SECTION 9

Profile:

Middle East Ports and Navigation

STRATEGIC WATER ISSUES IN THE MIDDLE EAST: THE ROLE OF INLAND WATERWAYS AND PORTS

DISTRIBUTION NOTE: THIS DRAFT CONCEPT PAPER IS NOT INTENDED FOR USE BEYOND ESC AND WRSC PEER REVIEW

I. INTRODUCTION

1. **PURPOSE.** This paper presents an assessment of the role inland waterways and ports perform as part of a portfolio of strategic water resource issues in the Middle East. This and other strategic water resource issues are viewed as critical elements to the success of any long-term political achievements in this region.

2. **SCOPE.** This paper:

a. presents a survey of ports and inland waterways throughout selected Middle East countries (Kuwait, Iraq, Syria, Lebanon, Jordan, Israel, Southern Turkey)

b. assesses the relationship between ports and inland waterways in the Middle East.

c. focuses upon strategic inland waterway/port issues affecting the long term stability of the Middle East.

3. **BACKGROUND.**

a. **Strategic Water Resource Issues in the Middle East.** The Chief of Engineers, Lieutenant General Henry J. Hatch, has commissioned a survey of strategic water resource issues in the Middle East. The USACE Office of Strategic Initiatives (OSI), through Mr. Bill Robertson, is directing this survey. OSI has tasked the USACE Water Resources Support Center (WRSC) as the principle study agency. The focus of the survey will be to outline the key issues associated with water quality, availability, and usage in the Middle East. WRSC has called upon USACE personnel with experience and contacts in Middle East affairs to assist them in their survey. Personnel from the USA Engineer Topographic Laboratories (ETL), the USA Waterways Experiment Station (WES), and the USA Engineer Studies Center (ESC) have contributed data and valuable insights to this key Middle East assessment.

b. **Inland Waterways and Ports as a Strategic Water Resource Issue.** In addition to providing background information and locations of data sources to WRSC, ESC analysts have also contributed timely analysis. ESC has contributed to WRSC's assessment of strategic water issues in the Middle East by examining the role of inland waterways and ports. This assessment is being published as part of WRSC's survey of critical water resource issues in the Middle East for the Chief of Engineers.

4. **APPROACH.** ESC's approach to this topic is summarized in three major steps:

a. **Determine the scope of work.** Initial meeting and study coordination between members of the WRSC study group and ESC personnel focused upon three specific tasks. These tasks included the delineation of sources and points of contact (POCs) that would provide information to the WRSC study team, identification and analysis of specific functional areas that fall within ESC's expertise, and participation in the peer review of the WRSC paper.

b. **Research and data collection.** ESC's research and data collection efforts on strategic water issues in the Middle East centered upon existing ports and inland waterways. In addition to information resident at ESC, documentation on Middle East ports and inland waterways was collected from the Engineer Topographic Laboratories (ETL), the Defense Intelligence Agency (DIA), the Defense Mapping Agency (DMA), and the USACE Middle East Africa Projects Office (MEAPO). Conversations with Middle East regional and functional area experts from the Department of Commerce, Military Transportation Management Command (MTMC), International Monetary Fund & World Bank, and the USA Corps of Engineers (USACE), were conducted to obtain supplementary data.

c. **Synthesis, analysis and presentation.** Upon receipt of source information, ESC assessed the information concerning ports and inland waterways in the Middle East. Next, a process of synthesis of similar type information was conducted. Finally, an analysis of pertinent port and inland waterway issues was produced for review and input into the larger WRSC paper. This analysis was then presented in this short paper for review by the WRSC senior project manager.

5. DEFINITIONS.

a. **Port.** A city or town with a harbor where ships can load and unload cargo.[1]

b. **Inland Waterways.** A navigable inland body of water (such as a river, canal or sound).[2]

c. **Middle East.** An extensive region comprising several countries of Southwest Asia and Northeast Africa; specifically for this paper the countries of Israel, Lebanon, Syria, Southern Turkey, Iraq, Jordan and Kuwait.

d. **Southern Turkey.** For the purposes of this study, southern Turkey is defined as a triangle bounded by the Mediterranean coastal city of Antalya in the east, the confluence of the Iranian-Iraqi-Turkish border in the west, and the central Turkish city of Malatya in the north.

e. **Port-Inland Waterway Complex.** Ports located along or adjacent to an inland waterway.

f. **Port Classification Scheme.** The ports examined in this study have been classified by levels (primary, secondary, tertiary) of port service and infrastructure. Primary ports indicate a full level of shipping services and cargo handling. Subsequent classifications represent smaller or lower level of port facilities. For example, Israel's port of Haifa is classified as a primary port because of the high level of services and facilities provided. Israel's port of Ashkelon is classified as a tertiary port because it's sole function is as a POL terminal.

