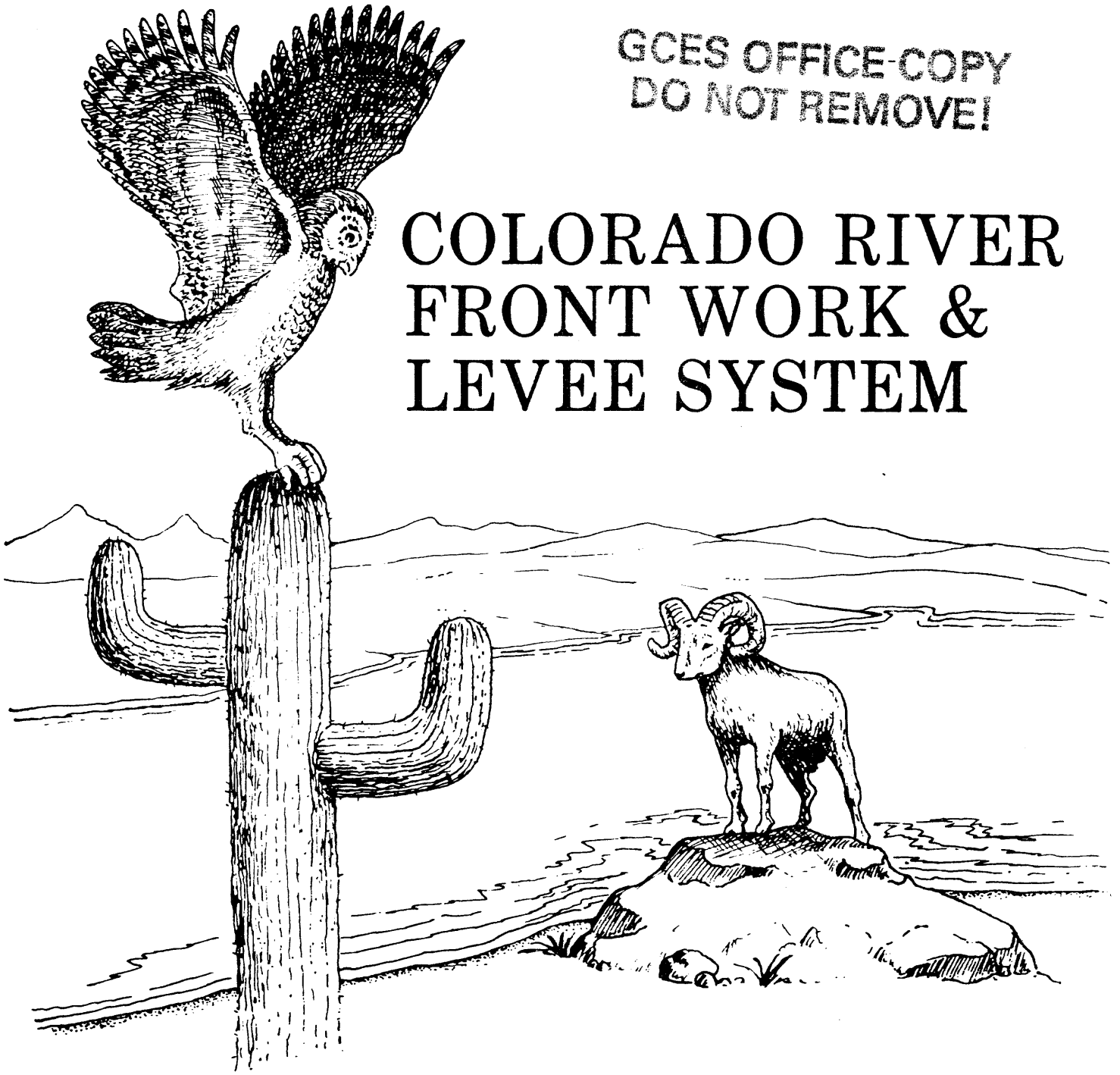
ENVIRONMENTAL ASSESSMENT



COLORADO RIVER FRONT WORK & LEVEE SYSTEM

U. S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

LOWER COLORADO REGION

UNITED STATES DEPARTMENT OF INTERIOR

BUREAU OF RECLAMATION

LOWER COLORADO REGION, BOULDER CITY, NEVADA

ENVIRONMENTAL ASSESSMENT

COLORADO RIVER FRONT WORK AND LEVEE SYSTEM

June 1983

Table of Contents

I. Purpose and Need

A. Introduction and Past History

Under authority of the Colorado River Front Work and Levee System Act, the Bureau of Reclamation maintains the conveyance channel, banklines, levee systems, and control structures along the Colorado River. This maintenance program is for increased bank stabilization to prevent further erosion and to protect life and property in anticipation of high volume water releases from Hoover Dam and flood runoff from tributary drainages. This maintenance requires large amounts of riprap material. In 1977 the Bureau of Reclamation (Bureau) began a program to replenish all of the riprap stockpiles along the river.

The work which this assessment covers is a continuation of the past work. Future work will be similar to past work and generally in the same locations. A description of some of the past work follows; however, this description is not exhaustive.

Although river maintenance work first began near Yuma, Arizona prior to 1925, Congress did not pass the Colorado River Front Work and Levee System Act until March 3, 1925. The present authority under which the Bureau operates the Colorado River Front Work and Levee System is the Act of June 28, 1946. This act authorized appropriations for maintaining the banks of the Colorado River, dredging and straightening the river channel, and conducting studies necessary to fulfill the foregoing objectives.

Prior to construction of storage dams on the Colorado River, the lower river from the present site of Hoover Dam to the Gulf of California was typical of a river carrying a heavy sediment load over an alluvial bed. Before the dams, the river was actively building up the alluvial valleys by repeated inundation when the spring snowmelt flowed from the upper river basin. Each flood deposited part of its sediment load on the valley floor.

The dams impounded the heavy load of sediment that the river carried down from the upper basin, and the clear water released from the dam entered the channel practically free of sediment and immediately began transporting a new sediment load. The dams caused natural sediment load in the river to be redistributed with the result that further downstream the quantity of sediment was so great that the river continued the natural process of aggradation.

At Topock, for example, the deterioration of the channel induced more deposition and by 1943 sandbars extended across the entire channel. They caused water levels upstream to rise and

eventually caused serious flooding at Needles. Although emergency protective works were undertaken, channelizing the river was the only permanent solution so a dredge cut a new channel from Needles to Topock and the river was diverted into the new channel on June 25, 1951. To prevent the same aggradation process from repeating itself, the Topock Settling Basin was constructed to reduce the flow of sediment into Topock Gorge. Periodic dredging is required to maintain the settling basin.

Below Parker Dam, erosion has also been uncontrolled, only repeating a pattern of scour or degradation. A temporary rock weir was constructed at the Palo Verde Irrigation District's diversion headworks to restore and stabilize the water elevation at the intake. The weir, known as Palo Verde Diversion Dam, has been maintained since its completion in 1945.

Increased agriculture in the Palo Verde Valley resulted in a greater need for protection from flooding. Therefore, construction of levees to confine the river more closely to its channel was begun at an early date. These levees have prevented the river from overflowing into the valley bottoms, and have stopped the buildup of the valley bottom.

Farther downstream, the ponding of water behind Imperial Dam in 1938 created backwaters with decreased velocity and initially caused much of the incoming sediment to be trapped. By 1945, the sediment concentration in the flow diverted at Imperial Dam for irrigation had increased to an objectionable level and the desilting works for the All-American Canal were placed in operation.

To handle the sediment inflow to the Laguna Division a settling basin was constructed between Laguna and Imperial Dams.

Water required for sluicing in the California sluiceway at Imperial Dam has been reduced with the construction of the Laguna Settling Basin. In recent years about 350,000 acre-feet has been used to meet this need and about 700,000 acre-feet of Mexico's water has been delivered at Pilot Knob Powerplant. This operation has reduced the sediment load into Mexico considerably and the use of Pilot Knob Power Plant has provided better control of flows being delivered to Mexico.

Downstream from Laguna Dam, for the greatest part of the distance to the international boundary, the river is confined

within a levee system which was raised and strengthened pursuant to the provisions of the treaty between the United States of America and Mexico, effective November 8, 1945. The levees protect the Yuma Valley in Arizona and the Reservation Division of the Yuma Project in California.

In 1961 the Bureau agreed to attempt to reduce the amount of sediment arriving at Morelos Dam, and in return, Mexico no longer would dispose of all sediment entering the Alamo Canal by deposition in the river channel.

In addition to the dredging of the Topock Settling Basin, Laguna Settling Basin, and Imperial Dam, other areas along the river have required dredging from time to time. These areas include the Needles Marina, Park Moabi Marina, Blythe Marina, McIntyre County Park, and Squaw Lake.

Aside from the need for dredging for maintenance, riprap for bank and levee stabilization has also been needed at various locations along the river primarily to repair existing stabilized banks and levees. Approximately 60,000 tons of material have been placed annually for about the last 10 years; 80-90 percent of it was used for repair and the remainder was used to arrest new erosion problems. Routine maintenance has generally required several hundred feet of riprap at each location; however, in extreme emergencies, riprap has been placed up to 2,000 feet at one location to contain new erosion. The type of work which this assessment covers is a continuation of the type of work done in the past; however, future work will be on a lesser scale.

B. Need for the Project

The Colorado River is very unstable. This instability results in the river meandering and changing its alinement. It also results in erosion of the riverbanks and levees. Because of this, maintenance work is necessary to retain the integrity of the bankline and levees.

The river picks up the eroded materials and deposits them downstream, causing a gradual rise in riverbed elevations. Sand bars develop, acting as plugs and restricting riverflow. Water backs up, topping the banks, and flooding adjacent property.

If no maintenance is accomplished on the levees, further deterioration will occur, increasing the probability of compromising their capability. Unprotected levee banks would erode and possibly fail if the flood water continued long enough. Once the bank fails, any developed properties would be severely damaged by flood waters.

Based on available information, there is about a 70 percent chance that flood control releases from Hoover Dam will

have to be made during the 1981 to 1990 period. Stable banks would not only retard sedimentation but would safeguard present and future developments along the riverbank.

If the settling basins and river banks are not maintained, increasing sediment downstream, 300,000 acre-feet of water which was once formerly used to clear the California sluiceway, would have to be used again to clear the California Sluiceway and would not be available for use at the Pilot Knob Powerplant.

Without maintenance, the river will return to its cycles of aggradation and degradation, making long-term planning of riverine developments difficult or impossible. A lowering of the water levels under controlled conditions would maintain and enhance the recreational potential of the area.

C. Purpose of the Proposed Project

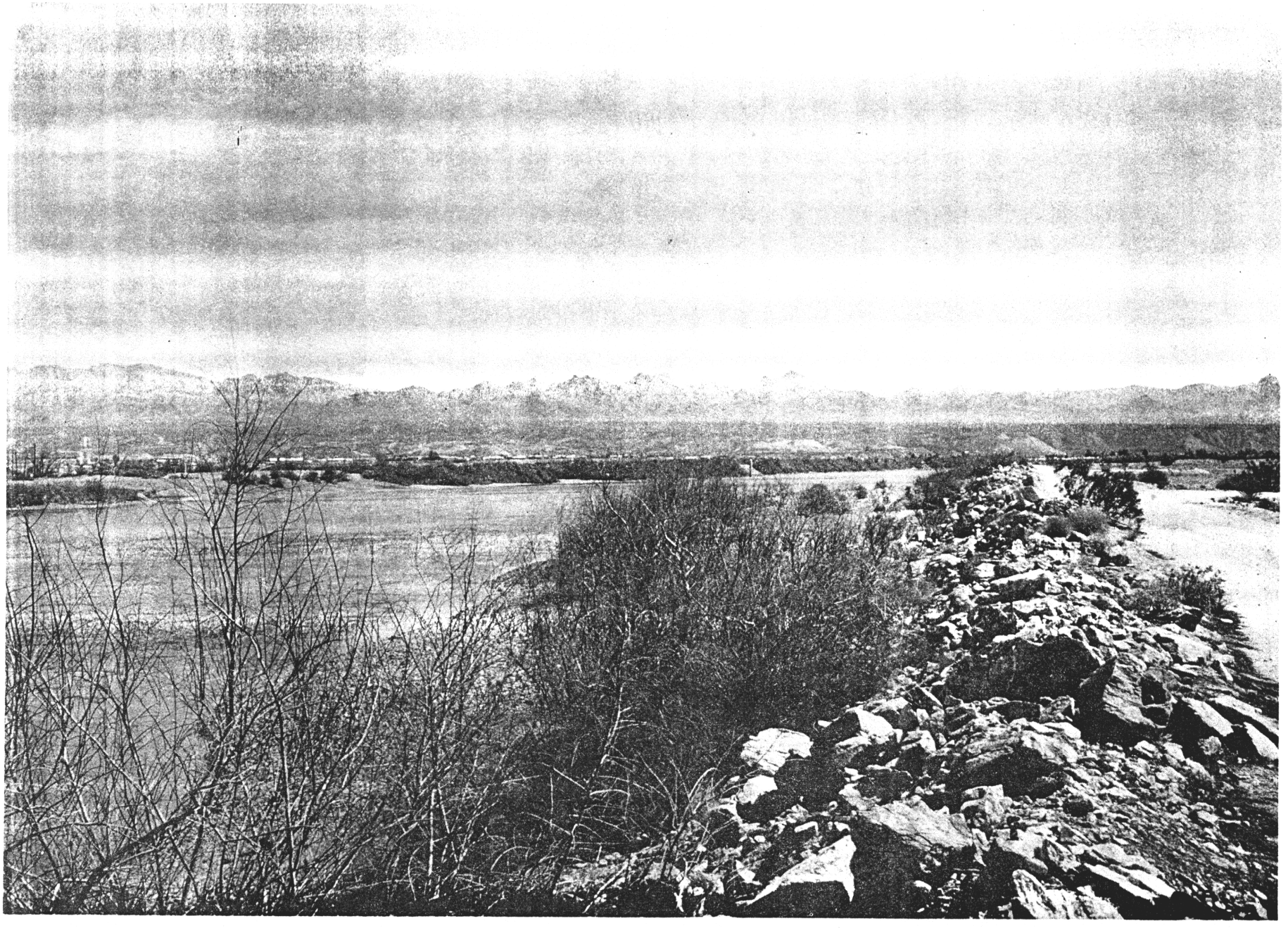
The purpose of the proposed action is to reduce sediment in the river, stabilize the riverbanks, and armor the levees. Sufficient amounts of riprap material for a project of this scale are not presently available so the riprap material for a given area will have to be quarried and stockpiled prior to the maintenance work in that area.

II. Alternatives Including the Preferred Alternative

A. Introduction

There are only two alternatives discussed in this assessment, the proposed alternative and the no action alternative. No other alternatives were identified as feasible or practical. The purpose of this project is threefold: to maintain channelized portions of the river and prevent its meandering; to decrease the sediment load of the river; and to maintain existing flood control. There are only limited ways to meet the above objectives. The only way to channelize the river is to stabilize the banks. The only ways to remove sediment from the river is by dredging directly or by providing settling ponds in which the sediment falls out. The only way to prevent the flooding is to stabilize and armor the levees and banks and keep them in good repair.

To accomplish these objectives, the levees must be armored, the river channelized, and sediment removed. Alternatives to the proposed plans are so costly that they were quickly dropped from consideration. For example, instead of armoring the levees by riprapping, the levees could be concrete lined. Or instead of channelizing the river by dredging, it could be channelized by placing concrete on the riverbed. But even a cursory glance at how much concrete could be required for such an endeavor renders this alternative clearly impractical.



This photograph shows a riprapped bank near Laughlin Nevada. This bank is typical of existing riprapped areas which will be repaired.

Rock groins and weirs were considered to provide bankline stabilization and protection. However, they would not provide the same degree of protection that riprapping would, and would intensify the adverse impacts of rock quarrying and stockpiling because they require an even greater quantity of rock. These two alternatives were also dismissed from further consideration.

Therefore, dredging and riprapping are the only two means identified to accomplish the objective of maintaining channelized areas, bankline stabilization, and sediment reduction. Dredging and riprapping are not two alternatives, but two separate features of the same alternative, since they are both essential to accomplish the overall goal. The only other feasible alternative is the no-action alternative.

B. The Proposed Alternative

The proposed alternative consists of four features or actions. The first feature is a series of rock quarries, where rock will be quarried for use in riprapping the levees and river banks. The second feature is a series of stockpile sites, where the riprap material will be stored until ready for use. These stockpile sites must be adjacent to the river and outside the levee, in order to be useful. The third feature is the riprapping itself, in which the rock will be placed on selected areas of the riverbank and levees to prevent further erosion. The fourth feature is the dredging. Settling basins must be dredged in order to make room for further sediment. In addition, entrances to some marinas will be dredged.

1. The Quarrying Feature

There are 17 previously used quarries which were used to mine rocks for river maintenance work. These quarries are:

1. Davis Dam
2. Section 7
3. Eagle Pass
4. Bat Cave No. 1
5. Agnes Wilson
6. Ripley
7. Palo Verde
8. Laguna Dam West
9. Pilot Knob
10. Moon Mountain
11. La Paz East
12. La Paz West
13. Ehrenberg
14. Trigo Wash
15. Hart Mine No. 2
16. Laguna Dam East
17. Palo Verde Dam

In addition the Bureau has identified 19 quarry sites: 14 are in California and 5 are in Arizona. Sites were determined by suitability of material, amount of material available, potential adverse environmental impacts, cost of development, and proximity to stockpiles and areas of need. A total of 33 possible sites were investigated, 15 in Arizona and 18 in California, but 14 were eliminated because they failed to meet some or all of the above criteria.

There are alternative sites to the 19 described herein. However, those that are not suitable have been eliminated from further consideration. The Lower Colorado River Basin is an unusual geological setting. There are vast amounts of rock exposed along its entire length; however, because of extensive upheavals and movement in ages past, only a few areas of rock remain with the engineering properties and size suitable for our riprap needs.

One of four basic plans for quarrying the material will be used. There are three basic considerations for selecting which one of the four mining plans will be used on any given site. These considerations are:

1. Safety of the mining operation.

2. Safety of the general public when the quarry is not being mined.

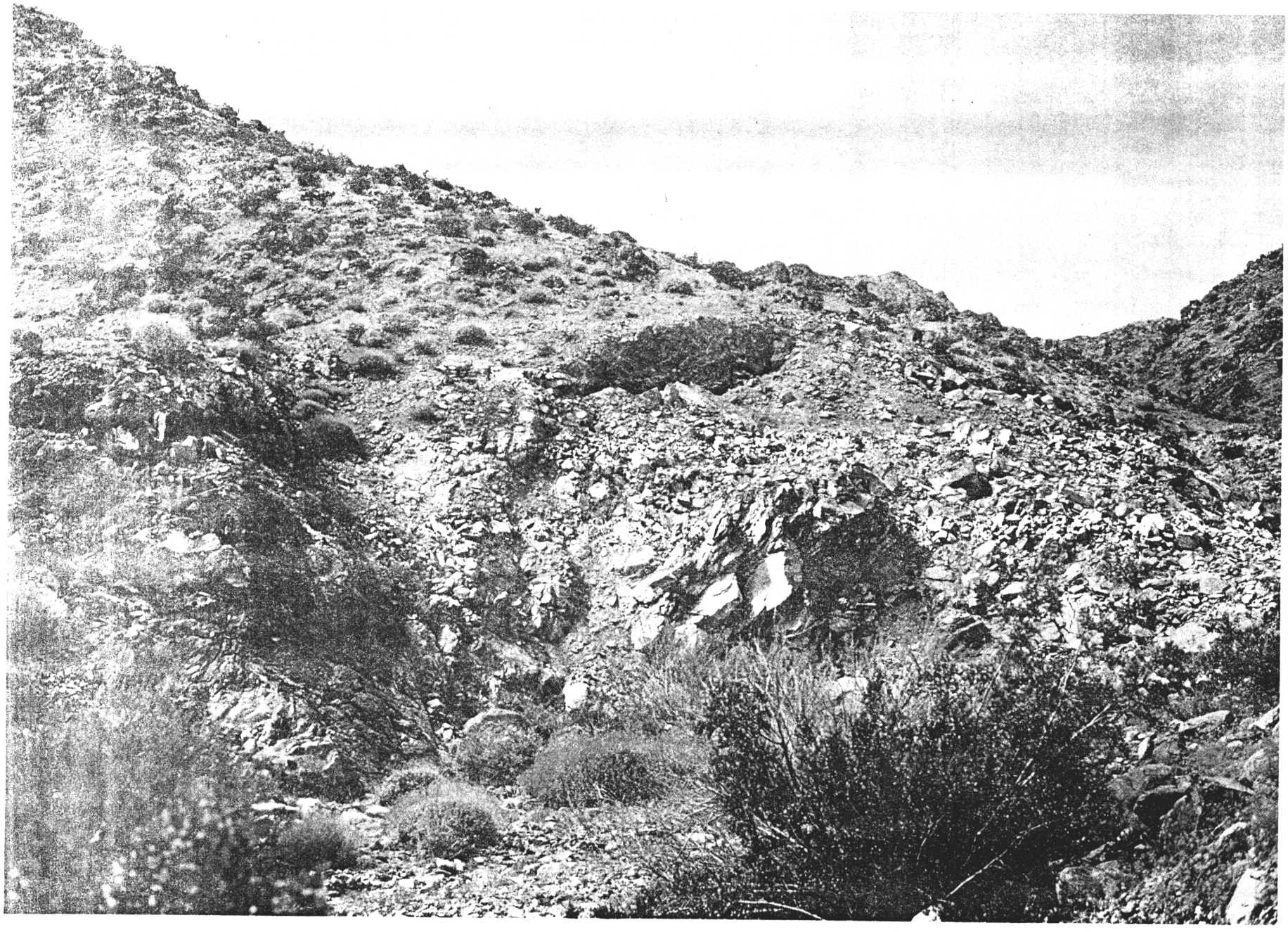
3. Utilization of the maximum amount of materials mined. This is a very important change from past operations which left large amounts of undersize spoil and oversize rock at the quarry sites. Current specifications require the contractor to process all rock. Rocks of the desired size remain on top of a screening device while dirt and undersize rocks fall through. Smaller rocks are mixed with clay and stockpiled for road surfacing. Oversize rocks are broken and used.

The four basic mining plans (called Mining Plans A, B, C, and D) are described below. The mining plan that is finally selected for any given quarry will be determined by engineering considerations for that particular quarry.

1. Mining Plan A is the general plan that will be used for mining quarries with a gently sloping face and with a top which can be reached with haul roads having an overall grade of less than 8 percent and local grades of not more than 12 percent. For details about this mining plan, see Appendix A.

2. Mining Plan B is the general plan that will be used for quarries with a steep face and where the top cannot be reached with gently sloped haul roads. For details of this plan, see Appendix A.

3. Mining Plan C is the general plan used to mine relatively high, nearly vertical cliffs. For details of this plan, see Appendix A.



The pipeline quarry site, shown here, is typical of most quarry sites.

4. Mining Plan D--Mining Plan D would be utilized for surface rock salvage operations. Some areas have a fairly large number of rocks of the right size for riprap. This plan would use a rock rake and simply harvest the rocks off the surface. For details of this plan, see Appendix A.

Table 1 shows which mining plan will be used on each quarry site, as well as the amount of material to be removed, and the land area which will be disturbed. Chapter III and Appendix B give a more detailed description of each quarry site, the amount of material to be removed, and the acres of land which will be disturbed. See Maps Nos. 423-300-1549 and 423-300-1550 for the quarry locations.

2. The Stockpile Feature

Once the rock and gravel have been quarried, they must be transported and stored in convenient locations close to the site where they will be used in order to cut down on the time and expense involved in transporting them for use. An engineering assessment is made at each stockpile site to assure that the materials will be readily available under the most severe flood conditions. Therefore, stockpile locations will have to be spaced along the Colorado River, since banklines and levees will be riprapped all along the river.

A total of 45 stockpile sites have been selected for possible use. Some of these sites are already in use as stockpile areas. Chapter III and Appendix C describe these sites and also indicate which of the sites are existing sites.

3. The Riprap Feature

There are two aspects to the riprapping feature. One is riprapping the river banks and the other is riprapping the levees. The exact location of the bankline stabilization, or riprapping the banks, is determined as needed. The location is determined no more than a year in advance and the priority depends on the severity of erosion and economics involved. However, it is possible to project which reaches of the river most of the work will take place in. Approximately 85 percent of the stabilization activity involves the repair of existing riprapped banks located along the river as indicated below:

RM-RM* (Division)**	% Riprapped (Approx.)
22-43 (Yuma)	10
87-106 (Cibola)	95
106-134 (Palo Verde)	70
165-178 (Parker)	80
234-276 (Mohave) (234-250, 267-275 most probable)	90

*River Mile
**Map No. 423-300-933 identifies divisions

The remaining 15 percent of stabilization will be in non-riprapped areas. The most severe erosion on the river is occurring in Parker II (RM 134-RM 160) but that area is being studied separately. The most probable areas to be stabilized are in the Cibola and Palo Verde Divisions, RM 88-RM 134. Stabilization work is not anticipated in the Limitrophe, Laguna, Imperial, Havasu, and Topock Gorge Divisions.

Approximately 92 total miles of levee will be riprapped in four divisions - Mohave, Cibola, Yuma, and Limitrophe - of the river. Construction will require the placement of a sand and gravel bedding for the riprap material. The materials will be hauled by trucks and placed below the scour line by bulldozers or front end loaders.

Although levees in the Mohave and Cibola Valleys were constructed between 1949 and 1970, major development of lands protected by the levees did not begin until the late 1960's. Since then, development has progressed at a rapid rate and it is expected to continue. Levees in the Yuma, Arizona, area were constructed to protect developed residential areas and farmlands. Further residential development behind the unprotected reaches of levees in this area is expected to continue at a rapid rate.

The armoring of the levees would begin at the southern end and would progress northward with the most critical areas given priority. Drawings numbers 423-300-1697 to 423-300-1707 show the location of the levee armoring.

The construction program of armoring will be over a 5-year period; $6 million the first year; 10 million the 2nd, 3rd and 4th years; 4 million the 5th year for a total of $40 million in construction costs. It is estimated the levees will last at least 100 years, with only token maintenance required during that period, except for years in which intense flooding occurs and more extensive maintenance may be needed.

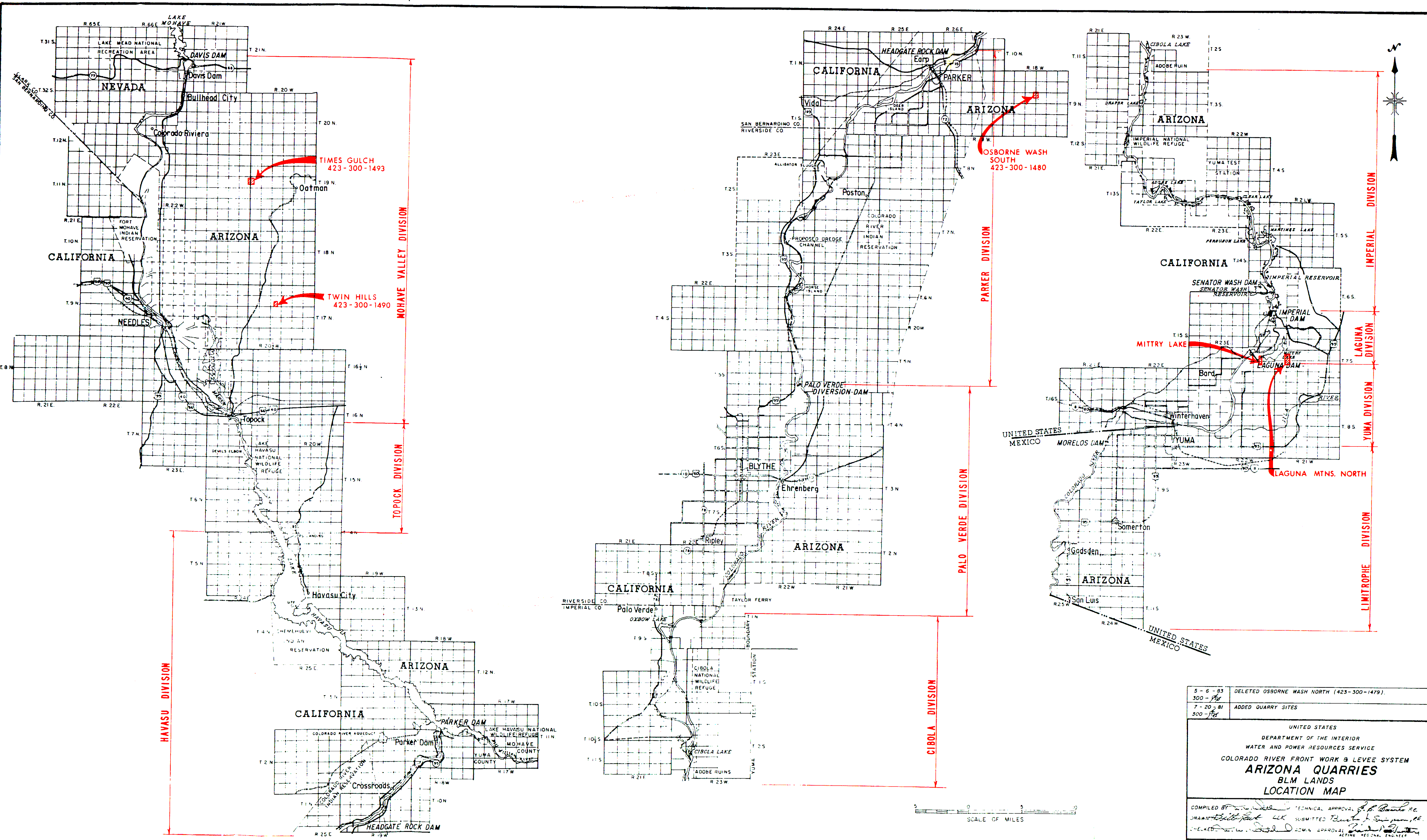
4. The Dredging Feature

Dredging is accomplished by hydraulic pipeline dredge. The most probable dredging areas are shown on the drawings in the impacts section of Chapter III with approximate quantities and frequencies as follows:

Area	Quantity (cy)	Frequency
Topock Settling Basin	1,500,000 - 2,000,000	Annual
Laguna Settling Basin	500,000 - 1,000,000	Annual
Imperial Dam	Up to 250,000	Annual

TABLE 1 ACREAGES, TONNAGE AND MINING PLANS

QUARRY SITE	Acres of Disturbance				Tons of Material	Mining Plan
	Haul Roads	Work Area	Quarry	Total		
Arizona						
Osborne Wash South	3.8	4.6	11.5	19.9	925,000	B
Mittry Lake	3.1	1.8	2.8	7.7	150,000	B
Laguna Mtns. North	5.2	2.0	3.4	10.6	200,000	B
Times Gulch	6	11	10.3	27.3	2,300,000	C
Twin Hills	11.2	1.0	9.2	21.4	240,000	D
California						
Manchester	9.6	16	60	85.6	3,235,000	B
Eagle Pass Westerly	5.5	21.8	62	89.3	10,000,000	A&B
Eagle Pass South Hill	8.3	14.7	15	38.0	200,000	D
Park Moabi	1.1	3.4	8	12.5	200,000	A
Pipeline	2.1	4.8	10	16.9	800,000	B
Big Maria No. 1	8.0	12.6	8	28.6	1,800,000	B
Big Maria No. 2	10.1	5.5	13	28.6	1,100,000	B
Bat Cave Wash No. 2	2.6	2.0	8.3	12.9	1,030,000	B
Bat Cave Wash No. 3	2.2	6.2	11	19.4	No Estimate	B
Vidal Junction	8.5	12.0	179	199.5	740,000	D
Quien Sabe East	6.8	2.8	10.5	20.1	820,000	B
Quien Sabe West	2.6	3.7	19.3	25.6	1,215,000	A
Hills Ranch	1.4	5.5	10	16.9	600,000	C
Mission Wash East	9.6	4.1	108	121.7	2,100,000	D
Total	111.3	139.1	586.9	837.2	27,745,000	



Date	Revision
5-6-83 300-[illegible]	DELETED OSBORNE WASH NORTH (423-300-1479).
7-20-81 300-[illegible]	ADDED QUARRY SITES

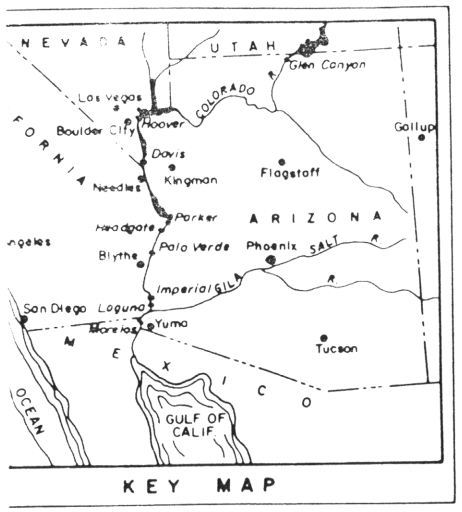
UNITED STATES
DEPARTMENT OF THE INTERIOR
WATER AND POWER RESOURCES SERVICE
COLORADO RIVER FRONT WORK & LEVEE SYSTEM

ARIZONA QUARRIES
BLM LANDS
LOCATION MAP

COMPILED BY [signature] TECHNICAL APPROVAL [signature] P.E.
DRAWN [signature] SUBMITTED [signature] P.E.
CHECKED [signature] ADMIN. APPROVAL [signature]
ACTING REGIONAL ENGINEER

BOULDER CITY, NEVADA NOVEMBER 30, 1979 423-300-1550

This photograph shows Stockpile Number 268.0 which is typical of existing stockpiles.



10 0 10 20 30
SCALE OF MILES

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
LOWER COLORADO REGION

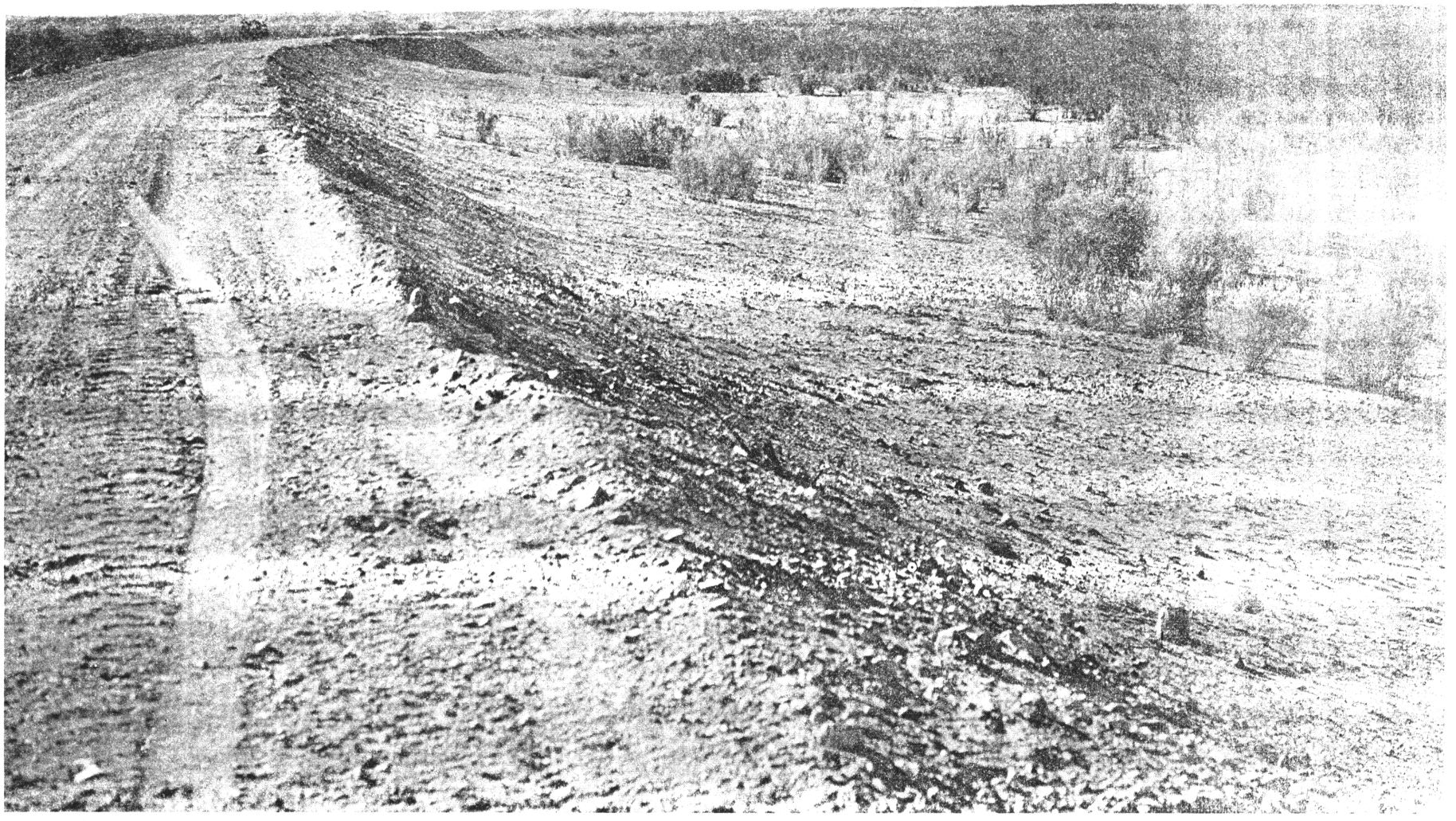
LOWER COLORADO RIVER

VIS DAM TO INTERNATIONAL BOUNDARY

SUBMITTED.....
RECOMMENDED.....
APPROVED.....

ER CITY, NEV MAR 8, 1971

423-300-933



This photograph shows a levee located south of Bullhead City, Arizona. This levee is typical of levees in need of riprapping. Vegetation along many levees is scarce.

ARIZONA
MOHAVE COUNTY

NEVADA
CLARK COUNTY

COLORADO RIVER

Davis Dam

Bullhead City

Laughlin

Mohave Generating Station

Davis Dam Camp

BULLHEAD CITY AIRPORT

RECREATION AREA

SPORTSMAN PARADISE COUNTY CAMPGROUND

SWITCHYARDS

BOUNDARY

LAKE MOHAVE

LAKE MEAD

NATIONAL

COAL PIPELINE

Silver Creek

Montana Wash

Riviera

SUBSTATION

PIPELINE

R. 21 W.
R. 22 W.

T 20 N.
T 19 N.

T 31 S.
T 32 S.
T 33 S.

M.D.M.

