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FINAL ENVIRONMENTAL STATEMENT

# INDIAN BEND WASH ARIZONA

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FINAL ENVIRONMENTAL STATEMENT

INDIAN BEND WASH

MARICOPA COUNTY, ARIZONA

Prepared by

U.S. Army Engineer District  
Los Angeles, California

October 1973

SUMMARY  
INDIAN BEND WASH  
MARICOPA COUNTY, ARIZONA

( ) Draft (X) Final Environmental Statement

RESPONSIBLE OFFICE: U.S. Army Engineer District, Los Angeles, California

1. NAME OF ACTION: (X) Administrative ( ) Legislative

2. DESCRIPTION OF ACTION: The recommended plan will provide flood control and recreational facilities in the Cities of Scottsdale and Tempe. For the reach along Indian Bend Wash from the Arizona Canal to the Salt River, the recommended plan can be divided into three integral parts; an inlet with an interceptor channel, a siphon, and a dike; a nonstructural greenbelt floodway; and an outlet channel. The recreational facilities proposed for development along the wash consist of a comprehensive trail system with rest areas at the inlet, at Thomas Road in the greenbelt floodway, and at the outlet; a nature area; a park; an information center; an exhibit center; a boating lake. The recommended plan also provides for a collector channel paralleling the proposed dike at the inlet, a collector channel just west of and parallel to the Arizona Canal from the proposed dike southwestward to 1,000 feet south of Camelsback Road and three side channels to convey floodwaters eastward to the wash. No recreational development is proposed in this area. Because of loss of wildlife habitat within the project area, 40 acres of land will be acquired for off-site wildlife mitigation adjoining the Gila River one mile south of Allenville, Arizona.

3a. ENVIRONMENTAL IMPACTS: The recommended plan will protect 25-year-frequency floods along the west bank of the Arizona Canal and against 100-year-frequency floods along Indian Bend Wash. The plan will alter the landscape, remove about 41 acres of natural vegetation (mostly mesquite) at the inlet, outlet, and collector channels, provide 40 acres of off-site wildlife mitigation, reduce loss of human life, preserve 790 acres of open space, temporarily disrupt traffic and utility service, cause short-term reduction in air and water quality, and destroy an archeological site after the salvage of significant material.

3b. ADVERSE EFFECTS: Construction will also alter the desert esthetics of the area, remove about 41 acres of natural vegetation and wildlife habitat, and destroy an archeological site. During construction the project will cause short-term air, water, and noise pollution as well as traffic and utility disruption.

4. ALTERNATIVES: In addition to the inlet and outlet with nonstructural greenbelt floodway, the following actions were also considered: a structural greenbelt, either leveed or entrenched; a concrete trapezoidal channel, similar to the authorized plan; two dams and a greenbelt low-flow channel; a diversion levee; and no action.

5. COMMENTS RECEIVED:

Advisory Council on Historic Preservation  
U.S. Department of Agriculture:  
Agricultural Research Service  
Forest Service  
Soil Conservation Service  
U.S. Department of Commerce  
U.S. Department of Health, Education, and Welfare  
U.S. Department of Housing and Urban Development  
U.S. Department of the Interior  
Environmental Protection Agency  
State of Arizona:  
Agriculture and Horticulture Dept.  
Arizona Game & Fish Dept.  
Arizona Outdoor Recreation Coordinating Committee  
Arizona Power Authority  
Arizona State Museum  
Arizona Water Commission  
Dept. of Economic Security  
Mineral Resources  
Office of Economic  
Planning and Development  
State Land Dept.  
Maricopa County, Arizona  
City of Scottsdale  
City of Tempe  
Friends of the Earth  
Maricopa Audubon Society

6. Draft statement to CEO September 5, 1973.  
Final statement to CEO \_\_\_\_\_.

# FINAL ENVIRONMENTAL STATEMENT

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## FINAL ENVIRONMENTAL STATEMENT

### INDIAN BEND WASH MARICOPA COUNTY, ARIZONA

#### PROJECT DESCRIPTION

1. INTRODUCTION. This environmental statement covering Indian Bend Wash, Maricopa County, Arizona, is submitted in compliance with Public Law 91-190, the National Environmental Policy Act of 1969. This statement discusses the environmental features of the area and evaluates the impact of the proposed project on the environment. The project was authorized by the Flood Control Act of 1965, Public Law 89-298, approved October 27, 1965. The purpose of the project is to provide protection against floods in Scottsdale and Tempe. The area to be protected includes residential, commercial, industrial, and public property. As a postauthorization change, recreation development was added as a project purpose.

2. AUTHORIZED PLAN. The project document plan, which is described in House Document 303, Eighty-eighth Congress, second session, provides for a concrete-lined trapezoidal channel along Indian Bend Wash from the Arizona Canal to the Salt River. The authorized channel would be 7 miles long and would have an average top width of 125 feet and an average depth of 25 feet. Channel appurtenances for the authorized project would include two earth inlet levees north of the Arizona Canal, a siphon to carry canal flows under the channel, and bridges at major street crossings.

3. RECOMMENDED PLAN. The authorized project has been restudied and a recommended plan, which has not yet been approved, has been developed. The plan of improvement now recommended (pl. 1) will protect against (a) a 100-year-frequency flood\* along Indian Bend Wash from Indian Bend Road southward to the Salt River, a distance of 7 miles, and (b) a 25-year-frequency flood west of the Arizona Canal from Indian Bend Wash southwestward to 56th Street, a distance of 5 miles (pl. 2). The plan also proposes the development of recreational facilities along Indian Bend Wash. The following paragraphs describe the major flood control and recreational features of the recommended plan.

4. The recommended plan for the area along Indian Bend Wash combines structural and nonstructural flood control measures to provide protection against a 100-year-frequency flood. This plan consists of three integral parts: an inlet, a greenbelt floodway, and an outlet. Tying the parts together will be a proposed 11-mile-long, meandering, bicycling-hiking trail system that will parallel the wash from the Arizona Canal to the Salt River; an equestrian trail is also proposed for the inlet-interceptor channel area and will connect with Maricopa County's Sun Circle Hiking and Riding Trail system.

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\*A 100-year-frequency flood is a flood having a statistical frequency of once in 100 years, although a flood of that magnitude may occur in any year or more than once in one year. It is based on an analysis of stream flow records for the watershed and analysis of rainfall and runoff characteristics in the watershed.

5. THE INLET. The proposed inlet will collect flows above the Arizona Canal, convey them across the canal, and discharge them into the greenbelt floodway presently being developed south of McDonald Drive by the City of Scottsdale. The inlet proper will be an unlined channel extending from Indian Bend Road to McDonald Drive; the channel will be designed to convey a discharge of 27,000 c.f.s. (the discharge resulting from a 100-year-frequency flood). Inlet channel dimensions will be as follows:

Length	1.1 miles
Base width	480 to 1,050 feet
Depth	7 to 10 feet
Side slopes	Ranging from 1V on 6H (1 vertical on 6 horizontal) to 1V on 2.5H

Some channel areas will be lined with revetment on a 1V on 2.5H slope to preclude scouring. Where possible, the revetment will be covered with an overburden of soil having 1V on 6H side slopes. The area covered with soil will be landscaped with grasses.

6. The inlet area will also contain an interceptor channel, a dike, and a siphon. To drain the waters that pond behind the north bank of the Arizona Canal, an unlined trapezoidal interceptor channel is proposed north of and parallel to the Arizona Canal. The interceptor channel, which will extend eastward from Indian Bend Wash to Pima Road, will be designed to convey a discharge of 3,000 c.f.s. (the discharge resulting from a 100-year-frequency flood). Interceptor channel dimensions will be as follows:

Length	1.3 miles
Base width	Ranging from 250 feet at the wash to 350 feet at Pima Road
Depth	Ranging from 5.2 feet at inlet to 4.7 feet at Pima Road
Side slopes	1V on 6H

7. A 100-foot-wide corridor will be set aside between the interceptor channel and the Arizona Canal. The native mesquite in this corridor will be preserved in place and additional native trees and shrubs will be planted. The corridor, which will comprise 15-1/2 acres, will be developed as a nature area. Marked nature trails, information signs and a rest area will be provided. The rest area will contain picnic tables, ramadas, barbecues, a comfort station and a water supply. Mesquite will also be planted in the interceptor channel. The mesquite, which will be supplemented with other desert plants to landscape the channel, will be planted at a density of 4 trees per acre.

8. A dike will be constructed along the south side of Indian Bend Road west of Indian Bend Wash. The proposed dike will be about 2,900 feet long and will range up to 4 feet in

height. The purpose of the dike is to divert floodwaters to the inlet and thereby prevent them from flooding the area west of and adjacent to the Arizona Canal south to 56th Street. The dike will be designed to blend into the surrounding area.

9. The proposed siphon is needed to pass water in the Arizona Canal under Indian Bend Wash. The gated, box siphon with four 10-by 10-foot barrels will be 1,000 feet long and will have an operating capacity ranging from 200 to 1,700 c.f.s. Each barrel of the siphon will be gated to permit diversion of all canal flows into the wash or regulation of the flows by providing velocity control through the capacity range of each barrel. During floods, the siphon will be closed. A gated wasteway will be provided upstream from the siphon to discharge irrigation water and floodwaters from the canal into Indian Bend Wash.

10. **THE GREENBELT FLOODWAY.** The City of Scottsdale is developing a 4.5-mile-long greenbelt floodway from McDonald Drive to 1,200 feet north of Van Buren Street (McKellips Road). Scottsdale will construct (a) a 4,000 c.f.s. low-flow channel in the greenbelt floodway from McDonald Drive to Thomas Road and (b) bridges across the channel at McDonald Drive, Chaparral Road, Camelback Road, Indian School Road, Thomas Road, McDowell Road, and Van Buren Street. The greenbelt floodway, an integral part of the Corps of Engineers flood control plan, will accommodate a 30,000 c.f.s. discharge, which approximates the 100-year-frequency discharge of 27,000 c.f.s. Scottsdale is responsible for the management of the greenbelt floodway and for the construction of any necessary flood control features. The city has designated a floodway for flood plain management purposes ranging in width from 480 to 1,100 feet; has enacted zoning restrictions for future development; and intends to floodproof existing areas that have been subject to flooding within the greenbelt floodway. Local assurances will be provided that the greenbelt floodway will be managed and maintained to provide an adequate point of disposal for inlet and side channel floodwaters.

11. As planned by Scottsdale, the urban greenbelt floodway will contain recreational facilities, such as parks, golf courses, and lakes, that are compatible with flood control. As of May 1973, the city had completed about 50 percent of the greenbelt. Under the recommended plan, the Corps will not participate in the development of flood control features in the greenbelt; however, the Corps will participate in the development of the following proposed recreational facilities:

a. A 4.9-acre rest area near Thomas Road that will contain picnic tables, ramadas, barbecues, a comfort station, and a water supply;

b. A park near Indian School Road that will contain 15 acres of active sports areas and court activities, 5 acres of passive activities including picnic tables and barbecues, and a 20-acre children's playground;

c. An information center (Casa de Cinto Verde meaning House of the Greenbelt) that will occupy 2,000 to 3,000 square feet near the proposed park and will describe the history and purpose of the greenbelt;

d. An exhibit center on 8 paved acres near McDowell Road to present national and international shows and other cultural and social activities; and

e. A fishing lake above McKellips Road with a water surface of 6 acres and adjoining surrounding land of 18 acres.

f. A bicycling-hiking trail system.

12. THE OUTLET. The recommended plan proposes the construction of an outlet extending from 1,200 feet north of Van Buren Street (McKellips Road) to the Salt River. The proposed outlet will be an unlined, entrenched channel having the following dimensions:

Length	1.9 miles
Base width	620 feet
Depth	7 to 10 feet
Side slope	1V on 6H
Design capacity	27,000 c.f.s.

Levees up to 5 feet in height will be built adjoining the Vista Del Camino Housing development and the Scottsdale Mobile Homes Trailer Park, north of Van Buren Street. The levees will collect flows from the greenbelt floodway and direct them into the outlet. These levees will be hydroseeded with grasses. Where possible, the channel side slopes will be developed for esthetic and landscaping purposes. A 1-to-2-acre rest area for trailusers is proposed for development in the outlet. The area will include picnic tables, ramadas, barbecues, a comfort station, and a water supply.

13. COLLECTOR AND SIDE CHANNELS. To protect the area along the Arizona Canal west of Indian Bend Wash from floodwaters from the Phoenix Mountains, two collector and three side channels are proposed. The first collector channel will be constructed just west of and parallel to the Corps proposed dike at the inlet. The channel will be 1,000 feet long, will have a base width of 25 feet, and side slopes of 1V on 3H. This channel will be an open, unlined channel. The second collector channel, which will be constructed just west of and parallel to the Arizona Canal, will extend from the Corps proposed dike to 1,000 feet below Camelback Road where it will tie into an existing, open channel constructed by the city of Phoenix. Designed to convey a 25-year-frequency flood, the collector channel along the canal will consist of pipe conduits and open channels. Floodwaters that pond along the dike and the Arizona Canal will collect in these channels and then will be discharged into the wash at the siphon or carried eastward to the wash via the three side channels.

14. Side channels are proposed at McDonald Drive, Chaparral Road, and Camelback Road. The side channels, along with the inlet at the siphon, will be designed for a 25-year-frequency flood and will convey flows totaling 4,250 cubic feet per second (c.f.s.). At McDonald Drive and Chaparral Road, the side channels will consist of reinforced

concrete pipe conduits 78 inches in diameter. At Camelback Road, the side channel will consist of a 12.5-foot-wide by 9-foot-deep box conduit. These side channels will convey floodwater under the canal and beneath the existing streets to the wash. Recreational development is not being recommended for the collector and side channels because the rights-of-way are limited and most of the channels will be under existing streets.

15. **BENEFIT-COST RATIO.** The benefit-cost ratio of the recommended plan was based on an economic life for the project of 100 years; with an interest rate of 5-5/8 percent, the benefit-cost ratio (excluding area redevelopment benefits) for the flood control aspect is 1.5 to 1 and for the recreation, 2.2 to 1. Benefits and costs were based on October 1973 price levels.

#### ENVIRONMENTAL SETTING WITHOUT THE PROJECT

16. **TOPOGRAPHY AND DRAINAGE.** The Gila River and its tributaries have a 58,200-square-mile drainage area, comprising 5,600 square miles in New Mexico; 51,500 in Arizona; and 1,100 in Sonora, Mexico. A part of this drainage area, about 206 square miles in south-central Arizona, is the Indian Bend Wash Basin, which is 26 miles long and 15 miles wide. This basin, 10 miles east and northeast of Phoenix, is the drainage area of Indian Bend Wash, a tributary of the Salt River which in turn is a tributary of the Gila River. The Indian Bend Wash drainage area is bounded on the east by the McDowell Mountains, on the north and west by the Cave Creek drainage area, on the southwest by the Phoenix Mountains and Camelback Mountain, and on the south by the Salt River (pl. 1).

17. About 20 percent of the Indian Bend Wash Basin consists of rugged, sparsely vegetated mountains with steep gradients. The gradient of the headwaters of streams in the McDowell Mountains is about 300 feet per mile. The remaining 80 percent is fairly flat valley land that is part of an alluvial desert plain, which gently slopes southwestward. The desert lowland gradients range from 20 feet per mile in the lower reaches to 150 feet per mile in the upper reaches at the base of the mountains. Elevations in the drainage area range from 1,150 feet at the confluence of Indian Bend Wash and the Salt River near Tempe to 4,034 feet at McDowell Peak in the McDowell Mountains.

18. Streams in the Indian Bend Wash drainage area are ephemeral, flowing only during and immediately after heavy rainfall. Indian Bend Wash, the main stream in the drainage area, rises on the southwestern slopes of the McDowell Mountains and flows generally southward for about 32 miles to the Salt River. Several unnamed streams are tributary to Indian Bend Wash near Scottsdale. The Arizona Canal intercepts several other unnamed streams, originating to the east of Indian Bend Wash; these streams, prior to canal construction in the 1890's, entered Indian Bend Wash downstream from the canal crossing.

19. **GEOLOGY AND SOILS.** The McDowell Mountains, the Phoenix Mountains, Camelback Mountain, and Papago Buttes (southwest of the project area) are composed primarily of Precambrian granites and schists. Camelback Mountain and Papago Buttes also contain sandstone and coarse conglomerates. Extrusive basalt, rhyolite, tuff, and andesite are also present locally.

20. Indian Bend Wash occupies a broad, fairly smooth alluvial plain formed primarily by older and recent alluvial deposits. These deposits have a depth of more than 1,500 feet and are divided into three stratigraphic units: lower alluvium, middle alluvium, and upper alluvium. The lower alluvium consists chiefly of weakly to moderately cemented sand and gravel that contain beds of clay and silt. The deposits are generally 200 to 400 feet thick in the Scottsdale area. The middle alluvium consists mainly of weakly cemented silt, silty sand, and gravel with caliche present near the mountain flanks. The deposits are more than 1,000 feet thick. The upper alluvium is weakly cemented, but locally near the Phoenix and McDowell Mountains the alluvium becomes firmly cemented by caliche. Included in this upper alluvium are gravelly flood plain deposits that are present only near the Salt River. This upper layer has a maximum thickness of about 250 feet near the Salt River. Much of the information regarding the stratigraphy was derived from "Ground Water in Paradise Valley, Maricopa County, Arizona," prepared by the U.S. Geological Survey in cooperation with the City of Scottsdale, May 1968.

21. The materials in the upper reaches of the project area are predominantly alluvial deposits of sandy clay and clayey sand. Gravel and cobbles were observed in the lower reaches but were generally absent in the upper reaches. Outcrops of the older rocks present considerable evidence of ancient folding and faulting. However, no known active faults exist within the project area and no recent seismic activity in the area is recorded. The project site is in a low seismic area that has been assigned to zone 2 on the Seismic Risk Map of the United States (1969). The potential earthquake hazard is not considered to be serious. According to the "Final Environmental Statement, Proposed Central Arizona Project," prepared by the U.S. Bureau of Reclamation in September 1972, "Severe earthquakes in California and Mexico have been widely felt throughout southern Arizona; but few earthquakes have centered within the southern part of Arizona during the 122 years of recorded earthquake history. During that period, earthquake damage in southern Arizona has been minor."

22. The vegetative capability of the soils, as defined by the Soil Conservation Service on their "Soil and Capability Map" for the City of Scottsdale falls predominantly in two categories — I-1 and II-s-6. The I-1 unit, which dominates in the inlet area, is characterized by Gilman loam, Laveen loam, Mohall loam, and Glenbar clay loam. These soils are typically deep and well drained with fine through medium textured surface and subsoil. They have moderate to slow permeability and good water holding capacity. These soils are suitable for growing all climatically adapted vegetation under irrigation and normal management. The II-s-6 unit, found in the project area as Rillito gravelly loam, has a texture ranging from moderately fine through moderately coarse in the surface and subsoils. They have moderately slow to moderately rapid permeability and are suitable for growing climatically adapted vegetation with proper irrigation and management.

23. CLIMATE. The Indian Bend Wash Basin and the surrounding area have an arid, subtropical climate that affords year-round recreation, a frost-free growing season of about 280 days, and a winter-resort environment. There is a high percentage of days of possible

sunshine, about 85 percent. The climate is characterized by short, mild winters with clear days and cool nights; long, hot summers; low annual rainfall; low relative humidity; and a high water-evaporation rate.

24. The 90-year mean annual precipitation ranges from about 7.8 inches per year at the Salt River to about 14.0 inches per year in the higher mountain areas. Rainfall is divided about equally between the summer and winter seasons. The recorded maximum and minimum annual precipitation was 18.08 inches in 1941 and 2.63 inches in 1956, respectively. Both of these figures were from stations in the Tempe reach of the watershed. More indicative of the consequences of precipitation is the intensity of rainfall during storms, such as that of 22 June 1972. The maximum recording-gage intensity measured that day was 3.85 inches in 1 hour and 20 minutes; during the same storm, unofficial National Weather Service stations recorded rainfall in the range of 4.45 to 4.87 inches. All these readings were recorded in the Phoenix metropolitan area and are detailed in a "Report on Flood of 22 June 1972 Phoenix Metropolitan Area, Arizona," prepared in October 1972 by the Los Angeles District Corps of Engineers.

25. Three types of storms produce rain in the drainage area: general winter storms, general summer storms, and local thunderstorms.

a. General winter storms, which usually occur between November and April, may last for several days. They originate over the Pacific Ocean and move eastward toward the basin. Because these storms must first pass over the coastal mountains, much of their moisture has been lost by the time they reach the Phoenix area. They produce low-intensity rainfall over a widespread area.

b. General summer storms, which originate over the Pacific Ocean or the Gulf of Mexico, usually occur during July, August, or September. They cause heavy rainfall over large areas and usually last up to 24 hours, although showers may continue for as long as 3 days.

c. Local thunderstorms can occur at any time of the year, either during general storms or as isolated phenomena. However, they are more common between July and October. These storms, which cover comparatively small areas, are of high intensity but short duration, usually 3 hours or less. Many of the destructive "flash floods" well known in the southwest are produced by this type of storm.

26. During the summer, daytime temperatures commonly exceed 100 degrees F. By contrast, daily winter temperatures usually range from 55 to 65 degrees F. The predominantly clear skies and characteristically dry atmosphere permit intense surface heating during the day and active radiational cooling at night. This cooling produces diurnal temperature variations averaging 30 degrees F., and sometimes exceeding 40 degrees F. The seasonal average temperature is as follows:

	High	Low
Summer	105 degrees	75 degrees
Fall	87 degrees	55 degrees
Winter	64 degrees	35 degrees
Spring	84 degrees	50 degrees

27. The project area has a dry atmosphere; the average humidity ranges from a low of 10 to 20 percent to a high of 70 to 80 percent, with the high occurring in the early morning and the low in the late afternoon. The combination of low humidity and high temperature causes high rates of water evaporation and transpiration. The gross annual evaporation rate averages about 70 inches in central Arizona.

28. The prevailing winds in the morning are from the east; in the afternoon and evening, the winds are generally westerly. Normal wind velocities range from 2 to 7 miles per hour with some gustiness. Gusty winds may accompany thunderstorms; also severe windstorms may occur, resulting in violent duststorms. Velocities during windstorms usually range from 40 to 60 miles per hour. The highest wind velocity in the project area, recorded in September 1950, was 75 miles per hour.

29. SURFACE HYDROLOGY. Water is a critical physical environmental factor in the Indian Bend Wash Basin. As previously stated, annual precipitation in this area is low and the evaporation rate is high. Presently, the water supply consists of subsurface water and surface water from the Salt River Project. This project, one of the first to be constructed under the Federal Reclamation Act of 1902, is a regional water and power project consisting of six dams in the mountains of central and eastern Arizona and 1,200 miles of canals, laterals, and ditches in the Phoenix metropolitan area. The Arizona Canal (pl. 1), which is operated and maintained by the Salt River Valley Water Users Association, and is a part of the Salt River Project, crosses the Indian Bend Wash project area. The canal is a key link in the canal system that delivers water to the Phoenix area.

a. Work is underway to supplement this water supply by utilizing Colorado River water via the Central Arizona Project. The Central Arizona Project, to be constructed by the Bureau of Reclamation, is a multipurpose water transmission facility that will provide municipal, industrial, and agricultural water for central and southern Arizona.

b. Within Indian Bend Wash itself, the Indian Bend Pump Lateral, which is a unit of the Salt River Project, conveys irrigation water and storm runoff. The Arizona Canal and the Indian Bend Pump Lateral are both utilized by Scottsdale to maintain water in a series of 10 or 11 interconnected lakes within their greenbelt floodway park system. These lakes are sealed to prevent loss of water, and therefore ground water recharge from this source is minimal.

30. Because climatic and drainage-area characteristics are not conducive to continuous runoff, little surface flow occurs in the drainage-area streams, except during and immediately after periods of heavy rainfall. The combination of high-intensity rainfall and steep gradients in the mountains results in streamflows that increase rapidly and cause high peak, debris laden flows to spill onto the valley plains below. The debris is deposited on the valley plains as the flows spread out overland. Ephemeral flows percolate through the ground and enter the ground water supply. However, the percentage of impervious area, especially in the lower reaches of the drainage area, is increasing appreciably because of the urbanization taking place. This means that, because a lesser amount of flow is percolated, the amount of the runoff flow is increased. Vegetation, being sparse, has a minimal effect on runoff.

31. The natural floodway of Indian Bend Wash includes the wash, which is shallow and poorly defined in many places, and the adjacent, flat land which has been or could be covered by floodwaters. The adjacent land included in the natural floodway is highly subject to urban development because it is flat, easily accessible, and not obviously subject to flood threat.

32. Most floods in the drainage area are of the "flash flood" type resulting from thunderstorm rainfall that occurs unexpectedly, with little or no time to warn affected communities of impending danger to life and property. However, flooding can also occur from either general summer storms or general winter storms. Torrential flows from the steep mountain slopes disperse across the alluvial plains as sheetflow. These flows are interrupted and concentrated by manmade structures such as the Arizona Canal, individual surface drainage systems, and street systems. Flows continue until the waters are collected in Indian Bend Wash. After reaching the main channel of the wash, floods are then contained in that channel and its immediate flood plain, which extends to the Salt River.