6. LIMITATIONS, ASSUMPTIONS, AND THEIR SIGNIFICANCE.

a. **Limitation.** This paper has not incorporated classified documents and information. **Significance.** Classified reports contain information that can provide further clarification on several issues contained in this paper.

b. **Limitation.** The Seyhan and Ceyhan rivers in Turkey are not addressed or classified as inland waterways in this paper. **Significance.** These rivers are the water source for Turkey's proposed " Peace Pipeline".

---

[1] Guralnik, David B. ed, Webster's New World Dictionary, 2nd College Edition 1979, The World Publishing Company.

[2] US Army Engineer Topographic Laboratories, Glossary of Selected Water Resources and Related Terms, January 1987.

c. **Limitation.** Detailed discussion of the impact of port destruction and reconstitution is not included in this paper. **Significance.** The total cost of opening or the reconstruction of a damaged port-inland waterway complex is beyond the scope of this paper.

d. **Assumption.** The Shatt al Basra-Khawr abd Allah waterway is closed due to damages incurred from Operation Desert Storm. **Significance.** Iraq has no maritime transport network available to the Persian Gulf.

e. **Assumption.** The water issues presented in this paper are part of a larger comprehensive set of strategic water issues in the Middle East. **Significance.** A better appreciation of the value of water resources to long term political stability in the Middle East is gained by obtaining a copy of WRSC's paper entitled "Strategic Water Issues in the Middle East".

f. **Assumption.** Ports and inland waterways of Iran are beyond the scope of this report. **Significance.** Detailed discussion of the roles of the ports of Abadan and Khorramshahr, and the Rud e Karun have been omitted from this report's analysis.

II. DISCUSSION.

7. **SURVEY OF PORTS IN THE MIDDLE EAST.** A survey of the number of ports serving the Middle East is seen in Figure 1. These selected ports establish a base line of ports for this paper.[3] These ports are grouped according to country, classified by level of services (primary, secondary, tertiary) offered, and linked to an existing drainage basins. As seen in **Figure 1**, there are 35 ports in the Middle East. The number of port in each countries varies. Jordan possesses only one port, while nine ports serve Kuwait.

8. **SURVEY OF INLAND WATERWAYS IN THE MIDDLE EAST.** The inland waterways of the Middle East are located in Iraq (**Figure 2**). The waterways of Iraq comprise what is commonly referred to as the Tigris-Euphrates system. This system consists of the Tigris and Euphrates rivers, the Shatt al Arab and the Shatt al Basra canals. The Jordan, Litani, and Orontes rivers (**Figure 2**) cannot be classified as viable inland waterways due to seasonal flow rates, diversion of water for irrigation and other uses.

a. **Tigris-Euphrates system.** The waterways of this system are fed by many tributaries which wind their way through Iraq. Navigation on both Tigris and the Euphrates rivers is limited to light vessel and occasional barge traffic which is restricted by seasonal flows and shifting channels.

(1) *The Shatt al Arab* (**Figure 3**) is a natural stream formed at the confluence of the Tigris and Euphrates rivers at Al Qurnah. It flows southeast for 205 kilometers to the Persian Gulf. The river lies entirely within Iraq to a point about 100 kilometers from its sources; it then forms the disputed Iran-Iraq border for the remainder of its course.

(2) *The Shatt al Basra Canal* (**Figure 3**) connects the town of Basra to the Persian Gulf via the Khawr az Zubayr and Khawr Abd Allah Waterways. The northern end of the canal connects to the Qarmat Ali waterway of the Euphrates River about 13

---

[3] Lloyd's of London, Ports of the World, 1990, Lloyd's of London Press, 1990; Shipping Guides Limited, Guide to Port Entry-1989-1990, Shipping Guides LTD Nautical Advisers and Publishers, 1989; Fairplay Publications Ltd., The Fairplay World Ports Directories 1990-Volume 3 Mediterranean, Africa & Middle East, 1990.