DAVIS-HOOVER 230 KV

DAVIS-PRESCOTT 230 KV

DAVIS-KINGMAN 69 KV

U.S.B.R. DAVIS-PARKER 230 KV

U.S.B.R. DAVIS-NEEDLES 69 KV

S.C.E. MOHAVE-FLOODING 300 KV

S.C.E. LUGO-MOHAVE 300 KV

MOHAVE VALLEY LEVEE

FORT MOJAVE INDIAN RESERVATION

RIVER MILES: 275, 270, 265

NEV.
ARIZONA
CALIFORNIA
MEXICO

SHEET 1 — DAVIS DAM, Bullhead City
SHEET 2
SHEET 3 — Needles
SHEET 4
Lake Havasu City
PARKER DAM — Parker
SHEET 5
SHEET 6 — Blythe
SHEET 7
IMPERIAL DAM
LAGUNA DAM
SHEET 8
SHEET 9 — Yuma
SHEET 10 — San Luis
SHEET 11

LOCATION INDEX

EXPLANATION

XXX - LEVEES TO BE ARMORED

REMAINING LEVEES — ARMORING COMPLETED

(160) - RIVER MILES

UNITED STATES
DEPARTMENT OF THE INTERIOR
WATER AND POWER RESOURCES SERVICE

COLORADO RIVER FRONT WORK & LEVEE SYSTEM
ARIZONA - CALIFORNIA - NEVADA

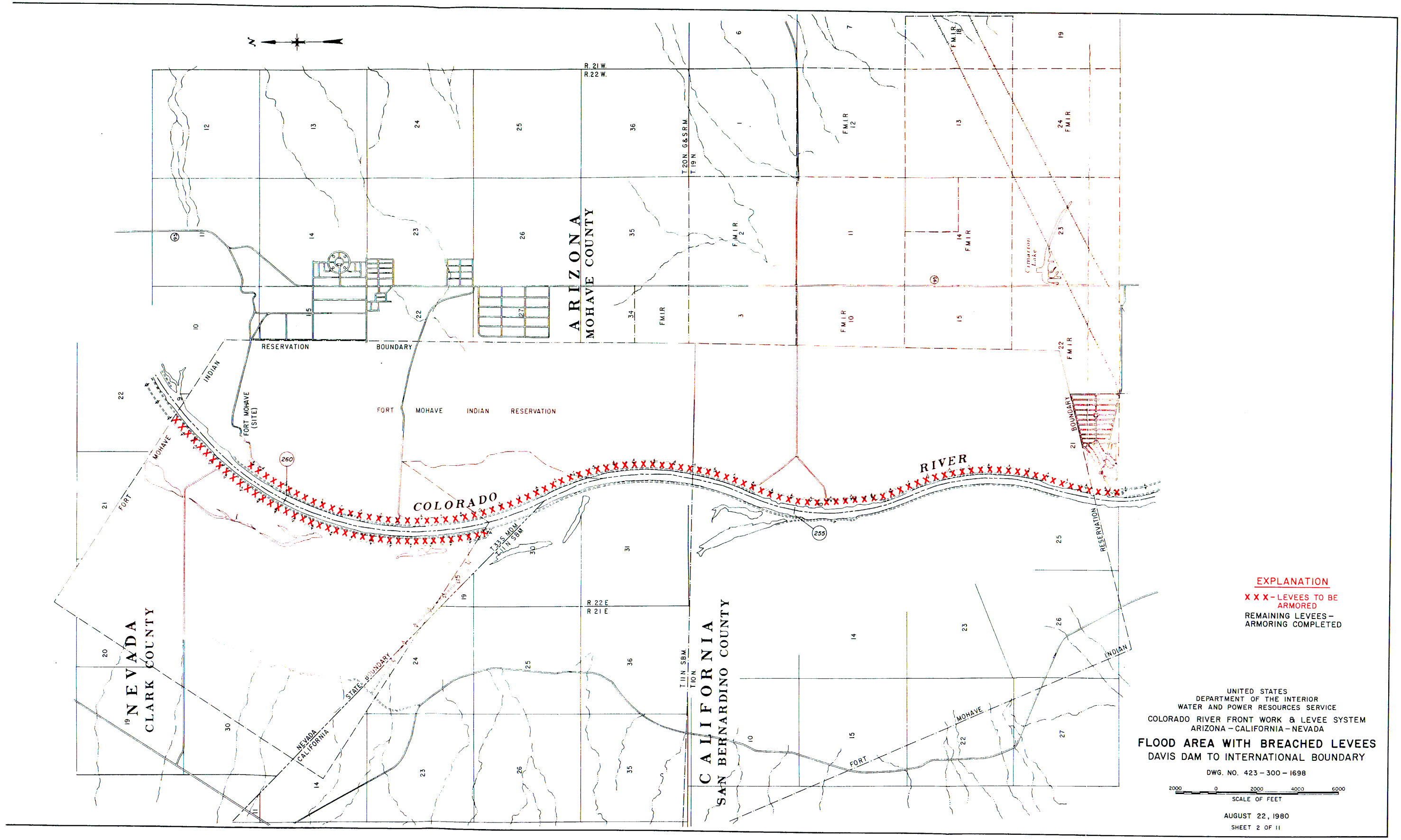
FLOOD AREA WITH BREACHED LEVEES
DAVIS DAM TO INTERNATIONAL BOUNDARY

DWG. NO. 423-300-1697

2000 0 2000 4000 6000
SCALE OF FEET

AUGUST 22, 1980

SHEET 1 OF 11



EXPLANATION

XXX – LEVEES TO BE ARMORED

REMAINING LEVEES – ARMORING COMPLETED

UNITED STATES
DEPARTMENT OF THE INTERIOR
WATER AND POWER RESOURCES SERVICE

COLORADO RIVER FRONT WORK & LEVEE SYSTEM
ARIZONA – CALIFORNIA – NEVADA

FLOOD AREA WITH BREACHED LEVEES
DAVIS DAM TO INTERNATIONAL BOUNDARY

DWG. NO. 423 – 300 – 1698

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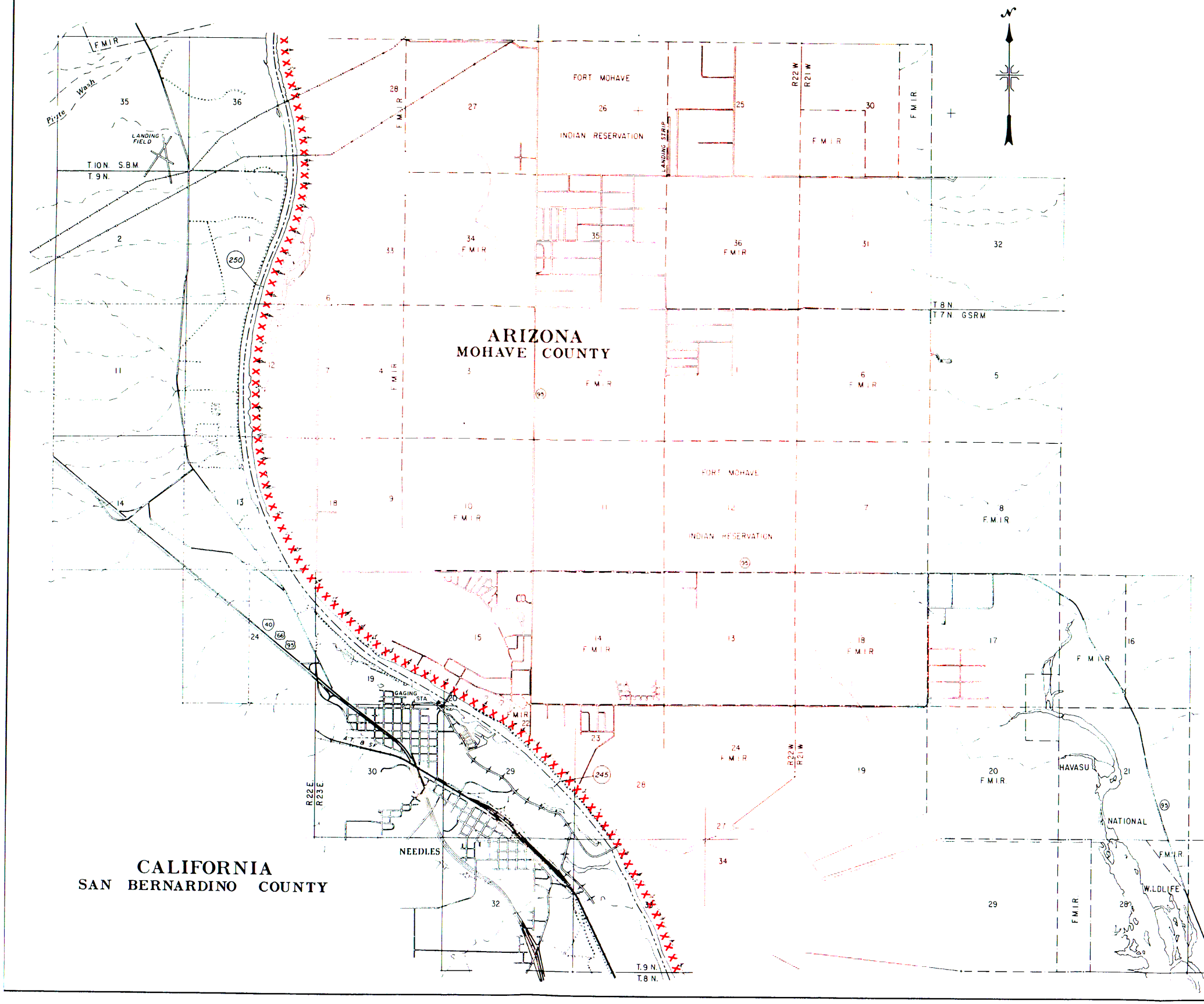
SCALE OF FEET

AUGUST 22, 1980

SHEET 2 OF 11



EXPLANATION

XXX - LEVEES TO BE ARMORED

REMAINING LEVEES - ARMORING COMPLETED

UNITED STATES
DEPARTMENT OF THE INTERIOR
WATER AND POWER RESOURCES SERVICE

COLORADO RIVER FRONT WORK & LEVEE SYSTEM
ARIZONA - CALIFORNIA - NEVADA

FLOOD AREA WITH BREACHED LEVEES
DAVIS DAM TO INTERNATIONAL BOUNDARY

DWG. NO. 423-300-1699

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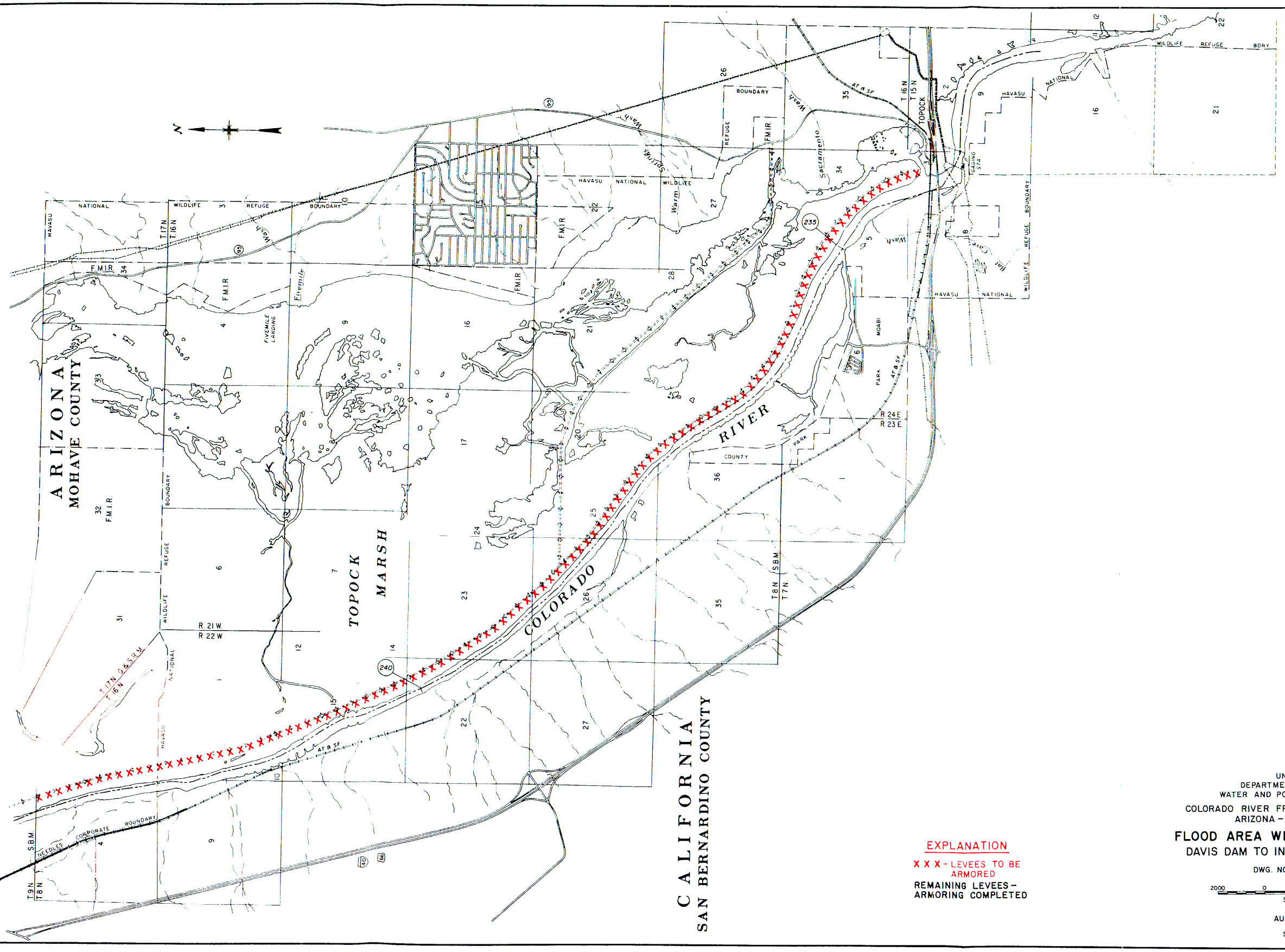
SCALE OF FEET

AUGUST 22, 1980

SHEET 3 OF 11



EXPLANATION

XXX - LEVEES TO BE ARMORED

REMAINING LEVEES - ARMORING COMPLETED

UNITED STATES
DEPARTMENT OF THE INTERIOR
WATER AND POWER RESOURCES SERVICE

COLORADO RIVER FRONT WORK & LEVEE SYSTEM
ARIZONA - CALIFORNIA - NEVADA

FLOOD AREA WITH BREACHED LEVEES
DAVIS DAM TO INTERNATIONAL BOUNDARY

DWG. NO. 423-300-1700

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SCALE OF FEET

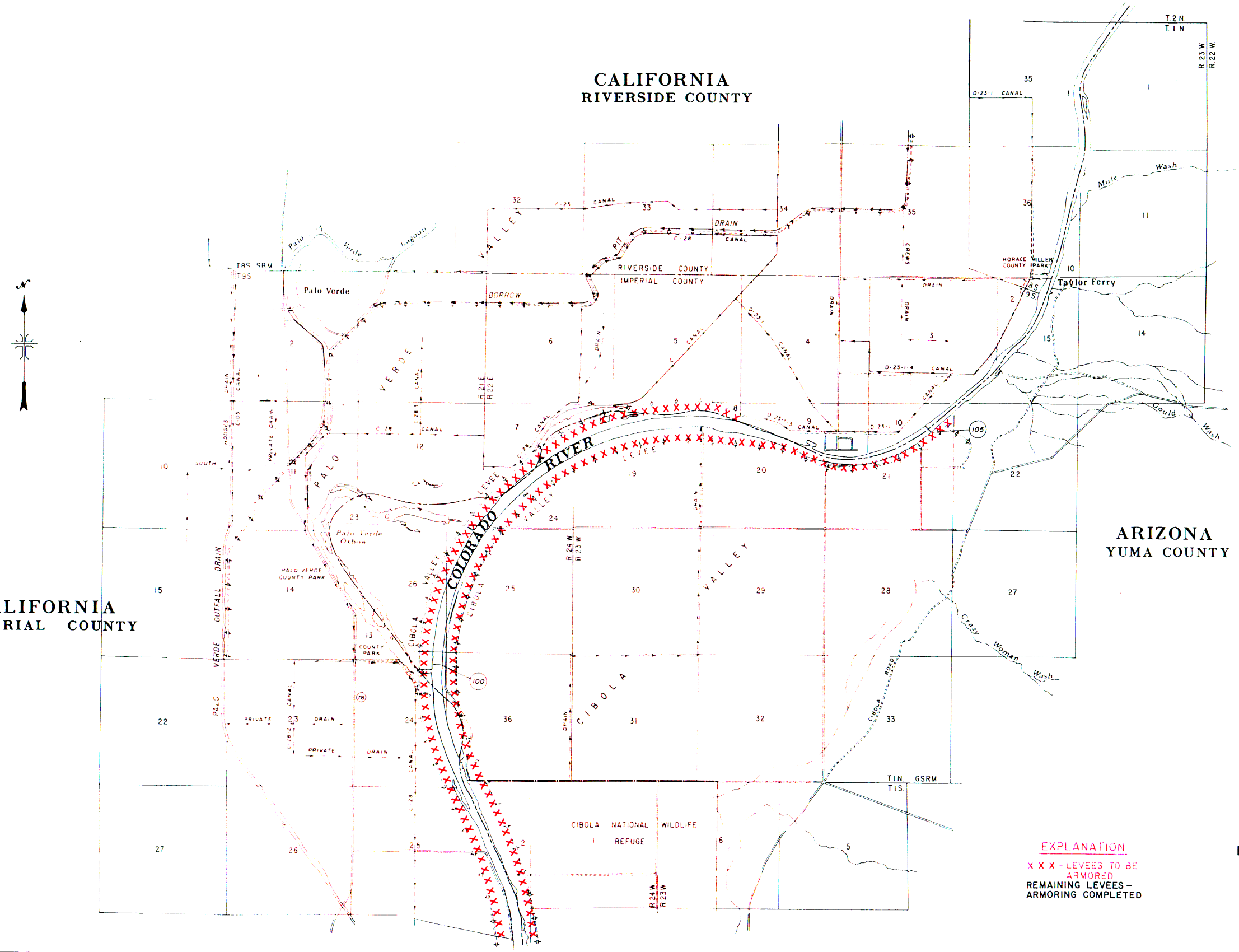
AUGUST 22, 1980

SHEET 4 OF 11

CALIFORNIA
RIVERSIDE COUNTY

ARIZONA
YUMA COUNTY

CALIFORNIA
IMPERIAL COUNTY



EXPLANATION

XXX - LEVEES TO BE ARMORED

REMAINING LEVEES - ARMORING COMPLETED

UNITED STATES
DEPARTMENT OF THE INTERIOR
WATER AND POWER RESOURCES SERVICE

COLORADO RIVER FRONT WORK & LEVEE SYSTEM
ARIZONA - CALIFORNIA - NEVADA

FLOOD AREA WITH BREACHED LEVEES
DAVIS DAM TO INTERNATIONAL BOUNDARY

DWG. NO. 423-300-1701

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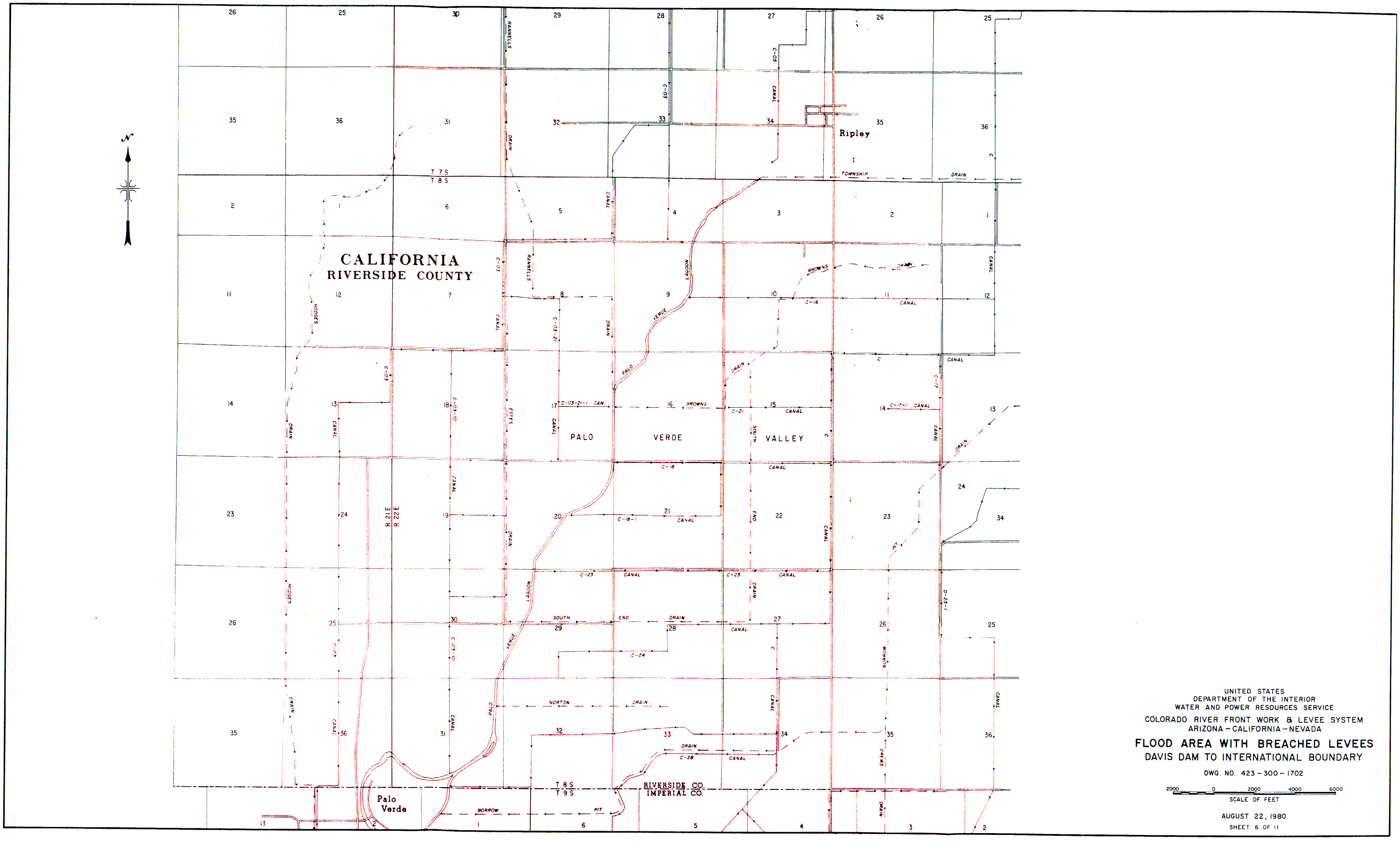
SCALE OF FEET

AUGUST 22, 1980

SHEET 5 OF 11



UNITED STATES
DEPARTMENT OF THE INTERIOR
WATER AND POWER RESOURCES SERVICE

COLORADO RIVER FRONT WORK & LEVEE SYSTEM
ARIZONA – CALIFORNIA – NEVADA

FLOOD AREA WITH BREACHED LEVEES
DAVIS DAM TO INTERNATIONAL BOUNDARY

DWG. NO. 423 – 300 – 1702

2000 0 2000 4000 6000
SCALE OF FEET

AUGUST 22, 1980

SHEET 6 OF 11

ARIZONA
YUMA COUNTY

CALIFORNIA
IMPERIAL COUNTY

EXPLANATION

XXX – LEVEES TO BE ARMORED

REMAINING LEVEES – ARMORING COMPLETED

UNITED STATES
DEPARTMENT OF THE INTERIOR
WATER AND POWER RESOURCES SERVICE

COLORADO RIVER FRONT WORK & LEVEE SYSTEM
ARIZONA – CALIFORNIA – NEVADA

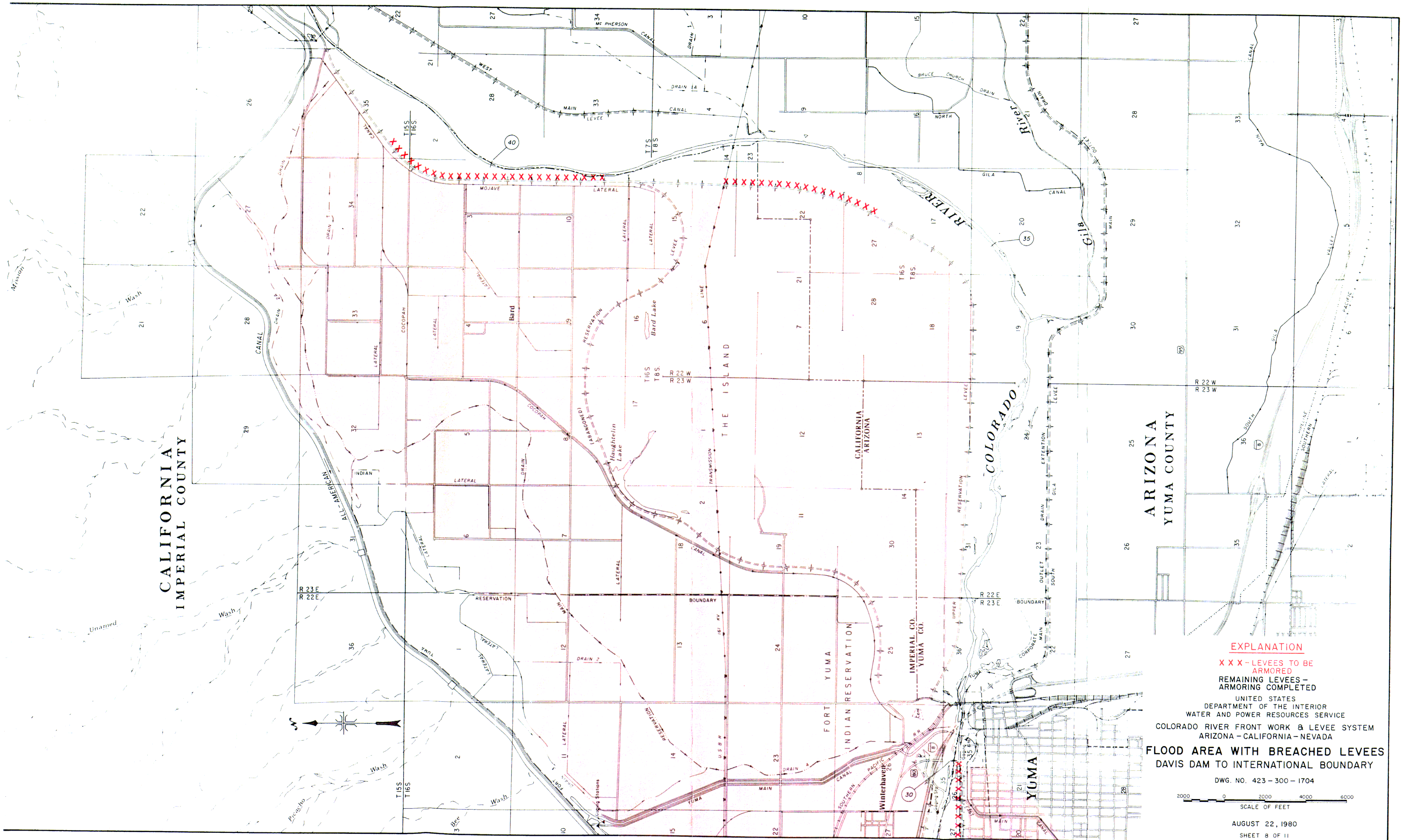
FLOOD AREA WITH BREACHED LEVEES
DAVIS DAM TO INTERNATIONAL BOUNDARY

DWG. NO. 423 – 300 – 1703

2000 0 2000 4000 6000
SCALE OF FEET

AUGUST 22, 1980

SHEET 7 OF 11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REMAINING LEVEES - ARMORING COMPLETED
UNITED STATES
DEPARTMENT OF THE INTERIOR
WATER AND POWER RESOURCES SERVICE
COLORADO RIVER FRONT WORK & LEVEE SYSTEM
ARIZONA - CALIFORNIA - NEVADA
FLOOD AREA WITH BREACHED LEVEES
DAVIS DAM TO INTERNATIONAL BOUNDARY
DWG. NO. 423 - 300 - 1704
2000 0 2000 4000 6000
SCALE OF FEET
AUGUST 22, 1980
SHEET 8 OF 11
ARIZONA
YUMA COUNTY
CALIFORNIA
IMPERIAL COUNTY
YUMA
Winterhaven
Bard
COLORADO
RIVER
Gila
River
THE ISLAND
FORT YUMA INDIAN RESERVATION
Bard Lake
Haughtelin Lake
ALL-AMERICAN
R 22 W
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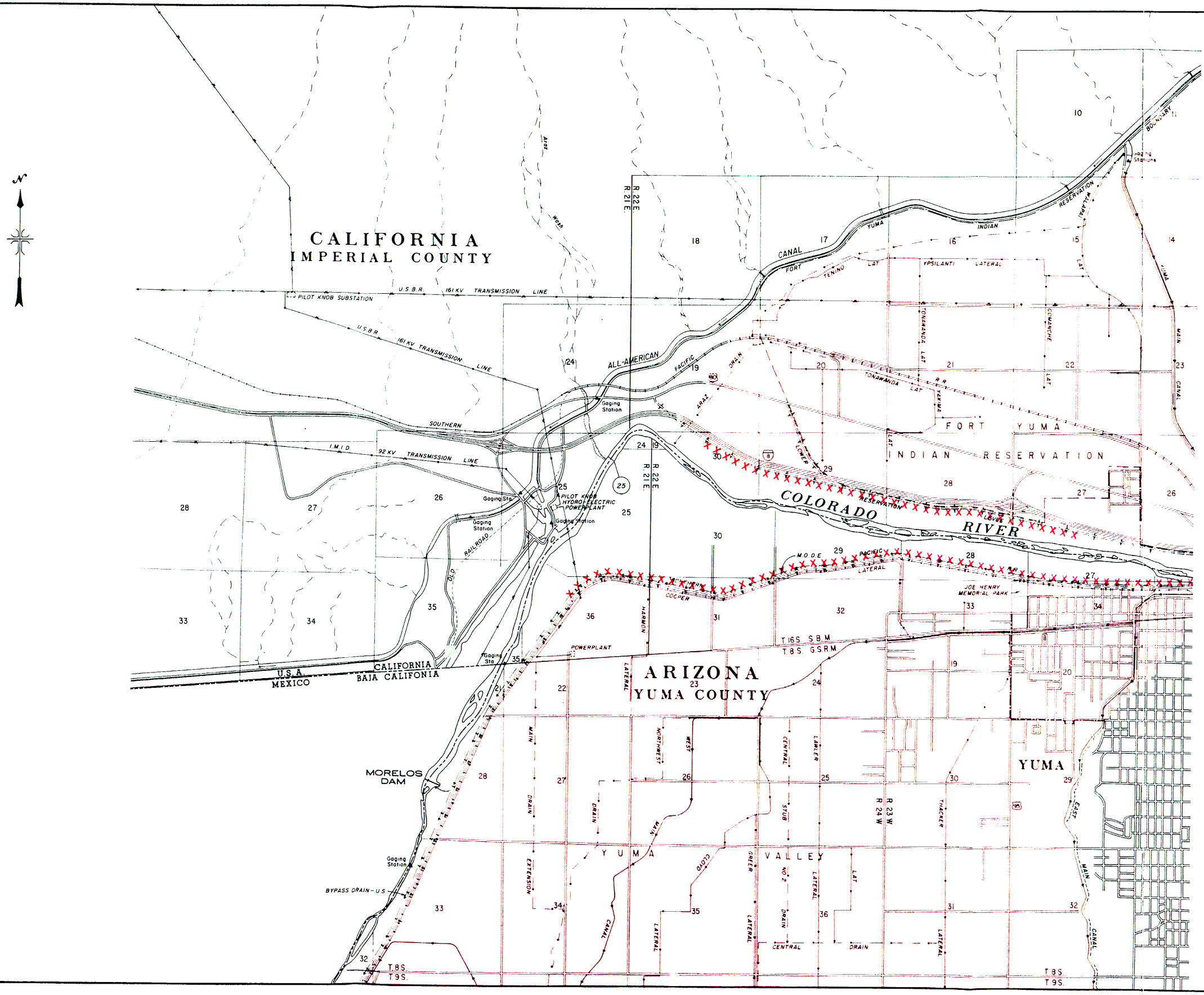
IMPERIAL CO.
YUMA CO.



EXPLANATION

XXX - LEVEES TO BE ARMORED

REMAINING LEVEES - ARMORING COMPLETED

UNITED STATES
DEPARTMENT OF THE INTERIOR
WATER AND POWER RESOURCES SERVICE

COLORADO RIVER FRONT WORK & LEVEE SYSTEM
ARIZONA - CALIFORNIA - NEVADA

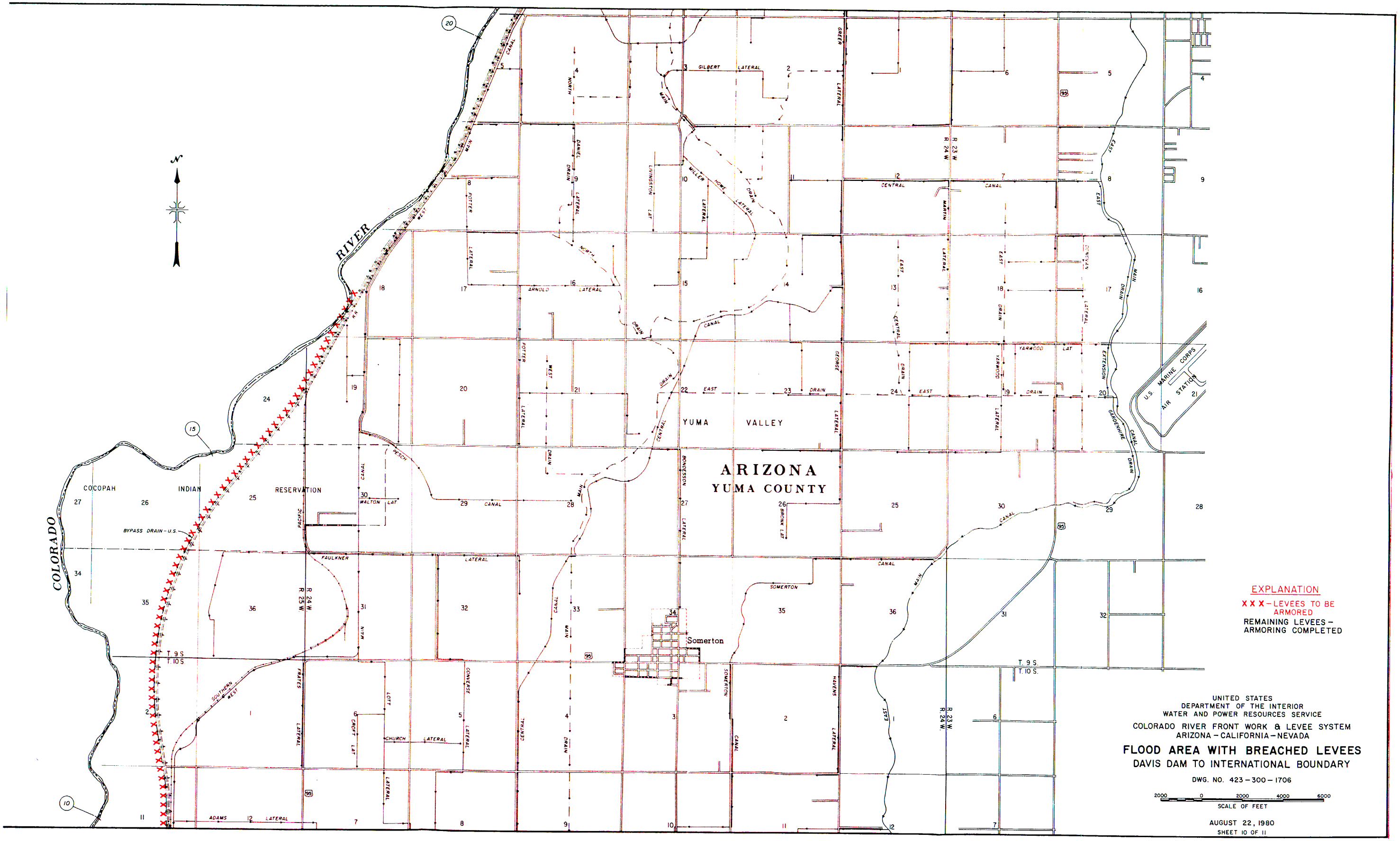
FLOOD AREA WITH BREACHED LEVEES
DAVIS DAM TO INTERNATIONAL BOUNDARY

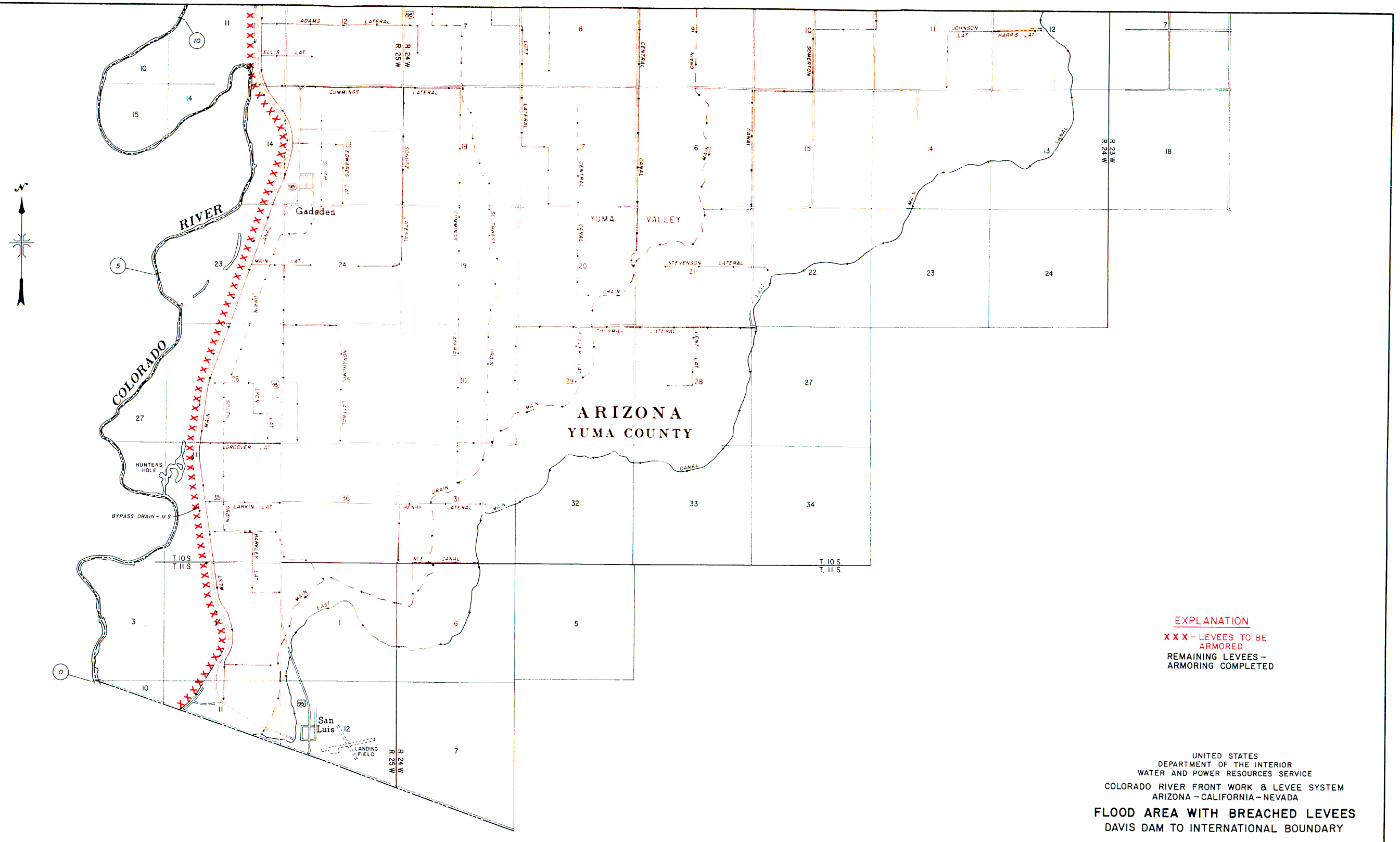
DWG. NO. 423 - 300 - 1705

2000 0 2000 4000 6000
SCALE OF FEET

AUGUST 22, 1980

SHEET 9 OF 11


RIVER
COLORADO
ARIZONA
YUMA COUNTY
YUMA VALLEY
COCOPAH INDIAN RESERVATION
Somerton
U.S. MARINE CORPS AIR STATION
BYPASS DRAIN - U.S.
GILBERT LATERAL
MAIN CANAL
DANIEL DRAIN
LIVINGSTON LAT.
MILLER HOME LATERAL
POTTER LATERAL
ARNOLD LATERAL
CENTRAL CANAL
MARTIN LATERAL
EAST MAIN DRAIN
YARWOOD LAT.
EXTENSION GRIDERLINE CANAL DRAIN
PACIFIC
FAULKNER LATERAL
WALTON LAT.
SOUTHERN PACIFIC LATERAL
CHURCH LATERAL
ADAMS LATERAL
SOMERTON CANAL
T. 9 S.
T. 10 S.
R. 25 W.
R. 24 W.
R. 23 W.
EXPLANATION
XXX - LEVEES TO BE ARMORED
REMAINING LEVEES - ARMORING COMPLETED
UNITED STATES
DEPARTMENT OF THE INTERIOR
WATER AND POWER RESOURCES SERVICE
COLORADO RIVER FRONT WORK & LEVEE SYSTEM
ARIZONA - CALIFORNIA - NEVADA
FLOOD AREA WITH BREACHED LEVEES
DAVIS DAM TO INTERNATIONAL BOUNDARY
DWG. NO. 423-300-1706
2000 0 2000 4000 6000
SCALE OF FEET
AUGUST 22, 1980
SHEET 10 OF 11



UNITED STATES
DEPARTMENT OF THE INTERIOR
WATER AND POWER RESOURCES SERVICE

COLORADO RIVER FRONT WORK & LEVEE SYSTEM
ARIZONA – CALIFORNIA – NEVADA

FLOOD AREA WITH BREACHED LEVEES
DAVIS DAM TO INTERNATIONAL BOUNDARY

DWG. NO. 423 – 300 – 1707

2000 0 2000 4000 6000
SCALE OF FEET

AUGUST 22, 1980

SHEET 11 OF 11

Area	Quantity (cy)	Frequency
Entrances to		
Needles Marina	Up to 500 per location	Once
Park Moabi Marina		Once
Blythe Marina		Once
McIntyre Co. Park		Once
Squaw Lake		Once
Needles Dredge Basin		Once

The Material is classified as clean medium sand.

Dredging will be accomplished using the dredge "Little Colorado" and others. These dredges have a nominal dredging depth capability of 24 feet below the water in which they operate. However, depth of dredging is influenced by a number of factors and is in practice somewhat less.

Disposal areas for some proposed dredge sites have not been selected at this time. Dredge material from entrances to the marina and parks listed above would be disposed of in areas adjacent to each entrance.

Considerable analysis has been devoted to disposing of the material to be dredged from the Topock Settling Basin. Eight sites adjacent to the basin were proposed for investigation in a meeting with Fish and Wildlife Service on February 11, 1974. In addition, five miles of river above Topock Bridge were investigated for possible sites. This is presently considered the safe limit of settling basin operations. The areas investigated are shown on the drawings included in the discussion on impacts. The areas identified by numbers on the drawing correspond to the Fish and Wildlife Service sites; the areas identified by alphabet letters are other disposal areas evaluated. A description of these areas is found in Chapter III.

Several areas were investigated for disposing of the material to be dredged from the Laguna Basin. It was decided that the best disposal sites would be immediately adjacent to the Laguna Settling Basin. Disposal areas will be located immediately adjacent to, and almost coterminous with, the settling basin.

C. The No Action Alternative

As mentioned earlier, the only real alternative to the project as proposed is the no action alternative, which is simply doing nothing. Under this alternative, rock would not be quarried or stockpiled, the river banks would not be riprapped, the levees would not be armored, and the settling basins would not be dredged. A discussion of the impacts of this alternative is contained in the next chapter, following the discussion of impacts of the proposed alternative.

III. Environmental Consequences and the Affected Environment

A. General Description

1. Location

The area covered by the Colorado River Front Work and Levee System extends from Davis Dam on the north to the International Boundary with Mexico on the south. The length of this reach of river is about 280 miles and traverses 3 wildlife refuges, 4 Indian reservations, and 5 irrigation districts.