33. The stream channels in the drainage area are generally poorly defined and can accommodate only minor flows. The Arizona Canal, which is primarily an irrigation project, contributes to flood control in a small way by intercepting flows up to 2,000 c.f.s. when the canal is empty. Flows in excess of the canal capacity overflow at random points along the canal, entering Indian Bend Wash upstream from Thomas Road.

34. Records of discharge measurements from past floods in the project area are based on one historical flood in 1943 and on the U.S. Geological Survey recording stream gage; the gage, which is in Indian Bend Wash at Indian Bend Road, has been in operation since 1961. The flood of August 1943 had a peak discharge estimated at 15,000 c.f.s. at the Arizona Canal. The flood of June 1972, the largest on record, had a peak discharge of 20,000 c.f.s. at Indian Bend Road. According to the "Report on Flood of 22 June 1972 Phoenix Metropolitan Area, Arizona," prepared by the Corps of Engineers, the flood caused an estimated \$1,459,000 in damages along Indian Bend Wash from the Arizona Canal to the Salt River and an estimated \$1,187,000 in damages along the Arizona Canal from Indian Bend Wash to 64th Street.

35. Because of the drainage characteristics of the wash, heavy rainfall causes streets within the wash to be closed and threatens schools in the Scottsdale area with inundation. Children and other commuters who must cross the flood plain are subject to inconvenience from street blockage and are threatened with possible injury or loss of life.

36. **SUBSURFACE HYDROLOGY.** Over 60 percent of the water used in central Arizona is being retrieved from underground sources. In recent years an average annual withdrawal of about 3.8 million acre-feet has produced an estimated overdraft of about 2.1 million acre-feet per year. An overdraft means more water is being consumed each year than is being added to the natural supply. From spring 1923 through spring 1964, declines in the ground-water level in the project area attained a maximum of 200 feet. Depths to ground water in this area range from 300 to 400 feet. The State of Arizona has designated the basin in which the project is located as a critical groundwater basin because of these declining ground water levels.

37. Ground water is primarily recharged through percolation of rainfall runoff. However, the climatic characteristics of the drainage area -- low annual precipitation and high evaporation rate -- result in a natural recharge that is inadequate to satisfy the water needs of the area, which are increasing as the population grows.

38. **VEGETATION AND WILDLIFE.** An excellent, historical bosque community, totaling 28 acres, remains in the part of Indian Bend Wash from Indian Bend Road to the Arizona Canal (photo 2). This mature bosque community is a remnant of a habitat type which has practically disappeared from central Arizona. A bosque community is a dense plant community dominated by a honey mesquite overstory and usually located outward from riparian growth along a river channel. The bosque depends on a high ground water table for survival yet is less tolerant of inundation than the riparian growth. Historically, mesquite bosque dominated the Salt River Valley; but the growth of urbanization and agriculture has severely reduced the bosque in the region. The mesquite north of the Arizona Canal are large mature trees that provide quality habitat for the smaller forms of native wildlife (quail, doves, rabbits, and songbirds).

39. Most of the project area along the Arizona Canal west of Indian Bend Wash is urbanized. Some natural vegetation does however exist in a strip paralleling the west bank of the canal from the proposed dike to 400 feet north of Chaparral Road. This strip of vegetation is 1-1/4 miles long and ranges in width from 20 to 350 feet. The vegetation occupies 20 to 25 acres and consists primarily of mesquite. This habitat supports less wildlife than the more extensive and unmodified natural bosque community north of the canal; however, the habitat is superior to any found farther south along Indian Bend Wash.

40. The entire reach along Indian Bend Wash from the Arizona Canal to the Salt River contains little unmodified natural habitat; most natural habitat was removed for agricultural purposes in the early 1900's. Plate 3 indicates the extent of the natural areas. Cultivated agriculture and subsequent urbanization and development have so modified this area that the majority of the reach has limited wildlife habitat. Where natural communities do exist, they are diverse and relatively dense riparian communities that support wildlife.

41. Within Scottsdale, the wash has been converted from farmland to an urban greenbelt with parks, golf courses, and lakes (photo 4). Although not as desirable as a natural area for native wildlife, the greenbelt does provide an aquatic habitat not previously present and does attract a number of birds.

42. From the Scottsdale city line to Princess Road, broom baccharis, mesquite, and many annuals are present. The mesquite is found as riparian growth along one side of the Indian Bend Pump Lateral and serves as primary cover for small game, such as cottontail rabbits, Gambel's quail, small mammals, and many birds.

43. The reach from Princess Road to the Salt River is typical of an outwash plain. The dominant vegetation includes salt cedar, salt bush, creosote bush, some sage, and many annuals. The annual vegetation provides an energy base for a diverse fauna community. However, annuals are considered undesirable in urban parks because of maintenance problems and their potential fire hazard, thus their presence in urban parks is minimized, and the result is a less diversified representation of wildlife species.

44. Table 3 lists predominating flora in the drainage area. As shown by the species listed in tables 4, 5 and 6, the area supports a relatively diverse wildlife population. In addition to the species listed in these tables, an introduced mollusc, the Asian clam (Corbicula sp.) is found in the Arizona Canal. Three areas of value as wildlife habitat within the project limits are the upstream and downstream ends of the floodway and the collector channel area. Because it is essentially undisturbed, the area just above the junction of Indian Bend Wash and the Arizona Canal provides excellent wildlife habitat especially for such game species as dove, quail, and rabbits. The natural vegetation on the west bank of the Arizona Canal provides wildlife habitat of moderate value. This habitat has been slightly disturbed by several ranches in the area. From Van Buren Street downstream to the confluence of Indian Bend Wash and the Salt River a disturbed area provides habitat for a variety of birds and small wildlife species that are capable of living in an area surrounded by urban development.

45. The prairie falcon, which is listed as endangered by the U.S. Bureau of Sport Fisheries and Wildlife, may be an occasional migratory visitor to the project area. It is unlikely that the prairie falcon would nest in the area because suitable nesting habitat is lacking and the urbanized Scottsdale-Tempe area is not conducive to permanent residency by this shy bird. No other rare or endangered species are known to be utilizing the habitat in the Scottsdale-Tempe area of the project.

46. **ARCHEOLOGICAL AND HISTORICAL SITES.** The State of Arizona Historical Preservation Officer has indicated that no sites in the project area are currently listed on the National Register of Historic Places. The Department of Interior commented that the proposed action would not affect any existing, proposed or known potential units of the National Park Service nor any historic, natural or environmental education sites.

47. West of the wash outside the project area, the Arizona State Museum has recorded four prehistoric sites of the Hohokam Indian culture. The four prehistoric sites consist of (a) a 10- to 20-acre agricultural site on the north edge of Tempe, (b) a masonry pueblo of 12

rooms on a hill overlooking the Salt River, (c) a sherd scatter on the north side of the Salt River, and (d) a masonry pueblo and trash mound on a terrace on the north side of the Salt River. None of these sites will be affected by the project.

48. Because of these known sites and the possibility of other sites, an intensive archeological survey of the project area was made by the University of Arizona. Findings of this survey were reported in "An Archeological Survey of Indian Bend Wash" prepared by the Arizona State Museum for the University in June 1973. This survey identified a Hohokam Indian site within the outlet area. The site, comprising a sherd scatter, is on the western side of the wash near the south end of the project area. A major part of the site lies just within the western edge of the designated channel rights-of-way. Based on existing information, the site does not presently merit nomination to Federal or State registers of historic places.

49. The site does however offer some unique archeological opportunities: (a) most of the existing knowledge of the Hohokam culture is based on the study of large sites; study of this comparatively small site would supplement the accumulated knowledge, and (b) site exploration would increase knowledge regarding how the Hohokams used the tributaries of the Gila and Salt Rivers. The Arizona State Museum is of the opinion that the site requires study and, if warranted, preservation. Test excavations will be conducted by the National Park Service. If the testing determines that the site is not significant enough to require preservation, further studies and archeological excavation will be initiated by the National Park Service prior to project construction. If preservation is warranted, design in the local area will be reevaluated to assure maximum protection to archeological values consistent with project purposes.

50. **POPULATION.** The U.S. Bureau of Census indicates that the population of the City of Scottsdale increased from 10,000 in 1960 to 67,800 in 1970, a 576-percent growth. The City of Tempe's population has grown from 24,900 in 1960 to 62,900 in 1970, an increase of 152 percent. Similarly, the population of the City of Phoenix has grown from 550,000 in 1960 to 870,000 in 1970, a 10-year increase of 58 percent. The factors contributing to this phenomenal growth are nationwide growth rates, migration to the west, and the favorable climate of the southwest. This population increase has produced within each city an increase in the density of the developed areas and an outward expansion toward the undeveloped areas. This urban expansion has reached the point where Phoenix, Scottsdale, and Tempe now form a continuous urban complex. This growth, which has resulted in the conversion of agricultural and desert properties to urban uses, is one of the principal reasons for the aggravation of the flood problem in the area. Some of the above information was derived from "Population Growth, Composition and Projections, Maricopa County, Arizona," prepared by the Maricopa County Planning and Zoning Department in January 1972.

51. **LAND USE.** The flood plain within the project area is 60 percent developed (pl. 4). The area paralleling the wash within Scottsdale is primarily suburban residential. Elementary schools and high schools are along the wash. The area within Tempe is a combination of light industrial and residential development. The outlet area also contains 160 acres of Bureau of Reclamation withdrawn lands that are used for solid waste disposal as well as

transmission line rights-of-way. The area to be protected by the side channels is primarily residential with commercial service facilities along the major thoroughfares. The commercial development is the retail-service type consisting of shopping centers, gas stations, real estate offices, and banks. A major, private water utility parallels the west bank of the Arizona Canal from Lincoln Drive to Chaparral Road.

52. Increasing urban and industrial development has reduced the amount of agricultural activity in Scottsdale and Tempe, so that most of the remaining agricultural land use now occurs in the Salt River Pima-Maricopa Indian Reservation, which is east of Indian Bend Wash. This decrease in agricultural activity has occurred throughout the Phoenix metropolitan area and is evidenced by the fact that the amount of land under irrigation by the Salt River Project declined from 227,000 acres in 1940 to 146,300 acres in 1962, a decrease of 35 percent. A further decrease has occurred as shown by the 1971 figure which indicates the total land being irrigated is 129,100 acres.

53. The rapid growth of the area has resulted in encroachment on the flood plain. Within Scottsdale, the land north of the inlet, above Indian Bend Road, is currently being developed for multifamily dwellings (photo. 1). Between the Arizona Canal and McDowell Road in and along the floodway, the land is being developed for multiunit dwellings of the townhouse-condominium type. From McDowell Road southward to Van Buren Street (McKellips Road), the land adjoining the wash is being used for middle- and low-income, single-family units. The City of Phoenix and the Salt River Indian Reservation have been designated by the Manpower Administration of the U.S. Department of Labor as areas of concentrated unemployment or underemployment. Scottsdale and Tempe adjoin the Salt River Indian Reservation and are within a 25-minute commuting distance from the City of Phoenix. They are therefore eligible for area redevelopment benefits. The low-income housing (Vista Del Camino) is being built as a community redevelopment program by Scottsdale in cooperation with the U.S. Department of Housing and Urban Development. Under this program, all families that live directly within the wash and are subject to constant flood threat will be relocated above the flood plain into the low-income housing built for them. Below Van Buren Street (McKellips Road) within Tempe, the land is currently supporting light industrial development and middle-income residential units. The project area along the Arizona Canal is primarily residential and contains single-family dwellings and multiunit apartment and condominium complexes.

54. **TRANSPORTATION.** Most transportation in Scottsdale and Tempe is by private vehicle. Therefore, the people depend on the surface street system for their mobility and, in many cases, access to jobs, schools, and services. The street system, as now developed, crisscrosses Indian Bend Wash and is subject to flooding.

55. Traffic can be severely disrupted by minor storms and associated urban storm runoff. Low flows of 1,500 c.f.s., which can be expected to occur at least every 5 years, effectively divide Scottsdale into two separate communities as the east-west streets passing through the wash become impassable for up to 4 to 6 hours. During storms of high intensity, the gates on the south bank of the Arizona Canal are opened to allow canal water to flow down the

wash, thus enabling the canal to receive floodflows. When this procedure is followed, as it was during the flood of 22 June 1972, street crossings are closed for 6 to 20 hours. After floodwaters subside, maintenance is required at each street crossing to restore the pavement and shoulders and to remove sedimentation and debris.

56. RECREATIONAL FACILITIES. The climate of the overflow area permits the use of recreational facilities on a year-round basis. This favorable climate and the rapid growth of the area have increased the demand for recreational facilities, placing heavy stress on existing facilities. The Maricopa County Planning and Zoning Department, in its study "A Park Recreation and Open Space Study" printed in September 1970, estimates an additional 11,745 acres of park land will be needed by 1990 to meet the prescribed standards discussed in the foregoing study. In addition to the estimated park needs, 935 miles of pleasure trails will be required by 1990 as well as 809 acres of new golf courses.

57. Recreational facilities existing and under construction will not be adequate to meet future demands, which will increase as the population increases. Scottsdale is in the process of developing a greenbelt floodway in Indian Bend Wash with associated urban park facilities, including several lakes. The city has been implementing its greenbelt floodway plan through a program of land acquisition and building. Currently, about 50 percent of Indian Bend Wash in Scottsdale has been developed according to the greenbelt floodway concept. The greenbelt will place open space and recreational opportunities within 1-1/2 miles of the bulk of Scottsdale's population.

58. The greenbelt floodway will provide golf courses, undeveloped open space, pleasure trails, and recreation areas in a linear park setting (photo. 3). Par 3 and regulation golf courses already exist along the wash and are consistent with the city's greenbelt floodway concept. The open space, which will complete the plan, will be turfed area essentially left undeveloped and will be used for bicycling and jogging trails. Because of the climate, outdoor recreational facilities are used extensively in the evening. The existing and proposed facilities incorporate lighting for night-time use.

59. Following in outline form is a brief description of three parks being developed by local interests as part of the greenbelt floodway.

- a. Chaparral Park (74 acres)
  - Ball diamonds, including concessions and bleachers
  - Multiple-use play area
  - Soccer field - lighted
  - Picnic area with a capacity of 500
  - Pool
  - Community center for meetings, craft classes
  - 10-acre lake for boating and fishing
  - Tennis courts
  - Day camping
  - Bicycling and jogging trails

- b. Vista Del Camino Park (48 acres)
  - Lakes - for fishing and boating
  - Bicycling trail 4-1/2 miles long
  - Creative play area for children, three playgrounds
  - Picnic areas with a capacity of 1,000
  - Recreation center
  - Ballfields (lighted)
  - Spray play pads
  
- c. El Dorado Park (55 acres)
  - Soccer field
  - Baseball field, lighted
  - Picnic area with a capacity of 1,400
  - 3-1/2-acre lake for fishing and boating with
    - 1-1/2-acre island for group picnicking
  - 2 miles of bicycling and jogging trails
  - Swimming pool
  - Pavillion
  - Administration building for group meetings
  - Urban campground

60. AIR QUALITY. The rapid growth of population in Scottsdale and Tempe has contributed to a deterioration in the air quality of the cities. The increase in the number of residences, offices, industries, and vehicles has resulted in several air pollution problems. These include the increased burning of fuel for the additional power required to heat, cool, and light the new homes and offices being built. Associated with new construction is large-scale land modification and the stripping of desert vegetal cover for the development of housing tracts and shopping centers; the removal of large amounts of native vegetation results in the release of particulates -- dust. Growth has also brought about an increase in vehicular traffic and automobile exhaust emissions.

61. Because of climatic factors, the Phoenix metropolitan area, which includes Scottsdale and Tempe, has unique air pollution problems. The area has difficulty meeting Federal standards for particulate concentrations, because it is a desert environment and the wind constantly transports the desert particulates (table 1). Another Federal standard that the area has difficulty meeting is the carbon monoxide standard (table 1). The gaseous pollutant problem is aggravated by the inversion factor -- pollutants build up during the day, and the sharp drop between day and evening temperatures trap the pollutants in the atmosphere, preventing their dissipation. The threat of inversion is especially critical during December, January, February, and March. Additional data concerning carbon monoxide and photochemical oxidants concentrations are in table 1. The annual average concentration of sulfur dioxide and nitrogen dioxide has not exceeded Federal standards (table 2) since continuous monitoring was initiated.

62. Efforts are being made to control air pollution in the area before it reaches a critical stage. This responsibility is shared by the State of Arizona and Maricopa County. The Arizona State Air Pollution Control Division of the Department of Health has jurisdiction over everything that emits 75 tons of particulates a day as well as over mobile units of pollution, such as cars and hot-mix asphalt units. Any other source of air pollution is under the jurisdiction of the Maricopa County Bureau of Air Pollution Control. The county air implementation program consists of requiring permits for equipment that discharges pollutants into the atmosphere and also of monitoring air quality. The major contributor to air pollution in the overflow area is automobile exhaust, the control of which is under State jurisdiction. Presently, the State is implementing an emission-standards program.

63. Some of the above information was researched from "The State of Arizona Air Pollution Control Implementation Plan," prepared by the Arizona State Department of Health in May 1972, and the "Final Environmental/Section 4(f) Statement, Administrative Action for Interstate and Defense Highway 10," prepared by the Arizona Highway Department in consultation with the Federal Highway Administration in January 1973.

64. **WATER QUALITY.** Determination of the suitability of water for domestic use is generally based on the dissolved solids content. The U.S. Public Health Service Drinking Water Standards (1962) indicate that domestic water supplies should not exceed a total dissolved solids limit of 500 milligrams per liter (mg/l), but domestic water supplies of up to 1,000 mg/l are not uncommon. In central Arizona, the quality of ground water varies by area and with depth, depending primarily upon the mineralogical composition of the aquifer from which water is pumped. Most of the wells in the project area produce water containing 500 to 1,000 mg/l dissolved solids, but some range as high as 1,500 mg/l dissolved solids.

65. **NOISE POLLUTION.** Noises resulting from man's activities in the project area include those from aircraft, vehicles, machinery, industries, water pumps, and traffic. A special noise situation exists at the confluence of the Salt River and Indian Bend Wash, because the Salt River is along the flight path of airplanes arriving at and departing from Sky Harbor International Airport in Phoenix.

66. **ESTHETICS.** Scottsdale is a highly urbanized residential community having single-family units and multistory condominiums and townhouses. The parks, golf courses, and open spaces in the overflow area in Scottsdale create a clean, esthetically pleasing environment, which residents of the area use daily. The esthetics of the wash area in Tempe are controlled by the amount of open space; Indian Bend Wash exists in its seminatural state, and riparian vegetation and habitat are present in and along the flood plain. This open space is marred by unauthorized landfills, junkyards, and other debris (photo 6), all of which create an unsightly environment.

67. **EFFECTS OF OTHER FEDERAL PROJECTS.** In September 1972, the Bureau of Reclamation submitted a final environmental statement for the Central Arizona Project. Part of this project includes the Granite Reef Aqueduct from Lake Havasu on the Colorado River to Orme Dam at the confluence of the Salt and Verde Rivers. A draft environmental statement for the Granite Reef Aqueduct was prepared by the Bureau in March 1973.

68. To protect the Granite Reef Aqueduct from floods, the Bureau will use the following features: culverts, overchutes, low earth dikes, and a detention dike. The detention dike across Paradise Valley will cross Indian Bend Wash above the Arizona Canal and will provide flood protection not only to the aqueduct but also to the lands below the aqueduct. Although this detention dike would reduce the 100-year-frequency flood at the Arizona Canal, the reduction would not in itself provide adequate protection to the overflow area along Indian Bend Wash. The recommended project along the wash has been formulated assuming construction of the detention dike; with the detention dike the Indian Bend Wash project will protect against a 100-year-frequency flood having a peak discharge of 27,000 c.f.s. Without the Bureau's detention dike, the peak 100-year discharge would be about 40,000 c.f.s.; the Indian Bend Wash project design discharge of 27,000 c.f.s. approximates a 50-year-frequency flood under no-detention-dike conditions. The detention dike would have a minor flood control effect on the area along the Arizona Canal west of Indian Bend Wash.

69. FUTURE TRENDS. Because of the favorable winter climate and picturesque surroundings, the number of tourists will continue to increase, and facilities to accommodate and entertain them will have to be provided. As the cities grow, agricultural activity will practically disappear, and the area will become more heavily urbanized.

70. In order to protect the area against floods, the cities are interested in a floodway along Indian Bend Wash. Most residents in the overflow area desire flood protection and are strongly in favor of the greenbelt floodway concept. To make the floodway feasible, the cities must institute floodproofing and zoning measures. As previously mentioned, Scottsdale is currently implementing a greenbelt floodway plan that will provide, in addition to flood protection, recreational facilities and open space.

#### THE ENVIRONMENTAL IMPACTS OF THE PROPOSED PROJECT

71. The proposed Indian Bend Wash flood control project will consist of three integral parts along the wash: an inlet to be constructed with Federal participation, a greenbelt floodway being developed by Scottsdale with Federal participation in some recreation development, and an outlet to be constructed with Federal participation. The combination of these three structural elements will protect Scottsdale and Tempe from 100-year-frequency floods having a magnitude of 27,000 c.f.s. The inlet, interceptor channel and outlet will offer 100-year-frequency flood protection to 932 acres along Indian Bend Wash from Indian Bend Road to the Salt River. The side channels will provide 25-year-frequency flood protection to 188 acres along the Arizona Canal to 56th Street. These recommended facilities will also reduce damages from larger floods. The impact of each feature of the recommended plan is discussed in the following paragraphs.

72. INLET. The environmental impacts resulting from the construction of the proposed inlet in the reach of Indian Bend Wash, where it crosses the Arizona Canal, will be as follows.

a. The inlet will protect against 100-year-frequency floods. Specifically, the interceptor channel will alleviate ponding above the Arizona Canal, thereby eliminating a minor vector problem. It will reduce the threat of the canal's receiving flows in excess of its capacity and the possibility of canal spillage and/or breaks. The siphon will prevent Indian Bend Wash flows from entering the Arizona Canal, which was designed for irrigation and not for flood control. The dike will divert flows into the wash, reducing flooding along the west side of the Arizona Canal. Debris and sediment deposition due to flooding will be removed by local interests and placed in designated landfills.

b. The inlet structure will confine the floodflows to an entrenched floodway. This will increase the velocity of flows entering Scottsdale's greenbelt floodway downstream. The impact of the increased velocities will be minimized by the city's design of the greenbelt to accommodate the velocities of peak floodflows.

c. Because the inlet structure will be unlined, it will permit ground water recharge during flood runoff.

d. Short-term air pollution in the form of increased particulate release, such as, dust will occur as a result of construction activities. This impact will be minimized by requiring the contractor to maintain all excavation areas, stockpiles, haul roads, waste areas, and borrow areas free from dust that would be a hazard or nuisance to others. Methods of stabilization include sprinkling, chemical treatment, light bituminous treatment, or similar methods. Short-term noise pollution and traffic disruption will also occur during construction. It will be the responsibility of the contractor to investigate and comply with all applicable Federal, State, county, and municipal laws concerning pollution of all types.

e. The entrenchment of the inlet will necessitate removing 28 acres of mesquite bosque habitat of excellent wildlife value for such species as morning and white-winged dove, Gambel's quail, songbirds, ground squirrels and rabbits. This mesquite bosque provides the last sizeable area of native wildlife habitat in the urbanized reach of Indian Bend Wash. The interceptor channel will be constructed 100 feet north of the Arizona Canal, thus a strip of vegetation paralleling the canal will remain. The growth in this strip will be supplemented with planted nursery stock as partial mitigation for habitat lost because of the entrenchment of the inlet. This strip of vegetation will provide habitat for wildlife species that are tolerant of urbanization and public use. As further mitigation, the Arizona Game and Fish Department has recommended that a 40-acre parcel along the Gila River (pl. 7) be acquired in order to join two existing areas now being managed for wildlife purposes. The acquisition of this parcel will provide a continuity of management to the adjacent wildlife areas as well as providing additional acreage for wildlife preservation. The proposed 40-acre tract is located one mile south of Allenville, Arizona, along the Gila River. These lands will be acquired as a project cost by local interests and will be operated, maintained and administered by the Arizona Game and Fish Department.

f. The inlet will require 185 acres of land to be permanently set aside for flood control, thus preserving this acreage from urban encroachment. Within the 100-foot-wide strip in the interceptor channel area, 15-1/2 acres will be developed for recreational uses. The proposed recreational facilities are an equestrian trail, a bicycling-hiking trail, picnic tables, ramadas, barbecues, a comfort station, a nature trail, and nature information displays. These facilities will not be subject to inundation and will be as simple and minimal as possible to keep the area in its natural state.

g. Some of the inlet channel areas will be lined with riprap to preclude scouring. This riprap will be covered with select fill to provide an area for landscaping. The riprap is available from an existing spoil stockpile that is now supplying stone facing for Dreamy Draw Dam (a Corps of Engineers project recently completed in the Phoenix Mountains). This source is about 14 miles northwest of the Indian Bend Wash project area. If this source is not available at the time of construction, alternate sites are available in the Salt River. Regrading and planting of native vegetation will be accomplished at noncommercial alternative sites to restore these areas to blend with the surrounding environment. If a commercial quarry is used, restoration will be subject to the permit issued by the local jurisdictional agency.

h. About 1,300,000 cubic yards of material will be excavated from the inlet channel, of which 50,000 cubic yards will be used as levee fill. The levees will be up to 5 feet high and will be planted with grasses. The remaining 1,250,000 cubic yards will be used to fill undeveloped areas adjacent to the inlet channel above the 100-year floodline. This landfill is consistent with Scottsdale's flood plain management plan which requires that all presently undeveloped areas adjacent to the floodway be raised above the 30,000 c.f.s. waterline. Thus, landfill will occur with or without the Corps project. After being filled, these areas will develop in accordance with local zoning criteria.

i. The inlet will contribute to the security and safety of residents and property owners by reducing potential flood damage.

j. The major esthetic impact, as seen from adjacent residences, will be the concrete wall constructed adjacent to Saguaro High School; the other esthetic impacts of the inlet channel will be minor. The wall will be 1,000 feet long and will be 9.5 feet high as seen from the west edge of the channel and 4.5 feet high as seen from the residences on the east side of the channel. Beautification measures implemented by private developers will be visible from McDonald Drive. North of the drive, the channel will be developed into an 18-hole championship golf course. The Scottsdale Golf and Tennis Club will abut McDonald Drive on the south. This will consist of a pitch-and-putt golf course and a tennis court area. The design of the golf courses will be compatible with the flood control purpose of the project.

k. Low-profile levees will blend with the inlet channel interior; the levees will be up to 5 feet high and will be discernible outside the channel. To beautify the levees, select fill will be placed on top of riprap where hydraulically possible to provide soil cover for

landscaping with grasses. In the areas where fill is proposed adjacent to the inlet channel, the side slopes will blend with the channel interior and the requirement for levees will be eliminated. The interceptor channel will be planted with grasses and trees. See table 7 for a list of native plants that are suitable for landscaping.

l. The inclusion of vegetation within the channel has been considered in determining the cross sectional area and channel configuration. Hydraulic computations and the engineering design allow for trees and vegetation in the channel. The density of trees for the interceptor channel will be four trees per acre; this will be achieved with the planting of nursery stock.

m. Sedimentation in the Indian Bend Wash drainage area will diminish in the future as the area becomes more urbanized. Minimal erosion is expected in the inlet and greenbelt floodway which will be completely developed into parks and golf courses. Grasses will be used to stabilize the interceptor channel. Based on this information, an average annual operation and maintenance cost for flood control of \$26,000 has been used for the inlet and interceptor channel. The cost includes removal of debris from the channel, restoration of eroded areas, removal of sediment and maintenance and replacement of beautification features.

n. The proposed recreational facilities will be developed on a cost sharing basis. An 18-hole golf course and a 9-hole pitch-and-putt course will be developed within the inlet below the Arizona Canal. The facilities will be operated and maintained by the City of Scottsdale. The Corps of Engineers will not participate in the development of either of the courses.

o. An intensive archeological survey of the Indian Bend Wash project area was made by the University of Arizona. This study did not identify any historical or archeological sites in the inlet area. If archeological sites are unearthed during construction, work will be suspended and the National Park Service and the State Historic Preservation Officer will be notified.