SELECTED PORTS OF THE MIDDLE EAST

Country	Name of Port	Classification			Drainage Basin			
		Primary	Secondary	Tertiary	T-E*	Orantes	Jordan	Litani
Iraq	Umm Qasr	X			X			
Iraq	Khor As Zubayr		X		X			
Iraq	Al Basrah		X		X			
Iraq	Al Faw			X	X			
Iraq	Khor Al Amaya		X	X				
Iraq	Mina Al Bakr			X				
Israel	Ashdod		X					
Israel	Ashkelon			X				
Israel	Eilat	X						
Israel	Hadera			X				
Israel	Haifa	X						
Lebanon	Beirut	X						
Lebanon	Jounieh			X				
Lebanon	Selaata			X				
Lebanon	Sidon		X					
Lebanon	Sour (Tyre)			X				
Lebanon	Tripoli	X						
Lebanon	Zahrani Terminal			X				
Lebanon	Chekaa			X				
Jordan	Aqaba	X						
Kuwait	Khor Al Mufatta			X				
Kuwait	Kuwait (Shuwaikh)	X						
Kuwait	Mina Al Ahmadi		X					
Kuwait	Shuaiba		X					
Kuwait	Mina Adulla			X				
Kuwait	Ras Al Ard			X				
Kuwait	Doha			X				
Kuwait	Ras Al Qulayh			X				
Syria	Banias			X				
Syria	Lattakia	X						
Syria	Tartous	X						
Syria	Borj Islam			X				
Turkey	Iskerderun	X						
Turkey	Mersin	X						
Turkey	Antalya	X						

* T-E = Tigris-Euphrates

Figure 1. Selected Ports of the Middle East.