The overall length of the river is divided into 10 divisions as shown on Map No. 423-300-933. These divisions are:

Mohave Valley Division - Davis Dam to Topock Bridge (R.M. 276.2 to R.M. 233.9)

Topock Gorge Division - Topock Bridge to upper end of Lake Havasu (R.M. 233.9 to R.M. 219.2)

Havasu Division - upper end of Lake Havasu to Headgate Rock Dam (R.M. 219.2 to R.M. 177.8)

Parker Division - Headgate Rock Dam to Palo Verde Diversion Dam (R.M. 177.8 to R.M. 133.8)

Palo Verde Division - Palo Verde Diversion Dam to Taylor's Ferry (R.M. 133.8 to R.M. 106.6)

Cibola Division - Taylor's Ferry to Adobe Ruins (R.M. 106.6 to R.M. 87.4)

Imperial Division - Adobe Ruins to Imperial Dam (R.M. 87.4 to R.M. 49.3)

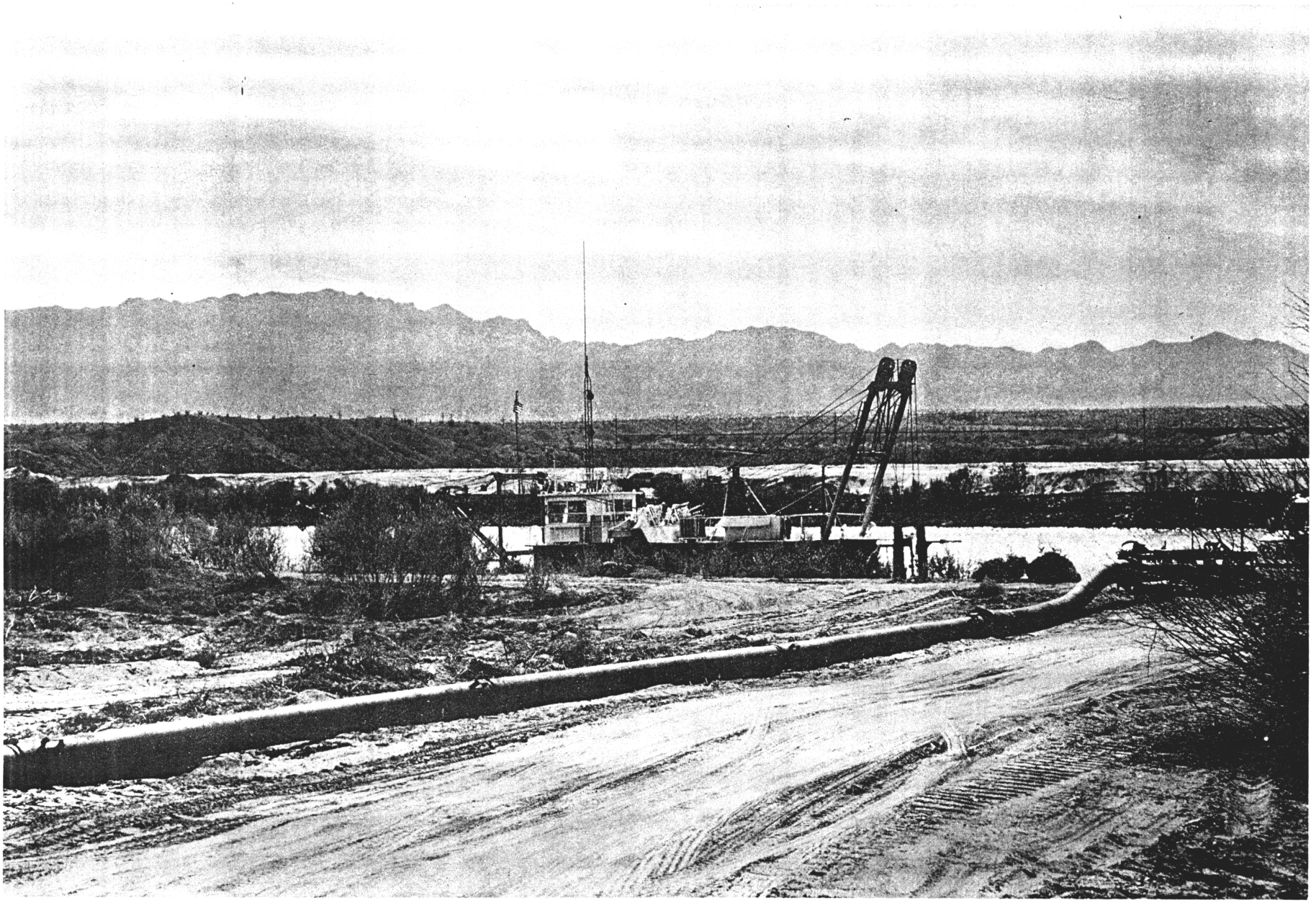
Laguna Division - Imperial Dam to Laguna Dam (R.M. 49.3 to R.M. 43.3)

Yuma Division - Laguna Dam to Morelos Dam (R.M. 43.3 to R.M. 22.1)

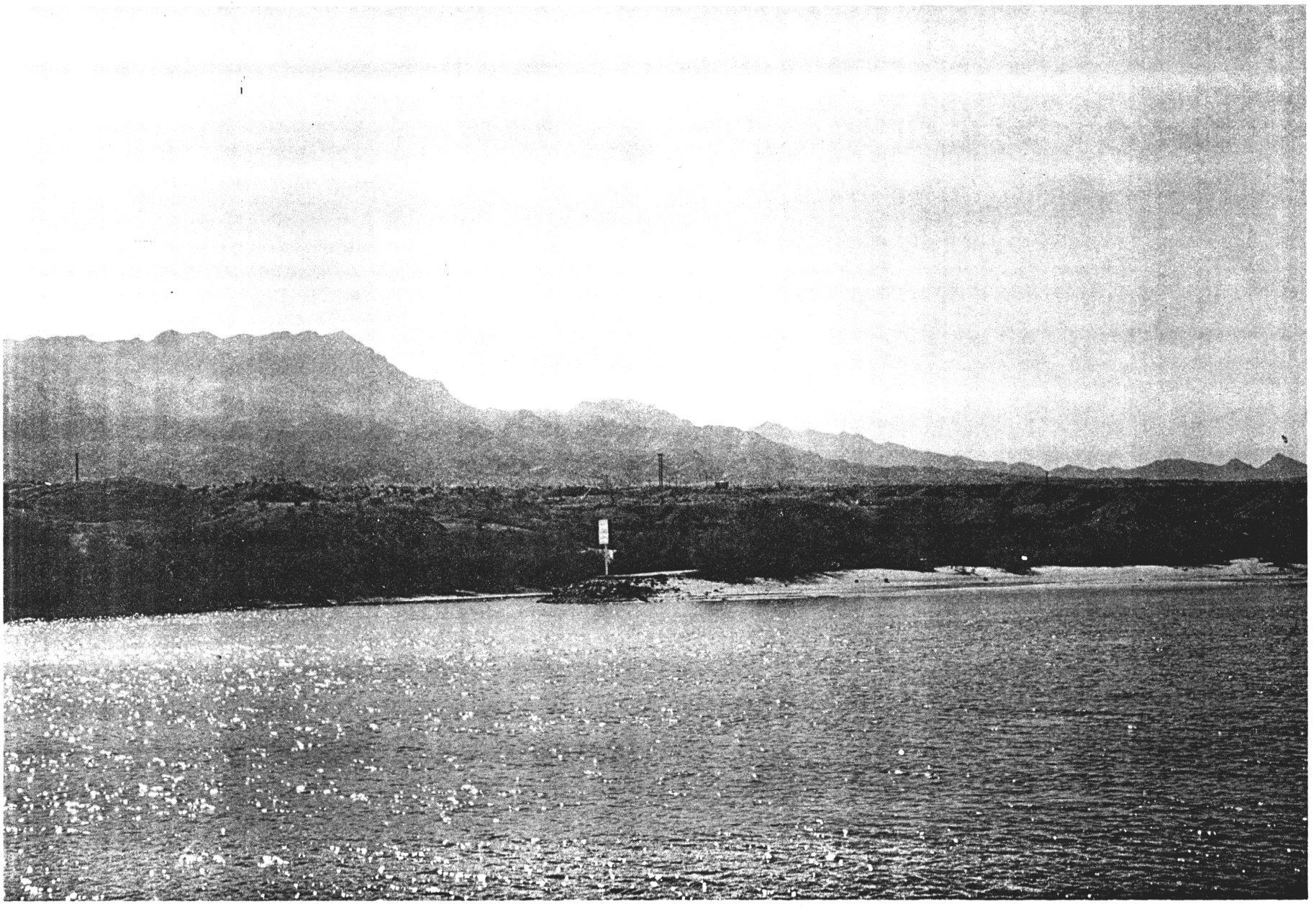
Limitrophe Division - Morelos Dam to the southern International Boundary (R.M. 22.1 to R.M.0)

2. Climate

The climate is typical of southern Nevada, southern Arizona, and inland southern California. The desert climate is dry and rainfall averages less than four inches annually, which rapidly



The dredge, Little Colorado, operating in the Topock Settling Basin.



This photograph shows the entrance to Park Moabi Marina and the area to be dredged.

evaporates. However, heavy showers sometimes occur in the winter and summer, which can cause flash flooding. Most days are sunny; a cloudy day is very rare. The summers are hot and the winters are mild. The maximum temperature is high, ranging between 115° and 123° F. Spring winds are common.

3. Air Quality

Air quality in most of the area is very good, although high winds frequently cause dust problems because of the arid climate and sparse vegetation. In some of the irrigation districts, where agricultural wastes are burned, the air quality is reduced.

4. Terrestrial Resource

The only perennial tributaries of the Colorado River below Davis Dam are the Bill Williams and Gila Rivers. However, numerous washes with a total drainage area of 11,000 square miles empty into the main stream. The steep slopes of these washes contain much sand and gravel, which wash into the river valley during periods of high runoff. If this coarse, alluvial material flows into the river channel, it can alter the course of the river.

The topography of the lower Colorado River basin is characterized by broad, flat valleys separated by low ranges. Between Davis Dam and the International Boundary, the Colorado River flows alternately through alluvial valleys and mountain canyons. The valleys traversed by the river are:

Mohave Valley (Davis Dam to Topock)	43 miles
Parker, Palo Verde, and Cibola Valleys (Parker to Imperial Dam)	148 miles
Yuma Valley (Imperial Dam to International (Boundary)	47 miles

About two miles below Topock, Arizona, the Colorado River enters a 12 mile long canyon known as Topock Gorge. Within the valleys, the alluvial character of the bed and banks provides little resistance to meandering and transport of riverbed sediments.

The mountain ranges are mainly igenous and are part of the oldest known formation; the younger sedimentary rocks have been removed by erosion. The soils of the valley are primarily heterogeneous deposits of river sediments laid down on the flood plain of the Colorado River before the flow was controlled by upstream dams. Small areas have accumulations of material from the adjoining mountains and fans. The land reflects alternating deposits of coarse and fine material.

5. Vegetation

a. General

The vegetation of the northern part of the project area is within the Mohave Desert. The characteristic species include creosote bush, burro bush, brittlebush, and Mohave yucca. The vegetation in the southern part of the project area is within the Sonoran Desert. The main species are creosote bush, burro bush, palo verde, saguaro, and ocotillo. The area around Needles, California, is in a transition zone between the Sonoran and Mohave Deserts. The vegetation in the area is extremely sparse, a characteristic of the Mohave Desert, but consists of species typically Sonoran.

Vegetation in the project area is composed of three main vegetative communities. These are the desert scrub community, agricultural acres, and riparian.

The main community in the area is the desert shrub community. Creosote bush and burro bush are co-dominants within this community. Other species consist of brittlebush, palo verde, ocotillo, and saguaro cactus. Exact acreages of this community are hard to determine because of the great numbers of acres involved.

Approximately 100,000 acres in the project area are under irrigation. High value specialty crops are produced, including cotton, winter vegetables, citrus fruits, and feed grain.

The uncultivated land bordering the river is covered with heavy riparian growth. There are approximately 103,500 acres of riparian vegetation within the entire project area. This vegetation consists of seven types. Approximately 34 percent of the riparian vegetation is salt cedar. Salt cedar in association with screwbean mesquite composes 20 percent and in association with honey mesquite 6 percent of the total riparian community. The other types of vegetation which comprise the remainder of the community are cottonwood/ willow, 7 percent; honey mesquite, 23 percent; marsh, 6 percent; and arrowweed, 4 percent. For more detailed information on the type and location of vegetation the reader is referred to Ohmart and Anderson's 1976 report, prepared under contract with the Bureau, Vegetation Type Maps of the Lower Colorado River from Davis Dam to the Southerly International Boundary.

b. Special Status Species

Under authority of Section 12 of the Endangered Species Act of 1973 (Public Law 93-205, 87 Stat. 884), the Federal Government has been developing a list of proposed endangered

This photograph shows a levee located near the Nevada-California state line. It also shows the vegetation adjacent to the levee which will be preserved prior to riprapping.

plants. A tentative listing of such plants was published in the Federal Register of June 16, 1976. Since that time, several species have been given official endangered or threatened status; however, a biological inventory of the project area did not reveal any of these species and none are mentioned in the literature as occuring in the area.

Two species of plants proposed for the endangered list have been found within the project area by BLM. These species are Coryphanta vivipara var. alversonii (foxtail cactus) and Ferocactus acanthodes var. acanthodes (barrel cactus). According to BLM the foxtail cactus is found at the Big Maria No. 2 site and the Hills Ranch site. The barrel cactus has been found at Times Gulch, Osborn Wash South, Eagle Pass South Hill, Big Maria No. 2, Vidal Junction, and Bat Cave Wash Nos. 2 and 3. According to BLM a number of plant species protected in both Arizona and California also occur on some of the proposed quarry sites. These species include beavertail, barrel, hedgehog, opuntia, ocotillo, paloverde, smoke tree and mesquite.

The BLM, in accordance with BLM Manual 6840, recognizes species meriting special attention in their planning and decision-making processes. The objective is to maintain or increase the population of less common species by early habitat protection or enhancement before these less common species require listing as rare, threatened, or endangered. No BLM-sensitive Species are known to occur in the area.

6. Fish and Wildlife

a. General

The wildlife of the Lower Colorado River has been the subject of a study by Drs. Anderson and Ohmart under contract to the Bureau. Their report submitted in 1977 is titled Wildlife Use and Densities Report of Birds and Mammals in the Lower Colorado Valley. This report is probably the most comprehensive and up to date listing of wildlife inhabiting the Lower Colorado River and the reader is referred to this report for detailed information.

(1) Fish

Sampling of the Colorado River has provided a good qualitative description of the fish species found in the area.[1/] More than 20 species have been recorded in this

1/ W.A. Dill, The Fishery of the Lower Colorado River, California Fish and Game 30:309-409, 1944.
J. W. Moffett, A Fishery Survey of the Colorado River Below Boulder Dam, California Fish and Game 28:76-86, 1942.

reach of the river. Among the most common are the bluegill, carp, channel catfish, flathead catfish, largemouth bass, red shiner, striped bass, and threadfin shad.

(2) Amphibians and Reptiles

Numerous species of lizards, snakes, and amphibians inhabit the area. The most common are as follows:

coachwhip
striped whipsnake
chuckwalla
desert spiny lizard
desert tortoise
western whiptail
side-blotched lizard
Mohave rattlesnake
spiny soft-shelled turtle
western banded gecko
western diamondback rattlesnake
zebra-tailed lizard
Mohave Desert sidewinder
tree lizard

(3) Birds

There is a great diversity in the bird community of the Lower Colorado River area. The area includes three National wildlife refuges important to migrating and wintering waterfowl of the Pacific fly way. Waterfowl species most common are the Canada goose, snow goose, green winged teal, cinnamon teal, pintail, mallard, gadwall, redhead, bufflehead, shoveler, American widgeon, ring-necked duck, and common mergansers. There is also a large coot population. The sand bars and shorelines also provide habitat for numerous resident and migrating shorebirds and songbirds. Some of the more common species of shorebirds are the great blue heron, snowy egret, great egret, Wilson's phalarope, and godwit. Double-crested cormorants, grebes, marsh hawks, red-tailed hawks, turkey vulture, and ospreys are also familiar inhabitants of the area. The dominant game bird species are white-winged doves, mourning doves, and Gambel's quail.

(4) Mammals

The following species of small mammals and big game species are sparsely distributed throughout portions of the project area:

antelope ground squirrel
badger
beaver
big brown rat
blacktail jackrabbit
bobcat
cactus mouse
coyote
desert bighorn
desert cottontail
desert mule deer
desert pocket mouse
kit fox
Merriam's kangaroo rat
Mexican free-tail bat
muskrat
pallid bat
raccoon
river otter
round-tailed ground squirrel
valley pocket gopher
white-footed mouse
white-throated wood rat
Yuma myotis

b. Bureau of Land Management Sensitive Species

BLM-sensitive species, which may occur within the project area, are the desert tortoise, flat-tailed horned lizard, golden eagle, and Nelson bighorn. During a field reconnaisance conducted by a Bureau biologist, one desert tortoise was seen at the Mission Wash site and several bighorn sheep were seen at the Times Gulch site.

c. Endangered or Threatened Species

Consulting the Federal List of Endangered and Threatened Species revealed that five endangered species may be found in the project area.

Peregrine Falcon

Peregrine falcons (Falco peregrinus) may be found over the Southwest at any time of the year, either as residents or migrants. These birds prefer rocky, steep cliffs, preferably near water where prey concentrations are high.

Bald Eagle

The bald eagle (Haliaeetus leucocephalus) winters along rivers and major reservoirs in the Southwest. These birds nest near water and require large trees or rock cliffs for nesting. Fish are their primary food source.

Brown Pelican

The brown pelican (Pelecanus occidentalis) is generally found in coastal areas. Its normal food source and natural habitat are dependent on salt water environments. However, some brown pelicans are found as transients along the Lower Colorado River.

Yuma Clapper Rail

The original range of the Yuma clapper rail (Rallus longirostris yumanensis) was confined to the Colorado River delta, but its range has been moving northward during the past 60 years (Ohmart and Smith, 1973). Rails are secretive animals which require secluded freshwater marsh areas containing mature stands of cattail and bulrush. In 1966, Yuma clapper rails were first recorded in Topock marsh. This is the northernmost record of the Yuma clapper rail to date.

Bonytail Chub

The bonytail chub (Gila elegans) was once found throughout the Colorado River. In this river it was most frequently associated with eddies adjacent to swift water. The most recent surveys of streams and reservoirs in the Colorado River basin indicate that it is presently found only in Lake Mohave (Federal Register, Volume 45, No. 80). However, AG&F report that an angler caught a bonytail chub in the river below Davis Dam in July 1979. The bonytail chub has not been collected below Parker Dam.

d. Other Special Status Species

The Arizona Game and Fish Department has forwarded the following list of state protected species in the project area. This list is the official state list approved by the Arizona Game and Fish Commission on October 21, 1978.

desert bighorn sheep (subspecies mexicana)
black rail
fringe-toed lizard
great egret
snowy egret
black-crowned night heron
zone-tailed hawk
osprey
desert tortoise
gila monster
Pacific tree frog

7. Water Quality

The Lower Colorado Region is hydrologically defined as the drainage area of the Colorado River in the United States below Lee Ferry. The Front Work and Levee System covers that part of the river from Davis Dam to the Southern International Boundary.

Salinity has long been identified as the Region's most serious water quality problem. The river has traditionally had a higher salinity level than most other major rivers in the United States. This salinity comes from a large dissolved mineral load caused by both natural conditions and human activities.

The Colorado River enters the region at concentrations exceeding 500 mg/liter and varies between 500 and 900 mg/liter at most diversion points, and increases to as high as 1000 mg/liter during fall months at Imperial Dam.

Although salinity is considered to be the most serious water quality problem in the Colorado River Basin, there are a number of other water quality problems of varying magnitude. Other key water quality parameters include dissolved oxygen, pH, heavy metals, toxic materials, nutrients, bacteria, and radioactivity. Water quality problems related to these parameters are primarily site-specific and large distances apart throughout the river basin.

In addition to salinity, agriculture also contributes pesticides and fertilizers to the waters of the river. However, the mere presence of a pesticide in water does not necessarily indicate serious pollution. Samples of fish were tested for pesticides and it was found that pesticide levels were well below the limits set by the Food and Drug Administration.

Nutrients, primarily nitrogen and phosphorus, are conducive to the growth of algae. The sources of these nutrients are runoff from agricultural lands, municipal and industrial waste waters, and natural runoff.

Within the Colorado River Basin, the majority of discharges from waste water treatment plants enter the river system and contribute to the bacteriological and organic pollution.

Sediment is also a problem of the Colorado River. It causes damage during transport along streams, rivers, and lakes. Sediment results in overwash, swamping, and increased flooding. It accumulates in reservoirs, increases treatment costs of municipal and industrial supplies, impairs navigable streams, clogs irrigation and drainage improvements, smothers growing plants. It destroys harvestable crops, increases maintenance costs of utility and transportation facilities, decreases the recreational value of water, and adversely affects the fishery resource.

8. Archaeological and Historical Resources

The sequence of man's occupation of the lower Colorado River area is not well understood; however, most archaeologists accept the following account.

There is evidence indicating occupation as early as 20,000 to 40,000 B.C. This period was characterized by lack of projectile points and the presence of large, percussion flaked bifaces, scrapers, flakes, and cores. Most of the artifacts have come-from surface sites, but none have been dated with any degree of certainty.

Willey has labeled the next occupation period as the Lake Mohave. Sites of this period have been dated somewhere between 7,000 to 10,000 B.C. Because no milling stones have been

found, it is postulated that plant foods, especially seeds, did not play a major role in the economics of this tradition.

A period of increasing utilization of plants is dated from approximately 7,000 B.C. and has survived in some areas to the historic period. This period has been defined by Jesse Jennings (1964) as the Desert Culture. By 600 A.D., maize was being grown along the lower Colorado River, irrigated by the annual spring floods. The people of this period were probably the ancestors of the later Yuman-speaking groups.

Much of the evidence of occupation along the Colorado River has been destroyed or covered by the annual floodings, the constant shifting of the river channel, as well as by the various historic and modern developments in the flood plain. On the terraces and uplands bordering the river, however, there is evidence of the various people who occupied the area.

Although European explorations of the river began in the 17th century, intensive settlement dates from the mid-1800's. By the late 1800's, agriculture became important and more permanent towns and stable communities appeared. The building of canal systems and dams began in the 1890's and facilitated the development of agriculture as a major industry.

The existing cultural resource data base for the lower Colorado River compiled for the Bureau was consulted to provide information for the Class I Literature Search Phase of the study. The data base is the result of three contracted Phase I literature searches of the river and flood plain in the disciplines of history and architecture, archaeology, and paleontology. This data base is on file and is available for review. In addition to the contracted studies, the document, The Preliminary Resource Inventory Report for the Colorado River between Lee's Ferry, Arizona and the United States/Mexico Boundary, provided useful information in the literature search.

The California and Arizona State Historic Preservation Offices have not yet responded to the request for information. The Nevada State Historic Preservation Office has no properties in the project area presently listed on, or pending nomination to, the National Register of Historic Places.

The California Archaeological Site Survey Regional Office, Imperial County, reported no sites within the vicinities of the proposed stockpile or quarry sites in Imperial County.

The University of California at Riverside has reported 6 sites in the general area of the quarry and stockpile sites. None of these would be affected by the project.

The San Bernardino County Museum Association responded with records of four known sites. Three of the sites are outside the project area and will not be affected. The remaining site was a rock shelter that had contained pottery at the time of the report in 1968. The Class III Survey relocated the rock cave but no artifacts or features were present. It is not eligible for nomination to the National Register of Historic Places.

Mr. William Pink, Executive Secretary of the Native American Heritage Commission, has been consulted in regard to P.L. 95-341, the Native American Religious Freedom Act. His office has not yet responded.

The cultural resources data base reported 14 possible historical resources and 22 possible archaeological resources within a 5-mile radius of the proposed stockpile and quarry sites.

The paleontological resource data base reported a very sketchy knowledge of resources in this area. Because of the lack of knowledge concerning the fossil resources, there is no way at this time to assess impacts on these resources.

A Class III Survey was conducted for each of the areas. The individual site reports are on file with this office. The results are discussed under the site specific descriptions. The Bureau proposes to mitigate the impact of the undertaking on any archaeological or historical resources located during construction activities. Any properties located will be evaluated by an archaeologist who will make a determination in consultation with the State Historic Preservation Officer as to the properties' significance. Should the property be determined eligible for nomination to the National Register of Historic Places, the Bureau will follow the procedure outlined in 36 CFR Part 800. Should it then be determined that extensive recovery and study were required, such activities would be both beneficial and adverse. The beneficial impacts will include the actual location and documentation of the site, the information gained through excavation, and the preservation of artifacts found. The adverse impacts will involve the physical loss of the site, which will preclude any future evaluation at some later date when newer technology might allow for more detailed findings.

9. Esthetics

The project area consists of the lower Colorado River from Davis Dam to the International Boundary. The Region is characterized by sparse desert habitat with irrigated tracts in the river valleys and strips of riparian vegetation along the streams, canals, and drainage channels.

The terrain is characterized by flat flood plains and terraces crossed by many arroyos and washes. The land is separated into valleys by low, rugged hills and mountains which are oriented in a north-south, or northwest-southeast direction.

Along most of the river's length, the view is typical of the southwest deserts: sparse desert shrub interspersed by sand and rocky soil. Occasionally, the desert vista is broken by thicker stands of trees and other riparian vegetation, especially in the Topock Marsh area, and in the Havasu, Cibola, and Imperial National Wildlife Refuges.

10. Land Use and Ownership

The land along the lower Colorado River is put to many uses. From Davis Dam to Needles, California, the primary use of the land adjacent to the river is recreation. Some of the land is used for houses and trailer parks. Around Needles, Parker, Blythe, and Yuma the land is used for irrigated agriculture. Three wildlife refuges - Havasu, Cibola, and Imperial National Wildlife Refuges-are located along the river.

There are 529 miles of shoreline along the Colorado River below Davis Dam. The majority of this land is federally owned. A more detailed breakdown of land ownership is found in the following tabulation.

Land Ownership
Colorado River Shore Line
Below Davis Dam

U.S.	55%
Indian	22%
Private	14%
State	3%
Unknown	5%

11. Recreation

At the present time, recreational developments along the lower Colorado River consist of boat launching and mooring sites, trailer parks, cabins, motels, campgrounds, picnic sites, stores, and restaurants. Vacation residences and permanent dwellings which have been built vary from cabins and trailers to substantial houses. Fishing, swimming, boating, hunting, camping, and picnicking are the most prominent recreational activities along the river. The Topock Settling Basin provides an excellent area for water sports.

The more elaborate resort developments lie along the reservoirs and the wider sections of the river where either private lands were available or tenure by government lease was possible. Residences along the unstable reaches of the river and on trespassed federal lands generally represent much smaller investments and tend to be of a temporary nature.

12. Socioeconomic Conditions

Since 1965, the population of the area has been increasing at the rate of 4 to 5 percent per year. The area is one of the fastest growing in the nation. The combination of climate, employment opportunities, scenery, and recreation opportunities has attracted residents from all parts of the United States.

Agriculture provides one of the mainstays of the area's economy; however, new employment opportunities exist in the manufacturing, trades, and service-type industries. The area is experiencing a vigorous, healthy upswing of development in all these industries. Personal income per capita for the area was near the national average.

Parts of the area have become meccas for retirement, recreation, and entertainment which have boosted the noncommodity dollar output to more than the combined amount from all other economic sectors.

B. Environmental Consequences

1. Preferred Alternative

a. Quarry Sites

The 19 proposed quarry sites are summarized in Table 2. This table gives the name of the quarry site and the number of acres it comprises. The table summarizes the impacts of quarrying operations for each site. It indicates the density of the vegetation, the frequency of wildlife use, as well as the presence or absence of archaeolgical resources.

The table also indicates what BLM Visual Resource Management Class (VRM Class) the site is found in. Each visual resource management class describes a different degree of modification allowed in the basic elements of the landscape. The primary character of the landscape should be retained regardless of the degree of modification. The five classes and the limitation on land use they imply are described as follows:

1. Class I. This class provides primarily for natural ecological changes; however, it does not preclude very limited management activity. Any contrast created within the characteristic environment must not attract attention. It is

applied to wilderness areas, some natural areas, wild portions of the wild and scenic rivers, and other similar situations where management activities are to be restricted.

3. Class II. Changes in any of the basic elements (form, line, color, texture) caused by a management activity should not be evident in the characteristic landscape. A contrast may be seen but should not attract attention.

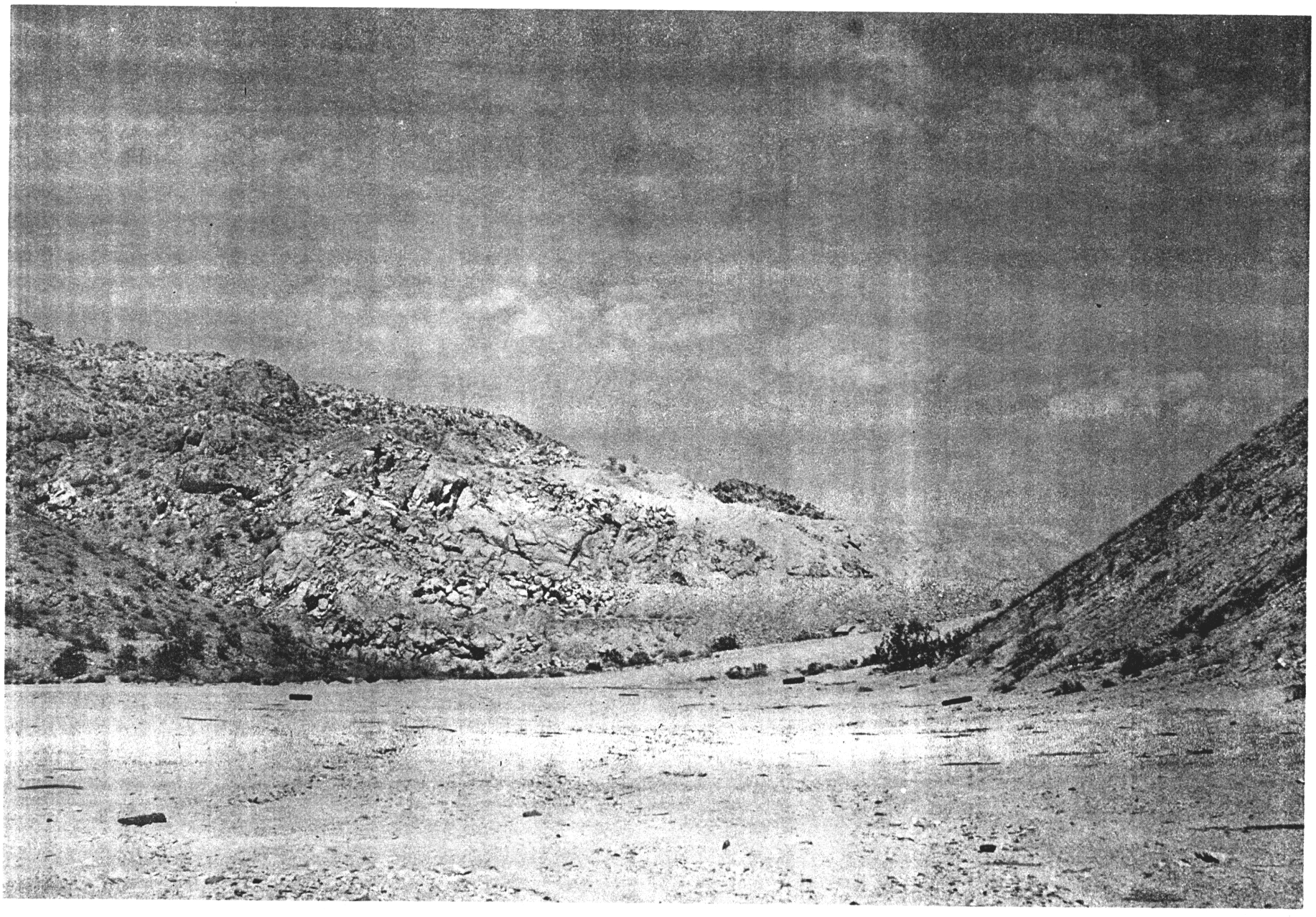
4. Class III. Contrasts to the basic elements (form, line, color, texture) caused by a management activity may be evident and begin to attract attention in the characteristic landscape. However, the changes should remain subordinate to the existing characteristic landscape.

5. Class IV. Contrasts may attract attention and be a dominant feature of the landscape in terms of scale; however, the change should repeat the basic elements (form, line, color, texture) inherent in the characteristic landscape.

6. Class V. Change is needed or change may add acceptable visual variety to an area. This class applies to areas where the naturalistic character has been disturbed to a point where rehabilitation is needed to bring it back into character with the surrounding landscape. This class would apply to areas identified in the scenic evaluation where the quality class has been reduced because of unacceptable cultural modification. The contrast is inharmonious with the characteristic landscape. It may also be applied to areas that have the potential for enhancement, i.e., add acceptable visual variety to an area/site. It should be considered an interim or short-term classification until one of the other VRM class objectives can be reached through rehabilitation or enhancement. The desired visual resource management class should be identified.

The table gives miscellaneous information in the final column, especially the mitigation of any adverse impacts. It also indicates present condition of the land, such as disturbance by ORV use, pipelines, or previous quarrying, and any other significant features necessary to understand the extent of impact.

All 19 of the quarry sites are discussed on Table 2. Nine of the 19 sites will be discussed in more detail in the following text. These nine sites are the ones with the most impacts. They are discussed in the body of the text to give the reader insight into the type and magnitude of impacts associated with the quarrying operation. All the sites are discussed in greater detail by parameter in Appendix B.



The Davis Dam Quarry, shown above, typifies existing

TABLE 2 Quarry Sites -- S U M M A R Y O F E N V I R C N M E N T A L - C O N S E Q U E N C E S

Quarry Site	Acres Disturbed	Vegetation	Wildlife Use	Archaeology	VRM Class	Previous Disturbance	Other
1. Times Gulch	27	Heavy	Heavy	No sites	Class I	Moderate--mining, hunting, pospecting	3 insignificant archaeological sites would be impacted
2. Twin Hills	22	Moderate	Moderate	3 Sites	Class II	None	for bighorn sheep -no blasting
3. Osborn Wash South	20	Moderate	High	No Sites	Class II	None	postponed, reconsidering 1987
4. Laguna Mountains North	10	Sparse	Light	No Sites	Class II	None	
5. Mittry Lake	8	Sparse	Light	No Sites	Class III	Heavy--prospecting & burros	
6. Eagle Pass Westerly	89	Sparse	Light	1 Site	Class II	Heavy--quarrying, public use	Remove boulders from the wash to enhance area. Constant water source
7. Eagle Pass South Hill	31	Moderate	Moderate	No Sites	Class II	Moderate--mining, public use	One insignificant archaeological site would be impacted; for bighorn sheep protection quarry will remain inactive from March to October. Construct water sources.
8. Park Moabi	12	Sparse	Light	No Sites	Class III	Moderate--pipelines & O&M roads	
9. Pipeline	17	Sparse	Light	No Sites	Class II	Heavy--pipelines, camping, dumping	
10. Big Maria No. 1	29	Moderate	Light	No Sites	Class III	Moderate--camping, hunting	Construct water source, work from April to September.
11. Big Maria No. 2	29	Moderate	Moderate	No Sites	Class II	None	Construct water source, work from April to September.
12. Vidal Junction	200	Sparse	Light	No Sites	Class II	Heavy--prospectors military	Idle March through September to protect the desert tortoise, and mule deer.
13. Quien Sabe East	20	Sparse	Light	No Sites	Class II	None	
14. Quien Sabe West	26	Sparse	Light	1 Site	Class III	None	One insignificant archaeological site would be impacted.
15. Hills Ranch	17	Sparse	Light	No Sites	Class III	Heavy--ORV use	Construct water source.
16. Mission Wash	122	Sparse	Moderate	No Sites	Class II	None	For mule deer and desert tortoise protection the site will remain idle October through March.
17. Bat Cave Wash Nos. 2 & 3	32	Sparse	Light	No Sites	Class III/II	None	Several water ent pments would be destroyed.
18. Manchester	86	Moderate	Heavy	No Sites	Class III	None	Several water catchments would be destroyed by quarrying. Water catchments will be constructed to replace those destroyed.

1. Twin Hills

The proposed quarry site is two low hills southwest of McHeffy Butte on BLM land. About 21.5 acres would be disturbed by the removal of 240,000 tons of rock. However, this site is in an area already disturbed by mining, prospecting, and grazing. This site is in a wilderness study area (WSA). Quarrying would not change the characteristic landscape, although it would remove the desert varnish and hence cause a visual impact.

Vegetation is sparse because the quarry site is covered with talus. The site is in close proximity to critical bighorn sheep habitat. However, since no blasting will be required, impacts on sheep are expected to be minimal.

Three isolated archaeological features are found near enough to the site to be impacted by hauling activities. However, none of these features meet the criteria for eligibility for inclusion on the National Register of Historic Places.

2. Eagle Pass Westerly

The proposed quarry site is the rock shelves on both sides of a large wash from which 10,000,000 tons of rock would be removed. This would disturb about 85 acres of sparse desert wash community. It is found in a BLM (California) wilderness study area. Ultimate wilderness designation is doubtful because of past heavy disturbance of the area due to an existing access road.

Quarrying this site would result in a noticeable scar; however, quarrying may also help improve the condition of the area by removing boulders from the wash. According to BLM, these boulders, which were left from previous quarrying operations, may be impairing the suitability of the area for wilderness classification. This area is not visible from any population centers or major roads.

California Fish and Game considers this area to be important habitat for bighorn sheep because of the presence of several permanent water sources. In addition, California Fish and Game believes this site to be used by raptors for nesting and brooding.

3. Eagle Pass South Hill

The proposed quarry site is a large talus-covered hill from which 200,000 tons of rock would be removed. This would disturb about 31 acres of desert wash community. This site is also in a wilderness study area, but because of heavy past use, wilderness designation is doubtful.

A Class III field survey located one archaeological feature. This is the remnant of a mining ore chute from which the metal tie-rods have been removed. This feature could be impacted by

blasting and hauling rock. However, it does not appear eligible for the National Register.

Because of the high number of rodents and reptiles, the area supports a high raptor use. Raptors include turkey vultures, red-tailed hawks, and possibly great horned owls. These raptors could be impacted by this loss of habitat. BLM biologists and California Fish and Game consider this area to be permanent bighorn sheep range.

4. Vidal Junction

The proposed quarry site is four talus-covered hills from which 70,000 tons of rock would be removed by surface raking. Approximately 200 acres of sparse vegetation would be affected. Care would be taken to prevent damage to mesquite trees growing in the adjacent wash.

The site lies in habitat of the desert tortoise as identified by the BLM California Desert Plan Staff.

This site is in VRM (Visual Resource Management) Class III. It has been heavily disturbed by prospectors, ORV's, and the military, and is transected by several roads and trails. Disruption of such a large area would result in a noticeable scar. However, visual impacts would be minimal because of previous disturbances and screening provided by vegetation along the highways. The site is visible from U.S. 95 and California Highway 62.

5. Quien Sabe West

The quarry site is a hillside between two other hills from which a maximum of 1,215,000 tons of rock would be removed from a 25.5 acre area. Vegetation on the quarry site is primarily grasses and forbs, with a few scattered creosote bushes.

A Class III field survey for archaeological resources revealed one isolated feature which would be impacted by blasting and hauling. The feature does not appear significant enough to be eligible for the National Register.

The area is presently undisturbed, so its appearance would be changed by quarrying.

6. Mission Wash

The proposed quarry site is the talus-covered slopes of a large wash. A maximum of 2,100,000 tons of rock would be removed from this site by surface raking, disturbing about 122 acres of

land. Vegetation on the site is very sparse, although vegetation in the wash itself is fairly dense.

Wildlife use in this area is fairly high. Small washes in the general area are important mule deer habitat and desert tortoise have been observed on the site.

The area is a Wilderness Study Area and is relatively undisturbed. A noticeable scar would be made by quarrying, which could affect its wilderness potential.

7. Bat Cave Nos. 2 and 3

Both proposed quarry sites are steep rock shelves along the edge of a small wash. A maximum of 1,030,000 tons of rock would be removed from site No. 2. No estimate has been made of the amount of material to be removed from site No. 3. A combined total of 32 acres would be disturbed on both sites.

An access road, which is an extension of the road into Bat Cave Wash No. 1, already runs into site No. 2. The road would be extended approximately 2,500 feet into site No. 3. The work areas at both sites would be located in the wash.

Vegetation in the wash is relatively sparse and appears to have been recently subjected to high water flows. Vegetation in the wash is dominated by creosote bush, brittlebush, and burro bush. Vegetation on the quarry site is sparse, consisting primarily of scattered beavertail and barrel cactus.

Several water entrapments would be destroyed by construction of the road from site No. 2 to site No. 3.

Site No. 2 has been designated a visual resource management Class III because there is an existing access road. Site No. 3 has been designated a visual resource management Class II because it is undisturbed.

Quarrying operations and construction of the access road into site No. 3 will result in noticeable scars. Neither of the sites are visible from a major road or population center.

8. Manchester

The site is on a rocky ridge parallelling a large wash. Approximately 3,253,000 tons of rock would be removed from the sites, disturbing about 86 acres of sparse vegetation.

The wash is heavily used by wildlife. The area supports a large rodent population and therefore probably supports a number of

predators and reptiles. Evidence of desert mule deer was found in the wash.

As a result of this project, several small, natural water tanks in the wash would be destroyed during construction of the haul road and work area. Several small water tanks would be constructed to replace those destroyed by quarrying.

b. Stockpile Sites

The sites are titled according to their location in terms of river miles. For instance, site 124.1 would be located 124.1 miles upstream from the Southerly International Border.

Forty-one of the forty-five sites have existing stockpiles. The vegetation and wildlife were removed when the material was stockpiled although some reptiles, birds, and small mammals may have returned. These animals may be disturbed again when the rock is removed; however, this would be done slowly over a period of time and no significant impacts would occur. There would be no archaeological impacts on existing sites. Nor would there be any impacts to threatened or endangered species. If the rock is replenished after the stockpile site is emptied, some fugitive dust may be generated and noise levels would increase. Dust and noise levels would also increase when the rock is removed from each site.

Each stockpile site is described in Table 3 and discussed in greater detail in Appendix C. Four sites are described in the text because they are not existing sites. It may be necessary in the future to locate up to approximately five additional sites in the Palo Verde Division. These sites would be located on private land. The impacts from stockpiling on these sites would be similar to those described below for the other stockpile sites.

