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DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, D.C. 20523

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PROJECT PAPER

Proposal and Recommendations
For the Review of the
Development Loan Committee

JORDAN - JORDAN VALLEY IRRIGATION PROJECT STAGE II

AID-DLC/P-2230

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DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
WASHINGTON, D.C. 20523

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August 8, 1977

MEMORANDUM FOR THE DEVELOPMENT LOAN COMMITTEE

SUBJECT: Jordan - Jordan Valley Irrigation Project Stage II

Attached for your review are recommendations for authorization of a loan to Jordan (the "Cooperating Country") in an amount not to exceed Five Million United States Dollars (\$5,000,000) to help in financing certain foreign exchange and local currency costs of goods and services required for the project.

No meeting is scheduled for this loan proposal. However, please advise us of your concurrence or objections as early as possible, but in no event later than close of business on Tuesday, August 16, 1977. If you are a voting member, a poll sheet has been enclosed for your response.

Development Loan Committee
Office of Development Program
Review

Attachments:

Summary and Recommendations
Project Analysis
Annexes 1 - 10

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JORDAN VALLEY IRRIGATION PROJECT STAGE II

I. Summary and Recommendations

A. Borrower: The Hashemite Kingdom of Jordan (GOJ).
The Project will be implemented by the Jordan Valley Authority (JVA).

B. Loan:

1. Amount: Not to exceed five million U.S. dollars (U.S. \$5,000,000) to be financed from Security Supporting Assistance Funds.

2. Terms: Repayable in U.S. dollars in 40 years, including a grace period of 10 years at an annual rate of two percent (2%) during the grace period and three percent (3%) thereafter.

C. Project Cost: The project will cost approximately \$10 million of which \$7 million are estimated to be in foreign exchange and \$3 million in local costs. The proposed AID loan will be disbursed in both foreign exchange and local currency costs. A Kreditanstalt fur Wiederfaubau (KFW) loan of \$1.7 million equivalent has been made available to the GOJ and the equivalent of \$3.4 million is to be provided by the GOJ.

(US \$000)

<u>Funds</u>	<u>Foreign Exchange (U.S. Dollars)</u>	<u>Local Currency ^{1/} (U.S. Dollars)</u>	<u>Total Costs</u>
AID	\$4,280	\$ 720	\$ 5,000
KFW ^{2/}	1,675	30	1,705
GOJ ^{2/}	<u>1,316</u>	<u>2,088</u>	<u>3,404</u>
	\$7,271	\$2,838	\$10,109

^{1/} The exchange rate used throughout this paper is one Jordanian Dinar (JD) equals U.S. \$3.00.

^{2/} Includes all contingencies.

D. Project Description: The proposed loan will assist in financing final detailed design and preparation of invitation for bid documents necessary to secure bids from international and Jordanian contractors for construction of the proposed Maqarin Dam and its associated power generation facilities and irrigation system.

E. Project Justification: The JVA's six year (1976-1981) plan for continuing the activities initiated under the "Rehabilitation and Development Plan of the Jordan Valley (East Bank) 1973-1975" has a major objective to provide assured irrigation water to all of the irrigable land on the East Bank of the Jordan River. Irrigation projects previously initiated in the Valley will, by 1977, utilize all the water provided by existing dams and unregulated streams. Therefore, in order to determine the feasibility of securing additional water from the Yarmouk River and the power and irrigation benefits, the GOJ asked and AID agreed to finance a study of the feasibility of constructing a multi-purpose dam at Maqarin. This study, which has been substantially completed by the Harza Overseas Engineering Co., demonstrates the economic, technical and financial viability of a project which will, when built, permit full irrigation of all arable land in the Jordan River Valley (East Bank), assure continued irrigation water for the Adasiya Triangle and provide water for municipal and industrial areas in the Jordan Valley and the city of Irbid.

An analysis also was made of the water rights of the riparian States, namely Jordan, Israel and Syria. The principle concerns of the States have been identified and at present no cause has been found to delay project implementation. In fact, the objectives of the States is identical in that all desire the most efficient use of the limited water resources of the region. Construction of the Maqarin Dam will permit the most efficient use of the flow of water entering the Yarmouk River above Maqarin by providing storage and regulation. The diversion weir at Adasiya will contribute to the efficient regulation to the Adasiya Triangle and East Ghor Main Canal of the flows entering the Yarmouk below the dam site and water releases from the Maqarin Dam. The conversion of existing gravity feed irrigated areas and the development of new areas utilizing the more efficient method of applying water to the land by a pressure irrigation system (i.e., sprinklers) also contributes to the overall objectives of making the most efficient use of water resources.

F. Mission Views: The Mission endorses the proposed loan. The Mission Director's 611(e) certification is enclosed as Annex 1.

G. Statutory Checklist: All statutory criteria have been met. (See Annex 2.)

H. Issues: None.

I. Recommendation: That a loan be authorized in an amount not to exceed U.S. \$5.0 million.

Project Committee

USAID/J: Thomas A. Pearson, Chairman

NE/CD: James M. Shea

SER/ENGR: Leo Mastrofini

NE/ME: Ronald Witherell

GC/NE: Jan Miller

SER/CM: J.P. Pittenger

II. Project Background and Description

A. Location

The Yarmouk River, the largest tributary of the Jordan River, joins the Jordan River about seven kilometers below the outlet of Lake Tiberias, near the village of Adasiya. The Yarmouk River drains an area of 6,800 square kilometers, of which 1,800 square kilometers are in the Hashemite Kingdom of Jordan and the remaining 5,000 square kilometers in Syria. Several tributaries which drain areas on the Jordanian and Syrian Plateaus join near Maqarin Station to form the Yarmouk River. Wadi Shallala drains the areas within the Kingdom of Jordan to the south of Maqarin and to the north of Jerash. The Wadi Zeizun drains the area to the east and collects the perennial flow from the vicinity of Muzeirib. The Wadi Harir drains the area to the northeast. The Wadi Allane contributes the runoff from the Syrian plains to the north. These wadis in general drain a rolling plateau area without deep canyons. Close to their junctions, they enter canyons which join to form the Yarmouk River which is itself deeply incised into the plateau forming a narrow gorge several hundred meters deep. The Yarmouk proper has only one major tributary, the Wadi Raqqad. This stream, which flows into the Yarmouk from the north just upstream of Ebalid Station, drains a catchment area of nearly 600 square kilometers, about half of which lies within a zone of relatively high rainfall. A map of the project area is presented in Annex 3.

B. Previous Studies

The handling and controlling of the waters of the Jordan and Yarmouk Rivers outside the boundaries of Palestine were considered in the 1920 Convention between Great Britain and France concerning the Mandate for Syria and Lebanon, Palestine and Mesopotamia. Under this Convention, experts were to examine the irrigation and hydroelectric potential of the upper Jordan, the Yarmouk and their tributaries. It is not clear that any definitive results came from the examination or even that the study was done. In 1930, the British Colonial Office conducted a survey of the potential for irrigation of the Jordan Valley. This survey was followed by further studies under the 1937 Peel

Commission and the 1938 Woodhead Technical Commission on Palestine. An important result of the Peel Commission was the first hydrographic survey of the Jordan Valley. This hydrographic survey, completed in 1939, also included a plan for the use of water resources of the Jordan and Yarmouk Rivers and Lake Tiberias. Subsequent to this first water use plan, several additional surveys, Commission's plans, studies, proposals, etc., for development of the Jordan and Yarmouk Rivers have been made, namely: Joint Study, Palestine Water Corporation, Lebanese Engineers (1943); Lowermilk Plan (1944); Hays Plan (1948); McDonald Plan (1951); Bungler Plan (1952); Charles T. Main Plan (1953); Johnston Plan (1953); Cotton Plan (1954); Arab Plan (1954); Baker-Harza Report (1955); Energoprojekt Study (1960); and Dar Al Handasah Report (1969). Several of the previous engineering studies noted that full development of the Yarmouk River would require the construction of two dams on Jordanian and Syrian territories. The construction of one of those dams, Khalid bin-Al-Walid, was under implementation when the June 1967 war broke out and Israel occupied territories which included part of the dam site and the West Bank of Jordan. Consequently, construction activities were terminated.

The dam site at Maqarin is accessible at present from both the Syrian and Jordanian sides. The left and right banks of the Yarmouk River, above Wadi Raqqad, are in the present territories of Jordan and Syria respectively. The left bank of the Yarmouk below its junction with Wadi Raqqad is also in Jordan. The location of the Maqarin Dam, being above Wadi Raqqad, is therefore immediately available for implementation as part of the total project and the GOJ and Government of Syria have entered into an agreement permitting construction of the Maqarin Dam at the selected site.

C. Present Studies

1. Feasibility Studies : Although the feasibility of the Maqarin Dam was considered in the Main Report (1953), Harza-Baker study (1955) and by Energoprojekt (1960), the studies were not sufficiently detailed or comprehensive enough to permit an investment decision. Therefore, in order to inform itself properly for the investment decisions necessary for the final phase development of the Jordan Valley irrigation program, the Jordanian Government in November 1974 informally requested the help of AID and the World Bank in obtaining a comprehensive, in-depth analysis of the feasibility of a dam at the Maqarin site

and of the associated power and irrigation facilities. In conjunction with the U.S./Jordan Joint Commission meeting in January 1975, the AID Administrator indicated that AID would assist in bringing the project up to the point where an investment decision could be made.

Accordingly, AID, IBRD and the GOJ prepared a scope of work for undertaking a feasibility study of the project. It was agreed during the project preparation phase for the Maqarin Dam Feasibility Study Loan (278-K-018) that one contractor selection criterion would be the contractor's capability to provide all engineering and supervision services required if the dam were built. Four phases of effort were defined as follows: (A) feasibility study, (B) final design, (C) construction supervision and (D) operation and maintenance. This criterion was noted in the Project Paper, the Commerce Business Daily (CBD) advertisement soliciting qualifications of firms to perform the feasibility study, and the subsequent request for proposals to those firms which were rated most qualified to perform the feasibility study. The contract with the firm selected for the feasibility study also stated the contractor should be prepared and qualified to carry out all phases of the project.

Twenty-five U.S. and six non-U.S. firms submitted prequalification data in response to the CBD notice. A short list of seven U.S. firms was prepared by the GOJ and approved by AID on August 29, 1975, and requests for proposals (RFP) sent to those firms. The RFP's specifically noted the GOJ intention to enter into a four-phase contract. On December 10, 1975, AID approved the GOJ selection of Harza Overseas Engineering Company (Harza) to perform the feasibility study. A \$1.243 million contract, of which \$1.0 million was made available from the Maqarin Dam Feasibility Study Loan, was executed on March 2, 1976 between the GOJ and Harza. This contract spelled out in detail that the contract would be carried out in four phases.

A review of a draft of the feasibility study was held in London on June 20 - 22, 1977. This review was attended by representatives of the IBRD, the W. German Ministry for Economic Development, Kreditanstalt fur Wiederaufbau, the Arab Fund for Economic and Social Development, the Kuwait Fund for Arab Economic Development, the Government of Jordan and its consultant (Harza Overseas Engineering Co.) and AID.

During the discussions the JVA and the potential donors raised questions concerning the consultants' proposals, but agreed the project was feasible and that the final design should proceed. The consultants were asked to revise the feasibility study by December, 1977. It was agreed that another meeting of potential donors would be called, tentatively in March, 1978, but not less than two months after submission of the revised study. The purpose of the next meeting would be to review the final report, to discuss proposals for project financing and implementation and to make arrangements for pre-appraisal and appraisal of the project. It was agreed that a Board of Consultants will be formed to review the dam design and the geology of the dam site and reservoir area. The estimated cost, to be funded by the GOJ, is \$100,000. It was decided to go ahead with the site investigations, drilling program and final design of the dam and preparation of detailed specifications and tender documents.

The draft final feasibility study prepared by Harza is entitled "Jordan Valley: Irrigation Project - Stage II, Feasibility Report." Copies are available in NE/CD,

2. Water Rights: Because the Yarmouk River is an international river coursing through territories controlled by three sovereign nations (Jordan, Syria and Israel), it was decided by AID to cause a study to be made which would analyze the effect of construction of the Maqarin Dam on the water rights of the riparian States. The purpose of the study was to provide State/AID with a better comprehension of the legal implications for the riparian States of implementing the Yarmouk River/Maqarin Dam project as proposed by the GOJ and of other alternative options of water utilization. The study was intended to identify international legal principles relevant to the proposed construction, to assess such legal consequences and to consider related questions. To accomplish the above objectives, a contract was entered into on June 30, 1976 between AID and the American Society for International Law. This study has been completed and copies are available from NE/CD.

III. Project Description

This project is to investigate, study, design and to prepare design specifications, plans and bidding documents for providing the necessary physical facilities for completing the irrigation system planned for East Ghor of the Jordanian Valley. The project includes preparation of topographical drawings of all project facilities; conducting detailed studies of the method for irrigation supply, design-level foundation exploration, construction materials testing, and hydraulic model testing. On the basis of the detailed field investigations and associated laboratory testing, the final detailed designs of the project shall be completed. The invitation for bid (tender) and contract documents shall then be prepared in accordance with the approved final designs.

