Flood Control District of Maricopa County

Consolidated Annual Reports

Beginning with 1975 to 20__ (ongoing)

003.128

Library Catalog Search Results

Main Library Search Results for '003.1' (29 records)

1
Call Number: 003.101S
Title: Annual Report : Maricopa County Flood Control District 1975-1976
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1976
Original Archived: No

2
Call Number: 003.102S
Title: Annual Report : Maricopa County Flood Control District 1976-1977
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1977
Original Archived: No

3
Call Number: 003.115S
Title: Annual Report : Maricopa County Flood Control District 1978-1979
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1979
Original Archived: No

4
Call Number: 003.116S
Title: Annual Report : Maricopa County Flood Control District 1979-1980
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1980
Original Archived: No

5
Call Number: 003.117S
Title: Annual Report : Maricopa County Flood Control District 1980-1981
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1981
Original Archived: No

6
Call Number: 003.103S
Title: Annual Report : Maricopa County Flood Control District 1981-1982
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1982
Original Archived: No

7
Call Number: 003.104S
Title: Annual Report : Maricopa County Flood Control District 1984-1985
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1985
Original Archived: No

8
Call Number: 003.105S
Title: Annual Report : Maricopa County Flood Control District 1985-1986
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1986
Original Archived: No

9
Call Number: 003.106S
Title: Annual Report : Maricopa County Flood Control District 1986-1987
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1987
Original Archived: No

10
Call Number: 003.107S
Title: Annual Report : Maricopa County Flood Control District 1987-1988
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1988
Original Archived: No

11
Call Number: 003.108S
Title: Annual Report : Maricopa County Flood Control District 1988-1989
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1989
Original Archived: No

12
Call Number: 003.109S
Title: Annual Report : Maricopa County Flood Control District 1989-1990
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1990
Original Archived: No

13
Call Number: 003.110S
Title: Annual Report : Maricopa County Flood Control District 1990-1991
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1991
Original Archived: No

14
Call Number: 003.111S
Title: Annual Report : Maricopa County Flood Control District 1991-1992
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1992
Original Archived: No

15
Call Number: 003.112S
Title: Annual Report : Maricopa County Flood Control District 1992-1993

Author: Maricopa County Flood Control District-FCD
ID:
Date: 1993
Original Archived: No

16
Call Number: 003.113S
Title: Annual Report : Maricopa County Flood Control District 1993-1994
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1994
Original Archived: No

17
Call Number: 003.114S
Title: Annual Report : Maricopa County Flood Control District 1994-1995
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1995
Original Archived: No

18
Call Number: 003.119
Title: Annual Report : Maricopa County Flood Control District 1995-1996
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1996
Original Archived: No

19
Call Number: 003.118
Title: The Flood Control District of Maricopa County Year-in Review 1996-1997
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1997
Original Archived: No

20
Call Number: 003.120S
Title: Flood Control District of Maricopa County Annual Report 1997-1998
Author: Flood Control District of Maricopa County-FCD
ID:
Date: 1998
Original Archived: No

21
Call Number: 003.121S
Title: Flood Control District of Maricopa County Annual Report 1998-1999
Author: Flood Control District of Maricopa County-FCD
ID:
Date: 1999
Original Archived: No

22
Call Number: 003.122S
Title: Flood Control District of Maricopa County Annual Report 1999-2000
Author: Flood Control District of Maricopa County-FCD
ID:
Date: 2000

Original Archived: No

23

Call Number: 003.123S
Title: Flood Control District of Maricopa County 2000-2001 Annual Report
Author: Flood Control District of Maricopa County-FCD
ID:
Date: 2001
Original Archived: No

24

Call Number: 003.124
Title: Flood Control District of Maricopa County Annual Report 2001-2002 Fiscal Year
Author: Flood Control District of Maricopa County-FCD
ID:
Date: 2002
Original Archived: No

25

Call Number: 003.125
Title: Flood Control District of Maricopa County 2002-2003 Annual Report
Author: Flood Control District of Maricopa County-FCD
ID:
Date: 2003
Original Archived: No

26

Call Number: 003.126
Title: Flood Control District of Maricopa County 2003-2004 Annual Report
Author: Flood Control District of Maricopa County-FCD
ID:
Date: 2004
Original Archived: No