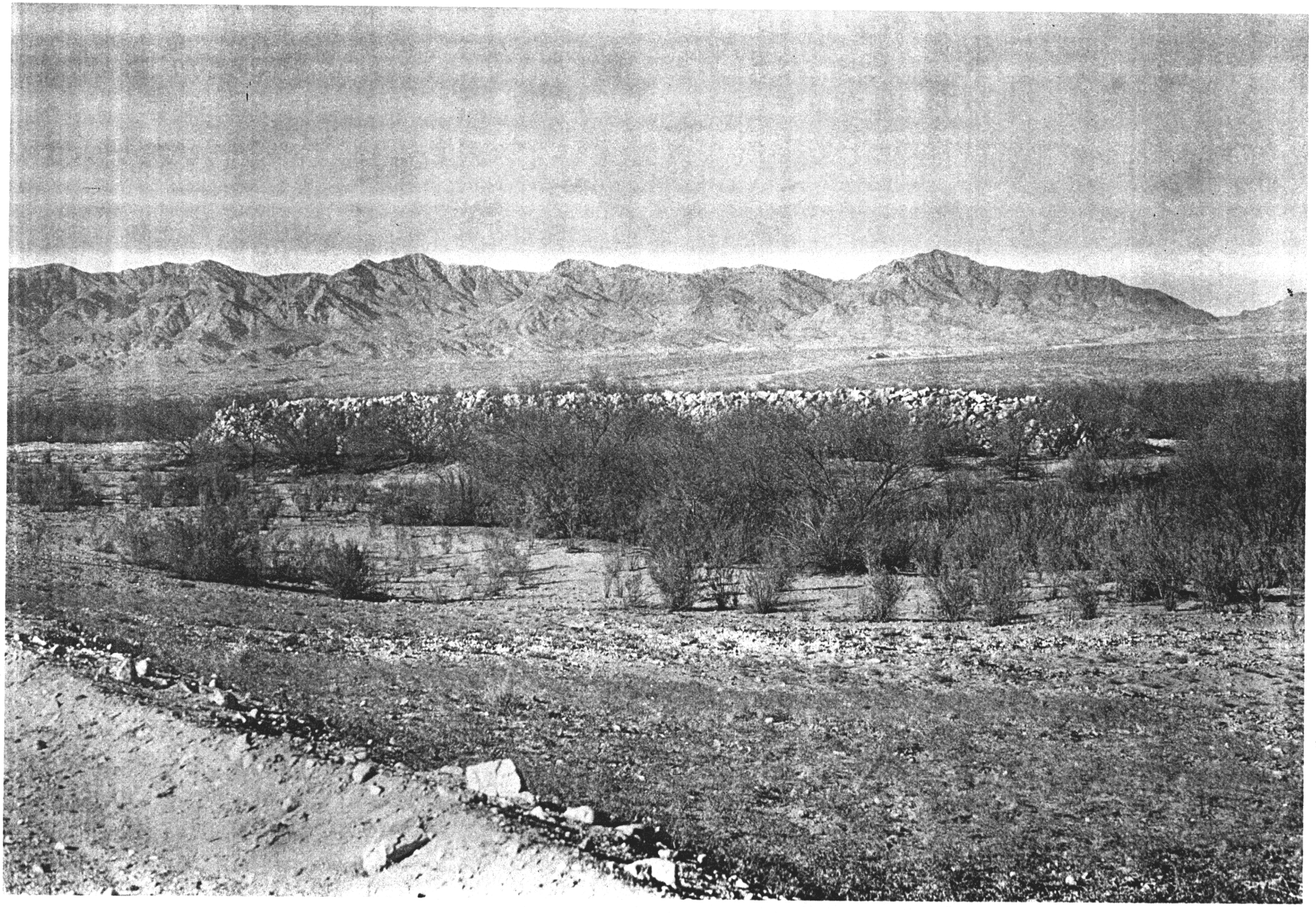
Transporting rocks from the quarry sites to the stockpile sites will cause additional truck traffic. Each quarry site will be mined for about four weeks. A ten ton truck will leave the quarry site with a load of rocks about every ten minutes while the site is being quarried. This means that about fifty trucks a day will be on the road for four weeks during quarrying activities.

(1) Site 258.7

This site is located adjacent to a dirt road west of the Mohave Valley levee on the Nevada side of the river. This site was burned in June 1980 so an open and disturbed area is available for stockpiling.

Table 3 Stockpile Sites - Summary of Environmental Consequences

Site	Status	Quantity	Vegetation	Wildlife	Archaeology	Other
274.1	Existing	30,000 tons				
268.0	Existing	24,500 tons				
264.6	Existing	30,000 tons				
261.7	Existing	30,000 tons				
258.7	New	20,000 tons	Prevously burned	Sparse	none	
254.3	Existing	45,000 tons				
253.8	Existing	50,000 tons	Disturbed area	Sparse	none	30,000 existing add 20,000
248.7	Existing	30,000 tons				
244.5	Existing	10,000 tons				
244.2	Existing	45,000 tons				
240.3	Existing	4,500 tons				
239.9	Existing	23,000 tons				
238.3	Existing	5,000 tons				
236.7	New	40,000 tons	Sparse	Sparse	None	Open dredge spoil
235.7	Existing	1,200 tons + 10,000 tons				Add 10,000 tons Rock
174.3	Existing	6,000 tons + 20,000 tons				Add 20,000 tons rock
164.0	New	50,000 tons	cleared	Sparse	None	
156.8	Existing	20,000 tons				
154.2	Existing	18,000 tons				
134.0	Existing	20,000 tons				
130.8	Existing	40,560 tons				
124.4	Existing	30,000 tons				
120.8	Existing	51,640 tons				
119.1	Existing	3,000 tons + 5,000 tons				Add 5,000 tons rock
114.8	Existing					Add 10,000 tons rock
114.2	Existing	15,000 tons				
110.8	Existing	20,000 tons				
108.8	Existing					Add 10,000 tons rock
105.3	Existing	30,000 tons				
104.0	Existing	60,000 tons				
100.2	Existing	27,000 tons + 10,000 tons				Add 10,000 ton gravel to existing rock
98.9	Existing	27,000 tons				
96.7	Existing	40,000 tons				
96.0	New	45,000 tons	Moderate	Moderate	None	25,000 tons gravel 20,000 tons rock
94.3	Existing	47,000 tons				
93.7	Existing	20,000 tons				
90.7	Existing	10,500 tons				
89.5	Existing	30,000 tons				
48.3	Existing	20,000 tons	Moderate	Moderate	None	Add 20,000 tons rock to existing may enlarge stockpile by 5 acres
43.2	Existing	7,500 tons				
38.7	Existing	43,000 tons				
34.1	Existing	40,000 tons				
23.3	Existing	3,000 tons				
11.7	Existing	9,500 tons				
10.6	Existing	20,000 tons				



This photograph shows a typical stockpile partially concealed by the surrounding vegetation.

(2) Site 236.7

This site lies approximately 1 mile north of the Park Moabi campground. About 40,000 tons of rock would be stored on this open area of dredge spoil. Vegetation is sparse with a few salt cedar and arrowweeds on this half acre site.

(3) Site 163.4

This site is adjacent to the recently paved Wilson Road on the Colorado River Indian Reservation. Approximately 30,000 tons of rock would be stockpiled on this site. This site has already been cleared of vegetation by past construction work.

(4) Site 96.0

This proposed site would be located within the immediate area outside the levee on the Cibola National Wildlife Refuge. The area consists of old dredge spoil supporting a vegetation community. Vegetation includes salt cedar, some honey mesquite, creosote, schismus grass, and a few small annuals.

Approximately 25,000 tons of gravel and 20,000 tons of rock would be stockpiled on the site. This would result in the disturbance of approximately one-half acre of vegetation.

c. Riprap Feature

The riprap feature includes two different actions. The first is riprapping parts of the bankline to stabilize it, and the second is riprapping parts of the levees to armor them. The impacts associated with these two parts are discussed together.

There are no precise locations for most of the riprapping, because locations are determined by need, and this in turn depends upon the river. About 85 percent of the bankline stabilization would be performed on banks which have already been riprapped and will be repair and maintenance of these areas. Of the 115 river miles involved, about 3 miles (in small segments) would be repaired. Only 15 percent of the bankline riprapping would be done on banks that have not been riprapped in the past. This would involve an area approximately 1 mile in total length. The 85 percent of riprapping to be done on armored banks in need of repair would be done within the Divisions identified on the following page.

Division	Location of Division by River Mile
Yuma Division	22-43
Cibola Division	87-106
Palo Verde Division	106-134
Parker Division (upper)	165-178
Mohave Division	234-276

The new riprapping would be done where sections of the bank are collapsing or undergoing rapid erosion. Preliminary surveys indicate that most of this new riprapping would be done in the Cibola and Palo Verde Divisions between River Mile 88 and 134.

The armoring program would consist of riprapping 92 miles of presently unriprapped levees. This riprapping would be begun at the southern end and would progress northward. Areas are identified on drawings 423-300-1697 to 423-300-1707 included earlier.

(1) Impacts of Bank Stabilization

There would be certain temporary impacts caused by riprapping the river banks. Trucks would have to haul the rock, disturbing vegetation. Once the project is completed the vegetation would eventually recover. In addition, dumping the rock into the river would increase turbidity in the general area of dumping. The turbidity caused by placing riprap is limited to the area where the rocks are placed in the water and this turbidity would clear up the same day it is placed.

More long lasting impacts would be caused to the fish and wildlife and to the vegetation in the immediate vicinity of the riprap placement. The overhanging vegetation on the banks of the river, either that which has grown up between the rocks of past riprapping, or that which grows along the banks in unriprapped stretches, would be destroyed by dumping rocks on top of it. This would involve approximately 1 acre of vegetation in new areas and 3.5 acres of vegetation in areas already riprapped. This overhanging vegetation is particularly important for producing insect populations which furnish fish food. This overhang also furnishes perches and cover for birds, as well as shade and plant roots which increase habitat diversity for aquatic organisms. Fish losses as a direct result of riprapping work will be insignificant. Riprapping over existing vegetation will eliminate shade and food in localized areas. The riprap will provide a new substrate which will be colonized by some benthic organisms. In addition, small fish will use the riprap for cover and feeding. Reestablishment of vegetation which provides shade and a terrestrial source of food

will require several years. However, much of this vegetation is expected to be lost to the high flows in the river in the next few years. It would probably take a year or more for the overhanging vegetation to reestablish itself after completion of the riprapping.

Some fish would be lost due to the riprapping. However, the fish population should soon reestablish itself, particularly because of the new habitat formed by the rocks. The riprap, especially the larger rocks, would form breeding spots for fish; catfish in particular seek rock cover to breed. The rocks would also provide cover for smaller fish.

An additional impact would be the destruction of the snake dens found along the river. However, the snake population should reestablish itself once the riprapping is completed.

(2) Impacts of Levee Armoring

There will be some temporary construction impacts while the levees are being armored. These will include such things as increased fugitive dust in the area caused by clearing activities and the dumping of rock. There will also be increased noise levels caused by these activities.

More long lasting impacts to vegetation and to fish and wildlife will also result from the riprapping of the levees. The levee will be cleared from the top of the levee to the toe. This distance will vary considerably depending upon what section of the river the levee is found in. Levees in three sections of the river will be riprapped. The following tabulation indicates the division of the river that will have levees riprapped, the average width of clearing, the miles of levee cleared, and the acres affected.

Division	Average Width of Clearing	Miles of Levee Cleared	Acres Affected
Mohave	40 feet	35 miles	170
Cibola	55 feet	30 miles	200
Yuma Limitrophe	40 feet	27 miles	130

Therefore, armoring the levees will impact 500 acres of levee area. Most of the vegetation is the screwbean mesquite-saltcedar association, predominantly saltcedar, with some cottonwood-willow south of Needles and some saltcedar-honey

mesquite in the Cibola Division. The density of this vegetation varies depending upon the location of the levee. About 50 percent of the levees are denuded of vegetation or very sparsely vegetated and would require very little clearing. Other sections of the levee support the above vegetative communities and would require a greater degree of clearing.

The wildlife associated with this vegetation will be displaced and probably lost. Wildlife populations should recover once the vegetation has recovered.

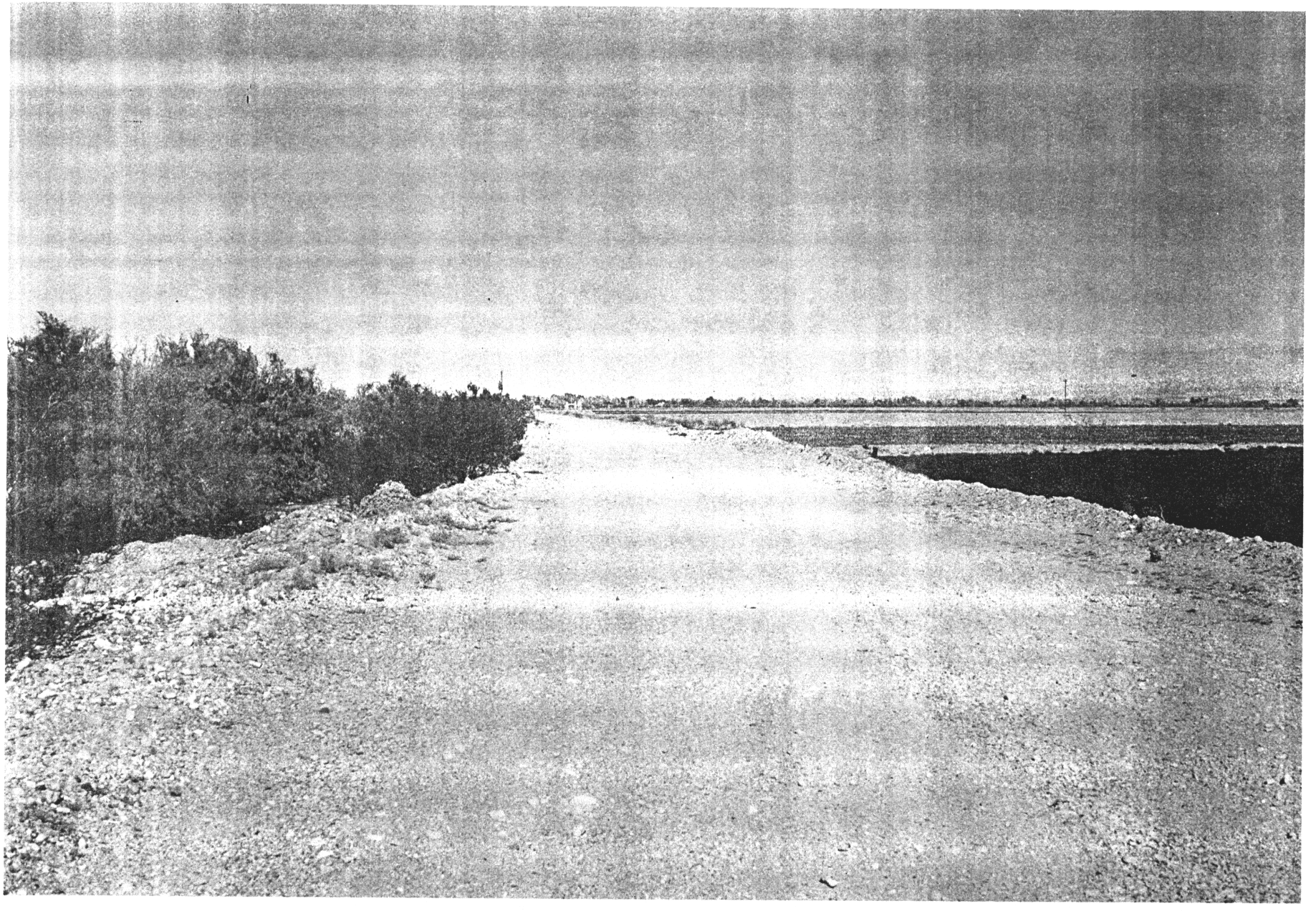
Clearing of vegetation could also affect the esthetic sensibilities of some water based recreationists.

d. Dredging

Both the Laguna Settling Basin and the Topock Settling Basin will continue to be dredged. Accumulated sediment, which in some places has formed sandbars, would be pumped from the river and carried by a pipe to the disposal area. A small segment of the Colorado River adjacent to the desilting works in front of Imperial Dam would also be dredged of accumulated sediment. Other dredging areas include the entrances to several marinas and riverside parks. The earlier tabulation given in Chapter II gives the quantity of sediment that would be removed from the different locations.

The impacts would be those caused by the dredging itself and those caused by disposing of the dredge spoil. There would be some fish lost to the dredge as it pumps up the sediment; however, the number of fish lost would be insignificant. Dredging would cause some slight turbidity in the immediate area of the dredge line itself; however, this slight turbidity would clear up within one day. Because the dredge material is fine sand, dredging would not result in any measurable turbidity in the general area. There would be no impacts at all to dissolved oxygen. Other impacts would be caused by disposing of the dredge spoil. Approximately 800 acres in the Topock Basin and 300 acres in the Laguna Basin are used as a depository of spoil. The vegetation currently on these areas would be covered; however, since most of these areas have recently been used for spoil placement, the vegetation has not yet returned. The majority of this vegetation is saltcedar and arrowweed. The vegetation would be allowed to recover to its natural state. No planting is currently planned. There would also be some increase in wind-borne dust from the newly placed piles of dredge spoil. When the vegetation recovers, the amount of wind-borne dust would be reduced.

The sediment itself is classified as clean, medium sand. This type of substrate is usually low in food value.



This photograph shows a levee on the Fort Mohave Indian Reservation which will be riprapped. It also shows the irrigated agricultural fields located adjacent to the

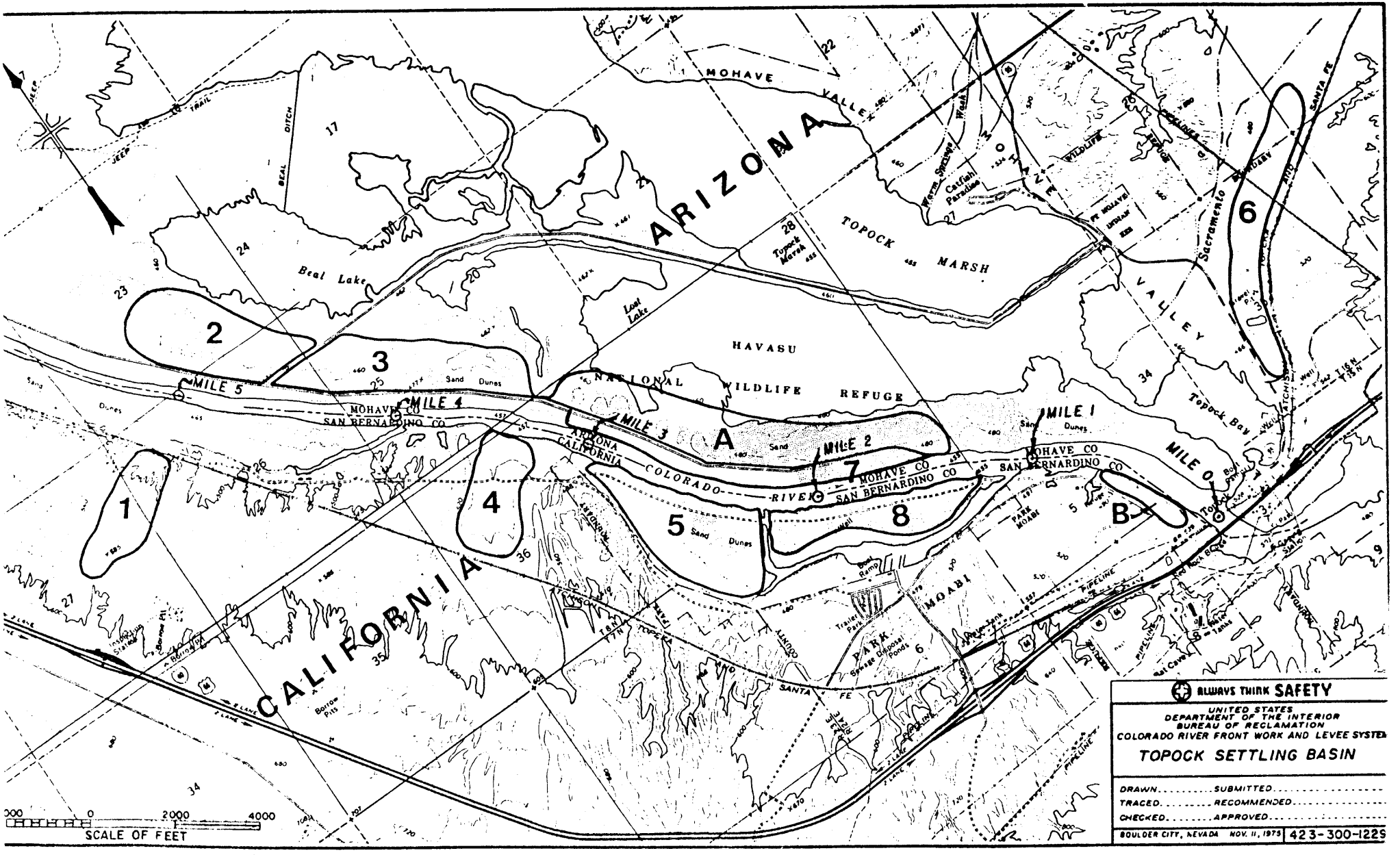
As a result, it is not of high value to most species of fish. However, sand bars do provide resting areas for wading birds and some habitat for small fishes. Removal of sand will not have any long term impacts on fish and wildlife. It will not have any effect on water quality because the material is inert and will not cause any pollution problems.

The disposal areas for dredging the small entrances to the parks and marinas are located adjacent to each entrance. Dredge spoil disposal areas for the settling basins are found adjacent to the settling basins. The disposal areas for the Topock Basin are those agreed upon during consultation between the Bureau and the Fish and Wildlife Service. The following maps of the Topock and Laguna Settling Basins show the locations for these disposal areas. A description of these disposal areas, with a discussion of the impacts, follows.

(1) Topock Settling Basin - Dredge Spoil Disposal Sites

(a) Area 1, on the California side at River Mile 238.9, is located in a wide wash above and beyond the railroad. It has approximately 300,000 cubic yards of disposal capacity. Development of a disposal site in this area would have to consider the possibility of a substantial amount of material washing back into the river during storm runoff. Plans would have to be developed to prevent this. In addition, filling in this area would increase erosion in the unoccupied bed. The distance from the river and the elevation of the site place it in the low production range of the dredge's operation capabilities, making the dredge operation itself expensive. The relatively small disposal volume, the expenses of developing the site, and the inefficiency of operation make this area very unattractive for use at this time and it would probably not be used within the next 5 years. This site is located outside the riparian zone classified by Anderson and Ohmart.

(b) Area 2, on the Arizona side at River Mile 238.9, is located in relatively flat terrain immediately adjacent to the river. It has a capacity of approximately 3 million cubic yards. This area is farther upstream than the presently established limit of the settling basin. Being adjacent to and level with the riverbank, it comprises an attractive site from the viewpoint of operating economy. It may be utilized at some future time if the settling basin is extended farther upriver but it would probably not be used within the next 5 years. This site is within that association classified cottonwood willow by Anderson and Ohmart. However a field reconnaisance of the area revealed no cottonwood or willow on the site.



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BUREAU OF RECLAMATION
COLORADO RIVER FRONT WORK AND LEVEE SYSTEM

TOPOCK SETTLING BASIN

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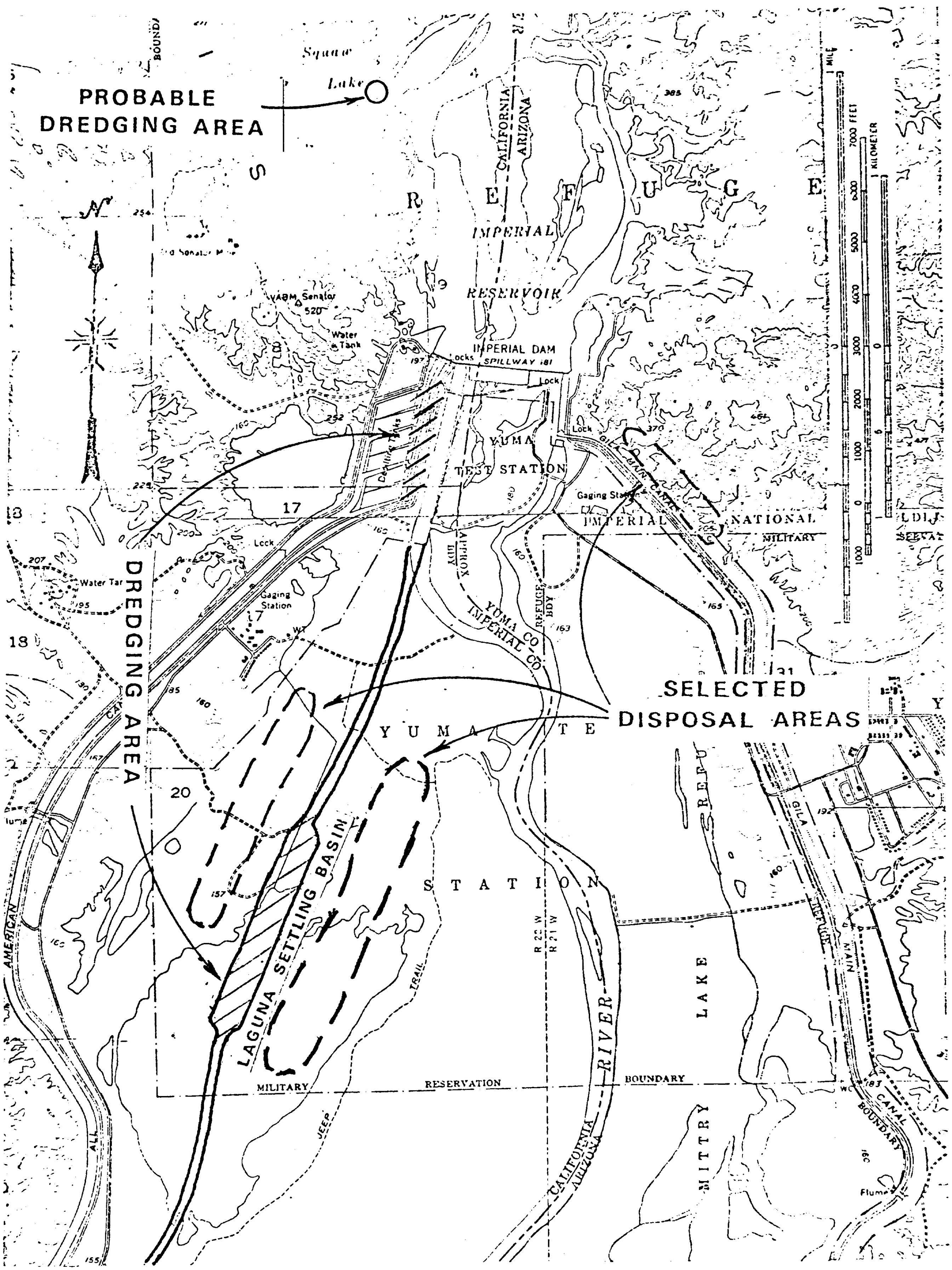

PROBABLE
DREDGING AREA
DREDGING AREA
SELECTED
DISPOSAL AREAS
IMPERIAL
RESERVOIR
IMPERIAL DAM
SPILLWAY 181
YUMA
TEST STATION
LAGUNA SETTLING BASIN
MILITARY RESERVATION BOUNDARY
RIVER
LAKE
MITTRY
CALIFORNIA
ARIZONA
GILA MAIN CANAL
ALL AMERICAN CANAL
R E F U G E
IMPERIAL NATIONAL
YUMA
STATION

(g) Area 7, on the Arizona side between River Mile 235.4 and River Mile 237.0, is a strip approximately 200 feet wide immediately adjacent to the river. Its capacity is approximately 930,000 cubic yards. Its use is attractive from the operational standpoint, and no significant problems are foreseen from its use. This site is not classified by Anderson and Ohmart as riparian.

(h) Area 8, on the California side at River Mile 235.4, is part of the existing Park Moabi. San Bernardino County has requested that a part of the existing park be covered with a blanket of dredged sand as a part of their park development. It is estimated that up to 1 million cubic yards can be placed in this area, depending on the time frame of development of the park and the timely availability of dredged material. This site is classified by Anderson and Ohmart as being in the salt cedar community.

(i) Area A, on the Arizona side, generally comprises the existing spoil areas between River Mile 235.4 and River Mile 237.5. This area is essential to the continued operation of the Topock Settling Basin, since it is located in the very heart of the basin. In order for this area to continue to be effectively utilized, and at the same time contribute to the development of the Topock Marsh, a change in the methods of sand discharge must be initiated. By constructing dikes with land equipment and extending the dredge land lines, further encroachment into the marsh area can be minimized. However, these methods seriously affect the efficiency of the dredge operation, reducing it by as much as 50 percent. Using diking, this area has a capacity of approximately 8,000,000 additional cubic yards. This site is classified by Anderson and Ohmart as being largely salt cedar.

(j) Area B, is a relatively small area on the California side at River Mile 234.4. It has been previously used and has a remaining capacity of approximately 160,000 cubic yards. A scheduled use is not being contemplated at this time and the site would probably not be used within the next 5 years. Due to this strategic location, its use should be reserved in case some natural happening or inadvertent mishap should require dredging the entry of the gorge. This site is outside the riparian zone classified by Anderson and Ohmart.

(2) Laguna Dredge Spoil Site

The Laguna Dredge spoil site consists of one fairly continuous site stretching for about a mile on both sides of the Laguna Desilting Basin. The site will be managed in such a way as to minimize the environmental impacts. Retention dikes would also be built around two limited areas of cottonwood/

willow communities. These dikes would protect the trees from excess water runoff caused by the dredge spoil. The dredge spoil would then be pumped into the site where it would slope away from the basin. The top elevation of a typical section will be 161 ± feet, which would constitute approximately 5-15 feet of dredge spoil on top of the existing elevation. The approximate slope will be 20:1. Crawler tractors would be used to construct retention dikes and maintain access roads.

The Anderson and Ohmart vegetation type maps indicate that the majority of vegetation on the subject site consists of arrowweed (32 percent) and saltcedar (31 percent). The remaining percentages are made up of more important types such as cottonwood/willow, screwbean mesquite, and marsh. The effects on vegetation would vary depending on its location. Vegetation occurring in the innermost area of the spoil site will be completely covered with spoil and thus receive the highest impact. The effects will become less as the spoil slopes away from the settling basin, because there would be less spoil to impact the vegetation. Excess water caused by dredge spoil could have a beneficial impact on the outermost edge of the basin. This area could be enhanced through the leaching of salts and increase in vegetation. Overall, the operation would be expected to have an insignificant effect, since the cottonwood/willow communities would be protected by retention dikes.

2. No Action Alternative

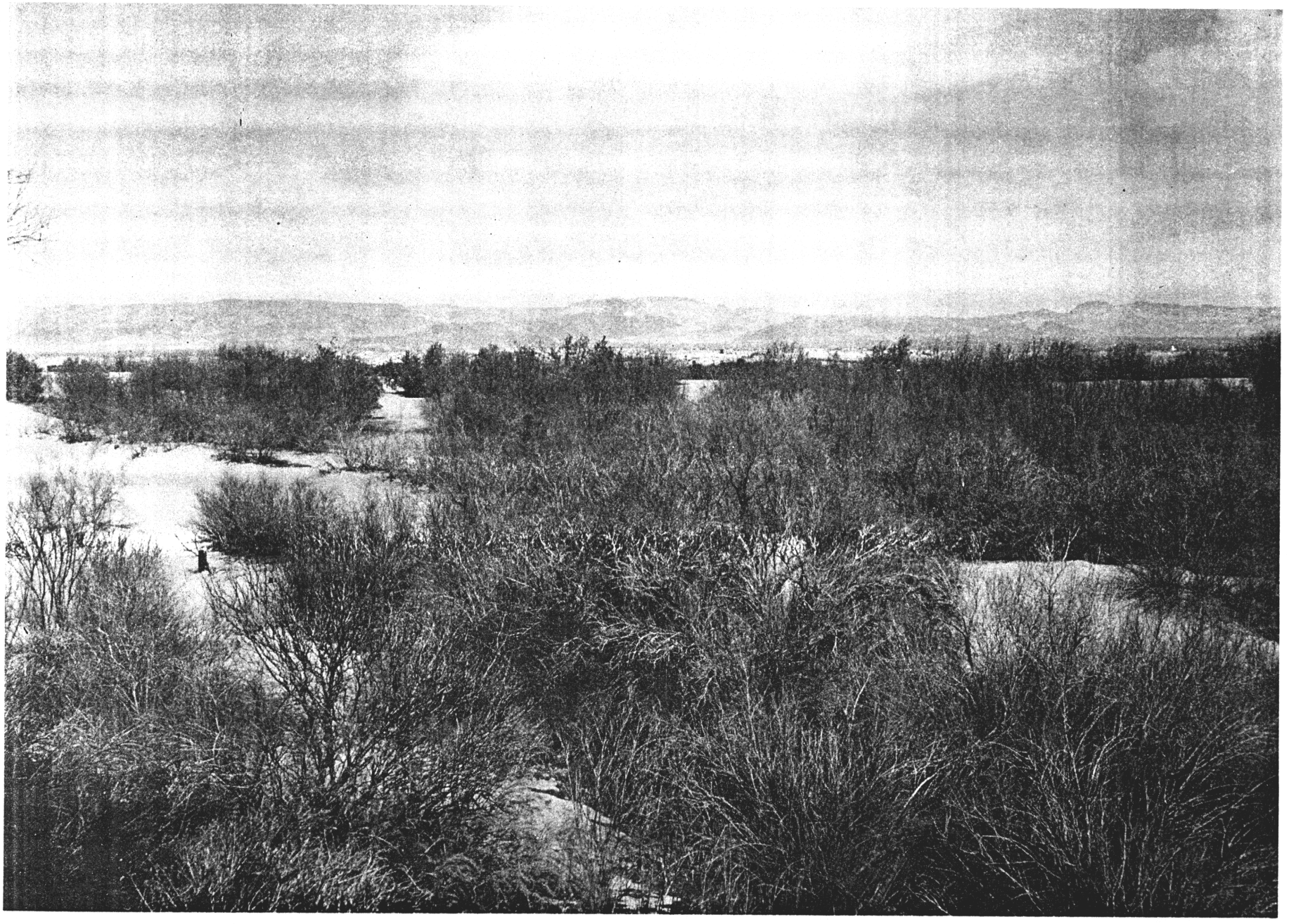
Under this alternative, the river banks would continue to erode, the levees would continue to deteriorate, and sediment would continue to accumulate in the river channels. The future would be one of continued flooding and a meandering river. The impacts of this no action alternative will be discussed in general terms by feature of the project.

a. The Quarrying Feature

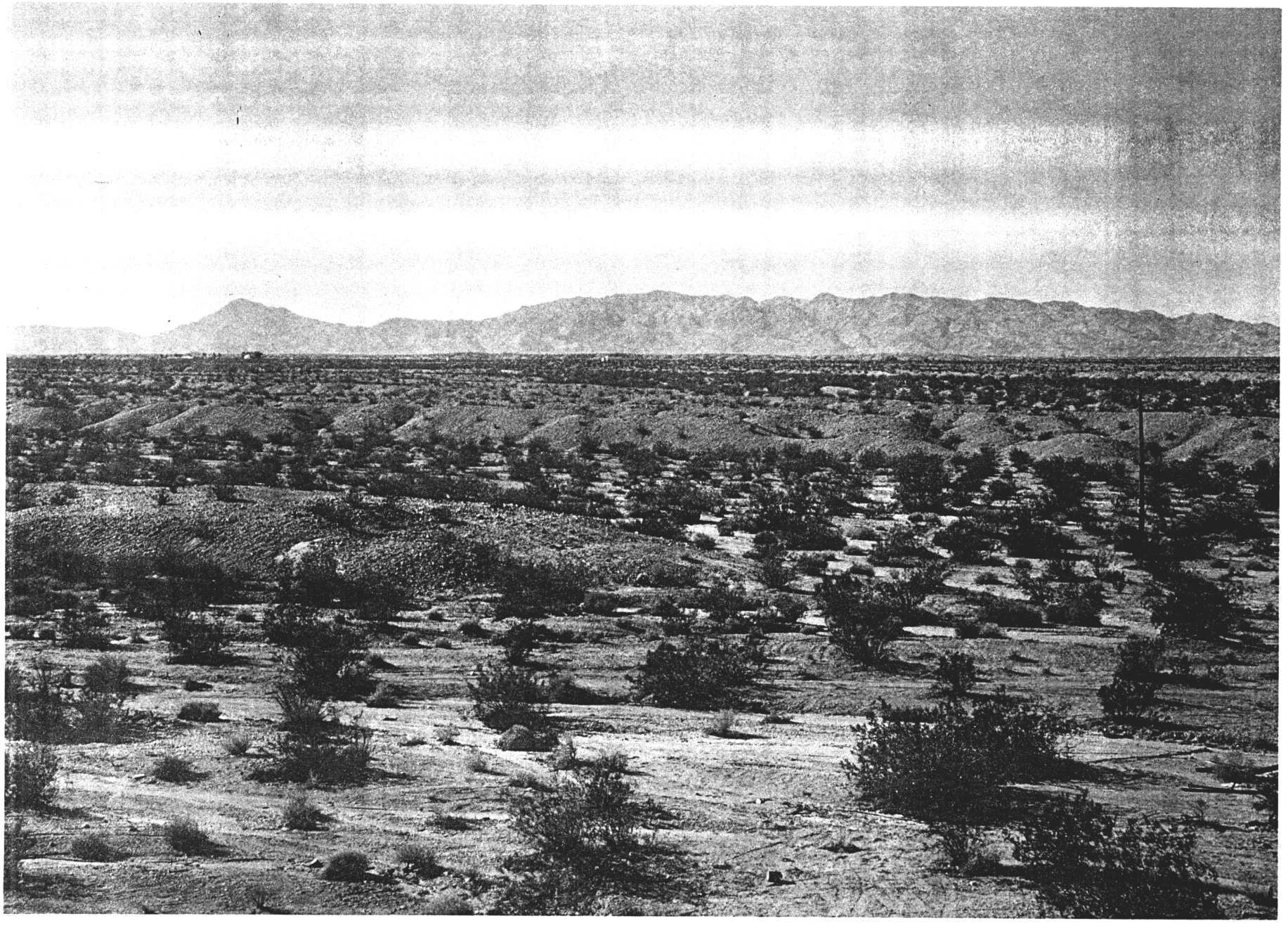
If the quarrying feature is not implemented, there would not be the disturbances to the environment caused by it. There would be no noise of quarrying, no dust from loading and transporting rock, and no esthetic degradation caused by removing large quantities of rock.

b. The Stockpile Feature

If the stockpile feature is not implemented, there would be fewer stockpile sites spread along the river. These stockpile sites do form a visual intrusion onto the environment. In addition, there would not be the dust and noise associated with transporting the rock to and from the stockpile sites.



This photograph shows a site, near the Topock Settling Basin, already used for disposing of dredge material. Note the regrowth of salt cedar.



This photograph shows an unused dredge material site located south of Needles, California.

This photograph shows a site, near the Topock Settling Basin, already used for disposing of dredge material. Note the regrowth of arrowweed.

c. The Riprap Feature

If the river banks are not riprapped, then they will continue to erode. This not only weakens the stability of the river's course, but it also causes this material to move downstream until it reaches a point where the river's sediment-carrying capacity decreases and the sediment settles out on the river bottom. The deposition of materials on the river bottom creates a problem of severe aggradation where sandbars develop, acting as a plug and restricting river flow. The water then backs up and causes flooding when the water overtops the river banks.

Not riprapping the riverbanks would cause other impacts as well. The river banks would not be stabilized, which in turn would cause the river to change its course from time to time, creating backwater areas which are beneficial to fish and wildlife. Stabilizing the river banks eliminates the creation of these backwater areas.

Not riprapping the riverbanks would also cut down on the temporary noise and dust caused by the dumping of rock on the riverbank.

In addition, high flows in the river would top the banks and inundate the overhanging vegetation, eventually destroying it.

Not riprapping the levees would pose a fairly serious threat of flooding in the future. Although the construction of large multipurpose dams on the Colorado has brought great reductions in downstream flood peaks, large flows are still possible below the dams. A levee-design flood was adopted in 1949 for use in flood-protection planning. Based on a severe but reasonable combination of hydrological and meteorological conditions occurring in the watershed, the design flood consists of releases through the dams as well as local inflow from tributaries below the dams.

The magnitudes of the design floods were computed by the Bureau in collaboration with the Corps of Engineers; the results were concurred in by the United States section of the International Boundary and Water Commission.

Flows of the levee-design flood are as follows:

Davis Dam to Paiute Wash	50,000 ft^3/s
Paiute Wash to Lake Havasu	70,000 ft^3/s
Parker Dam to Palo Verde Dam	50,000 ft^3/s
Palo Verde Dam to Taylor Ferry	75,000 ft^3/s
Taylor Ferry to Adobe Ruins	80,000 ft^3/s
Imperial Dam to Gila River	103,500 ft^3/s
Gila River to Southern International Boundary	140,000 ft^3/s

The levees could be overtopped by the peak high flood. The water velocities could also erode the levee banks sufficiently to cause the levees to be breached, thus flooding the adjacent valleys.

Since the levees were constructed, considerably more development has taken place in those protected valleys. There has been some increase in agricultural lands, but the primary growth has been in population in the more densely settled areas in Yuma and the Mojave Valley areas. The 1980 census figures recently released by the City of Yuma indicate a 60 percent population increase since 1970. The Mojave Valley in Arizona is considered experiencing a similar growth as indicated by aerial photos. Failure to riprap the levees would expose these growth areas to flooding.

d. The Dredging Feature

Not dredging the settling basins as proposed would cause the continued aggradation of the river channel, especially in the settling basin where water loses its sediment carrying capacity. This would cause the appearance of sand bars, which would cause the back up of water and the increased potential for flooding. An additional result of not dredging would be the decrease in the amount of dredge spoil around the settling basin.

IV. Mitigation

Mitigation measures have been closely coordinated with the Arizona Game and Fish Department, California Department of Fish and Game, and Bureau of Land Management. The following measures have been agreed to:

A. Times Gulch

In accordance with Arizona law the Arizona Commission will be given at least 30 days notice prior to excavation to allow inspectors an opportunity to check the area and salvage protected plants if necessary.

B. Twin Hills

Both the AGFD and the BLM would be notified in advance if any deviation from the described mining plan, such as light blasting, were necessary. To minimize possible impact on bighorn sheep, construction and quarrying activities would be restricted to the months of July through January.

The Arizona Commission would be given at least 30 days notice prior to construction and quarrying activities so that protected plant species can be salvaged.

C. Laguna Mountains North

The Arizona Commission will be given at least 30 days notice prior to construction and quarring activities so that protected plant species can be salvaged.

D. Mittry Lake

The Arizona Commission would be given at least 30 days notice prior to construction and quarrying activities so that protected plant species can be salvaged.

E. Eagle Pass Westerly and South Hill

In order to minimize impacts to bighorn sheep, an adit will be constructed in the Hidden Canyon area. Big game guzzlers will be constructed near Broken Mule Shoe Spring and Mort Spring. One additional adit or guzzler will be constructed at a mutually agreeable site in the general area. Construction and quarrying activities will be restricted to the months of November through February.

F. Big Maria Nos. 1 and 2

These areas were historically good deer habitat and the Bureau has agreed to develop permanent water sources in the areas in an effort to restore historical habitat values. This will be done by constructing one adit on or near each site and constructing ten small check dams in nearby washes to improve vegetative productivity. Access roads to the adits will be blocked at the conclusion of each contract. Bureau and CDFG personnel will jointly inspect the sites to determine the feasibility of blocking the primary access roads. At Big Maria No. 1. an 18 consecutive month period will be allowed for work done under the initial contract. Work done under subsequent contracts will be restricted to the months of April through September. At Big Maria No. 2., work will be limited to the months of April through September.

G. Vidal Junction

One big game guzzler will be constructed on nearby public lands. Quarrying activities will be restricted to the months of October through February in order to minimize impacts on mule deer movement and the desert tortoise.

H. Quien Sabe West

To reduce impacts to mule deer two check dams will be constructed in nearby washes and two adits will be constructed on or near the site. Construction and quarrying activities will be restricted to the months of June through September.

I. Hills Ranch

To minimize impacts to mule deer five small check dams will be constructed in nearby washes and one adit will be constructed on or near the site. Upon conclusion of quarrying activities, the access road will be blocked by a rock barrier.

