fish were exported daily to Spain and Greece, priced at LE 3.5/kilo (field investigations). The Egyptian Company for Fishing and Marketing would like to market fish for export and proposes that a fish packing plant be established to serve as a basis.

Recommendations: Perform market assessment to obtain the following information: (1) historical supplies of fish (per month or per week) and (2) processing and packaging requirements. A decision should first be made regarding the proportion of fish that are to be offered for foreign sale in preference to domestic demand.

Cost: $5000 and LE 1000.

3.9.5 - P.S.65 - Sand Dune Fixation - Northern and Western Sinai

Sand dune encroachment is a major problem in Sinai because of the maintenance and expense required to protect existing land uses and infrastructure. The El Qantara-El Arish road must be constantly plowed to prevent dunes from consuming parts of the road. Several methods for controlling dunes mentioned in P.S.65 are worthy of study. Perhaps a complementary action to fixation would be the study of dune movements, which would yield preventative solutions (P.S.32). This is particularly germaine to the subject of settlement and infrastructure siting.

Recommendations: Experts with previous sand dune stabilization experience should be retained to review the Sinai dune systems and propose alternative measures for controlling them.

Cost: LE 50,000 (estimate)

3.9.6 - P.S. 25 - Agricultural Experimentation and Extension - El Arish and 1-4 Other Locations in Sinai

A most urgent action needed in the agriculture sector is to define a full program of agricultural experimentation and extension. The success of virtually every agricultural project in Sinai depends upon a viable system of experimentation and field testing, to provide guidance to extension agents and farmers. Results of this work would have important and useful implications for other desert agriculture in A.R.E.

Recommendations: Before the initiation of Phase II, a consultant with experience in designing similar institutions to the one proposed, should define a master plan for agricultural experimentation and extension. Terms of reference are in preparation.

Cost: LE 70,000 (Master Plan), LE 6.87 million (entire project including Master Plan cost).

3.9.7 - P.S.171 - Land Reclamation Using Nile Water - Bitter Lakes and Northwestern Sinai

Approximately 3,000 feddans have been reclaimed East of the Bitter Lakes, but current agricultural conditions are poor. The infrastructure of the main canal and pumping station East of the Bitter Lakes is in very poor condition. A new set of six inverted siphon tubes are being installed to deliver water from the Ismailia Canal, under the Suez Canal, to the reclamation area. One of the six is supplying water to the 3,000-feddan irrigated area. No detailed planning has yet taken place on any of the other candidate areas in Northwest Sinai. Construction is underway, however, to extend the Salaam Canal up to the Suez Canal, with capacity for delivering Nile water with a mixture of drainage water across the Suez Canal to Sinai for possible irrigation of the Northern Coastal area (265,000 feddans) and El Tina Plain (135,000 feddans).

Recommendations: Preparation of a Master Plan for these areas should be undertaken and should define the feasibility studies required for various components of the total reclamation scheme. One of the feasibility studies should indicate requirements for re-design/rehabilitation of the main water conveyance system. The redesign/rehabilitation should precede

any further land reclamation. The existing system is certain to be inadequate and inefficient, and breakdowns are sure to happen. It will be much more cost-effective to rebuild/rehabilitate now rather than to have to stop the waterflow, perhaps for several months, while rebuilding takes place later. This work should be done before Phase II is initiated. Finally, an experimental agronomic unit needs to be installed, initially on about 25 feddans but expanded later (P.S.25). Further extension of reclaimed land should be delayed until an experimental base is available.

Cost: Dependent upon area of reclamation during the period between 1981-2000. Estimated range is LE 6.88 million (operating and maintenance for the 3,000 feddans already reclaimed) to LE 285.39 million (if a total of 180,000 feddans were to be reclaimed).

3.9.8 - P.S.170 - Land Reclamation Using Well Water - El Arish, El Qaa Plain, Selected Smaller Plots

The initiation of the exploratory well-digging program is a prequisite to further reclamation of lands using well water, especially in the El Arish vicinity (P.S.1). Further expansion of the 1200 feddan area in El Arish could lead to deterioration of water quality. The risk of doing so is that the entire municipal and agricultural water supply will be seriously and perhaps irreversibly damaged by salinity. After the exploratory drilling program yields sufficient results about the groundwater availabilities in Sinai, further land reclamation can be assessed (P.S.1).

Recommendations: The exploratory drilling program should be initiated and yield sufficient results regarding groundwater availabilities. A master plan for land reclamation should be prepared to indicate the areas where soil and water characteristics appear tentatively to be favourable for agriculture and would attach priorities on areas to be reclaimed. Starting first with the highest priority areas, feasibility studies with detailed soil analyses would be conducted and implementation plans prepared.

Cost: Estimated total of reclaiming 27,000 feddans, phased over 20 years including operation, maintenance and replacement for the irrigation system (but excluding infrastructure and housing) is LE 52.47 million of which LE 20.91 is foreign exchange cost and LE 31.56 million is local currency cost.

NOTE: Project Summaries 169, 168, 167 below: The base studies indicated for the olive, date and vegetable projects would be largely descriptive analyses of the size of the areas where the crops are grown, location, cultural practices, types and varieties grown and their relative productivities, problems encountered by farms and existing marketing, processing and transporation facilities. These base studies should be carried out in 1982 and would constitute much of the background information on which the production projects would then be designed.

3.9.9 - P.S.169 - Vegetables for Population Centers - El Arish and Other Towns

Vegetable productivity in El Arish is limited to the extent that approximately half are brought in from the Delta with loss of quality in transit. Soils at El Arish and in small areas near population centers are suitable for wide-range vegetable production.

Recommendations:

A base study should be undertaken as part of Phase II. Substantially expanded technical assistance should be extended (and in close association with P.S.25 - Agricultural Experimentation and Extension, should that project be accepted and implemented).

Cost: LE 1.15 million - project (LE 550,000 is foreign exchange cost, and LE 50,000 is local currency cost).

3.9.10 - P.S.93 - Commercial Poultry Production - N. and W. Sinai

Most of the eggs needed by the population in North Sinai are transported from the Nile Valley. Currently, the estimated demand for eggs at El Arish is 11 million (see project summary). Allowing for some immediate increase in demand due to possible tourism, the proposed plant would produce 15 million eggs per year. In addition, 60,000 hens would be raised per year for slaughter, thereby greatly increasing the local meat supply.

Recommendations: A non-exhaustive feasibility study should be undertaken and include an analysis to determine appropriate size of the projected rate of growth and cash flow. This venture would likely attract

private investment and would not require direct government financing. A feasibility study should begin after the initial assessment just outlined.

Cost: To be determined.

3.9.11 - P.S.168 - Enhanced Date Production - N. Sinai and along the Coast of the Gulf of Suez

The international market for dates is strong and will likely continue. Potential for increasing productivity per date plam tree is large, over the long-term, and can be done at relatively low cost. Date palms grow well in selected coastal areas of Sinai and, despite low rainfall, appear to be hardy. Compared to other areas of the world, the quantity of dates per tree is very low. Vegetative propagation could improve productivity of trees and reduce variation in the dates.

Recommendation: A base study, identifying varieties and tree types of the most productive potential should be undertaken. As part of the Agricultural Experimentation and Extension project, experimental trials should be established both of local and imported varieties (P.S.25). Packaging and processing facilities could be provided by the industrial sector (P.S.48).

Cost: To be determined.

3.9.12 - P.S.167 - Enhanced Olive Production - N. Coast of Sinai

Olives seem to have a comparative advantage at El Arish, where their cultivation dominates cropping patterns. This may also be the case in other areas of Sinai. A number of young trees have been cultivated in the reclamation areas East of the Bitter Lakes. Farmers in El Arish have organized a mechanized operation for olive processing. They report that the problem they have faced to date has been one of marketing. Apparently, El Arish olive oil has not been consumed by the international market due to its high acidity. Some of the larger farmers have considered making soap as an alternative to selling processed oil (Settlement Survey of Social and Economic Conditions in Sinai, August, 1981).
The problem of crop quality and marketing could be solved through

agricultural experimentation investigating effects of fertilizer, water application and pruning (P.S.25). Regardless of crop quality, olive production seems to be profitable and profitability could be raised by crop improvement and enhanced production.

Recommendations:

An initial step is to commission a base study of olive production, processing and marketing. Terms of reference are in preparation Experiments should be undertaken as part of the proposed Agricultural Experimentation and Extension project (P.S.25).

Cost: LE 510,000 (project), LE 50,000 (base study) and LE 10,000 (import trees for trial plantings).

3.9.13 - P.S.121 - Sewerage Treatment Assessment - El Arish

The most common systems of sewage disposal in El Arish are (1) bucket latrine, (2) pit latrine and (3) compost privy. Most new dwellings under construction and those of upper income level groups are equipped with septic tanks. These methods of disposal are marginally unhealthy, and leakage from them poses still another threat to contamination of groundwater supply. The installation of a sanitary sewerage treatment plant could alleviate many current and future problems of disposal. The pros and cons of such a facility are outlined in the project summary as are cost estimates and a general outline for implementation.

Recommendations: A TOR should be prepared, a consultant selected to design a sewage and wastewater treatment system; contruction could be undertaken in a year or two and completed early in 1986.

Cost: See project summary pp. 2-3

3.9.14 - P.S.58 - Detailed Plans for Specific Settlements - Sinai

Detailed planning for specific settlements will be required once the economic development strategy for Sinai is defined. Large settlements like El Arish already require physical planning intervention to satisfy service requirements and accommodate further physical development.

Emerging settlements like Bir El Abd and St. Catherine's at their early stage in growth, would also benefit greatly from detailed planning. As local economies emerge and the regional economy is defined and expands, other settlements will undoubtedly be formed and will require that physical growth be directed and that demands for services and housing be satisfied.

Recommendations: Once the development strategy is defined, officials and urban and regional planners should define their priorities for settlement development. A TOR should then be prepared, as part of Phase I, and the requirements for master planning outlined.

Cost: To be determined.

3.9.15 - P.S.98 - Fresh Water Pipeline - Suez to Abu Rudeis

This project proposes to solve the acute water supply problem in the communities of Ras Sudr, Abu Zeneima and Abu Rudeis, by constructing a pipeline from Suez to Abu Rudeis through the Ahmed Hamdi Tunnel. The Ministry of Development, Sinai Development Authority and the South Sinai Governor support transporting Nile Water via pipeline through the tunnel. Existing water sources are not adequate to satisfy current basic infrastructure requirements, let alone future needs.

Recommendations: There should be an engineering cost study to compare this option carefully with the cost of tapping groundwater locally to provide adequate future water supplies for anticipated development. This would involve an assessment of local groundwater quantity and quality, based upon the results of the groundwater analysis for Sinai under Phase I. In order to support future development both the pipeline and water from wells will probably be required.

Cost: To be determined (assessment).

3.9.16 - P.S.20 - Industrial Complex Townsite Requirements - Abu Zenima/ Abu Rudeis Area

The potential development of the Abu Zenima /Abu Rudeis area, as an industrial center, requires early consideration of the scale of infra-

structure and services which will be demanded there. Once the viability of industrial development is ascertained and manpower plans are available, consideration should be given to full-scale townsite development. In order to provide an attractive environment which will induce the relocation of technicians that will be needed for industry, the area should be comprehensively developed to include social and entertainment amenities that would exist elsewhere.

Recommendations: A competent urban and regional planner, preferably Egyptian, should be retained to prepare a set of alternative conceptualizations of industrial townsite and service requirements of Abu Zenima/Abu Rudeis. A master plan should then be prepared for the area (P.S.58).

Cost: To be determined.

3.9.17 - P.S.35 - Solar Energy Demonstration - Mit Abul Kom El Arish or El Tor

Alternative energy sources not dependent of fossil fuels are important to settlement improvement and development. Over the long-term, solar energy could provide a clean and low-cost energy source for Sinai Settlements. The Ministry of Electricity and Energy has initiated a program for solar energy and, with the Desert Institute and National Research Center, has instituted a number of experimental programs throughout Egypt.

Recommendations: A series of solar demonstration projects should be instituted at the headquarters of the North and South Governorates and the program of Mit Abul Kom be expanded. Equipment and designs should be procured which make maximum use of local materials and skills acquired to construct and install suitable solar devices. Personnel should be trained in operation and maintenance of the devices.

Cost: $10,000 - $100,000 (estimate).

3.9.18 - P.S. 86 - Power Plant Siting Study - Northwest Sinai

The Egyptian Electric Authority is apparently planning to build a new fossil-fueled power plant in northwest Sinai. A desirable location is along the Suez Canal, so that local fuel could be supplemented by imported coal or that which may be extracted from Maghara. A power plant of this size, 300 to 600 megawatts, should be carefully sited to ensure that it is located in the most economically and environmentally sound location.

Recommendations: A multi-disciplinary team should undertake a study to include meteorology, air quality, fuel and transportation economics, cooling hydrology, waste disposal and water contamination, land use and ecology. A TOR should be prepared.

Cost: To be determined.

3.9.19 - P.S. 53 - Tourism Planning - Sinai

Sinai's natural beaches, religious sites and fascinating Bedouin culture offer a great potential for tourism. In order to develop this potential to the fullest and to attract the volume of visitors to make tourism a viable economic option, a tourism strategy should be developed for the entire peninsula. A variety of tourist attractions should be offered in various spots, but the main emphasis is expected to be beach tourism. A diversity of attractions will encourage the type of visitor who may be willing to invest in a peninsula tour, as opposed to going to one location for a week and leaving the country. To compete with other Mediterranean countries, each area and the peninsula as a whole will have to be studied and shrewd marketing accomplished.

Recommendations: Base studies on air and water transportation should be undertaken to ascertain the best strategy for providing transport to and from other tourist attractions, like Luxor and Magawish (P.S. 83, 84). A tourism strategy identifying outstanding locations for tourism, market analyses and proposals for development should be prepared. TOR is in preparation.

Cost: See TOR.

3.9.20 - P.S. 44 - Tourism Planning - Lake Bardawil

Tourism is a potential development option for Lake Bardawil. Whether or not it is an appropriate activity for the Lake is contingent upon the development concept for Lake Bardawil (P.S.2). Lake Bardawil has been viewed principally as a fishing resource. It has the potential for substantial tourist development which would not interfere significantly with fishing.

Recommendations: Once the development concept for the Lake is decided upon, a study of tourism may be appropriate. If undertaken, the study should include an analysis of domestic and foreign tourist potential. The analysis should be coordinated with or be a part of the master planning study for tourism (P.S.53). Technical assistance should then be provided to sketch out a preliminary design for a resort on the northeast boundary of the Lake.

Cost: To be determined.

3.10 - CATEGORY 10 - ACCELERATED ONGOING PROJECTS

3.10.1 - P.S.66 - Water Pumps for Nakhl - Nakhl

The people of Nakhl have shown great determination to provide themselves with a critically-needed water source. Over the past year, they have tried to gather money to re-install water pumps that were removed by the Israelis at the end of the Occupation. Several people interviewed in El Arish report that, if infrastructure were provided, they would readily move back to Nakhl and begin to farm their land again.

Recommendation: This project is very worthwhile and should be funded immediately.

Cost: LE 50,000

3.10.2 - P.S.89 - Fresh Water Pipeline - El Arish

People living along the El Qantara-El Arish road are almost

exclusively dependent upon trucked water. The amount of discharge from wells in El Arish has approached the critical limit, and the salinity of the water supply is increasing. Water supply is a very basic infrastructure component. It is unrealistic to consider any type of future development of the North Coast until this project is completely implemented.

Recommendation: Accelerate installation of the pipeline between Qantara and Bir El Abd and at the canal crossing.

Cost: To be determined.

3.10.3 - P.S. 46 - Telecommunications Network - Sinai

Telecommunications in Sinai are virtually restricted to El Arish town and governmental offices in South Sinai. The development of the Peninsula would be greatly aided by the installation of an extended system. However, the phasing of the system is the problem at this point. The ARETO proposal does not call for an excessive system, and its major outline follows the northern coastal road and the Suez coastal road which are undoubtedly areas slated for development. Until aggregations of economic activity are clarified, it would be uneconomical to extend a complex network in Sinai.

Recommendations: Immediate approval of ARETO's proposal, followed by prompt procurement and installation of equipment, concluded by thorough training of operating and maintenance personnel.

Cost: To be determined.

3.10.4 - P.S. 74 - Upgrade Hotel and Food Services - El Arish and St. Catherine's

Existing tourist trade in El Arish and St. Catherine's could be maintained and even expanded if hotel and food services were improved to established standards.

Recommendation: Technical assistance to improve management through training programs and funding for upgrading.

Cost: Le 10,000 - 50,000 (training staff). Upgrading costs have not yet been determined.

3.10.5 - P.S.60 - Wadi Feiran Road - Wadi Feiran

The paving of the Wadi Feiran/St Catherine's Road has been ongoing for the past several months. Construction is not moving rapidly enough to facilitate any of the proposed or existing projects for the area (P.S.9,36,58). Until this road is completed it will be very difficult to move material transport trucks through the area to St. Catherine's, where the Governor plans increased touristic activities.

Recommendations: Every effort should be made to expedite this project. Increased funding will probably be required to do so, as well as to install flood protection embankments. Technical assistance would also help to ensure that final construction is of a standard that the road will not require frequent repairs upon completion.

Cost: Fully funded, but additional funding would speed construction and improve quality.

3.10.6 - P.S.16 - Suez Coastal Highway - Southwest Sinai

The importance of this highway to economic, social and political development is beyond doubt. Existing petroleum activities are hindered by poor transportation, and potential mining and touristic activities will be unable to function without it.

Recommendations: Highway construction and rehabilitation should be accelerated immediately. Technical assistance should be offered to ensure quality construction. Current construction activities should be expanded with donor support.

Cost: Probably several million LE, plus foreign exchange for additional road building equipment.

3.10.7 - P.S.36 - Interfaith Peace Memorial Complex - St. Catherine's

This project had the enthusiastic support of President Sadat. It is not intended to be self-supporting. Such a project would contribute to the general overall appeal of St. Catherine's area to tourists. The publicity that could be generated about such a facility would project a unique image for Sinai - an advantage in a competitive world tourism market.

Recommendations: A general design has already been prepared for this facility and local architects are now proceeding with detailed construction drawings. Fund raising activities should continue and be increased to move this project into the construction stage.

Cost: To be determined.

3.10.8 - P.S.19 - El Arish Airport - El Arish

If the El Arish airport were re-opened for civilian use tourism and the shipment of goods via airfreight would be greatly facilitated. Currently, the only access to El Arish and North Sinai is by car. Delays at crossing the canal and at the border crossing to Israel greatly discourage movement in and out of the town. The absence of water transporation exacerbates this problem further. It is unlikely that tourism can flourish in North Sinai if visitors are restricted to ground transporation entry.

Recommendations: Authorities should continue to treat this project as urgent for the development of exports and tourism in Sinai and should expedite its completion.

Cost: To be determined.

3.10.9 - P.S.138 - Television Broadcasting - El Arish and El Tor

This project is important for two reasons: (1) it provides a direct public communication link from Cairo to the governorate capitals and (2) it serves as an incentive for people to live in Sinai through the extension of the same information and entertainment media which is available all over Egypt.

Recommendations: Technical and monetary assistance should be offered if required. The radiation pattern of El Arish should be arranged to be directed to serve the Lake Bardawil area and the El Tor pattern should be directed to serve Abu Rudeis.

Cost: Included in the budget of the Broadcasting and TV Federation.

3.10.11 - P.S.129 - Marriott Construction - El Arish

This hotel facility is urgently needed in El Arish. Currently, the only alternatives are very small chalets or camp facilities on the beach front.

Recommendations: The construction process should be monitored and accelerated.

Cost: Unknown - funded.

3.10.11 - P.S.8 - Traffic Surveys - Suez Canal Area

Information collected by Traffic Surveys would greatly facilitate planning for Sinai as well as for improvements to canal crossing facilities, road emergency aid, and tourism development. Some rudimentary information is currently being collected. However, a full-scale survey would aid in scheduling of ferry-crossing times and guage the demand for additional crossings or bridges.

Recommendations: Prepare formal survey and execute data collection.

Cost: To be determined.

3.10.12 - P.S.14 - Fabrication of Solar-Powered Equipment - El Arish

A small plant is operating in El Arish and is currently producing about three solar hot water systems per day for the local market and for shipment to Cairo. The present activities could form the base for an expanded factory to produce, install and service significant numbers of solar hot water systems.

Recommendations: A specialist should be attained to (1) evaluate the existing facility, (2) assess the market for products generated, and (3) estimate cost of expansion.

Cost: $2000 (estimate).

APPENDIX

PRIORITIZATION INDICATORS AND EXEMPLARY SCORED PROJECT SUMMARY

This section illustrates the scoring procedure of the prioritization methodology. Indicators included in each set of criteria are listed on the following pages and an exemplary scored project summary is presented.

The score for each set of criteria is the sum of all relevant indicators which can be responded to given the information available. If no information related to the indicator is available in the project summary or the indicator is not relevant, the indicator is not included in the score. Each criteria set has a possible score range between 1 and 3:

1 = low effect/poor
2 = moderate effect/fair
3 = high effect/good.

The Environmental Impact Criteria Scores are:

3 = little or no negative impact/good
2 = moderate negative impact/fair
1 = high negative impact/poor

Total scores, the sum of all seven sets of criteria, are:

1-7 = low priority
8-14 = moderate priority
15-21 = high priority

If one set of criteria is not applicable to the project proposed it is not included in the total score. Instead the scores of all relevant sets of criteria are summed, a percentage derived and the percentage multiplied by 21 (highest number possible) to get a total score.

HIGH DEVELOPMENT IMPACT - 1

1.	Early positive cash flow expected	(+)
2.	Low incremental capital/output ratio	(+)
3.	Low capital/labor ratio	(+)
4.	Activity results in job creation for local people	(+)
5.	Activity requires that labor used be trained (training provided (+) not provided (-))	
6.	Activity utilizes available unskilled labor (lowers unemployment rate)	(+)
7.	High financial rate of return	(+)
8.	Marketing channels exist for product of activity	(+)
9.	Marketing research required to ensure success of activity	(-)
10.	Activity results in high economic rate of return/ improves local and/or regional economic base	(+)
11.	Activity may result in attraction of technical labor force from other areas of Egypt	(+)
12.	Activity facilitates implementation of projects considered important to achieve national and regional development goals (and strategic planning goals)	(+)
13.	Activity complements existing projects undergoing implementation	(+)

QUICK GENERAL ACCEPTANCE - 2

1.	Requires the establishment of new institutions (-) required only for this particular project, (+) required to facilitate implementation of projects enhancing regional development)	(-) or (+)
2.	Utilizes existing or planned formal institutions	(+)
3.	Takes advantage of local government experience and/or utilizes technical or professional experience of Egyptian nationals	(+)
4.	Training facilities are available for upgrading labor force required of activity	(+)
5.	Funds required for activity are available from governorate budget, national budget	(+)
6.	Funds required must be drawn from foreign sources/(+) if available, (-) if not available	(+) or (-)
7.	Activity results (expected) in higher incomes for local population	(+)
8.	High value added as a proportion of total sales	(+)

EARLY REALIZATION - 3

1.	Short gestation period	(+)
2.	Minimal investment required	(+)
3.	Marketing channels for product of activity exist	(+)
4.	Marketing channels must be developed	(-)
5.	Dependent upon new project being created	(-)
6.	Dependent upon existing project under implementation and nearing completion	(+)
7.	Dependent upon uncertain projects	(-)
8.	Utilizes available local raw materials	(+)
9.	Utilizes available construction (manufactured materials)	(+)
10.	Dependent upon materials for which shortages exist	(-)
12.	High energy requirement/energy source not available	(-)
13.	Tolerates impure water	(+)
14.	Does not rely on developed transport and telecommunications networks	(+)

ESSENTIAL INFRASTRUCTURE - 4

1.	Project or component results in the provision of basic infrastructure	(+)
2.	Level of technical sophistication of project is suitable for local conditions and capabilities	(+)
3.	Project utilizes local government management capabilities	(+)
4.	Project impacts local population and satisfies basic service requirements	(+)
5.	Project serves needs primarily of private sector projects	(-)
6.	Project provides infrastructure promoting regional development	(+)
7.	Funds available from local or national budgets or possibly from foreign donors	(+)
8.	Project relates to the protection and/or maintenance of existing or proposed infrastructure	(+)

ENVIRONMENTAL IMPACT - 5

1.	Industrial waste generated and effects surface or groundwater	(-)
2.	Solid waste disposal required	(-)
3.	Industrial waste contained/improving existing groundwater situation	(+)
4.	Hazardous waste disposal required	(-)
5.	Lowers groundwater table and/or effects downstream users	(-)
6.	Reduces dependence on groundwater table	(-)
7.	Vulnerable to flooding and/or shifting sand	(-)
8.	Prevents flooding and/or sand shifting	(+)
9.	Emits air pollution that would impinge on surrounding terrain	(+)
10.	Threatens animals species considered endangered or valuable	(-)
11.	Provides protective environment for animals considered endangered/valuable	(+)
12.	May result in loss of wetland or wildlife habitats	(-)
13.	Impacts (neg.) historical, archaeological, or religious site of significance	(-)
14.	Enhances historical, archaeological, or religious site of significance	(+)
15.	Produces significant levels of sound, dust, noise	(-)
16.	Reduces significant levels of sound, dust, noise	(+)
17.	Detracts from existing aesthetic values	(-)
18.	Enhances existing aesthetic values	(+)
19.	Displacement of potentially more important land uses	(-)

CRITICAL TO LIFE - 6

1.	Improves groundwater supply	(+)
2.	Improves potable water supply	(+)
3.	Improves local food availability	(+)
4.	Improves food distribution system	(+)
5.	Displaces existing or potential agricultural land use which could be a source of food for local population	(-)

CRITICAL TO LIFE - 6 - Continued

6.	Results in depletion of groundwater supply	(-)
7.	Results in the diversion of potable water supply	(-)
8.	Provides shelter for local (non/governmental) inhabitants	(+)
9.	Improves material extraction techniques and local building methods for shelter	(+)
10.	Project complements activities (existing or planned) of informal and formal social programs	(+)
11.	Project promotes self-reliance of indigenous population (long-term)	(+)

GOVERNMENT PRIORITIES - 7

SCORE:

0 - not considered a priority by local or regional officials, community leaders, and/or citizens

1 - low priority

2 - secondary priority

3 - high priority

References:

* Ministry of Planning: Approved Projects for the Development of Sinai, 1980-1981
* Sinai Development Authority's Priority List for Sinai Projects
* "North Sinai Governorate: Year of Achievements May 1980 - 1981"
* North Sinai Governor's list of priorities
* Open-ended interviews with the Governor of South Sinai, representatives of the Democratic Party, municipal officials, businessmen, citizens ("Settlement Survey Social and Economic Activity in Sinai", August, 1981, Dames and Moore)

No. 98

PROJECT SUMMARY: South Sinai Fresh Water Pipeline

Total Score 18.8

Category 9C1

Priority Rank Within Category 2

High Development Impact - 1

1 -1
2 -1
3 -1
4 +1
5 -
6 +1
7 - (public service project)
8 +1 (demand exists)
9 -
10 +1 (indirectly)
11 +1 (indirectly)
12 +1
13 +1

Score: 2.1
7 (+) 3(-) =.7 x 3 = 2.1

Quick General Acceptance - 2

1 -
2 +1
3 +1
4 -
5 +1
6 -
7 -
8 -

Score: 3
3(+) - 1 x 3 = 3

Early Realization - 3

1 -1
2 -1 (LE12 mil.)
3 -
4 -
5 -
6 +1 (Hamdi Tunnel)
7 -
8 +1
9 +1
10 -1 (very likely)
11 -
12 +1
13 -

Score: 1.7
4(+) 3(-) = .57 x 3 = 1.7

Essential Infrastructure - 4

1 +1
2 +1
3 +1
4 +1
5 -
6 +1
7 +1
8 +1

Score: 3
7(+) 1 = x 3 = 3

Environmental Impact - 5

1 - 6 - 11 - 16 -
2 - 7 -1 12 - 17 -
3 - 8 - 13 - 18 -
4 - 9 - 14 - 19 -
5 - 10 - 15 -

Score: 3 - adjusted, expected negative impact is low

Critical To Life - 6

1 - 6 - 11 -
2 - 7 -
3 - 8 -
4 +1 9 -
5 - 10 -

Score: 3

Government and Public Priorities - 7

0 = no priority
1 = low priority
2 = moderate priority
3 = high priority

Score: 3

USAID GRANT NO.

263-0113

THIRD PROJECT LIST

VOLUME II

OCTOBER 1981

SINAI DEVELOPMENT STUDY - PHASE I

PERFORMED FOR THE ADVISORY COMMITTEE FOR RECONSTRUCTION

OF THE MINISTRY OF DEVELOPMENT

BY DAMES & MOORE

(in association with Industrial Development Programmes SA)

SUBMITTED OCTOBER 31, 1981

PREFACE

This Volume II of the Third Project List Report contains all completed Project Summaries (Lists A and AA, as explained in Volume I) along with Initial Environmental Examinations (IEE) and thus provides supporting reference material for the main report.

Since some Project Summaries have been consolidated and others are not completed (e.g., because inadequate information is available to the Study Team), some serial numbers found on the full list of Project Ideas are not represented by Project Summary pages.

In cases where Project Summaries have been revised since an earlier report, the date of revision is noted in the upper righthand corner, below the code and serial numbers.

Several Project Summaries are new in this Report (e.g., numbers 161, 163, 166-76). IEEs were presented for Project Summary Numbers 1-46 in Working Paper No. 6. IEEs for later serial numbers are presented for the first time in this Volume.

In preparing this reference Volume, Summaries could have been grouped by sector or by the nine categories described in Volume I; however, it was felt that the easiest way to reference the Summaries would be by Serial Number and Page Number, listed in the Table of Contents overleaf.

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PROJECT SUMMARY

NAME: Drilling Program for Hydrogeological Investigations

LOCATION: North and South Sinai

TYPE: Drilling and testing exploratory water wells.

OBJECTIVES: To locate groundwater sources in Sinai that may be used for agriculture, industry, public supply and other enterprises. To provide data on Sinai aquifers to improve knowledge of the groundwater resources, and thus, to facilitate their rational management.

DESCRIPTION: The project consists of drilling, construction and testing of 37 exploratory wells in Sinai. Of these, 10 are in the central and northern area, with depths ranging to 900 meters. Seventeen are in the Suez Rift Border Province, along the southwestern coast, with depths generally 250 meters or less. The remaining ten exploratory wells would be located in the Crystalline Province in the south and would be 200 meters or less in depth. Complete details on this recommended program and the drilling equipment required are provided in the consultant's report, "Preliminary Drilling Program for Hydrogeological Investigations in Sinai," dated February 1, 1981.

COST: Estimates being prepared for presentation to the ACR about mid-March.

STATUS: Proposed program is being reviewed by the ACR/MOD and AID/Cairo.

INFORMATION SOURCES: Sources of hydrogeologic plus field reconnaissance are described in the referenced memorandum.

REPORTERS' ASSESSMENT: A program along the lines outlined in the memorandum is essential to determine the existence and magnitude of groundwater supplies to support a variety of developmental projects proposed for Sinai.

RECOMMENDED NEXT STEPS:

1. Completion by consultant of estimates of the probable cost of several alternative ways of implementing the drilling program, including purchase and operation of a rig on the one hand, and contracting with a drilling company on the other.

2. Final approval by the Ministry and possible funding agencies.

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 3-A,B

Serial No. 1

PROJECT: Drilling program for hydrogeological investigations

NATURAL AREA CLASS: Of the approximately 40 proposed borings, at least 20 are expected to occur within sensitive areas. The remainder are expected to be in nonsensitive areas of Sinai.

ENVIRONMENTAL CONCERNS: No significant environmental concerns are associated with this drilling program. Drilling will be along roads and vehicular tracks, and the drilling area will be no greater than 1000 square meters. Any impacts that occur are expected to be of short duration and confined to a small area.

MITIGATION AND ALTERNATIVES: No mitigative or alternative action is required.

THRESHOLD ANALYSIS: The project is not expected to have a detrimental effect on man or the environment.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: Interaction with the St. Catherine, Wadi Fieran, Gebel Abu Alaqa, and Maghara areas will be limited and cause no significant effect on the biota.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: There is no need for an EA or EIS.

PRIORITY: Because the hydrogeological drilling program provides the basis for a number of other development projects and is not expected to cause any significant environmental impacts, it should be of high priority.

CODE NO. 1,8,9-A

SERIAL NO. 2

(Revised -
August 5, 1981)

PROJECT SUMMARY

NAME: Lake Bardawil Integrated Planning

LOCATION: Lake Bardawil

TYPE: Multi-faceted study to evaluate and integrate various proposals for development of the Lake Bardawil area.

OBJECTIVES: Identification of alternative development possibilities for the lake and definition of a strategy to forward integrated planning.

DESCRIPTION: Lake Bardawil's resources and environment provide various development opportunities, which, if coordinated properly, could enhance the overall development of the Mediterranean corridor.

COST: To be determined.

STATUS: The Governor of North Sinai is very interested in planning national development of this major resource. The Japanese Consulting Institute has offered to carry out studies to recommend the capital equipment needed to expand the fishing industry and will propose equipment to be acquired from Japanese suppliers; financing of such equipment would presumably be available from Japanese aid funds on concessional terms. The Suez Canal Authority is presently dredging the inlets to the Mediterranean.

INFORMATION SOURCES: Governor of North Sinai, Sinai Development Authority, Zikry Construction Company (Heliopolis), Fish Marketing Company, Institute for Sea Sciences and Fisheries, Suez Canal Universities. Fishermen and officials, Bir El Abd.

REPORTERS' ASSESSMENT: The development of Lake Bardawil requires coherent planning and the coordination of various projects presently under consideration. Integrated planning should include the following components:

a - Survey and evaluation of socio-economic and environmental conditions;
b - Generation of alternatives for development and cost/benefit analysis of alternatives;
c - Outline of a physical development program which would define and coordinate water and land use, community development, fishery, tourism, industry, conservations, etc.;
d - Definition of managerial and operational apparatuses required to implement development;
e - Definition of training programs for counterpart personnel which would guarantee continual involvement of and increased responsibility by Egyptians taking part in the planning process.

The following early action projects would provide valuable data for the planning of Lake Bardawil and should, therefore, be initiated immediately:

a - Collection and analysis of water quality and fishery data (P.S. 38) --- urgently required to better determine the reasons for the decline in fish production over recent years and recommend prompt remedial actions to supplement ongoing dredging activities.

b - Inlet design (P.S. 40) --- ongoing dredging activities should be reviewed to ensure the optimum configuration of inlets and sand control structures and expedited.

c - Salt Production (P.S. 45) --- this project is reasonably self-contained and appears promising barring unexpected findings from the previous two studies.

d - Marketing in Europe (P.S. 39) --- assuming increased yields resulting from ongoing dredging activities, these marketing activities should be carried out prior to the beginning of the next fishing season in April 1982.

A TOR should be prepared for such a planning study which would evaluate the multi-faceted development opportunities for the region and recommend a phased investment program to realize the most promising ones.

In addition to the early action projects listed above, the proposed study could include elements of four other sub-projects:

a - Lake Bardawil Investment Company (P.S. 40);

b - Solar-powered Ice Plant (P.S. 42);

c - Solar Salt Pond Electric Demonstration Project (P.S. 43); and

d - Tourism Planning (P.S. 44).

REPORTERS: Clay Wescott
Donna Wirt

DATE: August 5, 1981

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 1,8,9-A

Serial No. 2

PROJECT: Lake Bardawil integrated planning

NATURAL AREA CLASS: This project is located in a sensitive area.

ENVIRONMENTAL CONCERNS: The development of an integrated plan for Lake Bardawil will not in itself produce any environmental concerns. The various projects that would be included in the integrated plan, however, may have varying impacts and a significant total impact. Each of these studies is considered separately in projects 38 through 45.

MITIGATION AND ALTERNATIVES: No mitigative or alternative action is required. People on reconnaissance surveys should remember to travel slowly in boats, make minimum use of islands, and not molest the birds--especially during the nesting season.

THRESHOLD ANALYSIS: Development of the master plan should not significantly affect the environment or the people living near Lake Bardawil.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: Development of the master plan for Lake Bardawil should be limited to reconnaissance-level surveys and should not affect wildlife.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: There is no need for an EA or EIS.

PROJECT PRIORITY: Lake Bardawil is an internationally recognized area of importance for birdlife. For this reason, an integrated plan for its potential development should receive high priority.

PROJECT SUMMARY

NAME: Ferromanganese Mining and Processing

LOCATION: Abu Zenima

TYPE: Rehabilitate ferromanganese mine and plant.

OBJECTIVES: To provide initial mining and processing facilities on a scale that provides a catalyst for ·rastructure investment and the development of other economic structures in and near Abu Zeneima. Also to provide ferromanganese at reasonable cost to the growing steel industry in Egypt and possibly for export at the margin.

DESCRIPTION: A prefeasibility study on the rehabilitation of this mining and processing operation was carried out by the Kaiser Engineering Company, under the sponsorship of US AID which made the following points:

●re Reserves

●re reserves which the Sinai Manganese Company presented to Kaiser upon its entery to the project totalled roughly 4 million tons averaging 20% Mn and with an Mn:Fe ration of around .90.

Through data reviews and limited ground work, Kaiser reduced SMC's reserves to 1.7 million tons, then speculated upon an additional 2 million ton potential in unexplorable areas.

of the resulting total of 3.7 million tons in the ground, Kaiser assumedthat .65 million tons would contain more than 35% mn in. Its Stage 1 prefeasibility analysis employed this assumption to calculate marginal economic viability, calling forth a number of government subsidies, allowances and deferrals. Marginal viability and exploration potential were used to justify further work on the project (Phase A & B Exploration and the Desk Study Update).

Phase A & B Exploration disproved the existence of .65 million tons of high grade ore, finding instead 1.2 million tons of mineable ore averaging 27.2% Mn.

Mining

Kaiser's Stage 1 Report assumed 60% open pit and 40% underground mining. Phase A & B Exploration changed the anticipated ratio to 40% open pit and 60% underground. Average mining costs per ton for the two ratios varied by only LE 2.00. Differential analysis yielded a surface mining cost of LE 13.70 per ton and an underground cost of LE 15.70 per ton. Both of these valves differ substantially from expected norms (i.e. surface mining costs seem high and underground costs low compared to international norms).

Processing and Marketing

Metallurgical tests upon which costs and recoveries are based indicate technical feasibility.

Egyptian demand for ferromanganese which has hovered around 7000 tons annually for the past 10 years, is projected to increase to 10,000 tons for 1981 and 20,000 tons by 1984. These projections imply major growth in domestic specialty steel fabrication industries and product markets.

The Kaiser study proposes the following governmental incentives:

a. Infrastructure development at government expense, including housing, gas-fed electric generation, water line, main haulage road and renovation of some processing equipment at a total cost of LE 16.5 million.

b. Government supplied electric power at a price which will barely pay one-fourth of the operating cost of producing the power.

c. Government subsidy of diesel fuel for product truck transport.

d. An 8 year tax holiday.

e. Duty free import of capital equipment.

f. A market price for domesticallyproduced ferromanganese which is 10% above the delivered price of imported material.

g. Completion of the Ahmed Handi Tunnel under the Suez Canal.

On this basis Kaiser has estimated a 14.4% ROI, and a 12.54% ROE with an 11.3 year payback at an assured loan interest rate of 12%. The estimated IRR is 8%.

COST: The project as a whole is estimated to cost between LE 30 m and LE 50 m exclusive of infrastructure. Infrastructure will cost an additional LE 16.5 m - LE 20 m (including elements mentioned in (a) above and others).

STATUS: Kaiser Engineering has completed a Stage 1 Prefeasibility Study and Phases A & B of the mineral exploration program. They have proposed going ahead to a Stage 2 Prefeasibility Study and to Phase C of mineral exploration.

INFORMATION SOURCES: Stage 1 Prefeasibility Work Report with supporting Appendices by Kaiser Engineers and Constructors, dated September 1980.

Stage 1 Desk Study Update and supporting Exploration Phase A & B Results by K.E.C.I. dated December 1980.

REPORTERS' ASSESSMENT: Ore reserves presently uncovered are of a low grade compared to operating mines elsewhere in the world. Internationally, competitive ore ranges around 35% Mn.

Mining costs were not substantiated by preliminary mine plans and are probably generalizations with a number of assumptions, the validity of which may seriously affect project economics. Kaiser could not complete preliminary mine plans because it had not yet located an ore deposit(s) to develop a mine plan for.

Based upon comparable generalizations, Kaiser used a mine development cost of LE 500,000 in economic analysis. Because several small underground mines with a total of 6 stopes and at least one surface pit must beoperated, the LE 500,000 appears to represent a serious under-estimate.

The metallurgical tests upon which costs and recoveries are based are bench scale tests conducted under ideal conditions. While they prove technical feasibility, pilot and production scale tests typically yield lower than bench test percentage recoveries, tonnes of product, gross sales and profit. Two to five percent lower recovery will be reflected as at least a 5% lower net profit.

The estimated ROI is lower than the usual industry minimum of 15%, while the payback period is greater than the usual maximum of 50% of project life - both despite optimistic assumptions about demand and generous subsidies. The proposal to have the operation on-stream within 24 months of authorization to proceed with detailed design might be possible in an industrialized area, but is very optimistic for Sinai.

RECOMMENDED NEXT STEPS: Phase C Exploration and Analysis to upgrade or increase ore reserves should be undertaken as soon as possible. In addition, the following portions of the proposed Stage 2 prefeasibility study should be completed: (a) better documentation to support projected increases in domestic demand and (b) better substantiation of mine development costs with preliminary mine plans, etc. The remaining portions of the Stage 2 study can be undertaken following the successful completion of the above.

REPORTER: Ed. Phariss

February 14, 1981

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 4-B

Serial No. 5

PROJECT: Ferromanganese Mining and Processing

NATURAL AREA CLASS: This project is in a nonsensitive area.

ENVIRONMENTAL CONCERNS: Kaiser Engineers has completed an assessment of the environmental effects of reopening the mine and processing plant at Abu Zenima. Significant impacts identified were air emissions, fugitive dust, noise, solid waste disposal, and the potential for groundwater contamination.

MITIGATION AND ALTERNATIVES: The major effects of reopening the mine and processing plant at Abu Zenima can be controlled by conventional practices. The air emissions may need to be scrubbed, and a review of the solid waste disposal practices and monitoring of groundwater quality are recommended.

THRESHOLD ANALYSIS: This project should not significantly affect man or the environment if air emissions are controlled, dust and noise are abated, and solid wastes are properly disposed of.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: No interaction with protected areas is anticipated.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: An EA should be performed to assess the effects of air emissions and solid waste disposal. Groundwater quality should be checked periodically.

PROJECT PRIORITY: This project should be of high priority because of the obvious economic benefits to local inhabitants.

PROJECT SUMMARY

NAME: Construction Material Production

LOCATION: Low mountains and pediments south of and within 50 km of El Arish.

TYPE: Quarrying and similar structures to produce high quality sand, aggregate and other construction materials.

OBJECTIVES: Improve the durability and overall quality of construction in Sinai by developing new sources of quality aggregates, encouraging Sinai building and highway contractors to use them.

DESCRIPTION: Building and highway contractors in and near El Arish, a major development center, now rely upon several small, poor quality pits around Risan Aneiza and the El Guarir area for sand, concrete aggregate and base rock. The material, consisting of mixed limestone, flint and dolomite from alluvial fans, is hand screened to yield mortar sand, concrete aggregate and road base rock.

Concrete aggregate examined at several construction sites proved to be generally of poor quality, containing excess gypsum, sodium, mangnesium salts and friable particles. Base rock placed as road subgrade, while sufficiently durable, was generally too rounded and spherical.

These material liabilities, coupled with the expense and inefficiency of hand screening, suggest a need for:

A. Resource Identification

1. Regional reconnaissance to locate large sources of quality aggregate.
2. Reconnaissance test pitting or drilling to delineate tonnage and quality at the most favorable locations.
3. Bulk sampling, physical and chemical testing to determine suitability for use in building and road construction.

B. Production Planning and Development

1. Loading, classification and stacking equipment selection.
2. Equipment purchasing and installation.
3. Operator training.

Product demand in the El Arish area may range from between 250 and 500 cubic meters per day by 1983.