73. GREENBELT. The greenbelt floodway being implemented by Scottsdale consists of 425 acres and is an integral part of the flood control plan for Indian Bend Wash. When combined with the inlet and outlet structures, the greenbelt floodway will protect against 100-year floods. Within the greenbelt, Scottsdale is responsible for the development of flood control features. Corps participation is limited to cost sharing in the development of the following proposed recreational facilities: a bicycling-hiking trail system that will include modifications to bridges constructed by Scottsdale and a 4.9-acre rest area for trailusers; a 40-acre park that can serve as a regional park; an information center; an exhibit center; and a fishing lake having a water surface of 6 acres. The trail system proposed for the greenbelt will join the proposed trails in the inlet and outlet areas. The system when completed will create a nonvehicular transportation network connecting the public schools, the park system, the community center, and the Arizona State University campus with the residential areas of Scottsdale and northern Tempe. Arizona State University is south of the Salt River; it is one-fourth of a mile southwest of the project area.

74. Among the effects of the greenbelt floodway will be the following: (a) alteration of natural landscape; (b) preservation of open space; (c) recreational development in the greenbelt; (d) preservation and use of existing vegetation at the Corps proposed rest area and around the exhibit center; (e) prevention of further urban encroachment onto the flood plain; (f) protection against potential loss of life and property due to flooding; (g) replacement of natural desert flora with an urban greenbelt; (h) increase in the land value of surrounding residential areas; and (i) relocation of several homes.

75. Another effect will be the commitment of water resources to maintain a greenbelt park. Water use for the greenbelt will average 5.25 acre-feet per acre per year. The water in the city lakes and in the Corps proposed fishing lake will be irrigation water (342 parts per million of soluble solids as of April 1973) supplemented when necessary with well water, which meets Federal drinking water standards. There will be minimal ground water recharge because the lakes will be sealed to prevent seepage.

76. The greenbelt floodway will also facilitate travel by providing improved roads and wash crossings; will reduce inconvenience; and will effectively join the city, which becomes divided when floodflows enter the wash. Scottsdale will construct (a) a 4,000 c.f.s. low-flow channel in the greenbelt floodway from McDonald Drive to Thomas Road and (b) bridges across the channel at McDonald Drive, Chaparral Road, Camelback Road, Indian School Road, Thomas Road, McDowell Road, and Van Buren Street. All bridges, except for the McDonald and McDowell Road bridges will permit traffic to cross the channel during floods of 4,000 c.f.s. (a 5-year flood based on future development) and during all but 2 hours of a 100-year-frequency flood. The McDonald Road bridge will be designed for 8,000 c.f.s. (10-year flood) and the McDowell Road bridge for 27,000 c.f.s. (a 100-year flood). The channel under and on either side of the McDowell Road bridge will be paved and will be used as an exhibit center. All bridges except the Van Buren Street bridge will be raised sufficiently to permit trailers to go underneath them and thus avoid conflict with vehicular traffic. A trail overpass will be constructed over Van Buren Street. Esthetically, the bridges and overpass will alter the flat, open nature of the project area. In addition to the greenbelt floodway plan, Scottsdale has instituted the following flood plain management measures: (a) Designated floodways and encroachment lines, zoning restrictions, and subdivision regulations have been implemented throughout the greenbelt floodway; (b) As discussed in the section "Environmental Setting Without the Project" under "Land Use," urban redevelopment has been accomplished by Scottsdale in cooperation with the Department of Housing and Urban Development. This redevelopment (Vista Del Camino) has occurred on the east side of the wash between McDowell Road and Van Buren Street; and (c) Floodproofing would consist of two dikes on the west side of the wash: one between Indian School Road and Thomas Road and one south of Thomas Road opposite El Dorado Park.

77. The greenbelt concept and the recreational facilities planned therein will become the focal point of the surrounding community. Over 80,000 people are within walking and bicycling distance of the greenbelt. Although the recommended plan will provide about

2 million annual recreation days, these recreation days will not satisfy the market-area demand for recreation. City officials, in their overall master plan for Scottsdale, have taken into account the greenbelt and the recreational facilities planned therein.

78. **OUTLET.** Construction of the proposed outlet at the confluence of Indian Bend Wash and the Salt River will result in the following impacts.

a. As an integral part of the Indian Bend Wash greenbelt floodway, the outlet structure will protect life and property against 100-year-frequency floods. This protection contributes to the security and safety of residents and property owners by reducing their fear of flooding.

b. The unlined, entrenched outlet will allow ground water recharge during flood runoff.

c. Sedimentation in the Indian Bend Wash drainage area will diminish in the future as the area becomes more urbanized. The outlet will be planted with grasses and trees; which will help stabilize and landscape the channel. Based on this information, an average annual operation and maintenance cost for flood control of \$27,000 has been used for the outlet. The cost will include removal of debris from the channel, restoration of eroded areas, removal of sediment, and maintenance and replacement of landscaping. The removed debris and sediment will be deposited in landfill designated by local interests. Detailed requirements to maintain environmental quality in the landfills will be included in the operation and maintenance specifications.

d. The natural landscape will be altered by the construction of an entrenched floodway. In the 180 acres in the outlet (photo 5), 2 acres of mesquite and palo verde will be removed. The loss of vegetation is a minor impact because the area within the outlet has been highly disturbed by human activities and supports a minimal plant and wildlife community. Because the prairie falcon may only be an occasional visitor to the project area and a strip of native vegetation will remain in the interceptor channel area, the loss of vegetation in the outlet will have a negligible impact on the prairie falcon.

e. Parts of the embankment will be protected by riprap that will be covered by select material, thus affording an area for the planting of grasses. In the outlet channel, grasses and about 330 trees will be planted. The density of trees will be less than three trees per acre; the trees will be used for landscaping purposes. See table 7 for a listing of native trees that can be planted in the area. The inclusion of vegetation within the outlet channel has been considered in determining the cross sectional area and channel configuration. Hydraulic computations and the engineering design allow for trees and vegetation in the channel.

f. About 180 acres of open space will be preserved from urban encroachment. Recreational facilities will consist of a bicycling-hiking trail and a 1-to 2-acre rest area containing picnic tables, ramadas, and barbecues. The trail will be developed at the time of project construction on a cost sharing basis with local interests. The additional features will

be added at a future time on a cost sharing basis with local interests. These additional features are being deferred at the request of the City of Tempe.

g. The features now presenting an unesthetic appearance, such as unauthorized landfills, trash, and garbage, will be removed. The outlet will appear as an open space corridor between Van Buren Street (McKellips Road) and the Salt River. Native vegetation, selected for contrasts in foliage, will enhance the outlet's esthetics. Within the channel, low-profile levees will be planted with various native grasses and blended with the channel interior. Outside the channel, levees up to 5 feet in height will be discernible but will be graded to blend with the surrounding landscape. A trail system will meander within the outlet, affording hikers, bicyclers, nature lovers, and others an opportunity to observe the plants and wildlife. A low-flow channel, also planted with native grasses, will make a gentle swath within the outlet. Bridges will be constructed at Van Buren Street and Princess Drive and will mar the flat, open appearance of the wash area.

h. Short-term air, water, and noise pollution as well as traffic disruption will occur during project construction. The contractor will be responsible for investigating and complying with all applicable Federal, State, county, and municipal laws concerning pollution of all types.

i. Construction of the project will destroy the archeological site within the floodway at the proposed outlet. The Arizona Archeological Center of the National Park Service and the State Historic Preservation Officer have been notified about the existence of this site. The National Park Service has indicated that it will conduct test excavations at the site and further studies if warranted. These studies will be conducted prior to destruction of the site, and any significant material will be salvaged.

79. COLLECTOR AND SIDE CHANNELS. As compared with the rest of the project which will protect against 100-year-frequency floods, the collector and side channels will be designed to protect against 25-year-frequency floods. The design for the collector and side channels was restricted to a 25-year-frequency flood because of the limited rights-of-way and the high cost of purchasing additional rights-of-way in a highly developed urbanized area. The channels will reduce ponding west of the Arizona Canal as well as the possibility of canal overtopping and breakage. With the proposed side channels completed, a single 100-year-frequency flood would result in non-preventable damages of \$1.6 million. Flooding would be confined to about 240 acres adjacent to the west bank of the Arizona Canal at an average depth of 2 feet. Damages resulting from overtopping the east bank of the canal would be eliminated. The design of the side channels will be reevaluated prior to reaching a firm decision on the plan to be recommended. This reevaluation will determine if a greater degree of protection could be economically justified. The reduced ponding will minimize ground water recharge; nevertheless, this impact is considered minor because most of the ground water recharge in this area is due primarily to seepage from the Arizona Canal.

80. One acre of natural vegetation, primarily mesquite, will be destroyed by the construction of a collector channel paralleling the west side of the proposed dike. Construction activities for the collector channel paralleling the Arizona Canal will destroy 10 acres of natural vegetation paralleling the west bank of the canal -- 5 acres along the Canal between the inlet and Lincoln Drive, 3 acres from Lincoln Drive to McDonald Drive, and 2 acres from McDonald Drive to 400 feet north of Chaparral Road. The vegetation that will be destroyed will be in a 200-foot-wide strip from the proposed dike to Lincoln Drive, and in a 40- to 50-foot-wide strip from Lincoln Drive to 400 feet north of Chaparral Road. Two ranches within the 200-foot-wide strip will have to be relocated or floodproofed. There will be a visual impact associated with grouted stone energy dissipators at the downstream ends of the side channels.

81. Most of the area protected by the collector and side channels has been developed for residential and commercial uses. Therefore, the short-term effects of construction activities will have a greater impact on residents and businessmen than similar activities within the wash. Construction of the side channels will necessitate the partial closure of three streets (McDonald Drive, Chaparral Road, and Camelback Road) during the placement of pipe, temporarily disrupting the social and economic patterns of the area, for up to 3 to 4 months. Other short-term effects include the following: traffic disruption; air and noise pollution; disruption of access to commercial business, including a used car dealership, a hotel, and a botanical nursery; and disruption of utilities, such as sewer, gas, electric power, and waterlines. The latter disruption will be minimized by the installation of temporary bypasses.

82. Presently, construction activities specifically involving the Arizona Canal are planned to take place during the month when the canal carries no water. If construction is delayed, however, then interference with canal flows will occur, and a canal bypass will have to be constructed to temporarily convey canal waters around the construction area.

ANY ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE  
AVOIDED SHOULD THE PROPOSAL BE IMPLEMENTED

83. The structural modifications will require permanent alteration of the landscape. At the inlet, 28 acres of mesquite bosque will be removed, resulting in a loss of wildlife habitat. Building the collector channels will result in the destruction of 11 acres of mesquite. Project construction will also require the removal of 2 acres of sparse vegetation within the outlet. The vegetation, primarily mesquite in a strip 5 to 10 feet wide and 1,500 feet long, is growing along the west bank of the Indian Bend Pump Lateral. The total loss of 41 acres of habitat will be mitigated by acquisition and management of 40 acres of habitat near the Gila River. Construction of the project will destroy the one archeological site in the project area after its study by the National Park Service and after the salvage of significant material. Loss of the site represents a diminishing of the nonrenewable body of archeological data available. There will be unavoidable short-term adverse impacts during construction, including noise, dust, emissions from construction equipment, traffic disruption, etc.

## ALTERNATIVES TO THE PROPOSED ACTION

84. Besides the recommended plan (inlet, nonstructural greenbelt floodway, and outlet), several alternatives were considered.

### 85. ALTERNATIVE NO. 1 - STRUCTURAL GREENBELT

a. This alternative plan consists of a structural greenbelt, either leveed or entrenched, for the entire length of the project, about 7 miles. The entrenched plan, which would protect against 100-year-frequency floods, would use a trapezoidal channel with 1 V on 15 H side slopes and a base width of 500 feet, entrenched 6 to 7 feet deep. The leveed plan would also protect against 100-year-frequency floods; the channel would have a base width of 700 feet and levees 5 to 7 feet high. Common structural appurtenances for these plans would include an inlet structure and interceptor channel above the Arizona Canal and a siphon to divert canal flows under the Indian Bend Wash channel.

b. The environmental impacts of the structural greenbelt would include the following: flood control equivalent to that to be provided by the recommended plan, preservation of open spaces from urban encroachment, creation of recreational opportunities, alteration of the natural landscape, and removal of native vegetation and wildlife habitat, thereby affecting the wildlife population.

c. The structural greenbelt plan was not adopted because local interests felt that the levees for the entire length of the project were esthetically unacceptable. In addition, the entrenchment would involve the purchase of three golf courses, temporary removal of three parks, and the relocation of utilities and streets. Preliminary cost analyses of the structural greenbelt plans were made. The estimated cost of the leveed greenbelt is \$21,400,000 including a non-Federal contribution of \$11,800,000. The cost of the entrenched greenbelt is estimated at \$31,100,000, of which \$17,500,000 is non-Federal. These plans were economically unacceptable to local interests. For these reasons the structural greenbelt alternative was not analyzed in further detail.

### 86. ALTERNATIVE NO. 2 - CONCRETE CHANNEL

a. This alternative, which is similar to the authorized plan, would consist of a trapezoidal concrete channel along Indian Bend Wash from the Arizona Canal on the north to the Salt River on the south, a distance of 7 miles. As authorized, the channel would have an average top width of 125 feet and a depth of 25 feet and would protect against a 100-year-frequency discharge of 40,000 c.f.s. The pending construction of the Central Arizona Project (CAP) necessitated a redesign of the authorized plan in order to allow for the impact of the CAP's Paradise Valley detention dike and the reduced flood discharges. As redesigned, the average top width of the channel would be 115 feet; the base width, 12 feet; and the depth, 22.5 feet. The channel would accommodate a 100-year-frequency flood of 28,000 c.f.s. Channel appurtenances would include an entrenched inlet north of the Arizona Canal, an interceptor channel north of the canal to Pima Road, a levee south of Indian Bend Road to near Scottsdale Road, a siphon to divert Arizona Canal flows under the channel,

five bridges at the major street crossings, interceptor channels along the Arizona Canal and side channels along McDonald Drive and Chaparral and Camelback Roads. These interceptor and side channels are described in detail as a part of the recommended plan.

b. The concrete channel alternative would provide a high degree of flood protection. It is a feasible solution for conveyance of floodwaters to the Salt River; however, it would eliminate percolation in the wash. The concrete channel would also provide an outlet for all storm drainage works which may be constructed by local interests in the area. Intangible benefits that would accrue from the construction of the authorized project include: (a) reducing the danger of loss of life due to floods; (b) preventing the interruption of service by the Arizona Canal, which serves the Phoenix domestic water supply system as well as agricultural areas; (c) reducing the menace of epidemics caused by flood damage to sewer and water systems; (d) preventing interruptions to business, utility services, home life, schools, and other normal community activities, thereby preserving community morale; and (e) reducing bank and streambed erosion with associated sediment control.

c. Despite the tangible and intangible benefits, residents of Scottsdale have found the authorized plan to be objectionable for the following reasons. First, a concrete channel is considered esthetically unacceptable and upsetting to the ecological balance of the area. Second, 41 acres of natural vegetation and wildlife habitat would be destroyed -- the same amount that would be destroyed under the recommended plan. Third, flood control would encourage the development of 405 acres of flood plain.

d. The total project cost for the concrete channel is \$18,400,000, including a non-Federal contribution of \$4,500,000, and the benefit-cost ratio is 1.5 to 1. In addition to the tangible benefits, there would be significant intangible benefits. This justification may be further enhanced by significant intangible benefits. This plan, including considerations to make the concrete channel more esthetically pleasing, has been presented to representatives of the local governments and rejected. Because local assurances could not be obtained for a concrete channel, the implementation of this alternative is not possible.

#### 87. ALTERNATIVE NO. 3 - TWO DAMS AND A GREENBELT LOW-FLOW CHANNEL

a. This plan consists of two dams north of the Arizona Canal, an upper dam at the base of the McDowell Mountains and a lower dam at the base of the Phoenix Mountains. The former dam would have an embankment 13,600 feet long with a maximum height of 58 feet; the maximum surface area would be 490 acres. The latter dam would have an embankment 15,700 feet long with a maximum height of 37 feet; the maximum surface area would be 437 acres. The dams would be designed to provide 100-year-flood storage capacity. Interceptor levees would be provided to intercept and divert floodwaters to the dams. A low-flow channel would also be provided along Indian Bend Wash from the Arizona Canal to the Salt River; the channel would be designed for 4,000 c.f.s. Controlled releases would be made from the dams into the low-flow channel, which would be unlined. A greenbelt parkway would be developed along Indian Bend Wash similar to the other greenbelt plans.

b. The impacts of the greenbelt aspect of the plan include flood control, preservation of open spaces from urban encroachment, creation of recreational opportunities, alteration of the natural landscape -- all to a degree similar to that detailed in the recommended plan. The plan would require the removal of 2.5 acres of native vegetation and wildlife habitat in the inlet, thereby affecting a minor part of the wildlife population. In addition, construction of the dams would commit a large area of land to flood control, would create a possible barrier to wildlife movement, would create an additional area for recreational development, and would act as a visual barrier altering the esthetics of the area.

c. The proposed Paradise Valley detention dike, part of the CAP project, would cross the drainage area of the dams and would substantially reduce the effectiveness of the dams. In addition, the reservoirs for the dams would occupy large areas that have been subject to urban development in the Town of Paradise Valley and in north Scottsdale. The total project cost for the two dams and a greenbelt low-flow channel is \$32,000,000, including a non-Federal contribution of \$22,000,000. These non-Federal costs were economically unacceptable to local interests, who subsequently withdrew their support. Because of the aforementioned reasons, this alternative plan does not present a viable solution.

#### 88. ALTERNATIVE NO. 4 - DIVERSION LEVEE

a. This plan consists of a 10-foot-high levee and a floodway of 1,500 feet. The levee would be 3 miles north of the Arizona Canal and would extend 11 miles from the Indian Bend Wash southeastward to the Evergreen Wasteway. This plan is similar to the alternative plan considered in the project document. However, the design has been adjusted to present hydrological criteria and to provide a degree of protection comparable with the other alternative plans. A major part of the diversion levee would be in the Salt River Pima-Maricopa Indian Reservation.

b. The impacts of this alternative would include protection against floods; disruption of urbanized areas, requiring the removal of a number of structures; destruction of native vegetation and wildlife habitat; and creation of a visible barrier altering the esthetics and landscape of the area.

c. This plan was impractical for several reasons. First, many beneficial effects of the diversion levee would be negated by the proposed Paradise Valley detention dike. This dike would substantially reduce the effective drainage area above the diversion levee, making the levee effective only for storms centered in a 4-mile strip south of the detention dike. Second, acquisition costs for rights-of-way outside the reservation would be inordinately high. Of the 11-mile length of the diversion levee, 3 miles would be in a section of Paradise Valley and north Scottsdale which is now undergoing rapid urbanization. Assuming a floodway width of 1,500 feet, an area of about 550 acres would be required. With an average of two dwellings per acre and a value of \$30,000 per unit, the cost of rights-of-way alone for this area would be \$33,000,000. An approximate length of 1 mile would be in the Kaiser-Aetna development now under construction. The diversion levee would alter the approved master development plan. Associated recreational, commercial, and public

facilities in the Kaiser-Aetna development would also be affected. Based on an area of about 180 acres and a density of 3.75 units per acre, about 675 dwellings with an estimated value of \$20,000,000 would be eliminated.

d. Because of the rapid development in this area, costs will increase in the future as a result of additional urban encroachment. Land-use planning and development will be complicated, causing revision or cancellation of many present development plans. Based on the impact of the Central Arizona Project and the costs and problems associated with the acquisition of rights-of-way, this plan is not a feasible alternative.

#### 89. ALTERNATIVE NO. 5 - NO ACTION

a. Under this plan, there would be no Federal participation under this authority for flood control along Indian Bend Wash. Scottsdale would continue implementing their greenbelt floodway. As part of the greenbelt floodway plan, the city has instituted zoning ordinances as a form of flood plain management. This management will provide protection against a 100-year-frequency flood.

b. A no action plan does not present a complete solution to the Indian Bend Wash flood problem. An inlet is required to channelize the flows into the greenbelt floodway south of McDonald Drive and to protect areas along the Arizona Canal which have been subjected to frequent flooding; an outlet is required to direct waters into the Salt River from Van Buren Street and to protect a large area which is now subject to flooding; and side channels are required to protect the area west of the canal. Frequent flooding has occurred along Indian Bend Wash. The following brief history of flooding in the area indicates that flood damages are increasing with urbanization. A flood with a peak of 15,000 c.f.s. occurred in 1943 when development of the area was limited, therefore damages were minimal. The storm of September 4-6, 1970, occurred under more urbanized conditions, causing considerable damage to homes, streets, businesses, parks, and golf courses. The most recent flood with a peak discharge of 20,000 c.f.s. occurred on June 22, 1972, and resulted in damages of \$1,459,000 along Indian Bend Wash in Scottsdale and Tempe, and damages of \$1,187,000 along the Arizona Canal in Scottsdale. As urbanization continues to increase, the flood problem will become magnified because of greater population density and the increased runoff from developed areas.

c. The no action alternative was rejected because it would not reduce the flood threat, and it would not guarantee the integrity of Scottsdale's greenbelt floodway concept.

#### THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

90. The recommended flood control plan will protect existing urban developments from flood damages. This protection will be afforded not only to existing populations but also to future populations. Ultimately, the land adjacent to the project area will become entirely urbanized with or without the project; however, the project will preserve 185 acres in the

inlet, 425 acres in Scottsdale's greenbelt, and 180 acres in the outlet as open space, which will be developed for recreational uses compatible with flood control.

ANY IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS  
OF RESOURCES WHICH WOULD BE INVOLVED IN  
THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED

91. The proposed action will commit a part of the overflow area for flood control. This area will retain the manmade alterations of the environment that will result from construction of the project.

92. Primarily because of urban encroachment, little is remaining of what could be termed a natural plant community within the project area. Construction of the project will directly result in the removal of most of the remaining natural habitat, further decreasing the native vegetation and associated wildlife.

93. Many archeological sites in the Phoenix metropolitan area have been destroyed by urbanization, and the few preserved sites that have been studied have been large sites. Study of the small site in the outlet area will supplement existing knowledge and help to present a complete picture of a prehistoric civilization. Site destruction will decrease the amount of archeological information available for later study, thereby contributing to the decay of the entire archeological information base, a continually diminishing base.