J. Mission Wash

To improve the habitat for mule deer five small check dams will be constructed in nearby washes. The access road will be constructed out of the wash. Construction and quarrying activities will be restricted to the months of April through September, although further consultation may result in the construction of the southern 2 or 3 miles of access road during the winter months.

K. Manchester

In an effort to restore historical habitat value the Bureau has agreed to develop a permanent water source in the area. This will be done by constructing two guzzlers and/or adits on a mutually agreeable site in the Dead Mountains.

V. Consultation and Coordination

A. General

The river maintenance work discussed in this assessment has been a continuing item of interest at the Lower Colorado River Management Program Work Group meetings. This work group, organized in early 1973, meets regularly to discuss items of mutual interest in managing the river. The membership of this work group includes the following agencies:

The Bureau of Reclamation
The Bureau of Land Management
The Fish and Wildlife Service
The Bureau of Indian Affairs
The Corps of Engineers
The California Department of Fish and Game
The California State Lands Commission
The Colorado River Board of California
The Arizona Game and Fish Department
The Arizona Department of Water Resources
The Nevada Division of Wildlife
The Division of Colorado River Resources, Nevada
The Colorado River Indian Tribes

The State Historic Preservation Officers for the states of Arizona, California, and Nevada were consulted, as well as the site repositories for the counties of San Bernardino, Riverside, and Imperial, California.

Mr. William Pink, Executive Secretary of the Native American Heritage Commission has been consulted in regard to P.L. 95-341, the Native American Religious Freedom Act. His office has not yet responded.

The Fish and Wildlife Service was consulted under the provisions of the Endangered Species Act. A list of endangered and proposed endangered species was obtained from the Service.

A scoping meeting was held on January 8, 1980. Approximately 170 government agencies, citizen groups, and individuals were invited to attend this meeting. Representatives from the Fish and Wildlife Service, Arizona Game and Fish Department, and the Army Corps of Engineers attended this meeting. The main concern expressed was about the additional dredge spoil being deposited near the Havasu National Wildlife Refuge. The Arizona Game and Fish Department was concerned about dredge spoil blowing into the Refuge. All agencies represented at this meeting received a copy of the draft assessment when it was sent out for review in August 1981. See Appendix D for a listing of those agencies that received a copy of the Draft Environmental Assessment. Several agencies, including the BLM, FWS, AGFD, and CDFG commented on the assessment. Most of the comments dealt with the impacts of the quarries on bighorn sheep, mule deer. and wilderness areas. The letters of comment and the Bureau responses are attached as Appendix E. The draft assessment was revised to reflect the comments received and sent out along with the letters of response in February 1982. In these letters the Bureau agreed to meet with the BLM, AGFD, and CDFG to discuss the impacts of quarrying.

On February 26. 1982, representatives of the Bureau met with the California Department of Fish and Game in Long Beach, California. The quarry sites located in California were discussed and a field reconnaissance was planned. On September 13 and 14, 1982, representatives of the Bureau and the CDFG conducted an aerial survey of several proposed quarry sites along the Colorado River in California. The purpose of the trip was to identify and discuss potential mitigation features related to development of the proposed California quarries. Mitigation features have been agreed on and are included in this assessment in Chapter IV.

On March 4, 1982, representatives of the Bureau met in Phoenix, Arizona, with representatives of the AGFD. The quarry sites proposed for Arizona were discussed and agreement was

subsequently reached to drop one quarry from further consideration in this assessment and to defer use of Osborn Wash South because of environmental considerations.

On May 26, 1982, representatives of the Bureau and BLM conducted an aerial tour of the proposed quarry sites in California. Ongoing discussions with the BLM are continuing as part of the permitting process.

B. BLM Permit

During the past several years, numerous meetings have been held with the Bureau of Land Management to coordinate the Front Work and Levee System work with BLM's California Desert Conservation Plan and Wilderness Program. Since portions of the work would take place on BLM land, the Bureau must obtain a use permit from BLM. This assessment will be used to provide environmental clearance for this BLM permit.

C. 404 Permit

In addition to the permit from BLM, the Bureau must obtain a 404 permit from the Army Corps of Engineers. On October 18, 1972, Congress passed Public Law 92-500. Section 404 of this law requires that a permit be issued by the Army Corps of Engineers for the discharge of dredge or fill material into navigable waters of the United States. Since the maintenance work on the river was begun many years before the legislation was passed requiring 404 permits, no 404 permit was needed or obtained for the maintenance program. However, because of the advent of the recent legislation requiring 404 permits for dredging and riprapping, the Bureau is applying for a 404 permit for future maintenance on the lower Colorado River.

Colorado River maintenance dredging would be subject to the 404 requirement because water, which is an integral part of the dredged material, would eventually drain back into the Colorado river. Therefore, it has been determined that a 404 permit is necessary for this action. Applying for a 404 permit requires that the new EPA Guidelines for Specification of Disposal Sites for Dredged or Fill Material be followed. The following discussion addresses the questions found in Section 230.5 "General Procedures to be Followed," of the EPA Guidelines.

a) The restrictions on discharge found in Section 230.10 [a] - [d] have been reviewed in the light of this proposed action. None of the restrictions on discharge found in Section 230.10 apply to this action. There are no practicable alternatives to this action which would have fewer adverse impacts to the environment, and there is nothing in the dredged material which would be a health hazard to humans

This photograph shows a disposal site on which dredge material was recently deposited. This site is near the Topock Settling Basin.

or animals. Environmental degradation or pollution is not an issue with the dredged material.

b) A General Permit is not in effect at this time. However, a General Permit is being requested for this action. A General Permit would cover discharge of dredged material discussed in this assessment in various locations along the Colorado River to take place over the next 5 years.

c) The discharge sites indicated were developed during a study of the maintenance dredging operation, and there are no other known practicable alternatives to discharging the dredged material onto the sites indicated. To be a practicable alternative to the proposed action according to the Guidelines, the alternative would have to meet one of two conditions. One, the alternative would have to preclude the discharging of dredged material into the waters of the United States. To implement this feature, the dredged material sites would have to be diked and the water held and evaporated so it would not return to the river. Two, the dredged material would have to be discharged into some other area which would be less damaging to the environment.

Neither feature would be practicable in this case because the dredged material is inert and the water would not deteriorate in quality from the time it is taken from the river until the time it returns to the river, nor is there any environmental damage when it does return to the river. Therefore, there is no practicable alternative which causes less environmental damage.

d) The proposed dredged deposit sites are above the normal active river water surface, but within the flood plain. The dredged material will be contained in the designated areas for dredged deposit. The sites are on old dredge material or stratified alluvial deposits. The old dredge material deposits consist of poorly graded subangular sand, shown on gradation test, Figure No. 1. It contains a few freshwater clam shells, is very loose, and is tan in color. The stratified alluvial deposits consist of stratified beds of low plastic fines, sand, and gravel as shown on sediment size analysis, Figure Nos. 2 and 3. These materials have some dry strength and slight cementation and are tan in color.

e) In the environmental assessment, a discussion of environmental consequences and effects are presented. The effect on water flow and fluctuation are discussed in detail. The salinity of water returning to the river from the dredging operation will not increase. The dredge material from the river beds are sands and gravels. These materials by their

nature will not increase the salinity and turbidity of the return water.

f) The environmental assessment discusses the impacts on biological characteristics of aquatic ecosystems, impacts on special aquatic sites, and effects on human use. Also discussed are the measures to reduce these impacts and effects.

g) Factual determinations in paragraphs 230.11 of section 404 (b)(1) have been reviewed. Information is on file for the permitting agency to determine short- and long-term effects of the proposed dredge and fill material.

h) The material dredged is composed of river-borne sand, gravel, and other natural occuring inert materials. The areas to be dredged are in the existing river bed which has been filled by river sediment from upstream locations. Because the source of sand and gravels is the active river bed and washes along the river, the dredge material is not chemically contaminated or physically incompatible with the material being discharged.

i) There is no reasonable probability of chemical contamination. Refer to the paragraph above and the environmental assessment.

j) The environmental impacts are thoroughly discussed in the environmental assessment and need not be further discussed in this paragraph.

k) The factual determination has been made. Each of the items in paragraph 230.11 is documented above or in the Environmental Assessment. If more detailed information is required, the project file has the needed information. The information includes:

1) Physical substrate determination
2) Water circulation, fluctuation, and salinity determinations
3) Suspended particulate/turbidity determinations
4) Contaminant determination
5) Aquatic ecosystem and organism determinations
6) Proposed disposal site determination
7) Determination of cumulative effects on the aquatic ecosystem
8) Determination of secondary effect on the aquatic ecosystem

l) This document fulfills the requirement for Finding of Compliance.

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FIGURE No. 2

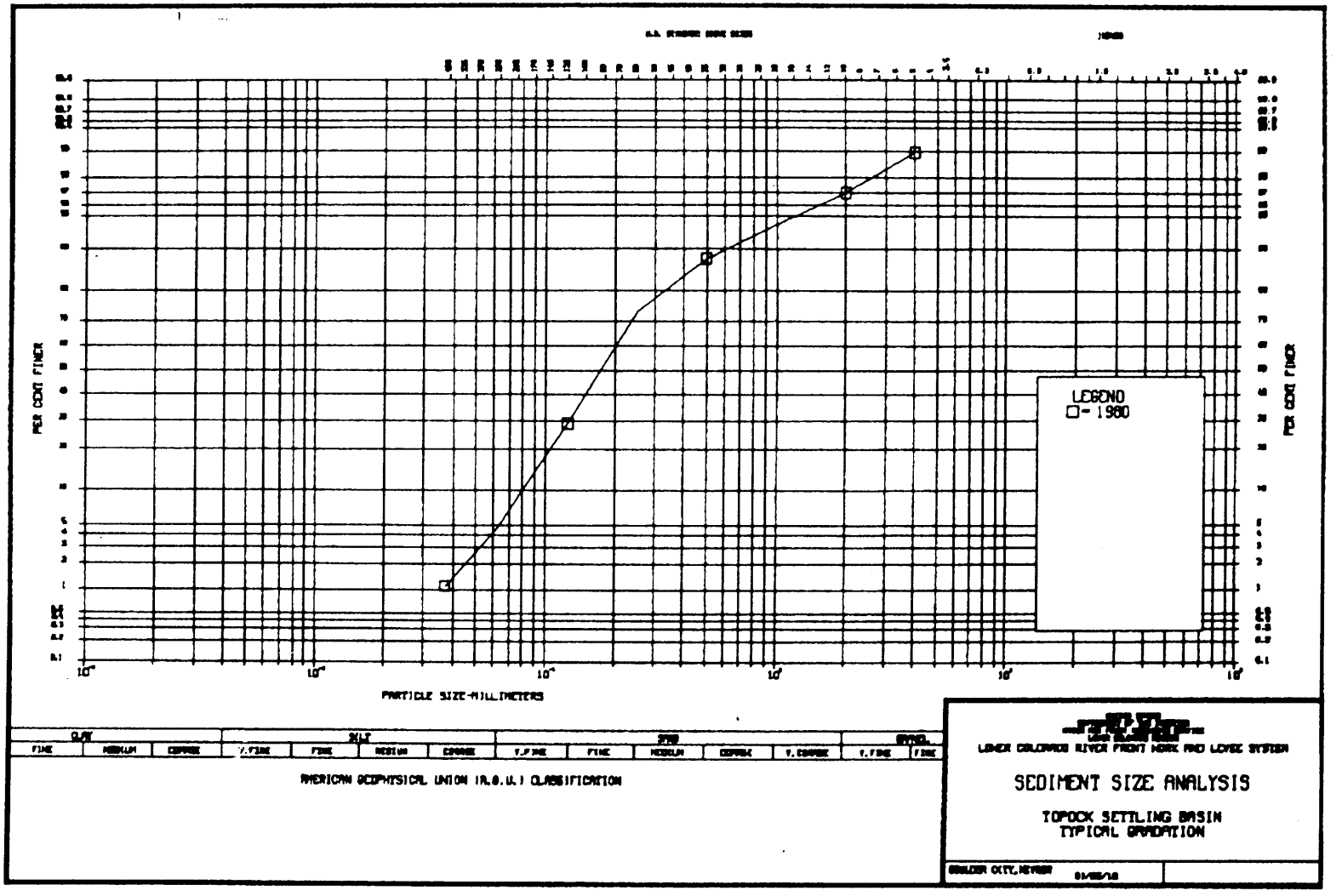

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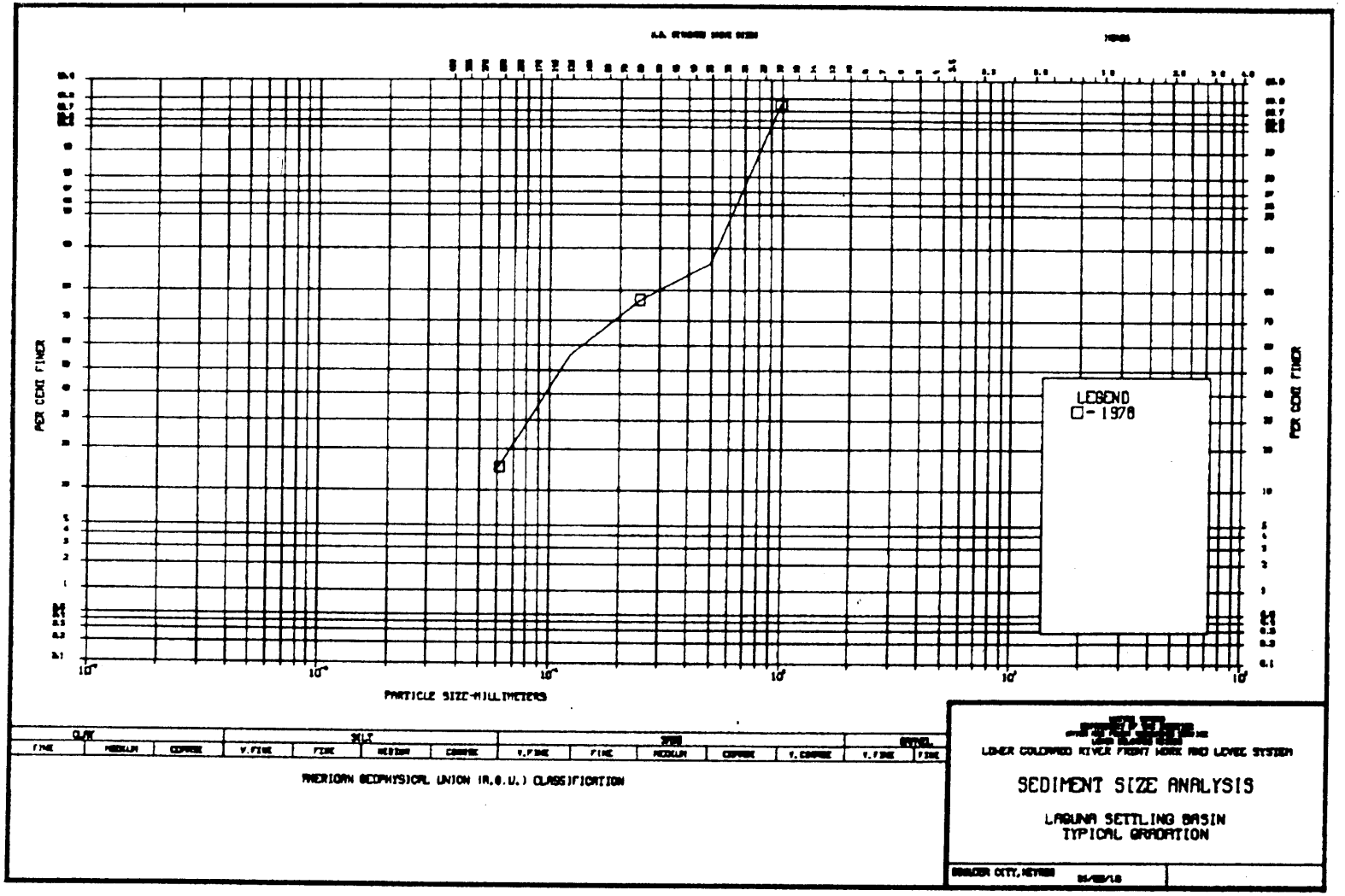
FIGURE NO. 3



D. Executive Orders 11988 and 11990

Since much of the bankline stabilization and levee riprapping is performed within the levees, they are subject to Executive Order 11988, which deals with all Federal action in the 100 year flood plain of a river and 11990 which deals with wetlands. These Executive Orders were considered in the preparation of this assessment. This action would take place in the flood plain because banklines and levees are by their very nature in the flood plain. The action is not in conflict with state and local flood plain regulation. The impacts to the flood plain are discussed in this assessment. So far as is known, the impacts would be limited to the immediate area. There would be no wide ranging impacts outside the flood plain, except insofar as the action provides flood protection to the area on both sides of the Colorado River beyond the levees.

The project was also considered from the point of view of Executive Order 11990. It was determined that this project would have no impacts on any wetlands values of areas found adjacent to the river in the project area.

Appendix A
Discussion of the Four Basic Mining Plans for Quarrying Riprap Material

The four basic mining plans for quarrying riprap material are described below.

Plan A

This plan is for gently sloping quarries with tops that can be reached by haul roads with average grades of less than 8 percent and no local grades exceeding 12 percent.

Quarries of this type will be mined from the top down. Successive lifts will generally be around 40 feet. The working face will have a backslope to match a prominent rock joint if such a joint is present. As the quarry limit is reached, the backslope will be flattened to a 1 to 1 or flatter slope, or benches will be left to provide an overall slope not steeper than 1:1.

Processed rock will be hauled directly from the benches. Access roads will generally be designed 24 feet or more in width. Where necessary, extra road width with a heavy earth berm will be provided at such locations as adjacent to deep fills.

The following equipment would be utilized in Plan A quarry operations.

a. A mechanically operated Grizzley and screening plant
b. Two or three rubber-tired front end loaders
c. Three to six trucks, depending on the distance to where the rock is being utilized and the capacities of the trucks
d. A crane with a crushing ball for breaking oversize material
e. A compressor and air drills
f. A contractor-furnished scales for weighing quarried materials
g. Several pickups and employees' private automobiles

Between 8 and 14 laborers, a foreman, and a Government inspector would be required in the work area under Mining Plan A.

Plan B

Mining Plan B is the general plan for steep quarries which cannot be reached by gently sloping haul roads.

Under this plan, the quarry will be mined from the bottom up. As each new level is developed, equipment access roads with average grades of 18 percent and local grades of 24 percent maximum will be constructed for the drilling equipment. The equipment access roads will generally be 12 feet wide but may vary from 8 feet to 20 feet.

The equipment and labor force as itemized for Mining Plan B would be the same as for Mining Plan A.

Plan C

This plan is for high, nearly vertical cliffs.

Under Mining Plan C, development of the quarry will require removal of talus and waste at the base of the cliff. The talus, if suitable, will be utilized for riprap. The waste will be used to form a work area for the riprap and to form a flat area encompassing from 2 to 4 acres in which to locate the processing plant and the loading area.

After the work area has been established, coyote tunnels will be excavated into the base of the cliff, loaded, and blasted. The equipment for each of the three phases of work is as follows:

Phase I--establishment of the work area:

(1) 2 to 3 D-9 dozers
(2) 1 to 2 rubber-tired front end loaders
(3) Air compressor and air drills to remove weathered or highly fractured rock
(4) Grizzley and screening plant, if talus is suitable for riprap

Phase II--excavating coyote holes, drilling and blasting:

(1) Air compressor and air drills
(2) Track and muck cars
(3) Rubber-tired front end loader

Phase III--processing and hauling riprap:

(1) Mechanically operated Grizzley and screening plant
(2) 2 to 3 rubber-tired front end loaders
(3) 3 to 6 haul trucks
(4) A crane with a headache ball
(5) A compressor and air drills for breaking oversize materials
(6) Scales for weighing quarried materials

Between 6 and 14 laborers, a foreman, and a Government inspector would be in the work area.

Plan D

This plan is for harvesting rocks lying on the surface of the ground. It is expected that the contractor would doze the rock into piles at convenient locations for loading. In-place rock, if present, would be ripped and/or blasted loose and utilized. Normally, rock obtained from surface rock salvage operations is subangular and would be mixed with rock from a conventional quarry operation to obtain suitable riprap.

The equipment to be used in a surface rock salvage operation would include:

a. One to three dozers with rippers where appropriate
b. One rubber-tired loader
c. Three to six haul trucks
d. Scales for weighing rock

Between 5 and 10 laborers, a foreman, and a Government inspector would be in the work area.

APPENDIX B - QUARRY SITES

(1) Times Gulch (NW¼, sec. 18., T. 19 N., R. 20 W., Arizona)

(a) Terrestrial Resource

The proposed quarry site is a sharply sloping (slope 1:1) vertical rock face on the north side of a large wash. The work area would be located in the wash at the bottom of the cliff. Care would be exercised in designing the work area so that it would not interfere with storm flows. A maximum of 2,300,000 tons of rock would be removed from this site and about 27 acres of land would be disturbed.

Considerable preparatory work would be required to remove the large talus and wash deposits at the base of the cliff. Much of the material would be used to form the work area and the remainder for haul road construction. A final decision has not yet been made as to placement of the access road. The road would either be an existing road connecting the site with a powerline O&M road, or a new road placed in a small wash and connecting the site with the existing access road into the abandoned Sierra Quarry.

Upon completion of each stage of the mining operations, a very steep rock face would be left with a slope comparable to or slightly steeper than the existing slope. All specifications would require removal of all loose rock and scaling to insure the safety of the next operation and the public between operations.

(b) Vegetation

Vegetation on the proposed quarry site is sparse, consisting primarily of scattered creosote bush and barrel cactus. Vegetation in a small wash immediately adjacent to the quarry site is very dense because of several seasonal water catchments and seeps which originate on the proposed quarry site. Although this natural water source will be eliminated during quarrying operations, it will be restored and improved once quarrying is completed. Vegetation on and around the seeps includes creosote bush, sweet-bush, brittlebush, bursage, Opunita sp., ocotillo, catclaw acacia, cholla, yucca, grasses and forbs. Vegetation on the work site is also quite dense and similar to the seep areas. Vegetation on the access road is much less dense, since the wash has been used as a jeep trail. Vegetation in the wash includes creosote bush, brittlebush, grasses and forbs, with scattered catclaw acacia, cholla, and ocotillo.

The project would result in the loss of 27 acres of vegetation for the quarry site, work area, and access road. In addition, the disturbance or destruction of the seeps would result in the loss of much of the vegetation on and around the seep areas and in the wash. However, once the seeps are restored, vegetation should eventually return.

(c) Wildlife

As a result of the dense vegetation and seasonal water supply, the site is used by wildlife. Many jackrabbits, cottontail rabbits, and Gambel's quail were observed by Bureau biologists on the site. Signs of relatively large populations of coyotes, rodents, reptiles, and raptors were observed, primarily in the vicinity of the seeps. Burro populations are obviously high in the area. Many burros were observed, and damage and trailing due to burros is extensive. What were believed to have been three bighorn sheep were sighted on a hill south of the wash, but were too far away for a positive identification. Sheep have historically used the area around the site. A herd of approximately 35 sheep were known to be in the general area as recently as 1978. However, no sign of sheep was observed around the water tanks during two days of observation and AGFD considers this site to be within low value bighorn sheep habitat which presently suffers from human disturbance and lack of water. Impacts to this habitat as a result of this activity are expected to be insignificant.

Wildlife on the site would be forced to relocate and some would perish. While the seeps and water tanks are disturbed, wildlife dependent upon them for a water supply would be forced to find alternative sources of water and some would perish.

(d) Archaeology

A class I literature search and a Class III field survey were conducted. The results of both indicated that no significant archaeological or historical resources would be affected by the proposed quarrying.

(e) Esthetics

This site is designated a visual resource management Class I. This designation provides for sites where change is limited mainly to natural ecological changes; however, it does not preclude very limited management activity.

The removal of 2,300,000 tons of rock from the site would result in the destruction of the entire rock face and a unique desert water hole. This water hole will be restored after quarrying is completed. This, combined with the loss of associated vegetation, would result in a noticeable scar. The site is not visible from any major roads or population centers; however, there is an existing access road (jeep trail) that goes to within a mile of the site.

(f) Land Use and Ownership

This site is on Bureau of Land Management (BLM) land. An existing road connects the site with a powerline O&M road and ultimately with the Oatman Road. Evidence of mining, prospecting, and hunting was observed. The area has apparently been grazed in the past, as the wash is fenced approximately 1½ miles west of the quarry site. The proposed action would have little impact on land use. Public use of the area may increase slightly if a new road is constructed.

(2) Twin Hills (NW¼, SE¼ and SW¼, NE¼, sec. 9., T. 17 N., R. 20 W., Arizona)

(a) Terrestrial Resource

The proposed quarry is located southwest of McHeffy Butte. All of 240,000 tons of rock would be removed from this site resulting in a disturbance of approximately 21.5 acres. The quarry would consist of two very low hills approximately 60 feet in elevation above the surrounding, relatively flat, terrain and would be very inconspicuous because of the very high hills to the east.

The quarry site is covered with a moderate amount of talus and may have some in-place rock suitable for ripping. The quantities of rock shown in Table 1 were calculated for a quarry without suitable in-place rock and would be revised if suitable rock is found. Recent core drilling has confirmed that only a minimal amount of inplace rock is available.

The work area would be located at the base between the two very low hills. The access road, which would connect the site with an existing powerline O&M road, would follow a small wash and then come up onto an extensive flat.

(b) Vegetation

Vegetation on the access road site is relatively heavy in the wash areas, consisting primarily of creosote bush, bursage, brittlebush, Mormon tea, cholla and paloverde. Vegetation on the proposed quarry site is sparse

because the hills are covered with talus. Quarrying this site would result in the loss of 21.5 acres of vegetation.

(c) Wildlife

Signs of burros, rabbits, coyotes, rodents, and reptiles were observed on the site. As a result of this project wildlife on the site would be forced to relocate and some would perish. However, since no blasting will be required, impacts on sheep are expected to be minimal.

(d) Archaeology

Both a class I literature search and a Class III field survey were conducted. Three isolated lithic features were located. These features would be impacted by the blasting and hauling activities. However, none of the features meet the criteria for eligibility for inclusion on the National Register of Historic Places.

(e) Esthetics

This site is designated a visual resource management Class II because it is within a wilderness study area. If it were not within a wilderness study area it would be designated Class III. Quarrying this site would not change the characteristic landscape. The removal of 240,000 tons of rock would disturb large areas of desert varnish, resulting in severe visual impacts. The site is not visible from any population centers or major roads; however, it is visible from the old Oatman Road.

(f) Land Use and Ownership

This site is located on BLM land. No roads exist on the site, and no evidence of public use was observed. The construction of an improved road would probably result in increased public use of the area.

The site is located in BLM Arizona Wilderness Study Area Number 2-28. This project may impair the suitability of the area for preservation as wilderness.

(3) Osborn Wash - South (NW¼, sec. 15, T. 9 N., R. 18 W., Arizona)

(a) Terrestrial Resource

The proposed quarry site is a horseshoe-shaped rock shelf on the edge of a small wash. The work

area would be in the wash bottom. The access road would cross a flat sandy area and enter the wash. It would be constructed through the center of the site and then doubled back both east and west along the outside perimeter of the quarry. A maximum of 925,000 tons of rock would be removed from this site resulting in the disturbance of 20 acres.

(b) Vegetation

Vegetation on the access road site is relatively sparse, consisting primarily of palo verde, cholla, ocotillo, forbs, and grasses. Vegetation is more dense in the wash. Dominant species in the wash are creosote bush, brittlebush, bursage, barrel cactus, grasses, and forbs. Quarrying this site would result in the loss of approximately 20 acres of vegetation.

(c) Wildlife

Evidence of very high populations of rodents and reptiles, primarily sidewinders, was observed on the site. Signs of coyotes, rabbits, and what was believed to be kit fox, were also observed. Wildlife on the site would be forced to relocate and some would perish. Several small water entrapments in the wash would be destroyed. The large populations of rodents and reptiles on the site may result in a relatively high mortality during construction of the access road. This in turn could affect predator use of the site.

This site is in an area which is being developed as bighorn sheep habitat by the AGFD and the BLM. Several permanent water sources have been developed in the area in an attempt to attract sheep away from the Parker Strip area. During a meeting with AGFD on March 4, 1982, the Bureau agreed to drop this site from immediate consideration; however, it was also agreed that this site would remain in the Bureau's long-range plans and that in 1987 the Bureau would again consult with the AGFD regarding the status of bighorn sheep in the area.

(d) Archaeology

Both a Class I literature search and a Class III survey indicated that no significant archaeological or historical resources would be affected by the proposed activities.

(e) Esthetics

This site is designated a visual resource management Class II because it is within a wilderness study area.

The removal of 925,000 tons of rock and 20 acres of vegetation would disrupt the desert varnish and result in a noticeable scar.

The area is undisturbed and has no existing roads. An access road would have to be constructed; however, it would not be highly visible because of the sandy character of the area. Portions of the site would be visible from a surfaced road.

(f) Land Use and Ownership

This site is located on BLM land. Although there are no existing roads on the site, the area has been disturbed by off-road vehicles. Cattle are currently being grazed in the area. The site is located in BLM Arizona Wilderness Study Area 5-12.

Construction of an access road may result in increased public use of the area. Suitability of the area for preservation as wilderness may be impaired.

(4) Laguna Mountains North (SE¼, sec. 17, and NE¼, sec. 20, T. 7 S., R. 21 W., Arizona)

(a) Terrestrial Resource

The proposed quarry site is a rock shelf on the edge of a small wash. The work area would be located in the wash bottom. The access road, which would connect the site with an existing O&M road, would cross a flat mesa and then proceed up the wash. All of the available 200,000 tons of rock would be removed from this site resulting in the disturbance of approximately 10.5 acres.

(b) Vegetation

Vegetation on the proposed quarry site and the mesa is relatively sparse, consisting primarily of creosote bush, grasses, and forbs. Vegetation is more dense in the wash. Dominant species in the wash are creosote bush, brittlebush, palo verde, smoke tree and ocotillo. One or two small saguaro cactus are growing on the edge of the proposed quarry site. Attempts will be made to relocate these cacti if it appears that quarrying will affect them. The project would result in the loss of 10.5 acres of vegetation.

(c) Wildlife

Signs of reptiles, and rodents were observed on the site. Wildlife on the site would be forced to relocate and some would perish.

(d) Archaeology

Both a Class I literature search and a Class III field survey indicated that no significant archaeological or historical resources would be affected by the proposed activities.

(e) Esthetics

This site is designated a visual resource management Class II. This site is in an undisturbed area.

The removal of 200,000 tons of rock and 10.5 acres of vegetation and the construction of an access road would result in noticeable scars. This site is not visible from any population centers or major roads.

(f) Land Use and Ownership

This site is owned by the United States Government and is part of the Yuma Proving Grounds. No roads exist on the area and little evidence of public use was observed. Construction of an access road into the site would probably increase public use of the area.

(5) Mittry Lake ($S\frac{1}{2}$, $SE\frac{1}{4}$, sec. 14, and $N\frac{1}{2}$, $NE\frac{1}{4}$, sec. 23, T. 7 S., R. 21 W., Arizona)

(a) Terrestrial Resource

All of the available 150,000 tons of rock would be mined on about 8 acres of this site. The proposed quarry site is a rocky slope rising 200-300 feet above the floor of a small wash. The work area would be located in the wash bottom. The access road would be placed in the wash and would connect the site with an existing O&M road.

(b) Vegetation

Vegetation on the site is relatively sparse. The wash appears to carry small but high velocity flows which prohibit the establishment of extensive vegetation. Dominant species in the wash are creosote bush, brittlebush, cheese-bush, cholla, and ocotillo. Vegetation on the slopes consists entirely of grasses and forbs. Quarrying this site would result in the loss of approximately 8 acres of vegetation.

(c) Wildlife

Signs of wild burro, coyotes, reptiles, and rodents were observed on the site.

Wildlife on the site would be forced to relocate and some would perish. Several small water entrapments in the wash would be destroyed. This should not affect large mammals as alternate water supplies are located nearby.

(d) Archaeology

Both a Class I literature search and a Class III field survey indicated that no significant archaeological or historical resources would be affected by the proposed activities.

(e) Esthetics

This site is designated a visual resource management Class III. This site has already been disturbed by prospectors and burro trailing. Visual impacts resulting from quarrying would be minimal because of previous disturbances. This site is visible from the Colorado River.

(f) Land Use and Ownership

This site is on Reclamation Withdrawn land. No roads exist on the site, but it has been heavily disturbed by prospectors and burro trailing.

(6) Eagle Pass Westerly (NW¼, sec. 19, T. 8 N., R. 22 E., and NE¼, sec. 24, T. 8 N., R. 21 E., California)

(a) Terrestrial Resource

The proposed quarry site is the rock shelves on both sides of a large wash. Approximately 10,000,000 tons of rock would be removed from this site resulting in the disturbance of approximately 89 acres. The work area would be in the wash bottom. The existing access road for the Eagle Pass site would be used, but would require widening in this area.

(b) Vegetation

Vegetation is relatively sparse for a desert wash community. Dominant species are creosote bush, brittlebush, cheese-bush, sweetbush, smoke tree, and catclaw acacia.

Vegetation on approximately 85 acres would be lost. Very little vegetation would be lost along the access road, as the road will require only minor improvements.

(c) Wildlife

Signs of rabbits, coyotes, reptiles, and rodents were observed on the site. Quarrying this site would force wildlife on the site to relocate and some would perish. This site is within an area considered to be critical bighorn sheep habitat because of several nearly permanent water sources. CDFG believes this site to be an important brooding and nesting area for raptor.

(d) Archaeology

A Class I literature search was initiated for this area. No sites were recorded in the immediate vicinity of the quarry; however, several sites were recorded to the west of the proposed quarry and haul road. A Class III survey located one isolated feature (evidence of mining debris) which would be impacted by blasting and hauling rock. None of these features appear to be eligible for the National Register of Historic Places. The results of the field survey indicate that no significant archaeological or historical resources would be affected by quarrying.

(e) Esthetics

This site is designated a visual resource management Class II because it is within a wilderness study area. Otherwise it would be designated Class IV because it has an existing access road and quarry.

Quarrying this site would result in a noticeable scar; however, quarrying may also help improve the condition of the area by removing boulders from the wash. According to BLM these boulders which were left from previous quarrying operations may be impairing the suitability of the area for wilderness classification. This area is not visible from any population centers or major roads.

(f) Land Use and Ownership

This site is located on BLM land. Evidence of fairly heavy public use was observed on this site. The road into the area is heavily traveled. The site is located in BLM (California) Wilderness Study Area Number 290 and within the California Desert Conservation Plan (CDCP) Class L. Quarrying this site would result in little change in land use. The area's suitability for preservation as wilderness may be affected.

However, the designation of this site as a wilderness area is questionable because of its past heavy use.

(7) Eagle Pass South Hill (NW¼, sec. 24, T. 8 N., R. 21 E., California)

(a) Terrestrial Resource

The proposed quarry site is a large talus-covered hill that has been quarried in the past by private individuals. A maximum of 200,000 tons of rock would be removed from this site resulting in the disturbance of 31 acres of land. The work area would be located in the wash. The access road to the other Eagle Pass sites would serve this site as well. The road is well traveled to this point, but would require widening. Extensive reconstruction could be required after severe storms.

(b) Vegetation

Vegetation in the wash is similar to Eagle Pass Westerly, but more dense. The quarry site is essentially void of vegetation with the exception of scattered creosote bush, beavertail cactus, and barrel cactus.

Vegetation on the 31 acres to be disturbed would be lost.

(c) Wildlife

Wildlife is similar to that of Eagle Pass Westerly, but rodent and reptile populations seem to be higher in this area. Raptor use was evident on this site. Turkey vultures, red-tailed hawks, and what appeared to be great horned owl scat, were observed.

Wildlife on the site would be forced to relocate and some would be destroyed. Apparent high populations of rodents and reptiles may result in relatively high mortality during construction. This mortality could affect the large number of raptors using the area.

BLM biologists believe the Sacramento Mountain Range, in which this site is found, to be perhaps the best bighorn sheep habitat in the overall area. They estimate there is a herd of 60 sheep in the mountain range. Smith Spring, which is an important watering hole for bighorn sheep, is a half-mile from this quarrying site. Smith Spring would not be affected in quarrying.

(d) Archaeology

A Class I literature search has been conducted for this site. The Class III field survey located the remnants of a mining ore chute on Eagle Pass South Hill. The tie-rods had been removed, collapsing the wooden sides and base. There were no associated features with this remnant of mining activity. This feature could be impacted by blasting and hauling rock. The feature does not appear to be eligible for the National Register of Historic Places. The survey indicates that no significant archaeological or historical resources will be affected by quarrying.

(e) Esthetics

This site is designated a visual resource management Class II because it is within a Wilderness Study Area. This site would be a Class III if it were not in a Wilderness Study Area because of previous disturbance and the existing access road. On the site there is also an old flume used to remove decorative rock.

Surface rock salvage on the site would disrupt the desert varnish and result in severe visual impacts. The site is not visible from any population centers or major roads.

(f) Land Use and Ownership

This site is on land administered by BLM. The site is on the same road discussed in the other Eagle Pass sites and evidence of fairly heavy public use was observed. Several old mining claims, digs, and inactive mines are located on the site. The site is located in BLM (California) Wilderness Study Area No. 290 and within CDCP Class L.

Improvement of the road may result in increased public use of the area, although the area is already accessible. The suitability of the areas for preservation as wilderness could be impaired. However, the designation of this area as wilderness is questionable because of its past heavy use.

(8) Park Moabi (SE¼, sec. 7, T. 7 N., R. 24 E., California)

(a) Terrestrial Resource

The proposed quarry site is on the side of a large, broad hill. Approximately 200,000 tons of rock would be removed from this site resulting in the disturbance of 12.5 acres. The work area would be constructed in a small wash at

the bottom of the slope. An access road would be constructed in the wash and would connect the site with an existing O&M road; however, the access road will be made inaccessible after quarrying is completed.

(b) Vegetation

Vegetation on the site is relatively sparse. Grasses and forbs are dominant on the hillside, while the wash contains scattered creosote bush, brittlebush, and Mohave sage.

Vegetation on the 12.5 acres of disturbed land would be lost.

(c) Wildlife

Wild burros, Gambel's quail, and signs of rodents and reptiles were observed on the site. The CDFG feels that deer and bighorn sheep inhabit this site; however, no evidence of either was found during field reconnaisance by Bureau biologists. Quarrying would force the wildlife on the site to relocate and some would perish. After joint review of this area by CDFG and Bureau biologists, it was determined that quarring this site would not significantly impact nearby deer and sheep habitat.

(d) Archaeology

Both a Class I literature search and a Class III field survey indicated that no significant archaeological or historical resources would be affected by the proposed activities.

(e) Esthetics

This site is designated a visual resource management Class III because of previous disturbance from pipelines and associated O&M roads.

Quarrying operations may result in the elimination of an entire hillside and would leave a noticeable scar. The site is not visible from the highway or any population centers.

(f) Land Use and Ownership

This site is on Reclamation Withdrawn land. No roads or trails exist on the quarry site. However, two natural gas pipelines and associated O&M roads are located within 1,500 feet of the site. The general area is traversed by several roads and trails and the site is within about 3,000 feet of Interstate 40. Little evidence of public use of the site was observed. The site is within CDCP Class M. Quarrying would have very little impact on land use.

(9) Pipeline (SE¼, sec. 12, T. 7 N., R. 23 E., California)

(a) Terrestrial Resource

The proposed quarry site is a steep cliff which rises approximately 175 feet above the floor of a small wash. A maximum of 150,000 tons of rock would be removed from this site disturbing 17 acres of land. The work area would be in the wash bottom. The access road would be placed in the bottom of the wash and would connect the site with an existing O&M road. An existing road would be used as a portion of the access road. This access road will be made inaccessible after quarrying is completed.

(b) Vegetation

Dominant species in the wash are creosote bush, bursage, sweetbush, and catclaw acacia. The quarry site is generally lacking vegetation.

Vegetation on approximately 17 acres of land would be lost.

(c) Wildlife

Gambel's quail and signs of wild burros, coyotes, rodents, and reptiles were observed. The CDFG feels that deer and bighorn sheep inhabit this site; however, no evidence of either was found during field reconnaissance by Bureau biologists. After joint inspection by CDFG and Bureau biologists, it was determined that the quarry would not significantly impact nearby deer and sheep habitat.

Wildlife on the site would be forced to relocate and some would perish. A few small, natural water

entrapments in the wash would be destroyed; however equivalent water entrapments will be created at the completion of the quarrying.

(d) Archaeology

Both a Class I literature search and a Class III field survey indicated that no significant archaeological or historical resources would be affected.

(e) Esthetics

This site is designated a visual resource management Class II because it is within a Wilderness Study Area. Otherwise it would be designated Class III because it has already been disturbed by pipelines and associated O&M roads.

Quarrying would remove the adjoining hill, leaving a noticeable scar. The site is not visible from any population centers or major roads.

(f) Land Use and Ownership

This site is on land administered by BLM. The area has been used extensively by the public, primarily for camping, hunting, and target shooting. The area around the proposed access road has been used for indiscriminate dumping. This site is close to the same roads and pipelines discussed under the Park Moabi site. This site is also within 3,000 feet of Highway 40. This site is in BLM (California) Wilderness Study Area Number 310 and within CDCP Class L.

Little impact on land use would occur. The suitability of the area as wilderness could be impaired. Designation of the area as potential wilderness is questionable because of the reasons discussed under the Park Moabi site.

(10) Big Maria No. 1 (SE¼, sec. 20, and SW¼, sec. 21, T. 4 S., R. 23 E., California)

(a) Terrestrial Resource

The proposed quarry site is a steep rock shelf along the edge of a large wash. Removing 260,000 tons of rock from this site would disturb approximately 29 acres. The work area would be located in the wash. An existing road would be used as an access road.

(b) Vegetation

Vegetation in the wash is relatively dense. Dominant species in the wash are creosote bush, brittlebush, Mohave sage, ocotillo, and catclaw acacia. Vegetation on the proposed quarry site is sparse, consisting primarily of beavertail and hedgehog cactus.

As a result of the project, vegetation on approximately 22 acres would be lost.

(c) Wildlife

Signs of mule deer, coyotes, rabbits, and relatively large populations of rodents and reptiles were observed on the site. Wildlife on the site would be forced to relocate and some would perish. BLM biologists consider the Big Maria sites to be in transient bighorn sheep range; however, sheep are not known to use this area.

(d) Archaeology

A Class I literature search and a Class III field survey indicated that no significant archaeological or historical resources would be affected by the proposed activities.