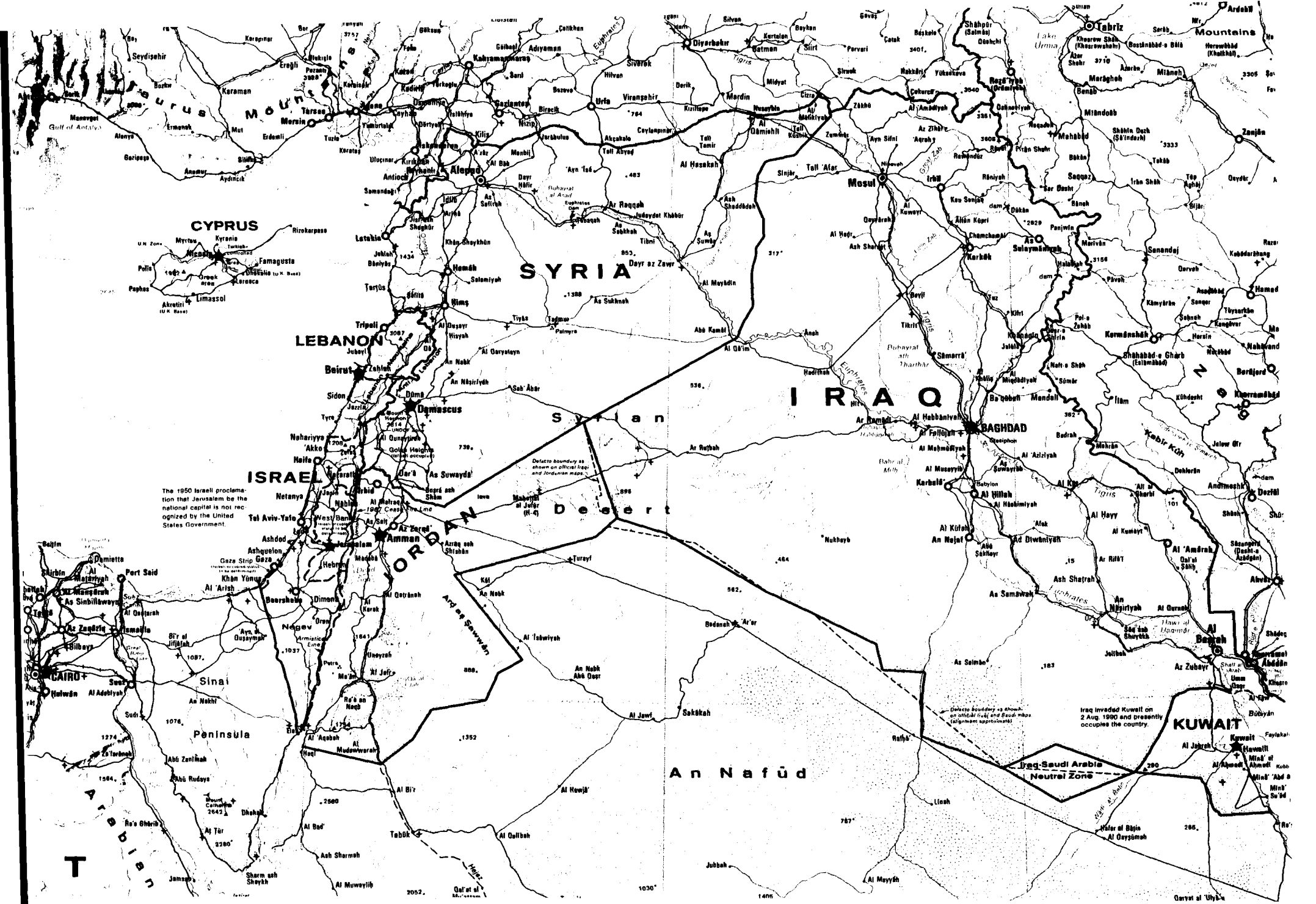
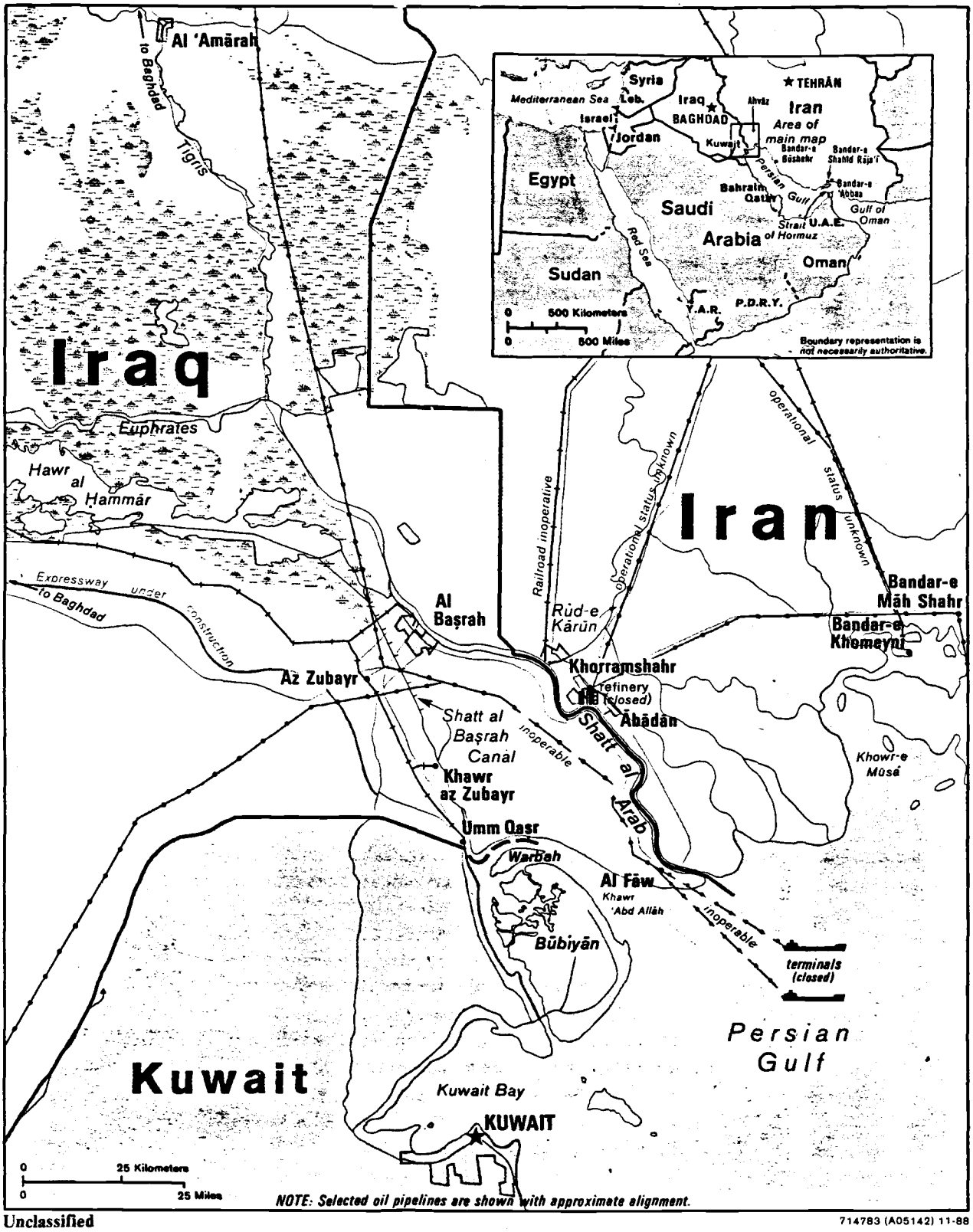