COORDINATION WITH OTHERS

94. PUBLIC PARTICIPATION. During formulation of the project and preparation of the environmental statement, planning conferences with representatives of the Maricopa County Flood Control District (MCFCD) and the Cities of Scottsdale and Tempe were conducted frequently. In September 1972, the Corps of Engineers presented four alternatives for an Indian Bend Wash improvement to the MCFCD, Scottsdale, and Tempe. Only the recommended plan was supported by the local interests. Subsequent meetings then involved refinement of project features, including recreational requirements. A public meeting was held in Scottsdale on September 12, 1973; 20 persons testified in support of the project and no opposition was expressed.

95. GOVERNMENT AGENCIES. The Draft Environmental Statement was sent to all governmental agencies known to have an interest in the proposed project. The comments of responding agencies are summarized in the following subparagraphs, and their letters of comment are included in Appendix A.

- a. U.S. Department of Agriculture, Soil Conservation Service.

Comment: The draft statement contains only sketchy information about the soils and is silent relative to the capabilities of those soils.

Response: The statement has been expanded to include more information concerning the vegetative capabilities of the soils.

Comment: In the Summary, page 2, the Forest Service and the Soil Conservation Service should be listed under USDA.

Response: The final statement contains a revised summary.

Comment: In paragraph 72 (now paragraph 75), a figure of 5.25 acre-feet per year is used. Should that figure be 5.25 acre-feet per acre per year?

Response: The units have been corrected.

Comment: The statement infers that native grasses and trees will stabilize the channels and minimize erosion. We suggest that the design velocity for the channels be given and the "native grasses" specified so that the reader can judge their effectiveness in preventing erosion.

Response: Coordination will be carried out with the local Soil Conservation Service representative to insure that maximum stabilization is achieved by selection of proper vegetation.

Comment: It has been our experience that the natural spacing of plants under our desert climatic conditions does not result in a density sufficient to effectively prevent erosion in channels.

Response: We will not rely on natural spacing. Nursery tree stock will be planted as landscaping. Grasses will be hydroseeded to obtain uniform coverage.

Comment: We have found it necessary to provide supplemental water to plantings during the establishment period. The statement is silent on this subject and costs are not shown in the discussions of operation and maintenance.

Response: Supplemental water will be provided. The costs are included in the operation and maintenance costs presented in the statement.

Comment: It appears doubtful that trees on a spacing of one per 15,000 square feet would be effective in reducing erosion. The opposite may be true. Paragraph 75e (now paragraph 78e) better describes their function.

Response: The statement has been modified to reflect this comment.

Comment: The statement does not discuss what provisions are planned for management of surface runoff that might occur during construction.

Response: The contractor will be required to provide a means of diversion and control of runoff that will adequately protect the uncompleted portions of the project.

Comment: Paragraph 71 (now paragraph 74) indicates that the greenbelt will replace the remaining agricultural land in the project area. The reader could better judge the resulting impact if acreage figures were given. Will there be a severance of existing farming operations?

Response: The land in the project area is rapidly becoming urban. Projections indicate that by the time construction is initiated there will be no agricultural land in the construction area. The statement has been modified to delete reference to agricultural land.

b. U.S. Department of Commerce

Comment: To what extent, if any, would comments from the Salt River Indian Reservation Tribal Council be appropriate?

Response: Coordination with the Salt River Indian Reservation Tribal Council has been effected.

Comment: The data on air quality (Table 1) could be presented more clearly by having the ordinate for "Total Days Sampled" coincide with the ordinate for "Days Equaled or Exceeded Standards," and by adding a third curve, "Fraction of Sampled Days Which Equaled or Exceeded Standards". Since air quality is only a peripheral consideration to this project, this section might be omitted.

Response: The data on air quality is believed pertinent and adequate in its present format.

c. U.S. Department of the Interior

Comment: It would be appropriate to explain the proposed landscape beautification program. The landscaping and simulation of habitat by reseeding native grasses and transplanting native tree species seems to be overstated in light of the difficulty in transplanting native trees and shrubs and the questionable safe use of certain native grasses. The Arizona Commission of Agriculture and Horticulture and the Arizona Highway Department could provide information on protected species and transplanting techniques appropriate for the species. Additional consultation might be obtained before deciding to transplant plants that may not be amenable to such action or reseeding with native grasses that may become a fire hazard when seasonably dry.

Response: The statement has been modified to include information concerning landscaping. Close cooperation is presently being maintained with the Soil Conservation Service, Maricopa County Parks and Recreation, and the City of Scottsdale Parks Department. We will coordinate with the Arizona Commission of Agriculture and Horticulture and the Arizona Highway Department.

Comment: It is suggested that paragraph 3a be expanded to indicate that the proposed action would not affect any existing, proposed, or known potential units of the National Park System, nor any Historic, Natural, or Environmental Education sites eligible or considered potentially eligible for the National Landmark Programs.

Response: The information has been included in paragraph 46, Archeological and Historical sites.

Comment: In review topographic maps and making on-site inspections of the area, we find that the surface drainage on the western portion of the Salt River Indian Community above the Arizona Canal and below the McDowell Mountains is in a southwest direction. In spite of this fact there appears to be no provision for taking the surface drainage off the Indian Community lands above or below the Arizona Canal. We also note that the interceptor drain north of the Arizona Canal stops at Pima Road. This will provide drainage for lands outside the Indian Community. There appears to be no provision for the extension of this drain to collect drainage waters from the Community lands. If the C.A.P. Aqueduct is not constructed, there is the possibility of large amounts of drainage water coming from the Community lands.

Response: The Indian Community rejected a plan for a diversion levee crossing their lands in the early 1960's which would have accomplished this purpose. Based on recent contacts with the BIA representative, their attitude on this matter has not changed. The recommended plan includes an interceptor channel along the north side of the Arizona Canal to Pima Road. The project was not intended to intercept all McDowell Mountain runoff along the canal. This channel was included to eliminate ponding and possible canal breaks, providing flood protection to an urbanized area. Based on available information, the ponding problem is confined between the wash and Pima Road. Extending the interceptor channel east of Pima Road could not be justified due to both hydraulic and economic considerations.

Comment: We also suggest that the flood channel below McKellips Road be constructed in such a manner and size that it will carry the flood water to the Salt River channel without backing water onto section 12 of the Salt River Indian Community.

Response: The outlet channel will tie directly into a proposed Salt River channel which will be constructed by Maricopa County prior to the project. The outlet will join the Salt River at Rural Road, one mile west of the reservation boundary. This will preclude any possibility of Indian Bend Wash backwaters reaching the Indian Community.

Comment: We are concerned that failure to provide for drainage on inlet channels on the east side of Indian Bend Wash channel will, in the face of continuing development of the non-Indian community, force flood waters onto the Indian Community land. This absence of controlled drainage will seriously impede the development of Community lands.

Response: The Maricopa County Association of Governments has developed a comprehensive storm drainage plan, which includes storm drains on the east side of Indian Bend Wash. This plan is now being implemented by Scottsdale. This will alleviate the problem of waters originating on non-Indian lands flooding the Indian Community lands.

Comment: It is suggested that in the initial reference to the Arizona Canal in paragraph 2, it be identified as part of the Salt River Project.

Response: The relationship of the Arizona Canal to the Salt River Project is described in paragraph 29.

Comment: We suggest you include reference to municipal as well as irrigation water in paragraph 9.

Response: The statement has been modified.

Comment: The fourth sentence in paragraph 28 (now paragraph 29) is misleading with regard to the regional scope and extent of construction by the Bureau of Reclamation.

Response: Paragraph 29 of the statement has been clarified.

Comment: In paragraph 28b (now paragraph 29b) we believe it would be appropriate to identify the "low flow canal" as the "Indian Bend Pump Lateral," which receives well water in addition to irrigation return flows and storm runoff up to the carrying capacity of the canal. It also may be beneficial to discuss here, or in a subsequent section, the provisions to be made for continuing operation of the lateral or the provisions agreed to by the Salt River Project to discontinue this operation. If use of the Indian Bend Pump Lateral is discontinued, the impact upon water use and conservation should be discussed.

Response: The statement has been modified to correctly identify the Indian Bend Pump Lateral. Current planning requires for modification of the pump lateral to be consistent with the flood control features in the outlet. A discussion of the future operation or discontinuance of the Lateral is not felt to be relevant in this statement.

Comment: In paragraphs 38 through 42 (now paragraphs 38 through 45), it would be appropriate to mention that the Asian clam, *Corbicula*, is present in areas of permanent aquatic habitat.

Response: The statement has been modified.

Comment: We concur with the recommendations of the Arizona State Museum in paragraph 46 (now paragraph 49) that additional testing and recovery of identified significant archeological resources is needed prior to construction. There seems to be little potential that Ariz. U:9:45 is eligible for nomination to the National Register of Historic Places; we recommend excavation and study of the site with no modification of the project.

Response: The statement indicates that further studies will be coordinated by the National Park Service in order to insure adequate study of the site.

Comment: Reference paragraph 48 (now paragraph 51). In the outlet area there are 160 acres of Reclamation-withdrawn land utilized by the Salt River Project -- in part, for transmission line right-of-way and for disposal of tree trimmings, tree stumps, and broken concrete resulting from project operation and maintenance. Continued availability of an area for these purposes should be considered and coordinated with the Bureau of Reclamation and the Salt River Project.

Response: The statement has been modified to include this information. The availability of this area for debris disposal has been made known to the local agency responsible for maintenance.

Comment: We suggest that paragraph 49 (now paragraph 52) identify the limit of the area for which the acreage figures apply.

Response: The statement has been modified to indicate that the acreage involved is land that is irrigated by the Salt River Project.

Comment: Paragraph 69f (now paragraph 72f) discusses the 100-foot strip between the interceptor channel and the Arizona Canal. If this 15-1/2 acres is to be used for all of the recreational facilities stated, its effectiveness as a wildlife sanctuary would be poor. We suggest that consideration be given in the statement to an alternate development consisting of minimal changes in the natural environment.

Response: The Corps has expanded the mitigation program to include off-site mitigation. The statement has been revised to include further data on the extent of mitigation provided by the 100-foot-strip. This mitigation will be limited to habitat for wildlife species that are tolerant of urbanization and public use.

Comment: We suggest that trees retained in the channel be left in clumps of three or four in order to be most beneficial to wildlife (see paragraph 69l now paragraph 72l).

Response: The hydraulic design requirements of the inlet channel will require removal of existing trees.

Comment: We suggest that paragraph 75 (now paragraph 78) include a statement about the effect of the discharge from Indian Bend Wash into the Salt River, the relationship of the Salt River to other Federal programs, the effect upon downstream development including Sky Harbor International Airport, and the availability of Federal lands for location of a portion of the outlet channel.

Response: A channel will be constructed by local interest in the Salt River that will accommodate the design capacity of the Indian Bend Wash project. We are now conducting planning studies on a Salt River Improvement. The general alinement of the outlet is restricted by the requirements to join the greenbelt floodway north of McKellips, tie into the proposed Salt River channel, cause the least interference to privately owned lands and developments, and conform to hydraulic requirements. Federal lands within the outlet will be utilized to the maximum extent possible, subject to the above constraints.

Comment: It is suggested that consultation with the Arizona Commission of Agriculture and Horticulture and the Arizona Highway Department, as well as reference to "Landscaping with Native Arizona Plants," would provide assistance in revising Table 7 for improved reader understanding.

Response: Table 7 has been modified. Prior to construction, the Arizona Commission of Agriculture and Horticulture and the Arizona Highway Department will be consulted.

Comment: The Indian Community boundary line shown on all plates, T.1 N., R. 5 E., is not correct. These plates should be amended to reflect the plates of Survey filed by the Bureau of Land Management, August 1973.

Response: The line indicated on Plate 1 is an approximate boundary. At the scale shown we find no substantial difference between the Bureau's survey and what is indicated on the plate.

d. Arizona State Museum

Comment: In paragraph 45 (now paragraph 48) the site is too accurately located in regard to landmarks immediately recognizable by the public at large.

Response: The statement has been modified to give a more general site location.

Comment: Paragraph 46 (now paragraph 49) does not accurately reflect the tenor of the recommendations suggested to mitigate against the impact of the project on the site. The draft statement does not indicate preservation to be the Arizona State Museum's primary recommendation.

Response: The statement has been modified.

e. State of Arizona, Department of Game and Fish.

Comment: Our Department feels that the 100-foot strip is not sufficient for meaningful mitigation; mitigation will have to occur elsewhere, as equitable wildlife habitat adjacent to the proposed project area is diminutive.

Response: The Corps has expanded the mitigation program to include off-site mitigation. The statement has been revised to include further data on mitigation measures.

Comment: Alternative 3 would probably have the least impact on wildlife, as it entails the removal of only 2.5 acres of mesquite.

Response: The reasons for not selecting this alternative are discussed in paragraph 87c of this statement.

f. Arizona Water Commission

Comment: The Arizona Water Commission in supporting this statement recommends that the references to the "minor impact" of groundwater recharge as referred to in the statement either be deleted or qualified by a discussion of the importance of recharge even though limited by frequency of occurrence.

Response: Paragraphs 36, 72c, and 78b of the statement have been modified.

Comment: It is also recommended that the Arizona Water Commission be included in the list of coordinating State agencies.

Response: The Arizona Water Commission has been included in the list of commenting agencies.

g. Maricopa County, Arizona

Comment: Delete "Arizona Canal" and substitute "Indian Bend Road" in the 4th line, paragraph 3. Change "McDonald Mountains" to "McDowell Mountains" in paragraph 84a (now 87a).

Response: The statement has been modified.

Comment: In paragraph 3, line 6, delete "56th Street, a distance of 5 miles" and substitute "68th Street, a distance of about 3-1/2 miles". Change report to show flood protection from Indian Bend Wash to 68th Street and revise acreages accordingly.

Response: The statement is correct as written. Flood protection will be provided to 56th Street. The recommended plan will provide for a collector channel to a point 1,000 feet south of Camelsback Road, which will tie into the existing city channel. By intercepting flows at this point, reduction in flooding to 56th Street will be realized.

Comment: In paragraph 93, add as subparagraph i: "Comply with Section 221 of the Flood Control Act of 1970 (Public Law 91-611) and also with the requirements of the Uniform Relocations Assistance and Real Property Acquisition Policy Act of 1970 (Public Law 91-646)".

Response: Paragraph 93, in its entirety, has been deleted from the statement. The suggested addition has been incorporated in the appropriate place in the General Design Memorandum -- Phase I.

Comment: On plate 1, indicate flow on west side of Arizona Canal from Lincoln Road to Indian Bend Wash is to the north. Delete overshoot over Arizona Canal in vicinity of Lincoln Road.

Response: Plate 1 has been modified.

h. The following governmental agencies reviewed the Draft Environmental Statement and had no adverse comments to make or changes to suggest:

Advisory Council on Historic Preservation  
Environmental Protection Agency  
Agricultural Research Service, USDA  
Forest Service, USDA  
U.S. Department of Health, Education, and Welfare  
U.S. Department of Housing and Urban Development  
State of Arizona:  
Agriculture and Horticulture Dept.  
Arizona Outdoor Recreation Coordinating Committee  
Arizona Power Authority  
Dept. of Economic Security  
Mineral Resources  
Office of Economic Planning and Development  
State Land Dept.  
City of Scottsdale  
City of Tempe

96. The Draft Environmental Statement was also sent to the Federal Aviation Administration and the Salt River Indian Reservation Tribal Council and no replies have been received to date.

97. CITIZEN GROUPS. The Sierra Club, Friends of the Earth, and the Maricopa Audubon Society were coordinated with informally during project formulation and preparation of the environmental statement. The Draft Environmental Statement was sent to citizen groups known to have an interest in the proposed project. The comments of responding groups are summarized in the following subparagraphs, and their letters of comment are included in Appendix A.

a. Friends of the Earth

Comment: I do not agree with some of the figures used in the draft statement, but I know what studies you used, so the disagreement is with the studies not with the document you sent me.

Comment: Would it be possible to leave some mature trees north of the Arizona Canal?

Response: The hydraulic design requirements of the inlet channel will require removal of existing trees.

b. Maricopa Audubon Society.

Comment: This chapter of the National Audubon Society is in full agreement with this project.

98. The Draft Environmental Statement was also sent to the Arizona State University and the following citizen groups and no replies have been received to date:

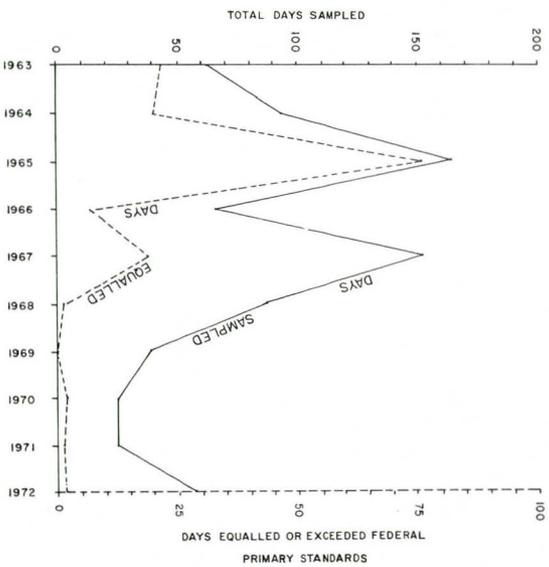
Arizona State University  
Advisory Commission on Arizona Environment  
Arizona Wildlife Federation  
National Wildlife Federation  
Sierra Club

## BIBLIOGRAPHY

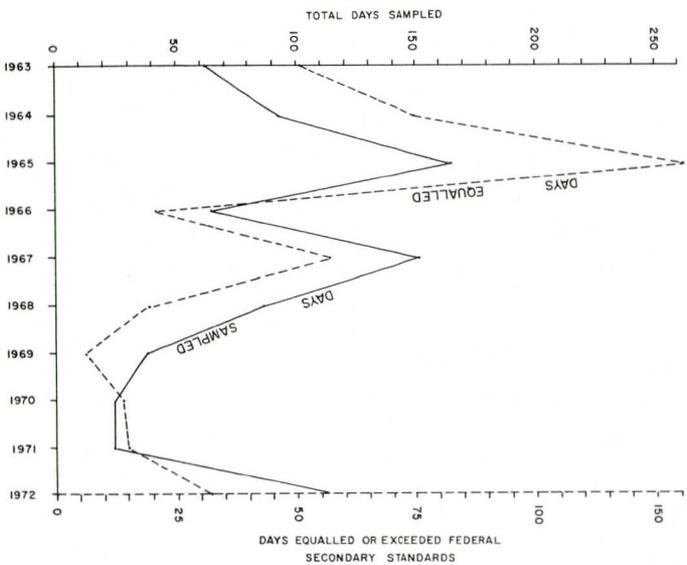
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TABLES

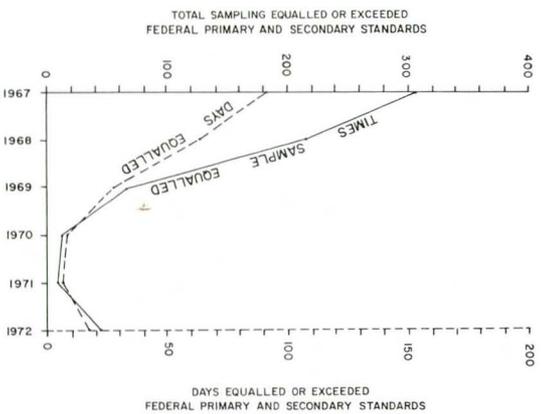
TABLE 1  
CENTRAL PHOENIX STATION  
AIR QUALITY PARAMETERS



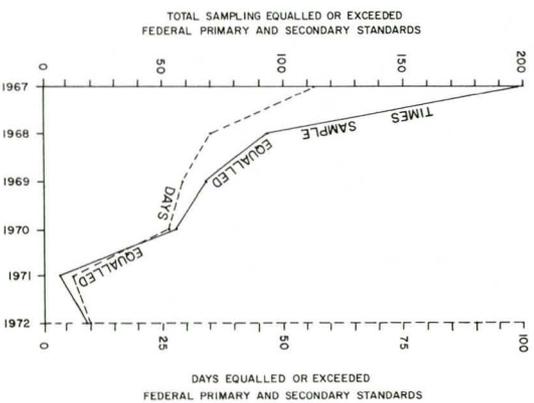
SUSPENDED PARTICULATE CONCENTRATIONS  
COMPARED TO FEDERAL PRIMARY STANDARDS  
(maximum 250 ug/m<sup>3</sup>, 24 hour average)



SUSPENDED PARTICULATE CONCENTRATIONS  
COMPARED TO FEDERAL SECONDARY STANDARDS  
(maximum 150 ug/m<sup>3</sup>, 24 hour average)



PHOTOCHEMICAL OXIDANTS CONCENTRATION COMPARED  
TO FEDERAL PRIMARY AND SECONDARY STANDARDS  
(maximum 160 ug/m<sup>3</sup>, 1 hour average)



CARBON MONOXIDE CONCENTRATIONS COMPARED  
TO FEDERAL PRIMARY AND SECONDARY STANDARDS  
(maximum 40 mg/m<sup>3</sup>, 1 hour average)

Table 2

## COMPARISON OF AMBIENT AIR QUALITY STANDARDS

Pollutant	Condition	Arizona standard	Federal primary standard	Federal secondary standard
Sulfur oxides (sulfur dioxide) (ug/m3)	3 hr. avg.	1300	---	1300
	24 hr. avg.	260	365	260
	Annual avg.	50	80	60
Suspended particulates (ug/m3)	24 hr. avg. (Max.)	100	260	150
	Annual geometric mean	60	75	60
Photochemical oxidants (ug/m3)	1 hr. avg.	80	160	160
	Peak value	150	---	---
Hydrocarbons (ug/m3)	3 hr. avg. (Annual Max.) (6 to 9 a.m.)	---	160	160
Nonmethane	Peak value	80	---	---
Nitrogen dioxide (ug/m3)	Annual avg.	100	100	100

Table 3

PREDOMINATING FLORA IN THE INDIAN BEND WASH DRAINAGE AREA

TREES

Common Name	Scientific Name
Cottonwood	<i>Populus fremontii</i>
Desert willow	<i>Chilopsis linearis</i>
Mesquite	<i>Prosopis juliflora</i>
Blue Palo verde	<i>Cercidium floridum</i>
Yellow Palo verde	<i>Cercidium microphyllum</i>

SHRUBS

Arrowweed	<i>Pluchea sericea</i>
Burrobrush	<i>Hymenoclea salsola</i>
White bursage	<i>Franseria dumosa</i>
Brittlebush	<i>Encelia farinosa</i>
Broom baccharis	<i>Baccharis sarothroides</i>
Catsclaw acacia	<i>Acacia greggii</i>
Creosote bush	<i>Larea divaricata</i>
Crucifixion thorn	<i>Holacantha emoryi</i>
Desert Thorn	<i>Lycium torreyi</i>
Desert salt bush	<i>Atriplex polycarpa</i>
Four-wing saltbush	<i>Atriplex canescens</i>
Quailbush	<i>Atriplex lentiformis</i>
Haplopappus	<i>Haplopappus heterophyllus</i>
Seepwillow	<i>Baccharis glutinosa</i>
Salt cedar	<i>Tamarix pentandra</i>
Tree tobacco	<i>Nicotiana glauca</i>
Yucca	<i>Yucca elata</i>

HERBACEOUS VEGETATION

Buckwheat	<i>Eriogonum spp.</i>
Buffalo gourd	<i>Cucurbita foetidissima</i>
Desert sunflower	<i>Gersea canescens</i>
Cocklebur	<i>Xanthium saccharatum</i>
Evening primrose	<i>Oenothera sp.</i>
Filaree	<i>Erodium cicutarium</i>
Fiddle-neck	<i>Amsinckia intermedia</i>
Desert-mallow	<i>Sphaeralcea ambigua</i>
Jimsonweed	<i>Datura meteloides</i>
Pigweed	<i>Amaranthus spp.</i>
Russian thistle	<i>Salsola kali</i>
Sand verbena	<i>Verbena gooddingii</i>
Nightshade	<i>Solanum xantii</i>

Table 3 (Continued)

GRASSES

Common Name	Scientific Name
Alkali-sacaton	<i>Sporobolus airoides</i>
Black drop-seed	<i>Sporobolus cryptandrus</i>
Drop-seed	<i>Sporobolus pulvinatus</i>
Bristlegrass	<i>Setaria lutescens</i>
Big galleta grass	<i>Hilaria rigida</i>
Johnson grass	<i>Sorghum halepense</i>
Salt grass	<i>Distichlis stricta</i>

CACTI

Barrel cactus	<i>Ferocactus sp.</i>
Cholla and pricklypear	<i>Opuntia spp.</i>
Fishhook cactus	<i>Mammillaria spp.</i>
Sahuaro	<i>Cereus giganteus</i>