(e) Esthetics

This site is designated a visual resource management Class III because of an existing road into the area.

Quarrying operations would destroy the rock shelf and part of the adjoining hillside, resulting in a noticeable scar. The site is not visible from any population centers or major roads.

(f) Land Use and Ownership

This site is on land administered by BLM. Evidence of limited public use, primarily camping and hunting, was observed. The site is readily accessible with 4-wheel drive vehicles. This site is within CDCP Class L.

Improvement of the road may result in increased public use of the area if the road cannot be blocked.

(11) Big Maria No. 2 (SW¼, sec. 20, T. 4 S., R. 23 E., California)

(a) Terrestrial Resource

The site is a steep hillside on the edge of a large wash. A maximum of 1,100,000 tons of rock would be removed from this site resulting in the disturbance of 28.6 acres of land. The work area would be located in the wash bottom. The access road would be constructed in the wash and would be an extension of the road into the Big Maria No. 1 site.

(b) Vegetation

Vegetation in the wash is similar to that discussed under Big Maria No. 1, but is denser because of the absence of a road. Vegetation on the proposed quarry site is sparse and consists primarily of creosote-bush, beavertail cactus, and barrel cactus.

Vegetation on the 28.6 acres to be disturbed would be lost.

(c) Wildlife

The wildlife inhabiting this site are similar to that found at the Big Maria No. 1 site. Wildlife on the site would be forced to relocate and some would perish. A few small water entrapments would be destroyed.

BLM biologists consider this site to be in transient bighorn sheep range; however, sheep are not known to use the area.

(d) Archaeology

A Class I literature search and a Class III field survey indicated that no significant archaeological or historical resources would be affected.

(e) Esthetics

The site is designated a visual resource management Class II. There is an old access road into the area, but it is impassable and the site has not been disturbed in the past.

Quarrying operations on the site would essentially destroy a steep rock shelf and a large portion of a mountainside. Disturbance of desert varnish would result in

severe visual impacts. The site is not visible from any population centers or major roads.

(f) Land Use and Ownership

The site is on land administered by BLM. With the exception of a few old mining claims and digs, very little evidence of public use was observed, even though the general area is accessible by a road which runs on a shelf above the wash. Maps indicate a jeep trail to the site through the wash bottom, but it is no longer passable. This site is within CDCP Class L.

(12) Vidal Junction (S½NW¼, S½SE¼, SW¼, sec. 19, and all except S½SE¼, sec., 30, T. 1 N., R. 24 E., California)

(a) Terrestrial Resource

The proposed quarry site is four rolling, talus-covered hills. All of the available 70,000 tons of rock would be removed from this site by surface raking resulting in the disturbance of approximately 200 acres of land; however the value of the hills will be maintained. An existing road, which connects the site with Highway 62, would be used for the biggest portion of the access road. The work area would be located in a gully which bisects the hills. Recent core drilling has confirmed that there is no quarryable inplace rock; therefore, all activities would be confined to rock raking.

(b) Vegetation

Since the proposed quarry site is covered with talus, vegetation is sparse. Ground cover on the site is estimated to be less than 20 percent, consisting primarily of grasses and forbs with scattered creosote bush, barrel cactus, and beavertail cactus. The access road will cross a large, densely vegetated wash. Dominant species in the wash are creosote bush, cheesebush, and catclaw acacia.

Vegetation on the 200 acres to be disturbed would be lost. Precautions would be taken to avoid the destruction of mesquite trees where the road crosses the wash.

(c) Wildlife

Wildlife on the site consists primarily of rodents and reptiles. Signs of mule deer, rabbits, and coyotes were observed in the wash. The site lies in habitat of the desert tortoise as identified by the BLM California Desert Plan Staff.

Wildlife on the site would be forced to relocate and some would perish.

(d) Archaeology

A Class I literature search and a Class III field survey were conducted. The results of the survey indicate that no significant archaeological or historical resources would be affected by the proposed activities.

(e) Esthetics

This site is in VRM Class III. It has been heavily disturbed by prospectors, ORV's and the military, and is transected by several roads and trails. Disruption of such a large area would result in a noticeable scar. However, visual impacts would be minimized because of previous disturbances and screening provided by vegetation along the highways. The site is visible from U.S. 95 and California Highway 62.

(f) Land Use and Ownership

This site is owned in part by the United States (BLM and Reclamation Withdrawn) and in part by private parties. This site is within CDCP Class M.

(13) Quien Sabe East (SE¼, sec. 15, N½NE¼, sec. 22, T. 3 S., R. 22 E., California)

(a) Terrestrial Resource

The proposed quarry site is in a deep gully in the side of a mountain. A maximum of 820,000 tons of rock would be removed from this site, disturbing about 20 acres. The work area would be in the bottom of the gully. The access road would connect the site with an existing O&M road.

(b) Vegetation

Vegetation on the site is relatively sparse, consisting primarily of grasses and forbs with scattered creosote bush. Vegetation on the 20 acre site would be lost.

(c) Wildlife

Signs of coyotes, reptiles, and rodents were observed. This site probably receives occasional use by mule deer and desert bighorn sheep, although no sign of this species was observed.

Wildlife on the site would be forced to relocate and some would perish. A few small water entrapments would be destroyed affecting those wildlife which rely on them. After joint inspection of the site by CDFG and Bureau biologists, it was determined that impacts on wildlife would be insignificant.

(d) Archaeology

Both a Class I literature search and a Class III field survey indicated that no significant archaeological or historical resources would be affected by the quarry.

(e) Esthetics

This site is designated a visual resource management Class II because the area is undisturbed and has no roads.

Quarrying operations would result in a noticeable scar, but would not be visible from any roads or population centers. Portions of the access road would be visible from Highway 95.

(f) Land Use and Ownership

The site is owned in part by the United States (BLM and Reclamation Withdrawn) and in part by private parties. The site is accessible only by foot and no evidence of public use was observed. This site is within CDCP Class L.

Construction of a road into the site would likely increase public use of the area.

(14) Quien Sabe West (NW¼, sec. 21, T. 3 S., R. 23 E., California)

(a) Terrestrial Resource

The quarry site is a hillside located above a saddle between two hills. A maximum of 1,215,000 tons of rock would be removed from the site resulting in the disturbance of 25.5 acres. The work area would be located in the saddle. The access road would enter a large wash from Highway 95 and follow the wash for a short distance.

(b) Vegetation

With the exception of the wash, which the access road would follow for a short distance, vegetation on the site is sparse. The wash is dominated by creosote bush, brittlebush, catclaw acacia, and a few mesquite. The access road as it leaves the wash and rises on the mesa is desert pavement and is generally void of vegetation. Vegetation on the proposed quarry site is primarily grasses and forbs, with a few scattered creosote bushes.

Vegetation on the 25.5 acres to be disturbed would be lost. Placement of the access road into the site would require extensive blasting, filling, and leveling, which may result in the destruction of additional vegetation. The access road in the wash would be placed to avoid the destruction of mesquite and mature catclaw acacia.

(c) Wildlife

Sign of rodents, reptiles, rabbits, and raptors was observed on the site. Wildlife on the site would be forced to relocate and some would perish. The access road where it crosses the wash, would result in the destruction of several natural water entrapments. These areas would be riprapped to create water entrapments.

(d) Archaeology

A Class I literature search for this area reported no sites.

A Class III Survey revealed one isolated feature which would be impacted by blasting and hauling. This feature is the broken remnants of a bottle used by early mining parties. The feature does not appear to meet the criteria of eligibility for the National Register of Historic Places. The results of the survey indicated that no significant archaeological or historical resources would be affected by the quarrying activities.

(e) Esthetics

This site is designated a visual resource management Class III. An old mining trail crosses the site.

Disturbance of extensive areas of desert varnish and desert pavement, and the removal of an entire hillside, would result in visual impacts, portions of which may be visible from Highway 95.

(f) Land Use and Ownership

This site is owned in part by the United States (BLM and Reclamation Withdrawn) and in part by private parties. Virtually no evidence of public use was observed. An old mining trail crosses the site, but is no longer passable. This site is within CDCP Class L.

Construction of a road into the site would probably increase public use of the area.

(15) Hills Ranch (NE¼, E½NW¼, sec. 2, T. 5 S., R. 23 E., California)

(a) Terrestrial Resource

The proposed quarry site is a steep, talus covered cliff on the northeast face of a hill. A maximum of 600,000 tons of rock would be removed from this site resulting in the disturbance of approximately 17 acres of land. The work area would be located at the bottom of the cliff. An existing road would be used as an access road. Approximately the last 2,000 feet of the road would be filled and widened.

(b) Vegetation

Vegetation on the site consists primarily of grasses and forbs, with scattered creosote bush, barrel cactus, and desert fir. Vegetation on the 17 acres to be disturbed would be lost.

(c) Wildlife

Signs of wild burros, mule deer, coyotes, rabbits, reptiles and rodents were observed on the site. Wildlife using this site would be displaced and some would perish.

(d) Archaeology

Both a Class I literature search and a Class III field survey indicated that no significant archaeological or historical resources would be affected by the proposed activities.

(e) Esthetics

The site is designated a visual resource management Class III because there is an existing road into the area and the area has been disturbed by off-road vehicles.

The removal of 600,000 tons of rock would result in a scar. The site is not visible from any areas of human residence or major roads.

(f) Land Use and Ownership

The site is owned by the United States (BLM and Reclamation Withdrawn). The road into the site, which connects the site with Highway 95, is heavily used and the general area has been disturbed by off-road vehicles. The site is designated CDCP Class L.

(16) Mission Wash ($W\frac{1}{2}SW\frac{1}{4}$, sec. 4, and $E\frac{1}{2}SE\frac{1}{4}$, sec. 5, T. 15 S., R. 23 E., California)

(a) Terrestrial Resource

The proposed quarry site is the talus-covered slopes on both sides of a large deep wash. A maximum of 2,100,000 tons of rock would be removed from this site by rock raking and would disturb about 122 acres of land. The work area would be located in the wash bottom. The access road, which would connect the site with an existing O&M road, would follow a bench and then drop into the wash.

(b) Vegetation

Vegetation on the quarry site and the bench area of the proposed access road is very sparse. The quarry site is covered with talus and the bench has alternating stretches of talus and desert pavement. Ground cover on these areas is estimated at less that 10 percent and consists almost entirely of grasses and forbs. Vegetation in the wash is relatively dense. Dominant species in the wash are paloverde, catclaw acacia, ocotillo, creosote bush, brittlebush, and cholla.

Vegetation on the 122 acres would be lost.

(c) Wildlife

Wildlife use in this area is relatively high. Jackrabbits, mourning doves, turkey vultures and a desert tortoise were observed on the site by a Bureau biologist. Relatively extensive signs of mule deer, rodents, and reptiles were also seen. Mule deer apparently use the wash for cover and for travel between the mountains and the All-American Canal.

Wildlife using this site would be displaced and some would perish.

(d) Archaeology

A Class I literature search and a Class III field survey indicated that no significant archaeological or historical resources would be affected by the proposed activities.

(e) Esthetics

This site is designated as visual resource management Class II because it is within a Wilderness Study Area and is relatively undisturbed. The removal of 2,100,000 tons of rock would result in a noticeable scar. Visual impacts would be limited to those associated with the disruption of desert varnish. There would be no impact on form or contour. The site is not visible from any population centers or major roads.

(f) Land Use and Ownership

This site is on land administered by the BLM. No trails or roads exist on the site and there is little evidence of public use. There is some disturbance near the O&M road caused by off-road vehicles. This site is located in BLM (California) Wilderness Study Area Number 356 and CDCP Class L.

Improving the road into the site may result in increased public use. Suitability of the area for a wilderness area could be impaired.

(17) Bat Cave Wash No 2 and Bat Cave Wash No. 3 (NE¼, sec. 17, T. 7 N., R. 24 E., California)

These sites will be discussed together because of their similarity and proximity to one another.

(a) Terrestrial Resource

Both proposed quarry sites are steep rock shelves along the edge of a small wash. A maximum of 1,030,000 tons of rock would be removed from site No. 2. No estimate has been made of the amount of material to be removed from site No. 3. A combined total of 32 acres would be disturbed on both sites.

An access road, which is an extension of the road into Bat Cave Wash No. 1, already runs into site No. 2. The road would be extended approximately 2,500 feet into site No. 3. The work areas at both sites would be located in the wash. Recent core drilling has confirmed that substantial quantities of medium quality rock are available from Bat Cave No. 2.

(b) Vegetation

Vegetation in the wash is relatively sparse and appears to have been recently subjected to high water flows. Vegetation in the wash is dominated by creosote bush, brittlebush, and bursage. Vegetation on the quarry site is sparse, consisting primarily of scattered beavertail and barrel cactus. Vegetation on the 32 acres of land would be lost.

(c) Wildlife

Coyotes, rabbits, reptiles, and rodents inhabit these sites. Wildlife on the sites would be forced to relocate and some would perish. Several water entrapments would be destroyed by construction of the road from site No. 2 to site No. 3. These water entrapments are not a permanent source of water, but catch and temporarily store rainfall and run off.

(d) Archaeology

A Class I literature search and a Class III field survey indicated that no significant archaeological or historical resources would be affected by the proposed activities.

(e) Esthetics

Site No. 2 has been designated a visual resource management Class III because there is an existing access road. Site No. 3 has been designated a visual resource management Class II because it is undisturbed.

Quarrying operations and construction of the access road into site No. 3 will result in noticeable scars.

Neither of the sites are visible from a major road or population center.

(f) Land Use and Ownership

Both sites are on private land. Little evidence of public use was observed. These sites are within CDCP Class L.

Public use of the area may increase following construction of the road into site No. 3 and improvement of the road into site No. 2.

Very little impact on land use would occur as a result of the project.

(18) Manchester ($W\frac{1}{2}NW\frac{1}{4}$, sec. 15 and $NE\frac{1}{4}$, sec. 16, T. 11 N., R. 21 E., California)

(a) Terrestrial Resource

This site is an approximately 250 foot high, rocky ridge which parallels a large wash for approximately 3,000 feet. Approximately 3,235,000 tons of rock would be removed from this site disturbing about 86 acres. The work area for the quarry would be located in the wash bottom. A 1-mile long haul road would be located on the relatively flat terrain above the wash for reasons of safety, and would connect the site to Highway 76.

(b) Vegetation

Vegetation on the quarry site is sparse, made up primarily of creosote bush, brittlebush, and bursage, with scattered bunches of grasses and forbs. Vegetation in the wash is relatively dense for a desert wash community. The wash appears to receive and hold a substantial amount of moisture, and supports mesquite, catclaw acacia, smoke-tree, paloverde, creosote bush, bursage, brittlebush, and cheese bush. The wash bottom also supports relatively dense stands of grasses and forbs.

Quarrying this site would disturb 86 acres of vegetation, including about 16 acres of vegetation in the wash.

(c) Wildlife

The wash is heavily used by wildlife. Wildlife observed in the area include jackrabbits, cottontail rabbits, Gambel's quail, red-tailed hawks, and western diamond back rattlesnakes. The area suports a large rodent population and

therefore probably supports a number of predators and reptiles. Evidence of desert mule deer was found in the wash. BLM biologists indicate the area hasn't supported bighorn sheep in recent years, although observations of signs in the past two years hint that either a remnant or new population may be using the general area. Signs of coyotes and burros were also observed in the area.

As a result of this project, wildlife using this area would be displaced and some would perish. Several small, natural water catchments in the wash would be destroyed during construction of the haul road and work area. Several larger water catchments are located in the wash, but, being northwest of the quarry area, would not be disturbed.

Several small water catchments would be constructed to replace those destroyed by quarrying.

(d) Archaeology

A Class I literature search showed no cultural resources are located in this area. A Class III survey indicated that no significant archaeological or historical resources would be affected.

(e) Esthetics

This site is designated a visual resource management Class III because it does not contain any unique or outstanding visual features.

Quarrying and construction of the haul road would disturb the desert varnish and perhaps cause changes in contour, resulting in a noticeable scar. This site is visible from a small portion of Highway 76. Quarrying would be concentrated on the south and west end of the ridge to reduce visibility from Highway 76.

(f) Land Use and Ownership

This site is located on privately owned land. Little evidence of public use was observed. The site is inaccessible except by small all-terrain vehicles. The site is designated CDCP Class L.

Construction of an access road would increase public use. The area's suitability for preservation as wilderness may be affected.

APPENDIX C - STOCKPILE SITES

(1) Site 274.1 (SW¼, sec. 30, T. 21 N., R. 21 W., Arizona)

This site is an existing stockpile. It is located approximately ¼ mile north of Bullhead City airport on Reclamation Withdrawn land. Approximately 30,000 tons of rock are currently stored there. This site is visible from - Arizona Highway 95.

(2) Site 268.0 (NE¼ & SE¼, sec. 29, T. 32 S., R.66E., MDW, Nevada)

This is an existing stockpile site. It is located approximately 150-200 yards south of the existing Davis Dam Quarry in a wide shallow wash on Reclamation Withdrawn land. Approximately 24,500 tons of rock are currently stored there.

The stockpile site is partially visible from some parts of the Big Bend area and adjacent traffic routes.

(3) Site 264.6 (sec 30, T. 20 N., R. 22W., G&SRM, Arizona)

This is an existing stockpile site on the Arizona side of the river in an area that has been heavily used by off-road vehicles. It is on Reclamation Withdrawn land. Areas to the north and east of the site are being developed for commercial and residential uses. Approximately 30,000 tons of rock are currently stored there.

(4) Site 261.7 (SE¼, sec. 22, T. 33 S., R66E., MDV, Nevada)

This existing stockpile site is immediately outside the levee in the historic flood plain on the Nevada side of the Colorado River. It is on Reclamation Withdrawn land. The boundary of the Fort Mohave Indian Reservation is about three-tenths of a mile south of the site. This site is an existing stockpile for riprap material from the Davis Dam Quarry and would be replenished for this project. Approximately 30,000 tons of rock are currently stockpiled there.

(5) Site 258.7 (Lot 3, sec. 5, T. 33 S., R. 66 E., MDW, Nevada)

This site is located adjacent to a dirt road west of the Mohave Valley levee on the Nevada side of the river. The Fort Mohave Indian Reservation borders the road on the north side. The site is on Reclamation Withdrawn land.

A fire during the week of June 9, 1980, burned from north of the road through the Fort Mohave Indian Reservation. The fire burned several acres of salt cedar-screwbean mesquite community. Vegetation in the area also includes arrowweed, brittlebush, schismus grass, and bermuda grass. No threatened or endangered plant or wildlife species are found on the site. Several acres of this site were burned clear, so an open and disturbed area is available for stockpiling.

Both a Class I literature search and a Class III field survey were conducted. The results of these surveys indicate that no significant archaeological or historical resources would be affected by the proposed activities.

Approximately 20,000 tons of gravel would be stockpiled on this site. Some visual and noise impacts would occur during construction and stockpiling. Fugitive dust may be generated during the deposition of gravel.

(6) Site 254.3 (NW¼, sec. 9, T. 18 N., R 23 E., G&SRM, Arizona)

This site is an existing stockpile located on disturbed dredge spoil on the Fort Mohave Indian Reservation. Approximately 30,000 tons of rock and 15,000 tons of gravel are stockpiled on the site.

(7) Site 253.8 (NE ¼, sec. 25, T. 10N., R. 23 E., SBM, California)

This site is an existing stockpile approximately 6 miles north of Needles on the California side of the river on the Fort Mohave Indian Reservation. There is an existing 30,000 ton stockpile of rock on the site. It is proposed to add a 20,000 ton gravel stockpile adjacent to the rock stockpile.

The vegetation in the area consists of screwbean mesquite, salt cedar, and arrowweed. There is an open, disturbed area approximately 700 feet south of the existing stockpile and the proposed stockpile would be located there. No threatened or endangered plant or wildlife species are found in the area. Impacts would be minimal to wildlife and the vegetation community.

A class I literature search and a Class III Survey were conducted. The results of these surveys indicated that no significant archaeological or historical resources would be affected by the proposed activities.

Some visual and noise impacts would occur during construction and stockpiling. Fugitive dust may be generated during the deposition of gravel.

(8) Site 248.7 (NE ¼, sec. 14, t. 9 N., R. 22 E., SBM, California)

This site is an existing stockpile located on Reclamation Withdrawn land. Approximately 30,000 tons of rock are currently stored there.

(9) Site 244.5 (NE ¼, sec. 32, T. 9 N., R. 23 E., SBM, California)

This site is an existing stockpile located within the Bureau construction yard at Needles, California. Approximately 10,000 tons of rock are currently stockpiled there.

(10) Site 244.2 (W½&NE ¼, sec. 33, T. 9N., R. 23 E., SBM, Arizona)

This site with its two existing stockpiles is located outside the levee on the Arizona side of the river. It is on Reclamation Acquired land. Approximately 15,000 tons of gravel and 30,000 tons of rock are stockpiled there.

(11) Site 240.3 (SE¼, sec. 12, T. 16 N., R. 22 W., SBM, Arizona)

This site is an existing stockpile. It is located inside the levee on the California side of the river on Reclamation Withdrawn land. Approximately 4,500 tons of rock are currently stored there and this rock will be replenished as it is used.

(12) Site 239.9 (NE¼, sec. 22, T. 8 N., R. 23 E. SBM, Arizona)

This site is an existing stockpile located just outside the levee on the Arizona side of the river. It is on Reclamation Acquired land in the Havasu National Wildlife Refuge. Approximately 4,500 tons of rock are currently stockpiled there. It is proposed to add 20,000 tons of gravel.

This site has already been cleared although some arrowweed and salt cedar still occur. No threatened

or endangered plant or wildlife species are found in the area. Impacts would be minimal to wildlife and the vegetation community.

A Class I literature search and a Class III Survey indicated that no significant archaeological or historical resources would be affected.

Some visual and noise impacts would occur during stockpiling. Fugitive dust may be generated during the deposition of gravel.

(13) Site 238.3 (NE¼, sec. 19, T. 16 N., R. 21 W., G&SRM, Arizona)

This site is an existing stockpile located on Reclamation Withdrawn land within the Havasu National Wildlife Refuge on the Arizona side of the river. Approximately 5,000 cubic yards of rock are currently stockpiled there.

(14) Site 236.7 (N½, sec. 36, T. 10 N., R. 23 E., SBM, California)

This proposed stockpile site lies approximately 1 mile north of the Park Moabi campground on Reclamation Withdrawn and Acquired land. Proposals call for stockpiling 40,000 tons of rock at this site.

The site lies on an open area of dredge spoil. Vegetation is sparse with a few salt cedars and arrowweeds on the site. No threatened or endangered plants or wildlife species are found on the site.

A Class I literature search and a Class III survey were conducted. The results of these surveys indicate that no significant archaeological or historical resources would be affected by the proposed activities.

Stockpiling rock on this site would result in the disturbance of half an acre of salt cedar-arrowweed community. Wildlife using this habitat would be forced to relocate and some would perish.

Some visual and noise impacts would occur during construction and stockpiling. Fugitive dust may be generated during the deposition of material.

(15) Site 235.7 (SW¼, sec. 28, T. 16 N., G&SRM, Arizona)

This site is an existing stockpile on Reclamation Withdrawn land within the Havasu National Wildlife

Refuge. There is an existing 1,200 ton stockpile of rock on this site. It is proposed to add an additional 10,000 tons of rock at this site.

(16) Site 174.3 (SW¼, sec. 11, T. 9 N., R. 20 W., G&SRM, Arizona)

This site is an existing stockpile located on the Colorado River Indian Reservation. Approximately 6,000 tons of rock are currently stockpiled on the site. It is proposed to add an additional 20,000 tons of rock.

(17) Site 163.4 (NW¼, sec. 34, T. 1 S., R. 22 W., SBM, California)

This proposed site is adjacent to the recently paved Wilson Road on the Colorado River Indian Reservation. The area is in the flood plain of the Colorado River. Approximately 50,000 tons of rock would be stockpiled on this site.

Vegetation in the area consists of a salt cedar-honey mesquite community with some quail bush and schismus grass. No threatened or endangered species of plant or animal occur on the site. The present road-surfacing contractor, D. C. Contractors, Inc., has cleared a site adjacent to the Wilson Road for parking construction vehicles and the proposed stockpile would be located there. Impacts to wildlife and vegetation would be minimal.

A Class I literature search and a Class III field survey indicated that no significant archaeological or historical resources would be affected by the proposed activities.

Some visual and noise impacts would occur during construction and stockpiling. Fugitive dust may be generated during the deposition of rock.

(18) Site 156.8 (NW¼, sec. 6 T. 7 N., R. 21 W., G&SRM, Arizona)

This site is an existing stockpile located inside the levee on the Arizona side of the river. The site is on the Colorado River Indian Reservation. Approximately 20,000 tons of rock are stockpiled on this site.

(19) Site 154.2 (SW¼, sec. 11, T. 7 N., R. 21 W., G&SRM, Arizona)

This site is an existing stockpile located inside the levee on the Arizona side of the river. The

site is on the Colorado River Indian Reservation. Approximately 18,000 tons of rock are stockpiled on this site.

(20) Site 134.0 (NW¼, sec. 19, T. 5 S., R. 23 E., SBM, California)

This site is an existing stockpile located in Riverside County, California. The site is northwest of the Palo Verde Diversion Dam, west of Highway 95 on Reclamation Withdrawn land. Approximately 20,000 tons of rock are stockpiled on this site.

(21) Site 130.8 (SE¼, sec. 11, T. 4 N., R. 22 W., G&SRM, Arizona)

This site is an existing stockpile located on the Colorado River Indian Reservation. Approximately 40,560 tons of rock are currently stockpiled on this site.

(22) Site 124.4 (SW¼, sec. 34, T. 4 N., R. 22 W., G&SRM, Arizona)

This site is an existing stockpile located on the Colorado River Indian Reservation on the Arizona side of the river. It is in the flood plain of the Colorado River. Approximately 30,000 tons of rock are currently stockpiled on this site.

(23) Site 120.8 (SW¼, sec. 15, T. 3 N., R. 22 W., G&SRM, Arizona)

This site is an existing stockpile located south of Interstate 10 and east of the Colorado River out of the flood plain. It is on Reclamation Withdrawn land. Approximately 51,640 tons of rock are currently stockpiled on this site.

(24) Site 119.1 (NE¼, sec. 29, T. 7 S., R. 23 E., SBM, California)

This site is an existing stockpile located within the Colorado River flood plain on Reclamation Withdrawn land. Approximately 3,000 tons of rock are currently stockpiled on the site and it is proposed to add 5,000 tons of rock to the existing stockpile.

(25) Site 114.8 (NW¼ sec 8, T. 2 N, R. 23 W., G&SRM, Arizona)

This is an existing cleared stockpile site. It is proposed to add 10,000 tons of rock to the site.

(26) Site 114.2 (SE¼, sec. 8, T. 2 N., R. 22 W., G&SRM, Arizona)

This site is an existing stockpile located on Reclamation Withdrawn land. Approximately 15,000 tons of rock are currently stockpiled on the site.

(27) Site 110.8 (NE¼, sec. 25, T. 2 N., R. 23 W., G&SRM, Arizona)

This site is an existing stockpile located within the flood plain of the Colorado River. The site is on Reclamation Withdrawn land. Approximately 20,000 tons of rock are stockpiled on the site.

(28) Site 108.8 (SW¼, sec. 35, T. 2 N., R. 23 W., G&SRM, Arizona)

This is an existing cleared stockpile site. It is proposed to add 10,000 tons of rock to the site.

(29) Site 105.3 (NW¼, sec. 22, T. 1 N., R. 23 W., G&SRM, Arizona)

This site is an existing stockpile located outside the levee on a sloping bajada. The site is on Reclamation Withdrawn land. Approximately 30,000 tons of rock are stockpiled on the site.

(30) Site 104.0 (NE¼, sec. 9, T. 9 S., R. 22 E., SBM, California)

This site with two existing stockpiles is located within the old Cibola operations yard on Reclamation Acquired land. Approximately 20,000 tons of gravel and 40,000 tons of rock are stockpiled on this site.

(31) Site 100.2 (SE¼, sec. 26, T. 1 N., R. 24 W., G&SRM, Arizona)

This site is an existing stockpile located at the west end of the Cibola Operating Bridge, outside of the California levee, on Reclamation Withdrawn land. Approximately 27,000 tons of rock are currently stored there. It is proposed to store 10,000 tons of gravel on the cleared area of this existing site.

(32) Site 98.9 (NE¼, sec. 2, T. 2 S., R. 24 W., G&SRM, Arizona)

This site is an existing stockpile located outside the levee on the Cibola National Wildlife Refuge. Approximately 27,000 tons of rock are currently stockpiled there.

(33) Site 96.7 (NW¼, sec. 6, T. 10 S., R. 22 E., SBM, California)

This site is an existing stockpile site located within the Cibola National Wildlife Refuge on Reclamation Acquired land. Approximately 20,000 tons of gravel and 20,000 tons of rock are currently stored there.

(34) Site 96.0 (SW¼, sec. 13, T. 1 S., R. 24 W., G&SRM, Arizona)

This proposed site would be located within the immediate area outside the levee on the Cibola National Wildlife Refuge. The area consists of old dredge spoil supporting a vegetation community occupying about 40 percent total ground cover. Vegetation includes salt cedar, some honey mesquite, creosote, schismus grass, and a few small annuals. No endangered or threatened plants occur on this site.

A Class I literature search was conducted on this site. No known cultural resources were located. A Class III survey was conducted. The results of the survey indicated that no signficant archaeological or historical resources would be affected by stockpiling on the this site.

Approximately 25,000 tons of gravel and 20,000 tons of rock would be stockpiled on the site. This would result in the disturbance of approximately ½ acre of vegetation. Wildlife using this habitat would be displaced and some would perish.

Some visual and noise impacts would occur during construction and stockpiling. Fugitive dust may be generated during the deposition of material.

(35) Site 94.3 (NE¼, sec. 25, T. 1 S., R. 24 W., G&SRM, Arizona)

This site is an existing stockpile located within the Cibola National Wildlife Refuge on Reclamation Acquired land. Approximately 20,000 tons of gravel and 27,000 tons of rock are currently stockpiled there.

(36) Site 93.7 (SW¼, sec. 29, T. 1 S., R. 23 W., G&SRM, Arizona)

This site is an existing stockpile located east of the lower Cibola Operating Bridge on Reclamation Withdrawn land. Approximately 20,000 tons of rock are currently stockpiled there.

(37) Site 90.7 (SW¼, sec. 8, T., 2 S., R. 23 W., G&SRM, Arizona)

This site is an existing stockpile located on a low hill adjacent to the Colorado River flood- plain. Approximately 10,500 tons of rock are currently stockpiled there.

(38) Site 89,5 (NW¼, sec. 18, T. 2 S., R. 23 W., G&SRM, Arizona)

This site is an existing stockpile located within the Cibola National Wildlife Refuge, on the California side of the river. The site is on Reclamation Acquired land. Approximately 10,000 tons of gravel and 20,000 tons of rock are currently stockpiled on this site.

(39) Site 48.3 (Lot 7, sec. 17, R. 24 E., T. 15 S., SBM, Arizona)

This site is an existing stockpile site located on Reclamation Withdrawn land. The vegetation within the stockpile site is dominated by salt cedar, arrowweed, and quailbush. No endangered or threatened plant or animal species occur on this site.

A Class I literature search was conducted on this site. No known cultural resources were located. A Class III survey was conducted. The results of the survey indicate that no signficant archaeological or historical resources would be affected by this project.

An additional 20,000 tons of rock would be stockpiled either on, or adjacent to, the existing site. If the proposed 20,000 tons of rock are placed within the boundaries of the existing site, no additional environmental impacts would occur other than temporary audio and visual impacts and fugitive dust. If it is necessary to enlarge the present site to accommodate the additional rock, additional minor impacts to vegetation and wildlife would occur. Less than ½ acre of vegetation would be lost and wildlife using this habitat would be displaced and some would perish.

(40) Site 43.2 (SE¼, sec. 14 T. 7 S., R. 22 W., G&SRM, Arizona)

This site is an existing stockpile located to the south of Laguna Dam near the terminus of a wash in the Laguna Mountains on Reclamation Withdrawn land. Approximately 7,500 tons of rock are currently stockpiled there.

(41) Site 38.7 (NE¼, sec. 15 T. 16, S., R. 23 E. SBM, California)

This site is an existing stockpile located at the junction of the new and old reservation levees on Reclamation Withdrawn land. Approximately 13,000 tons of gravel and 30,000 tons of rock are currently stored on this site.

(42) Site 34.1 (NE¼, sec. 30, T. 8 S., R. 22 W., G&SRM, Arizona)

This site is an existing stockpile located adjacent to the South Gila Levee, inside the ancient Gila River flood plain, approximately three-quarters of a mile south of the confluence of the Gila and Colorado Rivers. The site is on Reclamation Withdrawn land. Approximately 15,000 tons of gravel and 25,000 tons of rock are currently stockpiled on this site.

(43) Site 23.3 (SW¼, sec. 36, T. 16 S., R. 21 E., SBM, Arizona)

This site is an existing stockpile located inside the levee between the Colorado River. The site is on Reclamation Withdrawn land. Approximately 3,000 tons of gravel are currently stored there.

(44) Site 11.7 (SE¼, sec. 35, T. 9 S., R. 25, W., G&SRM, Arizona)

This site is an existing stockpile located on Reclamation Withdrawn land. Approximately 9,000 tons of gravel are currently stockpiled there.

(45) Site 10.6 (NE¼, sec. 11, T. 10 S., R. 25 W., G&SRM, Arizona)

This site is an existing stockpile located in the low lying area between a railroad embankment and the Yuma Valley Levee. The site is on Reclamation Withdrawn land. Approximately 20,000 tons of gravel are currently stored there.

Appendix D

Agencies that received the July 1981 Draft Environmental Assessment.

Colorado River Indian Tribes
Colorado River Indian Reservation
Route 1, Box 23-B
Parker, AZ 85344

State Conservationist
Soil Conservation Service
2828 Chiles Road
Davis, CA 95616

Chief Engineer
Colorado River Board of California
107 South Broadway, Room 8103
Los Angeles, CA 90012

Director
Arizona Department of Water Resources
99 E. Virginia Avenue
Phoenix, AZ 85004

Administrator
Division of Colorado River Resources
State of Nevada
P.O. Box 19090
Las Vegas, NV 89119

Director
Nevada Department of Wildlife
P.O. Box 10678
Reno, NV 89510

State Liaison Officer
Arizona Outdoor Recreation Coordinating Commission
4433 North 19th Avenue, Suite 203
Phoenix, AZ 85015

State Land Commissioner
Arizona State Land Department
1624 West Adams
Phoenix, AZ 85007

Director
Arizona Department of Mineral Resources
Mineral Building, Fairgrounds
Phoenix, AZ 85007

State Historical Preservation Officer
Department of Parks and Recreation
State Resources Agency
P.O. Box 2390
Sacramento, CA 95811

Director
Department of Fish and Game
1416 19th Street
Sacramento, CA 95814

The Resources Agency of California
Resources Building
1416 9th Street
Sacramento, CA 95814 (w/10 enclosures)

State Planning Coordinator
Nevada State Clearinghouse
State Capitol Building
Carson City, NV 89701 (w/15 enclosures)

Region IV Supervisor
Arizona Game and Fish Department
3005 Pacific Avenue
Yuma, AZ 85364

State Historic Preservation Officer
Arizona State Parks Board
1688 West Adams Street
Phoenix, AZ 85007

Office of Economic Planning and Development
State of Arizona
1700 West Washington Street
Phoenix, AZ 85007 (w/15 enclosures)

Director
Area Office
Fish and Wildlife Service
2953 West Indian School Road
Phoenix, AZ 85017

Area Manager
Boulder City Area Office
Western Area Power Administration
P.O. Box 200
Boulder City, NV 89005

Colorado River Agency
Bureau of Indian Affairs
U.S. Department of the Interior
Route 1, Box 9-C
Parker, AZ 85344

Yuma District Office
Bureau of Land Management
2450 4th Avenue
P.O. Box 5680
Yuma, AZ 85364

Lake Havasu City Area Office
Bureau of Land Management
P.O. Box 685
Lake Havasu City, AZ 86403

Appendix E

Letters of Comment on the July 1981 Draft Environmental Assessment and Bureau Responses to those Letters of Comment.

1416 Ninth Street
95814

(916) 445-5656

GOVERNOR OF
CALIFORNIA

Department of Conservation
Department of Fish and Game
Department of Forestry
Department of Boating and Waterways
Department of Parks and Recreation
Department of Water Resources

THE RESOURCES AGENCY OF CALIFORNIA
SACRAMENTO, CALIFORNIA

Mr. K.M. Trompeter
Regional Environmental Officer
U.S. Bureau of Reclamation
Post Office Box 427
Boulder City, NV 89005

September 29, 1981

Dear Mr. Trompeter:

The State has reviewed the Environmental Assessment, Colorado River Front Work and Levee System, submitted through the Office of Planning and Research. This review, in accordance with OMB Circular A-95, was coordinated with the Air Resources, Colorado River, Reclamation, and Water Resources Control Boards; State Lands Commission; and Departments of Boating and Waterways, Conservation, Fish and Game, Parks and Recreation, Water Resources, Health Services, and Transportation.

The Department of Fish and Game (DFG) comments that actions of this magnitude require full environmental impact statements. The actions (quarries, stockpiles, riprap, and dredging) should be treated in three documents. Quarrying should be discussed in a single document that addresses impacts and provides offsetting compensation for damage to fish and wildlife. Stockpile sites and riprap could be discussed in a single document. Dredging and spoil placement should be discussed in one document.

The effects of each action should be discussed clearly, so that all of the impacts to fish and wildlife can be identified and evaluated. Maps should be used to show locations of the actions, and Ohmarts Vegetation Type maps should be included as overlays. Including the wildlife density information of Ohmarts and Anderson would allow for an evaluation of the impacts of riprapping and spoil placement.

DFG also has the following specific comments to offer concerning quarry sites, stockpile sites, and riprapping:

Quarry Sites

The four quarry sites identified in the Sacramento Mountains (Eagle Pass, Eagle Pass Westerly, South Hill, and North Cliff) contain large populations of bighorn sheep. DFG recommends dropping these areas from consideration as quarry sites. The terrain at these sites and the proximity of springs and bighorn watering sites (Smith Springs and Broken Mule Shoe are within one mile) make this an important summer area for bighorn. Summer use areas are considered critical habitat

for bighorn sheep. The wash bottoms are essential to the sheep for foraging and temperature moderation. Two plants found in these washes, Bebbia and Stephanomeria, have been mentioned as important food for desert bighorn in the study Bighorn of Death Valley, by Ralph and Buddy Wells. In addition, raptors use these sites extensively as nesting and brooding areas.

Any proposal for quarrying at the Park Moabi site would have impacts on both deer and bighorn sheep. There would also be increased public use as a result of the widening of the road to the site. These impacts should be discussed fully in the EIS, and appropriate mitigation measures provided. A spring site is shown within one mile of the quarry site and may have potential for spring development.

The pipeline site is comparable to the Park Moabi site, and the same comments apply. The area is valuable for bighorn and other wildlife. Quarrying would destroy the small water tanks in the wash, and this would be a significant impact.

Big Maria Site 1 has both deer and bighorn values. A plan to permit quarrying in the Big Maria sites could be considered, if the road is closed when the project is completed and if water developments are created in identified areas.

The terrain at Big Maria Site 2 is a confluence of several washes. This creates high wildlife potential. The Big Maria sites have good habitat and good potential for wildlife, but do not now have large wildlife populations. This is probably due to a lack of water and also due to mining and associated human disturbances. There may be an opportunity to create water sources for wildlife in the Big Marias, and also in adjacent desert mountain ranges, such as the Riversides.

A recent DFG telemetry study has established the importance of the Vidal Junction site. Section 19 has been found to be good deer habitat with valuable vegetation including ironwood and mesquite. Either this site should be dropped from consideration as a quarry, or some means should be found to assure that the values of the hills will be maintained.

The two Quien Sabe sites are similar to the Big Maria sites, and the same comments and recommendations for compensation would apply.

Although the Hills Ranch site in the Big Marias still has some wildlife values, it is already an impacted area. Therefore, any compensation measures implemented would only be token measures to maintain some non-game wildlife values. The major emphasis for compensation should be in other desert mountain ranges where wildlife values are greater and, therefore, greater benefits could be realized.

The Mission Wash site is part of the complex of the deer habitat containing Milpitas Wash, and is an integral part of the system. This system contains high quality deer habitat and should be dropped from consideration as a quarry site.

Because the Bat Cave Wash sites are similar to the Chemehuevi Mountains sites (namely pipeline, etc.), the same comments apply for both areas.

The Manchester site in the Dead Mountains contains habitats of high value and should be dropped from consideration as a quarry site.

Stockpile Sites and Riprapping

Generally, the impacts associated with stockpiling could be offset by careful site selection. Riprapping can be done so as to preserve existing vegetation. Levee armoring could prevent wildlife from reaching the river, but this could be mitigated by construction of access ramps in the riprap on the levees at frequent spacings. This is most important in the Cibola Division.

Questions regarding these comments should be directed to Fred Worthley, Regional Manager, DFG, 350 Golden Shore, Long Beach, CA 90802.

The Department of Transportation comments that the transporting of rock and gravel from the quarry sites to the stockpile sites could impact State Highways 40 and 95. The report should address such impacts as traffic safety, volume of traffic, number of daily trips, composition of traffic, and degradation of the highway facilities' structural integrity. Prolonged use of heavily-laden trucks could severely tax the structure of the area's highways. The report should also discuss costs related to any transportation improvements, potential for funding, and sources of funding.

It may be necessary to obtain an encroachment permit, and Caltrans (as the responsible agency) may require that mitigation measures be provided as conditions for issuance of a permit. Caltrans should be involved early and continuously on any proposed plans that affect State highways.

Sincerely,

James W Burns

JAMES W. BURNS
Assistant Secretary for Resources

cc: Office of Planning and Research
1400 Tenth Street
Sacramento, CA 95814
(SCH 81081420)

1416 NINTH STREET
95814
(916) 445-5656

CALIFORNIA

partment of Conservation
partment of Fish and Game
partment of Navigation and
Ocean Development
Department of Parks and Recreation
partment of Water Resources

San Francisco Bay Conservation and
Development Commission
Solid Waste Management Board
State Lands Commission
State Reclamation Board
State Water Resources Control Board
Regional Water Quality Control Boards
Energy Resources Conservation and
Development Commission

THE RESOURCES AGENCY OF CALIFORNIA

SACRAMENTO, CALIFORNIA

OFFICIAL

RECEIVED OCT 13 1981

Action:

Action Taken (Initials)

Date	Initials	To
		750
October 9, 1981		
File		

Mr. K.M. Trompeter
Regional Environmental Officer
U.S. Bureau of Reclamation
Post Office Box 427
Boulder City, NV 89005

Dear Mr. Trompeter:

In its letter of September 29, 1981, the State provided comments on the environmental assessment, Colorado River Front Work and Levee System.