Three building contractors in El Arish cited the following costs/prices for construction sand and gravel:

Sand, m^3		Gravel, m^3
LE 2.50		LE 4.50
LE 1.00		LE 3.75
LE 2.25		LE 3.00
LE 2.92	AVERAGE	LE 3.75

Annual gross sales for a 250-500 m^3/day market would be LE 275,000 to 550,000. Approximate operating cost would be :

Salaries (20 laborers, 2 mgmt.)	LE 36,000
Fuel	LE 30,000
Replacement parts	LE 8,000
Administrative & overhead	LE 12,000
TOTAL OPERATIONS	LE 86,000

COST: Approximate costs for resource development are:

a. Resource Identification & Testing	LE 50,000
b. Production Planning & Development	
Engineering	LE 15,000
Capital Equipment	LE 650,000
Installation	LE 65,000
Training	LE 10,000
TOTAL	LE 790,000

Based on the above estimate of operating cost, two to four years of operations, depending upon market demand, would be required to amortize the capital investment.

STATUS: Conceptual project. Economic feasibility contingent upon infrastructure and industrial development plans in and around El Arish.

INFORMATION SOURCES: Reporter's field investigation, including interviews with three local building contractors.

REPORTERS' ASSESSMENT:

1. The use of quality aggregate in road and building construction seriously impacts the durability of construction. The combined effect of poor aggregate and too lean cement mixtures may be seen in crumbling concrete construction throughout Sinai.

2. Public sector identification and testing of a suitable aggregate source should induce private developers to utilize the source, ensuring better quality construction throughout the region.

RECOMMENDED NEXT STEPS: Terms of reference should be prepared for reconnaisance evaluation, identification, sampling and testing of quality aggregate source areas within a reasonable haulage distance of El Arish. A concurrent market analysis of present and potential future demand and competitive pricing should be undertaken. Results of these studies may be sufficiently favorable to attract private capital for development and production funding. It is estimated that such studies would cost approximately LE 50,000.

REPORTER: Ed Phariss February 12, 1981

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INITIAL ENVIRONMENTAL EXAMINATION

Code No. 4-A

Serial No. 6

PROJECT: Construction Material Production

NATURAL AREA CLASS: This project is located in a nonsensitive area.

ENVIRONMENTAL CONCERNS: The environmental impact of developing sources of high-grade construction materials is expected to be minimal. Some dust and noise may be produced, but any possible impacts will depend on the location of the developments and their proximity to local residential areas. Another potential concern, if the pit is located in a wadi, is its adverse effect on the groundwater aquifer.

MITIGATION AND ALTERNATIVES: If applicable, care should be taken not to disturb the aquifer, and any pit which is dug should be backfilled.

THRESHOLD ANALYSIS: The project is not expected to have a detrimental effect on man or the environment.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: No interaction with protected areas is anticipated.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: There is no need for an EA or EIS, but groundwater conditions should be assessed prior to development and production.

PROJECT PRIORITY: This project is considered to be of high priority.

PROJECT SUMMARY

NAME: Fishing Wharf

LOCATION: El Tor

TYPE: Design, construct and operate fishing boat wharf, including related port facilities.

OBJECTIVES: To increase income and employment in the El Tor area by providing improved facilities both for indigenous fishermen and to attract larger fishing vessels, thereby promoting access to fishing in southern Gulf of Suez.

DESCRIPTION: The Gulf of Suez is considered by many to be the best fishing area in the Red Sea. Unlike most of the Red Sea, which is full of coral near the shore and too deep in the middle, the Gulf of Suez is shallow enough to be suitable for fishing. Because there is no major port near the south end of the Gulf, most of the fishing fleet is based in the north. Because the Gulf is about 300km long, most of the fishing also takes place in the north, with the result that the Institute of Sea Sciences and Fisheries is considering further restriction of fishing in the northern Gulf in the interest of conservation.

The development of port facilities at El Tor is one of the recommendations of a FAO project studying Red Sea Fisheries. Such facilities would provide easy access by the fleet to lesser fished stocks and a great saving in fuel and time for vessels fishing the southern Gulf. In addition to a harf, facilities would be built to provide supplies such as fuel and ice to the fishing fleet.

Infrastructure related to a fishing village at El Tor is already under construction as one of the Sinai Development Authority's ongoing projects (housing, water, electricity and sewage).

COST: To be determined.

STATUS: Recommended by FAO project.

INFORMATION SOURCES: Institute of Sea Sciences and Fisheries. FAO project study of Red Sea Fisheries headquartered in Suez. Fishermen of Suez.

REPORTER'S ASSESSMENT: These facilities would both attract large vessels to El Tor and benefit the small population of indigenous fishermen.

RECOMMENDED NEXT STEPS: A preliminary analysis should be undertaken to estimate potential usage and advantages of new port facilities. The Study would estimate fuel savings and suggest size, type and functions.

It may be appropriate to construct a small wharf for immediate use. Also, as a matter of urgency, instruments should be installed to record wind and wave data for use in design of a larger, permanent wharf two or three years from now.

REPORTER: Bill Royce DATE: February 12, 1981

Code No. 1 - B

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 7

PROJECT: Fishing Wharf (at El Tor)

NATURAL AREA CLASS: This project would be located within a sensitive area.

ENVIRONMENTAL CONCERNS: Environmental concerns focus on the size and location of the wharf and the potential need for dredging and disposal of dredge material. Sanitation facilities may also be inadequate. Another important concern is the possible destruction of fauna in the shallow waters near the beach.

MITIGATION AND ALTERNATIVES: A review of the design and location of the new wharf should be made prior to installation. Large vessels may be limited because of the possible negative effect that their docking may result in, i.e. the destruction of fauna and rare endemic fish. This may not be a major problem if large vessels extend their activities to the Red Sea where rare fish species are less likely to be subjected to intensive fishing.

THRESHOLD ANALYSIS: The project is not expected to have a detrimental effect on man or the environment if the wharf is properly sited and dredge material is properly disposed of.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: Interaction only occurs with certain fish species in the Suez Gulf. The extent of this interaction and possible negative impacts cannot be predicted until the number and size of boats using the wharf is determined.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: An EA should be undertaken to:

1) Evaluate the fish population and crustaceous species which are likely to be affected by intensive fishing;

2) Determine the change in fish population during different seasons of the year.

PROJECT PRIORITY: This project is considered to be of high priority because it will bring more jobs and expand the food supply in the El Tor area.

PROJECT SUMMARY

NAME: Traffic Surveys

LOCATION: Ismailia, Suez City, El Qantara, Port Said.

TYPE: Traffic Survey.

OBJECTIVES: To acquire data on travel patterns of goods and people entering and leaving Sinai.

DESCRIPTION: There is no systematic information available on travel patterns to and from Sinai. Because Sinai may be entered or exited by ferry largely, an opportunity exists to sample at low cost the travelling population. We propose that surveys be placed periodically at the approaches to the ferries and tunnels at Ismailia, Port Said, El Qantara and Suez to interview people while they are waiting to cross. Information to be obtained would include:

- origin and destination of trip,
- routes used in Sinai,
- frequency of trips to and from Sinai, and purpose,
- number of passengers,
- type and amount of freight,
- time spent waiting for ferry and
- type of vehicle.

This information would greatly facilitate planning for Sinai as well as for improvements to canal-crossing facilities, road emergency aid facilities and tourism development. Frequency of sampling and details of the questionnaire remain to be determined, but at a minimum, the crossings should each be surveyed for one week, every three months. Interviews could be supplied by the Ministry of Transport or a team from the Suez Canal University, preferably persons familiar with roads and towns in the Sinai. Transport economists would develop, pretest and and process the traffic questionnaires and later develop recommendations for road and traffic improvements.

COST: Development and testing of the questionnaire would require two (2) work-weeks of professional expatriate labor plus local counterparts. Surveys could be handled by three (3) Egyptians - two interviewers and one supervisor - who would work a different ferry crossing each week during a survey cycle. Processing of the data would require 1½-2 man-weeks per cycle of expatriate and local labor.

Assuming four (4) survey cycles per year, expatriate labor would amount to 8-10 work weeks, costing approximately 20,000 dollars. Egyptian personnel costs, to be defrayed from Ministry budgets, are still to be estimated.

STATUS: New idea recommended for immediate implementation.

INFORMATION SOURCES: Observation of ferry operation by consultant.

REPORTERS' ASSESSMENT: Origin-destination data, travel frequency, trip purpose, and related information are indispensable to transport planning. Delays in ferry service and other hazards are a serious constraint to the expansion to the economic activity in Sinai a ı time when people should be encouraged rather than dissuaded to travel in that region. The traffic surveys recommended here are cheap, easy to administer, and valuable for the training and experience they provide to Egyptian transport authorities.

RECOMMENDED NEXT STEPS: Technical assistance is required to:

1. Discuss the concept with the Ministry of Development and Ministry of Transport officials. The surveys would also have to be coordinated with the Egyptian military and other personnel responsible for Canal crossings.

2. Develop and pretest (through experimental survey) the traffic questionnaire. Train Egyptian interviewers.

3. Initiate program ASAP.

REPORTER: R. T. Mott February 12, 1981

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 8-F

Serial No. 8

PROJECT: Traffic surveys

NATURAL AREA CLASS: Traffic studies would be conducted in nonsensitive areas.

ENVIRONMENTAL CONCERNS: No significant environmental concerns are associated with the traffic survey program.

MITIGATION AND ALTERNATIVES: No mitigative or alternative action is required.

THRESHOLD ANALYSIS: The project should not have a detrimental effect on man or the environment.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: No interaction with protected areas is anticipated.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: There is no need for an EA or EIS.

PROJECT PRIORITY: Since the information gathered through these surveys will facilitate a more complete understanding of travel in Sinai, but in itself will provide no direct benefit, this project is considered to be of moderate priority.

PROJECT SUMMARY

NAME: Improvement of Visitor Facilities at St. Catherines

LOCATION: Vicinity of St. Catherine's Monastery

TYPE: Upgrading accommodations, food service, and access to Monastery.

OBJECTIVE: To increase employment and income in the area by providing services to attract a greater number of tourists.

DESCRIPTION: Because of the very special area about the monasterythat comes from its history, placement, and genuine physical beauty, it is likely to remain a major Sinai tourist attraction. Most tourists presently come for day trips by airplane, with the largest influx during the summer months. An airport hotel is also available which makes exemplary use of indigenous building stones and architectural designs, such that the clustering of rooms around small courtyards provides shelter against both summer sun and winter winds.

There are presently two major constraints to the expansion of tourism in this area: 1) The monks permit only 200 visitors per day to enter the monastery, five days per week. Although these visitors are allowed to visit the church and its treasures, many of the icons and mosiacs currently on display are virtually invisible due to poor lighting. Except for the "burning bush", most visitors are not allowed to visit other parts of the monastery. 2) The hotel does not provide international class food and service required to attract package tour groups for overnight stays.

The proposed inter-faith center will take some of the pressure off the monastery by providing alternative attractions, but will increase the demand for higher standard hotel services.

COST: To be determined.

STATUS: The asphalting of Wadi Feiran road is nearly completed. Monks have rejected a proposal to pave the access road to the monastery. Rocks of Bir Nafach valley (Plateau of Hallaoui) have recently been painted blue and black by the Belgian artist, Jean Verame. Contributions are being received for inter-faith center (see separate project summary).

INFORMATION SOURCES: Egyptian Gazette; Field Investigations by Reporters.

REPORTER'S ASSESSMENT: It seems inevitable that different classes of visitation will develop. Right now those people who have made prior arrangements to stay in the hostel of the monastary are

PROJECT SUMMARY
Improvement of Visitor Facilities at St. Catherines

clearly in a unique and privileged position. Similarly, those who visit in winter will have less problem with crowds than in summer and most can be assured of a full visit to the church and its treasures - the second (and very satisfying) grade of visit. Probably summer crowds will have to include an increasing number of tourists who are content to wander around outside. It would help them if a museum with a sample of the iconography, for example, were set up outside the walls just to enrich such visits.

Even for those who tour the inner sancta, the routing of visitors and lighting of the treasures could be greatly improved. The icons and mosaics currently on display inthe church are virtually invisible due to back-lighting and other obstacles which should be restudied.

The building group that houses the monastery is so rich in detail and history that even first-time visitors may want to know more about it than can be learned from the small, albeit handsome, guide book sold there. A selection of all the good books which have been written about St. Catherines would be welcomed and their sale could be an additional source of revenue.

As far as the hotel airport and restaurant are concerned, improvements such as the following are required: the heating system for the restaurant should be repaired; the menu up-graded to international standards, and alternative lighting provided in the hotel rooms during power failures.

RECOMMENDED NEXT STEPS: Technical assistance is recommended to design and carry out a negotiation strategy with the monks over improved access to the monastery. Improvements in the facilities themselves (which would benefit both visitors and hosts) might be financed by outside foundations or international organizations such as UNESCO. Visitors would be happy to pay an admission charge to cover any recurrent costs.

Improvements to the airport restaurant and hotel would be expedited by having a professional hotel manager, who would supervise the up-grading of facilities. The expected modest costs would be covered by increased room and restaurant charges, airport loading fees, bus parking fees for tour operators, etc.

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 9-B

Serial No. 9

PROJECT: Improvement of visitor facilities at St. Catherine's

NATURAL AREA CLASS: This project is located in a highly sensitive area.

ENVIRONMENTAL CONCERNS: There are numerous resource-related concerns, such as the effect on water resources and contamination/sanitation, but the greatest concern is that of aesthetics. St. Catherine's is attractive because of the aesthetic appearance of the entire area, and development of any facilities will almost certainly affect the monastery as a tourist attraction.

MITIGATION AND ALTERNATIVES: A comprehensive plan for waste disposal is needed. The key to maintaining the aesthetics of the St. Catherine's area is the siting and design of new facilities.

THRESHOLD ANALYSIS: Any development at St. Catherine's could have a significant impact and thus be highly controversial if not carefully and appropriately carried out.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: Little direct impact should be felt in the vicinity of St. Catherine's because of the established use of the area. There should be minimal effect on the wildlife and vegetation.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: An EIS is recommended for the St. Catherine's area. It should focus on the socioeconomic, aesthetic, hydrologic, and waste disposal aspects of development. Cost: _____

PROJECT PRIORITY: This project should receive high priority because St. Catherine's is an important tourist attraction, and the facilities are needed.

PROJECT SUMMARY

NAME: Groundwater Survey and Monitoring Program

LOCATION: El Arish area

TYPE: Groundwater investigation.

OBJECTIVES: To obtain the hydrogeologic information necessary to permit the rational management of the groundwater resources in and around El Arish.

DESCRIPTION: This project is considered of vital importance because of the increasing likelihood of the overdraft of the coastal aquifer and because there is already some indication of groundwater quality deterioration there. The program would include three basic elements:

1. Inventory of all wells in the area. Data will be collected on well locations, well logs, well depths, static water levels, pumping water levels, average pumping rates and groundwater quality. Well locations would be plotted on a 1:25,000 scale topo map. Reference points for water level measurements would be levelled. Water sample would be obtained from most wells and sent for mineral analysis.

2. Performance of pumping tests, 2 to 10 days in duration, in a few selected existing wells. Analysis of these tests would provide reliable estimates for aquifer permeability and the location of aquifer boundaries.

3. Establishment of a groundwater monitoring program. This program would run for an initial period of 10 to 24 months. It would involve monthly measurement of water levels and key water-quality parameters in selected wells and monitoring of their pumping rates. In addition, rainfall data and river stage data for Wadi El Arish would be obtained and evaluated quarterly along with the monthly well data.

COST: LE 120,000-170,000.

STATUS: Recommended by the consultant. We are not aware that any formal proposal for this type of project is now under consideration by an Egyptian Government body.

INFORMATION SOURCES: This type of program for El Arish was recommended by Binnie Taylor in May 1980 and,in more detail, by McGowan Associates in December 1980 in their work for GORPAD.

REPORTER'S ASSESSMENT: The full assessment of the aquifer at El Arish that would be provided by this program is absolutely essential for the continuation of present groundwater pumpage in the area, as well as for further groundwater development there. This project should be given high priority.

RECOMMENDED NEXT STEPS: Initial discussion with donors concerning funding and formulate the program in more detail.

REPORTER: A. Mills February 20, 1981

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 3-A

Serial No. 10

PROJECT: Groundwater survey and monitoring program (El Arish)

NATURAL AREA CLASS: The proposed survey and monitoring program is situated in a nonsensitive area.

ENVIRONMENTAL CONCERNS: No significant environmental concerns are associated with this project.

MITIGATION AND ALTERNATIVES: No mitigative or alternative action is required.

THRESHOLD ANALYSIS: This project is not expected to have a detrimental effect on man or the environment.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: This groundwater monitoring program is not expected to interfere with any areas to be protected or conserved.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: There is no need for an EA or EIS.

PROJECT PRIORITY: This project should be given very high priority because of the other developments proposed for the El Arish area.

PROJECT SUMMARY

NAME: Gypsum Mining and Processing

LOCATION: Ras Malaab

TYPE: Developing and constructing new gypsum mine and processing plant

OBJECTIVES: To set up a major industry, producing gypsum for use in Egypt's agriculture and construction sectors.

DESCRIPTION: The site is on a branch of the coastal highway, 90 km southeast of Suez and 200 road kilometers from Cairo. Apparently, exploration and limited gypsum mining from open pits occured at the locale before The 1967 War.

The Sinai Manganese Company proposed to develop, initially, a 250,000 Tpy gypsum mine, crushing and sizing plant, followed in several years by an increase in mine capacity by another 250,000 Tpy and the construction of a 250,000 Tpy calcining facility. Precise plans which would serve as the basis for a full feasibility study, which McKee-Kearny wishes to undertake on behalf of the Sinai Manganese Company, are unclear in the first investigation report. McKee-Kearny completed the Prefeasibility Study.

Operating costs are stated as:

Mine	LE 1.24
Crushing and Sizing	LE 4.57
At-Plant Cost	LE 5.81
Transport to Cairo	LE 4.00 - 5.00
Delivered for Distribution	LE 9.81 -10.81

The delivered cost to Cairo is presented as competitive with that of GYMCO, the present raw gypsum supplier in Egypt.

Gypsum Demand

The principal use of raw gypsum is as an additive to improve productivity of certain soils. Humic acid acts upon the gypsum, generating calcium carbonate, increases permeability and accelerates the release of mineral nutrients to crops. Raw gypsum has been supplanted by liquid sulfuric acid in most industrialized nations because of its bulk and slow rate of reaction. Rawgypsum is calcined with limestone to produce cement in which the gypsum acts as a setting retarder. Calcined gypsum is also used in plaster, prefabricated drywall and in the chemical industry.

There exists no apparent export market for gypsum produced in Egypt. Low unit value precludes other than local transport. The domestic demand is apparently now around 284,000 tons, excluding that used in the manufacture of cement. Cement producers typically develop and operate their own gypsum mines, so do not constitute a potential market. The domestic demand for

agricultural gypsum is predicted to reach one million tons during the next several years.

Supply

As noted, cement manufacturers develop their own sources. Current production for external sale is carried out entirely by GYMCO at a plant site at Ballah, near Ismailia on the Suez Canal, where 615,000 metric tons were processed in 1979. According to the prefeasibility study, GYMCO's reserves at Ballah are nearly depleated; and GYMCO will remove to two quarry sites at Barkan and Hagf, where 500,000 tons per year will be produced. Some questions surround the depletion schedule for the Ballah site.

An additional potential supply of agricultural gypsum may result from phosphate fertilizer production by the Abu Zaabal Fertilizer and Chemical Company, yielding 325,000 tons of byproduct gypsum yearly by 1982. The byproduct gypsum is high in residual sulfuric acid and phosphoric acid.

COST: Capital costs [1] for the proposed 250,000 Ypy facilities are:

Mine Equipment and Development	LE 1,736,000
Crushing and Sizing Plant	LE 4,110,000
Calcining Plant	LE 4,814,000
Power Plant	LE 3,552,000
	LE 14,212,000

Infrastructure capital costs, including housing, street and road construction, power distribution, water and sanitation, were not estimated, assuming these would be government expenses.

STATUS: McKee-Kearny has recommended going ahead with a full feasibility study.

INFORMATION SOURCE: McKee-Kearny prefeasibility report.

REPORTERS' ASSESSMENT: McKee-Kearny supports the potential need for gypsum production at Ras Malaab, at least to the point of justifying a final feasibility study, by citing a growing domestic use and market for drywall construction and a potential supply-demand gap of 500,000 tons annually for agricultural gypsum. These are questionable bases because:

a. Drywall construction is totally new in Egypt and may or may not gain acceptance; the annual tonnage demand for drywall construction, even if heavily promoted, would be small.

b. The projected demand for agricultural gypsum appears seriously inflated. McKee-Kearny hangs economic feasibility upon the ability of the Sinai Manganese Company to market 500,000 tons of gypsum annually to the Ministry of Agriculture under the subsidy program.

c. The prefeasibility study states existing gypsum production in Egypt but does not cite production capacity. GYMCO is now producing 615,000 tons annually and will probably move the same equipment to their new sites, with equal production capacity. Each cement plant also include extra capacity.

(1) 1982 Egyptian Pounds

d. While Ras Malaab and GYMCO's future sites are equidistant from Cairo, GYMCO will enjoy a major transport distance advantage in all but the eastern-most margin of the Nile Delta.

e. The fertilizer company waste gypsum, existing as a disposal liability, can satisfy most of the perceived increase in agricultural demand. Residual sulfuric and phosphoric acid may be beneficial, giving the product gypsum a faster reaction rate. The fertilizer company possesses both the marketing contacts (public sector) and the infrastructure to distribute the material.

Overiding these questions of supply and demand are economic considerations which the prefeasibility study does not adequately address. Operating costs are sufficiently detailed for a prefeasibility study, but capital costs are presented as lump sum amounts only. Infrastructure costs are not estimated, even though marginal economic viability of the project will hinge on the government's willingness to bear the expense of infrastructure development. Finally, no cash analyses are performed to determine NPV, ROR, ROI, etc.

RECOMMENDED NEXT STEPS: The prefeasibility study is not sufficiently comprehensive to serve as a basis for a decision regarding the need for justification for a full feasibility study. Work which should be undertaken includes:

a. A more comprehensive and accurate market study, including a more precise definition of existing production potential and real estimates of anticipated agricultural demands, including an assessment of any subsidy programs which the Ministry of Agriculture will manage.

b. Capital costing ingreater detail, including infrastructure which may be alternately included and excluded from subsequent cash flow analyses.

c. A more detailed study of transportation methods and costs to various distribution points.

d. Conclusive information regarding the use or non-usability of fertilizer plant waste gypsum as agricultural gypsum.

e. Cash-flow analyses at least to the degree of detail allowed by the results of the prefeasibility study and the work suggested in this summary.

REPORTER: Ed Phariss February 13, 1981

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 4-B,6-B

Serial No. 11

PROJECT: Gypsum mining and processing

NATURAL AREA CLASS: This project would be in a nonsensitive area.

ENVIRONMENTAL CONCERNS: The environmental effects are expected to consist of local dust and possible impact to the hot springs about 12 kilometers to the west. Large trucks crossing highways may have difficulty when foggy or rainy conditions prevail. A number of conditions are undefined, including power source, solid waste disposal, housing, and social services.

MITIGATION AND ALTERNATIVES: The development plans should be reviewed to ensure that adequate planning has been completed, and the potential for affecting the hot springs should be assessed.

THRESHOLD ANALYSIS: This project is not expected to have a significant detrimental effect on man or the environment.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: No interaction with protected areas is anticipated.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: It is recommended that the Consultant review the plans for siting the mine and processing plant and other information about operation. At that time, an EA may be warranted.

PROJECT PRIORITY: This project will bring jobs and related benefits to Sinai and therefore should be of high priority.

CODE NO. 8 - B

SERIAL NO. 12

PROJECT SUMMARY

NAME: Gas Turbine Power Generation

LOCATION: Abu Zeneima (Sinai Manganese Company site)

TYPE: Rehabilitation of existing gas turbine power generators.

OBJECTIVES: To establish low-cost electric power source by determining the potential for and costs of rehabilitating the Sinai Manganese Company's electrical generating equipment for use by residents and industries in the Abu Zeneima area.

DESCRIPTION: The original (pre-1967) electrical generation station at Abu Zeneima included three Brown Boveri Type TA 80007 gas turbines complete with main compressors; combustion chambers; exciters; starting motors; and auxiliary control and other equipment. Also, there were two auxiliary diesel generators. Stacks for two of the gas turbines are fitted with heat exchangers that supplied heat to a 5000,000 GPD distillation plant for sea water desalinization; this was dismantled and removed by the Israelis following the 1967 War.

The power station suffered significantly less war-related damage than any other facility in the Abu Zeneima complex. A site visit by the Consultants revealed the following: although the resident architect-engineer stated that a fire burned for 27 days, this was apparently combustion of a heavy fuel oil that was very smokey but did little damage other than depositing a soot coating. Light bulbs and ceramic tiles are still in place and are not cracked, as would have been expected from a high-temperature fire. The wiring and electrical cables were damaged or have been removed, and the control cabinet and control systems were removed or destroyed. However, the generation units themselves appear to be unharmed, and the power circuit breakers likewise seem to be in good condition. Thus a potential 21 MW gas turbine electrical generation capability lies unused.

The power plant was originally to be supplied by an 8-inch spiral weld steel pipe from Belayim. Some of this pipeline has been destroyed, but at least part of it is still in place. The gas compressors in the Belayim field reportedly have been scrapped.

The heat exchangers (gas-to-water) appear to be only slightly damaged, with the aluminum flashing on one ripped. The original desalinization facility consisted of a Weir Westgarth Ltd. multi-stage flash distillation unit that had a design capacity of 800,000 cubic meters per year (equivalently, 500,000 gallons per day). This unit, which had an installed cost in the early 1960s of 270,000 British Pounds, had a performance of 10;1 with a maximum product quality (from sea water) of 50 p.p.m. The desalinization plant was completely transferred after the Six-Day War by the Israelis to Eilat, where it has operated since. A "ballpar "

estimate of a similar-size facility currently is US $1,250,000 (quotation from Sasakura International Corporation to Kaiser Engineers, 17 July 1980).

Kaiser Engineers noted in their September 1980 report that the model of the gas turbine generator sets now at Abu Zeneima is no longer in production, and that any spare parts required would have to be specially fabricated. Also, operating efficiencies of currently available units of similar size are somewhat higher (5 percent). For these reasons and also because fresh water requirements are much lower than the plant originally needed, Kaiser has recommended that the Brown Boveri units be scrapped. The question remains, however, whether they might be repaired and used for supplying power and, through a new distilling unit, water to residential and industrial users presently and potentially located in the Abu Zeneima/Abu Rudeis area.

A Brown Boveri engineer examined the power station in 1967, and estimated that rehabilitation of the electrical generation unit would cost US $11,057,000.

STATUS: New project recommended by Consultant.

INFORMATION SOURCES: Kaiser Engineers and Constructors, Inc. Feasibility Report to Sinai Manganese Company, September 1980. Reporters' field investigation.

REPORTERS' ASSESSMENT: The Brown Boveri cost estimate seems high, given the apparent small damage to the facility. It is noteworthy that they simultaneously quoted a cost of US $ 12,965,000 for two new Type 9, 29 turbine generators.

Because it appears that Sinai Manganese Company does not plan to renovate the power plant and desalinization facilities, the Ministry of Development may wish to consider immediate evaluation of the rehabilitation potential of these facilities for more general infrastructure use. The Abu Zeneima area provides an excellent location for an industrial complex that could include gypsum, glass-making, kaolin, cement and other potential industries in addition to the ferromanganese plant. Economies of scale dictate that the desirable plan would be to furnish fresh water and electricity from a central facility for this complex, presumably making use of associated gas from the Bellayim or other fields that is currently flared, rather than having individual plant generation. The central facility could also furnish water and electricity requirements for community development.

RECOMMENDED NEXT STEPS: It is recommended that the Ministry should consider making immediate use of this valuable equipment, which would otherwise be scrapped, in a productive application in Sinai, whether in Abu Zeneima or elsewhere. A team of specialized engineers should be dispatched to carefully examine this possibility in cooperation with the Sinai Manganese Company, at the earliest possible time.

PROJECT SUMMARY
Gas Turbine Power Generation

Basic questions to be answered include:

1. Cost of rehabilitating the Brown Boveri generators and associated equipment, either at their present location or after removal to another location.

2. Cost of re-establishing gas supply from Bellayim or other field.

3. Financial and economic analysis of costs and benefits of rehabilitation taking into account location and growth of power demand, cost and availability of alternate supplies of electric power, and cost and availability of natural gas.

It is estimated that two or three power systems engineers with specialized experience in gas turbine system repair would need to be retained to inspect and evaluate the costs and problems of rehabilitating the facility. They would require at least 1-2 weeks to contact suppliers and prepare their report. Therefore:

Professional Services:

3 men x 20 days x $500/day	$ 30,000
Subsistence: 3 x 30 x $ 75	6,750
Travel: 3 x $ 1,800	5,400
Total	$ 42,150

REPORTERS: T.V. LONG
D.E. LEE
R.T. MOTT

DATE: February 10, 1981

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 8-B

Serial No. 12

PROJECT: Gas turbine power generation

NATURAL AREA CLASS: This project is located in a nonsensitive area.

ENVIRONMENTAL CONCERNS: No significant environmental impacts are expected to result from rehabilitation of the gas turbine at Abu Zenima. Minor impacts may result from relaying the pipeline from Beloyin, but these impacts are not considered to be significant if the same route is used. Air quality and noise impacts are expected to be minor.

MITIGATION AND ALTERNATIVES: Emission stacks should be tall enough to disperse gases.

THRESHOLD ANALYSIS: The project is not expected to have a detrimental effect on man or the environment.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: No interaction with protected areas is expected to occur.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: There is no need for an EA or EIS.

PROJECT PRIORITY: This project is considered to be of high priority because it will determine the feasibility of other projects.

CODE NO. 6 - A

SERIAL NO. 14

PROJECT SUMMARY

NAME: Fabrication of Solar-powered Equipment

LOCATION: El Arish

TYPE: Expansion of on-going workshop.

OBJECTIVES: To increase capacity to produce solar water heaters and to increase their sales in Sinai.

DESCRIPTION: There are at the present a significant number of solar-powered domestic hot water systems installed and operating in El Arish. A small (3 man) plant exists in El Arish, which is currently producing about three solar hot water systems per day for the local market and for shipment to Cairo.

The present activities could form the base for an expanded factory to produce, install and service significant numbers of solar hot water systems. Following successful development of a line of water heaters, the plant might be expanded to include solar cookers, water distillation units, biogas generators and related gas devices and other alternative energy devices. In addition to generating direct and indirect employment in the region, this project would reduce the region's demand on Egypt's valuable non-renewable energy resources.

COST: Needs to be estimated on the basis of on-site inspection. Immediately required is one man-week of consulting services by an expert in solar water heating devices: possibly $2,000 plus travel and subsistence.

STATUS: There is a three-man operation in El Arish. The reporter has no idea who is providing capital or marketing and management expertise.

INFORMATION SOURCES: Consultant observation and information supplied by El Hafiz Koraym.

REPORTER'S ASSESSMENT: This appears to be a viable operation which could be the basis for a growing regional manufacturing activity. It may be an opportunity for the proposed Development Bank.

RECOMMENDED NEXT STEPS: Specialist (a) evaluation and recommendations regarding the existing facility; (b) assessment of market; and (c) estimation of costs of expansion.

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 6-A

Serial No. 14

PROJECT: Fabrication of solar-powered equipment

NATURAL AREA CLASS: This project is located in a nonsensitive area.

ENVIRONMENTAL CONCERNS: No significant environmental concerns are associated with this project.

MITIGATION AND ALTERNATIVES: No mitigative or alternative action is required.

THRESHOLD ANALYSIS: This project is not expected to have a detrimental effect on man or the environment.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: No interaction with protected areas is anticipated.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: There is no need for an EA or EIS.

PROJECT PRIORITY: This project is of moderate priority.

PROJECT SUMMARY

NAME: Cement Plant

LOCATION: Northwest or West Central Sinai

TYPE: Design and Construct a new Cement Plant

OBJECTIVES: To make maximum economic use of Sinai resources by setting up a major dry process cement plant also, to help meet both regional and national demand for cement.

DESCRIPTION: In 1978 Egypt imported 1.4 million tons of cement. Domestic production was roughly 3 million tons. In 1980, domestic capacity was around 4.5 million tons. The planned production increase is for an additional 10 million tons annually by 1985, providing some surplus for export. As a priority area for industrial development, part of this capacity could be developed in Sinai.

Major inputs for cement production are dolomite or limestone with some gypsum, silica (sand) and energy for calcining.

Limestone utilized in existing Egyptian cement plants is quarried from both middle to upper Cretaceous and Eocene carbonate units in Lower Egypt. These sedimentary horizons also occur extensively in north and central Sinai, together with ample silica sources. Deposits of gypsum have been explored and partially developed or are known to occur at El Shatt and along the southwest Sinai coast. Potential sources of energy are coal from the proposed mines at El Maghara and natural gas, which is presently flared or still undeveloped along the gulf.

Beyond requirements for low cost feedstock and energy, other siting criteria include access to transport routes for domestic and export distribution and infrastructre (housing, power, water and communication).

COST: To be determined. Given pre-arranged, favorable tax, import-export and energy cost considerations, foreign venture capital sources may be attracted for detailed feasibility studies. Initial siting studies and preliminary structuring of investment terms, however, must rely upon public sector, US AID, UNDP or similar funding. This project is no more than a concept at this stage. Implementation will be contingent on total infrastructure and industrial development plans for Sinai, national cement production needs and export market potential.

INFORMATION SOURCES: Reporter's field investigation.

REPORTER'S ASSESSMENT: The initial priority activity is to sketch out the likely demand for cement from such a plant, the subsidies and concessions required for the government to attract investors, and the relative merits of alternative locations. Siting criteria to be used would be ranked in the following order:

PROJECT SUMMARY
Cement Plant

1. Limestone sources;
2. Transport access to domestic and export markets;
3. Low cost energy;
4. Local labor force (infrastructure development); and
5. Silica and gypsum source.

The proposed siting study would locate one or two areas in which combinations of feedstock, accessibility and planned infrastructure are optimum.

RECOMMENDED NEXT STEPS: Terms of reference should be prepared for a four-phase siting study:

1. Reconnaissance and assessment of alternative sites;
2. Assessment of national and regional demand projections for cement relative to projected production capacity in Egypt;
3. Comparison of production and transport costs of potential Sinai cement with costs of cement produced elsewhere in Egypt;
4. Review of tax, import-export and energy cost policies for foreign investment in a cement plant in Sinai with recommendations for waivers or special treatment to promote venture capital development

A brief pre-feasibility analysis for cement plant construction in Sinai could then be completed if the MOD wishes by DAMES & MOORE's minerals group in the United States.

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 4-A,B,6-A,B

Serial No. 15

PROJECT: Cement plant

NATURAL AREA CLASS: The project location has not yet been determined.

ENVIRONMENTAL CONCERNS: Potential environmental impacts include local dust and noise problems. Other impacts need to be investigated when the sites are identified. There may also be impacts associated with the transport of the cement, especially if the roads are not paved.

MITIGATION AND ALTERNATIVES: Fugitive dust can be minimized by paving surfaces frequently used and by containing dust generated inside buildings. Noise levels can be moderated by using conventional technology.

THRESHOLD ANALYSIS: The project is not expected to have a detrimental effect on man or the environment, but this may change according to the site selected.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: Interaction with protected areas cannot be evaluated until sites have been identified.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: No EA or EIS appears to be warranted, but this may be site dependent.

PROJECT PRIORITY: This project is of moderate priority.

CODE NO. 8 - B

SERIAL NO. 16

PROJECT SUMMARY

NAME: Suez Coast Highway

LOCATION: Eastern Coast, Gulf of Suez

TYPE: Highway construction/rehabilitation

OBJECTIVES: To accelerate work and advance completion of improvements thereby facilitating economic integration of South Sinai.

DESCRIPTION: Portions of the coast highway between Ras Sudr and Abu Zenima were destroyed by floods in 1980-81. Rehabilitation work as well as improvements in alignment and drainage is now underway, particularly in the central stretch through Wadi Gharandal and south towards Wadi el Sidri. However, the amount of men and equipment observed at work on February 2-3, 1981, seemed small and slow moving: one or two crawler-tractors and road graders at separate locations and one crew of workers laying cement slabs at a fording.

The importance of this highway to the economic, social and political development of south Sinai is beyond doubt. The petroleum, mining, and tourist development activities of the region are being hindered by poor transportation.

The Sinai Development Authority of the Ministry of Development has budgeted LE 12.2 Million for reconstruction work on the highway between El Shatt and Abu Rudeis. About LE 9.1 Million had been expended through June 30, 1980, and another LE 209,000 is budgeted for FY 1980-81. An assessment of the adequacy of this budget is required, and if necessary, additional funds should be sought to permit completion of the planned improvements before the next rainy season (Fall/Winter 1981-82).

COST: To be determined; probably several million LE plus foreign exchange for additional road building equipment.

STATUS: On-going project; to be expanded with donor support.

INFORMATION SOURCES: Field investigation by reporter. Project data from SDA/MOD.

REPORTER'S ASSESSMENT: Road work is not progressing as rapidly as circumstances merit; funding may not be adequate.

RECOMMENDED NEXT STEPS:

1. Sinai Development Authority should prepare up-dated estimates of time, materials and manpower to complete the job;
2. Incremental budget requirements for foreign exchange items could be submitted for donar consideration (e.g. AID Commodity Import Program).

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 8-B

Serial No. 16

PROJECT: Suez Coastal Highway Between Ras Sudr and Abu Zenima

NATURAL AREA CLASS: Non-sensitive.

ENVIRONMENTAL CONCERNS: None

MITIGRATION AND ALTERNATIVES: NA

THRESHOLD ANALYSIS: This road is crucial to the development of southwest Sinai.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: NA

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: None required

PROJECT PRIORITY: High

CODE NO. 8 - E

SERIAL NO. 17

PROJECT SUMMARY

NAME: Improvement of Ferry Crossings

LOCATION: Suez City

TYPE: Improvement of infrastructure facility.

OBJECTIVE: Dramatically increase ferry turn-around time, thereby facilitating transport to Sinai.

DESCRIPTION: Improvement of Approaches and Landing Ramps:

The A.R.E. Army is now operating a pontoon ferry across the Suez Canal about 4 km north of the city, where highway 33 terminates. Pontoon sections are bolted together, each one measuring about 25 ft. x 8 ft. A typical operation employs 9 pontoons in a 3 x 3 configuration. Two diesel-powered outboard drives propel the float; the units are mounted on diametrically opposite corners. Each propeller unit rotates through 360°, thereby affording full directional control. Hinged ramps on each end of the pontoon set are lowered to enable vehicle access.

STATUS: Consultant's proposal.

INFORMATION SOURCES: Reporter's field investigation.

REPORTER'S ASSESSMENT: The problem with the system is the poor condition of the canal banks and approaches. The west bank has a concrete bulkhead which the pontoon grounds against, with the earch sloping up at an angle through a cut in the levee. Rocks are placed in an attempt to bridge the gap between the pontoon lip and where the hinged ramp contacts the bank. There is no bulkhead on the east bank, and as the tide level changes, the soldiers have to move large rocks up and down to fair up the approach to the pontoon ramps. On Tuesday afternoon (1630 hours) February 2, 1981, the tide had dropped to where the pontoon could not get close enough to the bank to permit the ramps to touch the bank at a flat angle. Only a few 4-WD vehicles were able to embark from the east bank, and the steel ramp was badly deformed by weight of several vehicles. Despite a 3-4 knot current, the operators had no difficulty holding the pontoons in position, it should be noted. The only problem was the shape of the bank at the contact point.

RECOMMENDED NEXT STEPS: An engineered concrete ramp is required on each bank together with lengthened and reinforced hinged ramps on the pontoons. Cable ferries on the Sacramento River in California have their ramps permanently cantilevered out from the hull, and the operator merely runs the ferry aground. The ramps are hinged to allow them to rise slighly when they contact the bank.

PROJECT SUMMARY
Improvement of Ferry Crossings

The concrete ramps probably could be precast on the shore and then be shoved into position. They should extend under water perhaps 15 feet beyond the mean low water level, and at least 10 ft. above the mean high water level. Some site preparation would be necessary to contour the bank so as to support the ramps and prevent the current from under cutting the bank. Anchors might be necessary at the outboard ends to hold the ramps against tidal currents (up to 3-4 knots).

This work may already be planned by the Suez Canal Authority; alternatively it could be done by the Army Engineer (A.R.E.) with locally available materials. Materials costs for concrete re-bar, steel plate and forms, plus equipment use for site preparation should not cost in excess of LE 10,000 (non-professional estimate). The job could be done in 1-2 weeks, with proper management.

This project covers the Suez crossing which the reporter recently used. We understand that the Suez Canal Authority also has in hand projects to improve ferry crossings by providing both new ferries and improved landing. It is possible that the Authority's plan includes the Suez crossing.

It would be generally useful for MOD and the Consultant to have accurate information from the Authority regarding the overall plan for improving Canal crossing services, including capacities planned and time schedules for implementation.

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 8-E

Serial No. 17

PROJECT: Improvement of Ferry Crossings (at Suez)

NATURAL AREA CLASS: This project will occur in a nonsensitive area.

ENVIRONMENTAL CONCERNS: No significant environmental impacts are expected as a result of this project.

MITIGATION AND ALTERNATIVES: No mitigative or alternative action is required.

THRESHOLD ANALYSIS: This project is not expected to have a detrimental effect on man or the environment.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: No interaction with protected areas is expected to occur.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: There is no need for an EA or EIS.

PROJECT PRIORITY: Because this project will greatly facilitate movement of vehicular traffic to Sinai and greatly aid in the implementation of other projects, it should be of high priority.

CODE NO. 2 - A

SERIAL NO. 18

PROJECT SUMMARY

NAME: North Sinai Development Bank

LOCATION: Head Office in El Arish

TYPE: New financial institution

OBJECTIVE: To stimulate economic development by providing financial and technical assistance to industrial and other enterprises.

DESCRIPTION: At the request of government and with strong support from the Governor, a number of Egyptian commercial and investment banks have collaborated to establish a development financing institution to assist industrial and probably also commercial, tourist, and agricultural projects by financing the expansion of their activities throughout North Sinai.

The proposed capitalization and scope of activities is given in an Attachment.

COST AND FINANCING: See Attachment.

STATUS: Legal formalities were being completed in December 1980.

INFORMATION SOURCES: Conversations with Governor Taleb. North Sinai Publication of October 1980 Egyptian Gazette.

REPORTERS' ASSESSMENT: Financing institutions of this type have been very useful in promoting regional and national development in various settings throughout the world. The proposed North Sinai Development Bank appears to merit high priority and should be given whatever attention and assistance it needs to initiate an active program in North Sinai quickly.

RECOMMENDED NEXT STEPS:

- Study team (perhaps Soliman and Guilliams) will obtain full details of the Bank's financial resources, staffing, organization, proposed program and current status with a view to see if any additional support is needed to give it a fast effective start;
- Projects like construction of a docking facility and expansion of the solar heater factory in El Arish should be recommended to the Bank as soon as it is ready for operations for appropriate appraisal and financing;
- Close liaison between MOD (SDA), the North Sinai Governor's study team, and the Bank should be maintained in order to facilitate start-up operations and to see that appropriate early projects receive adequate financial support.

ATTACHMENT

North Sinai Development Bank

Translated by Nassef from North Sinai Publication (October 1980)

Bank for Development in the Governorate of North Sinai:

Capital: LE5,000,000: 50% will be the Governorate's share and 50% for banks and individuals. However, 30% will be allocated for North Sinai people.

The bank will also collect savings from individuals to help create enough funds which could be used for different projects such as food production, land reclamation, light industry, etc.

It has been agreed that the bank will be the nucleus for establishing other companies.

It was agreed in principle that the National Institute for Administrative Development will prepare a pre-feasibility study and take the legal steps to establish the bank. Also it was agreed that the bank will concentrate on the following sectors:

1. Tourism and real estate;
2. Land reclamation, livestock and fishing;
3. Light industry;
4. Construction.

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 2-A

Serial No. 18

PROJECT: North Sinai development bank

NATURAL AREA CLASS: This project would be located in a nonsensitive area.

ENVIRONMENTAL CONCERNS: No significant environmental impacts are expected to be associated with the establishment of a development bank.

MITIGATION AND ALTERNATIVES: No mitigative or alternative action is required.

THRESHOLD ANALYSIS: The project is not expected to have a detrimental effect on man or the environment.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: No interaction with protected areas is expected to occur.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: There is no need for an EA or EIS.