Table 4

## AMPHIBIANS AND REPTILES IN THE DRAINAGE AREA

Common name	Scientific name	Scientific name
Couch's spadefoot*		<i>Scaphiopus couchi</i>
Western spadefoot*		<i>Scaphiopus hammondi</i>
Colorado River toad		<i>Bufo alvarius</i>
Woodhouse's toad		<i>Bufo woodhousei</i>
Great Plains toad*		<i>Bufo cognatus</i>
Desert tortoise*		<i>Gopherus agassiz</i>
Gila monster		<i>Heloderma suspectum</i>
Banded gecko		<i>Coleonyx variegatus</i>
Collared lizard		<i>Crotaphytus collaris</i>
Leopard lizard		<i>Crotaphytus wislizeni</i>
Chuckwalla		<i>Sauromalus obesus</i>
Zebra-tailed lizard		<i>Callisaurus draconoides</i>
Desert spring lizard		<i>Sceloporus magister</i>
Long-tailed brush lizard		<i>Uta graciosa</i>
Tree lizard		<i>Uta ornata</i>
Side-blotched lizard		<i>Uta stansburiana</i>
Desert-horned lizard*		<i>Phrynosoma platyrhinos</i>
Western whiptail		<i>Cnemidophorus tigris</i>
Western blind snake		<i>Leptotyphlops humilis</i>
Black-necked garter snake*		<i>Thamnophis cyrtopsis</i>
Checkered garter snake		<i>Thamnophis marcianus</i>
Coachwhip		<i>Masticophis flagellum</i>
Desert patchnosed snake		<i>Salvadora hexalepis</i>
Gopher snake		<i>Pituophis catenifer</i>
Glossy snake		<i>Arizona elegans</i>
Common kingsnake		<i>Lampropeltis getulus</i>
Southwestern lyre snake*		<i>Trimorphodon lambda</i>
Night snake		<i>Hypsiglena torquata</i>
Arizona coral snake*		<i>Micruroides euryxantus</i>
Western diamond-backed rattlesnake		<i>Crotalus atrox</i>
Mohave rattlesnake		<i>Crotalus scutulatus</i>
Sidewinder		<i>Crotalus cerastes</i>

\*Possibly present in the drainage area

Table 5

## BIRDS IN THE DRAINAGE AREA

Common name	Scientific name
Turkey vulture	<i>Cathartes aura</i>
Sharp-skinned hawk*	<i>Accipiter striatus</i>
Cooper's hawk	<i>Accipiter cooperii</i>
Ferruginous hawk*	<i>Buteo regalis</i>
Harris hawk**	<i>Parabuteo unicinctus</i>
Red-tailed hawk	<i>Buteo jamaicensis</i>
Sparrow hawk	<i>Falco sparverius</i>
Pigeon hawk	<i>Falco columbarius</i>
Prairie falcon**	<i>Falco mexicanus</i>
Gambel's quail	<i>Lophortyx gambelii</i>
White-winged dove	<i>Zenaida asiatica</i>
Inca dove	<i>Scardafella inca</i>
Morning dove	<i>Zenaidura macroura</i>
Ground dove	<i>Columbigallina passerina</i>
Road runner	<i>Geococcyx californianus</i>
Short-eared owl	<i>Asio flammeus</i>
Screech owl	<i>Otus asio</i>
Great-horned owl	<i>Bubo virginianus</i>
Elf owl	<i>Micrathene whitneyi</i>
Burrowing owl**	<i>Speotyto cunicularia</i>
Poor-will	<i>Phalaenoptilus nuttallii</i>
Lesser night hawk	<i>Chordeiles acutipennis</i>
Costa's hummingbird	<i>Calypte costae</i>
Red-shafted flicker	<i>Colaptes cafer</i>
Gilded flicker	<i>Colaptes chrysoides</i>
Gila woodpecker	<i>Centurus uropygialis</i>
Ladder-backed woodpecker	<i>Dendrocopos scalaris</i>
Western kingbird	<i>Tyrannus verticalis</i>
Ash-throated flycatcher	<i>Myiarchus cinerascens</i>
Say's phoebe*	<i>Sayornis saya</i>
Hammond's flycatcher*	<i>Empidonax hammondi</i>
Western flycatcher*	<i>Empidonax difficilis</i>
Vermillion flycatcher	<i>Pyrocephalus rubinus</i>
Horned lark*	<i>Eremophila alpestris</i>
Common raven*	<i>Corvus corax</i>
Bridled titmouse*	<i>Parus wollweberi</i>
Verdin	<i>Auriparus flaviceps</i>
White-breasted nuthatch*	<i>Sitta carolinensis</i>
House wren*	<i>Troglodytes aedon</i>
Bewick's wren*	<i>Thryomanes bewickii</i>

Table 5 (Continued)

## BIRDS IN THE DRAINAGE AREA

Common name	Scientific name
Cactus wren	<i>Campylorhynchus brunneicapillus</i>
Rock wren*	<i>Salpinctes obsoletus</i>
Mockingbird	<i>Mimus polyglottos</i>
Bendire's thrasher	<i>Toxostoma bendirei</i>
Curve-billed thrasher	<i>Toxostoma curvirostre</i>
Western bluebird*	<i>Sialia mexicana</i>
Mountain bluebird*	<i>Sialia currucoidus</i>
Bluegray gnatcatcher*	<i>Polioptila caerulea</i>
Black-tailed gnatcatcher	<i>Polioptila melanura</i>
Ruby-crowned kinglet	<i>Regulus calendula</i>
Cedar waxwing*	<i>Bombycilla cedrorum</i>
Phainopepla*	<i>Phainopepla nitens</i>
Loggerhead shrike	<i>Lanius ludoricianus</i>
Starling	<i>Sturnus vulgaris</i>
Bell's vireo	<i>Vireo bellii</i>
Orange-crowned warbler*	<i>Vermivora celata</i>
Lucy's warbler	<i>Vermivora luciae</i>
Audibon's warbler*	<i>Dendroica auduboni</i>
Yellow warbler	<i>Dendroica petechia</i>
MacGillivray's warbler*	<i>Oporornis tolmiei</i>
Wilson's warbler*	<i>Passer domesticus</i>
House sparrow	<i>Wilsonia pusilla</i>
Western meadowlark	<i>Sturnella neglecta</i>
Hooded oriole**	<i>Icterus cucullatus</i>
Bullock's oriole**	<i>Icterus bullockii</i>
Brewer's blackbird*	<i>Euphagus cyanocephalus</i>
Red-winged blackbird	<i>Agelaius phoeniceus</i>
Brown-headed cowbird	<i>Molothrus ater</i>
Summer tanager**	<i>Piranga rubra</i>
Cardinal	<i>Richmondia cardinalis</i>
Blue grossbeak**	<i>Guiraca caerulea</i>
Lesser goldfinch*	<i>Spinus psaltria</i>
Lawrence's goldfinch	<i>Spinus lawrencei</i>
House finch	<i>Carpodacus mexicanus</i>
Green-tailed towhee*	<i>Chlorura chlorura</i>
Abert's towhee	<i>Pipilo alberti</i>
Lark bunting*	<i>Calamospiza melanocorys</i>
Vesper sparrow*	<i>Pooecetes gramineus</i>
Lark sparrow*	<i>Chondestes grammacus</i>
Black-throated sparrow	<i>Amphispiza bilineata</i>

Table 5 (Continued)

BIRDS IN THE DRAINAGE AREA

Common name	Scientific name
Sage sparrow*	<i>Amphispiza belli</i>
Gray-headed junco*	<i>Junco caniceps</i>
Chipping sparrow*	<i>Spizella passerina</i>
Brewer's sparrow*	<i>Spizella breweri</i>
Lincoln's sparrow*	<i>Melospiza lincolnii</i>
White-crowned sparrow	<i>Zonotrichia leucophrys</i>

\* Winter visitors or migrants

\*\* Possibly present in the drainage area

Table 6

## MAMMALS IN THE DRAINAGE AREA

Common name	Scientific name
Desert shrew	<i>Notiosorex crawfordi</i>
California myotis	<i>Myotis californicus</i>
Western pipistrella	<i>Pipistrellus hesperus</i>
Big brown bat*	<i>Eptesicus fuscus</i>
Pallid bat*	<i>Antrozous pallidus</i>
Mexican free-tailed bat*	<i>Tadarida mexicana</i>
Harris' antelope squirrel	<i>Citellus harrisi</i>
Rock squirrel*	<i>Citellus variegatus</i>
Valley pocket gopher	<i>Thomomys bottae</i>
Arizona pocket mouse*	<i>Perognathus amplus</i>
Bailey's pocket mouse	<i>Perognathus baileyi</i>
Desert pocket mouse	<i>Perognathus penicillatus</i>
Badger	<i>Taxidea taxus</i>
Javelina	<i>Pecari angulatus</i>
Merriam's kangaroo rat	<i>Dipodomys merriami</i>
Southern grasshopper mouse*	<i>Onychomys leucogaster</i>
Western harvest mouse	<i>Reithrodontomys megalotis</i>
Cactus mouse	<i>Peromyscus eremicus</i>
Deer mouse	<i>Peromyscus maniculatus</i>
White-throated wood rat	<i>Neotoma albigula</i>
House mouse*	<i>Mus musculus</i>
Kit fox*	<i>Vulpes macrotis</i>
Gray fox	<i>Urocyon cinereoargenteus</i>
Ringtail cat	<i>Bassariscus astutus</i>
Bobcat	<i>Lynx rufus</i>
Mule deer	<i>Odocoileus hemionus</i>

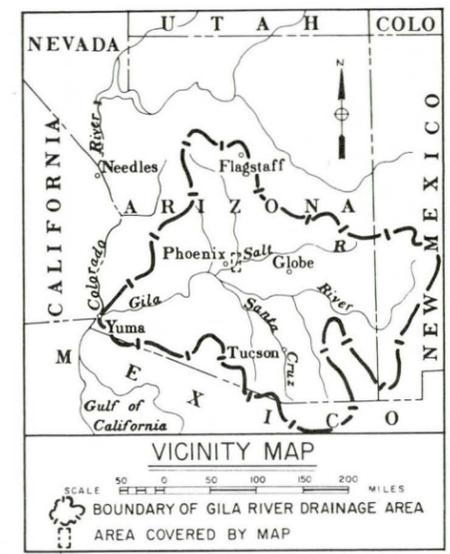
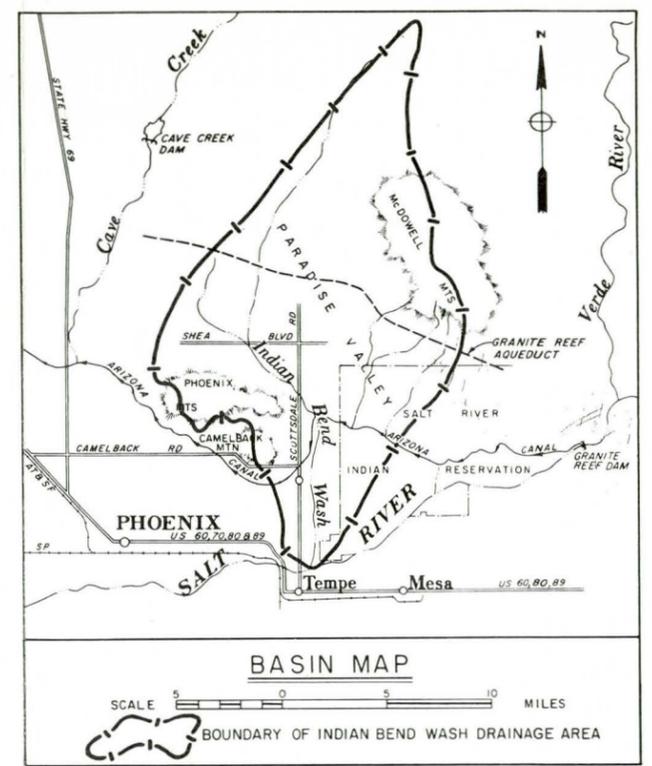
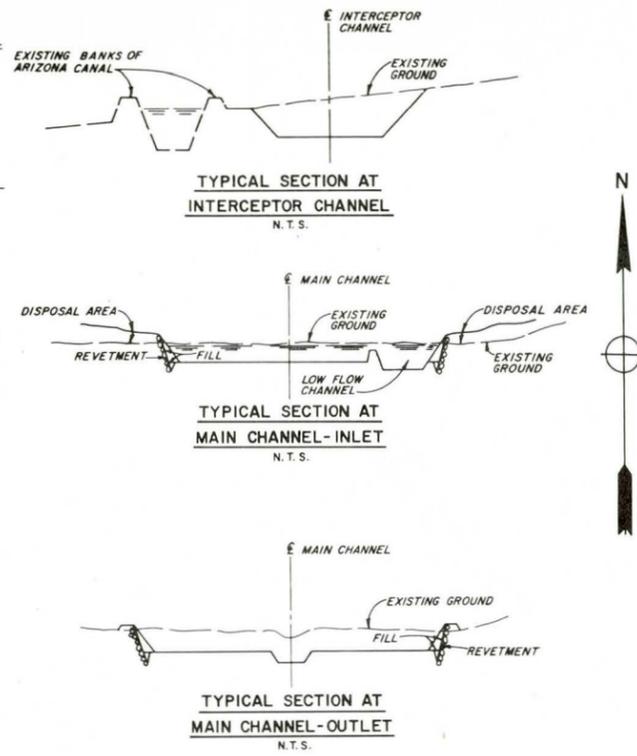
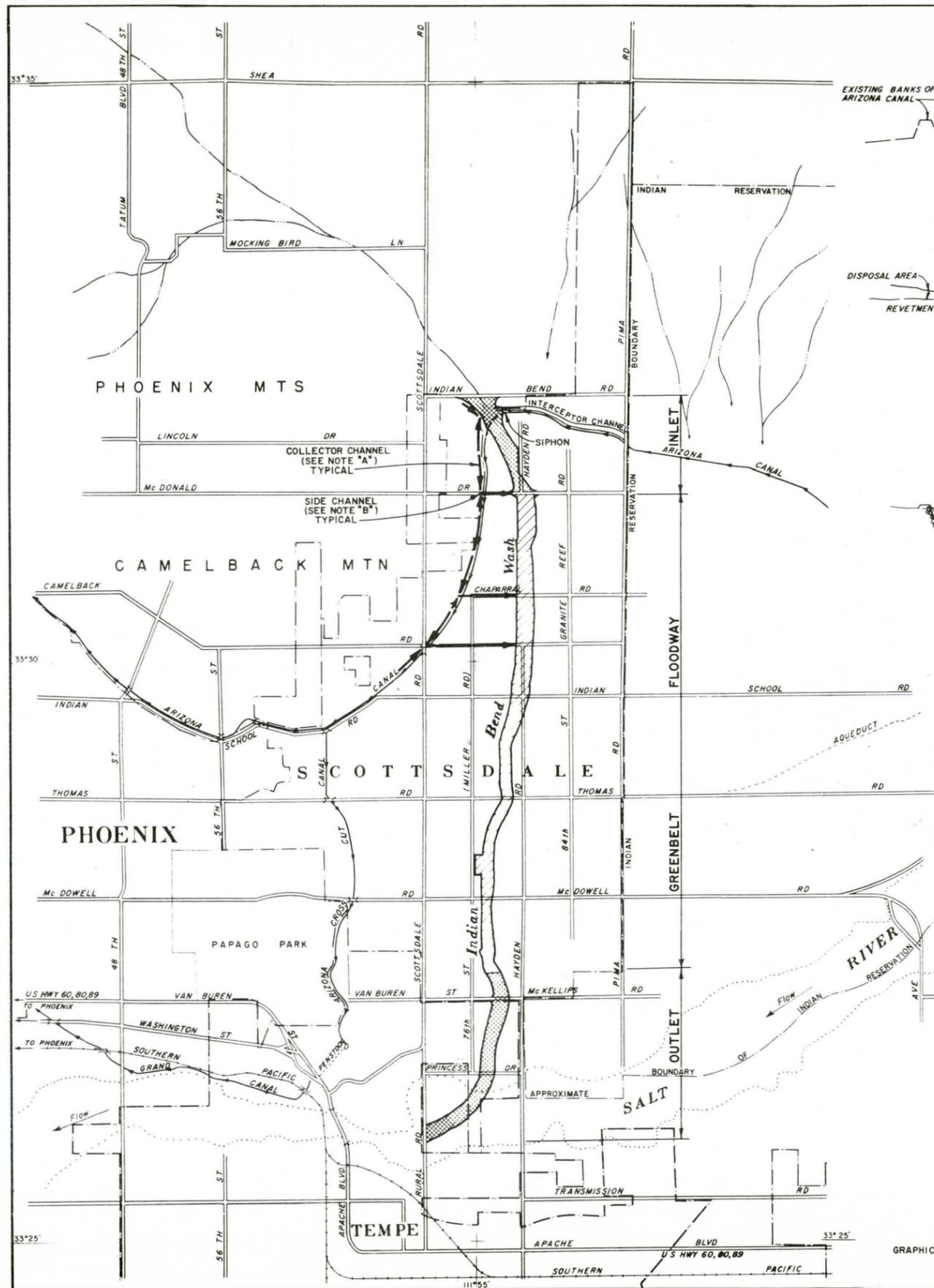
\* Possibly present in the drainage area

Table 7

## NATIVE PLANTS THAT CAN BE USED FOR LANDSCAPING

Common Name	Scientific Name
Palo Verde (deep rooted)	
Blue	<i>Cercidium floridum</i>
Horse bean or Mexican	<i>Parkinsonia aculeata</i>
Yellow	<i>Cercidium microphyllum</i>
Mesquite (deep rooted)	
Screw-bean	<i>Prosopis pubescens</i>
Honey	<i>P. juliflora</i>
Velvet	<i>P. juliflora</i> var. <i>velutina</i>
Ironwood	<i>Onega tesota</i>
Desert willow	<i>Chilopsis linearis</i>
Catclaw acacia	<i>Acacia greggii</i>
Salt bush	<i>Atriplex</i> spp.
Creosote bush	<i>Larrea tridentata</i>
Arizona black walnut	<i>Juglans major</i>
Arizona ash	<i>Fraxinus velutina</i>
Yucca	<i>Yucca</i>

PLATES



- NOTE:
- FD-08 CONTROL FEATURES INDICATED BY ARROWS (→) ARE AS FOLLOWS:
- A. COLLECTOR CHANNELS ADJACENT TO THE WEST SIDE OF THE ARIZONA CANAL
  - 1). SOUTH OF INDIAN BEND ROAD TO SOUTH OF LINCOLN DRIVE-UNLINED OPEN TRAPEZOIDAL CHANNELS.
  - 2). SOUTH OF LINCOLN DRIVE TO SOUTH OF MC DONALD DRIVE-UNLINED OPEN TRAPEZOIDAL CHANNELS AND REINFORCED CONCRETE PIPES VARYING FROM 6" TO 10 FEET IN DIAMETER.
  - 3). SOUTH OF MC DONALD DRIVE TO SOUTH OF CHAPARRAL ROAD-UNLINED OPEN TRAPEZOIDAL CHANNELS.
  - 4). SOUTH OF CHAPARRAL ROAD TO SOUTH OF CAMELBACK ROAD-UNLINED OPEN TRAPEZOIDAL CHANNEL AND REINFORCED CONCRETE PIPES VARYING FROM 6" TO 10 FEET IN DIAMETER.
- B. SIDE CHANNELS FROM WEST OF THE ARIZONA CANAL TO INDIAN BEND WASH
  - 1). MC DONALD DRIVE-THREE 78-INCH REINFORCED CONCRETE PIPES.
  - 2). CHAPARRAL ROAD-TWO 78-INCH REINFORCED CONCRETE PIPES.
  - 3). CAMELBACK ROAD-12.5-FOOT WIDE X 9-FOOT DEEP BOX CONDUIT.

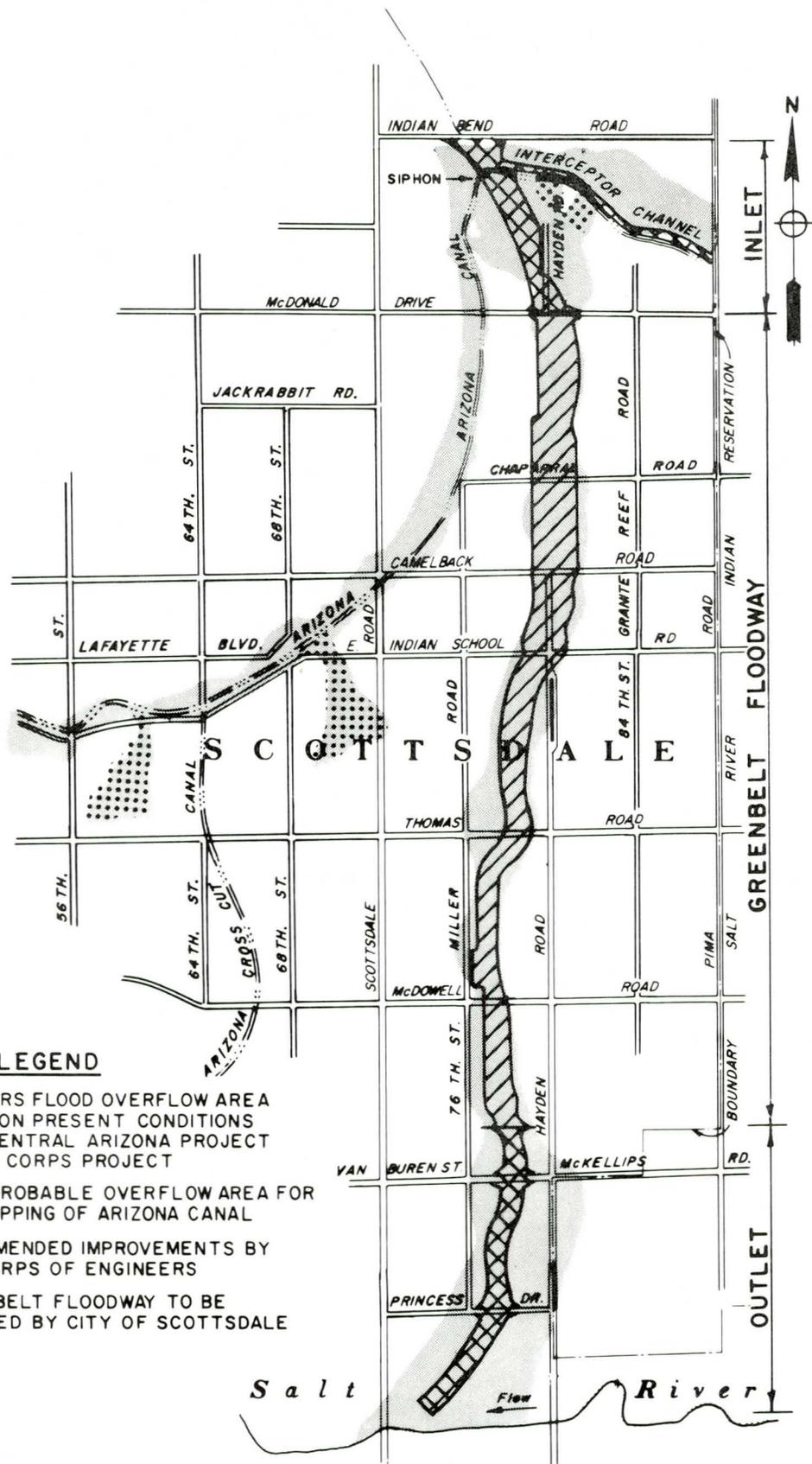


U. S. ARMY ENGINEER DISTRICT  
LOS ANGELES  
CORPS OF ENGINEERS

GILA RIVER BASIN, ARIZONA

**INDIAN BEND WASH**

**RECOMMENDED PLAN OF IMPROVEMENT**

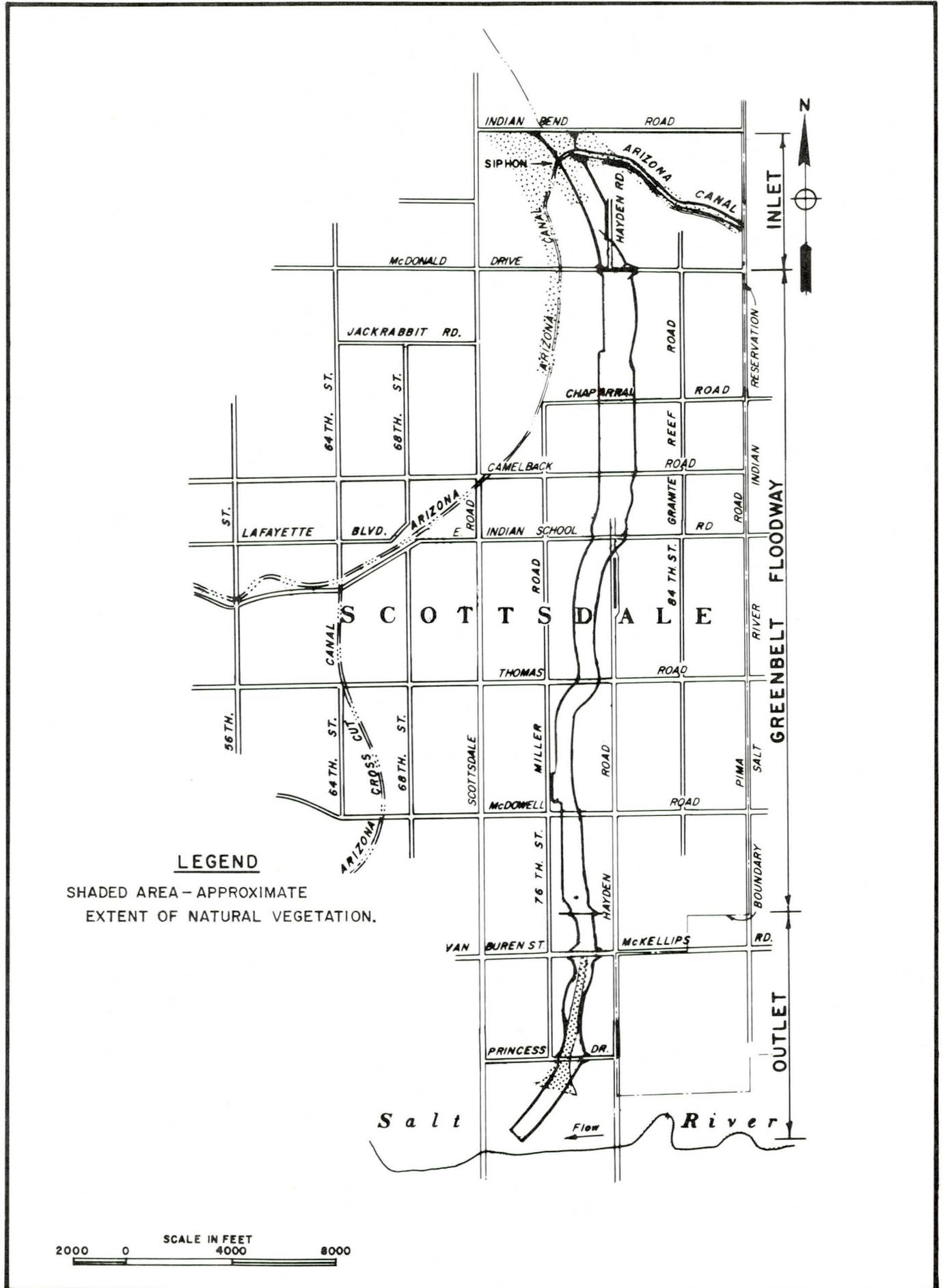


**LEGEND**

-  100 YEARS FLOOD OVERFLOW AREA BASED ON PRESENT CONDITIONS WITH CENTRAL ARIZONA PROJECT AND NO CORPS PROJECT
-  MOST PROBABLE OVERFLOW AREA FOR OVERTOPPING OF ARIZONA CANAL
-  RECOMMENDED IMPROVEMENTS BY THE CORPS OF ENGINEERS
-  GREENBELT FLOODWAY TO BE MANAGED BY CITY OF SCOTTSDALE