We have just received the following comments from the Department of Water Resources (DWR), and would appreciate your consideration of them as part of the State's response on this project proposal.

DWR recommends that the cities and counties with jurisdictional authority in the areas adjoining the levees regulate developments in accordance with the National Flood Insurance Program. On February 10, 1981, the Federal Emergency Management Agency issued an interim levee policy establishing the necessary levee requirements to protect developments from flood hazards.

Sincerely,

James W Burns

JAMES W. BURNS
Assistant Secretary for Resources

cc: Office of Planning and Research
1400 Tenth Street
Sacramento, CA 95814

Department of Water Resources, Southern District

(SCH 81031420)

FEB 12 1982

LC-154

565

Mr. James W. Burns
Assistant Secretary for Resources
The Resources Agency of California
Resources Building
1416 9th Street
Sacramento, CA 95814

Dear Mr. Burns:

We have carefully reviewed your letters of September 29, 1981 and October 9, 1981 forwarding comments from various California State agencies about our Environmental Assessment on the Colorado River Front Work and Levee System (CRFWLS). Wherever possible we have revised the assessment to reflect your comments. However, some comments we are unable to implement, either because we lack the necessary information at this time, or because we disagree with the comment. We would like to discuss these in more detail with you.

We do not agree with the comment from the Department of Fish and Game (DFG) that three separate environmental impact statements (EIS) are required for this project. We consider the CRFWLS to be one unified action, with all the individual features interrelated and interdependent, and therefore to be treated in one environmental document. We believe this position is consistent with both the letter and spirit of CEQ Regulations. As far as the second aspect of DFG's comment, that an impact statement is required instead of an assessment, we can only respond that at this time we have been unable to identify any significant impacts associated with this proposal. We believe that CEQ Regulations set forth the policy that the criteria for determining whether or not to prepare an EIS are the magnitude of the impacts and not necessarily the magnitude of the action. We believe that an environmental assessment is the proper action for this project. However, if it can be demonstrated during this analysis that significant impacts will occur as a result of this project we will reassess the possibility of preparing an EIS. We would like to meet with representatives of DFG to discuss any information they may have which indicates that possible impacts are more significant than those we have been able to identify.

We have considered DFG's comment that Drs. Ohmart's and Anderson's Vegetation Type Maps should be included as overlays in this assessment. While we do not agree that they should be included as overlays (because of the general bulk this would add to the assessment as well as their easy accessibility elsewhere) we do agree they should be referenced. Therefore, we have referenced these maps in the assessment and added more information generally from Ohmart's and Anderson's studies.

We would also like to discuss those more specific comments in your letter by the headings you used starting with Quarry Sites.

Quarry Sites

We have been unable to identify the significant impacts to bighorn sheep or raptors that your letter indicates would be caused by quarrying the Eagle Pass sites. Eagle Pass, for example, is an existing quarry, and was last used in late 1979. Since your letter indicates that bighorn sheep continue to use this site, we fail to perceive what the significant impacts are.

As concerns raptors using these Eagle Pass sites we were able to identify only one nest, and that was a stick nest at the Eagle Pass North Cliff site. The significance of the impacts of quarrying to raptors would be directly related to what species is nesting there. We have no indication that the raptors using this site are species of special concern.

As far as the remaining quarry sites discussed in your letter, we note you express three major types of concerns. One is the possible impacts to deer and bighorn sheep, another is the increased public use made possible by constructing access roads, and the third is possible destruction of natural watering tanks and catchments. We have revised the assessment in the light of these comments to indicate that we will close off any access roads we might construct to provide access for quarrying activities once those activities are completed. We have also revised the assessment to indicate that we will replace any watering tanks or catchments which would be destroyed by quarrying activities. We have the same problem identifying significant impacts to deer and bighorn sheep that we have already spoken of in relation to the Eagle Pass sites.

Stockpile Sites and Riprapping

We will consider any suggestions you might have as to what kind of wildlife access ramps to install or preserve as well as the best locations for such river access ramps.

We have added additional details to the assessment about the number of trucks and volume of traffic required for the hauling of riprap. We will contact the California Department of Transportation about the need for permits as well as keep them advised as to the progress of this action.

We received one additional comment from your agency in a letter dated October 9, 1981. The Department of Water Resources recommended that we consult with the Federal Energy Management Agency to insure local jurisdiction can regulate developments in accordance with the National Flood Insurance Program. We are presently consulting with FEMA.

In conclusion, we would like to inform you that we plan to continue with the processing of this environmental assessment. We plan to submit this assessment to the Corps of Engineers as part of our application for a

404 permit and to the Bureau of Land Management as part of an application for a use permit to quarry rock. We would like to assure you that we are not attempting to bypass your concerns about the quarry sites by doing so. Our responsibility to maintain the Colorado River requires that we continue in an expeditious manner to process this document. However, we are willing to discuss with representatives of the DFG further information about these quarry sites and their impacts on the bighorn sheep. Even though we have been unable to identify any significant impacts, perhaps they could identify those impacts they feel to be significant as well as provide us with general information which we may not have.

We will be attempting to contact the DFG shortly, and we will probably be applying for a 404 permit at about the same time. We are sure your agency will be included in the review process for that 404 permit, but also as already mentioned, we will be attempting to contact the DFG after the first of the year to discuss their concerns.

Enclosed is a copy of the revised assessment.

Sincerely yours,

ROY D. GEAR

Acting For N. W. Plummer
Regional Director

Enclosure

FILE COPY

March 31, 1982

APR 2 1982

Action: MW

Action Taken ..... (Initials)

Date	Initials	To
		150
File		

K. M. Trompeter
Regional Environmental Officer
Lower Colorado Regional Office
Bureau of Reclamation
Lower Colorado Regional Office
P.O. Box 427
Boulder City, Nevada 89005

470 (Needles)

Re: Colorado River, Needles vicinity
Bank Stabilization (AZ side)
DOI BR

ARIZONA STATE PARKS

1688 WEST ADAMS STREET
PHOENIX, ARIZONA 85007
TELEPHONE 602-255-4174

Dear Mr. Trompeter:

I have reviewed the documentation submitted for this proposed project and have the following comments:

1. Based on the Class I overview studies done by the BR, a check of our cultural resource files, and on professional judgment, there appears little likelihood that significant cultural resources could be located within the project area.

2. Therefore, I concur with the BR's determination that, pursuant to 36 CFR 800.4 of the Advisory Council's regulations ("Protection of Historic and Cultural Properties"), this project should have no effect on any National Register or eligible property.

3. However, should previously unrecorded archaeological remains be encountered during project construction, work should cease in the area of the discovery and this office be notified immediately.

Your continued cooperation is appreciated. If you have any questions, please contact me at (602) 255-4174.

Sincerely,

Frank B. Fryman

Frank B. Fryman
Archaeologist/Compliance Coordinator

for Ann A. Pritzlaff
State Historic Preservation Officer

FBF:mes

565

ARIZONA GAME & FISH DEPARTMENT
2222 West Greenway Road Phoenix, Arizona 85023

October 9, 1981

Mr. Ken Trompeter
Regional Environmental Officer
Bureau of Reclamation
Lower Colorado Regional Office
P. O. Box 427
Boulder City, Nevada 89005

Re: Environmental Assessment -
Colorado River Front Work
& Levee System

Dear Mr. Trompeter:

The Arizona Game and Fish Department has reviewed the subject document and we submit, for your consideration, the following comments.

The proposed action, which intends "to reduce sediment in the river, stabilize the riverbanks, and armor the levees", really involves four separate and distinct actions which, individually, have the potential to produce significant adverse impacts on the fish and/or wildlife resources of the project area: (1) quarrying of rock material to be used for riprapping and armoring, (2) stockpiling of quarried rock materials adjacent to areas where riprapping or armoring will occur, (3) riprapping of riverbanks and armoring of levees, and (4) dredging of the river and placement of resultant spoil.

These actions receive only token treatment in the environmental assessment, with unequal and inadequate information/data provided for each action to fully disclose and evaluate the magnitude of potential impacts. For example, little if any information is provided for specific areas or acreages of riparian habitats that will be impacted by the proposed action -- by river division, reach, or river mile. Riparian habitat is recognized as a unique and limited natural resource in Arizona; one that demands protection, management, and enhancement.

Since the document that would result from the augmentation/ elaboration of data for each separate action would be voluminous and unwieldly, the Department believes that each action should be treated separately, with its own environmental document. Also, when considering the scope of the actions and the potential for significant impacts, it is apparent that the situation demands a full environmental impact statement for each action, i.e., one for the quarrying aspect, one for stockpiling and riprapping/levee armoring, and one for the dredging and spoil deposition.

The Department has concerns regarding each of the four actions. Specific comments/information are provided for the subject environmental assessment as a separate attachment to this letter.

The Department appreciates the opportunity to review this environmental assessment, and we fully understand the Bureau's need to manage the Colorado River through a continuing and coordinated maintenance program.

Sincerely,

Bud Bristow, Director

Robert K. Weaver
Habitat Evaluation Coordinator
Planning and Evaluation Branch

RKW:dd

Attachment

cc: Wes Martin, Supervisor, Kingman Regional Office
Don Wingfield, Supervisor, Yuma Regional Office
State Clearinghouse, AZ 81-80-0047

Environmental Assessment - Colorado River and Front Work & Levee System

Specific Comments By
Arizona Game and Fish Department
October 9, 1981

Page 4, Paragraph 1:

If the water now used for sluicing is to be diverted into the All-American Canal, the biological impacts of this reduction in flow in the Colorado River, from Imperial Dam to Pilot Knob, must be addressed in this document. While the impacts of such a reduction in flow are unknown at this time, these impacts could affect fish and wildlife habitat over a large area, including the old river channel between Imperial and Laguna Dams, which lies within the Mittry Lake Wildlife Area. The old river channel provides habitat for the endangered Yuma Clapper Rail (Rallus longirostris yumanensis).

Page 4, Paragraph 2:

In the first sentence of this paragraph, the dynamic nature of wildlife habitat fails to be recognized. Long-term planning of "wildlife developments" does not depend on the actions proposed under this document.

Page 7, Paragraph 3:

Under this section, the scope of the proposed action is vague and unspecific. The following statements appear in the EA:

> "The most probably areas to be stabilized are in the Cibola and Palo Verde Divisions, RM 88-RM 134. Stabilization work is not anticipated in the Limitrophe, Laguna, Imperial, Havasu, and Topock Gorge Divisions."

With only such vague descriptions of the proposed riprapping of the riverbanks, it is impossible to even attempt to professionally assess potential impacts on fish and wildlife resources. The Cibola and Palo Verde Divisions encompass a considerable amount of fish and wildlife habitat. The second sentence of the above excerpt does not rule out bankline riprapping in the Limitrophe, Laguna, Imperial, Havasu, and Topock Gorge Divisions. Therefore, it must be assumed that this statement could be used to cover bankline riprapping in these divisions.

Pages 12-14, Fish and Wildlife:

The description of the fisheries resources in the project area found in this section must be considered inadequate when one considers the size of the project area. With all the literature available for reference, this section should say more than, "Sampling of the Colorado River has provided a good qualitative description of the fish species found in the area.", and a listing of a few common species.

Reptiles and Amphibians:

The following corrections should be made to the reptile and amphibian species list:

- common whipsnake should more appropriately read Striped whipsnake;
- chuckawalla should read chuckwalla;
- desert spring lizard should read desert spiny lizard; and
- zebra-tailed lizard, western whiptail, mohave desert sidewinder, side-blotched lizard and tree lizard should be added to the list.

Birds:

The following corrections should be made to the bird list:

- american wigeon and ring-necked duck should be added to the common waterfowl species;
- the common goldeneye, although occurring in the area, is not considered a common species;
- mergansers should read common merganser;
- the black-crowned night heron, although occurring in the area, is not considered a common species;
- American egret should read great egret;
- phalarope should read Wilson's phalarope;
- little brown crane should be omitted -- there is no such species;
- killdeer should be added to the common shorebird list;
- cormorants should read double-crested cormorants;
- grebes should read western grebes, pied-billed grebes, and eared grebes; and
- marsh hawk, red-tailed hawk, and turkey vulture should be added to this common bird list.

Mammals:

This section is grossly inadequate in describing the mammalian fauna of the project area. The following statement appears under this section:

"The following species of small mammals and big game species are sparsely distributed throughout the creosote bush habitat."

The creosote bush habitat is not the only wildlife habitat represented in the project area. The following vegetative communities are also well represented: Cottonwood/Willow, Screwbean mesquite-Salt Cedar, Honey mesquite-Salt Cedar, Salt Cedar, Honey mesquite, Arrowweed, and Marsh.

The mammalian species listed under this section of the document are not all "...sparsely distributed throughout the creosote bush habitat." Bats are not likely to be found in a typical creosote bush habitat. Bighorn sheep may be seen in creosote bush habitat, but this species has more elaborate habitat requirements. Jackrabbits may be quite abundant in a creosote bush habitat. Mice is a general and vague term in its usage and without further description, e.g. pocket mice, its use is inappropriate in an environmental document. The use of the term "rats" is likewise inappropriate. The probability of observing a white-tailed deer in the project area is nil for all practical purposes, and this species is very infrequently found in creosote bush habitat anywhere in the State of Arizona. The desert cottontail rabbit and raccoon should be included on the list.

Bureau of Land Management Sensitive Species:

The following species should be omitted as they do not occur on the Phoenix District's, Yuma District's, or Desert District's (California) Sensitive Species Lists:

- osprey;
- elf owl;
- vermillion flycatcher; and
- summer tanager.

Endangered or Threatened Species:

Only July 14, 1979 an angler caught a bonytail chub in the Colorado River below Davis Dam. Therefore, it is possible that bonytail chubs still occur in the river below Davis Dam.

This section should also mention those species listed by the State of Arizona in "Threatened and Unique Wildlife of Arizona - 1978". This list is the official State list approved by the Arizona Game and Fish Commission on October 21, 1978. Those State-listed species which occur in the project area include:

- desert bighorn sheep (subspecies mexicana)

- black rail
- fringe-toed lizard
- great egret
- snowy egret
- black-crowned night heron
- zone-tailed hawk
- osprey
- desert tortoise
- gila monster
- Pacific tree frog

Page 20, Paragraph 7:

Hunting is not considered to have disturbed this site.

Page 25, Paragraph 1:

This paragraph implies that wildlife has never returned to the stockpile sites. Reptiles, birds and small mammals probably use these existing stockpile sites.

Page 26, Riprap Feature, Paragraph 3:

In this paragraph and from the table which follows it, the implication is that river miles 22-43 in the Yuma Division have previously been riprapped. This is untrue. While there is some bankline riprap in this section, there are many areas with none. This paragraph is very unclear in its meaning.

Figure Opposite Page 29:

This figure implies riparian habitat is returning to spoil deposit sites. Salt cedar has invaded, but mesquite has not returned.

Page 29, Paragraph 1:

Dreding of the Topock Settling Basin is expected to cause significant adverse impact as a result of the deposition of the spoil material. The spoil deposit sites total 800 acres of existing or potential riparian habitat. Additionally, all the spoil deposit sites are located within the floodplain. When the river reaches flood stages, as a result of the expected large releases from Davis

Dam and/or runoff from the watershed south of Davis Dam, this spoil would be introduced into the Colorado River and would degrade downstream. Siltation of this magnitude is expected to be extremely adverse to the downstream aquatic environment.

Map of Laguna Settling Basin:

On this map, the Arizona-California state boundary is in error. This boundary no longer follows the Old River Channel but is across the "island" area, (see "Interstate Compact Defining the Boundary Between the States of Arizona and California", ratified March 12, 1963). Also, the line on the map showing the "Mittry Lake Refuge" is in error, as is the line showing the boundary of the Imperial National Wildlife Refuge.

Page 32, Laguna Dredge Spoil Site:

If the dredge spoil at the Laguna Settling Basin disposal site assumes a 20:1 slope, it will eventually impact vegetation and wildlife within the Mittry Lake Wildlife Area. The impacts of this dredge spoil on this area need further elaboration. Our Department is concerned about other vegetation types, especially those important for dove and other nesting, and we do not agree that the use of this spoil site will have insignificant impacts if retention dikes are built around cottonwood/willow communities.

Appendix B - Quarry Sites.

Times Gulch:

The Times Gulch site occurs within low-value bighorn sheep habitat which presently suffers from human disturbance and lack of water. Impacts to this habitat as a result of this activity are expected to be insignificant.

Twin Hills:

The Twin Hills site occurs adjacent to bighorn sheep habitat (.75 miles from high value habitat and 1.25 miles from a critical lambing ground). Harvesting surface rock with a rock rake or dozer is not expected to cause significant impacts to bighorn sheep. However, if blasting is necessary, bighorn sheep lambing activities may be impacted because of the close proximity to the lambing ground.

Because of the close proximity of this quarry site to high value bighorn sheep habitat, the Department requests notification of any deviations from the described quarrying plans of operation.

Osborn Wash - North:

The wildlife portion of this section is inadequate in describing the wildlife values of the quarry site and is grossly inadequate and

inaccurate in describing the probably impacts to wildlife resources as a result of this quarry.

This proposed quarry site lies within an important Desert Bighorn lambing area. The Desert Bighorn (Ovis canadensis mexicana)is listed in "Threatened and Unique Wildlife of Arizona - 1978" as a species whose status in Arizona may be in jeopardy in the foreseeable future.

Our Department opposes the development of a rock quarry at the Osborn Wash North Site.

Osborn Wash - South:

The wildlife portion of this section is inadequate and inaccurate in describing existing conditions and potential adverse impacts.

This proposed quarry site lies within an important Desert Bighorn lambing area.

Our Department opposes the development of a rock quarry at this site.

Partial Mitigation Measures for Proposed Actions.

The Quarrying Feature:

If blasting is required at the Twin Hills site, we recommend blasting only occur from July through December of any year to avoid impacts to the bighorn sheep lambing season.

The Stockpile Feature:

We recommend that all stockpile sites which have the potential to support riparian vegetation be abandoned. New, Department-coordinated stockpile sites in upland desert habitat would be less detrimental than existing sites within riparian habitat.

The Riprap Feature:

Most of the impacts resulting from the riprap feature are probably unavoidable. However, the riprap plan calls for the placement of a sand and gravel bedding for the riprap material. These materials will be hauled by trucks and placed below the scour line by front-end loaders and bulldozers. This activity may cause adverse levels of siltation, impacting spawning striped bass. To avoid these impacts, we recommend that the riprapping from Topock to Davis Dam not be conducted from April through June, inclusive.

The Dredging Feature:

Dredging at the Topock Settling Basin is expected to cause significant adverse impacts as a result of sedimentation. The impacts

to spawning striped bass resulting from operation of the dredge may be avoided by not dredging from April through June, inclusive.

The significant adverse impacts resulting from deposition of the spoil material can be avoided by depositing the spoil above the floodplain. We recommend that the spoil be trucked out of the floodplain, and be deposited on Department-coordinated upland desert sites.

FEB 10 1982

LC-154

565

Mr. Bud Bristow, Director
Arizona Game and Fish Department
2222 West Greenway Road
Phoenix, AZ 85023

Dear Mr. Bristow:

We have reviewed your October 9, 1981 comments on the Colorado River Front Work and Levee System (CRFWLS) Environmental Assessment and have revised the assessment wherever possible. However, some comments we are unable to implement, either because we lack the necessary information at this time, or because we disagree with the comments. We would like to discuss these in more detail with you.

We do not agree with your comment that three separate environmental documents are required. We consider the CRFWLS to be one unified action, with all the individual features interrelated and interdependent, and therefore to be treated in one environmental document. We believe this position is consistent with both the spirit and the letter of CEQ Regulations.

In addition, your letter states that we have given only "token" treatment of the impacts whose magnitude you imply is far greater than what we have discussed. We do not believe that we have given only "token" treatment of these impacts. We have been unable to identify the impacts to which you seem to refer. We have been maintaining the Colorado River for many years now and our experience has not revealed the impacts to be significant.

You also indicate that we do not give specific descriptions of the riparian vegetation to be impacted by this project. As we pointed out in the assessment, we do not know what specific areas of bankline will be riprapped at this time. Those areas will be determined as needed. Our responsibility to maintain the Colorado River requires that we have a certain amount of flexibility in placing riprap. However, we have discussed those general areas most likely to be riprapped.

Page 4, Paragraph 1

We have revised the paragraph on page 4 to indicate that the water is not now being used for sluicing. We are not changing the use of any water under our project; therefore, there would be no impacts.

Page 7, Paragraph 3

As already discussed, our responsibility to maintain the Colorado River demands that we exercise a certain flexibility in our maintenance program. It is impossible to determine exactly what banks will most need stabilization 5 years from now. However, we have indicated those areas which are most likely to be riprapped. Since all the riprapping we will do amounts to a little over 3 miles of river bank, and since this amount of riprapping will disturb at the most about 4.5 acres of vegetation, and since about 3 miles of this area has already been disturbed, we do not think the impacts will be significant regardless of the division in which they take place.

Page 25, Paragraph 1:

Assessment revised to indicate that some reptiles, birds, and small mammals may have returned to the sites.

Figure Opposite Page 29:

The caption beneath the picture does not mention anything but saltcedar. The picture shows an actual dredge material site and simply shows what was there in the spring of 1981.

Page 29, Paragraph 1:

This comment seems to revolve around a disagreement as to what is the flood plain of the Colorado River. Bureau engineers indicate that these sites are not in the flood plain of the Colorado River. Regardless, these sites were discussed with and were agreed upon by the Lower Colorado River Management Program Work Group, of which your agency is a member.

Map of Laguna Settling Basin:

This comment has been noted and the map will be revised when it is next printed.

Page 32, Laguna Dredge Spoil Site:

We maintain our position that this action will not have significant impacts on the Hittry Lake Wildlife Area. As already mentioned, the dredge material site will be located immediately adjacent to and almost contermainous with the settling basin. This means that the outer edge of the site will be about one-half mile from the boundary of the Hittry Lake Wildlife Area. In addition, the use of retention dikes will minimize impacts on cottonwood and willows. The selected dredge material site also supports a higher percentage of low value vegetation (arrowweed). For these reasons, we believe the effects on vegetation and wildlife in the Hittry Lake area will be insignificant.

Appendix B - Quarry Sites:

Twin Hills

Blasting at this site will not be necessary.

Osborn Wash-North

The assessment has been revised to indicate that Arizona Game and Fish Department believes this site to be bighorn sheep habitat.

Osborn Wash-South

The assessment has been revised to indicate that the Arizona Game and Fish Department considers this site to be important bighorn sheep habitat.

Partial Mitigation Measures for Proposed Actions:

The Quarrying Features

No blasting will be done at the Twin Hills Site.

The Stockpile Feature

It is unrealistic to consider moving stockpile sites inland. These sites would require extensive road building to be accessible. They would require extensive use of scarce energy resources to move the rock where needed. It would require extensive trucking, which would produce dust and traffic congestion. If, however, the Department has recommendations for alternate, better sites close to the areas being riprapped, the Bureau of Reclamation will look at these sites and consider their use.

The Riprap Feature

The riprap plan does not call for the placement of sand and gravel for bank line stabilization. Regardless, localized, short-term increases in suspended sediment during riprapping do not represent significant adverse impacts to striped bass reproduction. Unstable streambanks are presently a major source of sediment to the river due to bank sloughing during water level fluctuations. Riprapping these areas will eliminate these existing, persistent perturbations.

Dredging Feature:

Dredging at the Topock Settling Basin is not expected to cause significant adverse impacts to striped bass spawning. This area is a settling basin and has been an area of natural sediment deposition since Lake Havasu filled, causing the water currents to slow above Topock Gorge. Since striped bass spawn in areas of moderate to strong current (Hinckley 1973), Topock Settling Basin does not represent striped bass spawning habitat. If you have documentation of striped bass spawning in this reach of the river, we would appreciate such data.

In conclusion, we would like to inform you that we plan to continue with the processing of this environmental assessment. We plan to submit this assessment to the Corps of Engineers, as part of our application for a 404 permit and to the Bureau of Land Management as part of an application for a use permit to quarry rock. We would like to assure you that we are not attempting to bypass your concerns about the quarry sites by doing so. Our responsibility to maintain the Colorado River requires that we continue in an expeditious manner to process this document. However, we are willing to discuss with representatives of your office further information about these quarry sites and their impacts on the bighorn sheep. Even though we have been unable to identify any significant impacts, perhaps they could identify those impacts they feel to be significant as well as provide us with general information which we may not have.

We will be attempting to contact you soon, and we will probably be applying for a 404 permit at about the same time. We are sure your agency will be included in the review process for that 404 permit, but also, we will be attempting to pursue the subject with you as part of your earlier comments.

Enclosed is a copy of the revised assessment.

Sincerely yours,

ANTHONY D. CAMPBELL

Acting For
N. W. Plummer
Regional Director

Enclosure

COLORADO RIVER INDIAN TRIBES

Colorado River Indian Reservation

ROUTE 1, BOX 23-B
TELEPHONE (602) 669-9211
PARKER, ARIZONA 85344

November 4, 1981

U.S. Department of the Interior
Bureau of Reclamation
Lower Colorado Regional Office
P.O. Box 427
Boulder City, Nevada 89005

Dear Sir:

The Resources Development Committee of the Colorado River Indian Tribes, has reviewed the Environmental Assessment on the Colorado River Front Work and Levee System report and found no adverse impact will be made on the Colorade River Indian Reservation.

The Colorado River Indian Tribes strongly endorse the Bureau's project in its river regulation and flood control purpose.

It has been noted in the report that severe erosion is now occuring in the Parker II area and that a study is being made. The Tribes are hopeful that a plan approved by all concerned agencies and groups will soon be prepared and that stabilization of the river be developed wherein the Tribes can plan and made an orderly development for economic purposes.

Sincerely yours,

COLORADO RIVER INDIAN TRIBES

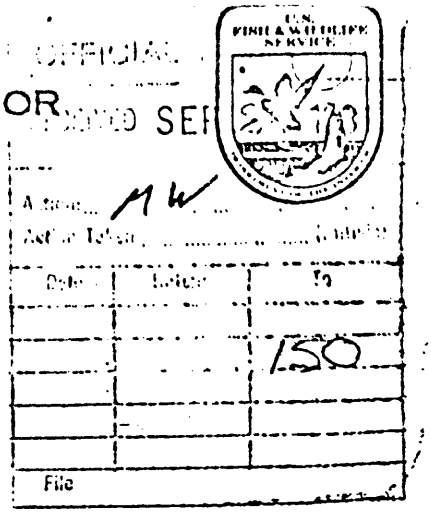
Anthony Drennan Sr.

Anthony Drennan, Sr., Chairman
Tribal Council

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

Ecological Services
2934 W. Fairmount Avenue
Phoenix, Arizona 85017

September 15, 1981



MEMORANDUM

To: Regional Director, BR, Boulder City, Nevada

From: Field Supervisor, Phoenix ES

Subject: Environmental Assessment, Colorado River Front Work and Levee System

We have reviewed the subject assessment and provide the following comments. Because specific comments would be too numerous we are presenting only our major concerns. Generally, a Finding of No Significant Impact (FONSI) is not justified based upon the information contained in the assessment. For example, in the description of the Dredge Spoil Disposal Sites for the Topock Settling Basin, Areas 3 and 8 both have potential to impact important marsh habitat. By stating that this impact will be minimized does not necessarily infer that it is not significant. More information should be given to support the claim. Also, in referring to the Dredge Spoil Sites for the Laguna Settling Basin on page 32, no mention is made of potential impacts to the Old River Channel due to the addition of water and sediment from the dredging operation.

Additionally, a number of questions regarding the environmental impacts to the proposed quarry sites remain unanswered or ignored. For example, the description of the Times Gulch site on pages B-1 through B-3 indicates that a valuable water source for bighorn sheep and other wildlife will be impacted. The fact that no sheep were observed in a 2 day period does not diminish the value of this resource to the sheep. A more detailed analysis is needed before any determination of the impacts can be made.

The discussion of alternatives on page 4 is very inadequate. No justification is provided to support the contention that there is only one way to meet the objectives of flood control and river stabilization. Merely making a statement of the contention is not justification.

In general there is insufficient information included in the report and much of the data that is presented is ambiguous or otherwise inadequate to support a FONSI. We recommend that the assessment be rewritten to include additional supporting data, more detailed site descriptions and a more realistic analysis of anticipated impacts, as indicated above.

If you have any questions concerning these comments or would like to discuss in detail our review of the subject assessment please contact this office.

LC-154

FEB 10 1982

565

Memorandum

To: Field Supervisor, Ecological Services, Fish and Wildlife Service, 2934 W. Fairmount Avenue, Phoenix, AZ 85017

From: ACTING Regional Director

Subject: Environmental Assessment on the Colorado River Front Work and Levee System (your September 15, 1981 memorandum)

We have reviewed your comments about the subject assessment. Wherever possible we have revised the assessment to reflect those comments. In reference to your comment about Dredge Disposal Sites 3 and 8 impacting important marsh habitat, field reconnaissance and the vegetation type maps prepared for this area by Drs. Ohmart and Anderson did not identify any marsh habitat in Sites 3 and 8. There is some marsh habitat adjacent to Site 3, but it will not be impacted since protective measures will be taken. There will be no impacts to the Old River Channel because the water and sediment from the dredging operation will not drain into the Old River Channel.

In regard to your comment about the Times Gulch quarry site and its possible impact on bighorn sheep, we will take this comment under further advisement. Even though we are continuing to process this assessment, that is, we are going to request a 404 permit and a Bureau of Land Management use permit, we are not foreclosing your concerns about bighorn sheep. We will be meeting soon with representatives of fish and game agencies to discuss quarrying operations and their impacts on wildlife. We have not been able to identify any significant impacts to wildlife due to quarrying, but we are willing to pursue the matter by further analysis and information gathering.

In regard to the comments found in the last two paragraphs of your memorandum, we could not revise the assessment in light of these comments or respond in detail to them because of a lack of specificity. We believe that we have given adequate justification for not presenting any viable alternatives, which is simply that there are not any. In reference to your last paragraph, we believe that we have given a "realistic analysis of anticipated impacts" in the assessment. Perhaps if you could be more specific as to what impacts we have not realistically discussed, we could more adequately respond to them. Enclosed is a copy of the revised assessment.

ANTHONY D. CAMPBELL

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
215 Fremont Street
San Francisco, Ca. 94105

K.M. Trompeter, Regional Environmental Officer
Bureau of Reclamation
Lower Colorado River Regional Office
P.O. Box 427
Boulder City, NV 89005

Dear Mr. Trompeter:

The Environmental Protection Agency (EPA) has received and reviewed the Environmental Assessment (EA) titled COLORADO RIVER FRONT WORK & LEVEE SYSTEM.

The EA does not adequately assess the impacts of the proposed project with respect to 404 permit and water quality issues. The attached comments detail our concerns which should be addressed in a revised EA or in any future document dealing with the proposed action.

We appreciate the opportunity to review this EA and request copies of any documents related to this project. If you have any questions regarding our comments, please contact Susan Sakaki, EIS Review Coordinator, at (415) 556-7858.

Sincerely yours,

Jake Mackenzie, Director
Surveillance and Analysis Division

Attachment

404 Permit Comments

While the Corps of Engineers issues 404 permits, EPA is responsible for reviewing and concurring on the permit applications. In light of our role in this process, we have the following comments to offer at this time.

1. The EA should provide further clarification and discussion with respect to the impacts associated with the discharge of dredged material to wetlands. Statements on page 30 (c) and page 31 (i) indicate that efforts should be made to minimize the impacts of encroachment of dredged materials into Topock Marsh. However, the last sentence on page 38 contradicts the need to minimize wetlands impacts by indicating that the "project would have no impacts on any wetlands found adjacent to the river in the project area." Project impacts on wetlands should be re-evaluated.

2. While the EA discusses some of the project's adverse impacts on wetland vegetation, wildlife, and fisheries, no specific mitigation measures are proposed for implementation.

3. The EA inaccurately states on page 36 that recent legislation requires "404 permits for dredging and riprapping." A 404 permit is required for disposal of dredged material. Additionally, the statement (p. 36, paragraph a) that "environmental degradation or pollution is not an issue with the dredged material" is misleading. While there may be no contamination of the dredged material, placement of this material in sensitive aquatic or terrestrial areas can have significant impacts on those areas.

Water Quality Comments

The EA does not adequately address the water quality impacts of bank stabilization and dredging. The discussion of bank stabilization (p. 27) does not indicate the degree of turbidity increases; nor does it indicate the time frame in which these conditions will "eventually clear up." The discussion of dredging (p. 29) states that "dredging would increase turbidity" and that "other impacts would be caused by disposing of the dredge soil." Again, the discussion of water quality impacts needs to be expanded. Greater detail should be presented on the impacts of dredging and dredge disposal on turbidity and dissolved oxygen.

FEB 10 1982

LC-154

565

Memorandum

To: Mr. Jake McKenzie, United States Environmental Protection Agency, Region IX, 215 Fremont Street, San Francisco, CA 94105

From: ACTING Regional Director

Subject: Environmental Assessment--Colorado River Front Work and Levee System (your letter of September 24, 1981)

We have reviewed your comments on the subject assessment and have revised the assessment wherever possible.

Certain measures have been proposed for mitigation. For example, quarrying activities will be limited in sensitive areas to those times of the year when impacts should be the fewest. However, a great degree of mitigation has not been proposed because it is not Bureau policy to mitigate for insignificant impacts. This project is in essence ongoing O&M work on the river. We have been doing this type of work for many years and have been unable to identify any significant impacts associated with it. We are still unable to identify any significant impacts, and we have not proposed mitigation for insignificant impacts.

We have revised the assessment to more clearly indicate that the dredge material is inert and therefore poses no pollution problems. All dredge disposal areas have been chosen in coordination with fish and wildlife resources agencies, as well as other state and Federal agencies. One of the criteria for selection was that these areas pose no significant environmental problems. We are not placing this material in any "sensitive aquatic or terrestrial areas" and therefore do not foresee any significant impacts.

We have revised the assessment to add more details about the turbidity caused by placement of riprap and the dredging activities. The turbidity caused by placing riprap is limited to the area where the

rocks are placed in the water and this turbidity would clear up the same day it is placed. Dredging could cause some slight turbidity in the immediate area of the dredge line itself; however, this slight turbidity would clear up within one day. Because the dredge material is fine sand, dredging would not result in any measurable turbidity in the general area. There would be no impacts at all to dissolved oxygen.

Enclosed is a copy of the revised assessment. For your information, we plan to utilize this revised version for our Corps of Engineers 404 Permit and Bureau of Land Management land use permit applications.

ANTHONY D. CAMPBELL

Enclosure

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
215 Fremont Street
San Francisco, Ca. 94105

RECEIVED SEP 28 1981
Action: FSI/MW (Initials)
To: 730
2d SEP 1981
File

780

K.M. Trompeter, Regional Environmental Officer
Bureau of Reclamation
Lower Colorado River Regional Office
P.O. Box 427
Boulder City, NV 89005

Dear Mr. Trompeter:

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We appreciate the opportunity to review this EA and request copies of any documents related to this project. If you have any questions regarding our comments, please contact Susan Sakaki, EIS Review Coordinator, at (415) 556-7858.

Sincerely yours,

Jake Mackenzie, Director
Surveillance and Analysis Division

Attachment

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" Samples

DEPARTMENT OF ENERGY
Western Area Power Administration
P.O. Box 200
Boulder City, Nevada 89005

OFFICIAL FILE COPY
RECEIVED AUG 31 1981

AUG 28 1981

MW

150

File

IN REPLY
REFER TO: G2330
5430 - Col. Rvr. Levee System

Mr. Eugene Hinds
Regional Director
Attention: LC-150
U.S. Bureau of Reclamation
Lower Colorado Region
P.O. Box 427
Boulder City, Nevada 89005

Dear Mr. Hinds:

Thank you for the opportunity to comment on the Environmental Assessment for the Colorado River Front Work and Levee System. We have reviewed the document and find no apparent impacts on Western. Based on our finding, we offer no comments.

Sincerely,

R. A. Olson
Area Manager

United States
Department of
Agriculture

Soil
Conservation
Service

2828 Chiles Road
Davis, CA 95616
(916) 758-2200

OFFICIAL FILE COPY

RECEIVED SEP 8 1981

Action: MW

Date	Initials	To
		130
File		

September 3, 1981

K. M. Trompeter
Regional Environmental Officer
U.S. Department of the Interior
Bureau of Reclamation
P. O. Box 427
Boulder City, NV 89005

Dear Mr. Trompeter:

We acknowledge receipt of the Environmental Assessment on the Colorado River Front Work and Levee System. We have reviewed the document and have no comments.

Sincerely,

Darwyn H. Briggs, acting

FRANCIS C. H. LUM
State Conservationist

STATE OF NEVADA
GOVERNOR'S OFFICE OF PLANNING COORDINATION
CAPITOL COMPLEX
CARSON CITY, NEVADA 89710
(702) 885-4865

September 4, 1981

Mr. K.M. Trompeter
Regional Environmental Officer
U.S. Department of the Interior
Bureau of Reclamation
Lower Colorado Regional Office
P.O. Box 427
Boulder City, NV 89005

RE: SAI NV# 82300011 Project: Colorado River Front Work & Levee System - E.A.

Dear Mr. Trompeter:

The State Clearinghouse has processed the S.F. 424 for the proposed project. Based on the information contained therein and the responses of interested parties, the proposed project is, as of this date, found not to be in conflict with the State's plans, goals or objectives.

Attached are the comments of the State Clearinghouse prepared by the Division of State Parks.

You should now continue with the application process prescribed by the appropriate funding agency.

The S.F. 424 is to be included with your final application, and a copy of this letter must accompany the application to the funding agency.

Sincerely,

John Wm. Sparbel

John Wm. Sparbel
State Planning Coordinator

JWS/sl
Enclosure

STATE LANDS
State Parks
Water Planning

NEVADA STATE CLEARINGHOUSE REVIEW FORM

TO:

-] Transportation
- X Conservation & Natural Resources
-] Human Resources
- X Wildlife (2)
-] Budget
-] Historic Preservation & Archeology
-] Agriculture
-] Community Services Agency
-] Commerce
-] Public Service Commission
- ☐ Employment Security Department
- ☐ Energy
- ☐ Law Enforcement Assistance
- ☐ Taxation
- ☐ Equal Rights Commission
- ☐ Economic Development
- ☐ G.O.P.C. -
- ☐ _____
- ☐ _____
- ☐ _____

PLANNING COORDINATOR
GOVERNOR'S OFFICE
CAPITOL COMPLEX
CARSON CITY, NEVADA
885-4865

8-13-81
Date

ROM: Bob Hill, State Planning Coordinator

AI NV # 82300011 PROJECT: Colorado River Front Work & Levee System - E.A.

ttached for review and comment is a copy of the aforementioned project. *PLEASE* evaluate it with respect to:

1) the program's effect on your plans and programs
2) the importance of its contribution to State and/or Areawide goals and objectives
3) its accord with any applicable law, order or regulation with which you are familiar
4) additional considerations.

EASE submit your comments to this office NO LATER THAN 8-27-81 by checking the appropriate x below and returning the form to this office. *Please do so even if you have no comment* on this particular project so at we may complete our processing.

IIS SECTION TO BE COMPLETED BY REVIEWING AGENCY (_____)

No comment on this project
Proposal supported as written (see below)
Additional information (see below)
☐ Conference desired (see below)
☐ Conditional support (outlined below)
☐ Disapproval/denial of funding (must specify reason below)

omments: *(use additional sheets if necessary)*

The Division sees little impact on recreation or open space in Nevada. There will be some impact with levees to be armored in the Fort Mohave area. This may affect future recreational development in conjunction with the proposed Colorado River State Park as part of the Fort Mohave lands transfer.

There is no analysis of impacts on rare or threatened species.

Many of the quarry sites will adversely impact wilderness, archaeological and recreational sites, but these are all out of Nevada.

SEP 1981

RECEIVED
AUG 11 1981
Nevada Division of State Parks

John L. Meder
John L. Meder, Administrator
Division of State Parks

SIGNOFF

OMB Approval No. 29-R0218

FEDERAL ASSISTANCE

2. Applicant's application — a. Number: LC-154; b. Date: 19 (Year Month Day)

3. State application identifier — a. Number: AZ 81-80-0047; b. Date Assigned: 19 81 08 12 (Year month day)

1. Type Of Action (Mark appropriate box): ☐ Preapplication ☐ Application ☐ Notification Of Intent (Opt.) ☐ Report Of Federal Action

Leave Blank: SEP 14 1981 Petra Leija-Leyba

Section I - Applicant / Recipient Data

4. Legal Applicant/Recipient
- a. Applicant Name: Bureau of Reclamation
- b. Organization Unit: Lower Colorado Regional Office
- c. Street/P.O. Box: P.O. Box 427
- d. City: Boulder City
- e. County:
- f. State: Nevada
- g. Zip Code: 89005
- h. Contact Person (Name & telephone no.): K. M. Trompeter, Regional Environmental Officer

5. Federal Employer Identification No.

6. Program (From Federal Catalog)
- a. Number: 15.999
- b. Title: unknown - DOI, Bureau of Reclamation

7. Title and description of applicant's project: COLORADO RIVER FRONT WORK AND LEVEE SYSTEM - ENVIRONMENTAL ASSESSMENT - The purpose of the proposed action is to reduce sediment in the river, stabilize the riverbanks, and armor the levees. Sufficient amounts of riprap material for a project of this scale are not presently available so the riprap material for a given area will have to be quarried and stockpiled prior to the maintenance work in that area.