PROJECT PRIORITY: This project is considered to be of high priority because the establishment of a development bank will stimulate economic growth.

CODE NO. 8 - A

SERIAL NO. 1a

PROJECT SUMMARY

NAME: Airport

LOCATION: El Arish

TYPE: Re-opening of Airport for civilian use

OBJECTIVE: Facilitate the development of tourism and air freight activities in the region.

DESCRIPTION: The use of the airport is presently restricted to military uses. However, improvements are proposed to extend the main runway from 2,500 to 3,000 meters, and to construct a passenger terminal.

COST: LE 1.2 Million has been allocated to airport improvement in the budget of the Sinai Development Authority for FY1980/81. Additional funds (e.g. for instrumentation and similar requirements) are reported to have been provided in the budget of the Civil Aviation Agency.

STATUS: Although scheduled for completion within six months, there was no thing underway when the site was visited in December 1980.

INFORMATION SOURCES: Reporters' field investigation, Sinai Development Authority.

REPORTERS' ASSESSMENT: Essential for direct air service (charter) from western Europe, which in turn is necessary for the development of the North Sinai Governorate as a beach vacation destination.

RECOMMENDED NEXT STEPS: The authorities concerned would be well advised to continue to treat this project as urgent for the development of exports and tourism in North Sinai, and should expedite its completion.

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 8-A

Serial No. 19

PROJECT: Airport (at El Arish)

NATURAL AREA CLASS: This project is located in a nonsensitive area.

ENVIRONMENTAL CONCERNS: The reopening of the El Arish airport to civilians and the extension of the main runway by 500 meters--from its current length of 2,500 meters--should not cause a significant effect. There will be a requirement for additional land, which happens to have agricultural potential, but this appears to be unavoidable. It is assumed that flooding of the runways has not been a significant problem in the past and that proper levees can be designed and constructed to alleviate any potential problems.

MITIGATION AND ALTERNATIVES: No mitigative or alternative action is required.

THRESHOLD ANALYSIS: This project is not expected to have a detrimental effect on man or the environment.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: No interaction with protected areas is expected to occur.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: There is no need for an EA or EIS.

PROJECT PRIORITY: This project is considered to be of high priority because the reopening of the El Arish airport will promote development of other projects.

CODE NO. 8-B

SERIAL NO. 20

PROJECT SUMMARY

NAME: Industrial Complex

LOCATION: Abu Zeneima - Abu Rudeis area

TYPE: Preliminary Assessment of Townsite Requirements

OBJECTIVE: To determine development potentials and infrastructure requirements for industrial and urban development.

DESCRIPTION: The availability of associated gas from oil wells on the Sinai side of the Gulf of Suez, coupled with the reported availability of a variety of mineral resources suggests the possibility of developing an industrial complex in the Abu Zeneima - Abu Rudeis area. Besides the Ferromanganese deposits near Abu Zeneima now being investigated by Kaiser Engineers for the Sinai Manganese Company, the renewed production of which would create a need for supplies of petroleum coke, quartzite, dolomite, limestone and natural gas, there are also local deposits of kaolin, white clays, glass sands and gypsum. A number of interests, both private and governmental, are investigating the potentials of developing some of these materials; but there is no single, integrating agency that is looking into consolidating the infrastructure requirements of these activities. There may be significant economies of scale with respect to water, power, roads, housing and public services that would enhance the economic viability of individual mineral resource projects.

COST: Unknown

STATUS: Consultant's proposal

INFORMATION SOURCES:

1. Field inspection: T.V. Long, D.C. Lee, R.T. Mott, E. Phariss, C.G. Wescott

2. Kaiser Engineers and Constructors, Inc., Feasibility Report to Sinai Manganese Co., September 1980 (p. 11-21).

REPORTER'S ASSESSMENT: It is too early to formulate specific plans for infrastructure development, because very little work has been done to assess mineral reserves, markets, or costs of production. However, it is possible at this time to sketch in broad outline the land and infrastructure requirements for a number of communities of alternative size and location. Specifically, a reconnaissance survey should be made of potential townsite locations in the Abu Zeneima - Abu Rudeis area by an urban and regional planner to estimate the land area and infrastructure requirements for towns of, alternatively, 5,000, 10,000 and 25,000 population. No site engineering or land surveying should be done at this point. Only expert judgements and broad-brush conceptualizations would be appropriate.

An important element would be water requirements. Data from water supply studies should be incorporated in the analysis of costs and

PROJECT SUMMARY
Industrial Complex

availabilities. The objective is to develop a set of rough estimates of costs and manpower and materials requirements to build the industrial towns. This information would then be available when specific mineral development and industrialization proposals for the region were being considered.

RECOMMENDED NEXT STEPS: Retain a competent urban and regional planner (preferably Egyptian, with experience in local development projects), to prepare a set of alternative conceptualizations of industrial townsites and infrastructure requirements in the Abu Zeneima - Abu Rudeis area. His report would consist of several very rough site master plans (assuming some suitable mix of married and bachelor housing, personal services, retail establishments and recreational facilities) and associated requirements (with order of magnitude cost estimates) for structures, potable water supply, sewerage, other utilities, roads, public safety facilities, etc.

Estimated cost for 2-3 man-months of professional labor plus travel, subsistence, and clerical support expenses:

Labor @ LE 2000 per m/m :	LE 6000
Expenses	2000
Total...	LE 8000

REPORTER: R.T. Mott DATE: 11 February 1981

Code No. 8-B

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 20

PROJECT: Industrial Complex at Abu Zenima
Abu Rudeis/Townsite Requirements

NATURAL AREA CLASS: Adjacent to a sensitive area (east of Abu Rudeis)

ENVIRONMENTAL CONCERNS: Several concerns which are related to any new settlement development: groundwater depletion, sewage disposal, disposal of solid waste, etc. are involved here. The establishment of an industrial community requires analysis of possible impacts of industrial externalities (air, noise, water pollution) on the population to be settled.

MITIGATION AND ALTERNATIVES: Careful site evaluation closely coordinated with industrial plans. Around the settlement, intensive tree cultivation should provide buffers between industrial activities and settlement activities. Within the settlement cultivated areas should be provided to create pleasant microhabitats which would break up the monotony of the landscape. Housing designs should include courtyards which could be used as controlled planted areas.

THRESHOLD ANALYSIS: Industrial planners and managements should be made aware of their responsibility to provide a safe and pleasant settlement for personnel of the industrial complex.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: Externalities of industrial development are a potential threat to adjacent sensitive areas. Groundwater contamination and solid waste disposal are major concerns.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: EA - regarding siting and requirements of the establishment of an industrial community is essential.

PROJECT PRIORITY: High

CODE NO. 5-A

SERIAL NO. 23

(Rev. June 15, 1981)

PROJECT SUMMARY

NAME: Dairy and Beef Production

LOCATION: About 3 Kilometers Southeast of El Arish

TYPE: Livestock activity integrated with reclamation project

OBJECTIVES:

(1) Assist in developing agriculture and industry in Sinai.

(2) Increase local food self-sufficiency and provide greater income to farmers involved in land reclamation schemes;

(3) Provide fresh, clean animal products for an increasing tourist industry in El Arish area.

DESCRIPTION:

(1) General: The project is designed in phases to allow for expansion from 100 to 250 cows depending on the availability of green feed and concentrates. At present there is little feed produced locally at El Arish, but the Governorate of North Sinai plans to reclaim 1200 to 2500 feddans of land near El Arish in the near future. The quality as well as the quantity of water available are important factors to be considered and are of major concern in any future agricultural development. Having to transport feed from the Nile for this project would make the economic feasibility highly questionable. If, after a period of 2-3 years, the project has proven successful with 100 cows and there appears to be no major constraints, the project can be expanded.

(2) Breeding Plan: The first phases of the project will begin with 100 pregnant imported purebred Friesian heifers (around 2½ to 3 years) of age. Friesians are suggested because:

a) They have proven ability to adapt to the prevailing conditions along the Mediterranean coast of Egypt;

b) There is over 30 years of experience in Egypt with Friesians; and

c) The heifers have proven able to produce an average of 3500 Kgs of milk in their first lactation, and their offspring have the potential of reaching 400 Kg liveweight at 18 months of age with good carcass quality.

Natural mating should be used, at least in the beginning because of the complications with artificial insemination.

At least 3 purebred Friesian bulls should be imported with the heifers and housed in proper facilities at the dairy farm. At least 12 percent of the female and 2% of the male calves out of the highest producing dams should be kept for replacements, while the balance of calves should be fed out and fattened for slaughter.

The second phase will be an expansion to 250 cows, depending on a critical analysis of the first phase.

(3) Feed Supply: A critical issue for this project is continual and good quality supply of feed. It can be assumed that a mature cow will consume, on the average, 20 to 30 Kg of green alfalfa or berseem per day or about 10 ton per head per year, or for 100 head, 1000 tons per year. Adding in requirements for 3 bulls will increase the amount by about 30-40 tons. If conservative estimates of yields per acre (5 tons/feddan/year) are taken for the early years of reclamations, over 200 feddans will be required in the first year of operation. As the calves are born and are later (3 months of age) put on feed for fattening or retainment for replacement, hay requirements will increase by 1/3. Hopefully, the low yields per acre will be increased and even doubled by good management. Depending on amounts of concentrate fed, amounts needed will be around 80-100 tons in the first year and up to 125 tons in year 2.

It must be emphasized that high quality forage and concentrate are a necessity for an efficient and productive dairy. The quantity fed daily must always be adequate, and the quality should not vary. Since if it does, milk yields and daily gains of fattening animals can be expected to decrease.

(4) Management: Proper health management and nutrition are a must for this project and will require the services of a full time veterinarian and the supervision of an advance-trained nutritionist. Day-to-day supervision is an absolute necessity for success.

(5) Expansion: The governorate of North Sinai has indicated that their plan of development calls for a dairy of 250 cows and the distribution of at least some cows to cooperating farmers. This proposal suggests starting with 100 cows under one management at a modern dairy center and having an objective analyses and project review at the end of year 3 to determine the feasibility of expansion, which will depend to a great extent on the success of reclaiming farm land and the availability of adequate quantity and quality of irrigation water. Possibility and practicality of the distribution of additional cows to cooperating farmers should be studied before the end of year 3, so that a recommendation can be made. A similar trial was carried out at El Nahda, adjacent to the North Western Coastal area of Egypt, where Friesian cows were distributed to local people. It would be advisable to contact this project to learn more about the benefits and problems of such an endeavor.

COST: A preliminary analysis of costs has been made and follows.

PROJECT SUMMARY - Serial No. 23
Dairy and Beef Production

A - Capital Investment

	Item		Cost LE
1 - 100	Fresian pregnant heifers @ 1200 $ U.S./head		84,000 LE
	3 Bulls @ $ 2500 (U.S.)		5,250
		TOTAL	89,250
2 -	Buildings		
	- one dairy barn (capacity 100 cows)		35,000
	- one calving pen (capacity of 35 animals)		15,000
	- Open sheds for animals after weaning till service		30,000
	- Quarantine		10,000
	- Store		10,000
		TOTAL	100,000
3 -	Equipment		
	5 portable milking machines		7,500
	or Pipe line with portable milking machine		10,000
	Various equipment		3,500
			11,000
		OR	13,500
	TOTAL INVESTMENT		200,250
		OR	202,750

B - Operating Expenses

	Cost LE
- Feeding Bulls (300 LE/Bull)	900
- Feeding cows (300 LE/Low)	30,000
- Feeding follower (100 LE/head)	10,000
- Vetrinary expenses (25 LE/head)	2,575
- Labor (15 LE/head)	1,545
- Utilities (SLE/head)	515
TOTAL	45,535

PROJECT SUMMARY - Serial No. 23
Dairy and Beef Production

Production

Production is based on the following parameters:

a - calving %. 80%
b - mortality rate in calves 5%
c - morality rate in cows 2%
d - sex ration 50% (50, 50)
e - Au. milk production/cow in the first location 3500 Kg.
f - manure 18 C.M. 1 animal
g - bull fattening (38 animals) to reach 400 Kg. at 15 months of age
h - twenty-eight heifers to be sold for breeding.
i - ten heifers for replacement
j - culled cows to be sold after fattening (weight 450-500 Kg)

Total Income:

Item		LE
Milk (first year): 80 X 3500 X 20	=	56,000
Fattening bulls after 15 m: 38X 400 X 140	=	21,280
Breeding heifers: 38 X 600	=	22,800
Culled Cows: 2 X 450 X 130	=	1,170
Manure: 103 X 18 X 2	=	3,708
		118,958
		104,958

Description:

	LE
1 - Cows & Bulls (7 year)	12,750
2 - Buildings (20 years @ 5%)	5,000
3 - Equipment (10 years @ 10%)	2,100
	19,850

Profit

= Total income - (running expenses + depreciation)
= 04.958 - (45,535 + 19,850)
= 104.958 - 65,385
= 39,573

NB: Capital interest @ 6% (loan)
mounts to 200,250 X 6% = 12,015
202,750 X 6% = 12,165

Net Profit = 39,573 - 12,015 = 27,558
OR 39,573 - 12,165 = or 27,408

STATUS: Construction has begun on facilities to house animals, feed supplies and equipment. A new well for watering animals has been completed, but salt content of water is unknown. It is planned by the Governor of North Sinai to settle farmers on 1,200 to 2,500 feddans of reclaimed land, where they will produce garden crops and berseem for the project. At present the facilities have 13 Brown Swiss cattle (8 cows, 3 bulls and 2 calves for dairy) and about 20 Egyptian Red cattle for beef. Berseem is presently being transported from Ismailia.

INFORMATION SOURCES: Governorate of North Sinai, Desert Institute, Ministry of Agriculture Office, El Arish, personal communication with staff at College of Agricultural, Ain Shams University, Nile Agricultural Development Company.

REPORTERS' ASSESSMENT: The project depends on the reclamation of lands near El Arish and an adequate supply of quality water for irrigation. The present project has been phased to allow for a trial period to work out constraints and to appraise future possibilities before Phase II is attempted. The government has made possible the importation of equipment for animal production without taxation; supply of feed concentrates at subsidized prices; and agricultural loans at a low rate of interest.

RECOMMENDED NEXT STEPS: Further discussions with the Governorate of North Sinai and the Ministry of Development to determine the status of the reclamation of the 1,200 to 2,500 feddans.

REPORTERS:
A. A. Younis
R. S. Temple

DATE: June 15,1981

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 5-A

Serial No. 23

PROJECT: Dairy and beef production

NATURAL AREA CLASS: This project is located in a nonsensitive area.

ENVIRONMENTAL CONCERNS: This project is essentially a feedlot operation which will require concentrating the animals and cropping the land. Environmental concerns relate to the potential for odor and for groundwater contamination/sanitation associated with feedstock wastes and runoff. Overgrazing of the rangeland may also be a problem, so range conditions will need to be watched and the number of animals adjusted accordingly.

MITIGATION AND ALTERNATIVES: Feedlot wastes should be contained by the proper lining of feedpens and suitable disposal/treatment. Wastes could be used as fertilizer.

THRESHOLD ANALYSIS: This project, together with project nos. 21, 22, and 29, may have significant effects on water supply and water quality in the El Arish area.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: No interaction with protected areas is expected to occur.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: Due to the number of projects dealing with land development near El Arish, an EA is recommended to assess their combined impacts (see project no. 21).

PROJECT PRIORITY: This project is considered to be of high priority because of its importance to the health and welfare of the inhabitants of El Arish.

PROJECT SUMMARY

NAME: Agricultural Experimentation and Extension

LOCATION: El Arish and one to four other locations in Sinai

TYPE: Experiment Station Development

OBJECTIVES: Strengthen the institutional base to develop and adapt agricultural technology suitable to Sinai conditions.

DESCRIPTION: Two agricultural experiment stations exist in Sinai: one at El Arish (16 feddans), operated jointly by the Green Revolution Society and the Desert Institute, and one at Ras Sudr (25 feddans), under jurisdiction of the Desert Institute. The El Arish facility has been in operation for many years; the Ras Sudr station has only been in operation about four years. Both stations have nurseries to provide trees, forage and other planting materials to farmers.

COST: The estimated total cost of the project until the year 2000 is LE 6.87 million, of which LE 3 million is foreign exchange cost and LE 3.87 million is local currency cost. For the various components, the estimated costs are:

Design Master Plan	LE 70,000
Upgrade Existing Stations	800,000
Develop New Stations	1,000,000
Technical Assistance	2,500,000
Operating Expenses	2,500,000

STATUS: El Arish - Trial plantings to determine their adaptability to local conditions have been made of various forages, including fodder beets from Holland and Australia; olives from Spain; beans and vegetables. No research is being conducted. The tree nursery is excellent.

Ras Sudr - The land was not adequately levelled; both surface and drip irrigation are inefficient. No drains have been installed; alkalinity is evident and will worsen until proper drains are installed and used. There is no farm manager, and only infrequent visits by scientic supervisors. The nursery is poor.

INFORMATION SOURCES: Members of the agricultural study team made several visits to the sites of the stations at El Arish and Ras Sudr and discussed the programs with resident officials and Desert Institute officials.

REPORTERS' ASSESSMENT: Experimentation and effective extension are crucial to the successful development of agriculture in Sinai. Farmers will respond rapidly to improved technologies which promise profitable production gains. Much is already known in other parts of the world that is relevant to Sinai and could be adapted to Sinai conditions with an effective system of experimentation and extension. The payoff can be quite high. The success of each project in the agriculture sector depends on an effective system of experimentation and extension.

The El Arish facility is too small, but is well located. It needs resident scientists to design and supervise the experimental work. The Ras Sudr station is ample in size, but needs to be developed before useful experimental work could be done. Resident scientific staff will be required.

RECOMMENDED NEXT STEPS: An urgent first step is to commission a competent team (estimate 20 person-months) to design a Master Plan for Agricultural Experimentation and Extension, to be completed within 6 months from the time it is commissioned. Terms of reference are in preparation.

REPORTERS: Leon F. Hesser
Ralph W. Richardson

DATE: August 26, 1981

Code No. 5-A,B

INITIAL ENVIRONMENTAL EXAMINATION Serial No. 25

PROJECT: Agricultural Experimentation & Extension (El Arish and one to four other locations in Sinai)

NATURAL AREA CLASS: The area near Ras Sudr is sensitive, but the El Arish and Nakhl areas are nonsensitive.

ENVIRONMENTAL CONCERNS: No significant environmental impacts are expected to be associated with the development of an agricultural experimentation and extension program in El Arish; but in Ras Sudr, there is both a potential for flooding and the need for protection of the bustard.

MITIGATION AND ALTERNATIVES: Mitigation of flooding in the Ras Sudr area may consist of building dikes to divert flood waters. Land considered for development in Ras Sudr should be surveyed by an ecologist, to be sure that it is not inhabited by the bustard.

THRESHOLD ANALYSIS: This project is not expected to have a detrimental effect on man or the environment, if the bustard is protected in the Ras Sudr Area.

INTERACTION WITH AREAS OF PROECTION AND CONSERVANCY: The only interaction with protected areas could occur in the Ras Sudr area and affect the bustard.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: There is no need for an EA or EIS if proper siting and ecological surveys are conducted.

PROJECT PRIORITY: This project will have an obvious beneficial effect on agricultural development in these areas and is thus a high priority.

CODE. 4 - A

SERIAL NO. 26

PROJECT SUMMARY

NAME: Maghara Coal

LOCATION: 90 kilometers southwest of El Arish and 175 kilometers by road, east of Ismailia.

TYPE: Mine development, process plant construction and operator training.

OBJECTIVES: To diversify domestic energy sources by mining coal; a 600,000 TPY mine would increase gradually to 1,000,000 TPY, with an associated coal preparation facility for domestic coking coal and/or power plant feed.

DESCRIPTION: Tender offers have been solicited by the Egyptian Geological Survey and Mining Authority from companies which would:

1. Conduct prefeasibility and final feasibility studies for mine development, plant construction and startup, including the training of Egyptian management and labor.

2. Research and identify optimum product uses, considering domestic needs and export potential, and conduct additional metallurgical tests as required.

3. Select and purchase mine operating equipment and plant components.

4. Develop a mine and construct a washing or sink-float plant, as dictated by product demand and upgrading needs suggested by 1 and 2 above.

5. Train Egyptian technical and management staff and labor through pilot mining and processing operations.

The "Call for Offers" makes specific reference to drill indicated reserves around the Safa Mine which was under development before 1967. Additional reserves are presently being drill developed southwest of the Safa Mine but are apparently not part of the presently considered package.

Offerors are expected to provide management and technical expertise plus development and construction capital for Steps 1 through 5, in exchange for a share of the mine product.

Currently defined mineable reserves in the Safa block are estimated to range around 36 million tons (proven plus probable) of subbituminous Type A coal in two seams. The seams range in thickness from 65 centimeters (minimum practical mining thickness) up to 190 centimeters and are separated by 8 to 10 meters of limestone, sandstone, clay and shale. Reserves dip northwestward at roughly 10^{o} and have been drill proven to a depth of 400 meters below ground surface.

PROJECT SUMMARY
Maghara Coal

Pre-1967 operating plans at Safa called for longwall stoping, initially at 150,000 tons per year, increasing to 450,000 tons per year over a five-year period. Coal was developed in a shaft and two declines, but no production occurred before hostilities began.

Future development at the site will probably require new access shafts and declines; existing openings may be retained for ventilation and escape-ways. No useable surface facilities or equipment remain.

Past metallurgical tests of coal from the Safa Mine suggest that minimal upgrading (sulfur and fines reduction) may be achieved by sink-float processing. Suitable coking coal for domestic use may be produced by blending Safa product with imported coal. The required ratio of domestic to import for coke production varies with the qualities of the import. Tests with West German coal yielded an optimum 56% domestic/44% import blend. Blending tests with Russian coal at the Helwan coking factory indicated a need for 85% import. Further metallurgical tests, using import from politically acceptable, cost-competitive sources, must be completed to firmly establish coking capability. An alternative use under consideration is steam coal for power generation.

Infrastructure:

The conceptual plan is for initial production at 600,000 tons per year, increasing to 1,000,000 tons within 3 years after startup. At full capacity, the mine and plant, if developed, will carry a staff of roughly 30 and a labor force of 300 men. Additional inputs will be water at the rate of 300 gpm (may be brackish, within certain limits for sink -float processing), power from a coal-fed generator, housing, potable water, etc.

COST: Present capital costs for a 1 million ton per year mine and preparation plant, excluding infrastructure, may range from LE 60 to LE120 million. Previous studies suggest coal production at a cost (capital plus operating) roughly 15 percent above the expense of comparable imported coal.

STATUS: Reports indicate that 10 - 13 organizations have responded with tender offers, among them Kaiser and Powell-Duffryn. Mr. Wassef, of the Egyptian Geological Survey, also mentioned offerors from Poland and Germany. The critical point of award and subsequent negotiations will be the percentage of product awarded to the developer/financier.

INFORMATION SOURCES:

1) "Call for Offer for Reactivation of Maghara Coal Mine" by the Egyptian Geological Survey.
2) Maghara Coal Project Report on Reserves and Relevant Geology by Powell-Duffryn, May 1966.

3) Economic Feasibility of a Coal Production Project in the Jebel Maghara Area, by S. Chechelnitzky and A. Moss, Research and Development Authority, Ben Gurion University, August 1976.

4) Interviews with Egyptian Geological Survey Staff.

5) Site reconnaissance by reporter, February 6, 1981.

REPORTER'S ASSESSMENT: Although tender offers for development and production have been solicited and received, the feasibility of mining, both technical and economic, have yet to be assessed. The project only marginally cleared pre-feasibility analysis.

It is probable that submitted offers contain pre-feasibility and final feasibility studies as initial stages in their proposed development programs. Rational offers will have stated or implied escape clauses at the end of the pre-feasibility and final feasibility stages. In short, real development of the mine is far from certain; production could begin, at the earliest, in three years.

The viability of real extraction at Maghara is heavily contingent upon:

1) The extent to which Maghara coal may be used in a blend to produce coking coal for the domestic steel industry; and

2) Suitability of the seams for longwall mining.

The two available coking blend tests yielded radically divergent results; 57% with West German coal and 10-15% with Russian coal. If the latter is valid, economic criteria, even with reasonable subsidies and in view of Sinai industrialization goals, will prohibit development unless a nearby export market is found (perhaps Israel). The alternative use of non-coking coal for power generation during the foreseeable future does not appear supportable in view of the availability of natural gas.

Suitability of the Maghara coal seams for longwall mining may only be determined by actual pilot mining operations. Tentative assessments may be made when existing workings are opened for inspection during pre-feasibility studies. However, real verses theoretical mineability may vary as much as 30% (cost, percentage recovery and dilution). Geologic reports on lithology and structure associated with the seams in the Safa area suggest them to be roughly intermediate in the range between readily mineable and non-mineable. Mineability may be the deciding factor for coal which, on the basis of coking characteristics, seam thickness caloric content and geographic location, is a paramarginal resource.

PROJECT SUMMARY
Maghara Coal

RECOMMENDED NEXT STEPS: Current development planning at Maghara may well result in pre-feasibility analysis.

For regional planning purposes, the Maghara field should be regarded as a tentative source of coking coal meeting 50% of the domestic demand or as a potential export to Israel at an annual rate at 1-2 million tons per year, beginning in 1985. It would be useful for MOD or another appropriate ARE agency to contract on this possibility.

At this time the Consultant does not have access to sufficient information regarding Maghara to assess the probability of development or the economics of coal production.

Substantive data on Maghara are held by the Egyptian Geological Survey. The EGS has declined to release the information until requested to do so by the Ministry of Development which is considering the issuance of such a request.

Until more substantive data are available, the following conclusion is tentative. Exploration at Maghara has identified a valuable natural resource. Metallurgical tests to determine optimum use of the coal should be made before development and production plans are finalized. Ongoing exploration by the Egyptian Geological Survey has been successful in delineating significant additional resources in the region: the final results of this exploration may enhance the economic outlook for coal development and production.

REPORTER: E. PHARISS DATE: February 17, 1981.

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 4-A

Serial No. 26

PROJECT: Maghara coal

NATURAL AREA CLASS: This project is located in a sensitive area.

ENVIRONMENTAL CONCERNS: Two primary sources of impact are associated with Maghara coal--the mining of the coal and its transportation and use. Mining impacts will include destruction of plant species and wildlife habitat, localized dust, noise and aesthetic effects, and perhaps socio-economic effects on the labor force. Transportation of the coal could be a major source of impact. If the coal is burned at the 300-megawatt coal-fired power plant planned for the Springs of Moses area, additional impacts could result.

MITIGATION AND ALTERNATIVES: To protect the sensitive plant and animal species in the Maghara area, a field survey of species is required. The mining plans should be reviewed by a qualified, independent party to determine if conventional mining methods are being used to minimize dust, noise, and aesthetic impacts. Any pits should be backfilled. Labor-socioeconomic impacts need to be assessed, and a transportation study is also needed.

THRESHOLD ANALYSIS: This project could have a major impact on the environment; a more complete analysis should be made when more information is available.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: Although this project is located in the vicinity of sensitive species of plants and animals, if a survey is conducted to identify locally sensitive or vulnerable populations and mitigative measures are employed, the interaction with these species is not expected to be serious.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: An EA is required; it should include all aspects of coal shipping as well as mining.
Cost: _____

PROJECT PRIORITY: The development of Maghara coal may be important to the overall economic growth of Sinai and should be given moderate priority.

CODE NO. 4 - B

SERIAL NO. 27

PROJECT SUMMARY

NAME: Kaolin

LOCATION: 20 kilometers inland from the coast between Abu Zenima and Abu Rudeis.

TYPE: Reconnaissance evaluation and market analyses, followed by ore reserve mapping, measurement and metallurgical testing, leading to mine development.

OBJECTIVES: To assess the prospects for developing mining operations based on six known, explored or partially developed kaolin deposits.

DESCRIPTION: The ultimate goal will be to develop several small kaolin mines, feeding a processing plant at Abu Zeneima or Abu Rudeis.

Staffing, capital demand, operating costs, cash flow, etc., may vary widely depending upon the outcome of the resource analysis proposed herein. A hypothetical model would be:

Mine Production:	2 mines at 150 Tpd ore and 50 Tpd waste		
Mill Production:	200 Tpd sold at 70-100 LE/ton		
Staffing:	Mine Professional	-	8
	Mine Labor	-	80
	Mill Professional	-	12
	Mill Labor	-	35

Additional inputs are a moderate amount of power, either electrical or natural gas directly, for drying products, and processing water at 20 tons per day.

Kaolin development feasibility is principally contingent upon the tonnage and grade of definable ore and either (a) domestic demand or (b) ability to capture a portion of the international market.

Ore reserve delineation and testing are the subjects of the project proposed herein. Domestic demand is presently satisfied by mines in the Eastern Desert (which yield a clay substitute for kaolin which is of lower quality, at a rate of roughly 70,000 Tpy) plus an unknown import tonnage. Sinai kaolin, because of quality, should be able to supplant a portion of the Eastern Desert production.

International kaolin traffic is closely controlled by a few large cartels based in England and the U.S. Entry to the export market might require development and production participation by one of these major exporters. Attracting such a participant would generally demand exploration and testing of the kaolin deposits.

Kaolin

Since ore reserve measurements and metallurgical testing are essential to yield production cost and marketability parameters necessary for economic analysis of development feasibility.

A typical program would include:

Phase 1 - Geologic Reconnaissance

- Stage 1 - Geologic mapping of known occurances, 1:2000 scale surface and underground, at 7 locations.
- Stage 2 - Sampling of underground exposures and analysis.
- Stage 3 - Polygonal plan analysis of developed reserves - tonnage and grade.
- Stage 4 - Reconnaissance results economic evaluation and reserve extension drilling program design.

Phase II - Exploration Drilling and Economic Evaluation

- Stage 1 - Shallow (50m) drilling along outcrop traces to expand ore reserves.
- Stage 2 - Plan polygonal and sectional analysis of total developed, proven and probable ore reserves.
- Stage 3 - Bench scale processing tests.
- Stage 4 - Conceptual mine and process facility costing, resulting in preliminary economic analysis, based upon order of magnitude development and operating costs, average domestic and export commodity prices.

Phase III - Prefeasibility Study

- Stage 1 - Domestic and export market survey.
- Stage 2 - Bulk testing for processing flow sheet development.
- Stage 3 - Preliminary mine and process facility layouts and costing.
- Stage 4 - Financial analysis.

COST: Total mine development costs: LE 2 million
Total mill development costs: LE 12 million.

Timing, staffing and costs would be approximately:

Phase	Professional Staff	Assistants or Laborers	Months Duration	Costs, including Laboratory Fees[1]
I	2 Geologists	1 to 5	6	$ 120,000
II	Geol., Mine Eng., Chem. Eng.	1 to 3	6	100,000
III	Mine Eng., Chem. Eng.	4	4	130,000
			16 mos.	$ 350,000

(1) Cost excluding drill road construction and contract drilling.

Exploration, testing , engineering and economic analysis through the prefeasibility stage, rendering the project suitable for presentation to capital funding organizations, will require 16 months at a cost of roughly LE 350,000 excluding drill road construction and drilling. These contract costs may range from LE 150,000 to LE 300,000, depending upon the extent of ore, which may be proven in existing underground workings.

STATUS: Consultant's proposal.

INFORMATION SOURCES:
(a) Central Desert Mining Company files.
(b) Red Sea Governorate Regional Plan, Volume III
(c) Mineral Map of Egypt, Egyptian Geological Survey and Mining Authority, 1979.
(d) Studies on some mineral deposits of Egypt, 1970, Egyptian Geological Survey.
(e) Site reconnaissance by reporter, on February 8, 1981.

REPORTER'S ASSESSMENT: Pre-1967 kaolin production in the area suggests potential viability. Early assessment of potential is desirable for infrastructure planning at Abu Zenima the most likely local town for labour housing, product processing and shipping.

Substantial development work has been completed at a number of the kaolin sites, apparently by the Sinai Manganese Company. While we have not had access to SMC's files , it is possible that a review of this information could suggest, either that no further work on kaolin resources be undertaken or that exploration and prefeasibility analysis are now appropriate.

The extent of past development work and statements by the Central Desert Mining Company staff indicate a potentially viable mineral resource development project.

RECOMMENDED NEXT STEPS: The following should be completed before TOR's are prepared for the work outlined above(Phases I through III):

(a) Acquire, through the MOD, complete recrods on kaolin development and production in the area from the Sinai Manganese Company and the Geological Survey.

(b) Perform a one-week reconnaissance of outcropping and underground developed kaolin occurrences.

(c) Undertake a cursory domestic and international market analysis of kaolin.

This lead-in work will entail two weeks of effort by a senior geologist plus one assistant, followed by a week of market analysis. The field work should be deferred until all Sinai Manganese Company and Egyptian Geological Survey data is in hand. The estimated cost is:

Senior Geologist	$ 6,000
Asst. Geologist	$ 4,000
Travel and Expenses	$ 4,000
Economist	$ 3,000
Field Expenses	$ 500
TOTAL	$17,500

A reconnaissance report and terms of reference for Resource Analysis and Preliminary Feasibility Study could be initiated within one month of receipt of substantive data from the Sinai Manganese Company and completed within the following 4-6 weeks.

REPORTER : E. Phariss

DATE: 14 February 1981.

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 4-B

Serial No. 27

PROJECT: Kaolin mine

NATURAL AREA CLASS: Non-sensitive.

ENVIRONMENTAL CONCERNS: The primary environmental concerns regarding the development of a kaolin mine are the production of localized dust and noise. Other impacts are of a secondary nature if planning for power and roads is incorporated into regional development plans. The environmental impacts from a future processing plant in Abu Rudeis or Abu Zenima may be significant, depending on the site and plant design.

MITIGATION AND ALTERNATIVES: The development plans should be reviewed when a mine site has been identified.

THRESHOLD ANALYSIS: This project is not expected to have a detrimental effect on man or the environment, but this may change depending on the site. A good network of roads between the six mines would facilitate proper transportation of the kaolin and keep the area as clean as possible.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: No interaction with protected areas is expected to occur. The kaolin mining activities should be confined within the "industrial zone" (to be defined) of the Abu Rudeis/Abu Zenima area in order to allow for sound environmental management.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: Once a site has been located, an EA should be performed to assess the general impact of the mine on the local environment. Its scope should focus on the ecology and the general layout of mine development.

PROJECT PRIORITY: This project is considered to be of high priority.

PROJECT SUMMARY

NAME: Glass Sand

LOCATION: El Khabouba - approximate 15 kilometers due of Abu Zeneima

TYPE: Reconnaissance evaluation and market analysis, as a first step toward preferability analysis.

OBJECTIVES:

1- Acquire data regarding El Khabouba sand chemical and physical quality now held by the Egyptian Geological Survey and Sinai Manganese Company;

2- Assess the tonnage potential and grade characteristics of quartz sand suitable for glass production at the previously mined El Khabouba site;

3- Estimate domestic and export demand for the quartz sand;

4- Contingent upon a favorable outcome from 2 and 3 above, undertake mapping, drilling and metallurgical testing to more precisely define resources; and

5- Complete prefeasibility studies based upon the results of resource delineation, testing and market analysis.

To mine quartz sand from the previously mined site at El Khabouba, which would be shipped to Cairo for use in the glass-making industry, or exported.

DESCRIPTION: Quality criteria and quartz sand feed in glass making include:

1- Optimum size limits: $< 16\#$ and $> 200\#$

2- Gradation : Uniform distribution within specified size limits.

3- Chemical: Less than .05% Fe_2O_5, less than 1% combined K, Na, C, less than 5% alumina

According to the Central Desert Mining Company, the sand at El Khabouba meets these chemical and sizing criteria better than any other source in Egypt. The Sinai Manganese Company (SMC) is presently opening a small pit on the same sedimentary unit developed at El Khabouba, but some distance away, under less favourable mining and transport conditions. SMC claims to have received tender offers for 300,000 tons of glass sand annually from their pit. Offerors have apparently sampled and tested the material. Prices range from LE 30/tonne at Abu Zenima to LE 50/tonne FOB at Suez City for export.

The success which SMC appears to be enjoying in foreign marketing suggests that additional international market potential, sufficient to support a second glass sand mining operation, may exist.

A favourable marketing study outcome followed by prefeasibility studies might show economic viability for the following hypothetical operation:

Captial Costs

A.	Prefeasibility and feasibility costs, including mapping, drilling, sampling and testing	750,000.
B.	Mine development - open pit	250,000.
C.	Mine Equipage - 1000 Tpd	2,500,000.
D.	Transport System Costs	2,000,000.
		$ 5,500.000

OPERATING COST ESTIMATE:

Mining	$ 8.00	Tonne
Transport to Cairo	$ 7.00	Tonne
FOB Ship @ Suez City	$ 5.00	Tonne
Bulk Packaging for Export	$ 15.00	Tonne
Administrative Overhead	$ 3.00	Tonne
Total for Domestic Sale	$ 18.00	Tonne
Total for Export Sale	$ 28.00	Tonne

Staffing

Administrative Staff	5
Professional Staff	6
Labor - Mine	20
Labor - Transport	30

The operation would logically be head-quartered in Abu Zeneima Because no processing is required, technical training requirements, principally involving mine grade control and heavy equipment operation, will be minimal. A model operation would employ 10 professionals and 40 workers.

STATUS: The El Khabouba concession was previously held by the Sinai Manganese Company. SMC applied to the governor of South Sinai for a renewal of the concession but was refused. It is reported that the governor wishes to award the concession to a company that is willing to install a glass plant in the area. This approach, in our opinion, is not tenable. The sand to glass conversion does not reduce transport

weights which might give an advantage to on-site fabrication; moreover, the transport of fragile glass from Sinai to domestic markets would seriously erode economic advantages which quality feed-stock at El Khabouba offers.

Apparently, no action is currently being taken regarding re-activation of El Khabouba.

INFORMATION SOURCES:

1- Mineral Map of Egypt, 1975, by the Egyptian Geological Survey.

2- Central Desert Mining Company files.

3- Sinai Manganese Company Mining Engineering Staff: interviews.

4- Site reconnaissance by reporter on February 7, 1981.

REPORTER'S ASSESSMENT: Despite claims regarding quality and marketability, the potential for international market development is believed to be limited. El Khabouba product may succeed in supplanting a portion of the glass sand now being mined in the East Desert for domestic consumers. The extent of this market is presently unknown.

RECOMMENDED MEXT STEPS: The estimated cost would be about $ 4,000 as follows:

1-	Data Aquisition -Cairo Staff	$ 1,000
2-	Market Analysis	
	Economist	$ 2,000
	Communications	$ 500
	Clerical and Accounting	$ 500

Based upon the results of 1 and 2, recommendations for reconnaissance mapping, sampling and prefeasibility studies may be justified.

REPORTER: E. Phariss

DATE: February 16, 1981.

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 4-B

Serial No. 28

PROJECT: Glass sand (prefeasibility analysis)

NATURAL AREA CLASS: This project is located in a nonsensitive area.

ENVIRONMENTAL CONCERNS: No major environmental concerns are associated with the reconnaissance and prefeasibility analysis of a glass sand mine at El Khabouba. If the mine becomes operational, transportation impacts may be significant, depending on the method of haulage and traffic conditions.

MITIGATION AND ALTERNATIVES: An assessment should be made of the various methods of transporting sand.

THRESHOLD ANALYSIS: The project is not expected to have a detrimental effect on man or the environment.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: No interaction with protected areas is expected to occur.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: There is no need for an EA or EIS.

PROJECT PRIORITY: This project is considered to be of high priority.

PROJECT SUMMARY

NAME: Ground Water Authority

LOCATION: El Arish

TYPE: Establishment of a government agency to continue developing and to manage the ground water resources at El Arish.

OBJECTIVES: To provide rational and equitable development and allocation of limited supplies of fresh ground water in the coaster aquifer at El Arish. To control groundwater with-drawals in the area so as to manimise the quantity and quality of groundwater while maintaining groundwater levels at acceptably high elevations.

DESCRIPTION: Because of the increasing likelihood of an overdraft of the coastal aquifer and increasing evidence of the deterioration of water quality, it is essential to establish some kind of government agency that would be empowered to manage and control all withdrawals from the aquifer in the El Arish area. A broad and reliable data base would form the foundation for the management decisions to be made by the agency, and this data base would be provided by the project "Groundwater Survey and Monitoring Program - El Arish", proposed as another project. The proposal agency could have the name, The El Arish Groundwater Authority, and should employ a full-time hydro-geologist to collect pertinent data evaluate it and advise the authority on the technical feasibility of proposed management decisions. The authority would have the following functions:

- control over all new wells constructed in area, issue permits, etc...
- control over groundwater pumpage, require installation of flow meters, etc...
- require submittal of well logs and construction details for each new well.
- require quarterly, submittal of pumpage and water-level data.
- prohibit disposal of garbage and other waste in groundwater re-charge areas.
- construct observation wells when required to improve management decisions.
- arrange for development and operation of a groundwater model of the coastal aquifer, if needed to improve management.

COST : To be determined.

STATUS: Recommended by Consultant.

INFORMATION SOURCES: The idea for a groundwater authority of this kind at El Arish was put forth by McGowan Associates in December, 1980 in the course of their work for GORPAD.

REPORTER'S ASSESSMENT: Because of the great importance of groundwater at El Arish and the rather precarious nature of its supply there, the

PROJECT SUMMARY
Ground Water Authority

establishment of a groundwater authority should receive high priority and should follow closely the initiation of the groundwater survey and monitoring program proposal for the area.

RECOMMENDED NEXT STEPS: A detailed organisation and function plan for the proposed authority should be drawn up, possibly based on similar government agencies operating in other countries.

REPORTER : A. Mills

DATE: February 20, 1981

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 3-A

Serial No. 30

PROJECT: Groundwater authority

NATURAL AREA CLASS: This project is located in a nonsensitive area.

ENVIRONMENTAL CONCERNS: No significant environmental impacts are expected to be associated with the development of an authority to monitor and control the use of groundwater.

MITIGATION AND ALTERNATIVES: No mitigative or alternative action is required.

THRESHOLD ANALYSIS: This project is not expected to have a detrimental effect on man or the environment.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: No interaction with protected areas is expected to occur.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: There is no need for an EA or EIS.

PROJECT PRIORITY: Since this project could significantly aid in the wise use of water resources and prevent contamination and overuse of water, it is considered to be of high priority.

PROJECT SUMMARY

NAME: Hydrologic Basin Studies

LOCATION: Sinai

TYPE: Experimental and Pilot Studies of Surface Runoff from small basins.

OBJECTIVES: To evaluate feasibility of alternative methods of "run-off farming" in Sinai.

To provide values for components needed in water balance analysis for Sinai that would aid in the management of the peninsula's water resources.

DESCRIPTION: This project would involve the detailed study of runoff on four separate basins, each having an area of 5 km^2 or less. We have tentatively identified the areas where the experimental basins would be selected, --- two in the north-central portion of the peninsula (Wadi El Bruk area and Gebel Maghara - EL Hasana area), and two in the south western portion (Wadi Sudr area and Wadi Feiran area). For all basins, a measuring weir with automatic recording equipment should be installed at the downstream end of the main drainage wadi. Between 5 and 10 rain gauges would be set in different parts of the basin. Also, the area and boundaries of the basins would be accurately surveyed.

Two of the four basins would be selected for experimental runoff farms. This would involve construction of diversion channels on a portion of each of the two basins, channels would lead run-off water to lower fields where terraces would be established. Each terraced field would be leveled and adjoining field channels contructed. Measuring weirs would be placed at the lower end of each diversion channel. Drought resistant fruit, vegetable and field crops would be grown in the terraced fields, watered only by runoff, and yields would be carefully measured.

The basin studies would be performed initially for a 3-year period with the possibility of continuing one or more of them for 3 additional years.

COST: Not yet estimated.

STATUS: The strict hydrologic aspects of this project are a part of the Sinai water resources study proposed in 1980 by the Water Resources Research Institute with the possibility of partial funding by the EEC.

INFORMATION SOURCES: "The Negevr The Challenge of a Desert" by Evenari, Shanan and Tadmor, published by Harvard University Press. The concept of small basin hydrologic studies in Sinai was suggested by the Water Resources Center (Ministry of Irrigation) and by Bennie Taylor, in their May 1980 report.

REPORTER'S ASSESSMENT: The establishment of the proposed experimental runoff farms could have great importance in determining the most efficient methods of farming under those conditions and in serving as demonstration farms. The runoff data would also be valuable for projects involving spreading of runoff water for ground water recharge in Sinai.