**OVERFLOW AREAS**

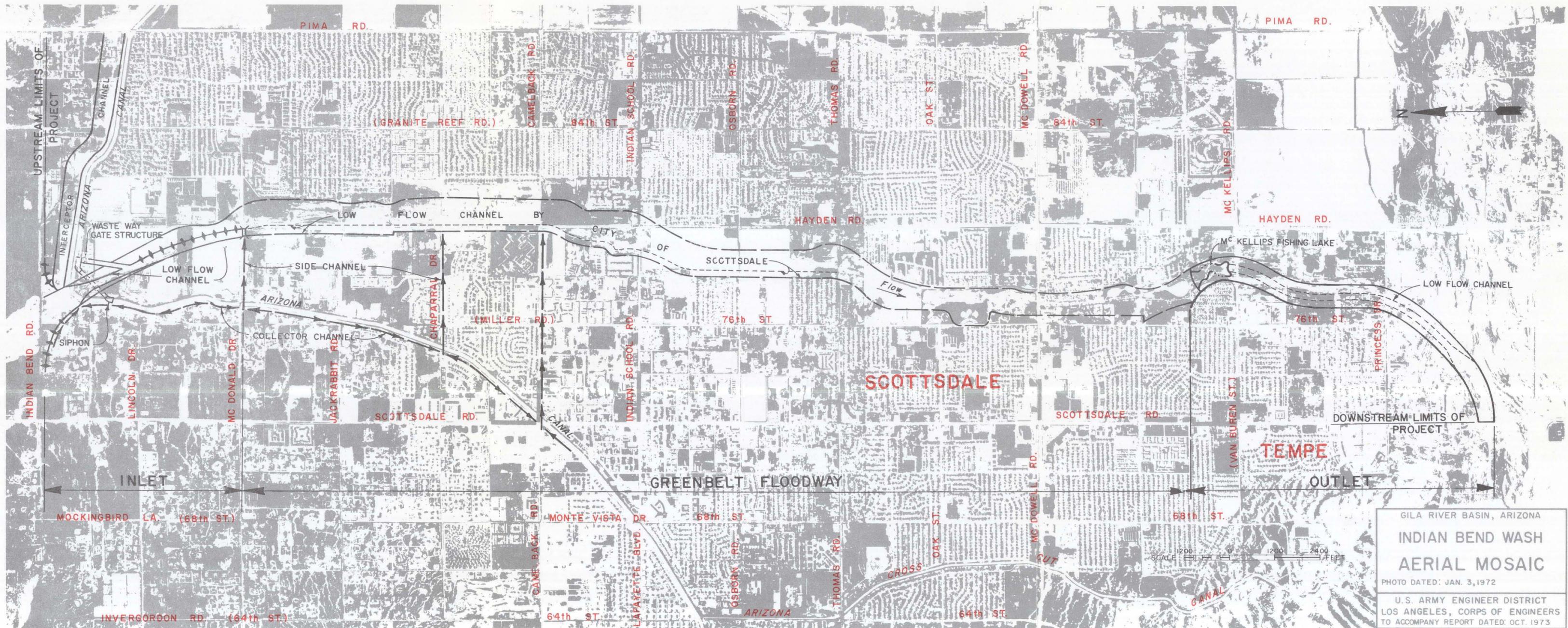




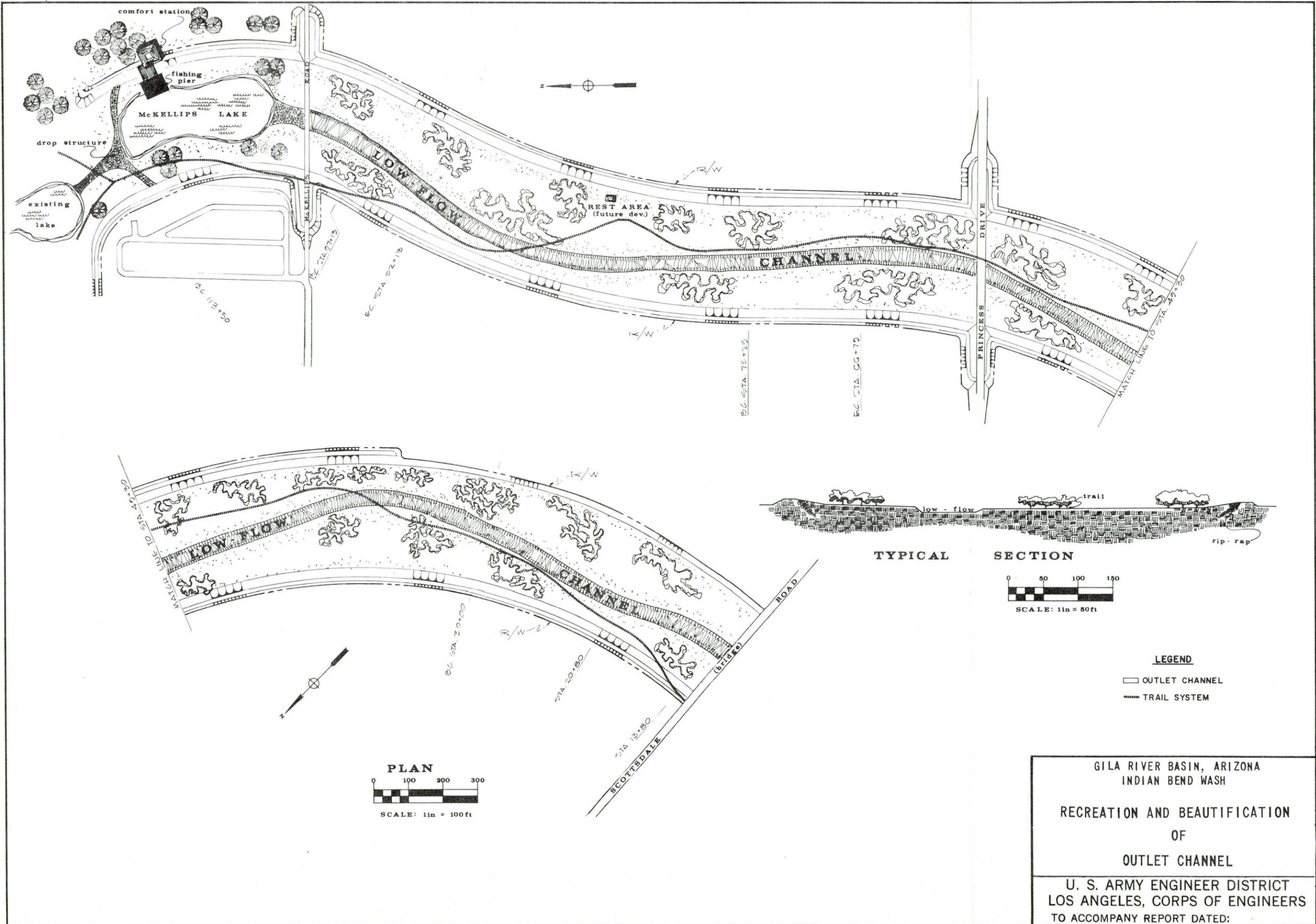
**LEGEND**

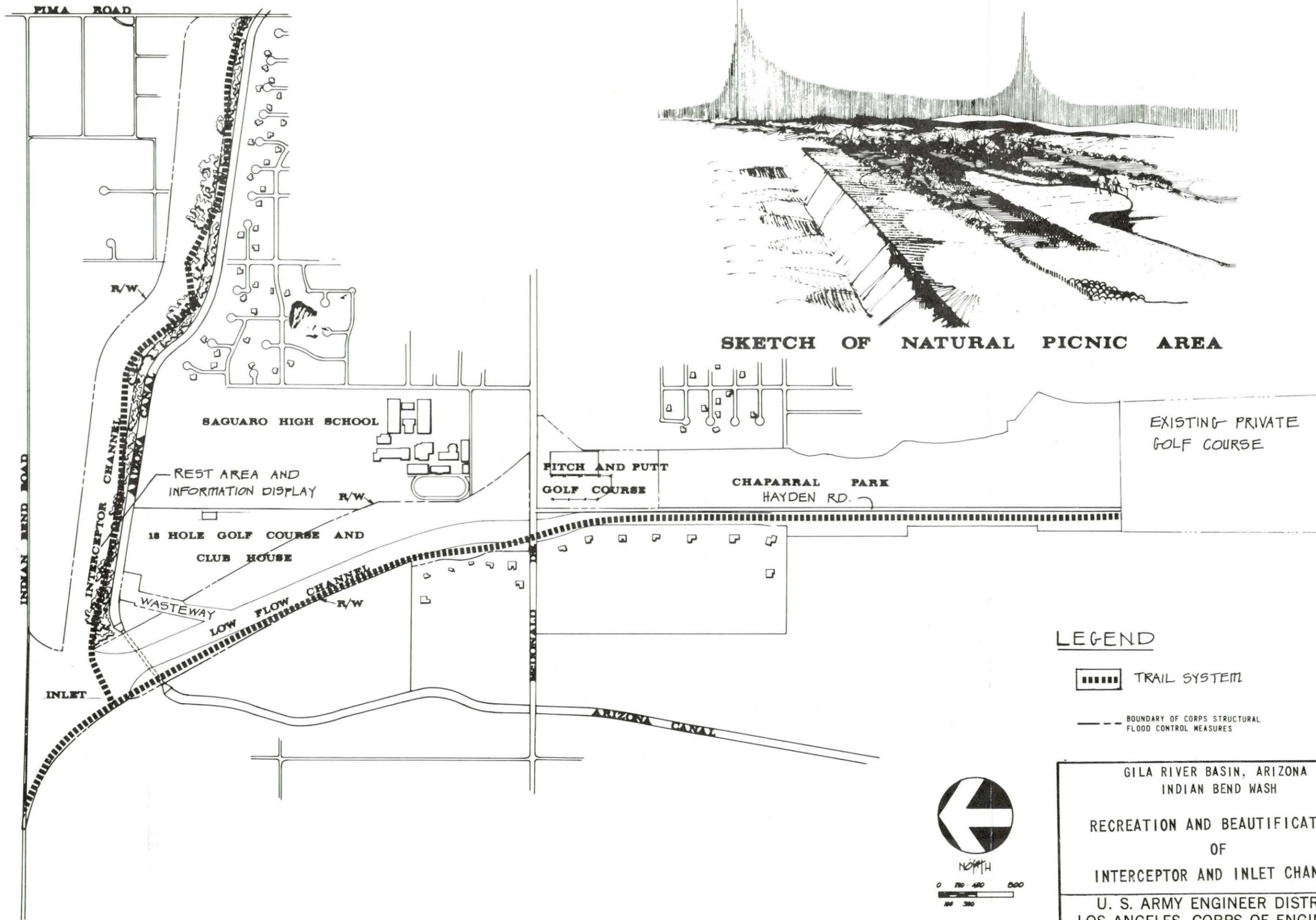
SHADED AREA - APPROXIMATE  
EXTENT OF NATURAL VEGETATION.

SCALE IN FEET  
 2000 0 4000 8000



GILA RIVER BASIN, ARIZONA  
**INDIAN BEND WASH  
 AERIAL MOSAIC**  
 PHOTO DATED: JAN. 3, 1972  
 U.S. ARMY ENGINEER DISTRICT  
 LOS ANGELES, CORPS OF ENGINEERS  
 TO ACCOMPANY REPORT DATED: OCT. 1973





SKETCH OF NATURAL PICNIC AREA

LEGEND

-  TRAIL SYSTEM
-  BOUNDARY OF CORPS STRUCTURAL FLOOD CONTROL MEASURES



GILA RIVER BASIN, ARIZONA  
 INDIAN BEND WASH

RECREATION AND BEAUTIFICATION  
 OF  
 INTERCEPTOR AND INLET CHANNEL

U. S. ARMY ENGINEER DISTRICT  
 LOS ANGELES, CORPS OF ENGINEERS  
 TO ACCOMPANY REPORT DATED:

LEGEND

-  PROPOSED MITIGATION AREA
-  PUBLIC LAND
-  PRIVATE LAND

NOTE:  
 THIS PLATE  
 MADE FROM  
 U.S.G.S. BUCKEYE  
 QUADRANGLE.

INDIAN BEND WASH  
 PROPOSED OFFSITE  
 MITIGATION AREA  
 ADJOINING GILA RIVER

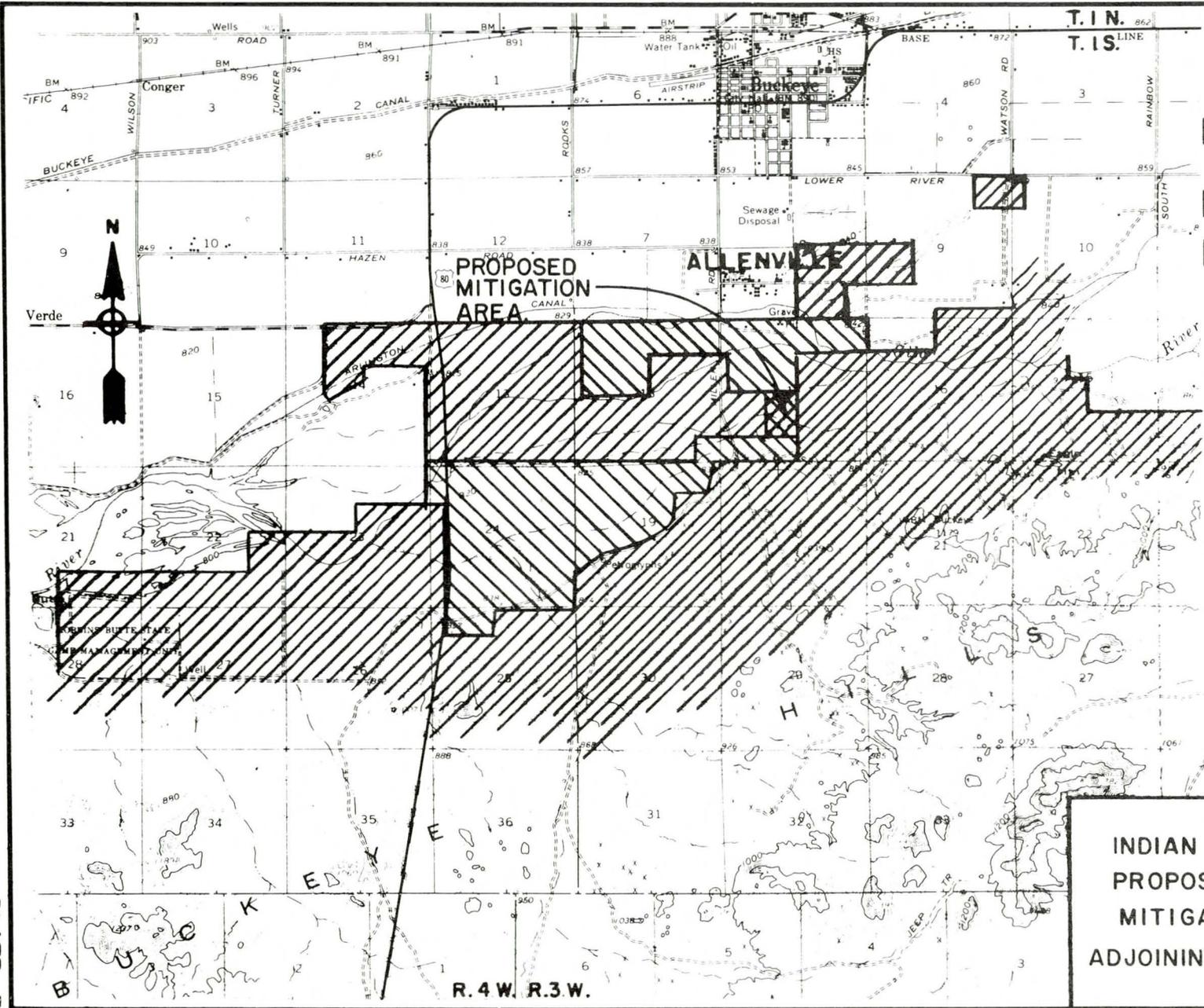


PLATE 7

R. 4 W. R. 3 W.

PHOTOS

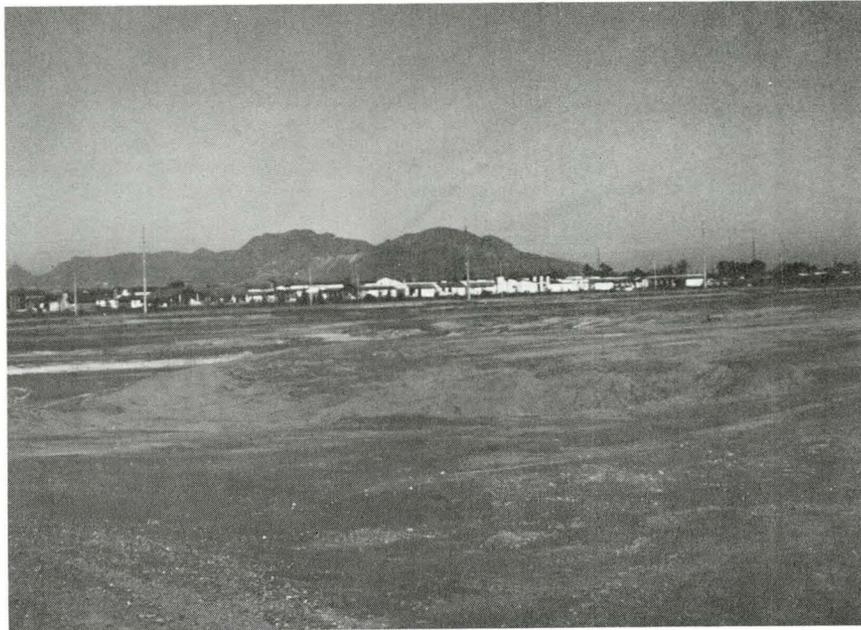


PHOTO 1. Looking northeast at the urban development just upstream from Indian Bend Road and the planned inlet structure. The McDowell Mountains are in the background.

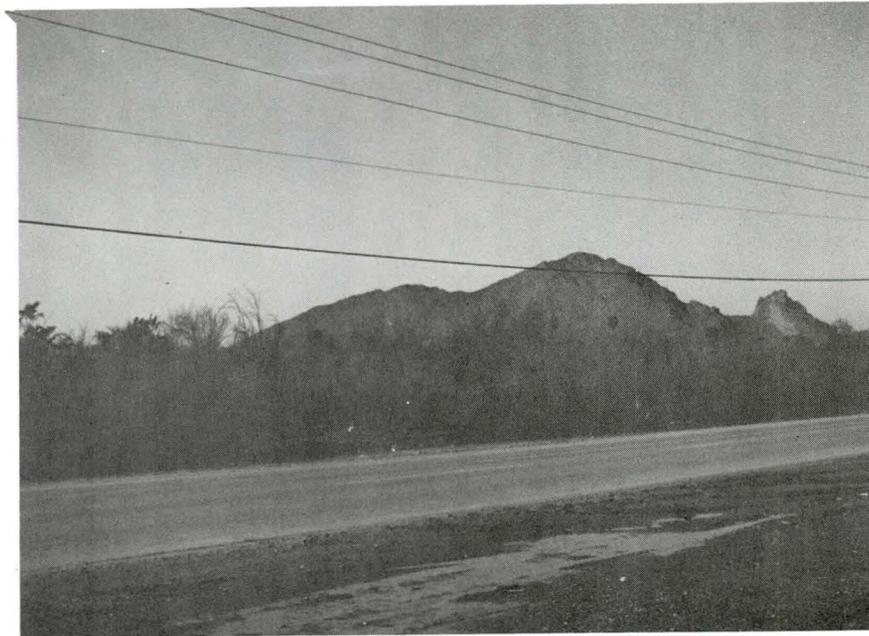


PHOTO 2. Vegetation and habitat in the inlet just downstream from Indian Bend Road. View is to the southwest with Camelback Mountain in the distance.

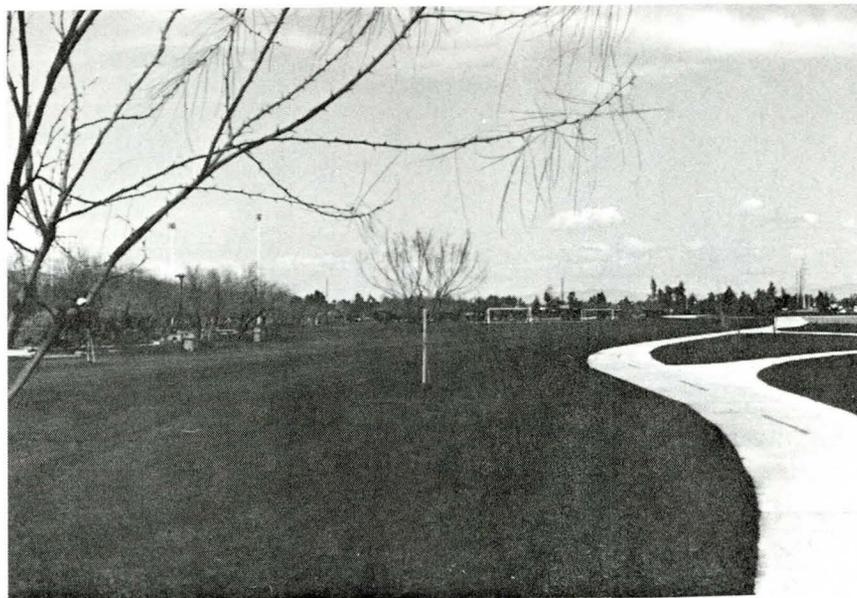


PHOTO 3. Looking northward at a bicycle-jogging trail, a soccer field and picnic areas in El Dorado Park, part of the greenbelt floodway.



PHOTO 4. View looking southward from Vista Park, showing the transition from urban greenbelt floodway to the undeveloped desert wash in the outlet.



PHOTO 5. Russian Thistle, Amaranths, other annuals and various grasses cover the open flood plain at the outlet. View is to the north.