The major elements of the project for which final designs, tender and contract documents are to be prepared are as follows:

1. Storage project at the Maqarin site;
2. A 20-MW power plant at Maqarin Dam;
3. A 2.0-MW power plant at King Talal Dam;
4. A diversion dam across the Yarmouk River at the existing intake to the East Ghor Main Canal (EGMC);
5. Rehabilitation or new diversion facilities at Wadis Yabis, Kufrinja and Rajib.
6. 14.5 kilometer southern extension of the EGMC;
7. Sprinkler irrigation system for 25,353 hectares; and

A contract with HARZA Overseas Engineering Company (HARZA) was executed by the JVA July 26, 1977, for the performance of work described herein. Items 1-5, above, will be eligible for payment from the proposed A.I.D. loan and items 6 and 7 will be financed from an existing KFW credit.

The proposed Maqarin Dam will be a zoned earth and rock fill dam. A chute spillway with a flip bucket will be located on the left abutment with sufficient capacity to pass the maximum design flood discharge. A low level outlet with a capacity of 20m³/sec. at minimum operating level will be constructed in the diversion tunnel. A conventional power plant will be located about 2 kilometers along the river downstream from the dam site on the left bank of the Yarmouk River. The plant will contain two generating units. A 66-KV transmission line from the power plant will connect to the national grid system in Irbid.

The concrete diversion dam to be constructed immediately below the existing intake to the EGMC (at Adasiya) will provide

for a diversion of 20m³/sec., the capacity of the EGMC, and the facility will permit water releases for the Adasiya Triangle.

A pit-type power plant will be installed in the right abutment immediately downstream from the King Talal Dam. A 33-KV transmission line will connect the power plant to the national grid near Abu Hamid.

A sprinkler irrigation system will be designed for a total of 25,353 hectares. The irrigation facilities will include a pipe distribution network, a farm system, and pumping stations located along the EGMC which is to be extended 14.5 kilometers to permit full irrigation coverage of the East Ghor.

Small diversion dams and canals are to be constructed on three side wadis (Yabis, Kufrinja and Rajib) to collect and distribute base flows for irrigation.

In addition the costs (perdiem and travel) of stationing two JVA engineers for purposes of liason and training in Harza's Chicago office for the duration of the contract (16 months) will be eligible for AID loan financing.

IV. Project Justification

A. Rationale for U.S. Assistance

The purpose of U.S. economic assistance to Jordan is both political and economic. One of our key foreign policy objectives is to help Jordan continue to be a moderate and stable power in the Middle East. Because of Jordan's geographic position, its pursuit of moderate policies contributes to regional stability. U.S. hopes for movement toward a Middle East settlement in the coming months enhances the importance of Jordan's stance. Jordan needs our continued encouragement and support as it enters into a period of increased risk and uncertainties. Our economic assistance program is, thus, a vital element in helping the movement towards a settlement. Overall economic growth in real terms has averaged about 7 percent in the past few years and unemployment is virtually non-existent, but Jordan lacks an economic base sufficient to support its population at current income levels without substantial outside assistance. The services sector accounts for 60 percent of GDP, most of which is public sector employment, an exceedingly high figure. Jordan's economic imbalance is also reflected in the balance of trade gap of about 75 percent of imports, and a 2:1 ratio between current budget expenditures and domestic revenues. It is doubtful that Jordan could maintain its current policies in face of the deteriorating economic situation that would result from significant reduction in aid flows.

The U.S. Mission in Jordan believes there are strong political and economic arguments for significant increases in aid, particularly concerning construction financing of the Maqarin project. The Maqarin project, is economically feasible and could contribute to stability in the region. It should be noted that a principle objective of the riparian States (Jordan, Israel and Syria) is to assure the most efficient use of the water resources of the Jordan River system. The Yarmouk River is the single, largest source of water in that system which has not been placed under controlled water management. As can be ascertained from Annex 4, approximately 75% of the average annual flow of the Yarmouk River occurs during a three month period. Because this flow is not regulated, present irrigation and other water use activities are severely limited and the bulk of the water is

wasted to the Dead Sea. Construction of the Maqarin Dam and its associated irrigation facilities will contribute significantly toward attainment of efficient water use.

Given the politically sensitive issues associated with the Maqarin project, the U.S. has a unique and probably essential role to play if this key project is to move forward. Construction of the Maqarin Dam will also contribute directly and substantially to the objectives of our economic assistance program. (For a more detailed discussion of the rationale for AID assistance, please refer to the FY 1979 Annual Budget Submission.)

B. The GOJ Development Program for the East Bank of the Jordan River Valley

In 1972, Jordan's development planners prepared a national "Three Year Economic Development (1973-1975)" which had as its goals the achievement of the highest possible level of employment, maximizing the growth of GNP with the maintenance of relative price stability, redistribution of public services among the population, a reduction in the trade deficit and the shift of the National budget's dependence from foreign to domestic financial sources. Under this national plan, a sub-plan was prepared for the development of the East Bank. This sub-plan known as the "Rehabilitation and Development of the Jordan Valley (East Bank) 1973-1975" was structured to maximize the benefit from agricultural production in the Valley. The purposes of this sub-plan were the rehabilitation of the East Bank from the effects of the 1967-1971 conflicts and to maximize agricultural production, and thereby to increase employment opportunities through full utilization of the water available for irrigation and to assure that irrigation water is available to permit an intensification of irrigation throughout the Jordan Valley.

During the implementation of the 1973-75 plan for the Jordan Valley it became evident that to realize the construction of facilities and to achieve the social targets would require a longer time period. Therefore a new plan for the years 1975-1982 ("Jordan Valley Development Plan 1975-1982") was prepared. This plan incorporates the ongoing projects of the 1973-75 plan and a new project - Jordan Valley Irrigation Project, Stage II - whose principal components include construction of a dam on the Yarmouk River at Maqarin and the construction of the irrigation water delivery system needed to bring the additional water to the fields

in the southern part of the Jordan Valley. Construction of the Maqarin Dam will permit maximum utilization of the available water resources which can be regulated at this time.

The development strategy for the Jordan Valley is to redistribute partially capital assets through limited land reform, to provide irrigation through massive infrastructure projects, build arterial and farm to market roads, develop planned villages with clinics, schools and government buildings, make available cheap mortgage money for housing, provide electricity and potable water, build market centers and develop a Farmers' Association capable of providing inputs to small farmers and to market their produce. Objectives are to attract to the Valley sufficient population to produce a doubling of agricultural production and national self-sufficiency in fruits and vegetables. AID views the GOJ's development policy for the Valley as a well thought-out strategy for integrated, mostly rural, development. The strategy seeks to produce a rough balance of equity and growth, with emphasis on equity.

V. Project Analysis

A. Introduction

The economic, technical and financial feasibility of constructing the Maqarin Dam and its associated power and irrigation facilities has been studied by the Harza Overseas Engineering Co. (Harza) and reviewed by the GOJ and potential lenders and donors.

The Contract for services under Phase 'A' was signed on March 2, 1976, and the draft Technical and Economic Feasibility Report was submitted by the Consultant on April 27, 1977.

The Feasibility Report was submitted in seven volumes, with the "Main Report" containing a summary of the feasibility studies done in connection with the project and the details of the studies presented in eight appendices, as enumerated below.

<u>Volume</u>	<u>Title</u>
I	Main Report
II	Appendix A - Hydrology
	Appendix B - Environmental Assessment
III	Appendix C - Geology
	Appendix D - Construction Materials
IV	Appendix E - Soil and Irrigation
	Appendix F - Agricultural Production
V	Appendix G - Operation Studies
VI	Appendix H - Economics and Financial Analyses
VII	Preliminary Designs and Cost Estimates

In addition the GOJ financed a marketing study which was prepared by Harza. This study is entitled "Supply and Demand for Jordanian Fruits and Vegetables". Copies of the above listed documents are available in NE/CD.

The overall objective of development in the Jordan Valley, of which the Maqarin Dam construction project is a vital and integral part, is to maximize the contribution of the East Jordan Valley to the economy of Jordan. As a part of this maximization, many new jobs will be created and the standard of living of the farmers, which presently is very low, will be significantly increased. Construction of the Maqarin project and provision of technical and other farm inputs will provide

for increased production as by the time of project completion, virtually all (36,000 hectares) of the arable land in the East Jordan Valley will be sprinkler or drip irrigated. During Stage II, 11,927 hectares of land under the command of the existing East Ghor Main Canal (EGMC) and 2,132 hectares now gravity irrigated from other sources will be converted to sprinkler irrigation and 11,294 hectares of presently unirrigated lands will be developed. In addition, 10,647 hectares will be brought under sprinkler irrigation with water from small streams on which projects are currently under construction.

It is estimated that the 36,000 hectares of irrigated lands will produce annually over 800,000 tons of vegetables and 200,000 tons of fruits, in addition to new field crops and a substantial growth in the dairy industry. Some of the production will be marketed and consumed in Jordan, but a portion of the fruit and vegetable production can be exported to other Middle Eastern countries. The marketing studies confirm that the future surplus production from the project can be absorbed by these markets.

Apart from the agricultural potential of the area, other existing material resources in the areas to be affected by construction of the project are limited. Return flows from the irrigated areas may increase the salinity of the Lower Jordan River to some degree, but that reach is already highly saline, and its use very limited.

1. Construction Costs: The estimated construction cost of the Maqarin Dam and its auxiliary works, with a breakdown of the various components, is as follows:

Maqarin Project (dam, spillway, powerplant and outlet works)-----JD	56,311,000
Adasiya diversion structure-----	123,000
East Ghor Canal (repairs & extension)-	1,888,000
Small Wadis Diversion-----	135,000
King Talal Powerplant-----	465,000
Irrigations Systems:	
Conversion areas-----	20,413,000
New lands-----	21,771,000
Subtotal direct cost-----	101,106,000
Contingencies-----	13,292,000
Engineering & Administration-----	17,159,000
Total Construction Cost (1977)-----	131,557,000
Allowance for escalation-----	38,443,000
Estimated escalation construction cost-	170,000,000

Before addition of the escalation allowance, the above cost estimates are based on January, 1977, price levels with provision for contingencies, engineering and owner's overhead. Costs have been expressed in Jordanian Dinars with an exchange rate of JD1.00 equals U.S. \$3.00. In order to estimate funding requirements, there has been included in the "escalated construction cost" an allowance for cost escalation until completion of construction equivalent to increase at the rate of 8.0 percent per year.

Of the total costs, it is estimated that 32 percent will be incurred in national currency, and 68 percent in foreign currency.

Consideration was given to constructing Maqarin Dam to its ultimate elevation. It was found advantageous to construct the project in two stages because an additional cost would have to be invested immediately, while the benefits from the higher project would not materialize until at least the year 2000.

2. Economic Evaluation: The overall internal rate of return is 17.4 percent, based on direct benefits alone. The benefit-cost ratio at a 10 percent discount rate is 1.9. Economic merits of each component of the proposed project were also evaluated with the following results.

<u>Project Element</u>	<u>Rate of 1/ Return %</u>	<u>Benefit: 1/ Cost Ratio (@10%)</u>
Conversion of EGCP to sprinkler irrigation	25.5	2.7
Development of new lands with Maqarin Project	19.0	2.2
Provision for M&I Water Supply	11.0	1.1
Hydroelectric power generating facilities	12.0	1.2

1/ All figures must be considered to be preliminary and subject to change pending submission of the final feasibility study. Based on the previously cited London discussion and evaluation of the draft report by AID and IBRD we do not expect the final numbers to vary significantly from those presented herein.

Additional, indirect benefits will also accrue to the Jordanian economy. Construction of the project will stimulate the economy of the region for several years until it becomes operative. Increases in agricultural productivity will ultimately about double the income of the farming families, thus resulting in a very substantial increase in their standard of living. The increased agricultural production of the Valley will lead to an industrial and commercial activity related to the preservation and shipping of produce for export. Finally, substantial benefits will accrue to the nation in the form of foreign exchange earnings from fruits and vegetable exports.

3. Financial Viability: Construction of the proposed project will require funds in the amount of JD 54 million in national currency and equivalent US \$350 million in foreign currency. These amounts include the escalation allowance, but do not include interest during construction, since estimating the latter requires a knowledge of the amount that can be funded directly by the Government of Jordan, and of the lending terms that can be negotiated with international financing agencies.

In order to obtain a measure of the financial viability of the proposed project, certain assumptions were made concerning interest rates and repayment periods. The range of interest rates selected was from 0 to 7.0 percent per annum with repayment of the principal over 25 years, following a 10-year grace period. To account for future cost escalation, expenditures following the initial construction period for O & M were increased at the rate of 3.0 percent per annum, and revenues from the sale of water were increased at the annual rate of 4.0 percent.