RECOMMENDED NEXT STEPS: Formulation of the project in detail in conjunction with the Water Resources Research Institute (Ministry of Irrigation) and development of cost estimate.

REPORTER: A. Mills

DATE: February 20, 1981.

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 3-A,B

Serial No. 31

PROJECT: Hydrologic basin studies

NATURAL AREA CLASS: This project may be located in a number of sensitive areas.

ENVIRONMENTAL CONCERNS: No significant environmental impacts are expected to be associated with development of the weirs and diversion channels and monitoring of surface runoff.

MITIGATION AND ALTERNATIVES: No mitigative or alternative action is required.

THRESHOLD ANALYSIS: This project is not expected to have a detrimental effect on man or the environment.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: Although this project may take place in a number of sensitive areas, it should not significantly affect the wildlife which these areas are intended to protect.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: There is no need for an EA or EIS.

PROJECT PRIORITY: This project is considered to be of high priority because a more complete understanding of hydrology is important to the comprehensive and coordinated development of Sinai.

CODE NO. 3 - A, B

SERIAL NO. 32

PROJECT SUMMARY

NAME: Network of Meteorological Stations on Sinai (NMSS)

LOCATION : Sinai

TYPE: Establishment of a network of first - and second - order meteorological stations.

OBJECTIVES: To provide meteorological data essential for the long-term management and rational utilization of the water resources, wind power and solar energy available on the peninsula.

DESCRIPTION: At present there are no meteorological stations in Sinai providing weather data on a regular basis. We propose a network of meteorological stations on the peninsula that would consist of four first-order stations (at El Arish, Nakhl, El Tor and Mt. St. Catherine) and four second-order stations (near Gebel) Libni, Gifgafa, Ras Sudr and Wadi Feiran Oasis.

The first-order stations should include instruments for the automatic recording of rainfall, humidity, pressure and wind velocity. Solar radiation, present cloud cover and standard pan evaporation should also be measured at these stations. The station at Mt. St. Catherine should also be outfitted to measure snowfall in the winter season.

The second-order stations should have instruments to permit the non-automatic measurement of rainfall, wind direction and velocity, humidity, pan evaporation and solar radiation.

The construction of the necessary shelter in each case (where not presently available) and the provision and installation of the instruments would constitute the first phase of the project. The second phase would involve the selection and training of operating personnel and the launching and operation of the stations under the Egyptian Meteorological Organization.

COST: Not yet estimated.

STATUS: New project.

INFORMATION SOURCES: The general formulation for this type project in Sinai has been advanced by the Water Research Center (Ministry of Irrigation) and by Binnie Taylor (in the report on Sinai groundwater resources in May 1980).

REPORTER ASSESSMENT: Optimum utilitzation of the Sinai's water resources, wind power and solar energy will only be possible if reliable long-term data are available, such as would be provided by this recommended NMSS.

RECOMMENDED NEXT STEPS: Discuss requirements with the Egyptian Meteorological Organization and Ministries of Irrigation, Agricultural, Development, Electricity and Energy. Formulate the program in detail, including cost estimates. This will take at least four work-weeks of consultant time. Careful attention should be given to arrangements that will ensure full understanding and cooperation of local residents in areas where meteorological monitoring stations are to be located.

REPORTER: Lee, Long, Mott, Mills. DATE: 20 February, 1981.

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 3-A,B

Serial No. 32

PROJECT: Network of meteorological stations

NATURAL AREA CLASS: All of the stations are expected to be located in non-sensitive areas, except at St. Catherine's--which is a highly sensitive area.

ENVIRONMENTAL CONCERNS: The establishment of meteorological stations for the collection of long-term meteorological data should not cause significant environmental impacts.

MITIGATION AND ALTERNATIVES: Wherever possible, the stations should be located where they will not be highly visible.

THRESHOLD ANALYSIS: The establishment of meteorological stations should not have a significant effect on man or the environment.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: No interaction with protected species is expected to occur.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: An EA or EIS is not warranted as long as the meteorological towers and apparatus are sited in inconspicuous locations.

PROJECT PRIORITY: This project is considered to be of moderate priority.

CODE NO. 9-B

SERIAL NO. 33

NAME: Tourist Hotel/Guest House

LOCATIONS: El Tor

TYPE: Accommodations suitable for a growing number of both beach and business visitors.

OBJECTIVES: To provide accommodations for tourists and travellers in south coastal area and the governorate capital. Also local expertise and staff for employment in tourist services.

DESCRIPTION: El Tor has a long history of serving travellers - mainly pilgrims returning by sea from Mecca, who are traditionally required to stop at El Tor for quarantine. However, there are no accommodations which meet modern, international standards and no facilities designed for contemporary tourists.

The Sinai Development Authority (SDA) proposes to construct a tourism "village" on the beach at El Tor. LE 2.25 million is budgeted, with completion schedule for 1983-84. No work has commenced. As presented in the current year's SDA budget, the project is part of a LE 19.84 million program of housing, infrastructure and fishing industry development at El Tor, of which approximately LE 5 million is to have been expended by 6/30/81.

During implementation of this program, as well as agricultural and petroleum development projects in the region, there will be frequent visits to the area by engineers, planners and officials of the ARE government, companies and donor agencies. A guest house or motel is urgently needed and should be built and operated, on standards of cleanliness and efficiency similar to commerical facilities internationally. At least 10 double-occupancy rooms with private baths are recommended initially.

COST: Assuming an average cost of US $ 50 per square foot and rooms averaging 200 sq. ft., a 10-room guest house or hotel would cost on the order of US $ 100,000, to which $ 50,000 - 100,000 should be added for food preparation, air conditioning, lounge, office facilities, utilities and landscaping. Local building materials should be used to the greatest extent possible (stone, palm tree trunks). Thus estimated roughly, the total cost would be US $ 150,000 - 200,000.

STATUS: The project proposed by SDA could be faciliated and accelerated with donor funding.

PROJECT SUMMARY
Tourist Hotel/Guest House

INFORMATION SOURCES: Sinai Development Authority (1980-83 budget plan); travellers'reports (Perkins); description of facilities in "Sinai Till the Year 2000", ARE specialised National Council, Cairo. 1979; pp 64.65.

REPORTER'S ASSESSMENT: There needs to be adequate commercial accommodation for visitors to the south coast of Sinai before 1983. El Tor is halfway between Abu Rudeis and Sharm El Sheikh and is to be the administrative center for the region. The SDA and the South Sinai Governorate should move immediately to construct a guest house or motel to support the development effort. There are no other facilities within 100 km.

RECOMMENDED NEXT STEPS:

1- SDA / MOD develop plans and budget for a guest house or hotel. The unit should be designed modularly so that additional rooms can be added as demand grows.

2- Donor funding be solicited.

REPORTER: R.T.Mott DATE: 19 February 1981

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 9-B

Serial No. 33

PROJECT: Tourist hotel/guest house (El Tor)

NATURAL AREA CLASS: This project is located in a nonsensitive area.

ENVIRONMENTAL CONCERNS: The environmental impact depends on the exact location of the tourist hotel/guest house. There is also concern about the impact of additional waste disposal (solid wastes and sewage).

MITIGATION AND ALTERNATIVES: Care should be taken to locate this facility where it will not interfere with waterfront developments. It is suggested that proposed sites and plans be reviewed by the Consultant.

THRESHOLD ANALYSIS: The establishment of a hotel/guest house of modest size should not have a significant effect on man or the environment if it is properly sited.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: No direct interaction with wildlife species is expected, and any impact should be minimal.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: There is no need for an EA or EIS if the site is reviewed and approved by the Consultant; otherwise, an EA is recommended.

PROJECT PRIORITY: This project is considered to be of high priority because the hotel is needed by people traveling in south Sinai.

CODE NO. 1-F

SERIAL NO. 34

PROJECT SUMMARY

NAME: Fish as Desert Animals

LOCATION: All Sinai

TYPE: Aquaculture

OBJECTIVES: To identify potential fish pond sites with suitable water and soil that are not suitable for agricultural crops, and to develop and prove aquacultural systems that are suited to soil and water conditions.

DESCRIPTION: The reports of desert water supplies too salty for irrigation and heavy, salty, clay soils that are too expensive to reclaim indicate opportunities for potential sites for aquaculture. The favourable aquacultural experiences in Egypt with two species of valuable salt water pond fish, the mullets, is a reason for optimism that effective systems can be proven. However, the scarcity of experience with salt water pond systems of the best type indicates that an experimental station should be established to do research and demonstrate the results of alternative systems.

COST: To be determined.

STATUS: Consultant's proposal.

INFORMATION SOURCES: Water resources data, soil data, plans for irrigation projects, scientific literature on aquaculture systems.

REPORTER'S ASSESSMENT: This innovative concept should be supported if a substantial area of suitable sites appear to be available. (The decision might be influenced also by the presence of suitable sites in the Western Desert). The sites should be evaluated with respect to physcial characteristics of soil and water and likely cost of development. If site circumstances are favourable, then the study of aquacultural systems should begin. I believe that favourable circumstances will be numerous.

RECOMMENDED NEXT STEPS: Although this is a major long-range development possibility, preliminary work need not proceed until better water resources and soils data are available. Field surveys on soils and water must keep aquaculture prospects in mind as they collect basic data.

REPORTER: W.F.Royce

DATE: February 22, 1981

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 34

PROJECT: Fish as desert animals

NATURAL AREA CLASS: This project is expected to be located in a non-sensitive area.

ENVIRONMENTAL CONCERNS: Few, if any, environmental impacts are expected, but further assessment depends on identification of potential locations for growing the fish.

MITIGATION AND ALTERNATIVES: Environmental control can be ensured if the fish ponds are properly sited.

THRESHOLD ANALYSIS: This project is not expected to have a detrimental effect on man or the environment.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: No interaction with protected areas is expected to occur.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: There is no need for an EA or EIS.

PROJECT PRIORITY: This project is considered to be of moderate priority.

CODE NO.8-A,B,D

SERIAL NO. 35

PROJECT SUMMARY

NAME: Solar Energy Demonstration Project

LOCATION: Mit Abu El Khom (new town)
El Arish and El Tor

TYPE: Solar Energy application pilot study.

OBJECTIVES: To support and expand the programs of the Minsitry of Electricity and Energy. The National Research Center and the Desert Research Institute in solar energy applications (solar cookers, solar heating, solar cooling, solar water pumping, wind machines, biomass converters).

DESCRIPTION: The Sinai climate (few cloudy days) and the lack of developed fossil energy infrastructure (oil and gas pipelines, electric power generating facilities) create an excellent opportunity for use of solar energy devices. President Sadat has indicated his interest in solar energy research at the New Mit Abu El Khom town development, and the Ministry of Electricity and Energy, the Desert Research Institute, and the National Research Center have instituted a number of experimental programs throughout Egypt with support from various foreign governments (see Dr. Tablawi's report of April 1980). We propose that a series of solar demonstration project be instituted at the headquarters of the North and South Sinai Governorates (El Arish and El Tor) and be expanded the program at New Mit Abou El Khom.

Sources of expertise and design requirements for solar energy applications are numerous. In the United States, the solar Energy Research Institute (DOE supported) and such private firms as the Solar Engineering Group of Princeton, N.J. (subcontracted to Dames and Moore for the Sinai Development Study), Battelle Institute, and SRI International could provide consulting services to MOD, MOEE, DRI, etc. provided AID funding. Examples of Solar applications include:

- Solar heating (space, water)
- Solar cooling and refrigeration
- Solar cooking
- photovoltaic power (e.g.for pumping)
- Solar salt ponds (thermal to electrical or mechanical energy)
- Crop drying
- water desalinization.

PROJECT SUMMARY
Solar Energy Demonstration Project

Also potentially viable are:

- biogas generators
- wind machines
- energy conservation devices.

Two documents describing on going solar research in Egypt (Dr. Talawis report) and a project description for solar cookers prepared by D E Lee of the Solar Engineering Group, for DAMES and MOORE, are particularly useful references for evaluating this proposal.

COST: Estimated at between $ 10,000 and $ 100,000, depending on scope of field investigation and equipment procurements. At a minimum, a solar energy applications expert should spend at least one month in the field appraising the technical and economic potentials and preparing the terms of reference for a demonstration project at El Arish, El Tor and New Mit Abu El Khom.

STATUS: Fragmented program by MOEE (see Tablawi report).

INFORMATION SOURCES:

1- Field inspections, by reporters January, February 1981.
2- Report of Dr. T.A. El Tablawi, "Activities of the Ministry of Electricity and Energy in Solar Energy Applications". Egyptian Electricity Authority, April 1980.

REPORTER'S ASSESSMENT: What has been initiated so far by the MOEE is good, but the program needs to be extended to Sinai. The New Mit Abu El Khom and the Governorate headquarters at El Arish and El Tor provide ideal locations where support will be strong for testing and demonstrating the usefulness of solar energy devices.

RECOMMENDED NEXT STEPS:

1- Retain a solar energy applications specialist to visit Sinai and scope out a demonstration program. Include economic feasibility analysis.
2- Procure equipment and designs making maximum use of local materials and skills to construct and install suitable solar devices.
3- Train local personnel in operations and maintenance of devices

REPORTER: R.T.Mott DATE: February 21, 1981

Code No. 8-A,B,D 89

Serial No. 35

INITIAL ENVIRONMENTAL EXAMINATION

PROJECT: Solar energy demonstration project

NATURAL AREA CLASS: This project is located in nonsensitive areas.

ENVIRONMENTAL CONCERNS: No significant environmental concerns are related to the solar energy demonstration project.

MITIGATION AND ALTERNATIVES: No mitigative or alternative action is required.

THRESHOLD ANALYSIS: This project is not expected to have a detrimental effect on man or the environment.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: No significant interaction with protected areas is expected.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: There is no need for an EA or EIS.

PROJECT PRIORITY: This project is of moderate priority.

CODE NO. 2B + 9B

SERIAL NO. 36

PROJECT SUMMARY

NAME : Interfaith Peace Memorial Complex

LOCATION: Adjacent to St. Catherine's (but out of direct view)

TYPE: Religious and tourist facility.

OBJECTIVES: To commemorate the peace treaty by providing religious, educational and touristic facilities,all of which will help promote economic activities in the region.

DESCRIPTION: The entire project is focused on a "Peace Memorial" consisting of separate Christian, Moslem and Jewish chapels; supporting facilities include a "cultural center" and a "touristic village, " which will provide some combination of visitor accommodations, accommodation for residents, shops and displays. Project siting and design minimize visual intrusion into the general landscape, as now planned, the project definitely does not involve the "construction on top of Mount Sinai" that has been decried by environmentalists.

COST: Estimate U.S.$ 60 million. Some contribution have already been received by the sponsoring organization, the Egyptian Engineering Society.

STATUS: A general design has already been prepared by local architects, and this firm is now proceeding with detailed construction drawings. (Architects Eng. Hassam M. Hassan and Abdel Halim Rimaly)

INFORMATION SOURCES: "Engineer's syndicate and the religious complex in Sinai", Engineers Journal; Egyptian Gazette, Mr. Hassan M. Hassan.

REPORTER ASSESSMENT:This project has the enthusiastic support of President Sadat. It is not intended to be self-supporting, but there may be some modest user charges to help defray operating costs. Such a project would contribute to the general over-all appeal of the St. Catherine's area to tourists and would therefore tend to stimulate total Sinai tourism. An additional, major attraction, such as this, will be particulary important if the monks continue to restrict the total visitor throughout at the monastery.

RECOMMENDED NEXT STEPS: Fund raising activities should continue to be pressed forward energetically.

INITIAL ENVIRONMENTAL EXAMINATION

PROJECT: Interfaith Peace Memorial Complex

NATURAL AREA CLASS: This project is located in a highly sensitive area.

ENVIRONMENTAL CONCERNS: There are numerous resource-related concerns, such as the effect on water resources and contamination/sanitation, but the greatest concern is that of aesthetics. The St. Catherine's area is attractive because of its aesthetic appearance, and development of any facilities will almost certainly affect the monastery as a tourist attraction.

MITIGATION AND ALTERNATIVES: The key to maintaining the aesthetics of the St. Catherine's area is the siting and design of new facilities.

THRESHOLD ANALYSIS: Any development at St. Catherine's could have a significant impact and thus be highly controversial if not carefully and appropriately carried out.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: Little direct impact should be felt in the vicinity of St. Catherine's because of the established use of the area. There should be minimal effect on the wildlife and vegetation.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: An EIS is recommended for the St. Catherine's area. It should focus on the socioeconomic, aesthetic, hydrologic, and waste disposal aspects of development (see project no. 9).

PROJECT PRIORITY: This project should receive high priority because it is important and will attract tourists to the St. Catherine's area.

CODE NO. 1-A

SERIAL NO. 38

(Rev. August 27, 1981)

PROJECT SUMMARY

NAME: Collection and analysis of water quality and fishery data.

LOCATION: Lake Bardawil

TYPE: Base line investigation of water, fish and other parameters of the lake regime as a basis for planning maximum sustainable production in future.

OBJECTIVE: To provide information as soon as possible on water circulation and potential fish production.

DESCRIPTION: The fishery in Lake Bardawil depends completely on the circulation of water from the Mediterranean through the inlets. Information should be collected and analyzed, including historical data on fishing and data on water chemistry and circulation. These and related data would facilitate estimation of the size of the present fish stocks in the lake, estimation of sustainable yields of fish and estimation of the circulation required to maintain water of suitable quality in different parts of the lake. These data would also be helpful to assess the relationship between fish productivity and circulation, the latter of which is a function of the design and operation of inlets.

COST: This project can be carried out over a period of one year at a cost of LE 5,000-10,000.

STATUS: Proposals have been submitted to the Governor of North Sinai from the Institute of Sea Sciences and Fisheries and from Suez Canal University, concerning the collection and analysis of fishery data with a view to improving conditions for fish production.

INFORMATION SOURCES: Governor of North Sinai, Institute of Sea Sciences and Fisheries and Suez Canal University.

REPORTERS' ASSESSMENT: The salinity appears to be already too high for shrimp and many sea fishes; if it is allowed to go higher, the fishery might well disappear. A baseline study of the type proposed is urgently needed. Water samples should be taken monthly from selected points in the lake. They can be analyzed by the Oceanographic Laboratory in Alexandria.

RECOMMENDED NEXT STEPS: The investigations should be carried out as soon as possible by the two proposers mentioned above. However, the proposals they submitted will benefit from modifications, which the reporters can suggest.

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 38

PROJECT: Collection and analysis of water quality and fishery data

NATURAL AREA CLASS: This project would take place primarily in the sensitive area of Lake Bardawil and also in smaller, highly sensitive areas.

ENVIRONMENTAL CONCERNS: No significant environmental concerns are expected to result from monitoring of water quality and fish in these areas. However, there could be significant effects if nesting birds are disturbed.

MITIGATION AND ALTERNATIVES: Care should be taken not to disturb nesting birds; suggestions include moderate-to-slow boat speed, no or minimal use of islands, and avoidance of birds whenever encountered.

THRESHOLD ANALYSIS: This project is not expected to have a detrimental effect on man or the environment.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: No significant interaction with sensitive wildlife species at Lake Bardawil is expected to occur if standard sampling methods are used.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: There is no need for an EA or EIS.

PROJECT PRIORITY: This project should be of high priority because of the usefulness of the collected information in planning for Lake Bardawil development.

CODE NO. 1-A

SERIAL NO. 39

(Rev. August 27, 1981)

PROJECT SUMMARY

NAME: Marketing in Europe.

LOCATION: Lake Bardawil

TYPE: Market development.

OBJECTIVES: To obtain better income by selling Bardawil bream at top prices.

DESCRIPTION: Shipment of fresh fish by air or frozen fish by surface are common practices and containers are available. The ice delivery and transportation facilities already available at Lake Bardawil can provide satisfactory handling of fresh fish if suitable precautions are observed by fishermen and transport people. Processing facilities are not available at Lake Bardawil and will need to be provided if processing is required. If the bream are to be frozen in Cairo o further processed, they should be iced and handled as carefully as if they were to be sold fresh.

COST: To be determined.

STATUS: Governor of North Sinai and others have recommended that export marketing of Bardawil fish be resumed.

INFORMATION SOURCES: Governor of North Sinai, Fish Marketing Agency.

REPORTERS' ASSESSMENT: The practical requirements for sale in Europe apparently can be met but more information is needed on bream supplies and markets.

RECOMMENDED NEXT STEP: Obtain information from Fish Marketing Agency on historical supplies of bream from Lake Bardawil by month or if possible by week. Obtain information from a fish marketing specialist on processing and packaging requirements and the probable prices in various markets for different products. Decide what proportion of the bream are to be offered for foreign sale. Invite bids from fish buyers or brokers prior to beginning of new fishing season (15 March).

REPORTERS: W. F. Royce
C. Wescott

DATE: 12 February, 1981

Code No. 1-A

Serial No. 39

INITIAL ENVIRONMENTAL EXAMINATION

PROJECT: Marketing in Europe

NATURAL AREA CLASS: Not applicable.

ENVIRONMENTAL CONCERNS: There are no environmental concerns related to determining a market for bream in Europe.

MITIGATION AND ALTERNATIVES: No mitigative or alternative action is required.

THRESHOLD ANALYSIS: This project is not expected to have a detrimental effect on man or the environment.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: No interaction with protected areas is expected to occur.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: There is no need for an EA or EIS. This project should be included in the EIS for Lake Bardawil development.

PROJECT PRIORITY: This project is of high priority because its purpose is to generate a market for bream.

CODE NO. 1-A, 8-A

SERIAL NO. 40

(Rev. August 27, 1981)

PROJECT SUMMARY

NAME: Inlet Design

LOCATION: Lake Bardawil

TYPE: Dredging operation

OBJECTIVES: Carry out extensive dredging of Lake Bardawil inlets to maintain adequate flow of sea water in lake, thereby reducing salinity, increasing enrichment and, ultimately, improving yields.

DESCRIPTION: The inlets were cut in order to form Lake Bardawil; maintaining them is essential for the continuation of fishing operations in the lake. According to local fishermen and officials, fish production fluctuates dramatically from year to year due to periodically clogged inlets.

COST: $6,000 and LE 1,500.

STATUS: The Suez Canal Authority is presently carrying out dredging operations to re-open clogged inlets.

INFORMATION SOURCES: Zikry Construction Co. (Heliopolis), local fishermen and officials.

REPORTERS' ASSESSMENT: Inlets require extensive dredging, as the sea continuously tries to rebuild the sandbar surrounding the lake.

RECOMMENDED NEXT STEPS: An experienced beach control engineer should be brought together with the Suez Canal Authority in order to ensure optimum configuration of inlets and sand control structures for Lake Bardawil. This is a gamble that a modest investment in advice might facilitate the present dredging operation and reduce the need for such activities in the future. This project should be carried out in close coordination with data collection activities (P.S. 38) and could begin as early as the end of Month 3 of that project.

REPORTERS: W. F. Royce
C. Wescott

DATE: August 27, 1981

CODE NO. 1-A,8-A

SERIAL NO. 40

INITIAL ENVIRONMENTAL EXAMINATION

PROJECT: Inlet design

NATURAL AREA CLASS: This project is expected to take place within the sensitive area of Lake Bardawil, and could possibly be located in a highly sensitive area.

ENVIRONMENTAL CONCERNS: A number of environmental concerns are associated with this project. These are, of course, the impacts associated with the possible construction of a new inlet and the potential changes that may affect water quality--especially salinity. Changes in water quality may affect the overall productivity of Lake Bardawil and its value to birds. There is also concern about the disposal of dredge material and what additional measures will be needed to maintain the inlet. Of equal concern is the increased use of Lake Bardawil from fishing and other man-related activities such as tourism.

MITIGATION AND ALTERNATIVES: It is recommended that baseline conditions be determined prior to construction of any new inlet. This should include an inventory of the Lake Bardawil ecosystem, with emphasis on water quality, fish, and birds.

THRESHOLD ANALYSIS: This project is likely to have a significant impact on Lake Bardawil and could be controversial because of the international importance of the lake to migratory birds.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: The Lake Bardawil area could be significantly impacted through increased use by the public.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: A baseline ecological study of Lake Bardawil should be conducted, emphasizing fish, birds, and water quality. The information should then be used along with other data to analyze the effects a new inlet will have on the lake (if such a new inlet has been proposed). An EA should be written when all information is available.

CODE NO. 1-A

SERIAL NO. 41

PROJECT SUMMARY

NAME: Lake Bardawil Investment Company

LOCATION: Lake Bardawil

TYPE: Establish Investment Company to oversee fishing operations.

OBJECTIVES: To improve management of procurement and operation of new capital equipment needed to support expanding fishing activities.

DESCRIPTION: The Governorate of North Sinai has suggested the establishment of an "Investment company in cooperation with the governorate and international experts, each with reasonable share". The functions that have been suggested include dredging, operation of refrigeration plants, production of ice, construction of fishing harbour structures, construction of fishing boats, management of the fishery, buying and selling of fish, overseas marketing, etc.

COST: To be determined.

STATUS: This is the beginning of a project proposed by the Central Committee for Integrated Popular Development of the North Sinai Governorate.

INFORMAION SOURCES: North Sinai Governorate.

REPORTER'S ASSESSMENT: The project as envisaged includes diverse management and investment problems which would probably pose major difficulties in the organization and operation of a single company.

RECOMMENDED NEXT STEPS: Review the operational, organizational, and financial options to determine the most likely combination for subsequent pre-feasibility or feasibility analysis.

REPORTERS: W.F.Royce
C.Wescott

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 41

PROJECT: Lake Bardawil investment company

NATURAL AREA CLASS: This project location will probably be a nonsensitive area (El Arish).

ENVIRONMENTAL CONCERNS: No significant environmental concerns are associated with the Lake Bardawil investment company.

MITIGATION AND ALTERNATIVES: No mitigative or alternative action is required.

THRESHOLD ANALYSIS: Although the Lake Bardawil investment company is expected to have no significant effect on the lake, a final assessment may depend on the conclusions of the EIS which is recommended for the Lake Bardawil inlet design.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: No interaction with protected areas is anticipated.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: No EA or EIS is warranted, but this project should be considered in the EIS for the Lake Bardawil inlet design.

PROJECT PRIORITY: This project is of a moderate priority pending the outcome of the Lake Bardawil EIS.

CODE NO. 4-A
6-A

SERIAL NO. 42

PROJECT SUMMARY

NAME: Solar-powered Ice Plant

LOCATION: Lake Bardawil

TYPE: Design, construct and operate Ice Plant.

OBJECTIVES: Produce competitively priced ice for packing fish, using solar technology.

DESCRIPTION: A concentrating solar collector focuses solar energy on a receiver through which a fluid is circulated to generate steam or superheated liquids. This energy then is utilized to drive turbines, compressors, or other mechanical or electrical devices.

COST: To be determined.

STATUS: Consultant's proposal.

INFORMATION SOURCES: A description of hardware which was designed at the Rensselaer Polytechnic Institute, New York, is available in study files.

REPORTER'S ASSESSMENT: A solar-powered ice plant would eliminate the need to transplant ice from El Arish or El Qantara for preserving the Lake Bardawil fish catch. Savings in time, fuel cost and fish would be realized, and experience would be gained in use of solar energy applications.

RECOMMENDED NEXT STEPS: A pre-feasibility study should be performed to evaluate the following issues:

1- Identify candidate solar concentrator/energy receiver-conversion systems (such as the PKI solar collector system) potentially suitable for the Lake Bardawil environment.

2- Perform field investigation to identify suitable locations for a facility relative to fishermen's and fish-buyers' requirements for ice.

3- Review performance requirements with system suppliers and determine order-of-magnitude costs of fabrication, delivery and installation.

4- Assess competitive impact of solar-based ice supply on price of conventional ice.

5- Prepare preliminary financial and economic feasibility analysis (foreign and domestic costs, IRR, DCF/ROR).

PROJECT SUMMARY
Solar-powered Ice Plant

A pre-feasibility analysis would require approximately 6 man-weeks of technical consulting expertise by a supplier of solar collectors. Travel and subsistence expenses for two persons would be incurred:

2 men x 15 days x $ 400/day	= $ 12,000
Expenses = 2 x 20 x $ 75	= $ 3,000
Travel = 2 x $ 2000	= $ 4,000
TOTAL	US$ 19,000

Costs of equipment are unknown. An equipment procurement and installation contract would follow the pre-feasibility study.

REPORTERS: Donald E. Lee
Robert T. Mott

DATE: 12 February 1981

INITIAL ENVIRONMENTAL EXAMINATION

PROJECT: Solar-powered ice plant

NATURAL AREA CLASS: This project would be located in or near sensitive and highly sensitive areas.

ENVIRONMENTAL CONCERNS: Environmental impacts should not be significant if the solar ice plant is sensibly sited.

MITIGATION AND ALTERNATIVES: Potential sites should be subject to an independent assessment as to their suitability.

THRESHOLD ANALYSIS: The solar ice plant could be controversial if not properly sited.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: Any possible interaction is site dependent.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: The impact of this facility should be included in the comprehensive plan and EIS for the Lake Bardawil inlet.

PROJECT PRIORITY: This project is of a high priority.

PROJECT SUMMARY

NAME: Solar Salt Pond Electric Power Demonstration Project

LOCATION: Lake Bardawil

TYPE: Solar power demonstration project.

OBJECTIVES: To design and install salt pond electric power generation technology in support of fishing and other development activities in Lake Bardawil.

DESCRIPTION: Salt ponds have been demonstrated as being technically feasible sources of heat energy at nearly the boiling temperature of water (100°C). The water in a salt gradient pond has high concentrations of dissolved salt at the bottom, with decreasing concentrations at higher levels. Solar radiation enters the pond and is absorbed by the denser (more salty) water. The more salty water at the bottom, being denser and therefore heavier, resists the tendency, as it becomes warmer, to rise (convect) through the higher, cooler layers. Thus, the bottom layer continues to absorb heat until losses through the bottom and upwards balance the solar input.

A research facility at the Israeli National Physical Laboratory in Jerusalem is producing electricity, and a 600 MWe solar salt pond generating complex is planned for the Salton Sea - Southern California Hot brine from the bottom of the pond is pumped to an evaporator, where a fluid is vaporized to drive a turbine and generator. Cool water from the top of the pond condenses the vapor back to a fluid.

It is envisioned that a small arm or cove of Lake Bardawil could be dammed off to create a salt pond which would drive an electric power generating system. A prefeasibility study of the concept is required first.

COST: To be determined.

STATUS: Consultant's proposal.

INFORMATION SOURCES: Solar Energy Research Institute, Golden, Colorado. Field investigation by Donald E. Lee.

REPORTER'S ASSESSMENT: The solar salt pond electric power concept seems particulary well suited for the North Sinai coast at Lake Bardawil. Important parameters are availability and cost of salt to augment sea-water concentrations, and distance and cost of power transmission to

load centers. A trade-off analysis is required to determine optimum sizes of the pond generation capability and transmission, requirements relative to existing and prospective electricity demand in the Bardawil area (residential, fish processing, tourism).

RECOMMENDED NEXT STEPS: A prefeasbility study should be performed to evaluate the following issues:

1- Identify suitable areas of Lake Bardawil for conversion to solar salt ponds.

2- Estimate size and location of electric power loads potentially serviceable by a Lake Bardawil solar electric generator.

3- Estimate site preparation and facility installation costs (preliminary, order of magnitude accuracy).

4- Estimate salt make-up requirements and costs of supply.

5- Estimate fossil fuel savings to conventional electric power sources.

6- Estimate back-up power requirements to ensure service reliability.

7- Estimate gross and net costs and benefits to users and to the economy; estimate IRR and DCF/ROR at 10% cost of capital.

8- Prepare recommendations for action or abandonment.

A prefeasibility analysis would require approximately 3 man-months of technical and economic consulting expertise. Travel and subsistence expense for two to three persons would be incurred:

3 men x 20 days x $ 400/day	= $ 24,000
Subsistence: 3 x 30 x 75	= $ 6,750
Travel: 3 x $ 2000	= $ 6,000
	US $ 36,750

Equipment costs are unknown at this point and would be determined in the prefeasibility study.

REPORTERS: Don Lee
Robert Mott

DATE: 12 February, 1981

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 6-A

Serial No. 43

PROJECT: Solar salt pond electric power demonstration facility

NATURAL AREA CLASS: This project would be located in or near sensitive and highly sensitive areas.

ENVIRONMENTAL CONCERNS: A feasibility study seems warranted, and possibly a comprehensive analysis of the environmental impacts would be needed. The location of such a facility is the single most critical factor. Because of its international importance, Lake Bardawil may be a poor site location.

MITIGATION AND ALTERNATIVES: After a site is selected, site-specific data on fisheries and water quality should be compiled.

THRESHOLD ANALYSIS: This project could be highly controversial because of its potential effect on Lake Bardawil.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: If sited improperly, the project could affect the most sensitive areas of Lake Bardawil.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: This project should be considered in the Lake Bardawil inlet EIS, or separately if warranted. Any evaluation of impacts should include a study of the effects on both water quality and the ecology of benthos and fish.

PROJECT PRIORITY: This project is of low priority.

CODE NO. 9-A

SERIAL NO. 44

(Rev. August 5, 1981)

PROJECT SUMMARY

NAME: Tourism Planning

LOCATION: Lake Bardawil

TYPE: Preliminary study to determine domestic and foreign tourist potential of Lake Bardawil (E.G., beach front activity summary - sailing, birdwatching).

OBJECTIVES: To suggest a plan for the development of tourism in the Lake Bardawil region coordinated with fishing and other activities, so that developments can go forward in ways that allow each proposed activity to complement others for which the area is equally well-suited.

DESCRIPTION: The gradually narrowing spit of canal that forms the northeast boundary has considerable potential as a future resort, which would offer the advantages of both the Mediterranean and Bardawil - turbulent versus still, cool versus warm, swimming versus water skiing and windsurfing. Such a resort would also provide easy access to a major wildlife refuge on the western shore of the Lake, which is a principal stopover for migratory birds from Africa to Europe, and could link up with the beach resorts spreading west from El Arish.

COST: To be determined.

STATUS: Consultants' suggestion. There has been no attempt to develop this area as a tourist resort.

INFORMATION SOURCES: Consultants' observation and conversations with Governorate officials.

REPORTERS' ASSESSMENT: Lake Bardawil has been viewed principally as a fishing resource. It has potential for substantial tourist development which would not interfere significantly with fishing but needs to be more carefully evaluated and proven into a coherent pattern of development for the area.

RECOMMENDED NEXT STEPS: Technical assistances should be arranged to stretch out the preliminary design for a resort on the northeast boundary of the Lake and a marketing plan for such a resort for beach vacations and ornithological expeditions. Proposed tourism development should be consistent with plans for expanding the fishing industry, with minimal disruption of the indigenous human and wildlife populations. This activity should take full account of the findings of the parallel Sinai Tourism Planning Study.

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 9-A

Serial No. 44

PROJECT: Tourism planning

NATURAL AREA CLASS: This project would include the sensitive and highly sensitive areas of Lake Bardawil.

ENVIRONMENTAL CONCERNS: Environmental concerns center around the protection of nesting birds at the eastern edge of Lake Bardawil.

MITIGATION AND ALTERNATIVES: People should be restricted from going into the islands and from molesting birds at anytime, especially during the nesting season. Boating should be controlled.

THRESHOLD ANALYSIS: This project is not expected to significantly affect man or the environment if tourism promotion is planned by professionals and access is reasonably controlled, especially during the nesting season.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: If not properly controlled, tourism could affect some of the highly sensitive areas of Lake Bardawil.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: No EA or EIS is required, but the impact of tourism should be included in the EIS for the Lake Bardawil region.

PROJECT PRIORITY: Because of tourism's major role in the economic growth of Sinai, this project is of a high priority.

CODE NO. 4-A

SERIAL NO. 45

PROJECT SUMMARY

NAME: Salt Production

LOCATION: Lake Bardawil

TYPE: Potential Industrial Development

OBJECTIVES: To develop a small, low-capital and low-technology industry which utilizes two of the most abundant natural resources in Sinai - Salt and Sun - and would serve as an integral part of overall development plans for the Lake Bardawill area.

DESCRIPTION: Brines from Lake Bardawil would be pumped through a series of ponding basins surrounded by levees. Solar evaporation of water from the brine as it progresses through the ponding system results in increasing salinity. At increasing salt concentrations, first gypsum, then magnesium and potassium chlorides, followed by sodium chloride (table salt) are precipitated. Brines are transferred to a final harvesting basin before NaCl precipitates.

After a sufficient layer of the NaCl has accumulated in a harvesting pond, residual brine is pumped out, and the salt is allowed to dry. Mechanical scalpers harvest and load the salt onto trucks for transport to a granulation plant where it is crushed, sized and bagged or placed in bulk containers for shipment.

The size of a salt project at Bardawil could be adjusted to domestic demand and export potential, within certain limits. The economics of scale dictate a minimum 200,000-ton-per-year operation. A 200,000 typ plant would require two years for design, development and construction and would ultimately employ a staff plus labor force of around 50 men.

COST: LE 5,000,000 is an order of magnitude capital cost estimate.

STATUS: Conceptual Project. A prefeasibility analysis can be completed by the Consultant's Economic Geologist.

INFORMATION SOURCES: Consultant's site reconnaissance, February 1981.

REPORTER ASSESSMENT: Water salinity at Bardawil is roughly twice that of normal sea water. Solar and wind conditions are good for rapid evaporation. If materials to construct semimpermeable membranes for harvesting pond bottoms are locally available, the project should be technically feasible. Economic viability depends upon the com-

PROJECT SUMMARY
Salt Production

petitive position of other domestic producers,domestic demand and nearby export markets, if any.

RECOMMENDED NEXT STEPS:

1- A short prefeasibility analysis to assign capital and operating costs for comparison with market values.

2- A brief assessment of domestic and export demand and prices.

REPORTER: E. Phariss

DATE: February 22, 1981.

INITIAL ENVIRONMENTAL EXAMINATION

PROJECT: Salt production

NATURAL AREA CLASS: This project would be located in both nonsensitive and sensitive areas.

ENVIRONMENTAL CONCERNS: One of the most important questions to be asked from an environmental impact viewpoint is where the ponding basin will be constructed, and how the salt production facilities will fit in with the fishing, tourism, and bird sanctuary uses of Lake Bardawil and its immediate surroundings. Although salt production will potentially employ 50 men, it is assumed that they will not live close to the plant, but will reside in El Arish. A suitable road will be needed to the salt basin, making Lake Bardawil more accessible--the road may spawn another set of secondary impacts.

MITIGATION AND ALTERNATIVES: Conceptually, it would seem possible to locate salt production ponding basins within the large, flat coastal plain that borders Lake Bardawil to the south. The vicinity of Lake Bardawil needs to be further investigated to integrate salt ponding basins with other uses of the lake area.

THRESHOLD ANALYSIS: The production of salt, if sited in a suitable location, should not cause significant impact, but together with other projects could cumulatively have an increased impact on Lake Bardawil.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: There is a possibility of interaction with sensitive areas of Lake Bardawil.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: An EIS is recommended for any salt production projects that may affect Lake Bardawil. The scope would address fishing, wildlife preservation, and tourism.

PROJECT PRIORITY: This project has a moderate priority.

CODE NO. 8-F

SERIAL NO. 46

PROJECT SUMMARY

NAME: Telecommunications Network

LOCATION: All Sinai

TYPE: Plan and implement major strengthering of telecommunications link within Sinai and with the rest of Egypt.

OBJECTIVES: To facilitate administration, development and economic activity by improving telecommunications services.

DESCRIPTION: Present telecommunications services are not adequate to modern business and administrative requirements. While the Governors' offices are connected to Cairo, even they do not have convenient telecommunication connection with other towns in Sinai and few other centers of activity have ready contact with each other or Cairo. To meet the urgent need for better services ARETO (The Arab Republic of Egypt Telecommunication Organization) has formulated a plan to be implemented promptly over the next few years.

The ARETO plan proposes 24 telephone exchanges in 24 cities and villages in Sinai, as shown on the attached map. The main centers of telecommunication would be Abu Rudeis and Ras Sadr in South Sinai, with an exchange capacity of 3,000 lines; in North Sinai, the El Arish exchange would have a capacity of 2,000 in El Arish and 1,000 in East Qantara. These major exchanges would be of automatic type. In addition, 22 other exchanges of 12 to 150 lines each would e established in other towns, all of manual type.

The ARETO project formulates the connection of the Sinai network to Egypt's main telecommunications system through Suez to El Tor, with links to all intermediate exchanges. The northern sector will be interconnected to El Arish or Qantara. A microwave link wi l carry telephone channels as well as other telecommunication channel requirements; it will be installed between El Arish and Qantara. In short, it is proposed to establish strong links with the rest of Egypt through two main routes: Suez - El Tor and Qantara - El Arish.

COST: Not available.

STATUS: Proposed for implementation by ARETO.

INFORMATION SOURCES: ARETO.

REPORTER'S ASSESSMENT: The ARETO proposal appears to meet basic requirements and is strongly recommended for immediate implementation. First priority in project implementation should be given to installation of main exchanges in El Arish, Bardawil, Bir el Abd, Ras Sudr, Abu Rudeis, El Tor and St. Catherines. The balance of the program should be completed as soon as possible thereafter.

PROJECT SUMMARY
Telecommunications Network

RECOMMENDED NEXT STEPS: Immediate approval of the ARETO proposal, followed by prompt procurement and installation of equipment, concluded with thorough training of operating and maintenance personnel.

ATTACHMENTS: Summary and Map prepared by ARETO for the Ministry of Communication: "Exchanges to be Constructed in Sinai."

REPORTER: Eng. Salah Amer DATE: February 12, 1981

MINISTRY OF COMMUNICATION

EGYPTIAN ORGANIZATION OF TELECOMMUNICATION

* Exchanges which will be constructed in Sinai.

I Automatic Exchanges:

i	El Arish	Capacity	=	2000 line
ii	El Kantara Sharq	"	=	3000 "

II Non-Automatic Exchanges:

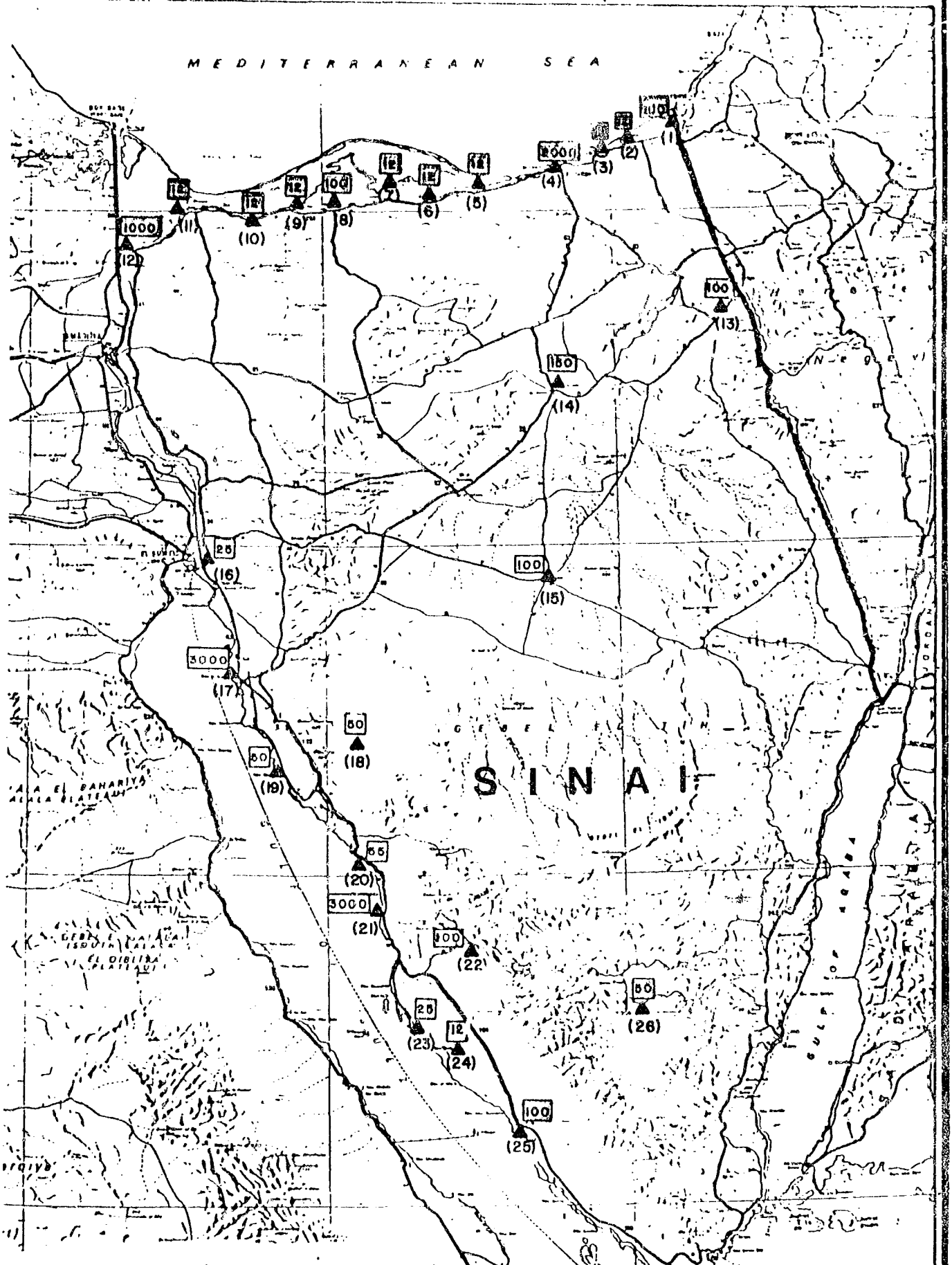
i	Abu Rudeis	"	=	3000 "
ii	Ras Sudr	"	=	3000 "

III Manual Exchanges:

1-	El Kosaima	"	=	100 "
2-	El Tor	"	=	100 "
3-	Bir Tl Abd	"	=	100 "
4-	El Hasana	"	=	150 "
5-	Wadi Gharandl	"	=	50 "
6-	Monastery St. Catherin	"	=	50 "
7-	Blalaeim	"	=	25 "
8-	Baloza	"	=	12 "
9-	Abu Haswa	"	=	12 "
10-	El Kherba	"	=	12 "
11-	El Mazar	"	=	12 "
12-	El Bardawil	"	=	12 "
13-	Nkhal	"	=	100 "
14-	Rafah	"	=	100 "
15-	Wadi Feiran	"	=	100 "
16-	Abu Zeneima	"	=	55 "
17-	Ras Mal	"	=	50 "
18-	Eh Shat	"	=	25 "
19-	El Petrico	"	=	25 "
20-	El Kharouba	"	=	12 "
21-	El Shwha	"	=	12 "
22-	Katia	"	=	12 "
23-	El Midan	"	=	12 "
24-	El Sheikh Zweid	"	=	12 "

* Main telephone nets:

1- Between El Arish & El Kantara
2- Between El Suez & El Tor.