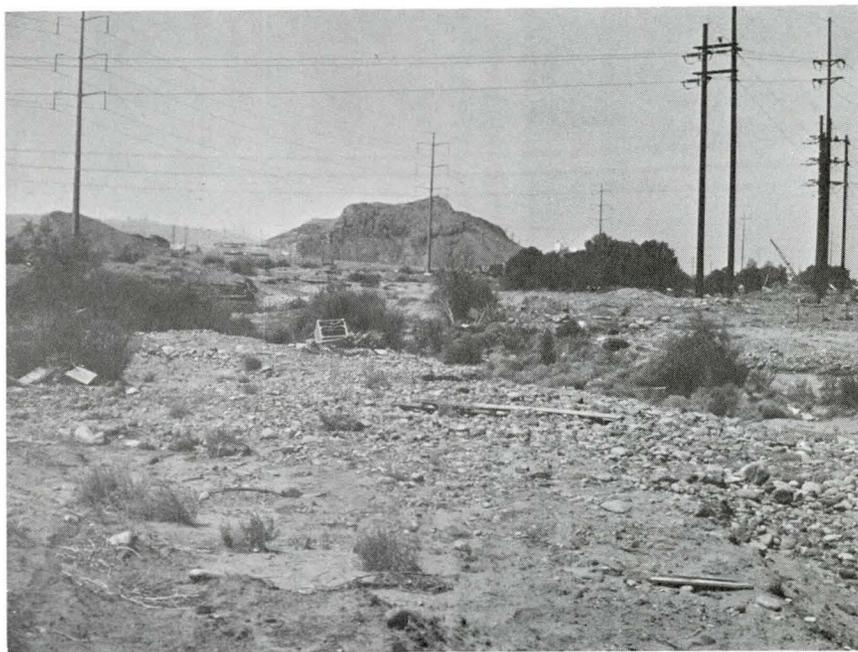


PHOTO 6. Looking westward at the landfills, trash and garbage piles that are near the confluence of Indian Bend Wash and the Salt River.

APPENDIX A  
LETTERS OF COMMENT

UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

6029 Federal Building, Phoenix, Arizona 85025

September 21, 1973

Mr. Garth A. Fuquay  
Chief, Engineering Division  
Department of the Army  
Los Angeles District  
Corps of Engineers  
P. O. Box 2711  
Los Angeles, California 90053

Dear Mr. Fuquay:

By your letter of August 24, 1973, you requested review and comment on your agency's Draft Environmental Statement, Indian Bend Wash, Maricopa County, Arizona. We offer the following for your consideration:

1. Your agency, the Flood Control District of Maricopa County, and the city of Scottsdale are to be commended for the basic flood prevention concept developed for this project. If properly installed and maintained, the project should enhance not only the economic values in the area but the environmental values as well.
2. Because this plan relies very heavily on nonstructural works or minimal structural works for its success, the soils in the area become a very important factor in the success of the project. The draft statement contains only sketchy information about the soils and is silent relative to the capabilities of those soils.

The Soil Conservation Service in cooperation with the East Maricopa Natural Resource Conservation District and the University of Arizona has completed a detailed soil survey of eastern Maricopa County, including the Scottsdale area. The East Maricopa Natural Resource Conservation District can provide valuable information concerning plant-soil-water relationships characteristic of the project area which should be of value to you during the planning and installation.

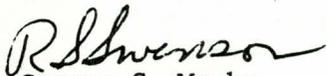
3. In the Summary, page 2, the Forest Service and the Soil Conservation Service should be listed under USDA.
4. In paragraph 72, page 19, a figure of 5.25 acre-feet per year is used. Should that figure be 5.25 acre-feet per acre per year?



5. In paragraph 75c. and elsewhere there is a statement that native grasses and trees will stabilize the channels and minimize erosion. This implies that the channel would be unstable without the vegetation. You might consider the following in your final statement:
  - a. Show the design velocity for the channels. This would permit the reader to judge the magnitude of the stability problem if, indeed, one exists.
  - b. Indicate what "native grasses" are recommended so that the reader can judge their effectiveness in preventing erosion.
  - c. It has been our experience that the natural spacing of plants under our desert climatic conditions does not result in a density sufficient to effectively prevent erosion in channels.
  - d. We have found it necessary to provide supplemental water to plantings during the establishment period. The statement is silent on this subject and costs are not shown in the discussions of operation and maintenance. It would be extremely difficult to vegetate the soils shown in Photo 6. (See paragraph 75c.)
  - e. It appears doubtful that trees on a spacing of one per 15,000 square feet would be effective in reducing erosion. The opposite may be true. Paragraph 75e. better describes their function.
6. The statement does not discuss what provisions are planned for management of surface runoff that might occur during construction.
7. Paragraph 71(f) indicates that the greenbelt will replace the remaining agricultural land in the project area. The reader could better judge the resulting impact if acreage figures were given. Will there be a severance of existing farming operations?

We appreciate the opportunity to review and comment. If we can assist in any way as you proceed with this project, please let me know.

Sincerely,

  
George C. Marks  
State Conservationist

For



**OFFICE OF THE ASSISTANT SECRETARY OF COMMERCE**  
Washington, D.C. 20230

September 24, 1973

Mr. Garth A. Fuquay  
Chief, Engineering Division  
Los Angeles District, Corps of  
Engineers  
P.O. Box 2711  
Los Angeles, California 90053

Dear Mr. Fuquay:

The draft environmental impact statement for Indian Bend Wash, Maricopa County, Arizona, which accompanied your letter of August 24, 1973, has been received by the Department of Commerce for review and comment.

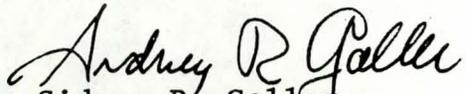
The statement has been reviewed and the following comments are offered for your consideration.

To what extent, if any, would comments from the Salt River Indian Reservation Tribal Council be appropriate? It would seem that this project would be of interest to this group because of the close proximity of the reservation, and requested comments from any Indian groups (Summary, page 2) are conspicuous by their absence.

The data on air quality (Table 1, following page 30) could be presented more clearly by having the ordinate for "Total Days Sampled" coincide with the ordinate for "Days Equaled or Exceeded Standards," and by adding a third curve "Fraction of Sampled Days Which Equaled or Exceeded Standards". Since air quality is only a peripheral consideration to this project, this section might be omitted.

Thank you for giving us an opportunity to provide these comments, which we hope will be of assistance to you. We would appreciate receiving a copy of the final statement.

Sincerely,

A handwritten signature in cursive script that reads "Sidney R. Galler".

Sidney R. Galler  
Deputy Assistant Secretary  
for Environmental Affairs



UNITED STATES  
DEPARTMENT OF THE INTERIOR

OFFICE OF THE SECRETARY

PACIFIC SOUTHWEST REGION

BOX 36098 • 450 GOLDEN GATE AVENUE

SAN FRANCISCO, CALIFORNIA 94102

(415) 556-8200

October 15, 1973

ER-73/1180

Mr. Garth A. Fuquay  
Chief, Engineering Division  
Corps of Engineers, U.S. Army  
Post Office Box 2711  
Los Angeles, California 90053

Dear Mr. Fuquay:

The Department of the Interior has reviewed the Corps of Engineers' draft environmental statement for Indian Bend Wash, Maricopa County, Arizona.

The draft statement satisfactorily describes the environmental issues involved and sets forth the different alternatives which were examined. However, we suggest that more information on the project description be included in order to convey a complete understanding of the effectiveness of flood control in a number of problem areas.

It would also be appropriate to explain the proposed landscape beautification program. The landscaping and simulation of habitat by reseeding native grasses and transplanting native tree species seems to be overstated in light of the difficulty in transplanting native trees and shrubs and the questionable safe use of certain native grasses. The Arizona Commission of Agriculture and Horticulture and the Arizona Highway Department could provide information on protected species and transplanting techniques appropriate for the species. Additional consultation might be obtained before deciding to transplant plants that may not be amenable to such action or reseeding with native grasses that may become a fire hazard when seasonably dry.

The following specific comments are provided for your consideration in the preparation of a final statement.

Statement Summary

It is suggested that paragraph 3a be expanded to indicate that the proposed action would not affect any existing,

proposed, or known potential units of the National Park System, nor any Historic, Natural, or Environmental Education sites eligible or considered potentially eligible for the National Landmark programs.

#### Project Description

In reviewing topographic maps and making on-site inspections of area, we find that the surface drainage on the western portion of the Salt River Indian Community above the Arizona Canal and below the McDowell Mountains is in a southwest direction. In spite of this fact there appears to be no provision for taking the surface drainage off the Indian Community lands above or below the Arizona Canal.

We note that the interceptor drain north of the Arizona Canal stops at Pima Road. This will provide drainage for lands outside the Indian Community. There appears to be no provision for the extension of this drain to collect drainage waters from the Community lands. If the C.A.P. Aqueduct is not constructed, there is the possibility of large amounts of drainage water coming from the Community lands.

We also suggest that the flood channel below McKellips Road be constructed in such a manner and size that it will carry the flood water to the Salt River channel without backing water onto section 12 of the Salt River Indian Community.

We are concerned that failure to provide for drainage on inlet channels on the east side of Indian Bend Wash channel will, in the face of continuing development of the non-Indian community, force flood waters onto the Indian Community lands. This absence of controlled drainage will seriously impede the developments of Community lands.

Page 1, paragraph 2. It is suggested that in this initial reference to the Arizona Canal it be identified as a part of the Salt River Project.

Page 2, paragraph 9. We suggest you include reference to municipal as well as irrigation water in this paragraph.

#### Environmental Setting Without the Project

Page 7, paragraph 28. The fourth sentence is misleading with regard to the regional scope and extent of construction by

the Bureau of Reclamation. Three of the six storage dams were built by the Salt River Project and one by Phelps Dodge Corporation.

Page 8, paragraph 28b. In the first sentence, we believe it would be appropriate to identify the "low flow canal" as the "Indian Bend Pump Lateral," which receives well water in addition to irrigation return flows and storm runoff up to the carrying capacity of the canal. It also may be beneficial to discuss here, or in a subsequent section, the provisions to be made for continuing operation of the lateral or the provisions agreed to by the Salt River Project to discontinue this operation. If use of the Indian Bend Pump Lateral is discontinued, the impact upon water use and conservation should be discussed.

Page 9, paragraphs 38 through 42. It would be appropriate to mention in this section on vegetation and wildlife that the Asian clam, Corbicula, is present in areas of permanent aquatic habitat.

Page 11, paragraph 46. We concur with the recommendations of the Arizona State Museum that additional testing and recovery of identified significant archeological resources is needed prior to construction. There seems to be little potential that Ariz. U:9:45 is eligible for nomination to the National Register of Historic Places; we recommend excavation and study of the site with no modification of the project.

The National Park Service is now negotiating for additional testing to determine research potential at the site. This study will be scheduled for completion no later than March 31, 1974. Based on the results of this testing, any additional archeological work to be done will be programmed by the Western Region, National Park Service, beginning early in FY 1975.

Page 12, paragraph 48. In the outlet area there are 160 acres of Reclamation-withdrawn land utilized by the Salt River Project - in part, for transmission line right-of-way and for disposal of tree trimmings, tree stumps, and broken concrete resulting from project operation and maintenance. Continued availability of an area for these purposes should be considered and coordinated with the Bureau of Reclamation and the Salt River Project.

Page 12, paragraph 49. We suggest this paragraph identify the limit of the area for which the acreage figures apply.

It appears to be those lands within the Salt River Project and to exclude other irrigation districts and unorganized lands within the Phoenix metropolitan areas. For further clarity, a map would be helpful; otherwise the uninformed reader might assume that this was the extent of the agricultural land in the area.

Page 17, paragraph 69f. This paragraph discusses the 100-foot strip between the interceptor channel and the Arizona Canal. If this 15-1/2 acres is to be used for all of the recreational facilities stated, its effectiveness as a wildlife sanctuary would be poor. The area would be beneficial to many species of birds and small game if only a limited trail system and nature information displays were constructed. We suggest that consideration be given in the statement to an alternate development consisting of minimal changes in the natural environment. The area would then have greater value for wildlife and would provide partial mitigation for loss of the 28 acres of mesquite habitat.

Page 18, paragraph 1. We suggest that retained in the channel be left in clumps of three or four in order to be most beneficial to wildlife.

Page 20, paragraph 75. We suggest that this section include a statement about the effect of the discharge from Indian Bend Wash into the Salt River, the relationship of the Salt River to other Federal programs, the effect upon downstream development including Sky Harbor International Airport, and the availability of Federal lands for location of a portion of the outlet channel.

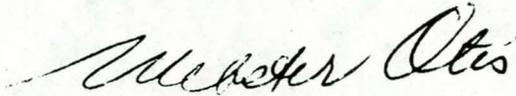
Page 38, Table 7. It is suggested that consultation with the Arizona Commission of Agriculture and Horticulture and the Arizona Highway Department, as well as reference to "Landscaping with Native Arizona Plants," would provide assistance in revision of this table for improved reader understanding. We note, for example, that yucca is listed under the heading of "Vines and Cactu ." Technically, yucca is in the lily family and is not even closely related to the cactuses.

Plates enclosed with statement

The Indian Community boundary line shown on all plates, T.1 N., R. 5 E., is not correct. These plates should be amended to reflect the plates of Survey filed by the Bureau of Land Management, August 1973.

We appreciate the opportunity to review and comment on this draft environmental statement.

Cordially,



Webster Otis  
Special Assistant to the Secretary

cc: OEPR, Washington, D. C.  
Reg. Dir., BSWF, Albuquerque  
NPS, San Francisco  
BOM, Washington, D. C.  
BLM, Phoenix  
BIA, Salt River  
BR, Boulder City

ARIZONA

OFFICE  
OF THE  
GOVERNOR



OFFICE OF  
**ECONOMIC PLANNING AND DEVELOPMENT**

3003 NORTH CENTRAL AVENUE • SUITE 1704 • PHOENIX, ARIZONA 85012 • (602) 271-5371

September 24, 1973

Mr. Garth A. Fuquay, Chief  
Engineering Division  
Department of the Army  
Los Angeles District, Corps of Engineers  
Post Office Box 2711  
Los Angeles, California 90053

Re: Indian Bend Wash Flood Control and  
Recreation Area  
State Application Identifier: 73-80-0040

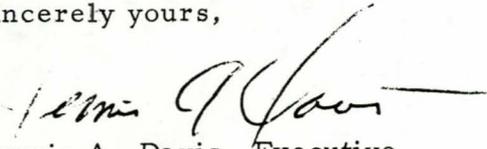
Dear Mr. Fuquay:

The Arizona State Clearinghouse has received and reviewed your notification of proposed action concerning the above project. The Clearinghouse review has generated several responses copies of which are attached for your information.

In accordance with current requirements as set forth in the Office of Management and Budget Circular A-95, Revised, this letter will serve as the State Clearinghouse comment on the proposal.

Please include the above State Application Identifier in any future correspondence regarding this proposal. Thank you for providing Arizona with the opportunity to comment upon this proposal.

Sincerely yours,

  
Dennis A. Davis, Executive  
Secretary for Federal Programs

DAD:cr  
encl

OFFICE OF  
**ECONOMIC PLANNING AND DEVELOPMENT**

3003 NORTH CENTRAL AVENUE • SUITE 1704 • PHOENIX, ARIZONA 85012 • (602) 271-5371

Date: August 29, 1973

Mr. Laurens C. Hammack  
Associate Archaeologist  
Arizona State Museum  
The University of Arizona  
Tucson, Arizona 85712

FROM: Clearinghouse Staff Contact: Mrs. Constance LaMonica

SUBJECT: Environmental Statement Review

Applicant: Los Angeles District, Corps of Engineers  
Department of the Navy

Project Title: Indian Bend Wash Flood Control and  
Recreation Area

State Application Identifier: 73-80-0040

A copy of a Draft Environmental Statement is attached for your review and comment in accordance with requirements of OMB Circular A-95. Please review the proposal as it affects the plans and programs of your agency and register your response below. Also note a staff contact within your agency in case further consultation is required. Please return this completed form within fifteen (15) days of your receipt of this request.

- No comment on the above project.  
 Proposal is supported as written.  
 Comments are attached.

**RECEIVED**  
SEP 13 1973

Please contact the Clearinghouse should you desire further information or need additional time for review.

STATE CLEARINGHOUSE  
DEPARTMENT OF ECONOMIC  
PLANNING & DEVELOPMENT

Review Agency Staff Contact

Project Coordinator, Arizona State Museum

Economic Sec  
Az State Museum  
Health Plan  
Game & Fish  
Mineral Resources  
Agriculture  
Power  
Health  
Education

Water  
Parks  
Land  
AORCC  
CEPAD

Mark Grady

Authorized Review  
Agency Signature

COMMENTS

ENVIRONMENTAL STATEMENT REVIEW

The following comments are directed toward a review of the Archaeological and Historical Sites section of the Draft Environmental Statement on Indian Bend Wash, Maricopa County, Arizona. The draft statement includes what is construed to be deliterious information from an archaeological point of view, and also misrepresents in part what the archaeological impact statement recommended as mitigatory action.

In paragraph 45, the site is too accurately located with regard to landmarks immediately recognizable by the public at large. The Arizona State Museum suggests that the site be more "ambiguously" located, so that site vandalism does not occur as the result of the general availability of such site location information. Perhaps a variant of the following sentence could be substituted for the 4th sentence in that paragraph: "The site, identified as a sherd scatter, is on the western edge of the wash near the south end of the project area."

Paragraph 46 does not accurately reflect the tenor of the recommendations suggested to mitigate against the impact of the project on the site. As such archaeological sites represent a nonexpendable resource, the highest priority, when appropriate, is that the site be preserved. The draft environmental statement does not indicate preservation to be the Arizona State Museum's primary recommendation.

The following paragraph is suggested as a substitute for paragraph 46 of the draft statement:

The Arizona State Museum is of the opinion that this site represents a part of a continually diminishing and non-renewable resource base which requires proper study, and, if warranted, preservation. The Museum therefore recommends that the site be tested to ascertain its research potential before further action is taken. If such testing reveals that the site is not significant enough to require preservation, excavation should be initiated, and the area then recommended for clearance. If preservation is in order, (1) the edge of the channel should be shifted further east in order to avoid the site, or (2) a protective dike should be constructed to prevent flood damage. Heavy equipment access to the site should also be restricted. For continued protection, if preservation is appropriate, it is suggested that a fence be constructed around the site to curtail vandalism.

RECEIVED

SEP 13 1973

STATE CLEARINGHOUSE  
DEPARTMENT OF ECONOMIC  
PLANNING & DEVELOPMENT

ARIZONA

OFFICE  
OF THE  
GOVERNOR



OFFICE OF  
**ECONOMIC PLANNING AND DEVELOPMENT**

3003 NORTH CENTRAL AVENUE • SUITE 1704 • PHOENIX, ARIZONA 85012 • (602) 271-5371

Date: August 29, 1973

TO:

Mr. John P. Dickinson  
Dept. of Economic Security  
Post Office Box 6123  
Phoenix, AZ 85005

FROM: Clearinghouse Staff Contact: Mrs. Constance LaMonica

SUBJECT: Environmental Statement Review

Applicant: Los Angeles District, Corps of Engineers  
Department of the Navy

Project Title: Indian Bend Wash Flood Control and  
Recreation Area

State Application Identifier: 73-80-0040

A copy of a Draft Environmental Statement is attached for your review and comment in accordance with requirements of OMB Circular A-95. Please review the proposal as it affects the plans and programs of your agency and register your response below. Also note a staff contact within your agency in case further consultation is required. Please return this completed form within fifteen (15) days of your receipt of this request.

- No comment on the above project.
- Proposal is supported as written.
- Comments are attached.

Please contact the Clearinghouse should you desire further information, or need additional time for review.

Review Agency Staff Contact

Economic Sec	Water
Az State Museum	Parks
Health Plan	Land
Game & Fish	AORCC
Mineral Resources	DEPAD
Air & Herb	
Power	
Health	
...	

*John P. Dickinson*  
 \_\_\_\_\_  
 Authorized Review  
 Agency Signature *JOHN P. DICKINSON*

ARIZONA

OFFICE  
OF THE  
GOVERNOR



OFFICE OF  
**ECONOMIC PLANNING AND DEVELOPMENT**

3003 NORTH CENTRAL AVENUE • SUITE 1704 • PHOENIX, ARIZONA 85012 • (602) 271-5371

Date: August 29, 1973

TO:

Mr. Les Ormsby  
Arizona Power Authority  
Post Office Box 6694  
Phoenix, AZ 85005

FROM: Clearinghouse Staff Contact: Mrs. Constance LaMonica

SUBJECT: Environmental Statement Review

Applicant: Los Angeles District, Corps of Engineers  
Department of the Navy

Project Title: Indian Bend Wash Flood Control and  
Recreation Area

State Application Identifier: 73-80-0040

A copy of a Draft Environmental Statement is attached for your review and comment in accordance with requirements of OMB Circular A-95. Please review the proposal as it affects the plans and programs of your agency and register your response below. Also note a staff contact within your agency in case further consultation is required. Please return this completed form within fifteen (15) days of your receipt of this request.

- No comment on the above project:
- Proposal is supported as written.
- Comments are attached.

Please contact the Clearinghouse should you desire further information, or need additional time for review.

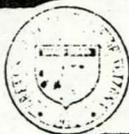
Review Agency Staff Contact

*Economic Sec  
Az state Museum  
Health Planing  
Game & Fish  
Mineral Resources  
Ag & Hort  
Power  
Health  
Region I*

*Water  
Parks  
Land  
ACRCC  
DEPAD*

*Y Ormsby*  
\_\_\_\_\_  
Authorized Review  
Agency Signature

ARIZONA



OFFICE OF THE GOVERNOR

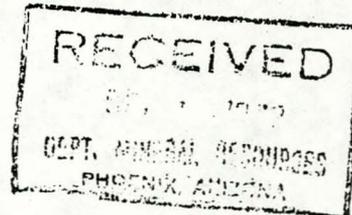
OFFICE OF ECONOMIC PLANNING AND DEVELOPMENT

3003 NORTH CENTRAL AVENUE • SUITE 1704 • PHOENIX, ARIZONA 85012 • (602) 271-5371

Date: August 29, 1973

TO:

Mr. John Jett, Director
Mineral Resources
State Fairgrounds, Mineral Building
1826 West McDowell Road
Phoenix, AZ 85007



FROM: Clearinghouse Staff Contact: Mrs. Constance LaMonica

SUBJECT: Environmental Statement Review

Applicant: Los Angeles District, Corps of Engineers
Department of the Navy

Project Title: Indian Bend Wash Flood Control and Recreation Area

State Application Identifier: 73-80-0040

A copy of a Draft Environmental Statement is attached for your review and comment in accordance with requirements of OMB Circular A-95. Please review the proposal as it affects the plans and programs of your agency and register your response below. Also note a staff contact within your agency in case further consultation is required. Please return this completed form within fifteen (15) days of your receipt of this request.

[ ] No comment on the above project.

[x] Proposal is supported as written. c/c

[ ] Comments are attached.

Please contact the Clearinghouse should you desire further information, or need additional time for review.

Review Agency Staff Contact

Economic Sec
Az State Museum
Health Plan
Game & Fish
Mineral Resources
Ag & Hort
Power
Health
Region I

Water
Parks
Land
AGRC
DEPAD

TED JOHNSON
John H. Jett
Authorized Review
Agency Signature

PLANNING DIVISION ROUTE SLIP

RESEARCH SECTION

PLANNING SECTION

- Required Action
- Signature
- For Information
- For Approval
- Note and Return to
- See Sender
- Per Your Request
- Library
- For Ordering
- File

CLEARINGHOUSE  
RE: 72-10-0040

- Myers *JM*
- Lung
- Beeman
- Plumlee
- Lynch
- Jenkins
- Etchells
- Storms
- Hubman
- Hancock
- Castro
- Larson
- Friedman
- Ward
- Eubank
- Good
- Gilbert
- J. Lynch
- Bessler

- Davis *JD*
- Jimenez
- LaMonica
- Schuckert
- Murray
- Scholl
- Moreno
- Fehr
- Rogers
- Austin
- Hamernick

LOCAL PLANNING ASSISTANCE

- Thompson
- Workman
- Lewis
- Vandebosch

REMARKS \_\_\_\_\_

\_\_\_\_\_  
 Signature

\_\_\_\_\_  
 Date

VA  
OFFICE OF  
THE  
GVERNOR



OFFICE OF  
**ECONOMIC PLANNING AND DEVELOPMENT**

3003 NORTH CENTRAL AVENUE • SUITE 1704 • PHOENIX, ARIZONA 85012 • (602) 271-5371

Date: August 29, 1973

TO: Office of Economic Planning  
and Development  
3003 North Central Avenue, Suite 1704  
Phoenix, Arizona 85012

FROM: Clearinghouse Staff Contact: Mrs. Constance LaMonica

SUBJECT: Environmental Statement Review

Applicant: Los Angeles District, Corps of Engineers  
Department of the Navy

Project Title: Indian Bend Wash Flood Control and  
Recreation Area

State Application Identifier: 73-80-0040

A copy of a Draft Environmental Statement is attached for your review and comment in accordance with requirements of OMB Circular A-95. Please review the proposal as it affects the plans and programs of your agency and register your response below. Also note a staff contact within your agency in case further consultation is required. Please return this completed form within fifteen (15) days of your receipt of this request.

- No comment on the above project.
- Proposal is supported as written.
- Comments are attached.

Please contact the Clearinghouse should you desire further information, or need additional time for review.