The analyses showed that, with water charges starting at the rate of 6 fils/m³ for irrigation water users, the project will, after an initial period of about 37 years, make positive cash contributions to the revenues of the Government of Jordan.^{1/} During the remaining 13 years of its economic life, these contributions will amount to a total of about JD 110 million--a sizeable sum.

Harza's analyses of the repayment capacity of the farmers have confirmed that a starting water charge of 6 fils/m³, and increasing thereafter at the annual rate of 4.0 percent will be easily afforded by the Valley farmers, consistent with the expected production yields and farm income.

1/ 1000 fils equals 1 JD equals US \$3.00

4. Project Implementation: Harza's analyses of construction procedures and schedules have established that all the proposed facilities can be constructed so that the project becomes fully operational during the 1983 dry season. In order to meet that schedule, tenders must be issued in October, 1978. That can be accomplished as long as funding is secured and construction contracts are awarded on schedule.

B. Technical Analysis: Final Design

The preparation of necessary drawings, field and laboratory testing and investigation, and final designs will be accomplished utilizing accepted procedures and criteria which are well known to the consultant, the owner, other potential participants and AID. No new technology or untried techniques are required. The preparation of the tender documents likewise is viewed as a straightforward task. It is concluded the project is technologically feasible and the cost estimates based on available data are deemed reasonable for accomplishing the project as described above.

C. Social Soundness

The developmental activities undertaken in the Jordan Valley essentially have been government efforts at induced change and, to date, have not enlisted broad participation from the local population. The eventual success of the various projects, however, does entail a necessity to involve local institutions through which external resources can be linked to local initiatives. Current activities now include at least three distinguishable approaches to modifying existing behavior through the transfer and introduction of new technology, the involvement of various governmental agencies and non-governmental institutions, and the involvement and cooperation of the local population.

Construction of the Maqarin Dam will result in the stabilization of the flow of water to the Jordan Valley, thereby allowing full utilization of all arable land in the Valley including land not now irrigated because of a lack of water and water conveyance systems. These actions plus activities under several ongoing irrigation projects will complete the GOJ's plan for providing sprinkler irrigation to the entire Valley. By itself, the availability of water does not guarantee attainment of the economic results projected for the project. A considerable degree of technical inputs (from extension agents and the training program prepared for operation of the system), farm inputs (improved seed, fertilizer, etc.), and support facilities

(i.e., credit and marketing facilities) are required. Plans are being prepared to assure the full package of assistance is made available to farmers. The proposed Farmers Association is the vehicle for assuring the farmer will be represented, and it should be noted this will be the first time farmers have been so represented at the highest levels of government. This organization, which will be structured to permit farmers to express their views and to influence decision making at the highest levels of the GOJ, is provided in Part II of the Farm Association Law, No. 19 for 1974.

It is considered that implementation of the project and related programs for technical, financial and management assistance to farmers and the novel representational aspect will create considerable change in the economic and social status of the intended beneficiaries. The degree of change, or its rapidity, are not easily quantified or measurable. In order to attempt evaluation of the changes AID has initiated actions necessary to establish base line data and social indicators under a program designed originally to evaluate the social/economic impact of the implementation of the Farmers Association. The scope of activities to be undertaken are spelled out in Annex 5.

D. Project Beneficiaries

Article 22 of the Jordan Valley Development Law of 1977 gives to the JVA authority to divide farm units expropriated for purposes of reclamation and exploitation through irrigated agriculture. The law provides a minimum (40 dunums) and a maximum (200 dunums) size holding possible for a family depending on the amount of land held by the family prior to expropriation. The formula for application is as follows:

<u>Number of Irrigable Dunums Held Prior to Expropriation</u>	<u>Number of Dunums To Be Allotted</u>
40 - 50	All previously held.
51 - 100	50 dunums, plus 25% of area exceeding 50 dunums
101-500	62 dunums, plus 17% of area exceeding 100 dunums
501-1000	130 dunums, plus 12% of area exceeding 500 dunums
1000 and above	200 dunums

To implement the distribution of land, the Authority (Article 24) is to appoint a Farmers Selection Committee composed of a member of the JVA (as chairman), and two other members, one of whom will be a farmer from the region or town or village where farm units are to be allocated. These committees shall assist the land owners in selecting the farm units the Authority may allocate in accordance with the law and select the farmers for farm units to be distributed. The Farmers Selection Committee must select the farming family to settle in farm units based on the following criteria (Article 24 (1)), in order of priority:

1. (a) Holders residing in the Kingdom who operate their lands themselves for areas that were irrigated at the time of expropriation;

(b) Holders residing in the Kingdom for unirrigated lands at the time of expropriation;

2. Holders residing in the Kingdom who exploit their land through leasing or sharecropping;

3. Professional farmers residing in the Valley;

4. Professional farmers who are not from the Valley population; and

5. Holders residing outside the Kingdom.

The Jordan Valley Development Law of 1977 supplanted National Resources Authority Law No. 12 of 1968. The NRA law was implemented in the northern portion of the Valley serviced by the EGMC gravity irrigation system. In that area 90 percent of the 1,659 holdings now are within the range of 3 to 5 hectares and only 11 holdings are greater than 5 hectares. None of these holdings exceeds 20 hectares.^{1/} Therefore, after redistribution of land in the project areas to be serviced by the Maqarin project, it is expected the resultant land distribution pattern will be similar to that in the EGMC gravity fed area. Based on the calculations of farm units to be serviced by the Sprinkler Irrigation Equipment Loan (278-K-018), approximately 9,000 farm units will be affected by construction of the Maqarin Dam.

Neither NRA Law No. 12 nor the Jordan Valley Development Law requires the owner to farm the land. Therefore, tenant-owner and renter-owner relationships will continue to exist.

^{1/} International Development Association, North East Ghor Irrigation and Rural Development Project, Annex 2, p. 2, May 10, 1974.

However, whereas owner-tenant and owner-renter arrangements were not usually formal and existed on a year-to-year basis, the Jordan Valley Development Law restricts owners, with JVA approval, to lease farm units for periods of not less than 3 or more than 10 years to any other farmer who does not own or hold a farm unit or units in the Jordan Valley (Article 21, H). Presently,^{2/} in the northern portion of the Valley serviced by the EGMC gravity irrigation system, 39.3 percent of the land holdings are farmed by land owners; 47.5 percent of the land holdings are entirely sharecropped; and 4.4 percent of the land holdings are entirely rented for cash with the balance (8.8 percent) farmed under mixed arrangements.

It would appear, based on the above described pattern of ownership and farm operation, both existing and proposed, that the principal beneficiaries will be small land owners and tenant farmers.

E. Other Beneficiaries

Construction of the Maqarin Dam will also provide a direct source of water supply for domestic use in the Irbid region as well as permit withdrawals of water from the King Talal Dam for domestic use in the city of Amman. From a health standpoint, the most important aspect of Jordan's physical environment is the scarcity of water. Despite a slight excess of supply over demand, operating problems affecting the country's water distribution systems, as well as the long distances between source areas and areas of highest demand, have resulted in severe shortages of water, especially in the densely populated areas of Amman and Irbid. The daily national water consumption rate in 1975 was about 60 liters per capita compared to similar figures for Syria and Morocco of 163 and 90, respectively. In addition to the inadequacy of the quantities of water available to Jordanians, there are serious deficiencies in water quality. Analyses by the Ministry of Health of samples taken from water systems in eight major urban areas throughout 1973-75 showed that, by World Health Organization standards, none of the systems were delivering water safe for domestic use. The actual availability of water for domestic use in the two critical locales--Irbid and Amman--as a result of the Maqarin Dam project, coupled with the improvements being planned for the Irbid and Amman water treatment, water distribution and sewage facilities, will be of great benefit to the total populace of these cities.

^{2/} Ibid, Annex 2, p. 2.

Domestic water supply for Jordan Valley residents is being provided in part from water sources in the Valley as part of the AID assisted Village Development project and the KFW financed Village Water Program. An additional volume of water (8 MCM) will be made available to Jordan Valley residents as a result of construction of the Maqarin Dam project.

F. Environmental

An Initial Environmental Examination (IEE) has been prepared and a determination reached that an Environmental Assessment is required. Harza, in the course of preparation of the Feasibility study, prepared a preliminary Environmental Assessment. However a broader and more comprehensive effort is required. Therefore a copy of the IEE is being circulated to selected Federal Agencies for their comments which will be taken into consideration in preparation of the final Environmental Analysis. The Environmental Analysis will be accomplished by a firm other than Harza and the funding sources will be the GOJ and the AID Grant funded Technical Services and Feasibility Studies project. This assessment would be completed before any AID funds are committed for construction.

G. Role of Women

This project does not involve specific consideration of the role of women in Jordanian society.

H. Other Donor Coordination

The World Bank participated informally in the development of the scope (all four phases) of work for the project and in the preparation of the detailed scope of work proposed for accomplishment under this second phase of the effort as described herein in Annex 7.

On June 20-22, Kreditanstalt fur Wiederaufbau (KFW), the Kuwait Fund for Arab Economic Development, and the Arab Fund for Economic and Social Development participated with AID, World Bank and GOJ representatives in a review of the Harza feasibility study report. KFW has agreed to finance the consulting engineering services necessary to, and the preparation of, the final design and bidding documents for the irrigation aspects of the work. Representatives of the German and Arab groups expressed an interest in making financing available for the construction activities associated with the irrigation and municipal water uses aspects of the project. Whether the World Bank or others will participate in financing of the construction of the Maqarin Dam itself is not yet known. Discussions are continuing concerning this matter.

I. Project Cost

The estimated cost of the project is \$10,109,029 (see Table 1). Cost plus fixed fee contracts have been negotiated by the JVA with Harza Overseas Engineering Co. (Harza) for final

design of the storage and power portions of the project and with Dah Al Handasah and Harza for design of the irrigation system. The surveying and camp costs are estimates based on JVA experience with similar surveying activities and engineer camp requirements. The engineering cost represents the local salary costs of GOJ engineers in Jordan while the FEX cost of these engineers is the estimated travel and per diem cost of two JVA engineers who will be detailed for 16 months to the Harza's Chicago office for training and liason purposes. The estimated costs for transportation and supplies are based on JVA experience. A contingency of 20 percent has been included in the cost estimate.

Harza's foreign exchange and most of the local currency costs for the storage and power design contracts will be met from the AID loan, the cost of the irrigation phase (both FEX and local currency) will be met from the KFW loan, the FEX costs associated with JVA engineers training and liason will be from the AID Loan. The balance of the funds and any cost overruns will be provided by JVA. It should be noted that KFW has made a credit commitment to the GOJ to provide up to DM 8.0 million (\$3.5 equivalent) in support of the irrigation phase costs. The contract for which these funds are to be used is only \$1.7 million and a loan agreement for that amount was executed between the GOJ and KFW. Should additional funds be required, the terms of the credit commitment permit negotiation of an additional loan for the same purpose, up to, but not in excess of, the DM 8.0 credit commitment.

Table 1
Project Costs
(US\$)

<u>Item</u>	<u>Local Currency</u>	<u>Foreign Exchange</u>	<u>Total</u>	<u>Source</u>
Final Design				
Storage/Power (Harza)	\$ 747,300 ^{1/}	\$4,221,528	\$ 4,968,828	A.I.D. Loan /GOJ
Irrigation (Harza-Dar Al Handasah)	27,486	1,677,877	1,705,363	KFW Loan
Surveying for Irrigation (J.V.A)	600,000	-	600,000	GOJ
Camps (J.V.A.)	300,000	-	300,000	GOJ
Engineering (J.V.A.)	450,000	60,000	450,000	GOJ-L/C
			60,000	AID LUAN FEX
Transportation (J.V.A.)	90,000	-	90,000	GOJ
Board of Consultants (J.V.A.)	-	100,000	100,000	GOJ
Supplies (J.V.A.)	150,000	-	150,000	GOJ
Totals	\$2,364,786	\$6,059,405	\$ 8,424,191	
	472,957	1,211,881	1,684,838	
Contingency @ 20%	\$2,837,743	\$7,271,286	\$10,109,029	

<u>Contribution</u>	<u>Amount</u>	<u>Percentage</u>
AID	\$ 5,000,000	49%
KFW	1,705,363	17
GOJ	3,403,666	34%
	\$10,109,029	100%

^{1/} \$28,828 equivalent of Harza's local currency costs to be funded by the GOJ.

J. Payment Prospects

An analysis of Jordan's balance of payments was recently completed by USAID/Jordan. The pertinent sections and tables of that analysis are reproduced in Annex 8. This analysis notes the ratio of debt service to export of goods and services was 6% in 1976 which indicates a considerable capacity for increased borrowings. This ratio has not changed substantially over the past 4 years during which time the ratio fluctuated from 7.3% in 1972 to 5.0% in 1975. It is not expected that the debt service ratio will fluctuate substantially over the next few years. This relative stabilization in the debt service ratio is predicated on the anticipated increased export of phosphates, other minerals and agricultural produce combined with the continued availability of concessional loans. The proposed loan, considering the concessionary terms recommended and the amount of the loan, will have minimal impact on the debt service ratio.