MEDITERRANEAN SEA
SINAI
(1) RAFAH
(2) EL SHEIKH ZUWID
(3) EL KHAROUBA
(4) EL ARISH
(5) EL MIDAN
(6) EL MASAR
(7) EL BARDAWIL
(8) BEER EL ABD
(9) EL KHERBA
(10) KATIA
(11) BALOZA
(12) EL KANTARA SHARQ
(13) EL KOSAIMA
(14) AL HASANA
(15) NAKHL
(16) EL SHAT
(17) RAS SED
(18) WADI GHARANDEL
(19) RAS MALAAB
(20) ABU ZENIMA
(21) ABU RUDEIS
(22) WADI FIRAN
(23) BALALIM
(24) ABU HASHA
(25) EL TOUR
(26) DEIR ST. CATRINA

Dames & Moore

INITIAL ENVIRONMENTAL EXAMINATION

PROJECT: Telecommunications network

NATURAL AREA CLASS: The project location is unknown at this time.

ENVIRONMENTAL CONCERNS: The major environmental concern regarding the installation of a telecommunications network is aesthetics. Installation of telephone lines will detract somewhat from the open, spacious feeling of the desert. Of major concern is the aesthetic impact of the microwave towers. They will need to be located on high ground, and, depending on the location selected, may be highly visible.

MITIGATION AND ALTERNATIVES: The key to minimizing the aesthetic impact of the lines and towers is in proper siting. A siting study should be conducted to select the optimum locations and routes.

THRESHOLD ANALYSIS: This project is not expected to have a detrimental effect on man or the environment, but it could if the towers or lines are sited in sensitive areas.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: There may be interaction with protected areas, but it is not expected to be significant.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: No EA or EIS is needed if these facilities are properly sited. The telecommunications network could be incorporated into the EIS being recommended for the St. Catherine's area.

PROJECT PRIORITY: This project has a high priority.

CODE NO. 6-A

SERIAL NO. 48

PROJECT SUMMARY

NAME: Date Processing Factory

LOCATION: Bir El Abd

TYPE: Agricultural Industry

OBJECTIVES: Use of locally produced dates as agricultural industry base.

DESCRIPTION: There are approximately 13580 date trees at Bir El Abd, producing some 60-70 kilograms of date pulp per acre. A small processing plant to separate the date pulp from the hulls and stones would provide additional industry to Bir El Abd, thus providing additional economic base to the area.

COST: North Sinai Governor is having costs estimated. Results are as of yet incomplete.

STATUS: North Sinai Governor has initiated this proposal. It is currently in the conceptual stage.

INFORMATION SOURCES: North Sinai Governor, Ministry of Development notes on social and economic conditions of north Sinai.

REPORTERS'ASSESSMENT: Such a facility would give the Bir El Abd area an additional economic base. However, the number of trees and productivity of these trees may make the facility economically marginal.

RECOMMENDED NEXT STEPS: Have Agricultural and Industry specialists look at methods of improving date harvest. Look into most effective cost efficient methods for processing dates. Determine economic viability.

REPORTERS: J. R. Guilliams
C. Wescott
M. White

DATE: April 27, 1981

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 6-A

Serial No. 48

PROJECT: Date Processing Factory - North Sinai

NATURAL AREA CLASS: Nonsensitive

ENVIRONMENTAL CONCERNS: None

MITIGRATION AND ALTERNATIVES: None required

THRESHOLD ANALYSIS: This project should not have a detrimental effect if the facility is located properly, e.g. not close to residential areas.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: NA

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: None required

PROJECT PRIORITY: Deferred until economic analysis is undertaken.

CODE NO.: 9-A & B

SERIAL NO.: 53

(Revised:
October 11, 1981)

PROJECT SUMMARY

NAME: Tourism Planning Study

LOCATION: Sinai

TYPE: Sector Strategy Planning Study.

OBJECTIVES: To ensure orderly, long-term development of tourist resources of Sinai in ways that support national economic and tourist sector objectives. The study will recommend a set of actions that will provide a marketing, physical, financial and management framework for a rapidly growing, economically viable tourist industry in Sinai.

DESCRIPTION: A tourism strategy for Sinai is to be defined in detail within the context of Egypt's national tourism program. The overall strategy will cover six sub-strategies:

- Resource identification and protection strategy for existing and potential tourism opportunities.
- Transportation strategy to assess access to tourist resources, internal circulation within Sinai, and linkages between Sinai tourist attractions and those in central Egypt.
- Marketing strategy covering the identification and detailed study of Sinai's major target markets, strategies for dealing with wholesale tour operators, and promotional plans and programs.
- Physical development strategy based upon resource and market analyses which would define areas to be developed, outline a development program and phasing of the program, and provide guidelines for developers with diverse interests.
- Financing and construction strategy for developing a tourist plant of a scale consistent with findings of market analyses and physical development concepts.
- Management and manpower development strategy required for the operation of a large-scale tourism industry.

Although the strategy should focus on the entire Peninsula, areas experiencing development pressures should be addressed first to assist orderly development in the near term.

Tourism facilities and developments are currently being proposed by local entrepreneurs and investment companies in both North and South Sinai. Development pressures seem relatively higher in the North than in the South, requiring that physical development programs be outlined for the North early in the study. The development of beach tourism along the Mediterranean corridor between Lake Bardawil and El Arish could potentially result in immediate employment generation. Accessibility to and along the Mediterranean corridor is good, while internal circulation and linkage between existing and potential tourism resources in Sinai is relatively restricted due to road conditions and lack of supportive infrastructure.

Isolation of tourism resources from one another in the South, coordination of activities on the Gulf of Aqaba with proposals for the Gulf of Suez,

and the diversity of possible activities (culture and nature sightseeing, hiking, skin diving, etc.) will require evaluation and recommendations within the context of infrastructure, transportation and resource studies.

COST: Up to LE 1,000,000 for North Sinai and an additional amount for South Sinai.

STATUS: Preliminary TOR drafted in July; a revised scope of work and schedule will be submitted in the form of a proposal by late October 1981.

INFORMATION SOURCES: Individuals involved in the tourism industry and with government officials.

RECOMMENDED NEXT STEPS: Work statement and schedule is in preparation and should be completed expeditiously by the Consultant. A tourism planning team needs to be engaged to prepare a strategies and master plan for North Sinai and to begin studies required for extended tourism in South Sinai. Although the planning for North Sinai seems to be most urgent, a development program for tourism in the South should also be prepared as soon as possible.

REPORTERS: Clay Wescott
Donna Wirt

DATE: Revised October 11, 1981

Code No. 9 - F

Serial No. 53

INITIAL ENVIRONMENTAL EXAMINATION

PROJECT: Tourism Planning Study - Sinai

NATURAL AREA CLASS: Locations for tourism will be located in both non-sensitive and sensitive areas.

ENVIRONMENTAL CONCERNS: Types of activities promoted planned for areas located within defined sensitive zones, e.g. St. Catherine's, Ras Mohammad, etc. should carefully be considered in regard to their potential environmental impact.

MITIGATION AND ALTERNATIVES: Acceptable tourist activities should be defined for tourism planned for sensitive areas. Tourism promotion should contain public education components to inform tourists that certain areas are sensitive. This information might be relayed through hotel tours, guide books, etc.

THRESHOLD ANALYSIS: See above, Mitigation and Alternatives.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: Areas requiring significant protection should be designated in the tourism Master Plan and strategies for protecting these areas should be provided.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: EA will be required for any activity located in a sensitive to highly sensitive area.

PROJECT PRIORITY: High

CODE NO. B-E

SERIAL NO. 58

PROJECT SUMMARY

NAME: Detailed Plans for Specific Settlements

LOCATION: Sinai

TYPE: Physical Planning for existing and emerging settlements

OBJECTIVES: (1) To identify potential settlements and further the physical development of existing settlements which could, as part of a regional settlement system, serve as a support mechanism for the socio-economic development of Sinai.

(2) To plan for the general and overall development of existing settlements and new developments which will be supportive of planned agricultural and/or touristic, and/or industrial economic activities within their boundaries.

(3) To satisfy service requirements for infrastructure and housing demand of existing settlements.

DESCRIPTION: Once the economic development strategy for Sinai is defined and the aggregation of economic activities decided upon, the definition of a settlement system for the Peninsula will become clearer. At that time, detailed physical planning for settlements should commence. Physical planning efforts should be focussed upon:

(1) existing settlements like El Arish which require immediate physical planning interventions, and

(2) emerging settlements, e.g. those which will be defined by planned social and political and economic activities, which should be developed as part of regional settlement system.

Principal activities performed would be:

Existing Settlements

- Evaluation of existing conditions, e.g. land use, population and demography, employment, infrastructure, housing, and social facilities;

- Determination of major services and facilities required;

- Identification of constraints and opportunities in service provision;

- Determination of appropriate standards, costs and financial arrangements needed to provide major services and facilities to initiate early action for their provision;

- Provision of a physical development program outlining public, private, mixed public/private involvement and the definition of a development strategy for implementation;

- Definition of implementation mechanisms and professional manpower required for implementation.

Emerging Settlements

According to manpower plans for industrial, agricultural, and/or touristic development:

- Service requirements and standards would be ascertained and plans for satisfying them prepared;

- Housing demand determined and strategies for provision identified;

- Overall physical development programs would be prepared and

- Coordinating agencies and staff requirements of those agencies would be outlined.

COST: To be determined for each settlement.

STATUS: Consultant's proposal.

INFORMATION SOURCES: Professional experience

REPORTERS ASSESSMENT: Detailed physical planning for specified settlements is required to support economic and social development and to provide infrastructure in a systematic manner.

RECOMMENDED NEXT STEPS: The physical planning of settlements is contingent upon definition of the development strategy, existing population aggregations, and planned aggregations of population and economic activities. Settlements like El Arish require immediate physical planning inputs. Once the development strategy is defined, officials should decide upon a strategy for developing settlements and define a priority list, regarding which settlements are to be given immediate assistance. A TOR should then be prepared as part of Phase II. The TOR should define the requirements for master plan preparation.

REPORTER: Donna Wirt DATE: September 15, 1981

Code No. 8-F

Serial No. 58

INITIAL ENVIRONMENTAL EXAMINATION

PROJECT: Detailed Plans for Specific Sinai Settlements - Sinai

NATURAL AREA CLASS: Sensitive and Non-sensitive

ENVIRONMENTAL CONCERNS: Settlement Planning and Development includes diverse and complex environmental interfaces that can only be dealt with when plans are being produced for individual areas. The interface of non-compatible land uses, e.g. industrial residential, are major concerns routinely dealt with in the planning process.

MITIGATION AND ALTERNATIVES: Environmental planning should be a component of planning for settlements.

THRESHOLD ANALYSIS: The juxtaposition of noncomplementary land use, e.g. industrial and residential, requires careful evaluation in the planning process. Land use maps accompanied by zoning ordinances provide some control over noncompatible uses.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: Areas requiring protection and conservation will have to be identified, zoned as sensitive areas, and regulations provided to protect them.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: All projects considered in the planning of settlements should be cleared as environmentally acceptable. Proposals for projects should be accompanied by Environmental Analysis if officials suspect that their implementation will result in negative impacts.

PROJECT PRIORITY: High.

PROJECT SUMMARY

NAME: Wadi Feiran Road

LOCATION: Wadi Feiran Oasis east to border junction at St. Catherines Airport.

TYPE: Infrastructure

OBJECTIVES: Complete the Wadi Feiran road to the St. Catherines Monastery area. Completion of this road will facilitate the development of the area.

DESCRIPTION: The paving of the Wadi Feiran/St. Catherines road should be accelerated. This road represents a major artery to the development of south central Sinai. Progress is currently being made towards the completion of this road, however, it has several kilometers to be covered at this time. Every effort should be made to expedite its completion.

COST: Fully funded for current development. Increased funding would enable the road to be protected from floods by building embankments.

STATUS: Ongoing project.

INFORMATION SOURCES: Field visits.

REPORTERS' ASSESSMENT: This project is essential to the development of South Sinai.

RECOMMENDED NEXT STEPS: Every effort should be made to expedite this project. Consideration should be made now toward making this road a permanent artery, with culverts, bridges, and embankments. The current road is being built in the wadi proper and has little flood protection.

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 8-B

Serial No. 60

PROJECT: Wadi Feiran Road - Wadi Feiran

NATURAL AREA CLASS: Passes through both sensitive and non-sensitive areas.

ENVIRONMENTAL CONCERNS: Disposal of unused construction materials on the roadside in sensitive areas. There are rare and endemic plants in the sensitive area and improper disposal of materials like unused cement, barrels, or tar could destroy these plants.

MITIGATION AND ALTERNATIVES: Ensure that construction materials and refuse are not discarded and left on the side of the road.

THRESHOLD ANALYSIS: Embankments and proper drainage engineering is very important in road construction in this area of Sinai. Flood protection devices would control drainage to the road as well as prevent damage to plants along the road.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: The road passes through sensitive areas.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: An EA is not required at this point in the construction process. However, the environmental concerns regarding plant protection should be addressed.

PROJECT PRIORITY: High

PROJECT SUMMARY

NAME: Sand Dune Fixation

LOCATION: Northern and western Sinai

TYPE: Land reclamaion

OBJECTIVES: Halt the encroachment of sand dunes onto roads, irrigable lands and other potential or established land uses.

DESCRIPTION: On morphological basis, the deserts of Mongolia and Tibet in China resemble the sandy desert areas of northwest Sinai. In case certain projects (agricultural, agro-industrial, industrial, urban, etc.) are undertaken in that portion of Sinai, it will be a primary requisite to consider the problems of shifting sand.

In China, traditional methods are used for sand dune fixation (grass, scrubs and trees), but the volume of work involved reflects the huge human power and also the high cost. This may make such methods appear non-practical for Sinai.

In Sinai, a study group for this subject should be composed of:

1 - A specialist in airo-dynamics
2 - " " " plant ecology
3 - " " " geomorphology
4 - " " " chemistry
5 - " " " economics.

To this study group, consideration of the following methods of sand dune fixation should be made:

1 - Pure vegetation without irrigation
2 - " " with irrigation either by drip, sprinkler or basin
3 - Use of petroleum products and plastic sprays
4 - Use of polyethylene mesh
5 - Use of sand fences based on snow fence technology
6 - Previous work in this field should be reviewed.

COST: Estimate LE 50,000.

STATUS: Several small efforts are underway in areas of Sinai. However, a full effort to establish this technology in Sinai is needed.

INFORMATION SOURCES: Personal experience; Mongolia, Tibet, Sinai field trips.

REPORTERS ASSESSMENT: Sand dunes are continuously encroaching upon established landuses and structures, rendering them marginally useful or useless. This project would be a strong step forward in alleviating this problem.

RECOMMENDED NEXT STEPS: Experts with previous sand dune stabilization experience should be retained to review the Sinai dune systems and to consult with the study team proposed herein.

REPORTERS: Dr. A. Shata, B. Moore, N. Soliman, M. White

DATE: 5/5/81

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 8-F

Serial No. 65

PROJECT: Sand Dune Fixation - North and West Sinai

NATURAL AREA CLASS: Non-sensitive.

ENVIRONMENTAL CONCERNS: None

MITIGATION AND ALTERNATIVES: To facilitate a successful fixation of sand dunes, shrubs and perrenial grasses may be transplanted from orchards (existing or created for this purpose). Plantations would have to be monitored for three years but after this period plants would require little or no maintenance. Indigenous plants should be chosen for plantings. The following species are recommended:

1) Perennial Grasses:
   - Lasiurus hirsutus
   - Pancium turgidum
   - Poa bulbosa, Poa Sinaica
   - Stipagrostis ciliata
   - Stipagrostis plumosa

2) Trees and Shrubs:
   - Pinus halepensis - for calacreous soils
   - Tamarix aphylla - thrives well on sand dunes and with little rainfall
   - Tamarix Nilotica - desert sandy soil
   - Acacia saligna - Australian spineless tree, proved to be a good sand binder

THRESHOLD ANALYSIS: NA

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: Recommend study to ascertain appropriate approach to control sand dune encroachment.

PROJECT PRIORITY: High

CODE NO. 3-A

SERIAL NO. 66

PROJECT SUMMARY

NAME: Water Pumps

LOCATION: Nakhl

TYPE: Acquisition of pumps for two existing wells.

OBJECTIVE: To replace previously existing pumps for water for irrigation.

DESCRIPTION: Nakhl is situated in a potentially very fertile area. Wells have existed there for centuries (stopover on the Hag route). One surface well (ca. 20 m.) deep and one deep well are presently there, but due to the lack of pumps, the water cannot be produced; and water is trucked in from El Arish. Nevertheless, the local Bedouins, under Sheik Mohammed, have, on their own initiative and without external assistance, started planting almond, peaches and olives (several hundred trees) in appropriate places. The area has a high potential value as agricultural land if water, which is present in rather large quantities, can be made available with individual pumps.

COST: ca. LE 50,000

STATUS: Immediate action should be taken to purchase appropriate pumps and piping.

INFORMATION SOURCES: Visit to area. Local Bedouins and government officials.

REPORTERS' ASSESSMENT: Immediate action for this viable and promising project. The initiative taken by the locals themselves is of a very encouraging nature.

RECOMMENDED NEXT STEPS: Application to AID through appropriate ministry for funding and coordination must be carried out with the North Sinai Governorate.

REPORTERS: B. Bruun
R. Root

DATE: March 19, 1981

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 3-A

Serial No. 66

PROJECT: Water Pumps for Nakhl - North Central Sinai

NATURAL AREA CLASS: Non-sensitive.

ENVIRONMENTAL CONCERNS: Groundwater depletion

MITIGATION AND ALTERNATIVES: Ideally, it would have been best to have water pump installation preceded by drilling investigations. The pump installation is, however, an ongoing project. Citizens of Nakhl say they plan to restrict water pumped for drinking purposes.

THRESHOLD ANALYSIS: NA

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: NA

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: Before agricultural development progresses, the water source should be fully assessed.

PROJECT PRIORITY: High

CODE NO. 9-A/B

SERIAL NO. 74

PROJECT SUMMARY

NAME: Hotel and Food Service Improvements

LOCATION: St. Catherine's and El Arish

TYPE: Establish and enforce higher standards; also provide management and training programs required to maintain high standards of service.

OBJECTIVE: To provide for an immediate Sinai tourist plant of acceptable quality.

DESCRIPTION: The existing four or five small hotels in El Arish are all well below any reasonable standard of attractiveness and comfort for typical middle-class tourists. While the hotel and dining area at the airport near St. Catherine's are physically adequate, present operations also fall below an acceptable standard. Since considerable time will be required to construct new facilities, the most efficient way to add quickly visitor capacity is to improve the facilities that are already in place. Improvements would range from simple painting, cleaning, and routine maintenance to more extensive reconstruction or installation of new furniture, kitchen equipment, etc.

COST: Depends on specific conditions, but would probably entail staff and training consultants in the range of LE 10,000 - 50,000. Funding sources have not yet been explored, but might include some form of low-interest loans to the private operators of the hotels and restaurants involved.

STATUS: The Ministry of Tourism has considered complete shut-down of some of the El Arish hotels and an enforced change of operators at St. Catherine's. Presumably, less severe remedies would be more acceptable to both Government and private operators. Ideally, some form of low-cost financial assistance (or the threat of closure) could be used to encourage refurbishment of facilities. Technical assistance will be required, however, if financing is to be well used.

INFORMATION SOURCES: Personal observation; discussions with Government officials and owner/operators of local hotels and restaurants.

REPORTERS' ASSESSMENT: This is another project aimed at obtaining quick improvements in tourism capacity at relatively low cost. Properly presented, it should find acceptance in both private and public sectors.

RECOMMENDED NEXT STEPS: Initiate discussions with ACR, Sinai Governorates, and Ministry of Tourism. Hotel Management and Tourism specialists should be used to provide guidelines and recommendations for improvement of St. Catherines and El Arish facilities.

Code No. 9 - A/B

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 74

PROJECT. Hotel and Food Service Improvements - St. Catherine's and El Arish

NATURAL AREA CLASS: Highly sensitive

ENVIRONMENTAL CONCERNS: More tourist traffic and heavier usage of the area may create concerns because of the rare plants which may be abused or destroyed by hikers and sightseers.

MITIGATION AND ALTERNATIVES: An educational component may be introduced into tour routines which inform visitors about St. Catherine's environmental characteristics, plants, etc. This would be particularly important for youth groups visiting the area.

THRESHOLD ANALYSIS: NA

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: NA

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: NA

PROJECT PRIORITY: High

CODE NO. 8+9 - C+D+E

SERIAL NO. 76

PROJECT SUMMARY

NAME: Canal Crossings Organization & Management

LOCATION: Qantara, Ismailia, Suez City

TYPE: Improvements in existing transport operations through minor civil works, increased capacity of ferry boats, and streamlined administrative procedures.

OBJECTIVE: To facilitate Sinai trade and traffic by improving ferry services across the Suez Canal through a combination of extended and more reliable hours of operation, improved queueing and loading procedures, and modest changes in physical facilities. Each crossing should be studied to understand traffic requirements more clearly, and appropriate recommendations should be made.

DESCRIPTION: Vehicular ferry service across the Suez Canal is unnecessarily slow and cumbersome for tourists. A previous project summary (No. 17) was directed to the specific problems of the ramps at the Suez City military ferry. It appears, however, that ferry service at all crossings could also be improved by a combination of improved operational procedures and modest physical improvements.

COST: Not to exceed LE 25,000.

STATUS: Recommendations of the Consultant.

INFORMATION SOURCES: Personal observations.

REPORTERS' ASSESSMENT: Priority for this project depends somewhat on the completion date for the tunnel. Presumably, completion of the tunnel will relieve some of the present pressure on ferry services. This project would become very urgent if the tunnel failed to open within 4 to 6 months.

RECOMMENDED NEXT STEPS: Exploration of concept with appropriate government agencies.

REPORTERS: Ed Perkins
Bob Gatje

DATE: 3/11/81

Code No. 8 + 9
C+D+E

Serial No. 76

INITIAL ENVIRONMENTAL EXAMINATION

PROJECT: Canal Crossings
Organization and Management
Qantara, Ismailia, Suez City

NATURAL AREA CLASS: Non-sensitive.

ENVIRONMENTAL CONCERNS: None

MITIGATION AND ALTERNATIVES: NA

THRESHOLD ANALYSIS: NA

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: NA

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: NA

PROJECT PRIORITY: High

CODE NO: 9-F

SERIAL NO: 77

PROJECT SUMMARY

NAME: Visitor Facilitation Program

LOCATION: All Sinai, but especially central and south areas.

TYPE: Removing barriers to Sinai visitation.

OBJECTIVES: To review the need for official paperwork and permissions for Sinai visits and to rescind, cancel, and otherwise remove those requirements for which there is no longer a valid and important purpose.

DESCRIPTION: Official permissions and paperwork are not required of visitors who wish to travel in and through Sinai, especially in the central and south portions. These requirements impede the flow of visitors, possibly unnecessarily.

COST: Modest administrative costs only; no major investment or consultant fees.

STATUS: Recommendation by Consultant.

INFORMATION SOURCES: Personal experience of study team.

REPORTERS' ASSESSMENT: Bureaucratic procedures often outlive their usefulness. A "sunset" procedure would be very helpful in facilitating all sorts of movements of people and goods, including tourists.

RECOMMENDED NEXT STEPS: Initiate discussions of the idea with appropriate government officials.

REPORTERS: Ed Perkins
Bob Gatje

DATE: 3/11/81

Code No. 9-F

Serial No. 77

INITIAL ENVIRONMENTAL EXAMINATION

PROJECT: Visitor Facilitation Program

NATURAL AREA CLASS: Sensitive and nonsensitive.

ENVIRONMENTAL CONCERNS: NA

MITIGATION AND ALTERNATIVES: NA

THRESHOLD ANALYSIS: NA

INTERATIONS WITH AREAS OF PROTECTION AND CONSERVANCY: NA

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: NA

PROJECT PRIORITY: NA

PROJECT SUMMARY

NAME: Beach Quality Study

LOCATION: Sinai shore of Gulf of Suez and, if possible, Gulf of Aqaba.

TYPE: Onsite examination to determine the locations and characteristics of beach sites most suitable for beach-oriented tourism.

OBJECTIVE: To determine the best locations for beach tourism along the South Sinai coasts, in terms of water quality, air and water temperature, wind and wave actions, drop-off, underwater footing and other factors.

DESCRIPTION: Sinai beaches on the Gulf of Suez and Gulf of Aqaba are prime candidates for "winter sun" beach vacation complexes, serving Western European markets. Various official and unofficial suggestions have been made for developments of this type at many specific sites. Unfortunately, these suggestions seem to be based mainly on land features, rather than beach quality. Nobody seems to know which Sinai beaches would be best for touristic developments. Primary emphasis would be on ordinary beach bathing and swimming use, though the diving possibility would also be assessed.

Nominally, the investigation should be confined to shore areas currently under Egyptian control, since current projects do not include Israeli-occupied areas. However, an exception should be made in the case of this study. A realistic assessment of optimum locations for beach tourism in South Sinai cannot be made solely on the basis of the Gulf of Suez. If, as some sources indicate, resources for tourism are actually superior on the Gulf of Aqaba, it might be a serious mistake to locate sizable tourist development on the Gulf of Suez.

COST: Unknown; probably LE 10,000-30,000.

STATUS: Consultants' recommendations.

INFORMATION SOURCES: Onsite examination.

REPORTERS' ASSESSMENT: This project is an essential input to any long-range plan for tourism development in the south coast area. Until more is known about beach quality, optimum tourist development locations cannot be specified.

RECOMMENDED NEXT STEPS: Exploration of project with appropriate government agencies.

Code No. 9-B, 3-B

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 78

PROJECT: Beach Quality Study - Sinai shore of Gulf of Suez and Gulf of Aqaba

NATURAL AREA CLASS: Sensitive and non-sensitive.

ENVIRONMENTAL CONCERNS: Beach areas for tourism require high water and air quality.

MITIGATION AND ALTERNATIVES: Identification of areas which will not be close to any existing or planned industrial developments.

THRESHOLD ANALYSIS: If industries are to be developed in the vicinity of areas identified as potential tourist focal points, the radius of influence of the industries should be determined. For an example, if Abu Rudeis-Abu Zeneima is developed as an industrial complex the externalities of industrial activities and effect on beach areas should be analyzed.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: The study should identify beach areas and the potential tourist usage of those beaches. Limitations on beach usage should be defined if beaches are located within a sensitive zone.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: Dependent upon areas defined for tourist use. If beaches in sensitive zones are considered as highly desirable for tourism an EA may be required.

PROJECT PRIORITY: Deferred until decision on tourism planning is made.

CODE NO. 9-F

SERIAL NO. 81

PROJECT SUMMARY

NAME: Religious Routes

LOCATION: Various specific sites throughout Sinai.

TYPE: Archaeological/historical study.

OBJECTIVE: To identify, locate, record, and install appropriate markers on routes of religious significance.

DESCRIPTION: Routes across and within Sinai are of immense historical significance to the Moslem, Christian, and Jewish religions. If properly signed and interpreted, these routes would attract tourists, scholars, and religious pilgrims. Depending on circumstances, appropriate means of preservation would also be recommended.

COST: Range of LE 15,000 - 30,000 for study, plus additional for signing and preservation.

STATUS: Recommendation by Consultant, with some implicit support from tourism and religious officials.

INFORMATION SOURCES: Examination of historical and religious references.

REPORTERS' ASSESSMENT: Religious routes in Sinai are of importance to a relatively small number of tourists and scholars, but they could attract a sizable special-interest tourist segment to locations all around Sinai. Appropriate signing and interpretation would be of interest to general tourists as well.

RECOMMENDED NEXT STEPS: Exploration of project concept with appropriate Government officials and religious leaders.

Code No. 9 - F

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 81

PROJECT: Religious Routes - Sinai

NATURAL AREA CLASS: Sensitive

ENVIRONMENTAL CONCERNS: No problem with identifying routes. Volume of hikers touring routes once they have been identified may be a problem because of people picking rare plants.

MITIGATION AND ALTERNATIVES: Environmental concerns should be taken into consideration by tourism planners who will suggest tourist activities focussed on these areas.

THRESHOLD ANALYSIS: NA

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: If routes are in a very sensitive area maybe tourists should only be encouraged to enter with a guide. Spectacular marks such as painting of natural rocks, etc., should be avoided.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: None required.

PROJECT PRIORITY: Deferred

PROJECT SUMMARY

NAME: Tourism Market Analysis

LOCATION: Covers entire Sinai; also applicable to other portions of Egypt.

TYPE: Market Research.

OBJECTIVE: To maximize the return on financial and manpower resources invested in tourist development, a study is needed that will estimate the sizes and characteristics of present and future market sources of potential Sinai tourists.

DESCRIPTION: Market segments of primary interest include the following:

- European summer beach vacation markets
- European winter sun beach vacation markets
- Domestic Egyptian summer vacation markets
- Summer vacation markets originating in other Arab and Middle Eastern countries
- Regional cultural tourism markets originating in the United States, Western Europe, Japan, Egypt, and Israel.

The market analysis would be directed first to identifying the size, characteristics, and likely growth rates of each of these market segments; second, to estimating likely shares of each market that might be captured by facilities and services in Sinai (and, potentially, other portions of Egypt as well); and third, to assessing the mix and characteristics of facilities and services required to accommodate these various markets.

As a part of this market analysis, it would be desirable to develop a simple model for estimating future airline fares to Sinai and competitive destinations, for each major market segment. Such a model was recently developed for a study of future tourism to Hawaii (by the Consultant's principal tourism economist), and it was found very helpful in developing an understanding of future competitive conditions in tourism markets.

COST: LE 75,000 - 150,000; funding sources have not been explored.

STATUS: Recommendation by Consultant. Representatives of the Ministry of Tourism recognize the need for an update of national as well as regional market studies.

INFORMATION SOURCES: Existing tourism statistics and recent National Tourism Plan, discussions with World Tourism Organization, discussions with several leading tourism economists, and inputs from leading U.S. and European tour operators.

REPORTER'S ASSESSMENT: Virtually all tourism market analysis in Egypt is based on the data developed by Steigenberger Consultants and presented to the Government in the form of the 1978 National Tourism Plan. Unfortunately, the data predate the impact of the Camp David peace accords and recent dramatic increases in air fares.

As a result, some key conclusions in the plan appear to be obsolete. Specifically, the plan contains statements to the effect that Egypt will probably never enjoy large beach tourism markets.

By contrast, our preliminary market investigation shows some very attractive potential beach vacation markets, as least as far as Sinai is concerned. In fact, both the statistical analysis and our discussions with key tour operators indicate that these beach markets are potentially much larger and more attractive than the "cultural" markets that now form the backbone of Egypt's tourist economy.

Accordingly, it appears essential that Egypt's tourism market analysis be revised and updated. Accurate market data and analysis are required for subsequent portions of the Sinai analysis. Obviously, however, much of the market research effort required for the Sinai would apply equally well to other portions of Egypt and, in fact, to the entire country.

The Ministry of Tourism recognizes the need for an updated national tourism market analysis and plan. Accordingly, some form of joint study may well serve national as well as Sinai interests.

RECOMMENDED NEXT STEPS: Prepare a work statement for the market analysis; and update and coordinate it with concerned Government agencies.

Code No. 9 - G

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 82

PROJECT: Tourism Market Analysis - Sinai

NATURAL AREA CLASS: Analysis will consider possible usage of tourist attractions in sensitive areas.

ENVIRONMENTAL CONCERNS: Sensitive areas should not be considered highly marketable if only passive activities like photography will be appropriate.

MITIGATION AND ALTERNATIVES: NA

THRESHOLD ANALYSIS: Environmental constraints, i.e. sensitive areas, should be considered in market analysis.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: Once locations are further defined statements concerning protection and conservation can be made.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: NA

PROJECT PRIORITY: Deferred (high)

CODE NO. 8-G + 9-G

SERIAL NO. 84

PROJECT SUMMARY

NAME: Air Service Analysis

LOCATION: Major tourist centers in Sinai, plus other gateways in Egypt and in tourist-originating countries.

TYPE: Study to improve air access to tourism centers in Sinai.

OBJECTIVE: To improve air service between major Sinai airports and other points inside and outside of Egypt by identifying and implementing appropriate governmental policies and procedures.

DESCRIPTION: The study would include identification of barriers to improved air service and suggestions for overcoming these barriers. It would also entail some general recommendations for Sinai airport developments. This project should be coordinated with the Tourism Master Plan.

COST: $ 15,000

STATUS: Recommendation by Consultant.

INFORMATION SOURCES: Onsite examination; experience with tourist centers in other areas.

REPORTERS'S ASSESSMENT: It appears that air service to and within Sinai will be facilitated by a number of changes in policy and procedures. For example, several European tour operators indicated that Government policies prohibiting direct charter service from main European points prevent them from marketing Egyptian tours effectively. Simple lack of knowledge about air service prevents other operators from scheduling tour groups to the St. Catherine's area.

Some minor changes in aviation policy and procedures could significantly stimulate tourism to Sinai (and possibly to other Egyptian areas).

RECOMMENDED NEXT STEPS: Provide technical assistance to develop appropriate air service schedules in Sinai.

REPORTERS: Ed Perkins
Bob Gatje

March 10, 1981

Code No. 2 - F

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 84

PROJECT: Air Transportation Analysis - Sinai

NATURAL AREA CLASS: Possibly non-sensitive and sensitive areas.

ENVIRONMENTAL CONERNS: Noise generated by air traffic.

MITIGATION AND ALTERNATIVES: Consider environmental concerns in analysis.

THRESHOLD ANALYSIS: NA

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: To be determined.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: Should be included in analysis. No major EA is required.

PROJECT PRIORITY: Deferred

PROJECT SUMMARY

NAME: Visitor Center

LOCATION: El Arish.

TYPE: Study to identify one or more possible centers of visitor interest.

OBJECTIVE: To provide a new, local tourist focus, in the community of El Arish, that would attract visitors to the area.

DESCRIPTION: One or more centers of visitor interest would greatly increase the attractiveness of El Arish as a day or overnight stop for tourists between Egypt and Israel. Two specific suggestions have been made by the project team--some sort of visitor center or museum, to be developed in and around the abandoned railroad station, and some sort of scenic view/market/fort restoration on top of the hill in the center of town. Other ideas might be generated during the project.

COST: Study costs not to exceed LE 20,000; construction costs dependent on study results.

STATUS: Recommendation by Consultant.

INFORMATION SOURCES: Onsite examination; successful development patterns in other tourist centers.

REPORTERS' ASSESSMENT: Some form of focal point would greatly benefit El Arish. In view of the fact that two good locations have already been suggested, chances of success are high.

RECOMMENDED NEXT STEPS: Exploration with appropriate governmental agencies.

Code No. 9-A

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 85

PROJECT: Visitor Center - El Arish

NATURAL AREA CLASS: Nonsensitive

ENVIRONMENTAL CONCERNS: None

MITIGATION AND ALTERNATIVES: None

THRESHOLD ANALYSIS: NA

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: NA

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: EA Not recommended

PROJECT PRIORITY: Moderate

PROJECT SUMMARY

NAME: Power Plant Siting Study

LOCATION: Northwest Sinai

TYPE: Power Plant Siting Study

OBJECTIVES: To identify a suitable site for a new fossil-fueled power plant.

DESCRIPTION: The Egyptian Electric Authority is apparently planning to build a new 300 to 600 megawatt fossil-fueled power plant in northwest Sinai, new Ayun Musa (Springs of Moses) about 5 km south of Suez. The power plant would be designed to burn coal and natural gas. The coal sources that have been mentioned include Maghara, Ayun Musa, and Beda which is inland from Abu Zenima. Maghara may not have enough coal; at Ayun Musa the coal is at some depth,and the coal at Beda is thought to be of poor grade. The site along the Suez was selected so that local fuel could be supplemented by imported coal. Any new power plant, especially one of this size, should be carefully sited to be sure that it is located in the most economically and environmentally sound location. Therefore, it is recommended that a site selection study be conducted.

COST: To be determined.

STATUS: Consultant proposal.

INFORMATION SOURCES: Dr. Abdou Shata.

REPORTER'S ASSESSMENT: This project should be pursued because power personnel are rarely knowledgable about the interdisciplinary studies that must be done. This would be one of the biggest single projects for Sinai.

RECOMMENDED NEXT STEPS:

1 - Discuss project with Dr. Ali Abu Zeid.

2 - Identify what type of considerations and/or studies they would consider as appropriate.

3 - Build a case for proposing a multi-disciplinary study to include: meteorology, air quality, fuel and transportation economics, hydrology in terms of cooling, waste disposal and water contamination, land use and ecology. If cooling towers are used, should consider effect of cooling tower drift.

REPORTER: R. A. Post DATE:

Code No. 8 - A

INITIAL ENVIRONMENTAL EXAMINATION Serial No. 86

PROJECT: Power Plant Siting - Northwest Sinai

NATURAL AREA CLASS: Nonsensitive

ENVIRONMENTAL CONCERNS: Should not be situated too close to existing or planned settlements because of air pollution that will result from burning coal. Disposal of waste from the facility will be a problem.

MITIGATION AND ALTERNATIVES: Some of the ash generated by burning coal may be used as a basic material for road construction.

THRESHOLD ANALYSIS: Future power requirements for Sinai may better be solved by another type of facility which does not require coal. However, because coal is a local source of energy there are of course economic advantages to using it.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: NA

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: Environmental Analysis is a prerequisite to siting the facility.

PROJECT PRIORITY: High

PROJECT SUMMARY

NAME: Fishing Pier

LOCATION: El Arish

TYPE: Construction

OBJECTIVES: Provide safe, efficient docking, loading facilities for coastal fishing and light freighter ships at El Arish.

DESCRIPTION: El Arish is somewhat isolated from Egypt proper in that it is located in the extreme northeast corner of Sinai. All roads leading to El Arish are in relatively poor condition, albeit several are being upgraded. A docking pier at El Arish would allow light material and supply freighters as well as an enhanced fishing fleet to operate from El Arish. This project could provide a sorely needed shipping infrastructure to this area of Sinai.

COST: Undetermined at this time. Rough guestimate $ $10 million, based on Dames & Moore's previous experience.

STATUS: This project is in the conceptual stage. The Governor of North Sinai has indicated he has a report providing the necessary wave and current action data along with coring data. This report has been requested.

INFORMATION SOURCES: Governor of North Sinai, field visit, and Dames & Moore's previous experience.

REPORTERS' ASSESSMENT: This project would be consistent with improving fishing yield, helping the food security program, and developing an economic base for El Arish area. This project would also be a first step in improving the efficiency of the fishing operations. Its impact would enhance life within the entire northern Sinai governorate.

RECOMMENDED NEXT STEPS: A prefeasibility study should be performed. All military or other government data regarding the El Arish coastal currents, waves, soils, and geology should be obtained. Additional data necessary for designing a pier facility should be obtained. This project is considered to be high impact and should commence immediately.

Code No. 8 - A

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 87

PROJECT: Fishing Pier - El Arish

NATURAL AREA CLASS: Nonsensitive

ENVIRONMENTAL CONCERNS: The location of the pier should be carefully chosen so that no rare, threatened, or special plant communities would be affected by construction.

MITIGATION AND ALTERNATIVES: Proper siting of pier

THRESHOLD ANALYSIS: This project is highly desirable to fishermen in El Arish as well as to local officials

INTERACTION WITH AREAS OF PROTECTIONAND CONSERVANCY: NA

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: EA should be a part of siting the pier

PROJECT PRIORITY: High

PROJECT SUMMARY

NAME: Central Sinai Road

LOCATION: El Arish - Bir Gifgafa - Ismailia

TYPE: Infrastructure

OBJECTIVES: Improve the existing road to accommodate increased traffic and load capacities. Facilitate transportation and shipping between Egypt proper and northeast and north central Sinai.

DESCRIPTION: There is an existing highway between El Arish and Ismailia, via Bir Gifgafa and Khatmia Pass, however, this road is inadequate for extensive use as a major transportation and shipping artery. To improve this road, asphalting along several major stretches will have to be improved, sand and flood embankments should be estalished and bridges and culverts should be installed.

COST: Undetermined.

STATUS: Project requested by North Sinai Governor; Consultant recommended.

INFORMATION SOURCES: North Sinai Governor; field visits.

RECOMMENDED NEXT STEP: Perform prefeasibility analysis and identify alternatives for road improvement.

REPORTERS: M. White
B. Moore

DATE: 5/5/81

Code No. 8 - A

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 88

PROJECT: Central Sinai Road - El Arish, Gifgafa, and Ismailia

NATURAL AREA CLASS: Nonsensitive

ENVIRONMENTAL CONCERNS: None

MITIGATION AND ALTERNATIVES: NA

THRESHOLD ANALYSIS: NA

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: None

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: EA not required

PROJECT PRIORITY: Deferred (moderate)

CODE NO. 3-A

SERIAL NO. 89

PROJECT SUMMARY

NAME: Fresh Water Pipeline - North Coast

LOCATION: Bir Al Abd/El Arish

TYPE: Construction

OBJECTIVES: Provide additional drinking water supply to El Arish.

DESCRIPTION: Arish area is dependent on underground water from wells for the purpose of drinking and agriculture. The amount of discharge from the wells has approached the critical limit, and the salinity of the water supply is increasing. Along with the currently proposed efforts drilling of extra wells, the pipeline will help improve the living conditions across the north coast and help in saving the groundwater needed for agricultural land.

COST: Undetermined

INFORMATION SOURCE: All sector studies plus the request from the North Sinai governor.

REPORTER'S ASSESSMENT: Project is essential for sustained development along the north coast.

RECOMMENDED NEXT STEPS: Accelerate installation of pipeline between Qantara and Bir El Abd and the canal crossing.

REPORTER: Eng. Salah Amer

DATE: May 10, 1981

Code No. 3 - A

Serial No. 89

INITIAL ENVIRONMENTAL EXAMINATION

PROJECT: Fresh Water Pipeline - North Coast

NATURAL AREA CLASS: Nonsensitive

ENVIRONMENTAL CONCERNS: None

MITIGATION AND ALTERNATIVES: NA

THRESHOLD ANALYSIS: NA

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: NA

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: Not required

PROJECT PRIORITY: High

PROJECT SUMMARY

NAME: Sample Survey (Census)

LOCATION: Nile Delta Sinai People

TYPE: Demographic Profile Data Acquisition

OBJECTIVES: To obtain accurate information about the proportion and characteristics of Sinai expatriates who want to return to Sinai, the contributions they can make to development projects, the needs and requirements for resettling them in the area and readjusting them to the current situation and future development plans.