FIGURE 2. WATERWAYS OF THE MIDDLE EAST



Unclassified

714783 (A05142) 11-88

FIGURE 3. INLAND WATERWAYS OF THE MIDDLE EAST

kilometers northwest of Al Basra. It extends about 40 kilometers southeast to the Sanah delta of the navigable Khawr az Zubayr bay. The southern end of the canal is almost 31 km north of the port of Umm Qasr seaport on the Khawr Abd Allah tributary leading into the Persian Gulf.

b. **Other Waterway Systems.** With the exception of light watercraft, the Jordan, Litani, and Orontes are not considered viable inland waterway systems. Their principal purpose is municipal and agricultural water supply, in addition to other industrial uses. A brief description of each waterway system is presented below.

(1) *The Jordan River.* The Jordan river originates at Lake Tiberias in the northern region of Israel and terminates at the Dead Sea. Its course is contained inland, with no outlet to the sea. The Jordan river water flow is degraded along its course by irrigation systems and water supply conduit systems.

(2) *The Litani River.* The Litani river originates in the in the central portion of Lebanon. From its origin in the Lebanon mountains, the river traverse south through Al Biqa valley where it terminates at the Mediterranean Sea just north of the city of Tyre. The five major uses of the Litani river water are for households and businesses, industries, hydroelectric power, cooling water for steam electric power plants and irrigation.

(3) *The Orontes River.* The Orontes river originates in the central highlands of Lebanon, follows a path through eastern Syria, and eventually terminates at the Turkish coastal town of Samadagi after passing through the city of Antioch. Like the Litani, the use of this river is accomplished by storage reservoirs, hydroelectric generation, and a system of canal for local irrigation purposes.

9. **SURVEY OF PORT-INLAND WATERWAY COMPLEXES.** Ports located along inland waterways are defined as port-inland waterway complexes. Analysis of information from Figures 1-3 shows that there are only two major port-inland waterway complexes. Remaining ports throughout the Middle East can be described as coastal, roadstead, or off-shore ports. There are no ports adjacent to or along the Litani, Orontes, and Jordan rivers, thus this paper has not focused upon issues facing these facilities.

a. **The Shatt al Arab Waterway Complex (Figure 3).** The Iraqi ports of Al Basra and Al Faw are located adjacent to the Shatt al Arab waterway. Before recent conflicts,

the port of Al Basra was Iraq's principal deep water commercial port; Al Faw was the main petroleum shipping terminal. Damages from the Iran-Iraq War and Desert Storm operations have closed the waterway as well as the port facilities. The current operational status of the Iranian ports of Abadan and Khorramshahr is unknown, however the closure of the Shatt al Arab waterway renders these ports ineffective.

b. **The Shatt al Basra Waterway Complex (Figure 3).** The Iraqi ports of Umm Qasr and Khawr az Zubayr are located upon the Shatt al Basra Canal-Khawr az Zubayr-Khawr abd Allah Waterway. Umm Qasr and Khawr az Zubayr served as alternatives to the port of Al Basra during the Iran-Iraq war. Eventually these ports were also closed. In 1988 these two ports reopened, however damages from the Desert Storm operation have rendered these ports and waterway inoperable again.