VI. Implementation

A. Administrative Arrangements

The Borrower will be the Hashemite Kingdom of Jordan; the implementing agency will be the Jordan Valley Authority (JVA).

1. Responsibilities of the JVA: The Jordan Valley Authority will be responsible for (1) selection of the consultants, (2) negotiation and execution of contracts for performing the final design phase, (3) providing \$3,403,666 equivalent in local currency toward the financing of the project, (4) providing all necessary financing beyond the financial plan that may be required for completing the effort, (5) providing all available requisite background information and data to the consultants, (6) supervision of the consultants' activities, and (7) making all necessary arrangements for the consultant to have access to the project site in both Jordan and Syria.

The staff of the Authority is fully competent to manage the proposed design contract. However, there may be a need during the course of the study for some specialized engineering management assistance to help the JVA address specialized problems.

2. A.I.D. Monitoring Responsibility: AID's monitoring responsibility will include:

- (a) Review and approval of the scope of work, contractor and the contract documents;
- (b) Follow-up on fulfillment of Conditions Precedent;
- (c) Review and approval of requests for disbursement;
- (d) Follow-up on project progress and reporting requirements;

- (e) During the performance of the work, hold periodic meetings with the Jordan Valley Authority to jointly review, evaluate and recommend solutions to problems encountered by the consultant; and
- (f) Review and approval of the consultant's performance and work product.

3. Selection of Contractor: United States firms were pre-qualified and the consultant selected in accordance with the procedures set forth in Handbook 11 Country Contracting, Chapter 1, "Procurement of Professional and Technical Services". The firm selected to accomplish the feasibility study will also supply the necessary services for Phase B. A full description of the selection process is presented in Section II.C.

B. Implementation Schedule

Following is the schedule for loan implementation actions. Annex 9 presents a bar chart schedule for performance of the work.

<u>AID - JVA Actions</u>	<u>1977</u>
Negotiate and Execute Contract	July 26
Authorize Loan	August 15
Negotiate & execute Loan Agreement	August 26
Issue Implementation Letter No. 1	September 7
Satisfy Conditions Precedent	September 16
Issue First Disbursement Authorization	September 30
<u>Consultant Actions</u>	
Consultant begin design work	August
	<u>1978</u>
Establish Board of Consultants	April
	<u>1979</u>
Complete design	January/February
Terminal Disbursement Date	September 30

C. Reporting Requirements

The contractor will be required to submit reports to the JVA covering each phase of the work as defined in the contract documents. These reports will be numerous and the requirements are spelled out in Annex 6, "Scope of Consultant's Services". In addition to the technical reports, the consultant will prepare progress reports in conformity with AID's requirements as described in Handbook 11, Chapter 1.

D. Disbursements

Loan funds will be used to finance consultant services and required equipment of U.S. and Jordanian source and origin. The terminal disbursement date will be set at 25 months from the signing of the loan agreement. Loan funds will be disbursed either under a direct letter of commitment to the consultant or by a letter of commitment/letter of credit procedure. Jordanian dinar expenditures will be made in accordance with the terms and conditions of the consultant's contract approved by A.I.D. It is anticipated that a portion of the loan funds will be used to reimburse the GOJ for foreign exchange and local currency payments made to Harza for mobilization and other costs in accordance with the contracts as approved by AID prior to the date loan funds are made available. Reimbursement to the GOJ will be in dinars using AID's standard reimbursement procedures.

The following sets forth the projected disbursement schedule:

(U.S. \$000)

	<u>AID Loan</u>	<u>KFW</u>	<u>GOJ</u>	<u>Total</u>
FY 1977	\$ 230	\$ 50	\$ 350	\$ 630
FY 1978	4,275	1,500	2,700	8,475
FY 1979	<u>495</u>	<u>155</u>	<u>354</u>	<u>1,004</u>
	\$5,000	\$1,705	\$3,404	\$10,109

E. Conditions Precedent and Covenants

Only the standard conditions precedent of a legal opinion as to validity of the Loan Agreement and of the naming of the borrower's representatives are recommended.

A covenant in the Loan Agreement will provide that, to the extent possible, the GOJ will throughout the period of the design work make possible full access to the project site, both in Jordan and Syria, as required for carrying out the work. An additional covenant will require the GOJ to provide all necessary funds in addition to the loan and any other resources needed to carry out the feasibility study.

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UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT

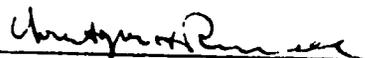
AMMAN - JORDAN

وكالة الولايات المتحدة للانماء القومي

عمان - الاردن

CERTIFICATION PURSUANT TO SECTION 611(e)
OF THE FOREIGN ASSISTANCE ACT OF 1961
AS AMENDED

I, Christopher H. Russell, the principal officer of the Agency for International Development in Jordan, having taken into account, among other things, the maintenance and utilization of projects in Jordan previously financed or assisted by the United States, do hereby certify that in my judgement Jordan has both the financial capability and the human resources capability to effectively carry out the design of the Jordan Valley Irrigation Project, Stage II. Major facilities to be designed include (a) a dam at Maqarin and diversion structure on the Yarmouk River at the intake of the existing East Ghor Canal, (b) extension of the canal and (c) the associated irrigation system.


Christopher H. Russell

Date: 10 July 1977

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JORDAN: MAQARIN DAM FINAL DESIGN

6C(3) - STANDARD ITEM CHECKLIST

Listed below are statutory items which normally will be covered routinely in those provisions of an assistance agreement dealing with its implementation, or covered in the agreement by exclusion (as where certain uses of funds are permitted, but other uses not).

These items are arranged under the general headings of (A) Procurement, (B) Construction, and (C) Other Restrictions.

A. Procurement

1. FAA Sec. 602. Are there arrangements to permit U.S. small business to participate equitably in the furnishing of goods and services financed? **Small business will be permitted to participate in accordance with A.I.D. procedures.**
2. FAA Sec. 604(a). Will all commodity procurement financed be from the U.S. except as otherwise determined by the President or under delegation from him? **Yes.**
3. FAA Sec. 604(d). If the cooperating country discriminates against U.S. marine insurance companies, will agreement require that marine insurance be placed in the U.S. on commodities financed? **Yes.**
4. FAA Sec. 604(e). If offshore procurement of agricultural commodity or product is to be financed, is there provision against such procurement when the domestic price of such commodity is less than parity? **There is to be no such procurement.**
5. FAA Sec. 603(a). Will U.S. Government excess personal property be utilized wherever practicable in lieu of the procurement of new items? **N.A.**
6. MMA Sec. 901(b). (a) Compliance with requirement that at least 50 per centum of the gross tonnage of commodities (computed separately for dry bulk carriers, dry cargo liners, and tankers) financed shall be transported on privately owned U.S.-flag commercial vessels to the extent that such vessels are available at fair and reasonable rates. **Yes.**
7. FAA Sec. 621. If technical assistance is financed, will such assistance be furnished to the fullest extent practicable as goods and professional and other services from private enterprise on a contract basis? If the facilities of other Federal agencies will be utilized, **N.A.**

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are they particularly suitable, not competitive with private enterprise, and made available without undue interference with domestic programs?

8. International Air Transport. Fair Competitive Practices Act, 1974

If air transportation of persons or property is financed on grant basis, will provision be made that U.S.-flag carriers will be utilized to the extent such service is available?

Yes.

B. Construction

1. FAA Sec. 601(d). If a capital (e.g., construction) project, are engineering and professional services of U.S. firms and their affiliates to be used to the maximum extent consistent with the national interest?

Yes.

2. FAA Sec. 611(c). If contracts for construction are to be financed, will they be let on a competitive basis to maximum extent practicable?

N.A.

3. FAA Sec. 620(k). If for construction of productive enterprise, will aggregate value of assistance to be furnished by the U.S. not exceed \$100 million?

N.A.

C. Other Restrictions

1. FAA Sec. 201(d). If development loan, is interest rate at least 2% per annum during grace period and at least 3% per annum thereafter?

This is not a development loan.

2. FAA Sec. 301(d). If fund is established solely by U.S. contributions and administered by an international organization, does Comptroller General have audit rights?

N.A.

3. FAA Sec. 620(h). Do arrangements preclude promoting or assisting the foreign aid projects or activities of Communist-Bloc countries, contrary to the best interests of the U.S.?

Yes.

4. FAA Sec. 636(i). Is financing not permitted to be used, without waiver, for purchase, long-term lease, or exchange of motor vehicle manufactured outside the U.S. or guaranty of such transaction?

Yes.

(Annex 2)

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5. Will arrangements preclude use of financing:

- a. FAA Sec. 114. to pay for performance of abortions or to motivate or coerce persons to practice abortions? **Yes.**
- b. FAA Sec. 620(g). to compensate owners for expropriated nationalized property? **Yes.**
- c. FAA Sec. 660. to finance police training or other law enforcement assistance, except for narcotics programs? **Yes.**
- d. FAA Sec. 662. for CIA activities? **Yes.**
- e. App. Sec. 103. to pay pensions, etc., for military personnel? **Yes.**
- f. App. Sec. 106. to pay U.N. assessments? **Yes.**
- g. App. Sec. 107. to carry out provisions of FAA Sections 209(d) and 251(h)? (transfer to multilateral organization for lending). **Yes.**
- h. App. Sec. 501. to be used for publicity or propaganda purposes within U.S. not authorized by Congress? **Yes.**

(Annex 2)

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JORDAN - MAQARIN DAM FINAL DESIGN

6C(2) - PROJECT CHECKLIST

Listed below are, first, statutory criteria applicable generally to projects with FAA funds, and then project criteria applicable to individual fund sources: Development Assistance (with a sub-category for criteria applicable only to loans); and Security Supporting Assistance funds.

CROSS REFERENCES: IS COUNTRY CHECKLIST UP TO DATE? IDENTIFY. HAS STANDARD ITEM CHECKLIST BEEN REVIEWED FOR THIS PROJECT? COUNTRY CHECKLIST IS UP TO DATE.

GENERAL CRITERIA FOR PROJECT.

1. App. Unnumbered; FAA Sec. 653(b)

(a) Describe how Committees on Appropriations of Senate and House have been or will be notified concerning the project;
(b) is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than \$1 million over that figure plus 10%)?

(a) The Committees will be notified in accordance with normal Agency procedures.

(b) All necessary notifications will be made.

2. FAA Sec. 611(a)(1). Prior to obligation in excess of \$100,000, will there be (a) engineering, financial, and other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?

(a) Yes.

(b) Yes.

3. FAA Sec. 611(a)(2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?

No further legislative action is required.

4. FAA Sec. 611(b); App. Sec. 101. If for water or water-related land resource construction, has project met the standards and criteria as per Memorandum of the President dated Sept. 5, 1973 (replaces Memorandum of May 15, 1962; see Fed. Register, Vol 38, No. 174, Part III, Sept. 10, 1973)?

While water-related, this is a design project and not for construction.

5. FAA Sec. 611(e). If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed \$1 million, has Mission Director certified the country's capability effectively to maintain and utilize the project?

Yes.

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6. FAA Sec. 209, 619. Is project susceptible of execution as part of regional or multi-lateral project? If so why is project not so executed? Information and conclusion: whether assistance will encourage regional development programs. If assistance is for newly independent country, is it furnished through multi-lateral organizations or plans to the maximum extent appropriate?

This project is not susceptible of execution as a regional project, and the project will not necessarily encourage regional development programs.

Jordan is not a newly independent country.

7. FAA Sec. 601(a); (and Sec. 201(f) for development loans). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.

The project will finance the design work preliminary to the construction of a dam. This design work by an American firm will not be relevant to any of the effects indicated.

8. FAA Sec. 601(b). Information and conclusion on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).

Project will finance the design and consultant services of an American engineering firm.

9. FAA Sec. 612(b); Sec. 636(h). Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized to meet the cost of contractual and other services.

Jordan is contributing 35% of total project costs. The major portion of this contribution is to meet local currency costs. Present economic problems prevent a greater contribution.

10. FAA Sec. 612(d). Does the U.S. own excess foreign currency and, if so, what arrangements have been made for its release?

No.

B. FUNDING CRITERIA FOR PROJECT

1. Development Assistance Project Criteria

a. FAA Sec. 102(c); Sec. 111; Sec. 201a. Extent to which activity will (a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production, spreading investment out from cities to small towns and rural areas; and (b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better life, and otherwise encourage democratic private and local governmental institutions?

Not applicable since project funded from Security Supporting Assistance funds.

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b1

b. FAA Sec. 103, 103A, 104, 105, 106, 107. Is assistance being made available: [include only applicable paragraph -- e.g., a, b, etc. -- which corresponds to source of funds used. If more than one fund source is used for project, include relevant paragraph for each fund source.]

N.A.