DESCRIPTION: The sample should be based on approximately 2,000 families selected to represent the Sinai people currently located in the Nile Delta and Valley. The data would be collected via scheduled interviews, over about 6 months. The research team should consist of sociologists, field supervisors and interviewers.

COST: LE 35,000

STATUS: Consultant defined.

INFORMATION SOURCES: Current project study.

REPORTERS' ASSESSMENT: Such a project will enable a much clearer understanding of potential capabilities and problems to be understood prior to any attempt at a resettlement program.

RECOMMENDED NEXT STEPS: This project should be funded as soon as possible.

REPORTERS: Dr. S. Gadalla
M. White

DATE: 5/5/81

INIT ENVIRONMENTAL EXAMINATION

Code No. 7 - F

Serial No. 90

PROJECT: Sample Survey (Census) -
Nile Delta Sinai People

NATURAL AREA CLASS: NA

ENVIRONMENTAL CONCERNS: NA

MITIGATION AND ALTERNATIVES: NA

THRESHOLD ANALYSIS: NA

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: NA

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: None required

PROJECT PRIORITY: Moderate

PROJECT SUMMARY

NAME: Sample Survey

LOCATION: Sinai

TYPE: Demographic profile data acquisition

OBJECTIVES: 1 - To obtain accurate information about the Sinai inhabitants' socioeconomic and demographic characteristics, their needs and expectations, their attitudes and aspirations, their capabilities to mobilize and utilize developmental plans, their potential contributions to developmental projects, and their outlook toward the future of Sinai.

2 - To obtain accurate information about the Sinai communities' composition and characteristics, their social organizations and institutions, their traditions and values, and their social, cultural and economic evolution with emphasis on their conditions prior to, during and after the Israeli occupation.

DESCRIPTION: This study will be based on 1,000 families representing three different community types in Sinai as follows:

- 600 families from 3 urban and semi-urban commjnities
- 300 families from 6 agricultural settled communities
- 100 families from 5-10 semi-nomadic settlements and nomadic groups.

This project would be carried out via scheduled interviews and in-depth community studies, systematic observations, unstructured interviews with key informants and case histories for all communities in the sample. It is anticipated that this effort should take about 6 months.

COST: LE 45,000

STATUS: Consultant defined.

INFORMATION SOURCES: Current project study.

REPORTERS' ASSESSMENT: Such a project will enable a much clearer understanding of potential capabilities and problems to be understood prior to any attempt at a resettlement program.

RECOMMENDED NEXT STEP: Funding should be obtained for this study.

REPORTERS: Dr. S. Gadalla
M. White

DATE: 5/5/81

Code No. 7 - F

Serial No. 91

INITIAL ENVIRONMENTAL EXAMINATION

PROJECT: Sample Survey (census) - Sinai

NATURAL AREA CLASS: Sensitive and nonsensitive

ENVIRONMENTAL CONCERNS: NA

MITIGATION AND ALTERNATIVES: NA

THRESHOLD ANALYSIS: NA

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: NA

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: None required

PROJECT PRIORITY: Moderate

PROJECT SUMMARY

NAME: Drip Irrigation Spare Parts

LOCATION: El Arish

TYPE: Agricultural infrastructure

OBJECTIVE: Maintain yields in the present area, approximately 500 feddans of drip-irrigated vegetables near El Arish.

DESCRIPTION: The existing drip irrigation systems in the El Arish area are mostly pre-1979. The useful life of this equipment is 4-5 years, and much of it is imported only for specific, previously approved projects. A small farmer is effectively barred from obtaining off-the-shelf replacement equipment. To avoid the deterioration of production, which a lack of spare parts brings, the Principal Bank of Development and Agricultural Credit (PBDAC) in El Arish should create a stock of spare parts for drip irrigation equipment, sold to farmers on a cash basis and periodically replaced. Nationally produced parts of adequate quality should be introduced whenever available, but creation of a spare parts stock should not be made contingent on the establishment of a national manufacturer.

COST: Approximately LE 100,000 (replacement parts for 100 feddans). It is possible to start with a smaller stock.

INFORMATION SOURCES: Spare parts requirements - from the Green Revolution Society, El Arish.

REPORTER'S ASSESSMENT: This project is necessary for maintaining existing production levels in El Arish and will become progressively more urgent.

RECOMMENDED NEXT STEPS:

- Obtain PBDAC support for the project;
- Obtain from the Green Revolution Society appropriate quantities and specifications for a stock of main lines, branch lines, emitters, filters (self-cleaning type), valves and other necessary equipment; and
- Secure a PBDAC budget allocation and make orders for import or local purchases as appropriate.

Code No. 5 - A

Serial No. 92

INITIAL ENVIRONMENTAL EXAMINATION

PROJECT: Drip Irrigation Spare Parts - El Arish

NATURAL AREA CLASS: Nonsensitive

ENVIRONMENTAL CONCERNS: None

MITIGATION AND ALTERNATIVES: NA

THRESHOLD ANALYSIS: NA

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: NA

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: None required

PROJECT PRIORITY: High

PROJECT SUMMARY

NAME: Commercial Poultry Production (Eggs)

LOCATION: About 3 kilometers southeast of El Arish

TYPE: Livestock activity on small-scale industrial basis

OBJECTIVES:

1 - Increase local food self-sufficiency by local supply of eggs and meat

2 - Assist in development of Sinai

DESCRIPTION: Most of the meat, milk and eggs needed by the population of El Arish is transported from the Nile Valley. With plans to develop the North Coastal zone of Sinai as a tourist area as soon as possible, the Governor of North Sinai has put high priority on developing agriculture as a whole. Much of this expansion of activity in the area depends on development of a plentiful and reliable source of water for irrigation as well as human and animal consumption.

The construction of a modern poultry farm on a commercial basis can be accomplished in a rather short period and can be based on feed transported from the Nile Valley, furnishing both fresh eggs and meat. A lack of local feed grains is not necessarily a restraint for an economical poultry business, especially when a feed manufacturing plant is not locally established. There are several feed plants in Cairo and Ismailia, which can mix the desired mixtures at a price that is equitable to the costs put on by a plant at El Arish when one considers the costs of establishing the plant, cost of tranporting the raw ingredients from the Nile Valley, etc. Therefore, lack of locally available feed is not a major constraint for a mondern poultry plant, as it is for a modern dairy/beef operation because of the differences in the types of feed required. The plant will be climate-controlled, consequently, the impact of the Sinai climate will be minimal.

A rough estimate of the number of eggs required at El Arish is in the neighborhood of 11 million per year (40,000 inhabitants x 3 eggs/person/week). Allowing for some immediate expansion due to possible tourism, the project is planned to produce 15 million eggs per year. Such a plant will also produce around 60,000 hens per year for slaughter, therby greatly increasing the local meat supply.

To meet the above estimated needs, a house for growing chicks from one-day-old to 18-weeks and three trap-nest laying houses will be required. The reception house for growing chicks will be pre-fabricated: 87.3 m long, 11.3 m wide, and 3.2 m in height. (The floor area is 987m^2.) The house will comprise four rows of batteries (length of 80.5 m), which contain 3840 cages (50 x 42 cm). Each cage will accommodate 6-7 chicks, allowing 322 cm^2 per chick plus 7.7 cm for feeding. Accordingly, the capacity of the rearing house will be 25,000 chicks. The house will be fixed with a feeding tower and ventilating fans (speed of 30,000 cu. m/hour) plus warming system of 20,000 kilo-calories/hour.

The three laying houses will be 84.3 m long and 12.3 m wide. Each house will contain five rows of batteries, each of three floors and a length of 77 m. The total number of cages will be 4500 (50 cm x 42 cm each), each accommodating 5 birds with a floor allowance of 420 cm^2, plus 10 cm for feeding for each bird. Each house will contain 22,500 birds, equipped with a feeding tower and ventilation system (348,000 cu. m/hour). The productive cycle will be as follows:

Stage	Rearing Phase	Productive Phase
Rearing period (chicks)	18 (weeks)	4 (weeks)
Production period (hens)	-	58 "
Cleaning	4 "	4 "
TOTAL	22 "	66 "

Thus, the ratio between the rearing and production phases is 1:3, the same ratio as between the number of houses for growing and egg production (1:3). The project will be supplemented with other installation and equipment as follows:

1 - Center for grading and storage of eggs,
2 - Buildings for administration,
3 - Fences and roads,
4 - Water tower,
5 - Means of transport and
6 - Transformer and generator.

COST: The costs and production estimates are as follows:

TABLE 1 - Capital Investment

Item	Cost (LE)
Poultry houses, grading and storage buildings and equipment	840,000
Administration building	50,000
Fences and roads	50,000
Water tower and surface well	30,000
Transformer	15,000
Generator building	25,000
Means of transport (pickup, cars, etc.)	40,000
Costs for installation and labor	90,000
TOTAL	1,140,000

TABLE 2 - Feed Requirements and Costs

	Quantity - Tons	Price/Ton (LE)	Total (LE)
Food for rearing	1,000	180	180,000
Food for production	2,400	170	408,000
TOTAL			588,000

Notes: 1 - Consumption/bird is about 16 kg and from 30-35 kg during the rearing and production periods, respectively.

2 - Figures of consumption were adjusted for mortality rates.

2 - Distance from El Arish to the Nile Valley was put into consideration in the evaluation of food price.

TABLE 3 - The Expected Inputs and Outputs

Input			Output	
Item	LE		Item	LE
Chicks	75,000		15 million eggs @ 6.5 pt each	975,000
Food	588,000		60 thousand hens @ 1.5 LE each	90,000
Vet. Costs	15,000		Manure	30,000
Wages	25,000			
Maintenance	10,000			
Electricity/Water	20,000			
Miscellaneous expenses[a]	50,000			
Depreciation[b]	20,000	(about)		
Capital interest[c]	65,700			
Total	868,700			1,095,000
Profit	225,300			
	1,095,000			1,095,000

[a] Includes egg trays, fuel & oil, marketing expenses and spare parts.

[b] 5% for buildings
4% for fences & roads.
10% water & electricity equipment
20% transportation

[c] Interest at 6%.

STATUS: The governorate of North Sinai has indicated a strong interest in an industrialized poultry unit at El Arish and has completed the buildings for housing about 5,000 hens per year. Plans for expanding this operation are under consideration. Private enterprises have indicated an interest in such

poultry operations in Sinai.

INFORMATION SOURCES: Cost information and tenders from foreign companies were made available through the Nile Agricultural Development Company (NADCO); personal communication with Poultry Department staff members of Ain Shams University; Governorate of North Sinai; Desert Institute; and personal visits to El Arish by the reporters.

REPORTERS' ASSESSMENT: On the basis of preliminary observations and calculations, the project appears economically feasible. The buildings recently completed will furnish part of the requirements for an enlarged operation but may require modification. Poultry projects of this nature are not labor intensive, however, they require a manager and 10-12 laborers.

RECOMMENDED NEXT STEPS: Discussion with Governorate of North Sinai to determine their overall objectives for increased poultry production at El Arish and to determine whether the proposed project would meet the requirements of a growing tourist industry. If the discussions are positive, the governorate could entertain discussions with commercial poultry enterprises in Cairo.

REPORTERS: A. A. Younis
R. S. Temple

DATE: June 15, 1981

Code No. 5 - A

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 93

PROJECT: Commercial Poultry Production - About 3 kilometers southeast of El Arish

NATURAL AREA CLASS: Nonsensitive

ENVIRONMENTAL CONCERNS: None

MITIGATION AND ALTERNATIVES: NA

THRESHOLD ANALYSIS: NA

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: NA

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: NA

PROJECT PRIORITY: High

PROJECT SUMMARY

NAME: Fresh Water Pipeline

LOCATION: From Suez to Abu Rudeis

TYPE: Basic Infrastructure Facility

DESCRIPTION: South Sinai communities receive domestic water supplies from wells, tank trucks, pipelines, and ship. According to the Dames & Moore infrastructure survey, much of well water is brackish and unsuitable for human consumption. Many of the fresh water wells deliver groundwater via public faucet (standpipe). At present, water is transported by truck from El Shatt to Ras Sudr at a cost of LE 3.25 per cubic meter. Water is piped from Suez to El Shatt. In addition to well water, St. Catherine is also supplied water via the Bir Zeitura-Bir Haron pipeline. Abu Rudeis and Abu Zenima receive potable water by ship at a cost of LE 8 per cubic meter (Dames & Moore Settlement Survey). El Tor has a limited quantity of fresh water from local wells, at a depth of 80-150 meters. Additionally, El Tor receives about 4 cubic meters of water per day via truck.

This project proposes to solve the acute water supply problem in the communities of Ras Sudr, Abu Zenima and Abu Rudeis by constructing a pipeline from Suez to Abu Rudeis through the Ahmed Hamdi Tunnel, a distance of about 170 kilometers. The ministry of Development, Sinai Development Authority, and the South Sinai Governor support transporting Nile River water via pipeline through the tunnel.

COST: The reported cost of the pipeline ranges from LE 12 million to LE 15 million. According to unit costs reported by Culpin & Partners in the Ismailia Demonstration Projects work, an 18-inch (457 mm) line is estimated at about LE 50,000 per kilometer. Therefore, an 18-inch line running 170 kilometers would be about LE 8.5 million. This estimate excludes any extra amount for siphons (required for tunneling) and for lifting/pumping due to change in elevation. A more detailed engineering estimate should be costed out during the next investigative effort.

STATUS: Recommended action.

INFORMATION SOURCES: Interview with Fouad Aziz Ghali, Governor of South Sinai, as reported in Settlement Survey Working Paper. Also from interview with Dr. Ali Abu Zeid, Director of Sinai Development Authority.

REPORTERS' ASSESSMENT: Existing sources of water supplies are not adequate for basic infrastructure requirements of current economic and social needs, let alone any consideration of future needs. If economic development is to occur and population is to increase in South Sinai, future water supplies must be dependable and good quality. There should be an engineering cost study to carefully compare this option vis-a-vis the cost of tapping groundwater locally to provide adequate future water supplies for anticipated development. This would involve an assessment of local groundwater quantity and quality, based on the anticipated results of the groundwater analysis for Sinai under Phase I. The question is not whether good, dependent water is needed. Rather, the question is what is the most cost efficient means of providing the requisite water for future development in South Sinai.

RECOMMENDED NEXT STEPS: Two actions are recommended:

(1) Following completion of the forthcoming assessment of groundwater in Sinai under Phase I, a detailed evaluation of the groundwater potential for specific community areas along the west coast should be performed. Such an assessment of locally available groundwater quantity and quality can be effective only in conjunction with the proposed exploratory drilling program.

(2) A thorough cost analysis should be conducted to determine the most cost effective method of delivering good quality, dependable water supplies to the South Sinai communities of Ras Sudr, Abu Zenima, and Abu Rudeis.

One these two actions are accomplished, a construction program to deliver, over the long term,water to South Sinai can be implemented.

REPORTERS: Jan Henley
Andy Mills

DATE: August 22, 1981

Code No. 8 - B

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 98

PROJECT: South Sinai Fresh Water Pipeline - Suez to Abu Rudeis

NATURAL AREA CLASS: Nonsensitive

ENVIRONMENTAL CONCERNS: None, water pipeline will go through Ahmed Hamdi tunnel

MITIGATION AND ALTERNATIVES: Alternatives to pipeline construction are reliance on well water (if enough is available) or desalination

THRESHOLD ANALYSIS: NA

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: NA

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: EA should be included in prefeasibility analysis

PROJECT PRIORITY: High

PROJECT SUMMARY

NAME: Aqaba Coast Tourist Facility Transition

LOCATION: South Sinai

TYPE: Procedure designed to maintain an existing tourist plant in good condition..

OBJECTIVE: To initiate procedures for orderly transition of existing tourist facilities along the Gulf of Aqaba coast from Israeli to Egyptian control.

DESCRIPTION: Tourism centers at Nuweiba/Neviot, Dahab, and Sharm-el-Sheikh/Na'ama have been developed by Israeli. There are presently about 300 hotel rooms plus associated restaurants, diving shops, and other tourist businesses. Also, the excellent Israeli combined military/civilian Ophir Airport will be essential to the large-scale tourism development of South Sinai. The reception facilities at the Ophir Airport may require expansion.

At present, Israeli operators have stopped any major construction or maintenance of their facilities, which are deteriorating. Also, traditional visitors are concerned about whether or not they will be able to return. Some sort of program to maintain resources and market continuity will help preserve the existing plant as a basis for future tourism growth. If possible, incentives to retain some Isareli management during a transition period should be explored.

COST: Unknown, but comparatively small.

STATUS: Suggestion by study team.

INFORMATION SOURCES: Onsite examination and interviews.

REPORTERS' ASSESSMENT: An unplanned transition will lose, rather than gain, vitally needed tourism superstructure. Maintenance of market continuity will assure a modest beach tourism market base to support additional large-scale development. A little planning should provide large dividends.

RECOMMENDED NEXT STEPS: Investigate the concept with the concerned ministries and South Sinai Governorate.

Code No. 9 - B

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 106

PROJECT: Tourist Facility Transition - Aqaba Coast

NATURAL AREA CLASS: Sensitive and highly sensitive

ENVIRONMENTAL CONCERNS: Conservation of animals and plants and appropriate tourist activities along the beaches should be defined in order to protect degradation of the coastal area.

MITIGATION AND ALTERNATIVES: The measures taken to protect plants and animals should be maintained. Trained environmental analysis may be associated with existing and planned centers of tourism. A program of maintenance of beach areas and facilities should be undertaken before expansion of tourism occurs.

THRESHOLD ANALYSIS: The entire coastal area of the Gulf of Aqaba has been classified as sensitive or highly sensitive. Types of tourist activities appropriate to such an area should be carefully scrutinized.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: High interaction with areas of protection and conservation. Conservation and protection should therefore be a part of any tourism programme for the area.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: Dependent upon types of projects proposed. All projects should be screened for negative impact and those suspected as resulting in negative impacts will require an EA.

PROJECT PRIORITY: Deferred until tourism planning is decided upon and transition strategy is defined.

CODE NO. 9-A & B

SERIAL NO. 107

PROJECT SUMMARY

NAME: Tourism Manpower Development

LOCATION: All Sinai

OBJECTIVE: To assure that adequate management, skilled labor, and ordinary labor are available to staff-proposed Sinai tourism centers.

DESCRIPTION: With an aggressive development strategy, total number of tourist visitor-days in Sinai could approach as much as double Egypt's current number of tourist visitor-days from the western countries. Specific projections call for as many as 14,000 direct hospitality industry jobs by 1990.

Successful competition for the beach tourism markets that will provide the majority of these new jobs will require a very high standard of management and operation. This requirement, in turn, means that there will be a demand for large numbers of specially-trained personnel.

The Egyptian Government presently operates a vocational training program for the hospitality industry. The existing facility, however, is taxed to capacity in meeting existing manpower needs. Meeting the additional needs generated by Sinai tourism will probably require significant expansion of the vocational training program.

In view of the localized needs, some consideration should be given to the establishment of a branch vocational training facility somewhere in Sinai

COST: Unknown

STATUS: Recommendation by consultant

INFORMATION SOURCES: On-site investigations and discussions

REPORTER'S ASSESSMENT: Manpower development will be a very important element of any successful tourism strategy for Sinai. Present vocational training programs can barely keep pace with existing needs.

This problem may not yet be recognized by those in charge of hospitality industry training. The Sinai Development Study, Phase I, is perhaps the first study to indicate a very large potential Sinai tourism market. At present, most Ministry of Tourism officials seem to be thinking at a much smaller level.

RECOMMENDED NEXT STEPS: Manpower development elements should be made a part of any ongoing strategic planning for tourism. In addition, some early discussions with institutions responsible for vocational training should be initiated.

CODE NO. 9-A & B

SERIAL NO. 107

INITIAL ENVIRONMENTAL EXAMINATION

PROJECT: Tourism Manpower Development

NATURAL AREA CLASS: Non-sensitive and sensitive.

ENVIRONMENTAL CONCERNS: Tourism management and staff should be aware of potential concerns related to the location of tourist facilities in sensitive areas.

MITIGATION AND ALTERNATIVES: Because some tourist activities and facilities are located in sensitive areas, management and staff should be trained to provide information regarding protection of these areas to tourists.

THRESHOLD ANALYSIS: NA

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: NA

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: None required.

PROJECT PRIORITY: Deferred/moderate - dependent upon tourism planning.

PROJECT SUMMARY

NAME: Palm Grove Regulations

LOCATION: El Arish

TYPE: Regulatory/Administrative

OBJECTIVES: Develop zoning regulations for appropriate structures and uses of the palm groves of the northern Sinai coast.

DESCRIPTION: Several tentative regulatory concepts have been cited as being appropriate for application to the palm groves around El Arish and the north coast of Sinai.

1 - Palm trees are not only the property of the farmer who harvests their dates but also a part of the public, visual wealth of North Sinai. No one has a right to destroy or endanger the continued growth of a palm tree. No one should build any foundation wall closer than 2 meters to the centerline of a palm. Within any given area of building lot, no more than 1 palm out of 10 may be disturbed and that palm must be moved and replanted in such a professional manner as will give it better than a 50% chance of survival.

2 - The right to build within the palm grove is not a universal right. It is a privilege and that privilege is granted only to those willing to abide by certain rules in return. The purpose of the rules is gradually to improve the appearance of the area under the palms to the benefit of those who live there and those who just walk through.

a - No roads are to be built in the grove. Except for emergency service, no vehicles should be driven in the grove. Vehicles should be parked at the edge of the nearest road and service should be on foot or by cart.

b - Except for buildings and private gardens equal to the ground floor area of adjacent buildings, no one shall erect any obstacle, physical or visual, which obstructs public access to the sea.

c - At the time of filing building plans for approval (and this shall be required for all buildings in the grove), the owner shall estimate the time required for construction. If approved, along with plans showing the location of all existing palms, this schedule must be met. No building may be occupied until it is complete, and "completion" shall include its physical appearance as well as those services necessary to health and welfare. The sole judge of completion shall be competent building authorities appointed by the Governor, and they shall issue a "Certificate of Occupancy," after the building is complete and its grounds have been cleared of all building refuse and rendered clean. If a "C of O" has not been issued within 6 months of the time scheduled in the original application for a building permit, the Government shall condemn the

property, take it over at a fair market rate of value, and either destroy the building at the owner's expense or complete it for sale to others.

3 - The grounds under the palms belong to the public and may not be used for private storage. They must be kept clean at the expense of the nearest owner.

4 - Buildings under the palms shall not exceed two (2) stories in height. No projection in excess of 8 meters from legal grade shall be permitted.

5 - No overhead electrical lines shall be permitted in new or altered construction under the palms. All service shall be run concealed below ground.

These statements may be used to stimulate discussion and hopefully lead to the development, implementation and enforcement of adequate zoning laws for the beautiful palm grove beaches of the northern Sinai coast.

COST: Undetermined - but very low.

STATUS: Consultant recommended - discussed with Governor of North Sinai.

INFORMATION SOURCES: Field visits.

REPORTERS' ASSESSMENT: To ensure that the palm grove will remain free of improper edifices and development; zoning regulations are urgently needed.

RECOMMENDED NEXT STEPS: Work with North Sinai Governor and planning staff to develop draft zoning regulations. Have appropriate referees submit draft regulations for endorsement into law.

REPORTERS: R. Gatje
M. White

DATE: 5/7/81

Code No. 9 - B

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 110

PROJECT: Palm Grove Regulations - North Coast Sinai

NATURAL AREA CLASS: Sensitive and nonsensitive

ENVIRONMENTAL CONCERNS: Destruction of palm groves

MITIGATION AND ALTERNATIVES: Regulations directed at protecting palms. Regulations should be directed at: 1) builders constructing private and public facilities adjacent to palm areas, and 2) tourists using beaches. Builders should be restricted from dumping unused or discarded construction materials in palm areas and forbidden to remove palms from construction sites. Tourists should not be allowed to climb trees or set up campsites which would result in destruction of groves.

THRESHOLD ANALYSIS: Over-regulation could result in setting off a land use issue with private builders and Bedouins who own most of the trees. The alternative or complementary action to regulation may be a public information campaign to protect palm groves. Organizations like the Green Revolution Society and/or the Youth Clubs of the Democratic Party could be very instrumental in guaranteeing success of a conservation program.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: Project proposes protection and conservation

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: None required

PROJECT PRIORITY: Deferred until specific areas for tourism are more clearly defined. Discussions with the organizations mentioned above regarding a public information campaign to protect the palms should be initiated immediately.

PROJECT SUMMARY

NAME: Regional Minerals Exploration

LOCATION: All Sinai

TYPE: Exploration

OBJECTIVES: Implement a program to rapidly locate, test, and develop undiscovered mineral deposits in Sinai.

DESCRIPTION: Over twenty different mineral deposits of potential economic significance are known to occur in Sinai. Major regions of Sinai have yet to be explored at the reconnaissance level for their minerals potential. Nor has thorough exploration for undiscovered mineral deposits, using contemporary, sophisticated methods and concepts, been undertaken. Achieving the foregoing exploration tasks will greatly accelerate mineral production and industrialization in Sinai.

COST: Estimate $2.5 million

STATUS: Full exploration proposal is being developed.

INFORMATION SOURCES: Egyptian Geological Survey, mining companies, field visits, interviews with locals.

REPORTERS' ASSESSMENT: This project represents a long-term goal, which will have a major impact on the development of Sinai.

RECOMMENDED NEXT STEPS: Review scope of work prepared by Dames & Moore and take appropriate action.

REPORTERS: E. Phariss
M. White

DATE: 5/5/81

Code No. 4-F

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 115

PROJECT: Regional Mineral Exploration - Sinai

NATURAL AREA CLASS: Both sensitive and Non-sensitive

ENVIRONMENTAL CONCERNS: This is an exploratory survey and should not have any detrimental effects

MITIGATION AND ALTERNATIVES: NA

THRESHOLD ANALYSIS: NA

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: Interaction in sensitive areas.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: Environmental analysis for areas within sensitive areas may be recommended by the exploration survey if extraction potential is identified.

PROJECT PRIORITY: Deferred until development strategy is further defined.

CODE NO: 1-A

SERIAL NO: 116

PROJECT SUMMARY

NAME: Fishing Vessels with Sonar

LOCATION: El Arish coastal waters

TYPE: Fishing

OBJECTIVES: Provide fishing fleet for El Arish

DESCRIPTIONS: Because of the inaccessibility of the North Sinai waters for fishing during the last 10 years, it is expected that sizable fish schools have developed along the coastal waters of North Sinai. A fleet of 5 sonar equipped fishing vessels has been recommended as being of appropriate size to effectively harvest this resource on a long-term balanced basis.

COST: Undetermined

STATUS: Requested by Governor of North Sinai, recommended by Japanese fishing industry experts.

INFORMATION SOURCES: Governor of North Sinai

REPORTER'S ASSESSMENT: This project would fit nicely with the shipping and docking wharf proposed for El Arish.

RECOMMENDED NEXT STEPS: Identify appropriate fishing vessels, funding sources, perform prefeasibility study.

REPORTER: M. White

DATE: 5/5/81

Code No. 1 - A

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 116

PROJECT: Fishing Vessels with Sonar - El Arish Coastal Waters

NATURAL AREA CLASS: Nonsensitive

ENVIRONMENTAL CONCERNS: Increased fishing with sonar devices may deplete fish supply.

MITIGATION AND ALTERNATIVES: Characteristics of the fish population should be determined, i.e. number of fish available by season and migration pattern of fish.

THRESHOLD ANALYSIS: Before sonar-equipped vessels are purchased, a sonar-equipped vessel should be tested in the off-shore areas of El Arish.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: No interaction if boats stay clear of Lake Bardawil coast.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: EA may not be appropriate here but the viability of purchasing the vessels and their impact on fishery certainly needs to be determined.

PROJECT PRIORITY: Deferred

PROJECT SUMMARY

NAME: Aerial Survey Mapping of North Coast and Southwest Coast

LOCATION: North Coast and Coast of Suez

TYPE: Data acquisition

OBJECTIVES: Obtain high quality, high resolution aerial mapping photography of Mediterranean coast and Gulf of Suez coast for use in physical plans and beach inventories.

DESCRIPTION: Recent high resolution aerial photographs are needed to assist the planning efforts and the beach inventory project. The scale of this imagery should be between 1:15,840 and 1:8,000. Normal color aerial photographs on a 9-inch format film will be required, with negatives, two print copies, and an aerial index mosaic. The aerial photographs should be acquired stereoscopically with 60% endlap and 30% sidelap. Aerial distortion due to plane skew and yaw. Should be less than 10% in any direction. Coverage should include the full coastline and 18 kilometers inland. The photographs should be acquired under cloud free conditions. All imagery should be turned over to the consultant for free use and interpretation.

COST: Undetermined

STATUS: Consultant's request

INFORMATION SOURCES: Field visits

REPORTER'S ASSESSMENT: The lack of high quality, available, recent aerial photographs has been a considerable hindrance to the current study. It will become critical for the tourism, physical plans, infrastructure and other development projects later in the study.

RECOMMENDED NEXT STEPS: Prepare terms of reference. Select contractor.

REPORTER: M. White DATE: 5/7/81

Code No. 2-F

INITIAL ENVIRONMENTAL EXAMINATION Serial No. 120

PROJECT: Aerial Survey Mapping of North Coast and Southwest Coast

NATURAL AREA CLASS: Sensitive and Nonsensitive

ENVIRONMENTAL CONCERNS: None

MITIGATION AND ALTERNATIVES: NA

THRESHOLD ANALYSIS: NA

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: NA

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: NA

PROJECT PRIORITY: Deferred until further definition of the development Strategy

Project Summary

NAME: Sewerage Treatment Assessment

LOCATION: El Arish

TYPE: Construction and implementation of waste water (sewage) treatment system.

OBJECTIVES: To plan, design, construct, and operate/maintain a municipal waste water treatment system in El Arish.

DESCRIPTION: El Arish is a large urban area in North Sinai. Approximately 60,000 people live in this unsewered community. Presently, sewage disposal is achieved by a combination of septic tanks (individual and collective), compost privy, pit latrine, and bucket latrine.

The bucket latrine is the most primitive system. Excreta is deposited in a bucket which is removed for emptying daily or several times per week. It is cheap initially but significant health hazards are encountered. This system is widely acknowledged to be an undesirable method of waste disposal.

Many dwelling units in El Arish have a modified form of pit latrine for excreta disposal. The pit latrine generally consists of a rectangular hole placed close to the building in the yard or the street. The bottom of the pit is left unsealed and the walls are generally constructed of dry brick or stone lining to permit some seepage. The top of the pit is covered with a reinforced concrete slab. A squatting plate without water seal is located inside the dwelling unit and is connected to the pit by a short length of pipe. Some pit latrines are constructed water-tight, particularly where groundwater supplies are tapped. Depending on the number of persons per pit, pit latrines usually fill in about 12 months. Users of this system complain about odors, insects, rapid rate of fill, and occasional flooding. According to local opinion the emptying process is a messy operation and contitutes one of the principal disadvatages of the system.

The compost privy is similar to the pit latrine except that organic household wastes are added to the human excreta in the pit. It uses the principle of aerobic composting to break down the deposited wastes into a nutrient rich humus. Aerobic composting occurs in a proper balance of air, organic material, moisture, and termperature. The process uses no external sources of water, chemicals, or energy. The resulting composted humus can be used as a fertilizer/soil conditioner. Thus, handling of raw excreta is eliminated. Actually, this method is more suited to rural areas than to dwelling units in El Arish. It must be closely supervised by health officials. Poor management of human excreta can lead to epidemics such as typhoid, cholera, and hepatitis.

The residential dwelling units currently under construction in El Arish are being equipped with the septic tank system. In addition, most of these middle to upper income housing units feature flush toilets, lavatories, showers, and kitchen sinks. Indoor plumbing links these household units to a central collection point (normally a trap on the patio) from where a vitrified clay sewer pipe carries the wastewater to a central septic tank. Four or more dwelling units commonly use a single septic tank. Liquid wastes are decanted into a nearby leach (infiltration) field while excreta decomposes and is removed after approximately six months. Installation of septic tanks requires an extensive area for distributing effluent adequately.

Mainly because the population of El Arish is growing at a substantial annual rate, existing sewage disposal methods are becoming not only marginally unhealthful, but also antiquated for a rapidly growing urban area. Under these existing conditions a most crucial problem facing El Arish is the high probablility of contaminating groundwater supplies. This imminent, threatening problem requires immediate recognition as well as plan formulation.

COST: A number of factors must be assumed to make a meaningful estimate of waste water treatment system costs. The following assumptions are used to develop a range of reasonable costs for construction and operations and maintanance of a wastewater treatment system in El Arish.

For construction:

1) Design Population for wastewater treatment plant (WWTP) = 120,000.

2) Water delivery system range = 100-120 lpcd.

3) Wastewater as percent of potable water delivery = 70-80%.

4) Type of WWTP: Secondary treatment with range of options from stabilization ponds (lagoons) to activated sludge.

5) Conveyance System (sewerage lines and appurtenances). See accompanying sketch.

a)

Pipe, Trench Depth (Aug)	Size	km
1.5 m	150 mm	50
1.5 m	225 mm	23
2.5 m	375 mm	12
2.5 m	500 mm	3
4.0 m	600 mm	5

b)

Manholes	Depth	Number
	1 meter	500
	2 m	230
	3 m	120
	4 m	30
	5 m	50

6) WWTP Cost Estimate

Wastewater per capita per day (residential component)
70-96 lpcd = 19-26 gpcd x 120,000 population
target = 2,280,000 g/d (or 8630 m^3/d) to 3,120,000 g/d (or 11,809 m^3/d)

Industrial, Services, Institutional Component
Est. @ 50% level of residential
= 1,140,000 g/d (or 4,315 m^3/d) to 1,560,000 g/d (or 5,905 m^3/d)

Contingency @ 20% of combined residential and services sectors
-- 3,420,000 (or 12,945 m^3/d) x 1.2 =

4,104,000 (or 15,530 m^3/d) to
4,680,000 (or 17,714 m^3/d) x 1.2 =

5,616,000 (or 21,256 m^3/d)

Range of WWTP Cost Estimates

WWTP Category	LE
-- Stabilization Pond a	388,200 to 531,400
-- Trickling Filter b	970,600 to 1,328,500
-- Activated Sludge c	1,698,600 to 2,324,900

a Compute @ LE 25 per m^3
b Estimate @ 2.50 times Stabilization Pond
c Estimate @ 1.75 times Trickling Filter

7) Conveyance System Cost Estimate

Assuming 93 km of sewer line w/ varying cost from LE 8,200/km to LE 49,000/km = LE 1,307,000.

Assuming 1 manhole/100 meters = 930 manholes.

@ varying costs/depth (1-5m.). Costs range from LE 120 per manhole 1 meter deep to LE 900 per manhole, 5 meters deep = LE 224,800

LE 1,307,000 + LE 224,800 = LE 1,531,800
1.2 contingency = LE 1,838,000.

8) Total Estimated Cost Range

WWTP For:	And For Conveyance System
-- Stabilization Pond	2,226,200 to 2,369,400
-- Trickling Filter	2,808,600 to 3,166,500
-- Activated Sludge	3,536,600 to 4,162,900

INFORMATION SOURCES: Yousef Sahri Abo Taleb, North Sinai Governor; Mohammed El Hafez Kuriam, Social Worker North Sinai Governorate; Dr. Badri Madruk, Faculty of Science, Zagzig (Delta); Engineering proposals to North Sinai Governate by KUP (Engineer Consultant) of Hannover, West Germany dated 27 May 1981.

REPORTER'S ASSESSMENT: During an interview on July 19, 1981, the Governor of North Sinai told this reporter that a sewerage treatment system was one of his top priority projects. According to the Governora central, municipal wastewater treatment system (plant and sewer lines) must soon be constructed in El Arish if future groundwater supplies are to be free of contamination.

The suggested level of treatment is secondary which implies approximately 65-70 percent removal of suspended solids (SS) and about 85-90 percent removal of biochemical oxygen demand (BOD). Secondary wastewater treatment processes are categorized as stabilization ponds, trickling filter, and activated sludge. Stabilization ponds are the least costly to construct and operate, while the activated sludge method is the most expensive due to relatively high energy demands of the aeration chambers (basins). Local factors and conditions should be carefully considered and weighed prior to final selection regarding level of treatment and type of process. For example, in areas where there is no aquifer to recharge, a primary treatment process might be adequate and would, overall, be less expensive than any of the aforementioned secondary processes. Depending on the ultimate use of effluent, chlorination may be advisable (particularly if

the effluent is applied to irrigate greenbelts) while the sewage sludge can be returned to the soil as a fertilizer/soil conditioner on nearby agricultural lands. The A.R.E. national water master plan recommends that all effluent from potential Sinai wastewater treatment plants be discharged into the Mediterranean Sea. If pursued, this action would be a gross mismanagement of water resources. It is recommended that the wastewater effluent be applied to croplands, orchards, or park areas.

KUP, a FRG engineering firm, has submitted a comprehensive wastewater treatment system with agricultural reuse. Their proposal delineates four major areas for feasibility and design: sewage systems (collection/conveyance); pumping (lifting); WWTP; and irrigation. KUP assumes a 100,000 population and their goals is stated as "...to improve the urban hygienics with simultaneous use of sewage for agriculture..."

According to the KUP proposal,

> "...Wastewater would lead via house connections to collecting pipes from which it would be collected at a relatively low situated point. A pumping station should be erected conveying wastewater via transportation pipes outside the planned developments. The selected wastewater system depends on wastewater components, degree of treatment, and available technical means. Air dried sewage sludge could be spread on agricultural lands. Wastewater effluent, which contains important nutrients of N,P, and Ca, should be used for irrigation of crops. Irrigation system to be selected depends on soils and on crops to be grown. The irrigation area must be near the WWTP site and be near El Arish as that transport costs for pipes from WWTP to irrigation area are minimized..."

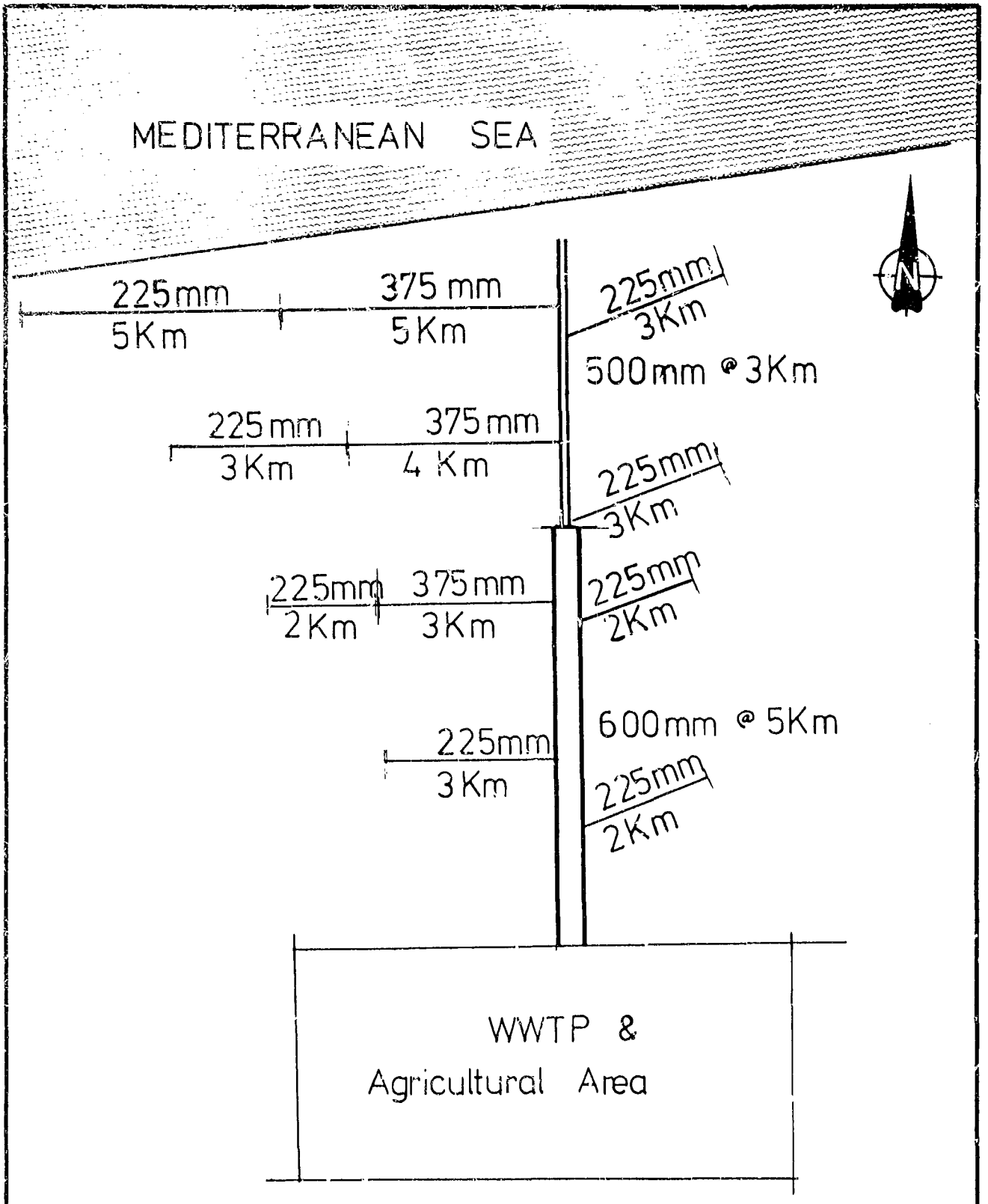
The KUP proposal assumed a planning estimate of 0.100 m^3 per inhabitant which is roughly equivalent to 26 lpcd. (This amount is considerably less than the Sinai infrastructure planning standards of 70-96 lpcd.) In general, the KUP porposal suggest that wastewater be conveyed to an area southeast of El Arish for treatment and subsequent distribution on irrigated cropland. The following WWTP elements are recommended by KUP: screening plant; sand trap; distribution channel; aeration basin; final settling basin; venturi tube flow meter; sludge pump station; return flow pump stations; service water tank; sludge holding tank; chemical feeder; and service building.

It is the reporter's judgment that a wastewater treatment system be planned, designed, constructed, and placed in operation at El Arish. Such a facility is justified and needed. The by-products of wastewater, i.e. sewage sludge and effluent, should be recycled to adjacent agricultural lands in an environmentally safe manner.

RECOMMENDED NEXT STEPS: The following plan outlines requisite steps:

Action	Agency	Time Frame	Estimated Cost (LE 000)
TOR	MOD/SDA	Sept-Oct. 81	10-20
Select Engineer Consultant to Design Wastewater Treatment System	MOD/SDA	Nov-Dec. 81	20-30
Consultant Designs System	MOD/SDA/NSG	Jan-Aug. 81	350-400
Construction of Wastewater Treatment System	MOD/SDA/NSG	Sep 82-Dec 85	4,500-5,000
Operation Begins	NSG/El Arish City Gov't	Jan 86	-

REPORTER: Jan Henley DATE OF REPORT: 8/19/1981



SKETCH OF EL-ARISH WASTE WATER TREATMENT SYSTEM

*not drawn to scale

Dames & Moore

Code No. 8 - A

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 121

PROJECT: Sewerage Treatment Assessment
El Arish

NATURAL AREA CLASS: Nonsensitive

ENVIRONMENTAL CONCERNS: The implementation of this project would alleviate environmental concerns associated with groundwater and seawater contamination by sewage.

MITIGATION AND ALTERNATIVES: Consider installation of the project

THRESHOLD ANALYSIS: This is a highly desirable project to people living in El Arish. If it is to be installed now is a good time to do so. Development will escalate in the town in the near future and control of the sewage problem should be undertaken immediately.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: Interaction of sewage with the groundwater supply is a critical concern.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: No EA recommended.

PROJECT PRIORITY: Very high

CODE NO. 9-F

SERIAL NO. 123

PROJECT SUMMARY

NAME: Battlefield Sites

LOCATION: Various sites throughout Sinai

TYPE: Study to catalog, locate, and evaluate a set of resources that will be of considerable interest to some tourists.