Review Agency Staff Contact \_\_\_\_\_

<i>Economic Sec.</i>	<i>Water</i>
<i>Az State Museum</i>	<i>Parks</i>
<i>Health Planning</i>	<i>Land</i>
<i>Game &amp; Fish</i>	<i>AORCC</i>
<i>Mineral Resources</i>	<i>DEPAD</i>
<i>Ag &amp; Hort</i>	
<i>Power</i>	
<i>Health</i>	
<i>Conservation</i>	

\_\_\_\_\_  
Authorized Review  
Agency Signature



JACK WILLIAMS  
GOVERNOR

Arizona  
State Land Department

1624 WEST ADAMS  
PHOENIX, ARIZONA 85007  
602 - 271-4634



ANDREW L. BETTBY  
STATE LAND COMMISSIONER

September 12, 1973

Mrs. Constance LaMonica  
Az. Department of Economic  
Planning and Development  
3003 N. Central Av., Suite 1704  
Phoenix, Az. 85012

Dear Mrs. LaMonica:

Re: State Application Identifier  
73-80-0040

In regard to the Draft Environmental Statement, Indian  
Bend Wash, Arizona, this Department has no comment with  
regard to the cited project.

Sincerely,

W. H. Edwards  
Administrative Assistant  
Contract Audit & Review

WHE:mb

RECEIVED

SEP 13 1973

STATE CLEARINGHOUSE  
DEPARTMENT OF ECONOMIC  
PLANNING & DEVELOPMENT

ARIZONA



OFFICE OF  
**ECONOMIC PLANNING AND DEVELOPMENT**

OFFICE  
OF THE  
GOVERNOR

3003 NORTH CENTRAL AVENUE • SUITE 1704 • PHOENIX, ARIZONA 85012 • (602) 271-5371

Date: August 29, 1973

TO:

Mr. L. D. McCorkindale ✓  
Agriculture & Horticulture Dept  
P. O. Box 6189  
Phoenix, AZ 85005

RECEIVED  
SEP 4 1973  
ARIZONA COMMISSION OF  
AGRICULTURE & HORTICULTURE

FROM: Clearinghouse Staff Contact: Mrs. Constance LaMonica

SUBJECT: Environmental Statement Review

Applicant: Los Angeles District, Corps of Engineers  
Department of the Navy

Project Title: Indian Bend Wash Flood Control and  
Recreation Area

State Application Identifier: 73-80-0040

A copy of a Draft Environmental Statement is attached for your review and comment in accordance with requirements of OMB Circular A-95. Please review the proposal as it affects the plans and programs of your agency and register your response below. Also note a staff contact within your agency in case further consultation is required. Please return this completed form within fifteen (15) days of your receipt of this request.

- No comment on the above project.
- Proposal is supported as written.
- Comments are attached.

Please contact the Clearinghouse should you desire further information, or need additional time for review.

Review Agency Staff Contact

*L. D. McCorkindale*

Economic Sec  
Az State Museum  
Health Plan  
Game & Fish  
Mineral Resources  
Ag & Hort  
Power  
Health  
Region I

Water  
Parks  
Land  
AORCC  
OEFAD

cc cc  
Authorized Review  
Agency Signature

ARIZONA



OFFICE  
OF THE  
GOVERNOR

OFFICE OF  
**ECONOMIC PLANNING AND DEVELOPMENT**

3003 NORTH CENTRAL AVENUE • SUITE 1704 • PHOENIX, ARIZONA 85012 • (602) 271-5371

Date: August 29, 1973

TO:

Mr. Roland H. Sharer  
AORCC  
4433 N. 19th Ave., Suite 203  
Phoenix, AZ 85015

FROM: Clearinghouse Staff Contact: Mrs. Constance LaMonica

SUBJECT: Environmental Statement Review

Applicant: Los Angeles District, Corps of Engineers  
Department of the Navy

Project Title: Indian Bend Wash Flood Control and  
Recreation Area

State Application Identifier: 73-80-0040

A copy of a Draft Environmental Statement is attached for your review and comment in accordance with requirements of OMB Circular A-95. Please review the proposal as it affects the plans and programs of your agency and register your response below. Also note a staff contact within your agency in case further consultation is required. Please return this completed form within fifteen (15) days of your receipt of this request.

- No comment on the above project.
- Proposal is supported as written.
- Comments are attached.

Please contact the Clearinghouse should you desire further information, or need additional time for review.

Review Agency Staff Contact

Economic *See*  
Az State Museum  
Health Plan  
Game & Fish  
Mineral Resources  
Ag & Hort  
Power  
Health  
Section I

Water  
Parks  
Land  
AORCC  
OEPAD

Authorized Review  
Agency Signature

*Commissioners.*

MILTON G. EVANS, Chairman, Flagstaff  
ROBERT J. SPILLMAN, Phoenix  
WILLIAM H. BEERS, Prescott  
CHARLES F. ROBERTS, O.D., Bisbee  
FRANK FERGUSON, JR., Yuma

73-80-0040

*Director*  
ROBERT A. JANTZEN

*Asst. Director, Operations*  
PHIL M. COSPER

*Asst. Director, Services*  
ROGER J. GRUENEWALD



**ARIZONA GAME & FISH DEPARTMENT**

*2222 West Greenway Road Phoenix, Arizona 85023 942-3000*

September 20, 1973

Mrs. Constance LaMonica  
Department of Economic Planning  
and Development  
3003 North Central Avenue, Suite 1704  
Phoenix, Arizona 85012

Dear Mrs. LaMonica:

We have reviewed the Draft Environmental Statement for the proposed Indian Bend Wash Flood Control Project in Maricopa County, Arizona, dated August 1973 and submitted by the Los Angeles District of the U. S. Army Corps of Engineers.

The elimination of the mesquite bosque at the terminus of the collector canals and the floodway would constitute the most important loss of wildlife habitat in the project area. Various kinds of developments in the southern part of Arizona in recent years have substantially reduced this riparian type of vegetation. The overall cumulative effect can be seen in the decrease of our dove populations, especially white-wings since 1970.

Habitat mitigation for the proposed project consists of a "wildlife sanctuary" containing a nature area, rest area, nature trail, etc. These developments will encourage high people use in limited areas, which will be to the detriment of the remaining wildlife.

Our Department feels that meaningful mitigation will have to occur elsewhere, as equitable wildlife habitat adjacent to the proposed project area is diminutive. We feel that this could be accomplished with minimum costs to the project.

Mrs. Constance LaMonica

- 2 -

September 20, 1973

Alternative #3 would probably have the least impact on wildlife as it entails the removal of only 2.5 acres of mesquite. The other alternatives, however, are similar to the proposed plan in regards to their effects on wildlife habitat.

We appreciate the opportunity to comment on this project. If we can be of further assistance, please notify us.

Sincerely,

Robert A. Jantzen, Director

*Bruce R. Duke*

By: Bruce R. Duke, Specialist  
Project Evaluation Branch

BRD:iw

Arizona Water Commission  
222 North Central - Suite 800  
Phoenix, Arizona 85007

September 20, 1973

Mrs. Constance LaMonica  
Clearinghouse Staff Contract  
Department of Economic Planning  
and Development  
3003 North Central Avenue  
Suite 1704  
Phoenix, Arizona 85002

Dear Mrs. LaMonica:

This is in regard to State Application No. 73-80-0040 concerning the draft environmental statement on the Indian Bend Wash Project.

This project is located in an area which has been designated by the State as a critical groundwater basin because of declining groundwater levels. The unlined channels of the recommended plan will maintain the potential for groundwater recharge, a factor which will undoubtedly be even more important in the future than it is today. As the development of the desert lands in the area continues with corresponding increased flood runoff, the maintenance of these natural channels as planned greenbelts will provide areas for needed recharge of water.

In addition to the environmental and economic benefits of groundwater recharge in the Scottsdale area, other benefits will accrue to downstream areas through reduction of flood flows which would have otherwise reached those areas.

The Arizona Water Commission in supporting this statement recommends that the references to the "minor impact" of groundwater recharge as referred to in the statement under Item C, page 17 and in Item B, page 20 either be deleted or qualified by a discussion of the importance of recharge even though limited by frequency of occurrence.

Mrs. Constance LaMonica  
September 20, 1973  
Page 2

It is also recommended that the Arizona Water Commission be included in the list of coordinating State agencies on page 27 of the statement to properly reflect the Commission's role in flood control planning and development in the State.

Sincerely,

Wesley E. Steiner  
Executive Director

# OFFICE OF THE BOARD OF SUPERVISORS

## MARICOPA COUNTY

602 County Administration Bldg. 111 S. 3rd Avenue, Phoenix, Arizona 85003

HENRY H. HAWS  
District 1

ELDON RUDD  
District 2

BOB CORBIN  
District 3

BOB STARK  
District 4

JOE EDDIE LOPEZ  
District 5



September 14, 1973

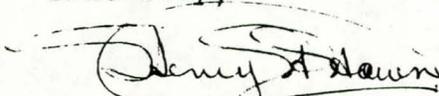
Col. John V. Foley, District Engineer  
U. S. Army Corps of Engineers  
P. O. Box 2711  
Los Angeles, California 90053

My Dear Colonel:

Receipt of your Draft Environmental Statement, with transmittal letter dated August 24, 1973, is acknowledged. A copy of the letter from the Chief Engineer of the Flood Control District is attached. I have reviewed his comments and concur in his findings.

I, therefore, approve of this statement as prepared subject to the changes recommended in the attached letter.

Sincerely,

  
Henry H. Haws, Chairman  
Board of Supervisors

HHH/aa

Attachment



**Flood Control District  
of  
Maricopa County**

**3325 WEST DURANGO STREET  
PHOENIX, ARIZONA 85009**

September 14, 1973

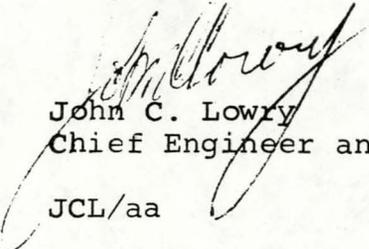
Col. John V. Foley, District Engineer  
U. S. Army Corps of Engineers  
P. O. Box 2711  
Los Angeles, California 90053

Dear Col. Foley:

Herewith are the comments of the Flood Control District concerning the Draft Environmental Statement for Indian Bend Wash, Maricopa County, Arizona.

Other than our comments it is the opinion of the staff this proposed Environmental Statement is well prepared, factual and is satisfactory to this department

Sincerely,

  
John C. Lowry  
Chief Engineer and General Manager

JCL/aa

Attachment

COMMENTS ON DRAFT ENVIRONMENTAL STATEMENT  
INDIAN BEND WASH, MARICOPA COUNTY, ARIZONA

The following comments are made relative to the Environmental Statement for Indian Bend Wash:

- 1- PARAGRAPH 3. Recommended Plan. On fourth line delete "Arizona Canal" and substitute "Indian Bend Road". On fourth line delete "56th Street, a distance of five miles" and substitute "68th Street, a distance of about three and one-half miles".
- 2- PARAGRAPH 8, page 2. Change to conform to latest revision to plan in this area.
- 3- PARAGRAPH 35, page 9. Change to show flood protection from Indian Bend Wash to 68th Street and revise acreages accordingly.
- 4- PARAGRAPH 84a, page 24. On second line, delete "McDonald Mountains" and substitute "McDowell Mountains".
- 5- PARAGRAPH 93, page 28. Add sub-paragraph i: "Comply with Section 221 of the Flood Control Act of 1970 (Public Law 91-611) and also with the requirements of the Uniform Relocations Assistance and Real Property Acquisition Policy Act of 1970 (Public Law 91-646)".
- 6- On drawing titled "Recommended Plan of Improvement", indicate flow, on west side of Arizona Canal from Lincoln Road to Indian Bend Wash, is to the north. Delete overshoot over Arizona Canal in vicinity of Lincoln Road.

**ADVISORY COUNCIL  
ON  
HISTORIC PRESERVATION**

WASHINGTON, D.C. 20240

August 30, 1973

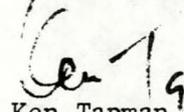
Mr. Garth A. Fuquay  
Chief, Engineering Division  
Los Angeles District  
Corps of Engineers  
P.O. Box 2711  
Los Angeles, California 90053

Dear Mr. Fuquay:

This is in response to your request of August 24, 1973, for comments on the environmental statement for Indian Bend Wash, Maricopa County, Arizona. Pursuant to its responsibilities under Section 102(2)(C) of the National Environmental Policy Act of 1969, the Advisory Council on Historic Preservation has determined that your draft environmental statement appears adequate regarding our area of expertise and we have no further comment to make.

Thank you for your cooperation.

Sincerely yours,



Ken Tapman  
Compliance Officer



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION IX  
100 CALIFORNIA STREET  
SAN FRANCISCO, CALIFORNIA 94111

Garth A. Fuquay, Chief  
Engineering Division  
Corps of Engineers  
Post Office Box 2711  
Los Angeles CA 90053

**OCT 4 1973**

Dear Mr. Fuquay:

We are replying to your August 24 request for our review and comment on the draft environmental impact statement prepared in accordance with the National Environmental Policy Act for the proposed Indian Bend Wash flood control project, Scottsdale, Arizona.

We have reviewed the draft statement and believe that it adequately sets forth the expected environmental impacts associated with this project. Further, EPA endorses the Corps' decision to use the non-structural approach to flood protection.

Our comments on this draft impact statement have been classified as Category LO-1. Definitions of the categories are provided in the enclosure. Our procedure is to classify draft impact statement in terms of both the environmental consequences of the proposed action and the adequacy of the impact statement. The classification and date of EPA's comments will be published in the Federal Register in accordance with our responsibility under Section 309 of the Clean Air Act to inform the public of our views on proposed Federal actions. We will appreciate receiving a copy of the final impact statement when it is available.

Sincerely,

*David L. Colburn*  
for Frank M. Covington, Director  
Air & Water Programs Division

Enclosure

cc: Council on Environmental Quality, Washington, DC

Environmental Impact of the Action

LO--Lack of Objections

EPA has no objections to the proposed action as described in the draft impact statement; or suggests only minor changes in the proposed action.

ER--Environmental Reservations

EPA has reservations concerning the environmental effects of certain aspects of the proposed action. EPA believes that further study of suggested alternatives or modifications is required and has asked the originating Federal agency to reassess these aspects.

EU--Environmentally Unsatisfactory

EPA believes that the proposed action is unsatisfactory because of its potentially harmful effect on the environment. Furthermore, the Agency believes that the potential safeguards which might be utilized may not adequately protect the environment from hazards arising from this action. The Agency recommends that alternatives to the action be analyzed further (including the possibility of no action at all).

Adequacy of the Impact Statement

Category 1--Adequate

The draft impact statement adequately sets forth the environmental impact of the proposed project or action as well as alternatives reasonably available to the project or action.

Category 2--Insufficient Information

EPA believes that the draft impact statement does not contain sufficient information to assess fully the environmental impact of the proposed project or action. However, from the information submitted, the Agency is able to make a preliminary determination of the impact on the environment. EPA has requested that the originator provide the information that was not included in the draft statement.

Category 3--Inadequate

EPA believes that the draft impact statement does not adequately assess the environmental impact of the proposed project or action, or that the statement inadequately analyzes reasonably available alternatives. The Agency has requested more information and analysis concerning the potential environmental hazards and has asked that substantial revision be made to the impact statement.

If a draft impact statement is assigned a Category 3, no rating will be made of the project or action, since a basis does not generally exist on which to make such a determination.

UNITED STATES DEPARTMENT OF AGRICULTURE  
AGRICULTURAL RESEARCH SERVICE  
NATIONAL PROGRAM STAFF  
Washington, D.C. 20205

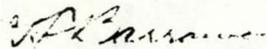
September 19, 1973

Subject: Draft Environmental Statement --  
Indian Bend Wash  
Maricopa County, Arizona

To: Garth A. Fuquay  
Chief, Engineering Division, CE  
Department of The Army  
P.O. Box 2711  
Los Angeles, California 90053

The Agricultural Research Service has reviewed the subject  
Draft Environmental Statement.

This agency has no comments to make or changes to suggest.



Harold L. Barrows  
Staff Scientist  
Soil, Water & Air Sciences

UNITED STATES DEPARTMENT OF AGRICULTURE  
FOREST SERVICE  
Region 3  
517 Gold Avenue, S. W.  
Albuquerque, New Mexico 87102

8420  
September 7, 1973



Mr. Garth A. Fuquay  
Chief, Engineering Division  
Department of the Army  
Los Angeles District  
Corps of Engineers  
P. O. Box 2711  
Los Angeles, California 90053

Dear Mr. Fuquay:

Your letter of August 24, 1973, invites our review and comments on the Draft Environmental Statement - Indian Bend Wash, Maricopa County, Arizona.

The project area with the watershed lands above it does not include any lands within the National Forest System or others which are the concern of our cooperative programs.

The matters covered in the Statement which might be of subject matter concern to the Forest Service appear to be competently treated and clearly presented. We have no substantive comments.

We appreciate the opportunity to review the draft; no copies of the final statement will be required.

Sincerely,

*J. W. Kaskella*

for WM. D. HURST  
Regional Forester



DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Office of Environmental Affairs  
50 Fulton Street  
San Francisco, California 94102  
September 25, 1973

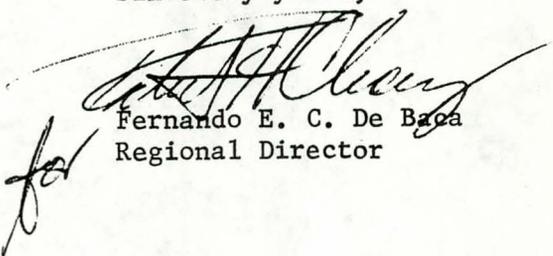
Mr Garth A Fuquay  
Chief, Engineering Division  
Department of the Army  
Los Angeles District  
Corps of Engineers  
P.O. Box 2711  
Los Angeles, California 90053

Dear Mr Fuquay:

This letter will acknowledge receipt of the draft environmental impact statement on Indian Bend Wash, Maricopa County, Arizona.

A review of the material submitted does not indicate any problems of direct concern to this department.

Sincerely yours,

  
Fernando E. C. De Baca  
Regional Director



DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT  
AREA OFFICE  
2500 WILSHIRE BOULEVARD, LOS ANGELES, CALIFORNIA 90057

AREA OFFICES:  
Los Angeles, California  
San Francisco, California

OCT 1 1973

REGIONAL IX  
REGIONAL OFFICE  
SAN FRANCISCO, CALIFORNIA

IN REPLY REFER TO:  
9.2PP-Ahuero

Mr. Garth A. Fuquay  
Chief, Engineering Division  
Department of the Army  
P. O. Box 2711  
Los Angeles, California 90053

Dear Mr. Fuquay:

Subject: Draft Environmental Impact Statement  
Indian Bend Wash  
Maricopa County, Arizona

We have received a copy of the subject document which assesses the impact of the proposed flood control project. As you know HUD Open Space and Community Development funds have been utilized by the City of Scottsdale to assist the development of the greenbelt floodway.

It is good to note that our Agencies are involved in the construction of such complementary projects. We have no objections to the proposal and hope to receive a copy of the Final Impact Statement for our records.

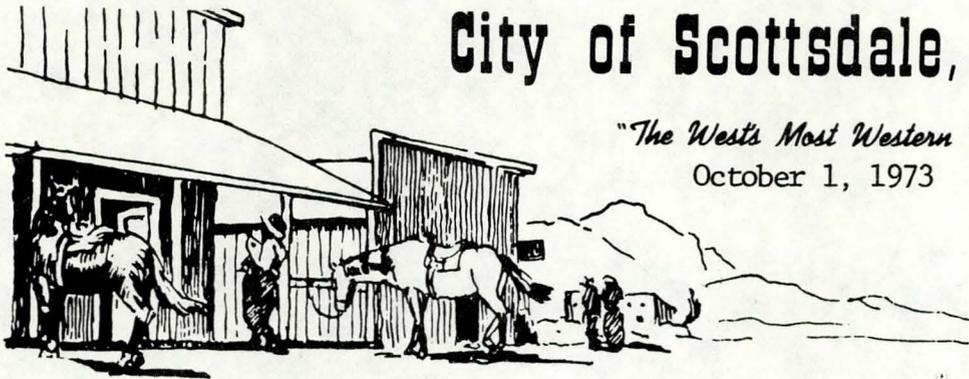
Sincerely,

John E. Bonkoski  
Director  
Operations Division

# City of Scottsdale, Arizona

*"The West's Most Western Town"*

October 1, 1973



District Engineer  
U. S. Army Corps of Engineers  
Los Angeles District  
P. O. Box 2711  
Los Angeles, CA 90053

Gentlemen:

We have been pleased to review the Environmental Impact Statement prepared for the proposed Indian Bend Wash project. We commend your fine work. Certainly the fact that you have changed the nature of the proposed project from a concrete lined channel to an open green-belt should serve to mitigate any environmental impact.

The project will have valuable favorable impact on our community. It will produce values to the community in areas of social, cultural, recreational and environmental concerns which may well exceed its value as a flood control project. If your statement has any shortcomings, it is its failure to take sufficient credit for the value the project will have on our community.

Please rely on us for any help or support that may be useful to you and to our objective of implementing this promising project.

Very truly yours,

M. G. Stragier  
Public Works Director

MGS/rm



# CITY OF TEMPE

Home of Arizona State University

P.O. Box 5002

Tempe, Arizona 85281

(602) 967-2001

September 25, 1973

Mr. Garth A. Fuquay  
Chief, Engineering Division  
Corps of Engineers  
P. O. Box 2711  
Los Angeles, CA 90053

Subject: Draft Environmental Statement  
Indian Bend Wash, Maricopa County, Arizona

Dear Mr. Fuquay:

The subject Draft Environmental Statement has been reviewed by the City Engineer, the Planning Director, the Parks and Recreation Director and the Public Works Director for the City of Tempe. A copy of the Statement was forwarded to the City Manager also.

The Statement has been deemed to be complete and equitable. We have no suggested additions, deletions or changes in the text.

We appreciate the concerted effort by the Corps of Engineers to move this project forward and to keep it moving toward completion.

Very truly yours,

CITY OF TEMPE

*Grover Serenbetz*  
Grover Serenbetz, P.E.  
Public Works Director

HN:bn

WILLIAM J. LOPIANO, Vice Mayor  
HARRY E. MITCHELL, Councilman  
DOROTHY C. NELSON, Councilman

DALE R. SHUMWAY, Mayor  
KENNETH A. McDONALD, City Manager

JOSEPH L. DWIGHT, Councilman  
THOMAS L. KINCAID, Councilman  
WILLIAM J. REAM, Councilman

# Friends of the Earth

Arizona Branch • p.o. box 1893 • scottsdale, arizona 85252

Water Task Force  
Arizona Friends of the Earth  
8514 E. Montecito  
Scottsdale, Arizona

Garth A. Fuquay  
Corps of Engineers  
Los Angeles Calif.

Dear Mr. Fuquay,

I must commend the Army Corps of Engineers for the total concept of flood control as it is being planned and completed for Indian Bend Wash. I do not agree with some of the figures used in this draft statement, but I know what studies you used, so the disagreement is with the studies and not with the document you sent me. I have no intention of nit-picking the Environmental Statement because I feel it is sufficient to satisfy the Federal Legislation.

There are two major areas I will comment upon: On page 16 you discuss the Central Arizona Project and the Granite Reef Aqueduct. You state, "The retention dike across Paradise Valley will cross Indian Bend Wash above the Arizona Canal and will provide flood protection not only to the Aqueduct but also to the lands below." This statement may be true, but I think you should check last years floods and the areas where rain fell. As I understand those floods, the rain fell south of the Granite Reef Aqueduct; therefore this flood dike will only affect rains further north and would not in any way concern floods in Indian Bend Wash unless rain falls in the McDowell Mountains. The newspapers have erroneously reported that the Granite reef dike will stop flooding in Scottsdale and Paradise Valley.

# Friends of the Earth

Arizona Branch • p.o. box 1893 • scottsdale, arizona 85252

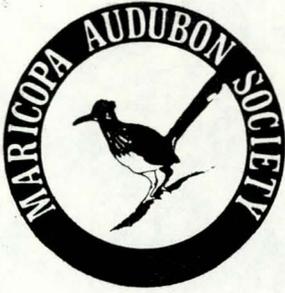
The second area of concern to me is on page 17e. I am wondering if it would be possible to leave some mature trees north of the Arizona Canal. In South El Dorado park mature mesquite trees were retained in the flood channel. Perhaps it would add to the beauty of the area if this is possible. Twenty-eight acres sounds like a fairly large area, but perhaps this is necessary. I don't in detail the plans for the siphon.

Thank you again for a very fine job.

Sincerely

*Dennis L. Stadel*

Dennis L. Stadel



# The Maricopa Audubon Society

Phoenix, Arizona  
Sept. 1, 1973

Garth A. Fuquay  
Chief, Engineering Division  
Department of the Army  
Corps of Engineers  
P.O. Box 2711  
Los Angeles, Calif. 90053

Dear Mr. Fuquay,

Thank you very much for the Draft Environmental Statement of the Indian Bend Wash Project. As mentioned before this chapter of the National Audubon Society is in full agreement with this project and wish you Godspeed in its expedition.

We are looking forward to your giving this society an early opportunity, when the time comes, for dialogue concerning the very considerable environmental impact of the Corps' projected "flood control" channelization project on the Agua Fria and New River here in Maricopa County.

Very sincerely yours,

*Robert A. Witzeman*  
Robert A. Witzeman, M.D.  
4619 E. Arcadia Lane  
Phoenix, Ariz. 85018