- (1) [103] for agriculture, rural development or nutrition; if so, extent to which activity is specifically designed to increase productivity and income of rural poor; [103A] if for agricultural research, is full account taken of needs of small farmers;
- (2) [104] for population planning or health; if so, extent to which activity extends low-cost, integrated delivery systems to provide health and family planning services, especially to rural areas and poor;
- (3) [105] for education, public administration, or human resources development; if so, extent to which activity strengthens nonformal education, makes formal education more relevant, especially for rural families and urban poor, or strengthens management capability of institutions enabling the poor to participate in development;
- (4) [106] for technical assistance, energy, research, reconstruction, and selected development problems; if so, extent activity is:
 - (a) technical cooperation and development, especially with U.S. private and voluntary, or regional and international development, organizations;
 - (b) to help alleviate energy problem;
 - (c) research into, and evaluation of, economic development processes and techniques;
 - (d) reconstruction after natural or manmade disaster;
 - (e) for special development problem, and to enable proper utilization of earlier U.S. infrastructure, etc., assistance;
 - (f) for programs of urban development, especially small labor-intensive enterprises, marketing systems, and financial or other institutions to help urban poor participate in economic and social development.

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(5) [107] by grants for coordinated private effort to develop and disseminate intermediate technologies appropriate for developing countries.

c. FAA Sec. 110(a); Sec. 208(e). Is the recipient country willing to contribute funds to the project, and in what manner has or will it provide assurances that it will provide at least 25% of the costs of the program, project, or activity with respect to which the assistance is to be furnished (or has the latter cost-sharing requirement been waived for a "relatively least-developed" country)?

N.A.

d. FAA Sec. 110(b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing?

N.A.

e. FAA Sec. 207; Sec. 113. Extent to which assistance reflects appropriate emphasis on; (1) encouraging development of democratic, economic, political, and social institutions; (2) self-help in meeting the country's food needs; (3) improving availability of trained worker-power in the country; (4) programs designed to meet the country's health needs; (5) other important areas of economic, political, and social development, including industry; free labor unions, cooperatives, and Voluntary Agencies; transportation and communication; planning and public administration; urban development, and modernization of existing laws; or (6) integrating women into the recipient country's national economy.

N.A.

f. FAA Sec. 281(b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and supports civic education and training in skills required for effective participation in governmental and political processes essential to self-government.

N.A.

(Annex 2)

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- g. FAA Sec. 201(b)(2)-(4) and -(8); Sec. 201(e); Sec. 211(a)(1)-(3) and -(8). Does the activity give reasonable promise of contributing to the development: of economic resources, or to the increase of productive capacities and self-sustaining economic growth; or of educational or other institutions directed toward social progress? Is it related to and consistent with other development activities, and will it contribute to realizable long-range objectives? And does project paper provide information and conclusion on an activity's economic and technical soundness? N.A.
- h. FAA Sec. 201(b)(6); Sec. 211(a)(5), (6). Information and conclusion on possible effects of the assistance on U.S. economy, with special reference to areas of substantial labor surplus, and extent to which U.S. commodities and assistance are furnished in a manner consistent with improving or safeguarding the U.S. balance-of-payments position. N.A.
2. Development Assistance Project Criteria (Loans only)
- a. FAA Sec. 201(b)(1). Information and conclusion on availability of financing from other free-world sources, including private sources within U.S. N.A.
- b. FAA Sec. 201(b)(2); 201(d). Information and conclusion on (1) capacity of the country to repay the loan, including reasonableness of repayment prospects, and (2) reasonableness and legality (under laws of country and U.S.) of lending and relending terms of the loan. N.A.
- c. FAA Sec. 201(e). If loan is not made pursuant to a multilateral plan, and the amount of the loan exceeds \$100,000, has country submitted to AID an application for such funds together with assurances to indicate that funds will be used in an economically and technically sound manner? N.A.
- d. FAA Sec. 201(f). Does project paper describe how project will promote the country's economic development taking into account the country's human and material resources requirements and relationship between ultimate objectives of the project and overall economic development? N.A.

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B2

e. FAA Sec. 202(a). Total amount of money under loan which is going directly to private enterprise, is going to intermediate credit institutions or other borrowers for use by private enterprise, is being used to finance imports from private sources, or is otherwise being used to finance procurements from private sources?

N.A.

f. FAA Sec. 620(d). If assistance is for any productive enterprise which will compete in the U.S. with U.S. enterprise, is there an agreement by the recipient country to prevent export to the U.S. of more than 20% of the enterprise's annual production during the life of the loan?

N.A.

3. Project Criteria Solely for Security Supporting Assistance

FAA Sec. 531. How will this assistance support promote economic or political stability?

This assistance will support the design of a dam. The dam will be a factor in Jordan's increasing economic growth and prosperity, which are preconditions to the country's continuing political stability.

4. Additional Criteria for Alliance for Progress

[Note: Alliance for Progress projects should add the following two items to a project checklist.]

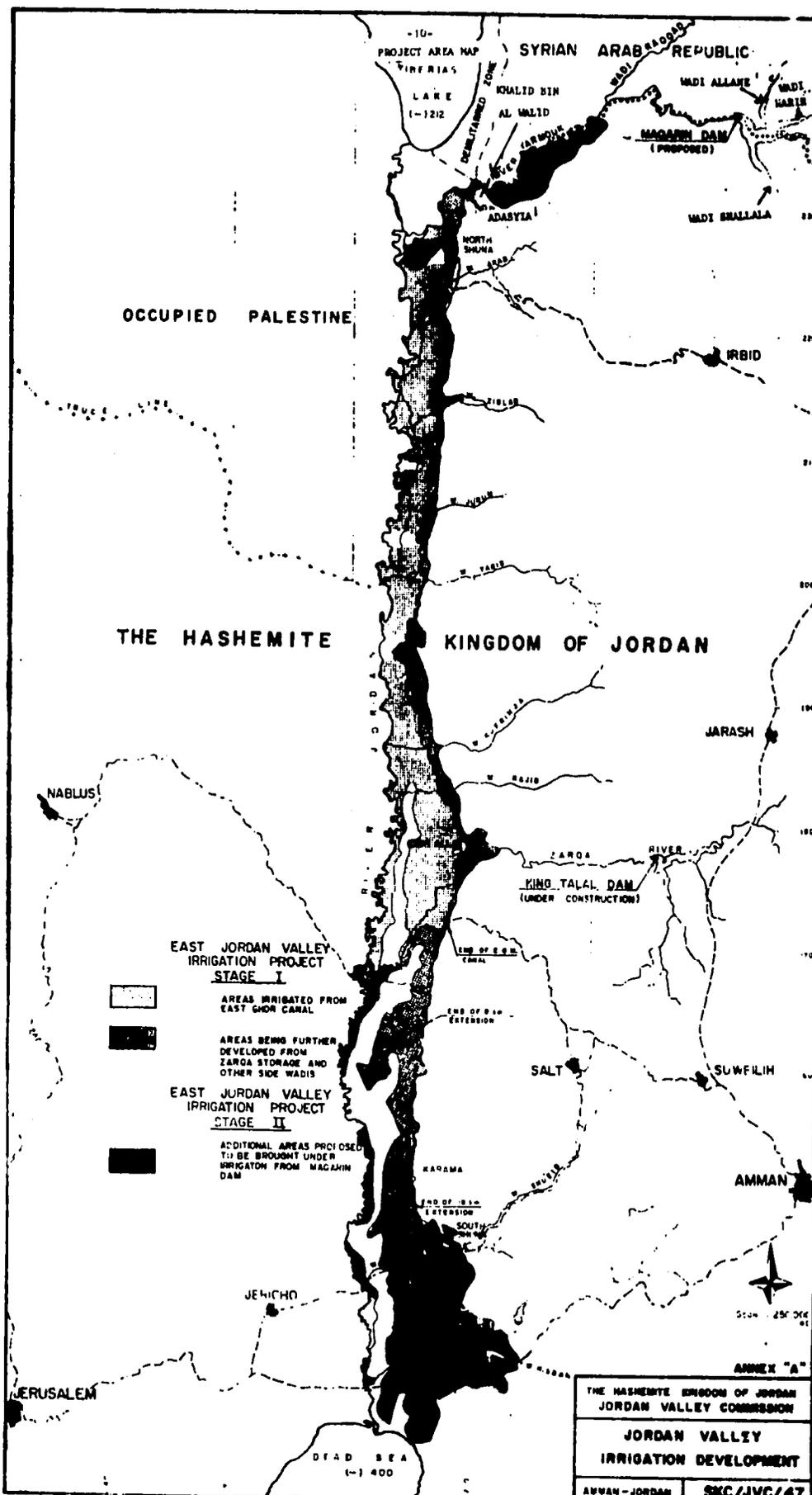
a. FAA Sec. 251(b)(1), -(8). Does assistance take into account principles of the Act of Bogota and the Charter of Punta del Este; and to what extent will the activity contribute to the economic or political integration of Latin America?

N.A.

b. FAA Sec. 251(b)(8); 251(h). For loans, has there been taken into account the effort made by recipient nation to repatriate capital invested in other countries by their own citizens? Is loan consistent with the findings and recommendations of the Inter-American Committee for the Alliance for Progress (now "CEPCIF," the Permanent Executive Committee of the OAS) in its annual review of national development activities?

N.A.

ANNEX 3



OCCUPIED PALESTINE

THE HASHEMITE KINGDOM OF JORDAN

EAST JORDAN VALLEY IRRIGATION PROJECT STAGE I

AREAS IRRIGATED FROM EAST GHOR CANAL

AREAS BEING FURTHER DEVELOPED FROM ZARGA STORAGE AND OTHER SIDE WADIS

EAST JORDAN VALLEY IRRIGATION PROJECT STAGE II

ADDITIONAL AREAS PROPOSED TO BE BROUGHT UNDER IRRIGATION FROM MAGAJIM DAM

ANNEX "A"

THE HASHEMITE KINGDOM OF JORDAN
 JORDAN VALLEY COMMISSION

JORDAN VALLEY
 IRRIGATION DEVELOPMENT

AMMAN - JORDAN SKC/JVC/47

ANNEX 4

TOTAL FLOW PAST ADASIYE - MCM

Year	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Annual
1 1953	1.77	1.30	0.77	61.05	64.21	12.59	5.10	1.26	1.55	1.30	1.48	1.24	155.41
2 1954	1.77	1.30	0.77	0.30	1.10	1.30	1.93	1.26	1.55	1.30	1.48	1.24	17.00
3 1955	1.77	1.30	10.92	29.15	7.45	2.18	1.93	1.26	1.55	1.30	1.48	1.24	62.73
4 1956	1.77	1.30	0.77	1.78	15.41	2.78	1.93	1.26	1.55	1.30	1.48	1.24	33.77
5 1957	1.77	1.30	0.77	43.71	1.10	1.30	1.93	1.26	1.55	1.30	1.48	1.24	59.91
6 1958	1.77	1.30	0.77	0.30	8.65	5.72	1.93	1.26	1.55	1.30	1.48	1.24	29.03
7 1959	1.77	1.30	0.77	0.30	1.10	1.30	1.93	1.26	1.55	1.30	1.48	1.24	17.00
8 1960	1.77	1.30	0.77	0.30	7.45	1.30	1.93	1.26	1.55	1.30	1.48	1.24	23.35
9 1961	1.77	1.30	18.20	6.64	19.19	1.30	1.93	1.26	1.55	1.30	1.48	1.24	58.36
10 1962	1.77	1.30	0.77	10.50	2.71	5.00	1.93	1.26	1.55	1.30	1.48	1.24	38.11
11 1963	1.77	1.30	1.63	0.80	36.13	24.00	2.64	2.29	1.93	1.32	1.48	1.24	77.13
12 1964	1.77	7.28	4.27	30.82	54.61	12.86	3.72	1.26	1.55	1.30	1.48	1.24	123.37
13 1965	1.77	1.30	0.77	10.09	27.01	23.47	1.93	1.26	1.55	1.30	1.48	1.24	74.37
14 1966	1.77	1.30	5.97	63.03	93.11	153.76	18.96	1.26	1.55	1.30	1.48	1.24	351.29
15 1967	1.77	1.30	0.77	25.75	21.72	21.68	1.93	1.26	1.55	1.30	1.48	1.24	82.94
16 1968	1.77	1.30	5.71	114.34	89.63	125.28	1.93	1.26	1.55	1.30	1.48	1.24	347.99
17 1969	1.77	1.30	0.77	0.30	1.10	1.40	1.93	1.26	1.55	1.30	1.48	1.24	17.10
18 1970	1.77	20.35	26.46	0.30	4.93	40.80	30.28	3.37	1.55	5.06	6.50	3.60	145.46
19 1971	1.77	1.30	1.51	1.00	26.04	1.30	1.93	1.26	1.55	1.30	1.48	1.24	42.88
20 1972	1.77	1.30	0.77	0.30	1.10	1.30	1.93	1.26	1.55	1.30	1.48	1.24	17.00
21 1973	1.77	1.30	0.77	2.20	6.79	5.06	1.93	1.26	1.55	1.30	1.48	1.24	28.45
22 1974	1.77	1.30	0.77	0.30	1.10	1.30	1.93	1.26	1.55	1.30	1.48	1.24	17.00
Average Monthly	1.77	2.44	3.82	18.54	22.65	20.32	4.25	1.95	1.57	1.47	1.71	1.92	

ANNEX 4

Average Annual 92.71

AID 1350-1X (9-70)	Cooperating Country Jordan	PIO/T No. 278-0181-3-70041	Page 2 of 3 Pages
PIO/T	Project/Activity No. and Title Jordan Valley Farmers' Association		

SCOPE OF WORK

17. Scope of Technical Services

A. Objective for which the Technical Services are to be Used

Technical assistance to GOJ in Jordan Valley.