OBJECTIVE: To develop selected Sinai battle and campaign sites as attractions for tourists interested in military history and lore.

DESCRIPTION: The battles and campaigns that have taken place in Sinai over the last 20 years are of great interest to professional and amateur students of military history. Compared with many other contemporary battle areas, Sinai battles were fairly long on drama and short on casualties and horrors.

The most important battle sites should be identified, through refence to historical documents. Specific sites should be examined, and various techniques for illustrating the battles and campaigns should be explored. Recommendations should be made for improved tourist access, resource protection, and suitable interpretation. Also, certain other Sinai areas should be designated in which highly-visible war relics should be left within the highway corridors for easy view by tourists.

COST: Unknown; probably in the LE 20,000 range.

STATUS: Suggestion by project team.

INFORMATION SOURCES: Onsite examination; discussion with tourism specialists.

REPORTER'S ASSESSMENT: Battle sites are one of several resource sets of importance to special-interest tourists. A few scattered war relics add to the local scenic values in several Sinai areas. This is an opportunity to develop and maintain an important tourist attraction at low cost.

RECOMMENDED NEXT STEPS: Review concept with concerned Ministries and Governorates. If tourism master plans proceed, this study element should be incorporated into the resource assessment phases.

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 9 - F

Serial No. 123

PROJECT: Sinai Battlefield Study

NATURAL AREA CLASS: Both sensitive and nonsensitive

ENVIRONMENTAL CONCERNS: Safety concern - unidentified mines

MITIGATION AND ALTERNATIVES: NA

THRESHOLD ANALYSIS: NA

INTERACTION WITH AREAS OF PROECTION AND CONSERVANCY: Depends on areas focussed upon by study.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: None required

PROJECT PRIORITY: Very low

CODE NO: 8-A

SERIAL NO: 124

PROJECT SUMMARY

NAME: Marriott Hotel Construction

LOCATION: El Arish

TYPE: Tourism/business facility

OBJECTIVE: Provide initial facilities for tourists and business travelers in El Arish area.

DESCRIPTION: Modern beach front motel about 3 kilometers west of El Arish. The motel is of a low-rise design with about 150 rooms plus restaurant. The plan provides for a number of courtyards thus saving palms and preserving the view of the sea from adjacent areas.

COST: Unknown - funded

STATUS: Under construction

INFORMATION SOURCES: Main Mahfouz Contractor, field visits.

REPORTER'S ASSESSMENT: There currently exists an urgent need for such a facility in North Sinai. This structure will be a low-key cinder block and stucco structure with some accent wall in rubble stone veneer. We strongly suggest that all high-rise hotels, apartment complexes, etc. be kept to the south side of the road at all costs.

RECOMMENDED NEXT STEPS: Monitor progress and facilitate as required.

REPORTERS: E. Perkins
R. Gatje
M. White

DATE: 5/5/81

Code No. 8 - A

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 124

PROJECT: Marriott Hotel Construction

NATURAL AREA CLASS: Nonsensitive

ENVIRONMENTAL CONCERNS: Discarded, unused construction materials in palm groves may destroy palms.

MITIGATION AND ALTERNATIVES: City of El Arish should intervene and insist palms are cleared of debree and enclosed by a fence until construction is completed.

THRESHOLD ANALYSIS: Construction could destroy one of the beach resources that will serve as an aesthetic attraction for the hotel.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: NA

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: None required

PROJECT PRIORITY: High

CODE NO. 5-A & B

SERIAL NO. 125

PROJECT SUMMARY

NAME: Livestock Grazing Reserves

LOCATION: To be determined

TYPE: Livestock activity

OBJECTIVES: To determine likely areas for grazing reserves to be used by Bedouins in time of drought so as to reduce losses.

DESCRIPTION: The transhumant Bedouins utilize, in a general but lax sense, grazing reserves. Through trial and error and by historical fact, they know areas which are best to graze at particular times of the year. In fact, they leave areas ungrazed, saving them for dry periods when other grazing is short; but often times such areas are over-grazed when they are used and are not given long enough rests. Alternatively, other clans or tribes may "invade" such reserves and use them, before the original group has a need. Such an invasion usually results in a dispute or, rarely, a fight. By having contact with the heads of clans and tribes, agreements may be reached to reserve certain areas and to utilize them only by agreement and advanced notice to all concerned. In some cases of other developing countries, "grazing associations" have been organized where all groups are represented and take part in discussions and decision making. If all parties know and respect the boundaries of such reserves, fences are not required except in cases where areas within the reserves are to be further protected because of previous damage of where new plantings need protection.

The determination of such areas should be carried out by a range specialist and a livestock management expert.

COST:

Range Specialist - 3 man-months	LE 12,000
Livestock Management - 3 man-months	12,000
1 vehicle (4wheel drive)	9,000
2 laborers (including driver)	2,000
Company and other diverse equipment	5,000
TOTAL	LE 40,000
Annual supervison costs	20,000

STATUS: New Project

INFORMATION SOURCES: Discussions with Bedouins; Desert Institute.

REPORTER'S ASSESSMENT: Successful range management in arid areas can be greatly facilitated by the establishment of grazing reserves. Any establishment of grazing reserves should be done in concert with other range improvement techniques.

RECOMMENDED NEXT STEP: Discussions with representatives of Bedouin tribes, Desert Institute and governors of North and South Sinai.

Code No. 5-A & B

Serial No. 125

INITIAL ENVIRONMENTAL EXAMINATION

PROJECT: Livestock Grazing Reserves -
To be determined

NATURAL AREA CLASS: Sensitive and nonsensitive areas

ENVIRONMENTAL CONCERNS: Without established grazing procedures and reserves overgrazing may occur leading to desertification

MITIGATION AND ALTERNATIVES: Grazing areas should include perennial plants or shrubs which are the most suitable for the area. Ephemerals (annuals) are very short-lived plants and are primarily consumed during the hot dry summer. The following species would be suitable for grazing reserves. They are drought-resistant and grow throughout the year if kept under a controlled grazing system and by supplying irrigation during the summer.

- Grasses (all native species):
  Panicium Turgidum, Pennisetum divisum, Lasiurus hirsutus, Oryzopsis miliacea, Dactylis glomerata, Poa sinaica
- Shrubs (all native species):
  Atriplex halinus, Artemisia herba-alba
- Perennial Herbs:
  Plantago albicans (native)
  Medicago sativa

THRESHOLD ANALYSIS: None

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: Sensitive areas will have to be avoided or the use of managed very carefully.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: Periodically after implementation. 2 - 3 years.

PROJECT PRIORITY: Deferred/High

CODE NO: 8-F

SERIAL NO: 131

PROJECT SUMMARY

NAME: Road Erosion Control

LOCATION: All Sinai

TYPE: Construction

OBJECTIVES: Prepare embankments, culverts, bridges to protect or enhance existing roads.

DESCRIPTIONS: Many of the major roads in Sinai have been built in the bottom of wadis and minor water courses. These roads are, therefore, frequently washing out and destroyed. Typical examples of this destruction can be seen at El Arish, the Umm Bogma region, and Wadi Feiran. In many cases, simple embankments, installations of culverts or small bridges would alleviate the destruction of these roads. Future roads, when being built, upgraded or repaired, should be designed according to the environmental factors, i.e., topography, drainage, soils and highway engineering principals should be applied.

COST: Estimate $50,000

STATUS: Recommend action

INFORMATION SOURCES: Field visits

REPORTER'S ASSESSMENT: The uncertainty of shipping corridors in Sinai will have increasingly detrimental effect on the development of Sinai as progress proceeds.

RECOMMENDED NEXT STEPS: Review the current situation, employ highway and soils engineers to recommend erosion control measures.

REPORTER: M. White

DATE: 5/5/81

Code No. 8-F

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 131

PROJECT: Road Erosion Control - Sinai

NATURAL AREA CLASS: Sensitive and Non-Sensitive

ENVIRONMENTAL CONCERNS: Proper engineering of erosion control devices according to topography, drainage, etc,

MITIGATION AND ALTERNATIVES: Many roads have been built in the bottom of wadi beds and major water courses. Consequently roads frequently are washed out and require repairs. New roads should not be situated in areas vulnerable to flooding and existing roads should have flood protection components installed.

THRESHOLD ANALYSIS: NA

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: Depends upon specific areas

RECOMMENDATION FOR FUTURE ENVIRONEMTNAL ANALYSIS: Environemtnal analysis should be part of road erosion control efforts, No major EA is required.

PROJECT PRIORITY: Deferred until roads requiring this intervention are specifically identified.

PROJECT SUMMARY

NAME: Fishing Boat Dock

LOCATION: Lake Bardawil

TYPE: Fishing Infrastructure

OBJECTIVES: Provide small docking facilities for Lake Bardawil fishermen.

DESCRIPTION: There are approximately 1,000 small fishing boats in the Lake Bardawil area. Currently, no docking facilities are provided at the icing house. This project would enable several boats at a time to dock at the ice house and unload their catch in an efficient manner.

COST: Undetermined

INFORMATION SOURCES: Field visits, interview with fishermen

REPORTER'S ASSESSMENT: This project would help secure the fishing industry of Lake Bardawil.

RECOMMENDED NEXT STEPS: Technical assistance whould be provided to the Lake Bardawil fishing authorities to help determine size, location and preliminary design of dock.

REPORTER: M. White

DATE: 5/5/81

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 8 - A

Serial No. 132

PROJECT: Fishing Boat Dock - Lake Bardawil

NATURAL AREA CLASS: Sensitive

ENVIRONMENTAL CONCERNS: The whole lake is an environmental concern of great magnitude.

MITIGATION AND ALTERNATIVES: An overall analysis should be made of the lake and the analysis should be a major determinant of future development.

THRESHOLD ANALYSIS: The construction of a boat dock is not going to have any more impact on the lake than the result of current fishing activities.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: High interaction

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: Careful siting of the dock should be considered. No EA is required.

PROJECT PRIORITY: High

PROJECT SUMMARY

NAME: Camel Improvement and Breeding Station

LOCATION: North Central Sinai - to be determined in consultation with Bedouin councils.

TYPE: Livestock activity and agricultural research.

OBJECTIVES:
1 - Provide improved camel sires to Sinai Bedouins;
2 - Collect information on camel nutrition, physiology management, and breeding so as to provide information and plans for the improvement of camel production systems presently in use in Sinai; and
3 - Collect information on environmental factors such as availability of water, different types of forages and browse, which affect camel production and to determine optimal environment and threshold conditions for camels.

DESCRIPTION:

General: Due in part to the migration of Bedouins to the cities and towns, the camel population in Egypt (including Sinai) is decreasing. Young men who have traditionally herded camels are now seeking more excitement and lucrative paying jobs near the population centers. In addition, the slaughter of camels in the North Africa coastal countries has increased considerably in the last 15 years, consequently, reducing the herd numbers. Egypt presently imports camels from Sudan, Somalia and Saudi Arabia.
The population in Sinai, however, has shown a substantial increase over the last 30 years: 1950 - 5,000; 1967 - 8,500; and 1978 - 9,000.

The Bedouins of Sinai, raising camels, have indicated a strong interest in a camel stud producing station, which would make available improved bulls of various breeding. Some fear that the level of inbreeding may reach undesirable levels, because imported bulls of diverse strains from Saudi Arabia, Somalia, Sudan, etc. are often too costly. They, therefore, frequently use local bulls, which may be closely related to their own cows.

The attention given to research and development on camel nutrition, disease and management in Egypt has been minimal due to attention given to other problems considered to be more pressing by government authorities. The Bedouins of Sinai stress the importance of camels and want advice on improvement, but they feel that there is a lack of expertise available.

It is, therefore, proposed to set up a camel improvement and breeding station, whereby breeding bulls can be produced and sold to Sinai Bedouins. Breeding, reproduction and production weights data will be recorded on all animals. Trials with restricted numbers of camels will be conducted to obtain information on diets normally consumed by camels, nutrition requirements, different methods of management, determined by their use (packing, riding, etc.), milk production, hair production and value, and carcass information.

Four hundred females should be included as a minimum so as to produce around fifty adult bulls per year, ready for mating. Herd bulls for the project should be selected from the best bulls in Egypt, as well as from other countries (Saudi Arabia, Sudan, Somalia, etc.). Those animals on certain trials may have to be kept in paddocks or pens, but the main breeding herd will be tended by Bedouin herders on open range as is customary in Sinai. Location of the project headquarters and experimental station will be determined later.

COST: The following cost estimates are preliminary:

400 Adult Camel Females	=	160,000 LE
20 Adult Camel Bulls	=	20,000 "
Headquarters facilities (office, labs, corrals, paddocks, water, utilities, etc.	=	250,000 "
Equipment, vehicles	=	100,000 "
Supplies	=	30,000 "
INITIAL COST TOTAL		560,000 LE
Annual operating costs		100,000 "
Equipment, vehicle renewal (annual)		35,000 "
Miscellaneous (annual)		15,000 "
Scientific personnel (2) and laborers (15) (annual)		50,000 "
ANNUAL OPERATING COSTS TOTAL		200,000 LE

The initial costs will have to be supplied by budget (government or loan), but proceeds from camel sales can help offset annual operating costs.

STATUS: New project proposal suggested by Bedouins.

INFORMATION SOURCES: Desert Institute, Cairo and personal communication with Bedouins.

REPORTERS' ASSESSMENT: There is a real and pressing need for a supply of good quality camel breeding bulls and information on improved management techniques for camels. The operation of this project should be under the guidance of a Bedouin council or livestock association.

RECOMMENDED NEXT STEP: For traditional livestock production in Sinai, this project is of high priority. Discussions with Bedouin councils and Desert Institute should be carried out to determine location of headquarters and operating body. A detailed feasibility study should be carried out.

Code No. 5 A & B

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 136

PROJECT: Camel Improvement and Breeding Stations

NATURAL AREA CLASS: Nonsensitive and sensitive

ENVIRONMENTAL CONCERNS: Camels are decreasing in number but are critically needed for extremely dry areas. Grazing of camels is not as destructive as grazing of goats.

MITIGATION AND ALTERNATIVES: None

THRESHOLD ANALYSIS: None

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: Project can have high impact on other agricultural projects.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: No EA required but grazing areas should be identified and grazing should not impact areas where rare or endangered plant species are present.

PROJECT PRIORITY: Deferred/High

CODE NO: 8-A

SERIAL NO: 137

PROJECT SUMMARY

NAME: Flood Hazard Assessment and Remedial Action Recommendation

LOCATION: El Arish

TYPE: Construction

OBJECTIVES: Eliminate flood hazard to El Arish, channel flood waters in Wadi El Arish.

DESCRIPTION: El Arish, last year, was hit by two floods flowing through Wadi El Arish. Several roads and other structures were damaged. Erosion of the agricultural land along the eastern side of the Wadi has been severe. This project would assess Wadi El Arish flood capability and provide preliminary recommendations for remedial protective measures.

COST: Estimate $30,000

STATUS: Necessary but not progressing

INFORMATION SOURCES: Governor of North Sinai; field visits

REPORTER'S ASSESSMENT: If the town of El Arish and its hinterlands are to continue to develop, the hazard of floods must be reduced.

RECOMMENDED NEXT STEPS: This preliminary assessment should be coordinated with Governorate and undertaken.

REPORTER: M. White

DATE: 5/5/81

Code No. 8 - A

Serial No. 137

INITIAL ENVIRONMENTAL EXAMINATION

PROJECT: Flood Hazard Assessment and Remedial Action Recommendation - El Arish

NATURAL AREA CLASS: Nonsensitive

ENVIRONMENTAL CONERNS: Preservation of agricultural land use and municipal infrastructure

MITIGATION AND ALTERNATIVES: Channel flood waters into Wadi El Arish

THRESHOLD ANALYSIS: Necessary but not progressing

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: NA

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: None required. This action is needed to protect agriculture and municipal infrastructure.

PROJECT PRIORITY: High

PROJECT SUMMARY

NAME: T.V. Broadcasting Service

LOCATION: El Arish and El Tor

TYPE: Extending the T.V. Service in Egypt to Sinai

DESCRIPTION:

(1) Building T.V. transmitting Center at El Arish equipped with 10 K.W. transmitter channel 6 with standby.

(2) Building T.V. transmitting Center at El Tor equipped with 2 K.W. transmitter channel 10 with standby.

(3) Extending the T.V. microwave link necessary to connect the T.V. programmes from Cairo Studios by extending the Hurgada link to El Tor and branching the Cairo-Port Said link from Qantara West to El Arish.

(4) Electric Power requirement for the transmitter is ascertained by separate dual diecel generating sets installed within the Center. Directive radiation of the T.V. signal is arranged to suit the reception requirement.

COST: Was included in the Budget of the Boradcasting and T.V. Federation

STATUS: Contracts concluded for the delivery and installation of the microwave links and bids for T.V. transmitter delivery are being revised for early contracting.

INFORMATION SOURCES: The Engineering body of the (O.B.T.F.) Organization of Broadcasting and T.V. Federation

REPORTER'S ASSESSMENT:

(1) The project is of great importance to the strategy of establishing the requirement incentives for people to live in Sinai through the extension to Sinai of the same information and entertainment media which is available all over Egypt. But the project should be considered as first stage which is to be followed by extending the same service to other inhabited areas in Sinai.

(2) Radiation pattern of the El Arish station should be arranged to be directed so as to servel El Bardawil area, and the radiation pattern of El Tor should be directed as much as possible to serve Abu Rudeis.

REPORTER: Salah Amer DATE: April, 1981

Code No. 8 - A&B

Serial No. 138

INITIAL ENVIRONMENTAL EXAMINATION

PROJECT: TV Broadcasting Service - El Arish and El Tor

NATURAL AREA CLASS: Nonsensitive

ENVIRONMENTAL CONERNS: NA

MITIGATION AND ALTERNATIVES: NA

THRESHOLD ANALYSIS: NA

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: NA

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: NA

PROJECT PRIORITY: High

PROJECT SUMMARY

NAME: Formation of Livestock/Grazing Associations

LOCATION: One each in North, Central and South Sinai

TYPE: Livestock Activity

OBJECTIVES:

1 - Act as controller of grazing areas in order to limit over-grazing and to develop and control water wells/springs for livestock;
2 - Set up grazing reserves and to control their uses;
3 - Advise government (national and local) on developments to improve livestock production and those developments which may seriously reduce production; and
4 - Act as advisory body and coordinator of Sinai Stud Breeding Stations (goats, sheep and camels), nutrition supplemental and animal health programs in Sinai.

DESCRIPTION: Any attempt at improvement of livestock production in Sinai should be handled in close cooperation with the Bedouins themselves. The formation of some type of associations gives a channel through which several avenues of approach to improvement can take place. The Bedouin council of tribes may wish to take on this activity or to appoint a body for this purpose. However formed, the association should have authority, responsibility and autonomy so that the Bedouins feel that they guide their own destiny. Little action can be expected from them, if they feel they are puppets of the government or feel that the associations were set up only to force them into action not their own.

The association should be composed of a representative of each tribe, owning important numbers of livestock. The financing of the association will be determined later, but several alternatives exist:

1 - Budgeted from central Egyptian or Sinai government;
2 - Each tribe pays a portion of annual budget of association, based on numbers of livestock;
3 - Bedouins are charged for services provided by the association;
4 - The association set up as a private enterprise with stock owned by participating Bedouins.

The internal structure of the association should be organized by the association itself so that the members are satisfied.

COST: The cost of organization of the association should probably not exceed LE 50,000. Costs of activities of the association will be determined later.

STATUS: New project.

INFORMATION SOURCES: Discussions with Bedouins.

REPORTER'S ASSESSMENT: Livestock grazing associations have worked positively in other arid zone developing countries.

RECOMMENDED NEXT STEP: Have discussions with tribal chiefs, the Bedouin political councils and the governors of North and South Sinai.

REPORTER: R. S. Temple DATE: June 15, 1981

Code No 5 A&B

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 139

PROJECT: Livestock Grazing Associations - Sinai

NATURAL AREA CLASS: Sensitive and nonsensitive

ENVIRONMENTAL CONERNS: Without local action, pasture reserves can be reduced drastically by overgrazing. The proposed Associations could address this problem.

MITIGATION AND ALTERNATIVES: Local Associations can have high degree of local positive influence.

THRESHOLD ANALYSIS: NA

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: There will be a high interaction between local organizations and all other livestock projects.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: No EA required. Review in 3 to 5 years.

PROJECT PRIORITY: High

PROJECT SUMMARY

NAME: Resident Regional Planner

LOCATION: Each Sinai Governorate

TYPE: Personnel

OBJECTIVES: Assist each Sinai Governor with the planning and project evaluation process for the Governorate.

DESCRIPTION: At present, insufficient assistance is available to the Governorates for proper long-term planning and evaluation of projects. A resident regional planner on the staff of each Governorate would help with planning and evaluation of project and coordinate activities with the Sinai Information Facilities.

COST: LE 30,000 for one year

STATUS: Needs recruitment and implementation

INFORMATION SOURCES: North Sinai Governor and field interviews

REPORTER'S ASSESSMENT: This project would facilitate the implementation of numerous development activities.

RECOMMENDED NEXT STEPS: Discuss acceptibility with each Governor, funding possibilities, recruit experienced people, and implement position.

REPORTER: M. White DATE: 5/5/81

Code No. 2 - F

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 142

PROJECT: Resident Regional Planner - Each Sinai Governorate

NATURAL AREA CLASS: Planners would be responsible for overseeing projects in both sensitive and nonsensitive areas.

ENVIRONMENTAL CONCERNS: One responsibility of a person in this position would be to identify environmental concerns relat d to projects being considered for implementation. The creation of a position for a regional planner in the governorates would partially guarantee that environmental issues are addressed.

MITIGATION AND ALTERNATIVES: Mitigation of or alternatives to environmental hazards posed by certain projects could be identified by a person in this position.

THRESHOLD ANALYSIS: NA

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: NA

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: NA

PROJECT PRIORITY: High

PROJECT SUMMARY

NAME: Mine Identification and Clearance

LOCATION: All Sinai

TYPE: Reclamation

OBJECTIVE: Remove military explosive mines; remove explosive hazard in all areas

DESCRIPTIONS: A concerted effort should be made to locate and remove all military explosive mines within Sinai. These mines represent a hazard to the continuing development of Sinai. Currently, the Egyptian Military and a private company are employed in removing mines on a project by project basis. It is the intent of this project to identify areas of high potential development and to ensure that they are completely free of all explosive hazards.

COST: Unknown

STATUS: Mines are being removed on a project by project basis.

INFORMATION SOURCES: Field visits

REPORTER'S ASSESSMENT: The mere likelihood of mines in an area will delay the potential development of that area.

RECOMMENDED NEXT STEPS: Have military identify all areas known or thought to have mines, match this with areas expected to have development, then hire a company to remove mines.

REPORTER: M. White

DATE: 5/5/81

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 2 - F

Serial No. 153

PROJECT: Mine Identification and Clearance

NATURAL AREA CLASS: Nonsensitive and sensitive

ENVIRONMENTAL CONCERNS: No development efforts can be undertaken in areas where mines are present.

MITIGATION AND ALTERNATIVES: Remove mines as required by development activities.

THRESHOLD ANALYSIS: NA

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: High interaction

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: NA

PROJECT PRIORITY: High

PROJECT SUMMARY

NAME: Road Planning, Marking and Mapping

LOCATION: Sinai

TYPE: Infrastructure

OBJECTIVE: Prepare highway development master plan, mark all roads, and prepare road maps.

DESCRIPTION: A highway master plan needs to be developed for Sinai. This plan should take into account anticipated long-term development and uses. The plan would identify primary arteries, secondary highways and third level maintenance roads. Necessary new roads would be identified and routed and inefficient old roads would be allowed to deteriorate. All roads would be marked with information, caution, and regulatory signs. Additionally, a comprehensive road map should be prepared for all of Sinai.

COST: Estimate $100,000

STATUS: Numerous roads are in various stages of being repaired or developed. Very few marker signs are along these roads. Most current Sinai maps have varying levels of inaccuracies regarding roads.

INFORMATION SOURCES: Field trips by consultants

REPORTER'S ASSESSMENT: Road development in Sinai appears to be piecemeal. The lack of road signs is a major problem to travel, as is the lack of a detailed comprehensive road map.

RECOMMENDED NEXT STEPS: Work with the appropriate Ministry and/or Governorate to encourage early action on sign posting, mapping and planning.

REPORTER: M. White

DATE: 5/5/81

Code No. 8 - F

Serial No. 158

INITIAL ENVIRONMENTAL EXAMINATION

PROJECT: Road Planning Marking and Mapping - All Sinai

NATURAL AREA CLASS: Sensitive and nonsensitive

ENVIRONMENTAL CONCERNS: Interaction with sensitive zones which may include rare plants.

MITIGATION AND ALTERNATIVES: Areas of sensitivity including rare plants should be identified. Construction of roads in these areas should be carefully supervised to avoid destruction of roadside areas.

THRESHOLD ANALYSIS: NA

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: High interaction with general areas. Specific areas must be defined.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: EA should be undertaken as part of the road planning process.

PROJECT PRIORITY: Deferred/High

CODE NO. 9-F

SERIAL NO. 159

PROJECT SUMMARY

NAME: Sinai Tourism Guidebook

LOCATION: All Sinai

TYPE: Marketing

OBJECTIVES: Provide guidebook for Sinai points of interest

DESCRIPTION: With the development of Sinai tourism, it will become increasingly important to have available small, cheap guidebooks, describing Sinai, its attractions, and brief history. This guidebook would enable a sightseer to select sights to see, plan a full or daily tour, and know what accommodations to expect throughout Sinai. It will also perform a function as a marketing tool. It should be designed to include site layout maps, general road maps, interest-stimulating pictures, and descriptive narratives of Sinai's numerous points of interest and vistas.

COST: Unknown

STATUS: Consultant proposed

INFORMATION SOURCES: Tourism consultants and field visits

REPORTER'S ASSESSMENT: The interest in Sinai already warrants such a guidebook. It will become increasingly important as tourism grows.

RECOMMENDED NEXT STEPS: Work with Ministry of Tourism and Governorate to encourage early implementation.

REPORTERS: M. White
E. Perkins
R. Gatje

DATE: 5/5/81

Code No. 9 - F

INITIAL ENVIRONMENTAL EXAMINATION Serial No. 159

PROJECT: Sinai Tourism Guidebook - Sinai

NATURAL AREA CLASS: Would overview tourism in sensitive and non-sensitive areas.

ENVIRONMENTAL CONCERNS: The book should serve as more than a sight-seeing guide by including facts about environmentally sensitive areas within Sinai.

MITIGATION AND ALTERNATIVES: NA

THRESHOLD ANALYSIS: NA

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: Areas should be identified and a conservation philosophy regarding these areas expressed.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: None required

PROJECT PRIORITY: Deferred until tourism planning identifies more specifically, sensitive areas requiring conservation.

PROJECT SUMMARY

NAME: Animal Health Clinics

LOCATION: Principal towns and villages in Sinai

TYPE: Livestock activity

OBJECTIVES: 1 - Set up a small but efficient network of veterinary clinics in Sinai.
2 - Make available common medicines, antidotes, nutritional concentrates and other livestock supplies to Bedouin livestock producers.

DESCRIPTION: Viable and progressive animal health clinics seem to be lacking in Sinai. A network of clinics should be set up in the principal towns and villages of Sinai under the technical supervision of the Veterinary Department, Ministry of Agriculture, Cairo and the administrative management of the Bedouin council of tribes for Sinai. Veterinarians and animal health assistants should be posted permanently in these clinics and should have training, knowledge and experience in camel, sheep and goat diseases and maladies. Each clinic should have mobile units (one or two 4-wheel-drive vehicles per clinic) available for periodic field visits and emergency cases. With an efficient network, periodic vaccinations can be carried out and epidemics avoided.

COST:

6 small clinics (buildings)	LE 180,000
Veterinary equipment for each clinic	120,000
" supplies	60,000
12 four-wheel-drive vehicles	108,000
Other equipment (pens, chutes, trailers, etc.)	60,000
TOTAL	528,000
6 Veterinarians (annual salary)	72,000
12 Animal health assistants (annual)	72,000
12 Laborers (including drivers)	36,000
Annual replacement of vehicles/equipment	96,000
Annual supplies	24,000
TOTAL (annual)	300,000

STATUS: Some veterinary assistance presently offered in Sinai, but definite expansion and improvement needed.

INFORMATION SOURCES: Discussions with Bedouins and representatives of Ministry of Agriculture in El Arish.

REPORTER'S ASSESSMENT: High priority and should be implemented as soon as possible.

RECOMMENDED NEXT STEP: Discussions with Ministry of Agriculture (Veterinary Department) and implementation.

REPORTER: R. S. Temple DATE: June 15, 1981

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 5A & B

Serial No. 161

PROJECT: Animal Health Clinics - Sinai

NATURAL AREA CLASS: Nonsensitive andsensitive

ENVIRONMENTAL CONCERNS: None

MITIGATION AND ALTERNATIVES: None

THRESHOLD ANALYSIS: NA

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: NA

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: None required

PROJECT PRIORITY: Deferred/High

PROJECT SUMMARY

NAME: Stud Ram Breeding Stations

LOCATION: Two: one in North and the other in South Sinai - definite locations not determined.

TYPE: Livestock activity

OBJECTIVES: 1 - Produce stud rams of the local Sinai breed for replacement to the Bedouin flocks, and
2 - Gather breeding, reproduction and production data for use in improving production systems used by Bedouins.

DESCRIPTION: At the present time, many Bedouin owners of sheep do not maintain their own rams. They use rams from other flocks, owned by the more prossperous Bedouins. Sometimes, the rams are better in the important traits of milk production, wool characteristics and soundness of body than the ewes to which they are bred; sometimes, they are not. This type of selection yields little or not improvement to the flock.

It is, therefore, proposed to set up two stud ram breeding flocks, one in North and the other in South Sinai. These flocks would be of the local (Baladi) breed and well-managed under a strict selection program to produce improved rams, which would be made available to the Bedouins (for use in their flocks). Each flock should be made up of at least 500 ewes and 30 rams, selected from the flocks presently in Sinai, to provide an adequately wide genetic base for selection. At breeding time, a single ram should be mated to a group of around 20 ewes, which are kept separate from the other groups, establishing exact parentage. (All animals will be individually identified.) Selection of the parent stock and future replacements should be based on those phenotypic traits, valued most by the Bedouins and, from scientific knowledge, are fairly highly heritable.

Replacements for the parent flock will come from the offspring produced (about 30% of the female lambs and 10% of the male lambs), but no lambs will enter the nucleus breeding flock unless they are better than the parent generation in the traits being considered. The flocks should be managed under the normal environment and system used by the Bedouins but with a good management standard. Lambs not used in the breeding flock will be made available to the Bedouins for use in their flocks.

The proposal should be approved by and carried out with the cooperation of the local Bedouin people through their council or livestock association.

COST: The following cost estimates are preliminary:

1,000 breeding ewes (Sinai Baladi sheep)	100,000 LE
120 breeding (Sinai Baladi sheep)	20,000 "
Headquarters facilities (office, labs, pens, paddocks, water, utilities, etc.)	180,000 "
Equipment, vehicles	75,000 "
Supplies	30,000 "
INITIAL COST TOTAL	405,000 LE

Annual operating costs (feed, repair, supplies)	40,000 LE
Equipment, vehicle renewal (annual)	25,000 "
Miscellaneous (annual)	15,000 "
Scientific personnel (2) and laborers (15) (annual)	50,000 "
ANNUAL OPERATING COSTS TOTAL	130,000 LE

STATUS: New project of high priority for improvement of traditional livestock sector.

INFORMATION SOURCES: Desert Institute, Cairo; discussions with Bedouins and Ministry of Agriculture authorities at El Arish.

REPORTER'S ASSESSMENT: The lack of improved sheep sires limits the improvement of the Sinai flocks - an important project.

RECOMMENDED NEXT STEP: Further discussions with Desert Institute and Bedouin council of tribes. Work out a detailed budget.

REPORTER: R. S. Temple
A. A. Younis

DATE: June 15, 1981

Code No. 5-A & B

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 163

PROJECT: Stud Ram Breeding Stations -
One in North Sinai and one in South Sinai

NATURAL AREA CLASS: Sensitive and nonsensitive

ENVIRONMENTAL CONCERNS: Sheep and goats are known to be destructive of vegetation.

MITIGATION AND ALTERNATIVES: Proper management of grazing areas would alleviate problems associated with grazing.

THRESHOLD ANALYSIS: To increase livestock productivity these stations are essential.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: Until specific locations are determined the extent of interaction with or conservation of areas cannot be estimated.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: The environmental impact of this project should be evaluated but no extensive environmental analysis should be required.

PROJECT PRIORITY: Deferred/High

CODE NO. 5 A & B

SERIAL NO. 166

PROJECT SUMMARY

NAME: Goat Improvement Stations

LOCATION: Two: one in North and the other in South Sinai - definite locations not determined.

TYPE: Livestock activity

OBJECTIVES: 1 - Produce buck goats of the local Sinai breed and the Anglo Nubian breed to be made available to Sinai Bedouins for flock improvement and
2 - Gather breeding, reproduction and production data for use in improving production systems used by Bedouins.

DESCRIPTION: The goats presently raised by the Bedouins in Sinai are hardy and well-adapted to the severe environment, but their milk production and the number of lambs raised as a percentage of the nannies bred are low. Improvement can be made by selection within the local breed and through cross-breeding, using such desert adapted breeds as the Anglo-Nubian.

In each of two locations, North and South Sinai, two flocks of Baladi (local) females will be maintained: one for selection within the breed and the other for crossbreeding with bucks of the Anglo-Nubian breed. The flocks intended for selection should be made up of 400 females; and the one used for cross-breeding should contain at least 100. Females selected for the parent flocks of either breeding program should be representative of the breed in Sinai, i.e., selected at random.

The flocks will be herded and managed in the typical Bedouin manner, although improved techniques may be used. During the breeding season, a single buck should be mated to a group of around 20 nannies, which are kept separate from the other groups, so that exact parentage can be determined. All animals are to be individually identified. Selection of the parent stock and future replacements should be based on those phenotypic traits valued most by the Bedouins and, from scientific knowledge, are fairly heritable.

Information and data will be collected on such traits as milk and hair production, weights at various ages, and reproduction. This information will be used for improving the management of the local flocks.

Replacements for the parent flocks will come from the offspring produced (about 30% of the female and 10% of the male kids), but no replacements will enter the nucleus breeding flock unless they are better than the parent generation in the traits being considered.

Young goats that are not used as replacements will be made available to the Bedouins for use in their flocks.

The proposal should be approved by and carried out with the cooperation of the local Bedouin people through their council or livestock association.

PROJECT SUMMARY - Serial No. 166
Goat Improvement Station

COST: The following cost estimates are preliminary:

1,000 breeding female goats (local breed)	100,000 LE
100 breeding males (local breed)	15,000 "
20 breeding males (imported Anglo-Nubian)	5,000
Headquarter facilities (office, labs, pens, paddocks, water, utilities, etc.)	180,000 "
Equipment, vehicles	75,000 "
Supplies	30,000 "
INITIAL COST TOTAL	405,000 LE
Annual operating costs (feed, repair, supplies, etc.)	40,000 LE
Equipment, vehicle renewal (annual)	25,000 "
Miscellaneous (annual)	15,000 "
Scientific personnel (2) and laborers (15) (annual)	50,000 "
ANNUAL OPERATING COSTS TOTAL	130,000 LE

STATUS: New project of high priority for improvement of traditional livestock sector.

INFORMATION SOURCES: Desert Institute, Cairo; discussions with Bedouins and Ministry of Agriculture authorities at El Arish.

REPORTERS' ASSESSMENT: The lack of improved goat sires limits the improvement of the Sinai flocks.

RECOMMENDED NEXT STEP: Further discussions with the Desert Institute and Bedouin council of tribes. Work out a detailed plan and budget.

REPORTERS: R. S. Temple
A. A. Younis

DATE: June 15, 1981

Code No. 5A & B

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 166

PROJECT: Goat Improvement Stations -
One in North Sinai and one in South Sinai

NATURAL AREA CLASS: Sensitive and nonsensitive

ENVIRONMENTAL CONCERNS: Overgrazing of areas, destruction of vegetation.

MITIGATION AND ALTERNATIVES: Proper management of grazing areas near stations. Animals could be directed to areas where undesirable vegetation is located.

THRESHOLD ANALYSIS: Project is supportive of improved livestock.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: Dependent upon location.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: None required. Project should be reviewed three years after implementation.

PROJECT PRIORITY: Deferred/High

PROJECT SUMMARY

NAME: Enhanced Olive Production

LOCATION: El Arish area plus small, scattered plots elsewhere.

TYPE: Agricultural Production

OBJECTIVES: To improve the productivity of land and water used to produce olives.

DESCRIPTION: Olives dominate in cropping patterns in the El Arish area. Production varies considerably from farm to farm, and from tree to tree. Some trees are irrigated by the basin technique and some by the drip system.

Young olive trees are being planted in the reclamation area East of Bitter Lakes. Besides this and the El Arish area, small groves exist in scattered locations in Sinai.

(For more description of olive production and processing, see the Staff Paper: Crop Production in Sinai, August 1981, Sinai Development Study - Phase I, Dames & Moore.)

COST: The estimated cost of the total project is LE 510 thousand, of which the foreign exchange cost is LE 385 thousand and the local currency cost is LE 125 thousand. The cost of initial activities would be: conduct base study, LE 50,000; import trees for trial plantings, LE 10,000.

STATUS: About 700 feddans of the total irrigated area of 2,100 feddans in the El Arish area is in olive trees, and more young trees are being planted. No experimental work is being done to serve as a basis for improving the productivity of land and water used in olive production. A small number of imported trees have been planted for adaptive trials at the Experiment Station at El Arish. Local capacity for processing olives is inadequate.

INFORMATION SOURCES: The agriculture team made several observation visits and obtained production data from North Sinai Governorate and Ministry of Agriculture officials and from local processors.

REPORTERS' ASSESSMENT: Olives appear to have a comparative advantage at El Arish, and perhaps in other regions of Sinai. Olive production seems to be profitable, especially among the farms that are well managed. However, total productivity can be enhanced considerably with some well designed experimental work on which to base recommendations. Early gains could be achieved from experiments on fertilization, water application and pruning. Long-term, low-cost gains can be obtained by selecting the most productive types from among, say, 20 imported varieties (100 plants each) as well as from among local varieties.

Plans for increased processing facilities are included in the Industrial Sector.

RECOMMENDED NEXT STEPS: An initial step is to commission a Base Study of Olive Production, Processing and Marketing in Sinai. (Terms of reference are in preparation.) This study will serve as the information base for activities designed to enhance productivity. As a part of the program under the

Agricultural Experimentation and Extension project, agronomic experiments and adaptive trials should be initiated at El Arish and East of Bitter Lakes.

REPORTERS: Ralph W. Richardson
Leon F. Hesser

DATE: August 26, 1981

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 5A & B

Serial No. 167

PROJECT: Enhanced Olive Production - El Arish
plus small, scattered plots elsewhere

NATURAL AREA CLASS: Nonsensitive

ENVIRONMENTAL CONCERNS: Disposal of waste pits from dates. Because pits are biodegradable disposal does not present a major problem.

MITIGATION AND ALTERNATIVES: Disposal of waste should be confined to an area on the site of production.

THRESHOLD ANALYSIS: NA

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: NA

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: None required

PROJECT PRIORITY: High

PROJECT SUMMARY

NAME: Enhanced Date Production

LOCATION: Mainly along the north coast of Sinai; also along the coast of the Gulf of Suez.

TYPE: Agricultural Production

OBJECTIVES: To increase the quantity and improve the quality of date production in Sinai.

DESCRIPTION: Date palms grow well in selected coastal areas of Sinai, with little attention. Even with low rainfall, the trees appear to be hardy. The quantity of dates per tree is very low, compared with other date producing areas of the world, and the quality of dates varies considerably. Virtually, all of the date palms have grown at random from seeds, rather than having been established by vegetative propagation, which accounts for much of the low productivity and the variation in product. Pollenization is poor.

COST: The estimated total cost of the project is LE 460 thousand, of which LE 350 thousand is foreign exchange cost and LE 110 thousand is local currency cost. The estimated cost of components is:

Base Study	LE 40,000
Import Materials for Trial Plantings	20,000
Import Materials for Commercial Plantings	100,000
Technical Assistance	300,000

STATUS: An estimated 1 million date palms grow in Sinai. They are treated essentially as wild plants. Most of the dates are harvested and consumed locally; the poorer quality ones are fed to livestock. The small quantity that is sold is poorly packaged.

INFORMATION SOURCES: Date palms were observed by members of the Agricultural Team at various stages in the production cycle on several trips throughout Sinai. Discussions were held with local farmers who harvest dates and with various officials in Sinai.

REPORTERS' ASSESSMENT: The international market for dates is strong and will likely continue to be. The potential over the longer run for increasing the productivity per date palm tree is large, at relatively low cost. Disease problems appear to be minimal. Fairly rapid increases in productivity could be obtained through improved pollenization, either by hand pollenization or by establishing bee colonies in appropriate places. To improve the inherent productive capacity of the trees and to get a more uniform and quality product, systematic experiments need to be carried out. One set of these would select for and evaluate the best local trees; another set would consist of adaptive trials of imported varieties. From among the best of both local and imported varieties, vegetative propagations would be made. The combination of improved inherent productivity and improved husbandry (pollenization, etc.) would greatly increase the quantity of a uniform, high-quality product.

RECOMMENDED NEXT STEPS: The first step is to conduct a base study which, among other things, begins to identify varieties and tree types in Sinai that appear to have highest productive potential. Terms of reference for such a study are in preparation. As a part of the Agricultural Experimentation and Extension project, experimental trials should be established of both local and imported varieties. Packaging and processing facilities will be provided for in the Industrial Sector.

REPORTERS: Ralph W. Richardson
Leon F. Hesser

DATE: August 27, 1981

Code No. 3 A&B

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 168

PROJECT: Enhanced Date Production

NATURAL AREA CLASS: Nonsensitive and sensitive (some areas on the Gulf of Suez)

ENVIRONMENTAL CONCERNS: None

MITIGATION AND ALTERNATIVES: NA

THRESHOLD ANALYSIS: NA

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: In certain areas in North Sinai, date palms assist in stemming dune formation.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: None required

PROJECT PRIORITY: High

SERIAL NO.: 169

PROJECT SUMMARY

NAME: Vegetables for Population Centers

LOCATION: El Arish mainly, but also for other cities and towns.

TYPE: Agricultural Production and Marketing

OBJECTIVES:

(a) Improve the efficiency of vegetable production on farms near population centers,
(b) Increase the supply of fresh produce for local populations, and
(c) Improve the marketing systems for fresh vegetables.

DESCRIPTION: Approximately half of the vegetables consumed at El Arish are produced in the area; the balance is brought in from the Delta, with loss of quality in transit. While it is possible to produce substantial quantities of vegetables per feddan, considerable variability exists from farm to farm. (See Staff Paper: Crop Production in Sinai, August 1981, Dames & Moore, for more details.)

On a smaller scale, a similar situation exists, where vegetables are grown throughout Sinai.

COST: The total cost of the project until the year 2000 is estimated to be LE 1.15 million, of which LE 550 thousand is foreign exchange cost and LE 500 thousand is local currency cost. By components, the estimated costs in thousand Egyptian pounds are:

	1982-5	1986-90	1991-5	1996-2000
Water Users' Associations	50	50	50	50
Upgrade Marketing System	200	100		
Technical Assistance	200	200		
Seed System	100	150		
Experimentation	(part of Ag. Experimentation project)			

STATUS: The Mennonite Central Committee (MCC) has a small resident staff (about 2 persons) at El Arish, providing technical assistance in vegetable production, mainly in the 320 feddan area, from which Egyptian farmers were displaced during the Israeli occupation, and where resettlement by Egyptians has been occurring in recent years. Many of these farmers are installing drip irrigation, which is a new technology for them. Where farmers have their own pumps, they have very few problems with the drip systems. Farmers who must depend on water from the public system have frequent problems, no matter which irrigation system they use. Some farmers have had little experience growing vegetables. No systematic experimentation is going on, to provide a basis for recommendations by Extension personnel for improved pratices. The flow of produce to the local markets is irregular, with widely fluctuating prices.

INFORMATION SOURCES: Agricultural team members observed vegetable growing and marketing in most of Sinai, throughout the growing season, and discussed growing conditions and problems with farmers, the MCC advisors and government officials, as well as with managers of produce markets.