IV. STRATEGIC WATER ISSUES IN THE MIDDLE EAST

10. PORT & INLAND WATERWAY ISSUES.

a. **Shatt al Arab Waterway Cleanup & Sovereignty.**

(1) *Overview.* The Shatt al Arab waterway (**Figure 3**) has long served as a transportation corridor for Iraq and Iran. The waterway gives Iraq, a country with little access to the Persian Gulf, one of two avenues to the Gulf. The other Iraqi avenue to the Persian Gulf, albeit minor in comparison, is the Shatt al Basra waterway (**Figure 3**). The Shatt al Arab waterway currently (February 1990) remains impassable as result of damages from the Iran-Iraq War (1980-1988) and the Desert Storm Conflict (1990-91). The debris blocking it includes unexploded ordinance & mines, sunken vessels and miscellaneous litter, as well as silt[4]. Complicating the problems of the Shatt al Arab waterway cleanup is the lingering issue of sovereignty over this path to the Persian Gulf. Although Iranian and Iraqi positions and claims have fluctuated during the past century, the sovereignty issue revolves around which country has control of the waterway. Various negotiated solutions over the past century have included: total sovereignty over the waterway by one country, joint sovereignty over the waterway marked at the "thalweg" line, and freedom of navigation on the waterway insured by a neutral party.

---

[4] Arab Times, Iraq develops other ports as Basra stays cut off, January 28, 1989.

(2) *Issues & Impact.*

(a) Shatt al Arab Cleanup. The issue of the Shatt al Arab Cleanup revolves around the length and cost of the cleanup. Issues central to the cost of the cleanup include several. What neutral party can direct the cleanup ? What country or consortium of countries will bear the cost of the cleanup ? How long will the cleanup take ? Conversations with USACE dredging experts have estimated that the cleanup will in all probability easily exceed cost (>$500 million) and time (multi-year) expended by the Suez Canal cleanup of 1975. This is due to a lengthy three phased effort: clearing the waterway (banks & channel) of unexploded ordinance, salvage of ships and other debris, and dredging of channel. Continued delay in cleanup will adversely impact Iraq due to the continued disuse of the port of Al Basra. The potential impact on the United States is that it may be called upon to participate in the management of the waterway cleanup.

(b) Shatt al Arab Sovereignty. Directly related to the Shatt al Arab cleanup is the question of sovereignty. What power will ultimately administer and maintain control of the waterway ? Regional powers, particularly those directly affected by control of the waterway (Iran & Iraq) will pursue positions favorable to their economic well being. For example, both Iran and Iraq have alternatives shipping outlets, but Iraq must rely on the less capable Shatt al Basra canal. (The final impact of damages incurred by Desert Storm operation have not been assessed). If both waterways are closed, Iraq is left with no viable port for waterborne traffic to and from the Persian Gulf. The impact on Iran is less costly. Iran has numerous alternatives along the Persian & Gulf of Oman that can serve as alternatives--though not as economically cost effective as ports along the Shatt al Arab. The potential impact on the United States is that is may be called upon to participate in a sanctioned boundary dispute team.

b. **Shatt al Basra/Khawr az Zubayr/Khawr Abd Allah Waterway Cleanup.**

(1) *Overview.* The Shatt al Basra waterway (**Figure 3**), has served as an alternative transportation corridor for Iraq in lieu of the closure of the Shatt al Arab. The waterway gives Iraq, a country with little access to the Persian Gulf, a lifeline to the Gulf. The Shatt al Basra waterway currently (February 1990) remains impassable as result of damages from operation Desert Storm (1990-91). The debris blocking it, like the Shatt al Arab undoubtedly includes unexploded ordinance & mines, sunken vessels and miscellaneous litter, as well as silt.

(2) *Issues & Impact.* The issue of the Shatt al Basra cleanup, like its sister waterway the Shatt al Arab, also revolves around the cost and length of the cleanup. Issues central to the cost of the cleanup include several. How soon can cleanup begin ? Will Iraq solely bear the cost of cleanup ? The scope of the cleanup is not expected to be as large as that of the Shatt al Arab cleanup. An advantage to the Shatt al Basra cleanup is that waterway sovereignty issues would not hinder cleanup. The closure of this waterway impacts Iraq severely. It closes all Iraqi maritime access to the Persian Gulf, and allows the erosion of the economy of associated ports. The United States, depending upon political decisions, may be called upon to rebuild part of Iraq's infrastructure.

c. **Warbah & Bubiyan Island/Channel Sovereignty.** The Warbah and Bubiyan Island channel is the waterway located between the Al Faw Peninsula and the islands of Bubiyan and Warbah (**Figure 3**). It is also referred to as the Khawr abd Allah. This channel is important because when linked with two other waterways it forms the Shatt al Basra Canal-Khawr az Zubayr-Khawr abd Allah Waterway. This waterway controls the Iraqi seaward access to the two Iraqi ports of Umm Qasr and Khawr az Zubayr.