B. Description

USAID/Jordan has been requested by the Government of Jordan to provide technical assistance in two specific areas of rural development in the Jordan Valley: (1) to help design the requirements for establishing a multi-purpose socio-economic system for the Jordan Valley Authority (JVA) and (2) to help establish and strengthen a newly formed Farmers' Association in the Valley (JVFA). As an essential part of USAID's response to these requests, USAID has proposed providing the technical services of a social scientist, Dr. Robert Fernea. Dr. Fernea is to examine some of the sociological/anthropological implications and problems surrounding the creation and establishment of the Jordan Valley Farmers' Association (JVFA) as well as problems connected with development of reliable socio-economic indicators concerning Jordan Valley Authority project activities. This is to be done in collaboration with JVA and JVFA Jordanian counterparts and will include:

see continuation sheet

C. Technicians

(1) (a) Number	(b) Specialized Field	(c) Grade and/or Salary	(d) Duration of Assignment (Man-Months)
1	Social Scientist	\$168.00 per day	12 Working in Amman

(2) Duty Post and Duration of Technicians' Services

Amman, Jordan - 14 days in country

(3) Language requirements

None

(4) Access to Classified Information

(5) Dependents Will Will Not Be Permitted to Accompany Technician

D. Financing of Technical Services

(1) By AID - \$ 6,000

(2) By Cooperating Country -

17-001
CONTINUATION SHEET

DEPARTMENT OF STATE
AGENCY FOR
INTERNATIONAL DEVELOPMENT

Worksheet Issuance

PAGE 7 OF 7 PAGES

FORM SYMBOL

TITLE OF FORM

1. Cooperating County
Jordan

2.a. Code No.

2.b. Effective Date

2.c. Amendme
 Original OR No:

3. Project/Activity No. and Title

Jordan Valley Farmers' Association

PIO/T

Indicate block numbers.

Use this form to complete the information required in any block of a PIO or PA/PR form.

19.B. continued

1. Beneficiary analysis related, in particular, to small farmers in general in Jordan Valley Authority area and in particular to amounts and ratios of membership in JVFA.
2. Examination of degree of congruence between JVFA objectives and prospective operations with existing patterns of Valley social organizations and local institutions.
3. Development of a number of different socio/economic indicators that can be used to measure project performance.

THRESHOLD DECISION BASED ON
INITIAL ENVIRONMENTAL EXAMINATION

Project Location: Jordan

Project Title: Jordan Valley Irrigation Project Stage II
(Construction of Maqarin Dam/Irrigation Facilities)

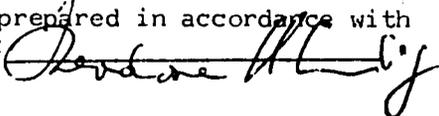
Funding (Fiscal Year and Amount): FY 1977; \$5.0 Million max.

IEE Prepared By: NE Bureau Date: 7/25/77

Environmental Action Recommended: Environmental Assessment
(Environmental Assessment, Negative Determination, etc.)

Mission Decision:
(Approval/Disapproval of Environmental Action Recommended in the IEE.)

The proposed project will have a significant effect on the environment and, therefore, an Environmental Assessment shall be prepared in accordance with AID Regulation 16.

APPROVED: 

DISAPPROVED: _____

DATE: _____

Clearances:

Environmental Coordinator: H. Gorchev Date: 7/25/77
SER/ENGR: J. Cassanos (Draft) Date: 8/2/77
GC/NE: J. Miller (Draft) Date: 8/2/77

INITIAL ENVIRONMENT EXAMINATION
NARRATIVE DISCUSSION

1. Project Location: Jordan
2. Project Title: Jordan Valley Irrigation Project Stage II
(Construction of Maqarin Dam/Irrigation Facilities)
3. Funding (Fiscal Year and Amount): FY 1977; \$5.0 Million max.
4. IEE Prepared By: NE Bureau Date: 7/25/77
5. Action Recommended: Preparation of an Environmental Assessment
6. Discussion of Major Environmental Relationships of Project Relevant to Attached Impact Identification and Evaluation Form:

A. Description of Proposed Project

The objectives of the proposed project are to develop the water resources of the Jordan Valley for municipal, industrial and agricultural uses and hydroelectric power production. The project area is located in the Northwest portion of Jordan (Exhibit 1). It is comprised of the east bank area of the Jordan River between the Yarmouk River and the Dead Sea. A general location map is attached. Main features of the project are as follows (Exhibit 2):

a. A storage project at the Maqarin site. Maqarin Dam will be a zoned earth and rockfill dam with its crest at elevation 150, that can be raised later by 50 meters to its ultimate level. A chute spillway with a flip bucket will be located on the left abutment with sufficient capacity to pass the maximum design flood discharge. A low-level outlet with a capacity of 20 m³/s at minimum operating level will be constructed in the diversion tunnel.

b. A 20-MW powerplant at Maqarin Dam. A conventional powerplant will be located about two kilometers along the river downstream from the Maqarin damsite on the left bank of the Yarmouk River. The plant will contain two generating units and have an installed capacity of 20 MW. A 66-KV transmission line from the powerplant will connect with the national grid system in Irbid.

c. A 2.0-MW powerplant at King Talal Dam. A pit-type powerplant will be installed in the right abutment immediately downstream from King Talal Dam. The plant will have an installed capacity of 2.0 MW; the energy will be transmitted to a substation near Abu Hamid by a 33-KV transmission line.

d. A diversion dam across the Yarmouk River at the existing

-2-

intake to the East Ghor Main Canal (EGMC). A concrete diversion dam will be constructed immediately below the existing intake to the EGMC. The dam will provide for diversion of the river up to $20 \text{ m}^3/\text{sec.}$, the capacity of the EGMC. Facilities will be included to permit releases for the Yarmouk Triangle area.

e. Extension of the EGMC. The EGMC will be extended at the southern end by 14.5 km to serve about 11,900 ha of new land.

f. A sprinkler irrigation system for 25,400 ha. Sprinkler application facilities will be installed in the 13,500 ha currently irrigated by surface methods. The 11,900 ha of additional irrigable land will also be served by sprinkler application facilities. The irrigation facilities will include a pipe distribution network, a farm system, and pumping stations located along the EGMC.

g. Diversion facilities on three small wadis. Small diversion dams and canals will be constructed on the side wadis Yabis, Kufrinja and Rajib to collect the base flows for use on project lands.

B. Discussion of Environmental Impacts

The Maqarin Reservoir, with its normal maximum reservoir at elevation 141 will have a total volume of 262 MCM and a useful storage volume of 217 MCM. The minimum river flow as regulated by the reservoir will be 194 MCM per year (equivalent to an average of $6.1 \text{ m}^3/\text{s}$). This degree of regulation will make it possible to deliver annually:

- 283 MCM/yr for irrigation by sprinklers (overall efficiency of 75 percent) of about 25,400 ha of arable lands, including about 13,500 ha currently irrigated with a surface system and about 11,900 ha of new lands not now irrigated. Together with the other ongoing projects, this will bring the total area under sprinkler irrigation to 36,000 ha.
- 20 MCM/yr for municipal and industrial water supply (12 MCM/yr destined to the town of Irbid and 8 MCM/yr to the Jordan Valley).
- 25 MCM/yr for water supply to the Yarmouk Triangle.
- 65 Gwh/yr with a minimum dependable capacity of 13.8 MW. This will permit the Jordan Valley Authority (JVA) to generate the electrical energy required for operation of its sprinkler systems (44 Gwh/yr with a peak demand of 8,600 kw) and to see its energy surplus to the Jordan Electricity Authority (JEA) as part of an exchange agreement to be negotiated.

-3-

As a result of the project, the agricultural production of the Jordan Valley will be increased significantly. We estimate that the 36,000 ha of lands irrigated in the Valley will produce annually over 800,000 tons of vegetables and 200,000 tons of fruits, in addition to new field crops and a substantial growth in the dairy industry. Some of the production will be marketed and consumed in Jordan, but a portion of the fruit and vegetable production can be exported to other Middle Eastern countries. These foreign markets are already being supplied to some extent by surplus production from Jordan. Marketing studies that have just been completed confirm that the future surplus production from the Project can be absorbed by these markets.

Additional indirect benefits will also accrue to the Jordanian economy. Construction of the project will stimulate the economy of the region for several years until it becomes operative. Increases in agricultural productivity will ultimately about double the income of the farming families, thus resulting in a very substantial increase in their standard of living. The increased agricultural production of the Valley will lead to an industrial and commercial activity related to the preservation and shipping of produce for export. Substantial benefits will accrue to the nation in the form of foreign exchange earnings from fruits and vegetable exports. Finally, Maqarin Reservoir may provide opportunities for the development of fisheries, water-oriented recreation and tourism.

The primary sources of adverse environmental impact can be identified as follows:

1. Construction and land preparation activities;
2. Inundation of the Maqarin site;
3. Changes in stream flow patterns;
4. Changes in agricultural practices; and
5. Changes in demographic, social and public health characteristics.

Construction Activity

It is anticipated that construction activity for the project will consist of dam construction including spillway facilities and powerhouse, reservoir clearing, construction of conveyance facilities, railroad relocation, and land preparation in the Jordan Valley including sprinkler irrigation and drainage systems.

Possible impacts during the construction phase of the project are excessive erosion, filling of reservoir with vegetation and other debris, disruption of existing resources and landscape features, damage to archaeological or other cultural landmarks present in the area.

Inundation of the Maqarin Site

Construction of the dam and inundation of the reservoir might have an impact on some archaeological sites present in the area.

Stream-Flow Patterns

Construction of the dam and diversion of the water for agricultural and municipal use will greatly alter stream-flows in the Yarmouk River downstream from the Maqarin site.

Diversion of the Yarmouk River will have the effect of diverting water that is relatively low in total dissolved solids away from the Jordan River. Return flows to the Jordan River will have increased nitrogen, phosphorous, and total dissolved solids concentrations. This condition will further increase the salinity of the Jordan River. The existing quality of the Jordan River water is already too poor to permit its use for agricultural, domestic, or industrial purposes.

Agricultural Practices

Increased use of agricultural fertilizer and pesticides is anticipated as agricultural production is expanded in the project area. Increased nitrogen, phosphorus, and total dissolved solids concentrations in the irrigation return waters will increase the already high salinity of the Jordan River flows.

No information is as yet available on proposed use of pesticides in the project area. Plans for the use of such chemicals must take into account the susceptibilities of the human population and of the bird life of the area to certain pesticides (especially the chlorinated hydrocarbons). The impact of pesticides can be minimized through careful choice of the chemicals to be applied, methods of application, and quantities to be used, coordinated with rigorous monitoring and control of all pesticide use.

Demographic, Social and Public Health Characteristics

Full development of the project, expected the mid-1980's, will greatly expand the population in the East Jordan Valley from the present level of 70,000. The influx of families and individuals attracted to the area by project development and related employment opportunities will tend to create some socio-cultural stress and secondary project impacts unless careful advance planning and implementation of adequate control measures are undertaken in a timely manner. Programs for the development of the social institutions and facilities required to support and maintain the agricultural production are being formulated by the Jordan Valley Authority.

These programs need to be formulated with great care, particularly relating to domestic water supply and sanitation, public health, and community development.

Public health programs are well established in the project area and there are no anticipated health problems associated with the project. Malaria and other vector-borne diseases have not been present or are under control. Snail hosts for schistosomiasis have been found at isolated locations, but the disease organism is not present. Programs for the identification and control of this vector are being implemented. Control of vector-borne disease also will increase because the irrigation water will be conveyed almost entirely within enclosed pipes.