REPORTERS' ASSESSMENT: The soils at El Arish and in small areas near population centers in much of Sinai are suitable for producing a wide range of vegetables. Much of the variability from farm to farm could be reduced, and overall production per feddan could be increased substantially with a project that yielded sound recommendations for improved agronomic practices (stemming from Experimentation); that encouraged the use of those practices through improved Extension; that provided better seeds; that helped farmers gain control over their water systems, through Water Users' Association; and that obtained more stability in prices farmers received, through improvement in marketing institutions.

RECOMMENDED NEXT STEPS: A substantially expanded (beyond the existing MCC assistance, which is quite good, but too small an effort) technical assistance effort, working in close association with the Agricultural Experimentation and Extension project, should be mounted.

REPORTERS: Ralph W. Richardson
Leon F. Hesser

DATE: August 31, 1981

Code No. 5 - A & F

Serial No. 169

INITIAL ENVIRONMENTAL EXAMINATION

PROJECT: Vegetables for Population Centers - Mainly El Arish, but also for other towns

NATURAL AREA CLASS: Sensitive and nonsensitive

ENVIRONMENTAL CONCERNS: Environmental concerns focus on the potential for drawdown or contamination of groundwater. In certain areas defined as sensitive (e.g. St. Catherine's and Oasis Feiran) there may be concern over extension of agricultural land into areas where unusual endemic plants are located.

MITIGATION AND ALTERNATIVES: Groundwater availability in El Arish and other settlements should be analyzed. Water should be tested for microorganisms and an ecological survey of the biota in areas under consideration for implementation of this project.

THRESHOLD ANALYSIS: Vegetables are highly demanded by existing populations. Further development will increase demand for fresh vegetables. Appropriate agricultural zones within settlements will have to be defined as part of land use analysis/master planning.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: Specific areas will have to be determined before conservation can be addressed.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: An EA is a prerequisite to this project.

PROJECT PRIORITY: High

PROJECT SUMMARY

NAME: Land Reclamation, Using Well Water

LOCATION: El Arish; El Qaa Plain; selected smaller areas.

TYPE: Land reclamation

OBJECTIVES:
(a) Increase food production, especially vegetables and fruits, for population centers in Sinai;
(b) Increase production of commercial crops, especially olives, for export from Sinai; and
(c) Increase production of forage crops to support local livestock enterprises.

DESCRIPTION: Many small, most of them garden-like, plots in Sinai are irrigated by water from shallow wells. The largest such area is at El Arish, where about 2,100 feddans of irrigated agriculture exists. Nearly all wells in Sinai yield salty water; some wells are too salty for growing crops.

Two areas at El Arish - one 1,200 feddans and one 2,500 feddans - have been designated for, and appear to have suitable soils for, irrigated agriculture. Many other areas, in wadis and plains, appear to have reasonable soils and topography for irrigated agriculture, depending on availability of water,

COST: The estimated total cost of reclaiming 27,700 feddans, phased over twenty years, including operation, maintenance and replacement for the irrigation system (but excluding social infrastructure, such as roads, housing, etc.) is LE 52.47 million, of which LE 20.91 million is foreign exchange cost and LE 31.56 million is local currency cost. (See attachment A for details.)

STATUS: Sixteen shallow wells have been drilled in the 1,200-feddan area, designated for reclamation at El Arish. One of these was in use during the summer of 1981, for about 50 feddans of new tree plantings, mostly oilves. The time-schedule for possible activation of the remaining 15 wells is unclear. The extent of reclamation possible at El Arish, in the El Qaa Plain and in other areas of Sinai depends on the extent to which economical sources of well water are found.

INFORMATION SOURCES: Data on the proposed scale of reclamation at El Arish were obtained from officials at El Arish. The possibility of reclaiming in other areas is deduced from reconnaissance survey, data by the Desert Institute and by visual examination of soils and topography by agriculture team members.

REPORTERS' ASSESSMENT: There appear to be reasonably good soils in a number of locations in Sinai where crops could be grown with water of up to 1,000 ppm salt content or, perhaps, up to 1,500 ppm for certain crops. Perhaps the largest such area is in the El Qaa Plain. The overriding question is the extent to which good water is available, at a depth that it can be pumped without excessive cost. In general, not much further planning can be done until more is known about water. A major concern is

that water quality at El Arish is deteriorating; and further expansion, even into the 1,200 feddan area, will accelerate the deterioration process until and unless new sources of quality water are discovered near there, or unless sweet water is piped in.

RECOMMENDED NEXT STEPS: The most urgent need is to stop further reclamation in the 1,200 feddan area at El Arish until the implications for the total El Arish water supply are better known. Aside from this, virtually no reclamation, using well water, can take place until test drilling programs yield information on groundwater supplies.

REPORTERS: Ralph W. Richardson
Leon F. Hesser
Sterling Davis

DATE: August 29, 1981

INVESTMENT (LE '000)

PROJECT Project Component	1981-1985		1986-1990		1991-1995		1996-2000		TOTAL
	Foreign	Local	Foreign	Local	Foreign	Local	Foreign	Local	
Land Reclamation Using Well Water									
Reclamation Near El Arish									
Reclaim 1200 fd.									
Original Investment	550	270							820
O M & R	90	290	160	480	160	480	160	480	2300
Reclaim 2500 fd.									
Original Investment			1130	570					1700
O M & R			200	600	330	990	330	990	3440
Reclamation in El Qaa Plain									
Detailed Studies, Soil & TOPO		100							100
Reclaim 5000 fd.									
Original Investment	2260	1140							3400
O M & R	400	1200	660	1980	660	1980	660	1980	9520
Reclaim 5000 fd									
Original Investment			2260	1140					3400
O M & R			400	1200	660	1980			6880
Reclaim 5000 fd.									
Original Investment					2260	1140			3400
O M & R					400	1200	660	1980	4240
Reclaim 5000 fd.									
Original Investment							2260	1140	3400
O M & R							400	1200	1600
Other Reclamation									
Detailed studies, Soil and TOPO		50							50
Reclaim 2000 fd									
Original Investment	920	450							1370
O M & R	160	480	260	790	260	790	260	790	3790
Reclaim 2000 fd.									
Original Investment					920	450			1370
O M & R					160	480	260	790	1690
	4380	3980	5070	6760	5810	9490	5650	11330	52470

Code No. 5 - A & B

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 170

PROJECT: Land Reclamation Using Well Water
El Arish, El Qaa Plain, selected smaller areas

NATURAL AREA CLASS: Sensitive and nonsensitive

ENVIRONMENTAL CONCERNS: Continued drawdown of wells may increase salinity. The result of increased salinity may certainly effect areas cultivated. The lack of water coupled with salinity subjects planted areas to wind erosion.

MITIGATION AND ALTERNATIVES: Use water from the Nile River and/or undertake feasibility studies before further reclamation is implemented.

THRESHOLD ANALYSIS: None

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: Groundwater investigation and agricultural research will help define a conservation strategy for sensitive areas.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: None required. P.S. 10 and 25 are very important to this project. All land reclamation areas should be monitored periodically to assess their impact.

PROJECT PRIORITY: High

PROJECT SUMMARY

NAME: Land Reclamation, Using Nile Water

LOCATION: East of Bitter Lakes, with the possibility of other candidate areas in northwestern Sinai.

TYPE: Land reclamation.

OBJECTIVES:

a - Provide food for growing population of Sinai,
b - Provide employment opportunities,
c - Increase production of commercial crops and, perhaps food crops, for Egyptian economy as a whole and for exports, and
d - Increase production of forage crops to support local livestock enterprises.

DESCRIPTION: The candidate total gross area for land reclamation in Egypt, up to the year 2000, has been described as 2.8 million feddans, of which 735,000 are in Sinai (Attachment A). The total candidate area has been divided into 70 candidate plots, of which five are in Sinai:

1 - Northern coastal area (0-5 m) - 265,000 feddans

2 - Northern coastal area (5-60 m) - 250,000 feddans

3 - El Tina Plain - 135,000 feddans

4 - East of Bitter Lakes - 30,000 feddans

5 - East of Suez - 55,000 feddans.

COST: The estimated total cost of the project depends on the total area reclaimed between now and the year 2000, and would range from LE 6.88 million for operating and maintenance expenses for the 3,000 feddans already reclaimed to LE 285.39 million, if a total of 180,000 feddans were to be reclaimed (Attachment B). Roughly, half the cost would be in foreign exchange.

STATUS: Approximately 3,000 feddans have been reclaimed, to some extent, East of Bitter Lakes (Attachment C). The infrastructure of the main canal and pumping station East of Bitter Lakes is very poor. A new set of six inverted-siphon tubes is being installed to deliver water from the Ismailia Canal under the Suez Canal to the reclamation area; one of the six is supplying water for the 3,000 feddans under irrigation.

No detailed planning has yet taken place on any of the other four candidate plots. Construction is underway to extend the Salaam Canal up to the Suez Canal, with capacity for delivering Nile water with a mixture of drainage water across the Suez to Sinai for possible use to irrigate candidate plots 1 and 3, above.

A reconnaissance soil survey was recently completed by REGWA on 1 million feddans in northwestern Sinai, in roughly the area that would be served by extension of Salaam Canal into Sinai. The conclusion is that 60,000 feddans (scattered, but much of it in El Tina Plains) is Class 3; 240,000 feddans is Class 4 and 700,000 feddans is Class 5, including shifting sand dunes.

INFORMATION SOURCES: All members of the agriculture team visited the area East of Bitter Lakes several times and discussed the project with resident managers,

senior officers in firms responsible for implementation, and various government officials. Team members visually inspected the other candidate sites and studied the few available publications that describe soils, topography and related resources, including sample survey data compiled by the Desert Institute. Other sources include Technical Report No. 19, the Water Master Plan for Egypt: Economic Evaluation of Land Reclamation, March 1981; and the Five-Year Plan: 1980-84.

REPORTERS' ASSESSMENT: Of the three separate schemes in operation East of Bitter Lakes, two are quite unproductive at present: Hero Village and Youth Village. (Attachments C and D.) The third, New Mit Abu El Kom, is reasonably successful from a technical standpoint, considering the lack of experimental data on which to base management decisions. The area under drip irrigation (250 feddans) looks better than that under center-pivot sprinklers (750 feddans). In effect, this 1,000 feddan area is an experimental plot, because they are learning by trial and error.

The agriculture team was unable to identify in the ARE an operational unit that is planning for the future of the 30,000 feddan area East of Bitter Lakes. If one does not exist, it is imperative that one be established and that it be guided by the considered deliberations of a competent, policy-level group if the development of that area is to be a success.

From visual inspection of the candidate areas for large-scale reclamation and after having studied available soil and topography data, the reporters cannot be optimistic about the prospects in Sinai. A growing amount of evidence supports this contention. For instance, the Economic Evaluation of Land Reclamation, referred to above, ranks the 70 candidate plots according to economic IRR (internal rate of return). Four of the five candidate plots in Sinai are in the lower 20 percentile group. East of Bitter Lakes is slightly better, at 27 percentile; hence, 73% of the candidate plots in Egypt would yield a higher economic return than the best one in Sinai. The El Tina Plains candidate plot ranks number 60 out of 70. A major reason is that even though much of this area is defined as Class 3, the soils are a heavy, lacustrine clay, thoroughly impregnated with salt; and they are almost impossible, technically, to leach.

RECOMMENDED NEXT STEPS: An urgent first step is to establish a policy-level group, which might be called a Policy and Planning Forum, with a Secretariat, to consider the more important issues in land reclamation in Sinai and to give guidance to those responsible for planning land reclamation schemes. Initial deliberations would be for the area East of Bitter Lakes. The Forum should be thoroughly apprised of the existing situation and should understand the implications for investment in rebuilding the infrastructure of the main water system if the decision is made to proceed with more than the 3,000 feddans already reclaimed.

A second crucial step is to redesign the main water system East of Bitter Lakes, and then to rebuild/rehabilitate it before proceeding with more reclamation. The existing system is certain to be inadequate and inefficient, and breakdowns are sure to happen. It will be much more cost-effective to rebuild/rehabilitate it now, rather than to have to stop the waterflow, perhaps for several months, while rebuilding takes place later.

Finally, an experimental unit (agronomic) needs to be installed, initially on about 25 feddans, but to be expanded later. This would be supervised by senior

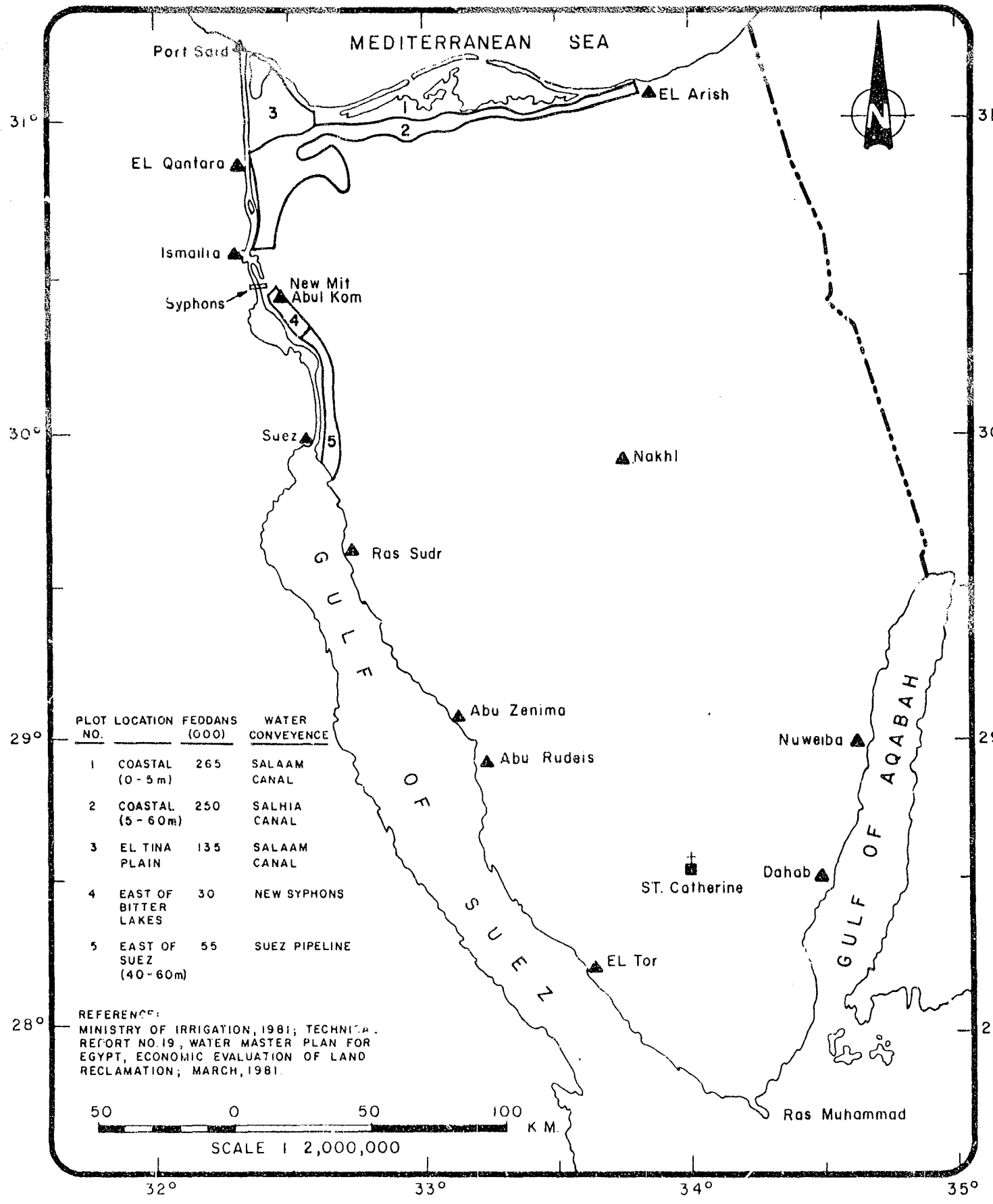
PROJECT SUMMARY
Land Reclamation, Using Nile Water

agronomists with experience in irrigated desert agriculture. The purpose would be to get a better information base on how to manage the water, fertilizer and other inputs to improve productivity. Further expension of the reclaimed area should be delayed until a more sound experimental base is available.

REPORTERS: Ralph W. Richardson
Leon F. Hesser
Sterling Davis
Itil Asmon

DATE: August 29, 1981

ATTACHMENT A



PLOT NO.	LOCATION	FEDDANS (000)	WATER CONVEYENCE
1	COASTAL (0 - 5 m)	265	SALAAM CANAL
2	COASTAL (5 - 60m)	250	SALHIA CANAL
3	EL TINA PLAIN	135	SALAAM CANAL
4	EAST OF BITTER LAKES	30	NEW SYPHONS
5	EAST OF SUEZ (40 - 60m)	55	SUEZ PIPELINE

REFERENCE:
MINISTRY OF IRRIGATION, 1981; TECHNICAL REPORT NO. 19, WATER MASTER PLAN FOR EGYPT, ECONOMIC EVALUATION OF LAND RECLAMATION; MARCH, 1981.

50 0 50 100 K M.

SCALE 1 2,000,000

Sinai Development Study Phase I
Ministry of Development

Dames & Moore

CANDIDATE PLOTS FOR RECLAMATION IN SINAI USING NILE WATER

PROJECT Project Component	INVESTMENT (LE '000)								TOTAL
	1981-1985		1986-1990		1991-1995		1996-2000		
	Foreign	Local	Foreign	Local	Foreign	Local	Foreign	Local	
Land Reclamation Using Nile Water									
Establish Policy & Planning Forum		100		150		150		150	550
Reclaim East of Bitter Lakes									
Redesign Main Water System	50	100							150
Rehabilitate Main Water System	5000	5000							10000
Reclaim 3,000 fd.									
Original Investment	Completed								
O M & R	360	1090	450	1360	450	1360	450	1360	6880
Detailed Studies, Soil & TOPO		50							50
Feasibility Studies	50	100							150
Reclaim 7000 fd									
Original Investment	4150	2070							6220
O M & R	420	1270	1060	3170	1060	3170	1060	3170	14380
Detailed Studies, Soil & TOPO		50							50
Feasibility Studies	50	100							150
Reclaim 10,000 fd.									
Original Investment			6000	3000					9000
O M & R			1000	3000	1500	4500	1500	4500	16000
Detailed Studies, Soil & TOPO				50					50
Feasibility Studies			50	100					150
Reclaim 10,000 fd.									
Original Investment					6000	3000			9000
O M & R			1000		1000	3000	1500	4500	10000
Extension of Salaam Canal									
Detailed Feasibility Studies (Part of Infrastructure)									
Install Syphons for 50,000 fd. (Part of Infrastructure Sector)									
Extend Salaam Canal (Part of Infrastructure Sector)									
Detailed Studies, Soil & TOPO				150					150
Feasibility Studies, 50,000 fd.			100	200					300
Reclaim 50,000 fd. (Class 3 Land)					30,000	15,000			45,000
Original Investment					30,000	15,000			45,000
O M & R					4,500	13,600	7560	22700	48,360

PROJECT Project Component	INVESTMENT (LE '000)								TOTAL
	1981-1985		1986-1990		1991-1995		1996-2000		
	Foreign	Local	Foreign	Local	Foreign	Local	Foreign	Local	
Detailed Studies, Soil & TOPO						250			250
Feasibility Studies, 100,000 fd.					150	300			450
Original Investment							60,000	30,000	40,000
O M & R							4,500	13,600	18,100
	10,080	9930	8660	11180	44660	44330	76,570	79,900	285,390

LAND RECLAMATION EAST OF BITTER LAKES

In the late 1950's or early 1960's, a plan was laid out to reclaim 20,000 feddans east of Bitter Lakes. The first installations were completed about 1963, and perhaps 1,000 feddans were under irrigation by 1967. There was essentially no activity between 1967 and 1980. Water is from the Nile, moved through the Ismailia Canal and then under the Suez Canal in a system of inverted syphon tubes to a canal on the east bank. The syphons cross the Suez Canal about 25 kilometres south of the bridge (#6) from Ismailia to Sinai. From the syphons, the water runs through a canal for about 2½ kilometres east to a pumping station, where it is lifted about 6 metres to a series of canals that conduct the water to reclamation projects. Originally, the pump station was designed to have been run by a series of six 350 horsepower electric motors.

The syphons that were used prior to 1967 are being replaced by a new system, with capacity to irrigate 30,000 feddans. Six syphons about 2 metres each in diameter are being installed. One syphon was operating in June 1981. The system is designed so that water flowing from the lift station can go to any of four project areas. One area lies to the north and is designated in future years. An area to the east named "Hero Village" is designated for reclamation by military forces. To the south is an area known as "Youth Farms" that is being reclaimed from land that had been farmed prior to 1967, and south beyond that is a new reclamation area called "New Mit Abou El Kom Village". Each of these last three reclamation areas will be discussed in turn.

HERO VILLAGE

The executing agent for this project is the Akkaria Company. In the winter of 1980-81, they had planted some small grain and some windbreaks and nursery stock. These were irrigated by gravity surface methods: furrow and basin. They propose to irrigate 1,000 feddans during the summer of 1981 by movable sprinkler irrigation, and an additional 2,000 feddans by the winter of 1981-82, by center pivot sprinkler system. They expect to grow berseem clover, barley, peas, horse beans, ground nuts, watermelon, cucumber, beans, tomatoes, and other vegetables.

YOUTH FARMS

A few young farmers have resettled this area and are farming perhaps 300-500 feddans of the original 1,000-1,200 feddans, with surface irrigation. Neither the irrigation ditches nor the drains are well maintained. Irrigation is by gravity surface methods: small basin, furrow, furrow-basin combination, and short furrow.

The crops, mainly vegetables and some olive trees, do not look promising.

NEW MIT ABOU EL KOM VILLAGE

This area was planned and designed by Misr Consultant Engineers and is being implemented by Arab Contractors. Of the three areas, this is the most impressive at this early stage of development. The design calls for reclaiming 6,000 feddans in phase 1 (1981-82) with an additional 5,000 feddans to be reclaimed later. Equipment for the first 1,000 feddans of phase 1 has been installed and is in operation. The equipment includes five center pivot irrigation systems, each covering 150 feddans, plus another 250 feddans of drip irrigation in between the centers.

Following installation of the center pivots in October 1980, the area under pivots was planted to barley. The crop was chissled down, rather than harvested, to put organic matter in the soil. Following this, alfalfa was planted under pivots number 1 and 3; peanuts under pivots number 4 and 5; the area under pivot number 2 was planted to sorghum, beans and sunflower. The young alfalfa stand looked promising in June 1981.

In this project area, the Government finances the social infrastructure: roads, electricity, water, etc. The Government provides low interest loans for the productive infrastructure. Misr Engineers has prepared a feasibility study to justify these low interest loans. The study included soil analyses, water studies related to the proposed irrigation systems, cropping programs, marketing, implementation of the project, agricultural industries needed, possible livestock enterprises, and the need for secondary infrastructure.

Soil analyses have been completed only for the first 1,000 feddans. They are awaiting soil classification for the additional 5,000 feddans before proceeding further. A commercial firm was hired to clear the area of mines.

Misr Engineers designed the 6,000 feddan area to include 3 villages: one central service center, with schools and other service institutions, plus two satellite villages. About one third of the farmers would live in each of the three villages.

Plans apparently include turning the land over to settlers at some point in the future, although the timing for this has not yet been determined. Neither have the details of what the land allocation pattern and procedures would be.

IRRIGATION INFRASTRUCTURE

In general, the lift station and the original set of canals and drains are in a very poor state of repair. Weeds and grass are growing in the canals and there are signs of considerable leakage from the main canal.

The original electric motors were replaced many years ago by Mercedes-Benz diesel engines to drive the pumps. Although five are in place, only four of them were functioning. Maintenance looked very poor.

LAND RECLAMATION IN SINAI
EAST OF BITTER LAKES REGION

Members of the agricultural team have made over ten visits to this region as groups and individually. This level of interest in the projects stems from the facts that:

1 - This is the only old reclamation scheme being rehabilitated and expanded in Sinai.
2 - It is the largest reclamation scheme underway in Sinai.
3 - Advanced irrigation technology is being utilized for the first time - on sandy soils in Sinai.
4 - The area being reclaimed has been superficially examined regarding soil and land suitability for reclamation by the team and found to be very promising for agriculture. (A soil survey conducted by the Desert Institute is being completed.)
5 - An assured supply of good quality water for the long term is available through the Ismailia-Suez Canal siphon system to the area.
6 - Two principal reclamation developments are moving rapidly on site - the New Mit Abu El Kom project and Hero Village.

The agriculture team's visits in November and December 1980, secured preliminary information regarding:

1 - The vital need for rehabilitation of the main lift station,
2 - The need for rehabilitation and lining of the secondary distribution system to youth farms, Hero Village and New Mit Abu El Kom,
3 - The need for improved drainage in the youth farm area and Hero Village,
4 - The water application levels being used at New Mit Abu El Kom for both center pivot sprinkler and drip systems,
5 - The stage of development and near-term planning for all systems, and
6 - The status of all crops recently planted for summer harvest.

Further visits in May and June reconfirmed the earlier above observations and data. All crops observed in May and June were either very promising or quite satisfactory for this early stage of reclamation development.

In early August, one of the team members visited New Mit Abu El Kom and reported that the cultivation of alfalfa, sorghum, horse bean and sunflower were so poor that some were to be plowed into the soil. On receipt of this information, a visit by three team members was quickly planned.

LAND RECLAMATION IN SINAI

On August 23, 1981, specialists in soils, irrigation and crop production travelled to Sinai to try to determine the reasons for this reversal of prospects, which appeared so promising in June of this year. We also wished to determine the extent and seriousness of the problem.

The sandy, well-drained soils under sprinkler irrigation at New Mit Abu El Kom appear to have very low fertilizer retention capacity. Heavy watering regimes (present application of 1,350 gal/minute over a 13-hour period on 150 feddans per day equals 3,059 m^3/fd. over a four-month crop cycle) plus a single application of fertilizers for each crop cycle (200 kilos super phosphate, 40 kilos ammonium sulfate, 50 kilos potash) could very well account for the dwarf nature, lack of tillering, early flowering and generally poor growth of alfalfa, sorghum, sunflower and peanuts. The horse beans, Vicia faba, had already been ploughed up.

Soil examination with a 2-foot probe revealed that drainage and percolation of water is rapid and thorough.

Unevenness of development of all crops strongly suggests that even the original application of nutrients may not have been uniform, or that many areas of soil have very different fertilizer retention capabilites.

In contrast to the sprinkler system, the areas irrigated by drip methods (1.6 gal per hour for 4 hours per day which equals 850 to 4,000 m^3/feddan/year, depending on crop spacing) show uniform growth and strong development. Fertilizer is applied in the irrigation water intermittently. This continuous feeding of plants during the year could be the principal reason for the difference in growth between the two systems.

No evidence of soil problems were observed except in a small block of grapes, where it appears that heavier loam and clay soils are becoming waterlogged. The area is quite uneven and should have been levelled before planting. A number of plants show evidence of inadequate root aeration, in the low spots in this field. A reduced water regime, every other day irrigation rather than every day should help to correct the problem. Ultimately, some form of drainage will be required.

Management at New Mit Abu El Kom is quite satisfactory, given the conditions under which they operate. Although soil analyses were conducted on the entire irrigated area, it is obvious that fertilizer rate and timing of application must be modified

under sprinkler irrigation to compensate for rapid leaching of nutrients beyond the root zone of plants.

Small scale field trials must be conducted immediately to determine and select:

a - Best adapted varieties of crops for which this area may have a competitive advantage.

b - Establish levels of NPK fertilizers required for each best adapted variety to achieve maximum productivity.

c - Establish fertilizer application regimes conducive to maximum productivity.

These field trials will not assure total success of the land reclamation scheme but resolve the most urgent problems observed. Future trials involving minor elements, weed, pest and disease control should provide information vital to successful development of this area.

Hero Village

Crop production in this development on the 1,000-feddan block, irrigated with movable pipe sprinklers, is totally unsatisfactory. The field plantings, soil, equipment and even the main pump house are all in bad condition.

The entire area, with much heavier soils than New Mit Abu El Kom,should have been levelled before planting. There are now problems of drainage and soil salinity. It is estimated that 10% of the 1,000-feddan block is unproductive due to water-logging and salt accumulation. There are no drains.

All further work in this project should take into consideration the distinct nature of some of these soils and provide adequate drainage and land levelling.

Field experimentation here also of highest priority but one station could serve both reclamation schemes.

Water Supply

Although plans are in advanced stages for further reclamation of land, it is our opinion that present water supplies and pumping stations are not adequate for any further expansion:

1 - Only one siphon under the Suez Canal is in operation.

2 - The main canal from the siphon is leaking badly and has much vegetation growing in it.

3 - The primary lift station pump house requires complete rehabilitation.

Pumping capacity inadequate for further land reclamation.

4 - Secondary distribution canals are losing much water through seepage. Must be lined and widened.

These are the major physical constraints which must be corrected before further land reclamation is undertaken.

Field experimentation is essential to the viability of this land reclamation area and should be started at once.

Drainage is a serious primary constraint to future success at Hero Village and should be initiated before any further reclamation work is undertaken.

Ralph Richardson
August 30, 1981

Code No. 5 - A

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 171

PROJECT: Land Reclamation Using Nile Water - East of Bitter Lakes with the possibility of other candidate areas in Northwestern Sinai

NATURAL AREA CLASS: Nonsensitive

ENVIRONMENTAL CONCERNS: Care must be taken not to increase salinity. Problems of drainage due to flood irrigation in newly-reclaimed desert areas resulted in rising of water levels and formation of a salt crust on the soil surface. The first time crops were cultivated in these areas cultivation seemed successful but crops dried out shortly thereafter. Manure perculated through the sandy soil as no humus was present in the soil to retain the manure to be used by plants.

MITIGATION AND ALTERNATIVES: Plow the soil every 2-3 years when the plants attain a reasonable size in order to add to the self fertility of the soil.

THRESHOLD ANALYSIS: None

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: None

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: Periodic EAs should be submitted every three years.

PROJECT PRIORITY:

CODE NO. 5-A&B

SERIAL NO. 172

PROJECT SUMMARY

NAME: Livestock Producer Markets

LOCATION: Rural Sinai - To be determined

TYPE: Livestock Activity integrated with development of livestock Associations

OBJECTIVES:

1) To promote fair marketing practices so that livestock producers can expect a fair price for their animals and products;

2) To provide an incentive to producers to sell those animals in their flocks and herds which are of low productive potential so as to reduce the pressure on the range;

3) To offer livestock producers the opportunity to exchange their animals and products for non-livestock products and to make food staples, cloth, etc available to the producers without having to travel long distances.

DESCRIPTION: It is proposed that one of the activities of the livestock/grazing associations would be to set-up several (6) marketing sites in locations or villages where the livestock producers frequent. The association would have current information available on prices of livestock and products at other markets so that the producers could determine whether they were being offered a fair price. The association may wish to be in a position to offer minimum prices for the livestock and/or products or to group them into lots to be transported to other more lucrative markets. In addition such food staples as small grains, flour, salt, sugar, spices, tea, coffee etc, cloth, thread and sewing needs, matches and whatever, should be made available at these markets so as to facilitate the obtaining of the items.

At present there are few such markets in Sinai and the rural peoples are often taken advantage of due to their lack of knowledge as to values on a country wide basis. The livestock/grazing association, having the confidence of the producers could offer considerable assistance through a combined effort.

If deemed desirable by the association such markets could be operated in conjunction with and/or in the vicinity of the proposed animal health clinics.

COST:

a) Establishment

6 small enclosures (pens) for sale yard. LE,	60,000
6 small offices	30,000
6 four wheel drive vehicles	108,000
other equipment (pens, chutes trailers, etc)	60,000
Total	258,000

b) Annual Operations

6 supervisors	LE,	36,000
6 laborers		18,000
annual replacement of vehicles/equipment		48,000
annual supplies		12,000
Initial budget (annual) for purchase of saleable goods		6,000
Total (Annual)		120,000

STATUS: New Project

INFORMATION SOURCES: Discussions with Bedouins

REPORTERS ASSESSMENT: Such markets have been initated with success and developed into a real asset in other arid zone developing countries.

RECOMMENDED NEXT STEP: Have discussions with tribal chiefs, the Bedouin political councils and the governors of North and South Sinai.

REPORTER: R.S. Temple

DATE: September 5, 1981

Code No. 5 - A&B

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 172

PROJECT: Livestock Producer Markets - Rural Sinai

NATURAL AREA CLASS: Sensitive and nonsensitive

ENVIRONMENTAL CONCERNS: Some limited deterioration of vegetation in immediate area of the markets.

MITIGATION AND ALTERNATIVES: Prohibit pasturing of animals near market place.

THRESHOLD ANALYSIS: None

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: Would assist in removing non-productive animals from the range and allow more pasture for better producers.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: No initial EA required. Project should be reviewed 3 - 5 years after initiation.

PROJECT PRIORITY: Deferred

PROJECT SUMMARY

NAME: Controlled Environment Agriculture

LOCATION: El Arish and possibly Abu Rudeis and St. Catherine's

TYPE: Agriculture Production

OBJECTIVES:

(a) Assure a year-round supply of fresh produce for population centers that are deficit, for institutions that service tourists, or for workers in petroleum or mineral production sites that are remote from agricultural areas; and

(b) Provide experimental facilities to conduct a range of agronomic practices and tests.

DESCRIPTION: Technological advances of the past 20 years have established the engineering and biological feasibility of controlled environment agriculture (CEA). In special situations, economic feasibility has also been established. Increases in yield per unit of land in such high technology systems range from 100 to 1,000 percent more than conventional open-field production, depending upon the crops grown. (See Attachment A for more complete description.)

COST: Excluding incentives that may be needed to attract the competent management and technical persons required to operate a CEA system, estimated costs of a 5-feddan unit (the size recommended for El Arish) are:

	Foreign Exchange	Local Currency
Capital costs	LE 300,000	LE 75,000
Annual operating costs	10,000	90,000

STATUS: CEA structures are now in operation in many nations, to provide fresh produce in special situations. Technological advancements are continuing to be made; and it seems likely that CEA will grow in importance, globally, for special situations, although the practice will never constitute a large proportion of total agricultural production.

INFORMATION SOURCES: The reporter has been associated in Mexico, the U.S., and other countries with the development and implementation of CEA systems and has accumulated references and experience on the subject.

REPORTER'S ASSESSMENT: Three or four special situations in Sinai appear to be the kind in which CEA systems might play an important role during the next decade or so. El Arish has a relatively large population and is deficit in fresh fruits and vegetables; hotels and restaurants that serve the growing tourist trade will need an assured supply of quality produce; CEA is a very efficient user of water, the scarce resource in El Arish. Petroleum and mineral production communities in western Sinai are remote from agricultural areas. St. Catherine's is an area that can produce vegetables only part of the year, at best; hotels and restaurants will need an assured supply

of fresh produce for the growing tourist trade.

The economics of CEA for each of these special situations will need to be looked at closely, before a definite recommendation can be made. However, on the basis of preliminary calculations, it appears that, quality of product considered, the economics may be reasonably favorable.

RECOMMENDED NEXT STEPS: The first installation of CEA should probably be considered for El Arish. The logical timing will depend to a large extent on how rapidly the tourist business developes. The installation should be planned for initiating operation about the time new hotels and restaurants are opened to serve the European tourist trade.

The first step would be to do a feasibility study. The timing for this will depend on other events, as noted above, but might take place near the end of the first planning period, with construction taking place early in the second 5-year planning period (1986-90).

REPORTER: Ralph W. Richardson DATE: August 31, 1981

Code No. 5-A & B

INITIAL ENVIRONMENTAL EXAMINATION

Serial No. 173

PROJECT: Controlled Environment Agriculture -
El Arish, Abu Rudeis, and St. Catherine's

NATURAL AREA CLASS: El Arish - Nonsensitive
Abu Rudeis and St. Catherine's - sensitive

ENVIRONMENTAL CONCERNS: None

MITIGATION AND ALTERNATIVES: NA

THRESHOLD ANALYSIS: NA

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: This type would be suitable for areas which are located within sensitive zones and provides an opportunity to provide vegetables where little can be grown due to the gross environment.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: None required.

PROJECT PRIORITY: High

CODE NO. 5-A & D

SERIAL NO. 174

PROJECT SUMMARY

NAME: Fertilizer Quotas for Desert Soils

LOCATION: El Arish, Ismailia (and other land reclamation zones)

TYPE: Administrative

OBJECTIVES: Provide sufficient fertilizer to farmers in desert lands.

DESCRIPTION: At present, farmers in the poor, sandy desert soils receive fertilizer quotas per feddan no higher than those in the richer Nile Valley soils and, thus, use insufficient quantities and obtain low yields. A special zone-specific fertilizer quota for these lands would enable farmers to receive sufficient fertilizer quantities at official prices.

COST: Little or none.

INFORMATION SOURCES: Principal Bank for Development and Agricultural Credit (PBDAC); desert agriculture research centers; Agricultural Extension Service.

REPORTER'S ASSESSMENT: This can be a rapid and simple measure for augmenting agricultural productivity in North Sinai, Ismailia (East Bitter Lakes) and other reclamation areas.

RECOMMENDED NEXT STEPS:

1 - Obtain PBDAC support for the measure;
2 - Convene in North Sinai, Ismailia and other concerned governorates ad hoc committee, including representatives of the agricultural bank, agricultural research and extension; and
3 - Define zone-specific fertilizer quotas and introduce them into PBDAC norms.

REPORTER: I. Asmon DATE: June 17, 1981

Code No. 5 A & D

INITIAL ENVIRONMENTAL EXAMINATION Serial No. 174

PROJECT: Fertilizer Quotas for Desert Soils -
El Arish, Ismailia (and other land reclamation zones)

NATURAL AREA CLASS: Sensitive and nonsensitive

ENVIRONMENTAL CONCERNS: None

MITIGATION AND ALTERNATIVES: Initially, the first few years of cultivation, crops should be grown and plowed under to increase the humus. (Leguminous crops, e.g. alfalfa, broad beans, etc. may be cultivated and when these attain a reasonable size they may be plowed under). After this procedure, the addition of manures or fertilizers would be useful.

THRESHOLD ANALYSIS: Adding fertilizers to new sandy soil is of little or no use as they freely perculate to levels below roots and are not used by the plants.

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: Specific interaction must be determined after zones for quotas and defined.

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: Not required

PROJECT PRIORITY: High

CODE NO. 5-D

SERIAL NO. 175

PROJECT SUMMARY

NAME: Land Titles to New Lands Settlers

LOCATION: East Bitter Lakes, other public irrigation projects

TYPE: Administrative

OBJECTIVES: Give graduates and smallholders on public irrigation projects clear, mortgagable titles to their farms.

DESCRIPTION: At present, beneficiaries on public irrigation projects are supposed to repay the land development costs, as assessed by the Ministry of Development, in 15 annual payments, following a four-year grace period. Until payments are completed (not only by the individual but by all members of a given land reclamation co-op),each beneficiary has only a certificate of ownership, which does not allow him to place the land as collateral for livestock and farm improvement loans. Thus, beneficiaries are limited to the severely restricted medium-term credit available through the land reclamation co-ops. At a realistic 15% interest rate, the present value of the above payment schedule is 20% of the normal value. Thus, it is proposed that the Ministry of Development should offer reclaimed land for cash sale to the beneficiaries at 20% of its assessed value as an alternative to the present repayment schedule. Many beneficiaries are likely to take up such an offer, which would enable them to place the land as collateral for farm improvement loans.

COST: Little or none (the proposal would generate an immediate positive cash flow to the Ministry of Development).

INFORMATION SOURCES: General Organization for Construction Projects and Agricultural Development, Ministry of Development.

REPORTER'S ASSESSMENT: This is an immediate measure which would clarify the Ministry of Development's relationship with the beneficiaries and give them a strong incentive for investing in the land. Smallholders who have farmed for five years in the East Bitter Lakes area consider a clear title as the most important condition for development.

RECOMMENDED NEXT STEPS:

1 - Obtain Ministry of Development support for the project; and
2 - Draft a regulation to that effect and make it official through a ministerial decree.

Code No. 5-D

Serial No. 175

INITIAL ENVIRONMENTAL EXAMINATION

PROJECT: New Land Titles to New Lands
Settlers - East of Bitter Lakes and
other Public Irrigation projects

NATURAL AREA CLASS: Sensitive and nonsensitive

ENVIRONMENTAL CONCERNS: None/Administrative

MITIGRATION AND ALTERNATIVES: None

THRESHOLD ANALYSIS: NA

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: NA

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: None required

PROJECT PRIORITY: High

SERIAL NO.: 176

PROJECT SUMMARY

NAME: Limited Range Improvement

LOCATION: To be determined.

TYPE: Livestock activity integrated with development of livestock associations.

OBJECTIVES:

A - Over a three-year period:
  1 - To divert runoff water from selected wadis to wider areas of land where it has been ascertained that increased pasture would result.
  2 - To utilize "pitting" of land surface in certain sites of fairly low gradient where soils are such that pasture could grow, if the precipitation was detained rather than allowing free runoff.
  3 - To reseed these areas (A-1 & 2), if water conservation is successful, with appropriate and tolerant species of grasses, shrubs and browse.

B - At the end of the three-year period:
  1 - To determine, as best as possible, the cost effectiveness of the above programs.
  2 - To plan a wider strategy for further development and planning of pasture improvement through water spreading and "pitting."
  3 - To determine whether such techniques are effective for limited production of annual crops, such as barley and sorghum.

DESCRIPTION: Although the rainfall in most of Sinai is extremely low (ranging from practically nothing to 250mm per year), there are occasions when storms are heavy enough that there is runoff - even to the degree of flooding. Most such runoff is carried down the wadis, thus not entering the soil where it can be utilized for plant growth. There are three main drainages in Sinai (see Dr. Shata's Working Paper on "The Management of Surface Runoff Water"), where periodically, storms do occur and considerable runoff results. There are two simple methods which are not too expensive (depending on size of project and topography of area) and which allow the water to percolate into the soils. The first method is the diversion of the runoff water (water spreading) to areas outside the main channel of the wadi, where it can serve as an irrigation technique for natural pasture or even cultivated crops. The second method is to "pit" the landscape in low-gradient areas, outside of the main wadi flow, so that precipitation is "caught" on the area it falls; and, due to its being gathered in pits, it is allowed time to penetrate the soils rather than run off. Both techniques are extremely old, used for centuries. But due to development of modern machines, much greater surface areas can now be managed by such techniques. At the same time and in the same locations, the use of drought-tolerant grasses, shrubs and browse should be tried.

The objectives of the project have been divided into essentially two phases. The first is to work out sites and techniques specific to Sinai and then to ascertain the cost-effectiveness of such a program, if done on a larger scale during a second phase.

COST: The cost of the first phase would include:

1 - Survey by soil scientist and pasture specialist for two feasibility study areas - 2 weeks, each	LE 1,000
2 - Two weeks' time of 1 large track-type tractor with appropriate equipment @ LE 100/hour (100 hours work) and supervision by soil scientist (or pasture specialist) at LE 500/two weeks	LE 10,500
3 - One week supervision/year by each: the soil scientist and the pasture specialist for 3 years, equals 6 weeks @ LE 250/week	LE 1,500
4 - Cost of seeds and seedlings	LE 5,000
5 - Evaluation of first phase and planning for expansion - 4 weeks (each)for two specialists	LE 2,000
6 - Contingencies - Travel, additional machine work, etc.	LE 5,000
TOTAL (3 years)	LE 25,000

The cost of the second phase is to be determined.

STATUS: New project.

INFORMATION SOURCES: Dr. Shata's paper on "The Management of Surface Runoff Water" and discussions with Sinai officials and Bedouins.

REPORTER'S ASSESSMENT: Such projects have been successful in other arid countries.

RECOMMENDED NEXT STEP: Early implementation of first phase.

Reporter: R. S. Temple DATE: September 7, 1981

INITIAL ENVIRONMENTAL EXAMINATION

Code No. 5A & B

Serial No. 176

PROJECT: Limited Range Improvement - to be determined

NATURAL AREA CLASS: Possibly both sensitive and nonsensitive

ENVIRONMENTAL CONCERNS: None, this project controls the environment to the extent that it makes use of rainwater that would normally be lost.

MITIGATION AND ALTERNATIVES: None

THRESHOLD ANALYSIS: NA

INTERACTION WITH AREAS OF PROTECTION AND CONSERVANCY: Unknown

RECOMMENDATION FOR FUTURE ENVIRONMENTAL ANALYSIS: None required

PROJECT PRIORITY: Deferred/High