(1) *Overview.* In a similar nature to the Shatt al Arab sovereignty dispute, Iraq has laid claim to channels and islands belonging to Kuwait. As early as 1973 Iraq began to seek complete control over the two islands of Warbah and Bubiyan and its associated channels (Khawr abd Allah), which command the approaches to Umm Qasr, one of Iraq's two ports on its narrow Persian Gulf Frontage.[5] In 1975 Kuwait rejected an Iraqi proposal that Kuwait cede Warbah Island and lease half of Bubiyan Island to Iraq for 99 years. Kuwait refused a similar Iraqi request in 1980 after the outbreak of the Iraq-Iran war, and again in 1989, after the war had ended. More recently (January 1991), continuing talks between Iraq and United Nations coalition forces, over outstanding grievances, failed to find a formula for an end to the Desert Shield crisis. One Iraqi suggestion included writing off the $70 billion debt of Iraq and the

[5] Alfred B. Prados, Iraq and Kuwait: Conflicting Historical Claims, Congressional Research Service, Library of Congress, January 11, 1991.

lease of Warba and Bubiyan Islands to Iraq.[6] Whether the claims are realistic, power politics or wartime rhetoric, it is a concern that must be addressed.

(2) *Issues & Impact.* The issue of the Warbah & Bubiyan Island/Channel Sovereignty raises many issues. Will control of the channel remain in its pre-Desert Storm alignment ? What power will ultimately administer and maintain control of the waterway ? Regional powers, particularly those directly affected by control of the waterway (Iran & Kuwait) will pursue positions favorable to their economic well being. Kuwait does not utilize the channel as access to their ports, but uses the boundary as a demarkation line for measurement of Law of the Sea boundaries. The loss of the channel would be disastrous for Iraq. They would be left without a controllable access to their ports on the Khawr az Zubayr. Unless called upon to participate in a sanctioned boundary dispute team, the resolution of this dispute would have little impact on the United States.

d. **Development of a New Arab Mediterranean Port.**

(1) *Overview.* Jordan and Iraq have no access to Mediterranean seaports, so that almost all of Jordan's (and in most cases Iraq's) exports and imports must go through Aqaba. This entails higher shipping costs. The possibility of construction a deep sea port a Gaza has been discussed as a solution[7]. In addition to saving shipping costs, the attractiveness of this proposal has been advanced further by linking it to the Palestinian problem. As a means of economic stability in the region, a new Arab port in Gaza would directly benefit West Bank-Gaza Palestinians and provide a long term economic bulwark.

(2) *Issues & Impact.* One primary issue dominates discussion of development of a new Arab Mediterranean port . Is the construction and financing of a News Arab Mediterranean seaport viable ? The resolution of this issue is not clear at this time. It is however a potential means for resolution of the Palestinian question, as well as developing a better path for Jordanian and Iraqi access to the Mediterranean.

e. **Summary.** The issues highlighted in this section have a common theme. What is the impact on the US ? When viewed in the proper perspective, these issues when

---

[6] Greenberger, Robert S., United States, Iraq Edge Toward Conflict in the Persian Gulf, Wall Street Journal, August 20, 1990 page A3.

[7] Meir Merhav, Editor, Economic Cooperation and Middle East Peace, Weidenfeld and Nicolson, London 1989.

addressed can have a positive impact on the US and the Middle East. For example, consider the stimuli of economic development as an incentive for regional cooperation and peace. US control of post Desert Storm reconstitution, and in particular the role of ports and inland waterways would be able to positively effect the economic performance of Middle East ports. This could be done by bestowing most favored nation trading status on Desert Storm coalition countries that possess ports that will be used to rebuild the region--thus insuring their economic well being for years to come.