IMPACT IDENTIFICATION AND EVALUATION FORM

Impact Areas and Sub-areas

Impact Identification and Evaluation^{1/}

A. LAND USE

1. Changing the character of the land through:

a. Increasing the population

_____ H _____

b. Extracting natural resources

_____ H _____

c. Land clearing

_____ H _____

d. Changing soil character

_____ H _____

2. Altering natural defenses

_____ M _____

3. Foreclosing important uses

_____ M _____

4. Jeopardizing man or his works

_____ M _____

5. Other factors

B. WATER QUALITY

1. Physical state of water

_____ H _____

2. Chemical and biological states

_____ H _____

3. Ecological balance

_____ M _____

4. Other factors

- ^{1/}N - No environmental impact
- L - Little environmental impact
- M - Moderate environmental impact
- H - High environmental impact
- U - Unknown environmental impact

(Annex 6)
IMPACT IDENTIFICATION AND EVALUATION FORM

C. ATMOSPHERIC

- 1. Air additives L
 - 2. Air pollution L
 - 3. Noise pollution L
 - 4. Other factors
-
-

D. NATURAL RESOURCES

- 1. Diversion, altered use of water H
 - 2. Irreversible, inefficient commitments M
 - 3. Other factors
-
-

E. CULTURAL

- 1. Altering physical symbols H
 - 2. Dilution of cultural traditions M
 - 3. Other factors
-
-

F. SOCIOECONOMIC

- 1. Changes in economic/employment patterns H
 - 2. Changes in population H
 - 3. Changes in cultural patterns M
 - 4. Other factors
-
-

IMPACT IDENTIFICATION AND EVALUATION FORM

G. HEALTH

- 1. Changing a natural environment M
 - 2. Eliminating an ecosystem element L
 - 3. Other factors
-
-

H. GENERAL

- 1. International impacts M
 - 2. Controversial impacts M
 - 3. Other factors
-
-

I. OTHER POSSIBLE IMPACTS (not listed above)

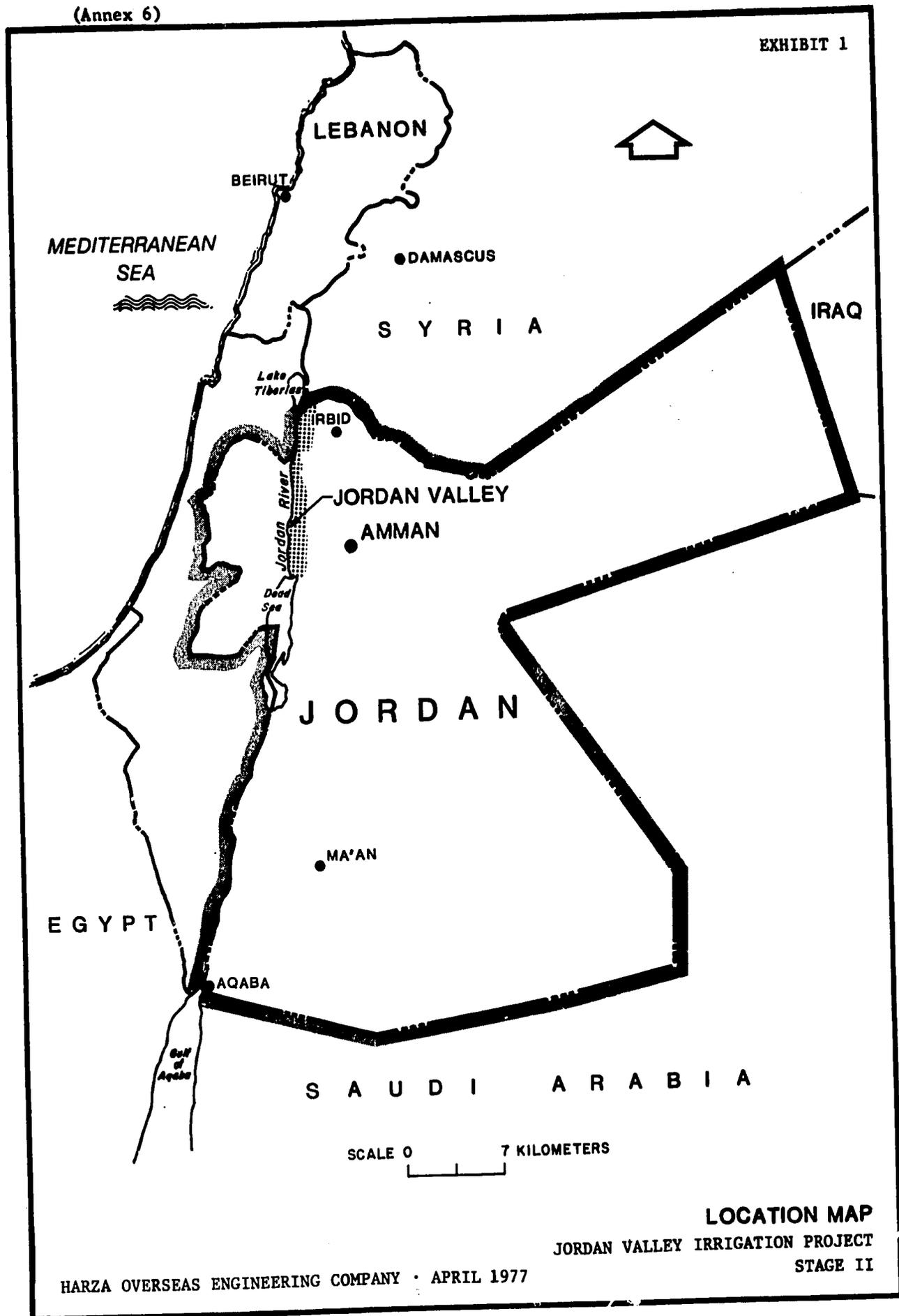
Prepared By: NE Bureau Date: 7/25/77

Project Location:

Project Title:

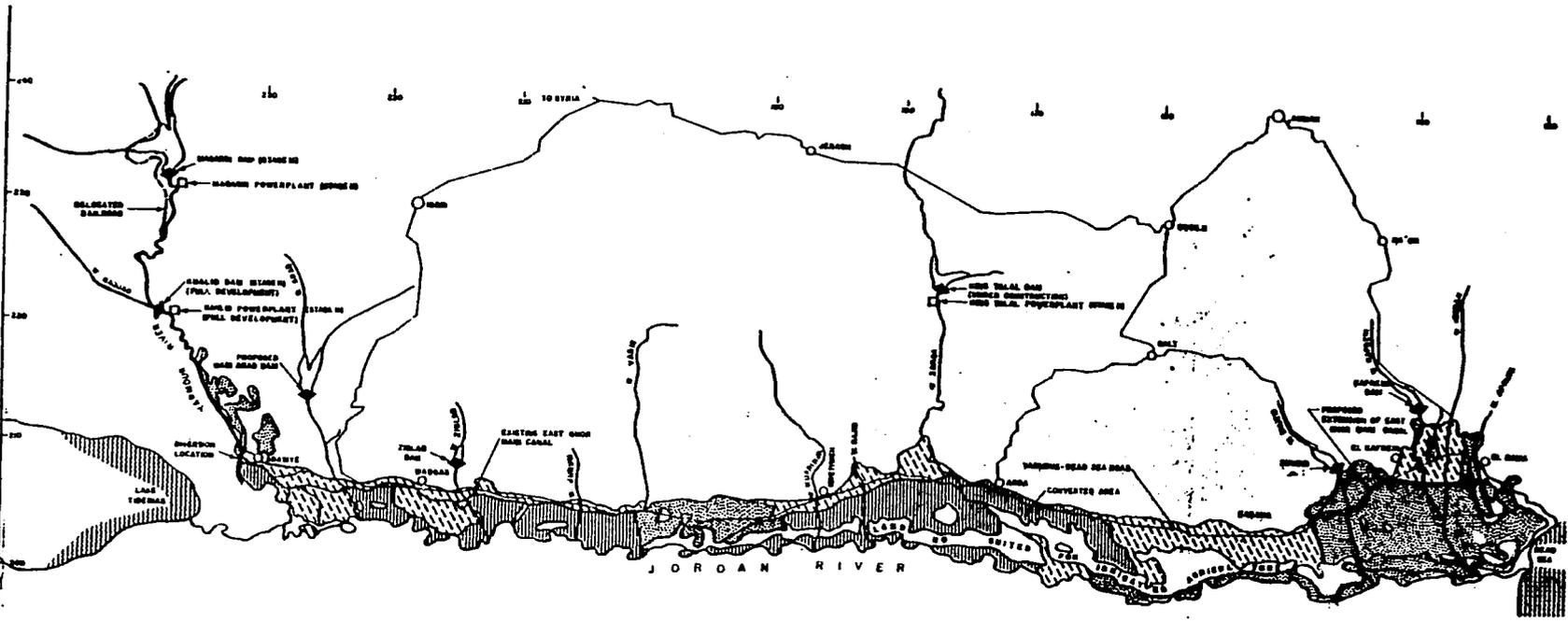
(Annex 6)

EXHIBIT 1



HARZA OVERSEAS ENGINEERING COMPANY • APRIL 1977

LOCATION MAP
JORDAN VALLEY IRRIGATION PROJECT
STAGE II



NOTE:
 FOR FULL DEVELOPMENT, MAQARIN DAM WILL BE RAISED
 AND KHALID DAM AND POWERPLANT WILL BE CONSTRUCTED.

LEGEND

- ON-GOING PROJECTS (STAGE I)
- PROPOSED PROJECT (STAGE II)
- Lands not previously irrigated
- Lands converted from surface to sprinkler irrigation

SCALE 0 10 KILOMETERS

ANNEX 7

SCOPE OF CONSULTANT'S SERVICES UNDER PHASE 'B₁'

1. The Consultant's services during Phase 'B₁' are expected to cover a period of approximately 15 months. The work during Phase 'B₁', will include topographic Drawings for all project facilities, detailed studies of the method of irrigation supply, design - level foundation exploration, construction materials testing and hydraulic model testing. On the bases of the detailed field investigation and the associated laboratory testing, the final detailed designs of the project shall be completed. The tender documents consisting of contract drawings and specifications shall then be prepared in accordance with the approved final designs.

2. Construction of the Project is foreseen to be undertaken as three sub-projects through financial assistance obtained from different financing agencies for the sub-projects enumerated below.

- i) The storage and power facilities including diversion facilities on the Yarmouk River.
- ii) Development of the lands north of Zarqa River, which consists basically of conversion of the existing surface irrigation system to a sprinkler irrigation system.
- iii) Development of the lands south of the Zarqa River, which consists basically of installation of a sprinkler irrigation system on new lands.

Accordingly, the final design and tender documents etc., will be prepared by the Consultant for three sub-projects relating separately to each of the components enumerated above.

In connection with Phase 'B₁' work, the Consultant's duties and responsibilities shall comprise of, but not be limited to, the following:

a. Surveys and Site Investigations.

Based upon the program of further surveys and investigations recommended at the end of Phase "A" and as approved by the Owner, the Consultant shall provide necessary equipment and related resources for continuing under his own supervision and administration the survey and investigation works in Phase "B₁". It is foreseen that the survey and investigation works will be essentially completed before the tender drawings are prepared. At the conclusion of the survey and investigation works in Phase "B₁", the results shall be recorded, analysed and interpreted by the Consultant and submitted to the Owner in the form of a report.

b. Final Design.

- (1) The Consultant shall prepare the final design of the various components of the approved Project in such detail that the nature and scope of the works as designed would minimize the possibility of major revisions or substantial alterations during execution of the works, except for adjustments arising from more detailed knowledge of the physical and geological conditions after exposure of the foundations and minor alterations in detail during construction, as necessary.
- (2) The final design of the Dam, the appurtenant works and the diversion facilities shall include complete and detailed drawings and design computations relating to hydraulics, structures and foundations including the mechanical and electrical components of the Project, each annexed with copies of the computation sheets which form the basis of the design.
- (3) The final design of the power stations shall include, but not be limited to, civil works of the power stations, turbines, generators, other hydro-mechanical equipment, electrical and ancillary installations, transmission lines and all other works required to connect any power station built under the Project to the National Grid or to the load centers in Jordan.

- (4) However, it is recognized that the complete detailed design and drawings of the electrical and hydro-mechanical equipment and those civil features directly affected by them will be finalized after the award of the contract for supply of these components of the Project; i.e, in Phase "C"
- (5) The final design will include the relocation of highways, bridges and irrigation channels, where necessary. Himma railroad relocation is not included in this Phase.
- (6) The final design of the main canal, the sprinkler irrigation network, pumping stations, will be based on detailed field surveying and will include full and complete drawings required for tendering and construction.
- (7) The final design will include the installation of a piezometric network for monitoring areas with future drainage hazard.
- (8) Before finalization and printing the Consultant shall submit the Final Design Report for review by the Owner, along with a justificative memorandum for the design of each component of the Project in order to facilitate the design to be reviewed by the Owner. However, the transmittal of these memoranda and the Draft Design Report to the Owner, and their acceptance by the latter, does not diminish in any way the responsibility of the Consultant concerning the correctness of their design and the behaviour of the constructed units.
- (9) If hydraulic and/or electrical analogue model tests are deemed to be necessary, the Consultant shall select a suitable laboratory with experience in model testing and shall advise the Owner of his selection. The Consultant shall prepare the scope of work and schedule of completion for the model tests. The Consultant shall supervise the performance of the model tests and review the reports prepared by the laboratory, and submit these to the Owner together with their conclusions

regarding the incorporation of the model study results in the final design. The model tests shall be so arranged that their results become available well in time for incorporation in the final design, where required.

c. Tender Documents and Tender Drawings.