8. Type of applicant/recipient
A-State; B-Interstate; C-Substate District; D-County; E-City; F-School District; G-Special Purpose District; H-Community Action Agency; I-Higher Educational Institution; J-Indian Tribe; K-Other
(Specify): Federal Agency — Enter appropriate letter: K

9. Type of assistance
A-Basic Grant; B-Supplemental Grant; C-Loan; D-Insurance; E-Other
Enter appropriate letter(s): E

10. Area of project impact (Names of cities, counties, states, etc.): Maricopa, Mohave, Yuma Counties, AZ

11. Estimated number of persons benefiting

12. Type of application
A-New; B-Renewal; C-Revision; D-Continuation; E-Augmentation
Enter appropriate letter: A

13. Proposed Funding

a. Federal	$	.00
b. Applicant		.00
c. State		.00
d. Local		.00
e. Other	1	.00
f. Total	$ 1	.00

14. Congressional Districts Of:
- a. Applicant
- b. Project: Mul

15. Type of change (For 12c or 12e)
A-Increase Dollars; B-Decrease Dollars; C-Increase Duration; D-Decrease Duration; E-Cancellation; F-Other (Specify):
Enter appropriate letter(s):

16. Project Start Date (Year month day) 19

17. Project Duration (Months)

18. Estimated date to be submitted to federal agency (Year month date) 19

19. Existing federal identification number

20. Federal agency to receive request (Name, city, state, zip code)

21. Remarks added ☐ Yes ☐ No

Section II - Certification

22. The Applicant Certifies That

a. To the best of my knowledge and belief, data in this preapplication/application are true and correct, the document has been duly authorized by the governing body of the applicant and the applicant will comply with the attached assurances if the assistance is approved.

b. If required by OMB Circular A-95 this application was submitted, pursuant to instructions therein, to appropriate clearinghouses and all responses are attached:

	No response	Response attached
(1) Arizona State Clearinghouse	☐	☒
(2) Region I Clearinghouse MAG, Region IV	☒	☐
(3) Clearinghouse (DIST. IV) (Comments will be forwarded)	☐	☐

23. Certifying representative
- a. Typed name and title
- b. Signature
- c. Date signed (Year month day) 19

Section III - Federal Agency Action

24. Agency name

25. Application received (Year month day) 19

26. Organizational Unit

27. Administrative office

28. Federal application identification

29. Address

30. Federal grant identification

31. Action taken
☐ a. Awarded; ☐ b. Rejected; ☐ c. Returned for amendment; ☐ d. Deferred; ☐ e. Withdrawn

32. Funding

a. Federal	$	.00
b. Applicant		.00
c. State		.00
d. Local		.00
e. Other		.00
f. Total	$	.00

33. Action date (Year month day) 19

34. Starting date (Year month day) 19

35. Contact for additional information (Name and telephone number)

36. Ending date (Year month day) 19

37. Remarks added ☐ Yes ☐ No

38. Federal agency A-95 action
a. In taking above action, any comments received from clearinghouses were considered. If agency response is due under provisions of Part 1, OMB Circular A-95, it has been or is being made.

b. Federal Agency A-95 Official (Name and telephone number)

Comment Form To Be Completed by Reviewing Agency

TO:

State Application Identifier (SAI)

AUG 12 1981

State A/Z No. 81-80-0047

Frank G. Servin, Exec. Dir.
District IV Council of Gov'ts
1020 Fourth Ave., Suite 201
Yuma, AZ 85364

Indian Affairs
Mineral Res.
Game & Fish
Ag. & Hort.
Archaeological Research
AZ Natural Heritage Prog.
Health
Water
AORCC
Land
Parks
OEPAD: P. Bergthold

Region I, IV

FROM: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

RECEIVED
DIST. IV COG
AUG 18 1981
AM 7;8;9;10;11;12;1;2;3;4;5;6 PM

This project is referred to you for review and comment. Please evaluate as to the following questions. After completion, return THIS FORM AND ONE XEROX COPY to the Clearinghouse no later than 17 WORKING DAYS from the date noted above. Please contact the Clearinghouse at 255-5004 if you need further information or additional time for review.

☐ No comment on this project ☒ Proposal is supported as written ☐ Comments as indicated below

1. Is project consistent with your agency goals and objectives? ☐ Yes ☐ No ☐ Not Relative to this agency

2. Does project contribute to statewide and/or areawide goals and objectives of which you are familiar? ☐ Yes ☐ No

3. Is there overlap or duplication with other state agency or local responsibilities and/or goals and objectives? ☐ Yes ☐ No

4. Will project have an adverse effect on existing programs with your agency or within project impact area? ☐ Yes ☐ No

5. Does project violate any rules or regulations of your agency? ☐ Yes ☐ No

6. Does project adequately address the intended effects on target population? ☐ Yes ☐ No

7. Is project in accord with existing applicable laws, rules or regulations with which you are familiar? ☐ Yes ☐ No

Additional Comments (Use back of sheet, if necessary):

Reviewers Signature: Frank G. Servin E-37 Date 9-7-81

TO:

Mr. John Jett, Director
Mineral Resources Department
Fairgrounds, Mineral Building
1826 West McDowell Road
Phoenix, Arizona 85007

FROM: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

State Application Identifier (SAI)

AUG 12 1981

State AZ No. 81-80-0047

Indian Affairs
Mineral Res.
Game & Fish
Ag. & Hort.
Archaeological Research
AZ Natural Heritage Prog.
Health
Water
AORCC
Land
Parks
OEPAD: P. Bergthold

Region I, IV

RECEIVED
AUG 13, 1981
DEPT. ... RESOURCES
... ARIZONA

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Additional Comments (Use back of sheet, if necessary):

Reviewers Signature John T Jett Date 8-13-81

Title B-38 Telephone

TO:

Mr. James R. Carter, Director
Agriculture & Horticulture Dept.
421 Capitol Annex West
Phoenix, Arizona 85007

FROM: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

State Application Identifier (SAI)
AUG 12 1981 State AZ No. 81-80-0047

Indian Affairs
Mineral Res.
Game & Fish
Ag. & Hort.
Archaeological Research
AZ Natural Heritage Prog.
Health
Water
AORCC
Land
Parks
OEPAD: P. Bergthold

RECEIVED
AUG 13 1981
ARIZONA COMMISSION OF AGRICULTURE & HORTICULTURE

Region I, IV

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6. Does project adequately address the intended effects on target population? ☐ Yes ☐ No

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Additional Comments (Use back of sheet, if necessary):

Reviewers Signature R. Abernethy Date 8-14-81

Title Division Director Telephone 255-4373

TO:

State Application Identifier (SAI)

AUG 12 1981 State A.Z. No. 81-80-0047

Dr. Paul Fish, Archaeologist
Arizona State Museum
The University of Arizona
Tucson, Arizona 85721

Indian Affairs
Mineral Res.
Game & Fish
Ag. & Hort.
Archaeological Research
AZ Natural Heritage Prog.
Health
Water
AORCC
Land
Parks
OEPAD: P. Bergthold Region I, IV

FROM: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

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6. Does project adequately address the intended effects on target population? ☐ Yes ☐ No

7. Is project in accord with existing applicable laws, rules or regulations with which you are familiar? ☐ Yes ☐ No

Additional Comments (Use back of sheet, if necessary):

Reviewers Signature Sharon F. Urban Date August 20, 1981

Title Public Archaeologist E-40 Telephone 626-4139

Joe F. Fallini, Commissioner
State Land Department
1624 W. Adams, 4th Floor
Phoenix, AZ 85007
Attn: Robert Yount

FROM: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

State Application Identifier (SAI)

AUG 12 1981

81-80-0047

Indian Affairs
Mineral Res.
Game & Fish
Ag. & Hort.
Archaeological Research
AZ Natural Heritage Prog.
Health
Water
AORCC
Land
Parks
OEPAD: P. Bergthold

Region I, IV

This project is referred to you for review and comment. Please evaluate as to the following questions. After completion, return THIS FORM AND ONE XEROX COPY to the Clearinghouse no later than 17 WORKING DAYS from the date noted above. Please contact the Clearinghouse at 255-5004 if you need further information or additional time for review.

☐ No comment on this project ☒ Proposal is supported as written ☐ Comments as indicated below

1. Is project consistent with your agency goals and objectives? ☐ Yes ☐ No ☐ Not Relative to this agency

2. Does project contribute to statewide and/or areawide goals and objectives of which you are familiar? ☐ Yes ☐ No

3. Is there overlap or duplication with other state agency or local responsibilities and/or goals and objectives? ☐ Yes ☐ No

4. Will project have an adverse effect on existing programs with your agency or within project impact area? ☐ Yes ☐ No

5. Does project violate any rules or regulations of your agency? ☐ Yes ☐ No

6. Does project adequately address the intended effects on target population? ☐ Yes ☐ No

7. Is project in accord with existing applicable laws, rules or regulations with which you are familiar? ☐ Yes ☐ No

Additional Comments (Use back of sheet, if necessary):

Reviewers Signature Robert Yount Date August 25, 1981

Title Land Manager E-41 Telephone 255-4625

Comment Form To Be Completed by Reviewing Agency

TO:

Mr. Clinton M. Pattea
Executive Secretary
Indian Affairs Commission
1645 West Jefferson St.
Phoenix, AZ 85007

FROM: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

State Application Identifier (SAI)

AUG 12 1981 State AZ No. 81-80-0047

Indian Affairs
Mineral Res.
Game & Fish
Ag. & Hort.
Archaeological Research
AZ Natural Heritage Prog.
Health
Water
AORCC
Land
Parks
OEPAD: P. Bergthold Region I, IV

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Additional Comments (Use back of sheet, if necessary):

Reviewers Signature [signature] Date 8-21-81

TO:

State Application Identifier (SAI)

AUG 12 1981

State A.Z. No. 81-80-0047

Department of Water Resources
Mr. Larry Linser
99 E. Virginia
Phoenix, AZ 85004

FROM: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

Indian Affairs
Mineral Res.
Game & Fish
Ag. & Hort.
Archaeological Research
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Health
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7. Is project in accord with existing applicable laws, rules or regulations with which you are familiar? ☒ Yes ☐ No

Additional Comments (Use back of sheet, if necessary):

Reviewers Signature David G. Lytle Date 8-31-81

Title E-43 Telephone 255-1566

TO:

Mr. Terry B. Johnson
Arizona Natural Heritage Program
30 North Tucson Boulevard
Tucson, Arizona 85716

State Application Identifier (SAI)

AUG 12 1981

81-80-0047

Indian Affairs
Mineral Res.
Game & Fish
Ag. & Hort.
Archaeological Research
AZ Natural Heritage Prog.
Health
Water
AORCC
Land
Parks
OEPAD: P. Bergthold Region I, IV

FROM: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

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7. Is project in accord with existing applicable laws, rules or regulations with which you are familiar? ☐ Yes ☐ No

Additional Comments (Use back of sheet, if necessary):

Reviewers Signature Terry B Johnson Date Aug. 31, 1981

Title Coordinator/ANHP E-44 Telephone 323-0867

TO:

Dr. James Sarn, M.D., Director
Department of Health Services
1740 West Adams Street
Phoenix, AZ 85007

State Application Identifier (SAI)

AUG 12 1981 81-80-0047

Indian Affairs
Mineral Res.
Game & Fish
Ag. & Hort.
Archaeological Research
AZ Natural Heritage Prog.
Health
Water
AORCC
Land
Parks
OEPAD: P. Bergthold Region I, IV

FROM: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

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7. Is project in accord with existing applicable laws, rules or regulations with which you are familiar? ☐ Yes ☐ No

Additional Comments (Use back of sheet, if necessary):

Reviewers Signature _____ Date _____

General Comments

1. Control of accelerated sedimentation should improve water quality and is therefore supported.

2. Protection from levee failures and floods is important to assure quality drinking water supplies for residents in low lying areas.

3. The quarry location maps and dwgs. 423-300 - 1697 thru 1707 provide an excellent indication of proposed operations.

4. Since the City of Yuma water supply is from the Colorado River, they should be given the opportunity to review this draft.

Specific Comments

1. Page 4, paragraphs 5 and 6 - Since there is a substantial national commitment to controlling the Colorado River, permanent solution alternative to the sediment reduction and riverbank stabilization should be more exhaustively investigated. For example, concrete lining of the banks and bottom should receive more than just a "cursory glance". Also, other alternatives, such as levee/bank vegetation enhancement, modified regulatory storage/hydroelectric operating procedures, dam construction, and improved rangeland management could be considered to reduce sedimentation.

2. Photograph opposite page 4 - The text should refer to this figure. Perhaps notation or artwork could be added to more specifically identify problems.

3. Page 5, paragraph 1 - Not clear. Please amplify.

4. Page 15, paragraph 8 - Surface water discharges to the Colorado River in Arizona typically meet bacteriologic, suspended solids and 5-day BOD requirements and are not known to be causing stream standards violations for these parameters.

5. Table 2 - Only 23 quarry sites are listed. The text refers to 24.

6. Page 20, paragraph 6 - First and second sentences are not clear.

7. Pages 20 thru 24 - The environmental evaluation should address potential sedimentation and mineralization impacts on water quality resulting from quarry operation and abandonment on or near ephemeral watercourses.

8. Page 27, paragraphs 2 thru 5 - Some rock contain toxic mineralization which could suppress biotic recovery following bank stabilization with riprap. Has this been a problem in the past?

9. Pages 29 thru 32, 2nd paragraph - How will sediment be controlled during dredging? Other aspects of the dredging program have not been reviewed by this Agency and we will support Arizona Game and Fish Department recommendations.

10. Page 32, paragraph 3 thru page 34, paragraph 4 - The no-action alternative should be expanded for the quarrying and dredging features.

FEB 10 1982

LC-154

565

Your Reference: AZ 81-80-0047

Department of Economic Planning
and Development
State of Arizona
Capitol Tower, Room 505
1700 West Washington Street
Phoenix, AZ 85007

Gentlemen:

We have reviewed the comments forwarded by your agency on the Colorado River Front Work and Levee System Environmental Assessment and have revised the assessment wherever possible. We could not add more discussion to the alternatives considered because concrete lining is simply too expensive to be discussed in any detail and there are legal and institutional restraints precluding us from considering the other alternatives mentioned, such as modified regulatory storage/hydroelectric operating procedures, and dam construction.

We have implemented your other comments. We have also evaluated the possible impacts of sedimentation reaching the river from freshly quarried sites. This has not been a problem in the past. Whatever mineral content there is in the quarry has already been reaching the river through natural runoff. There is the possibility that some undersize material may be carried into the washes by rainfall and be carried into the river. But the amount would be small. Most of the rock quarried will be much larger in size. Very little undersize material, i.e. smaller than gravel, will be produced.

We have not had a problem in the past with any toxic minerals in riprap material which retarded biotic recovery. Sedimentation is not a problem during dredging. The dredge material is fine sand and has not caused any problem of sedimentation in the past. The immeasurable amounts of sedimentation produced during dredging operations generally clear up in less than a day.

Enclosed is a copy of the revised assessment.

Sincerely yours,

ANTHONY D. CAMPBELL

Acting for N. W. Plummer
Regional Director

ARIZONA

OFFICE
OF THE
GOVERNOR
BRUCE BABBITT

OFFICE OF
ECONOMIC PLANNING AND DEVELOPMENT

Larry Landry, Director • (602) 255-5371 • General Offices of OEPAD • 4th Floor

MEMORANDUM

TO: Applicant

FROM: Arizona State Clearinghouse

DATE: SEP 30 1981

RE: Comments After Signoff

Enclosed are copies of responses, concerning the attached project, which was received by us after our Signoff to you.

A copy of the responses are to be forwarded to the Federal Agency.

Mailing Address: Executive Tower Room 505 • 1700 West Washington • Phoenix, Arizona 85007

SIGNOFF

OMB Approval No. 29--R0218

FEDERAL ASSISTANCE

2. Applicant's application — a. Number: LC-154; b. Date 19 (Year Month Day):

3. State application identifier — a. Number: AZ 81-80-0047; b. Date Assigned 19 81 08 12 (Year month day)

1. Type Of Action (Mark appropriate box): ☐ Preapplication ☐ Application ☐ Notification Of Intent (Opt.) ☐ Report Of Federal Action

Leave Blank: SEP 14 1981 Petra Leija-Leyba

Section I - Applicant / Recipient Data

4. Legal Applicant/Recipient

a. Applicant Name : Bureau of Reclamation
b. Organization Unit : Lower Colorado Regional Office
c. Street/P.O. Box : P.O. Box 427
d. City : Boulder City
e. County :
f. State : Nevada
g. Zip Code : 89005
h. Contact Person (Name & telephone no.) : K. M. Trompeter, Regional Environmental Officer

5. Federal Employer Identification No.:

6. Program (From Federal Catalog) — a. Number: 15.999; b. Title: Unknown - DOI, Bureau of Reclamation

7. Title and description of applicant's project: COLORADO RIVER FRONT WORK AND LEVEE SYSTEM - ENVIRONMENTAL ASSESSMENT - The purpose of the proposed action is to reduce sediment in the river, stabilize the riverbanks, and armor the levees. Sufficient amounts of riprap material for a project of this scale are not presently available so the riprap material for a given area will have to be quarried and stockpiled prior to the maintenance work in that area.

8. Type of applicant/recipient
A–State; B–Interstate; C–Substate District; D–County; E–City; F–School District; G–Special Purpose District; H–Community Action Agency; I–Higher Educational Institution; J–Indian Tribe; K–Other
(Specify): Federal Agency
Enter appropriate letter: K

9. Type of assistance
A–Basic Grant; B–Supplemental Grant; C–Loan; D–Insurance; E–Other
Enter appropriate letter(s): E

10. Area of project impact (Names of cities, counties, states, etc.): Maricopa, Mohave, Yuma Counties, AZ

11. Estimated number of persons benefiting:

12. Type of application
A–New; B–Renewal; C–Revision; D–Continuation; E–Augmentation
Enter appropriate letter: A

13. Proposed Funding

a. Federal	$ .00
b. Applicant	.00
c. State	.00
d. Local	.00
e. Other	1 .00
f. Total	$ 1 .00

14. Congressional Districts Of:
a. Applicant:
b. Project: Mul

15. Type of change (For 12c or 12e)
A–Increase Dollars; B–Decrease Dollars; C–Increase Duration; D–Decrease Duration; E–Cancellation; F–Other Specify:
Enter appropriate letter(s):

16. Project Start Date (Year month day) 19

17. Project Duration (Months)

18. Estimated date to be submitted to federal agency (Year month date) 19

19. Existing federal identification number:

20. Federal agency to receive request (Name, city, state, zip code)

21. Remarks added ☐ Yes ☐ No

Section II - Certification

22. The Applicant Certifies That

a. To the best of my knowledge and belief, data in this preapplication/application are true and correct, the document has been duly authorized by the governing body of the applicant and the applicant will comply with the attached assurances if the assistance is approved.

b. If required by OMB Circular A-95 this application was submitted, pursuant to instructions therein, to appropriate clearinghouses and all responses are attached:

	No response	Response attached
(1) Arizona State Clearinghouse	☐	☒
(2) Region I Clearinghouse MAG, Region IV	☒	☐
(3) Clearinghouse (DIST. IV) (Comments will be forwarded)	☐	☒

23. Certifying representative — a. Typed name and title; b. Signature; c. Date signed (Year month day) 19

Section III - Federal Agency Action

24. Agency name

25. Application received (Year month day) 19

26. Organizational Unit

27. Administrative office

28. Federal application identification

29. Address

30. Federal grant identification

31. Action taken
☐ a. Awarded
☐ b. Rejected
☐ c. Returned for amendment
☐ d. Deferred
☐ e. Withdrawn

32. Funding

a. Federal	$ .00
b. Applicant	.00
c. State	.00
d. Local	.00
e. Other	.00
f. Total	$ .00

33. Action date (Year month day) 19

34. Starting date (Year month day) 19

35. Contact for additional information (Name and telephone number)

36. Ending date (Year month day) 19

37. Remarks added ☐ Yes ☐ No

38. Federal agency A-95 action

a. In taking above action, any comments received from clearinghouses were considered. If agency response is due under provisions of Part 1, OMB Circular A-95, it has been or is being made.

b. Federal Agency A-95 Official (Name and telephone number)

TO: 9/4

John J. DeBolske, Exec. Dir.
Maricopa Association of Government
1820 W. Washington St.
Phoenix, AZ 85007
0825

State Application Identifier (SAI)
AUG 12 1981
State A7 No. 81-80-0047

Indian Affairs
Mineral Res.
Game & Fish
Ag. & Hort.
Archaeological Research
AZ Natural Heritage Prog.
Health
Water
AORCC
Land
Parks
OEPAD: P. Bergthold

Region I, IV

FROM: Arizona State Clearinghouse
1700 West Washington Street, Room 505
Phoenix, Arizona 85007

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Additional Comments (Use back of sheet, if necessary):

Reviewers Signature: Jack Tuthill

Date: 9/11/81

Telephone

IN REPLY REFER TO

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
California Desert District
1695 Spruce Street
Riverside, California 92507

1782
(Colo. Riv. ~~Rip-Rap~~)
OFFICIAL FILE (C-064.03)
RECEIVED JAN 13 1982

Action: KT
JAN 08 1982
1/13 ... 400 420
Colorado Regional 150 230
File

5693
X 775

Memorandum

To: Regional Director, Bureau of Reclamation, Lower Colorado Regional Office, P. O. Box 427, Boulder City, Nevada 89005

From: District Manager, California Desert

copy to: 150 230

Subject: Environmental Assessment, Colorado River Front Work and Levee System Rip-Rap Quarry Sites in California Desert

The following comments were prepared after consultation with our Needles Resource Area and Indio Resource Area offices. We are sorry about the long delay in replying to your memorandum.

We have two major problems with many of the selected quarry sites:

1. The sites have been designated by BLM as either "nonsuitable for wilderness" (WSA's 292, 321 & 356) or "suitable for wilderness" (WSA 310). Regardless of which designation has been given, all WSAs must be managed to protect their wilderness values until Congress decides on their final designation. We feel this may preclude their use as a quarry site in the interim period.

2. Should Congress act favorably on WSA's recommended as non-suitable, many of these areas are identified as "L" class in the CDCA Plan. This would mean any quarry site over 5 acres would then require an EIS. (A proposed Amendment to the plan is being processed but approval may take several months.)

In order to clarify our position on each proposed California quarry site we will list them by Number, Name and Legal description as shown in Appendix B, of your Environmental Assessment. We will show the present status of each site in regard to a BLM permit:

Site#	Name	Location
7	Eagle Pass	Section 18 T18N R22E
Not in WSA	Class M	Existing quarry site
On Reclamation Withdrawal	725,000 Tons of Rock	Existing road
9.4 Acres		EA acceptable

Site #	Name	Location
8 Existing Access Rd 89 acres	Eagle Pass Westerly WSA 292 Class L 10,000,000 tons of rock	NW 1/4 Sec 19 T8N R22E NE 1/4 Sec 24 T8N R21E Located within BLM - permit cannot be granted
9 Existing quarry work and road	Eagle Pass - South Hill Class L 200,000 tons of rock	NW 1/4 Sec 24 T8N R21E Within WSA 292 - BLM - permit cannot be granted
10 24 acres	Eagle Pass - North Cliff 5,400,000 tons of rock WSA 292 Class L	SW 1/4 Sec 13 T8N R21E BLM - permit cannot be granted
11 12.5 acres Reclamation withdrawal	Park Moabi 200,000 tons of rock WSA 310 Class C	SE 1/4 Sec 7 T7N R24E BLM - permit cannot be granted
12 17 acres	Pipeline 150,000 tons of rock within WSA 310 CLass L	SE 1/4 Sec 12 T7N R23E BLM - permit cannot be granted
13 29 acres	Big Maria #1 260,000 tons of rock within WSA 321 Class L	SE 1/4 Sec 20 and SW 1/4 Sec 21 T4S R23E Permit cannot be granted
14 28.6 acres	Big Maria #2 1,100,000 tons of rock Within WSA 321 Class L	SW 1/4 Sec 20 T4S R23 E Permit cannot be granted
15 76 acres	Big Maria #3 13,200,000 tons of rock Outside of WSA 321 - CDCA Class L will require an EIS until proposed amendment to the guidelines is approved.	E 1/2 NE 1/4 Sec 25 T4S R22E W 1/2 NW 1/4 Sec 30 T4S R23E
16 200 acres Some BLM - some BR withdrawal - no wilderness	Vidal Junction 70,000 tons of rock CLass M	S 1/2 NW 1/4, S 1/2 SE 1/4, SW 1/4 Sec 19 and all except S 1/2 Se 1/4 Sec 30 T1N R24E EA acceptable
17 20 acres BLM and BR withdrawal	Quien Sabe East (?) 820,000 tons of rock WSA 321 Class M	SE 1/4 Sec 15, N 1/2 NE 1/4 Sec 22, T3S R22E Permit cannot be granted
18 25.5 acres BLM and BR withdrawal	Quien Sabe West (?) 1,215,000 tons of rock outside WSA 321 Class L	NW 1/4 Sec 21 T3S R23E Will require an EIS until proposed amendment to CDCA Plan is approved.

Site #	Name	Location
19 25.5 acres	Hills Ranch 600,000 tons of rock WSA 321 Class L	NE 1/4 E 1/2 NW 1/4 Sec 2 T5S R23E Permit cannot be granted
20 122 acres BLM	Mission Wash East 2,100,000 tons of rock WSA 356 Class L	W 1/2 SW 1/4 Sec 4 and E 1/2 SE 1/4 SE 1/4 Sec 5 T15S R23E Permit cannot be granted
21 Old quarry site access road 19 acres	Bat Cave Wash No 1 WSA 310 Class L 960,000 tons of rock	Sec 8 T7N R24E Permit cannot be granted
22 32 acres Both on Reclamation withdrawal	Bat Cave Wash No 2&3 1,030,000 tons of rock Site 3 is in WSA 310 Both are Class L areas	NE 1/4 Sec 17, T7N R24E Permit cannot be granted
23 86 acres No BLM lands	Manchester 3,235,000 tons of rock	W 1/2 NW 1/4 Sec 15 and NE 1/4 Sec 16 T11N R21E private land

As you can see, aside from sites numbered 7, 16, and 23 we still have major problems. Sites numbered 15 and 18 now require an EIS. The remainder are all restricted by being within a WSA and all but one of these would be Class L. (The amendment process should be finalized by June 1, 1982).

We agree with your discussions regarding the need and urgency of providing "Front Work and Levee System" along the Colorado River from Davis Dam to the Mexican Border and will help any way we can to resolve those problems.

ACTING Bruce Ottenfeld

cc:
C-069
C-067
C-066
C-063.21
C-063.05

United States Department of the Interior

BUREAU OF RECLAMATION
LOWER COLORADO REGIONAL OFFICE
P.O. BOX 427
BOULDER CITY, NEVADA 89005

IN REPLY REFER TO: LC-156
780.

FEB 19 1982

Your reference:
1782
(Colo. Riv. Rip Rap)
(C-064.03)

Memorandum

To: District Manager, California Desert District, Bureau of Land Management, 1695 Spruce Street, Riverside, California 92507

From: ACTING Regional Director

Subject Environmental Assessment on the Colorado River Front Work and Levee System Riprap Quarry Sites in California Desert (your memorandum dated January 8, 1982)

In your memorandum of January 8, 1982 you expressed reservations about our use of the subject quarry sites. This memorandum is to respond to some of your comments about these sites, as well as pursue the possibility of our using some of these sites in the future.

First, we would like to mention Bat Cave Wash No. 1 and the Eagle Pass Site. These are existing quarry sites which we are presently using and are on Reclamation withdrawn land. For that reason we have deleted them from the Assessment and have added them to the list of existing quarries. It is our position that since these are existing quarries on Reclamation withdrawn land further NEPA clearance for permitting action is not necessary. Therefore, these two quarry sites are no longer an issue.

We also want to address the use of the Eagle Pass South Hill and the Mission Wash East quarries. Our plans are to quarry only surface rock at these two sites. We do not believe that such a quarrying method is necessarily harmful to wilderness values. We would hope that quarrying methods can be coordinated sufficiently with your staff so as to protect wilderness values and allow you to issue a permit based on the fact that our quarrying will not cause impacts significant enough to impair the suitability of these areas for wilderness designations. We would like to explore this possibility with you further.

We want to explore with you the possibility of using other quarry sites as well as Eagle Pass South Hill and Mission Wash East. The use of these sites may not be inconsistent with wilderness values. For example, Eagle Pass Westerly, Eagle Pass North Cliff, Park Moabi, Pipeline, Big Maria No. 1, Hills Ranch in addition to Eagle Pass South Hill, have all had previous disturbance either through access roads,

pipeline construction, or old quarrying activities. The fact that such disturbance does not militate against their consideration as possible wilderness areas indicates that a certain amount of disturbance, such as some type of quarrying, does not render them ineligible for wilderness designation. The Eagle Pass South Hill site, for example, has been previously quarried. If this past quarrying activity does not render this site ineligible for wilderness designation, then perhaps future quarrying activities can be arranged to preserve those values.

Finally, you point out in your memorandum that the use of quarry sites found in areas designated as Class L in the CDCA plan requires an environmental impact statement. Since our environmental assessment is acceptable for the Eagle Pass and Vidal Junction sites, we are assuming that it will also be acceptable for the Class L designated sites once the proposed amendment to the CDCA Plan is finalized.

We currently plan to continue processing this environmental assessment (copy enclosed). We will be applying shortly for a 404 Permit from the Corps of Engineers and a use permit from appropriate BLM offices. In addition, we have developed further correspondence outlining the program and financial impacts associated with alternative sites.

We believe it is imperative that our respective staffs meet in the near future, as we suggested earlier, to discuss the items we have mentioned here.

Roy D. Gear

Enclosure

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Yuma District Office
Post Office Box 5680
Yuma, Arizona 85364

OFFICIAL FILE COPY
IN REPLY REFER
OCT 2 1981
Action: ...
Action Taken: ... (Initials)

Date	Initials	To
	SEP 29 1981	
		150
File		

Memorandum

To: Regional Director, Lower Colorado Regional Office, Bureau of Reclamation, P. O. Box 427, Boulder City, NV 89005

From: District Manager, Yuma

Subject: Review of the Colorado River Front Work and Levee System Environmental Assessment

The Yuma District has reviewed the Colorado River Front Work and Levee System Environmental Assessment. Our comments are fairly detailed, and have been broken down according to the specific sections of the document they address.

II. ALTERNATIVES INCLUDING THE PREFERRED ALTERNATIVE

B. The Proposed Alternative

1. The Quarrying Feature

Discussion of the quarry sites eliminated from further consideration appears to be inadequate. The sites have not been identified and their present status is unclear. For example, there is no discussion of a site located north of Interstate Highway 10 in the vicinity of Tom Wells Road on which our office recently completed an archaeological inventory for a riprap quarry. Likewise, there is no discussion of known quarry sites located south of the town of Palo Verde, west of the Palo Verde Intake and elsewhere. We need to know if these sites, and others, are still under consideration as riprap sources for other projects.

3. The Riprap Feature

This feature should include a provision to preserve boat launching opportunities where undeveloped boat launch ramps exist. Total armoring of levees may eliminate these opportunities.

CONSERVE AMERICA'S ENERGY

Save Energy and You Serve America!

Paymaster Landing and Walter's Camp are erroneously labeled on Sheet 7 of the Flood Area with Breached Levees map. This error has been carried over from the USGS 7.5' maps.

III. ENVIRONMENTAL CONSEQUENCES AND THE AFFECTED ENVIRONMENT

A. General Description

5. Vegetation

b. Special Status Species

Two species of proposed endangered plants have been found within the project area:

(1) Coryphanta vivipara var. alversonii (Foxtail Cactus). A candidate species for listing as either endangered or threatened, Category 1 (Federal Register, December 15, 1980, p. 82486).

The foxtail cactus has been identified on one of the proposed quarry sites, and may occur on several other sites as well.

(2) Ferocactus acanthodes var. acanthodes (Barrel Cactus). A candidate species for listing as either endangered or threatened, Category 1 (Federal Register, December 15, 1980, p. 82510).

This species has been encountered on nine of the quarry sites listed.

The Regional Office of the U.S. Fish and Wildlife Service should be contacted for a biological opinion on the potential impacts of the quarry sites on these two species.

A number of state-protected plant species in both Arizona and California also occur on the proposed quarry sites. These species include beavertail, barrel, hedgehog, Opuntia and other cactus species as well as ocotillo, palo verde, smoketree and mesquite.

Arizona law provides that the Arizona Commission of Agriculture be given at least 30 days notice prior to excavation to allow inspectors an opportunity to check the area and salvage protected plants if necessary.

8. Archaeological and Historical Resources

Overall, the report gives very few details on archaeological and historical resources that can be evaluated. It appears that such a document should mention a more detailed professional cultural resource report, which should be on file and available to cultural resource specialists for review.

The Yuma District archaeologist should have time to at least field check areas where sites are recorded prior to making comments on this report. While the archaeologist did fly over some of the quarry sites with a Bureau of Reclamation team, he does not recall having an opportunity to provide BLM data for the initial Class I data gathering effort.

Two important documents should be mentioned somewhere in the text to show the full effort of Class I data gathering. These documents are:

(1) The Preliminary Resource Inventory Report for the Colorado River between Lee's Ferry, Arizona and the United States/Mexico Boundary by the U.S. Army Corps of Engineers, Los Angeles District.

(2) The comprehensive Class I study of western Arizona by Mike Schiffer of the University of Arizona. While the final report will not be published until this fall, site data for the river should be available at the State Museum.

The document has two weaknesses concerning the State Historic Preservation Offices. The offices must respond to requests for information concerning:

(1) Their records of existing sites in the area of proposed impacts;

(2) Their concurrence to an archaeological study that will detail why resources which would be impacted are not considered to be of National Register quality.

More information is needed on the archaeological site identified by the San Bernardino County Museum Association that will be impacted by the proposal.

The report indicates that a Class III Inventory was conducted for each of the proposed stockpile and quarry sites. Where Yuma District BLM land is involved, the archaeologist would like to see the resulting Class III report and site records.

Finally, the report should spell out proposed methods of data recovery prior to impacts so that the Yuma District archaeologist can evaluate them and either concur or not.

B. Environmental Consequences

1. Preferred Alternative

The text should include an analysis of the projected costs of constructing and armoring levees (in terms of economic costs and environmental impacts) compared to the benefits afforded by the project. Once costs are clarified, the possible mitigation of impacts for each feature of the project can then be added to the environmental consequences section of the assessment.

a. Quarry Sites

The status of several of the 24 proposed quarry sites in Table 2 appears to be in error. Specifically, the Big Maria No. 1, 2 and 3 and the Hills Ranch sites are all classified as "new" even though there are existing quarries at each of these sites.

The information on individual quarry sites found in Appendix B appears to be incomplete in some cases. For example, most of the legal descriptions for the quarry sites leave out the designations SBM in California and G&SRM in Arizona. There also appears to be no discussion on how much new access road would be required for the quarry sites, or if a cultural resource inventory of proposed new or improved roads was accomplished.

We also have specific comments on several of the 24 quarry sites listed in Appendix B:

(1) Times Gulch

(b) Vegetation

Barrel cactus (Ferocactus acanthodes var. acanthodes), a species proposed for Federal listing as either endangered or threatened, has been encountered at this site.

(d) Archaeology

A discussion of the impacts to the three "insignificant" archaeological sites identified in Table 2 is needed.

(3) Osborn Wash - North

(c) Wildlife

Wild horses and burros are not known to occur in this area of the Buckskin Mountains. Any signs of horses or burros were most likely caused by domestic horses or cattle.

Disturbances from dynamiting and rock removal at the site could have serious impacts to a lambing area for desert bighorn sheep. Such impacts have been recognized by both the Arizona Department of Game and Fish and the BLM. The impacts could probably be lessened by restricting operations in the period from May to October of each year.

The site is within 1½ miles of a newly built water development for desert bighorn sheep, game birds and other desert wildlife.

(f) Land Use and Ownership

This site is located in BLM Arizona Wilderness Study Area Number 5-12, not Area Number 5-14 as indicated in the text. Development of the site would impair the area's suitability for wilderness designation, and consequently would be precluded by the BLM's Wilderness Interim Management Policy as long as the area remains under wilderness review.

(4) Osborn Wash - South

(b) Vegetation

Barrel cactus (Ferocactus acanthodes var. acanthodes), a species proposed for Federal listing as either endangered or threatened, has been encountered at this site.

(c) Wildlife

Wild horses and burros are not known to occur in this area of the Buckskin Mountains. Any signs of horses or burros were most likely caused by domestic horses or cattle.

Disturbances from dynamiting and rock removal at the site could have serious impacts to a lambing area for desert bighorn sheep. Such impacts have been recognized by both the Arizona Department of Game and Fish and the BLM. The impacts could probably be lessened by restricting operations in the period from May to October of each year.

The site is within 1½ miles of a newly built water development for desert bighorn sheep, game birds and other desert wildlife.

(f) Land Use and Ownership

This site is located in BLM Arizona Wilderness Study Area Number 5-12, not Area Number 5-14 as indicated in the text. Development of the site would impair the area's suitability for wilderness designation, and consequently would be precluded by the BLM's Wilderness Interim Management Policy as long as the area remains under wilderness review.

(8) Eagle Pass Westerly

(f) Land Use and Ownership

The BLM wilderness proposal for California Wilderness Study Area Number 290, as found in the California Desert Conservation Area Plan, should be referenced here.

(9) Eagle Pass South Hill

(b) Vegetation

Barrel cactus (Ferocactus acanthodes var. acanthodes), a species proposed for Federal listing as either endangered or threatened, has been encountered at this site.

(f) Land Use and Ownership

The BLM wilderness proposal for California Wilderness Study Area Number 290, as found in the California Desert Conservation Area Plan, should be referenced here.

(10) Eagle Pass North Cliff

(b) Vegetation

Barrel cactus (Ferocactus acanthodes var. acanthodes), a species proposed for Federal listing as either endangered or threatened, has been encountered at this site.

(f) Land Use and Ownership

The BLM wilderness proposal for California Wilderness Study Area Number 290, as found in the California Desert Conservation Area Plan, should be referenced here.

(11) Park Moabi

(f) Land Use and Ownership

This site is located in BLM Arizona Wilderness Study Area Number 5-3, not California Wilderness Study Area Number 310 as indicated in the text. Development of the site would impair the area's suitability for wilderness designation. However, development may occur as our interpretation of the BLM's Wilderness Interim Management Policy is that it permits the use of Reclamation-withdrawn lands under wilderness review for valid Reclamation purposes.

(13) Big Maria No. 1

(b) Vegetation

Foxtail cactus (Coryphanta vivipara var. alversonii), a species proposed for Federal listing as either endangered or threatened, has been found to grow extensively and in close proximity to this site.

(14) Big Maria No. 2

(b) Vegetation

Foxtail cactus (Coryphanta vivipara var. alversonii), a species proposed for Federal listing as either endangered or threatened, has been found to grow extensively and in close proximity to this site.

Barrel cactus (Ferocactus acanthodes var. acanthodes), a species proposed for Federal listing as either endangered or threatened, has been encountered at this site.

(15) Big Maria No. 3

(b) Vegetation

Foxtail cactus (Coryphanta vivipara var. alversonii), a species proposed for Federal listing as either endangered or threatened, has been found to grow extensively and in close proximity to this site.

Barrel cactus (Ferocactus acanthodes var. acanthodes), a species proposed for Federal listing as either endangered or threatened, has been encountered at this site.

(16) Vidal Junction

b. Vegetation

Barrel cactus (Ferocactus acanthodes var. acanthodes), a species proposed for Federal listing as either endangered or threatened, has been encountered at this site.

(19) Hills Ranch

The legal description for this site does not match the map configuration for Site 423-300-1549.

(b) Vegetation

Foxtail cactus (Coryphanta vivipara var. alversonii) and barrel cactus (Ferocactus acanthodes var. acanthodes), species proposed for Federal listing as either endangered or threatened, have been encountered at this site.

(22) Bat Cave Wash No. 2

(b) Vegetation

Barrel cactus (Ferocactus acanthodes var. acanthodes), a species proposed for Federal listing as either endangered or threatened, has been encountered at this site.

(23) Bat Cave Wash No. 3

(b) Vegetation

Barrel cactus (Ferocactus acanthodes var. acanthodes), a species proposed for Federal listing as either endangered or threatened, has been encountered at this site.

c. Riprap Feature

(2) Impacts of Levee Armoring

The proposal to remove vegetation along levees and armor additional levees will have a negative impact on esthetics, and will lessen the attractiveness of the area for water-based recreation.

d. Dredging

(1) Topock Settling Basin - Dredge Spoil Disposal Sites

(a) Area 1 is located in a wash above Beal Slough, along the Colorado River. Development of a disposal site in this area could threaten Beal Slough with heavy siltation

if high water flows inundate the wash, as the recently improved and armored levee would direct these flows into the slough.

High water flows could be impounded in the wash by improvement of the planned dike on the north edge of the Beal Slough project area.

IV. CONSULTATION AND COORDINATION

B. BLM Permit

Finally, the text states:

> "Since portions of the work would take place on BLM land, the Bureau must obtain a use permit from BLM. This assessment will be used to provide environmental clearance for this BLM permit."

To the greatest extent possible, we feel that this document will provide environmental clearance for the BLM permit. However, additonal environmental analysis may still be required for implementation fo the individual features of this complex project.

We appreciate the opportunity to comment on this document.

Harry H. McVicker

FOR H. M. Bruce

FEB 10 1982

LC-154

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Memorandum

To: District Manager, Bureau of Land Management, Yuma District Office, P.O. Box 5680, Yuma, AZ 85364

From: ACTING Regional Director

Subject: Review of the Colorado River Front Work and Levee System Environmental Assessment (your September 29, 1982 memorandum)

We have reviewed your comments on the subject assessment. Wherever possible we have revised the assessment in the light of your comments.

We have added a discussion to the assessment of all existing quarry sites, even those which are presently being used. We are also willing to work with your office in preserving undeveloped boat launching ramps. If you have specific sites in mind, we will consider preserving them in some way. We will correct the map which is mislabeled for Paymaster Landing and Walter's Camp when the map is reprinted.

We have also taken into account all your comments on Special Status species and have revised the assessment accordingly.

An archaeologist from our staff is in contact with the Bureau of Land Management (BLM) archaeologist in Yuma. More information such as site records and resource inventories is being sent to the BLM archaeologist.

B. Environmental Consequences

1. Preferred Alternative

Cost-benefit figures are not available since we do not do a cost-benefit ratio for existing operation and maintenance projects.

a. Quarry Sites

We believe that geographical descriptions as given are adequate for a report of this nature. The total acreage disturbed for each quarry site includes the access road. In addition, the

archaeological survey of each site included the access road. Your comments on specific quarry sites have been accommodated except where indicated below:

(10) Eagle Pass North Cliff

The assessment has been revised per your comment, except for California Wilderness Proposal. It is not clear if you are indicating by your comment that this site is Wilderness Study Area Number 290.

d. Dredging

The Assessment already indicates that we will take action to prevent material from washing back into the river.

We plan to continue processing this environmental assessment. We will be applying shortly for a 404 permit from the Corps of Engineers and a use permit from the BLM. Your review of this document was appreciated.

We are concerned about your statements that activity in the Osborn Wash South and North Sites will be precluded because of impairment to Wilderness Study Area. We were in hopes that some accommodation could be reached to permit use of some of these sites. We would appreciate the opportunity to further pursue this, possibly in conjunction with our entry permitting process. In this regard we will be developing further correspondence outlining the program and financial impacts associated with potential alternative sites.

Enclosed is a copy of the revised assessment.

ANTHONY D. CAMPBELL

Enclosure