- (1) The Consultant shall prepare Tender Documents separately for the sub-projects enumerated in para 2 above for construction through independent general contractors or suppliers / manufacturers as directed by the Owner.
- (2) The tender documents for each sub-project shall contain the Conditions of Contract with special provisions to meet the requirements of the respective financing agencies. The contract specifications and Bill of Quantities shall be prepared in sufficient detail which would allow full and clear description of the nature, scope and quality of work required to be performed under the Contract. Contract drawings to be prepared shall be such as can be employed adequately for construction without resorting to preparation of additional principal drawings, other than such construction details as bar bending schedules or other working drawings for adaptation details etc. which the Engineer is expected to furnish or the Contractor is expected to prepare for Engineers approval during construction. The number, scale and detail of the drawings which shall form part of the bidding documents package shall be sufficient to enable those Contractors tendering to interpret correctly the design for the works and to prepare competitive tenders and shall be adequate to serve as construction drawings for execution for the works. The Tender Documents shall be submitted by the Consultant in draft form for approval of the Owner before finalization and issue.

- (3) Along with the final Tender Documents the Consultant shall submit a confidential priced bill of quantities for each tender. The unit prices to be used in the confidential priced bill of quantities shall be supported by detailed analysis of rates, and based on competitive prices prevailing in the region or the international construction industry.
 - (4) The invitations to bidders and specifications for the purchase and installation of materials, machineries, equipment, pumps etc., shall be written with the required precision for complete identification of the required supplies and to allow an easy selection of offers in view of ordering.
- d. Reports
- (1) The consultant shall keep the Owner fully informed of the major decisions to be made that affect the design of the project components.
 - (2) A monthly statement of progress of works shall be submitted by the consultant indicating the progress of works in comparison with the time schedule for completion of the various components of works.
 - (3) A quarterly report shall also be submitted to the Owner explaining the work accomplished during the period under report, and any changes introduced to the schedule of work.

ANNEX 8BALANCE OF PAYMENTS ANALYSIS

Jordan suffers from a chronic Balance of Trade deficit, with exports of goods offsetting only about 25% of commodity imports. Despite this structural problem its overall Balance of Payments has been in slight surplus as grant aid from abroad, and rapidly increasing remittances from Jordanians working abroad, together compensate for much of the trade gap.

	Millions U.S. Dollars			
	1973	1974	1975	1976
Goods & Services	-182.4	-251.4	-355.2	- 324
Imp. of Goods	-323.4	-467.1	-698.7	-1005
Exp. of Goods	+ 69.0	+149.4	+146.7	+ 207
Net Services	+ 68.7	+ 66.3	+197.1	+ 474
Transfers	+193.8	+260.1	+419.4	+ 381
Private	+ 10.5	+ 6.9	+ 5.4	+ 2
Government	+183.3	+253.2	+414.0	+ 379
Current Acct.	+ 10.5	+ 8.7	+ 64.2	+ 57
Capital Acct.	+ 22.2	+ 31.5	+133.8	- 52.5
Private	- 0.6	+ 2.1	+ 20.4	+ 10.5
Government	+ 22.8	+ 29.4	+113.4	- 63.0
Basic Balance	+ 33	+ 40.2	+197.4	+ 4.5

As shown in the table above, Jordan's commodity exports almost tripled from \$69 million in 1973 to \$207 million in 1976. Expanded phosphate exports (\$12 million in 1973 and \$58 million in 1976) account for much of the increase, but fruit and vegetable exports, mainly to neighboring Arab states, also have risen markedly--\$13 million in 1973 to \$59 million in 1976. These two categories represent more than 50% of all commodity exports with no other single item of much importance.

Despite this impressive performance, the Trade Balance has worsened since imports too have tripled, starting from a much higher base--\$324 million in 1973 to \$1005 million in 1976. Consumer goods account about \$300 million, or 40% of the total, falling from 45% in 1973. Capital goods imports rose very rapidly from \$60 million to approximately \$345 million in 1976, a more than five fold increase and a reflection of Jordan's growing developmental effort. Raw material imports too nominally quadrupled to about \$270 million in 1976, but perhaps \$100 million of this increase is the result of a new negotiated price of oil which took effect in 1976. The growth in consumer goods imports is essentially a function of rising income and inflationary pressure in Jordan. The Jordanians have not modified import

(Annex 8)

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regulations or custom duties, both of which compare favorably with other developing countries. The striking increase in overseas remittance, and growing public sector expenditure greatly stimulated the economy, in turn giving rise to the sizeable increase in consumer imports.

In 1973 remittances officially recorded approximated \$195 million. As the oil rich Arab states expanded their development expenditures, salaries rose and remittances more than doubled to \$372 million last year. The total net service income in 1976 was \$580 million as opposed to only \$66 million in 1973. This nine fold increase, together with official transfer payments of about \$380 million in 1976 more than offset the trade deficit. Central government transfers were about \$185 million in 1973.

With the capital account showing a surplus of \$22 million in 1973 and rising to \$135 million in 1976, as GOJ loan disbursement expanded, Jordan's basic Balance improved from \$33 million to \$198 million during the period.

Foreign exchange reserves stood at \$618 million at the end of last year, representing about eight months commodity goods imports. The 1973 ratio was about the same. During the same period the debt service ratio (interest and principal payments on external debt divided by total foreign exchange earnings) declined from 16% to 6%. This ratio indicates considerable capacity for increased borrowing.

It will take at least 10 years for Jordan to significantly improve its Balance of Trade situation. The 1976-1980 Development Plan projects unrealistic increases in exports, but we are reasonably optimistic about the export picture over the longer run. Fertilizer and phosphate exports of up to \$200 million could be reached by the early 1980's, given the status of current investment plans. Potash and other Dead Sea minerals also look promising. A current study indicates such exports of perhaps \$100 million are possible by the mid to late 1980's as the capital projects in the Jordan Valley are completed. Agricultural exports from this region too should expand rapidly to fill what is an almost unlimited demand in the Arab States. Tourism, also, given peace in the region, could loom large as an export earner in the service category. Jordan's Balance of Payment situation will justify economic assistance and concessional lending for many years to come. However, over the longer run the prospects are reasonably good. Jordan's long border with Israel gives it a major political importance which, in the short run, should continue to make Jordan a prime source for donor assistance. Barring war, we do not envisage a weakening of the Jordanian dinar nor in Jordan's ability to repay its foreign debt.

JORDAN VALLEY IRRIGATION & DRAINAGE SYSTEM DESIGN

SCHEDULE

ANNEX 9

OPERATIONS	MONTHS															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
MOBILIZATION	[Bar from month 1 to 16]															
CHECKING LAYOUT <small>BEIRUT JORDAN</small>	[Bar from month 1 to 4]															
FIELD SURVEYING & SUPERVISION OF- FIELD INVESTIGATIONS & FOUNDATIONS	[Bar from month 3 to 11]															
HYDROULIC DESIGN-ALL ASPECTS	[Bar from month 4 to 14]															
DRAFTING	[Bar from month 2 to 14]															
FINAL DESIGN REPORT	[Bar from month 5 to 16]															
STRUCTURAL - MAIN CANAL	[Bar from month 5 to 16]															
ARCHITECTRAL - PUMPING STATIONS	[Bar from month 5 to 16]															
STRUCTURAL - PUMPING STATIONS	[Bar from month 5 to 16]															
MECHANICAL - PUMPING STATIONS	[Bar from month 5 to 16]															
ELECTRICAL - PUMPING STATIONS	[Bar from month 5 to 16]															
SOIL WORK <small>AIR PHOTOS SURVEYING</small>	[Bar from month 2 to 4]															
FOR LAND <small>FIELD WORK</small>	[Bar from month 5 to 6]															
CLASSIFICATON <small>OFFICE WORK</small>	[Bar from month 6 to 7]															
<small>MAP PREPARATION</small>	[Bar from month 7 to 8]															
QUANTITY SURVEY	[Bar from month 7 to 8]															
GENERAL CONDITION SPECIFICATIONS	[Bar from month 10 to 16]															
TENDER DOCUMENT DELIVERY	[Bar from month 10 to 16]															

ANNEX 9 -649

App 9A, Ch 9, HB 3

AGENCY FOR INTERNATIONAL DEVELOPMENT
**PROJECT AUTHORIZATION AND REQUEST
 FOR ALLOTMENT OF FUNDS PART I**

1. TRANSACTION CODE
 A ADD
 C CHANGE
 D DELETE

2. DOCUMENT CODE
 PAF
 5

3. COUNTRY/ENTITY
 Jordan

4. DOCUMENT REVISION NUMBER

5. PROJECT NUMBER (7 digits)
 [278-0200]

6. BUREAU OFFICE SYMBOL
 NE [4]

7. PROJECT TITLE (Maximum 40 characters)
 [Jordan Valley Irrigation Project Stage II]

8. PROJECT APPROVAL DECISION
 A APPROVED
 D DISAPPROVED
 DE DCAUTHORIZED

9. EST. PERIOD OF IMPLEMENTATION
 YRS. [0] [1] QTRS [2]

10. APPROVED BUDGET AID APPROPRIATED FUNDS (\$000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE		E. 1ST FY <u>77</u>		H. 2ND FY		K. 3RD FY	
		C. GRANT	D. LOAN	F. GRANT	G. LOAN	I. GRANT	J. LOAN	L. GRANT	M. LOAN
(1) SSA	S 920		210		5,000				
(2)									
(3)									
(4)									
TOTALS					5,000				

A. APPROPRIATION	N. 4TH FY		O. 5TH FY		LIFE OF PROJECT		11. PROJECT FUNDING AUTHORIZED (ENTER APPROPRIATE CODE(S)) 1. LIFE OF PROJECT 2. INCREMENTAL LIFE OF PROJECT C. PROJECT FUNDING AUTHORIZED THRU	A. GRANT	B. LOAN
	P. GRANT	Q. LOAN	R. GRANT	S. LOAN	T. GRANT	U. LOAN			
(1) SA						5,000			1
(2)									
(3)									
(4)									
TOTALS						5,000			[7] [9]

12. INITIAL PROJECT FUNDING ALLOTMENT REQUESTED (\$000)

A. APPROPRIATION

	B. ALLOTMENT REQUEST NO. <u>1</u>	
	C. GRANT	D. LOAN
(1) SA		5,000
(2)		
(3)		
(4)		
TOTALS		5,000

13. FUNDS RESERVED FOR ALLOTMENT

TYPED NAME (Chief, SER/PM/PSD)

SIGNATURE

DATE

14. SOURCE/ORIGIN OF GOODS AND SERVICES
 000 941 LOCAL OTHER

15. FOR AMENDMENTS, NATURE OF CHANGE PROPOSED

FOR PPC/PIAS USE ONLY	16. AUTHORIZING OFFICE SYMBOL	17. ACTION DATE	18. ACTION REFERENCE (Optional)	ACTION REFERENCE DATE
		MM DD YY		MM DD YY

DRAFT
GC/NE:JMiller:ew
7/29/77

PROJECT AUTHORIZATION AND
REQUEST FOR ALLOTMENT OF FUNDS

Name of Country: Jordan

Name of Project: Jordan Valley Irrigation
Project Stage II

Number of Project:278-0200

Pursuant to Part II, Chapter 4, Section 532 of the Foreign Assistance Act of 1961, as amended, I hereby authorize a Loan to Jordan (the "Cooperating Country") of not to exceed Five Million United States Dollars (\$5,000,000) to help in financing certain foreign exchange and local currency costs of goods and services required for the project as described in the following paragraph.

This project consists of the final detailed design and preparation of bid documents for construction of the proposed Maqarin Dam and its associated power generation facilities and irrigation system.

The entire amount of A.I.D. funding herein authorized for the project will be obligated when the Project Agreement is executed.

I hereby authorize the initiation of negotiation and execution of the Project Agreement by the officer to whom such authority has been delegated in accordance with A.I.D. regulations and Delegations of Authority subject to the following essential terms and covenants and major conditions; together with such other terms and conditions as A.I.D. may deem appropriate:

a. Interest Rate and Terms of Repayment

The Cooperating Country shall repay the Loan to A.I.D. in United States Dollars within forty (40) years from the date of first dis-

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bursement of the Loan, including a grace period of not to exceed ten (10) years. The Cooperating Country shall pay to A.I.D. in United States Dollars interest from the date of first disbursement of the Loan at the rate of (a) two percent (2%) per annum during the first ten (10) years, and (b) three percent (3%) per annum thereafter, on the outstanding disbursed balance of the Loan and on any due and unpaid interest accrued thereon.

b. Source and Origin of Goods and Services

Goods and services financed by A.I.D. under the project shall have their source and origin in the Cooperating Country or in the United States or in countries included in A.I.D. Geographic Code 941, except as A.I.D. may otherwise agree in writing.

c. The Cooperating Country shall covenant that it will make the necessary arrangements to provide the consultants with access to the project site in Syria whenever it is required for carrying out the study.

Joseph C. Wheeler
Bureau for Near East