27

Call Number: 003.127
Title: Flood Control District of Maricopa County 2004-2005 Annual Report
Author: Flood Control District of Maricopa County-FCD
ID:
Date: 2005
Original Archived: No

28

Call Number: 003.128
Title: Flood Control District of Maricopa County Consolidated Annual Reports Beginning with 1975 to 20__ (ongoing)
Author: Flood Control District of Maricopa County-FCD
ID:
Date: 2008
Original Archived: No

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

Herbert P. Donald

FLOOD CONTROL DISTRICT
OF
MARICOPA COUNTY

ANNUAL REPORT

JULY 1, 1975 — JUNE 30, 1976

Herbert P. Donald

003.101

TABLE OF CONTENTS

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

		PAGE
I.	Introduction	1
II.	Organization Chart	3
III.	Project Activities During FY 75-76	6
	A. Buckeye Watershed	6
	B. Wickenburg Watershed	6
	C. Harquahala Valley Watershed	7
	D. Buckhorn Mesa Watershed	7
	1. Spook Hill Flood Retarding Structure	7
	2. Signal Butte Floodway	8
	E. RWCD Floodway	8
	F. Lower Queen Creek Watershed	9
	G. Indian Bend Wash	9
	1. Outlet Channel	9
	2. Greenbelt Floodway	9
	3. Inlet Channel	10
	H. Upper Indian Bend Wash	10
	I. Cave Buttes Dam	10
	J. Adobe Dam	11
	K. New River Dam	11
	L. Arizona Canal Diversion Channel	11
	M. Flowage Easements - Skunk Creek, New and Agua Fria Rivers	11
	N. Salt River Channel	11
	O. Champion Flood Prevention Project	11
	P. Local Projects	12
	1. City of Phoenix	12
	2. City of Mesa	12
	3. Town of Gila Bend	12
IV.	Project Location Map and Expenditures	13
V.	Construction and Operations Activities	14
VI.	Floodplain Regulations and Delineations	16
VII.	National Flood Insurance Program	20
VIII.	Tabulated Data on Completed Structures	22

SECTION I

INTRODUCTION

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ANNUAL REPORT

Introduction

This Annual Report is the first such report to be prepared by the Flood Control District, and, therefore, a limited amount of background and historical information is included in this section.

The Flood Control District of Maricopa County was organized on August 3, 1959, pursuant to Arizona Revised Statutes 45-2352 et seq. It was established for the purpose of acquiring, constructing, improving, extending, maintaining and operating flood control facilities to control the waters of rivers and streams, and other surface waters and flood waters to prevent the flooding of property and the endangering of lives of people.

Authorities granted to the Flood Control District by the enabling legislation provided for the District to be a public political taxing subdivision of the State and a municipal corporation to the extent of the powers and privileges conferred by the legislation or granted generally to municipal corporations by the Constitution and Statutes of the State of Arizona.

The District is governed by the board of supervisors, who shall be deemed to be the Board of Directors. The Board of Directors is authorized to exercise all powers and duties as are ordinarily exercised by the governing body of a political subdivision. The Board of Directors may adopt regulations and bylaws for the operation of the District as it seems fit and, in general, do and perform all things which it may consider necessary in the interest of the District.

The original State Statutes authorized a 2¢ per $100 property evaluation Flood Control Tax to create a Flood Control District. The District was empowered to issue and sell bonds to provide funds for construction of flood control projects. On March 8, 1966, an election was held which would authorize the sale of flood control bonds amounting to $22,679,000. The primary purpose of the bond election was to provide local funds to support Federal flood control projects previously authorized by Congress. This election failed by a wide margin. On May 4, 1972, ARS 45-2364 C authorized an increase in the Flood Control Tax to 20¢ per $100 property evaluation. This Flood Control Tax was levied by the Board of Supervisors of Maricopa County the following year. The State Flood Control Assistance Program was established on April 9, 1973, ARS 45-2701, et seq. This Program provided for State financial assistance for a period of 15 years and authorized the State to contribute one half of local costs for Federal flood control projects. Stated below are the amount of funds requested and appropriated since the Assistance Program was authorized:

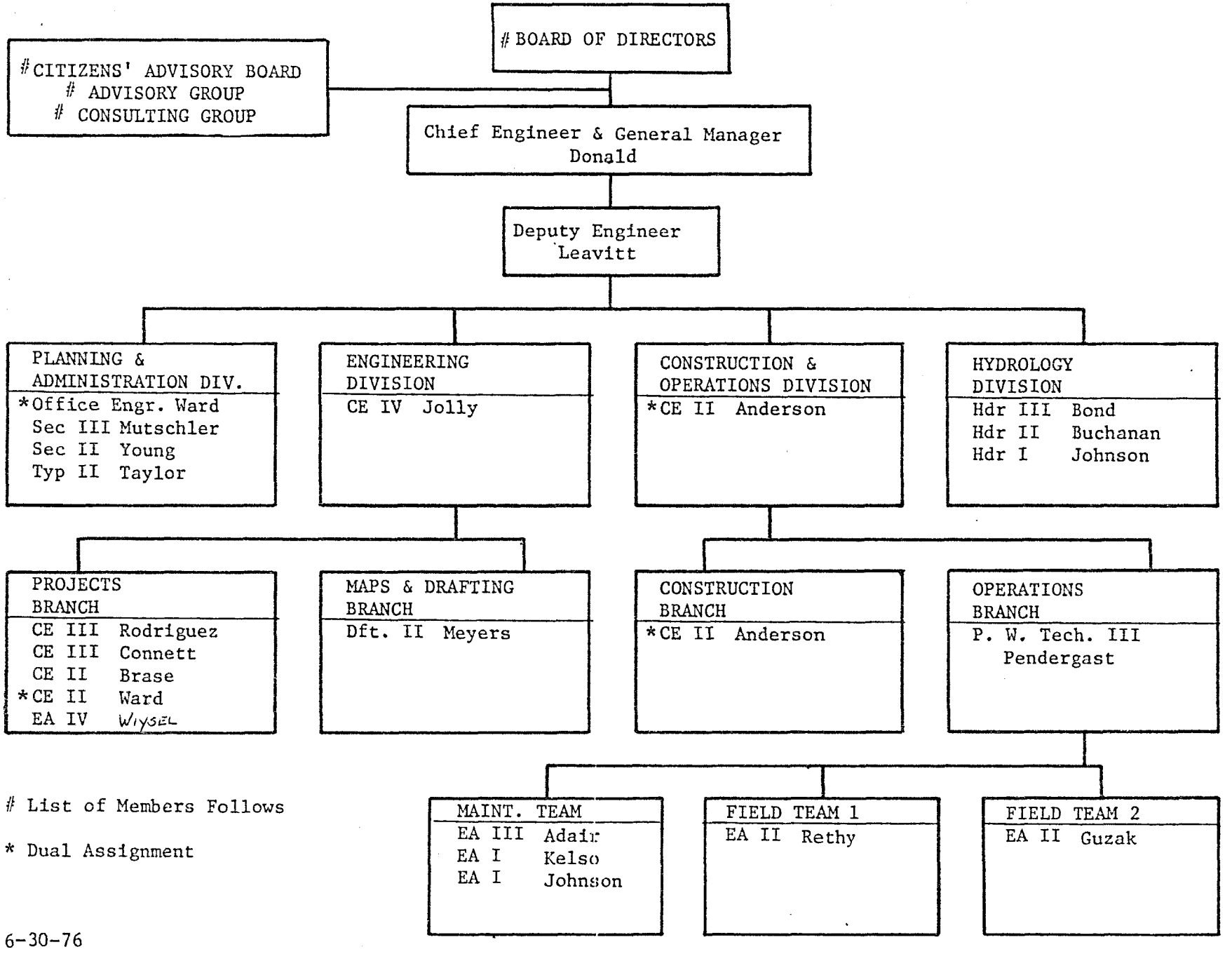
Year		Amount Requested	Amount Appropriated
1973		$2,450,000	$2,450,000
1974		2,475,000	895,000
1975		3,688,000	176,000
1976		4,700,000	600,000
	Total	13,313,000	4,121,000

Federal flood control projects are planned, designed and constructed by either the U. S. Army Corps of Engineers or the Soil Conservation Service, U. S. Department of Agriculture. It is the responsibility of the Flood Control District to provide funds for the acquisition of all rights-of-way necessary for the project and to relocate all facilities such as roads, bridges, utilities, irrigation systems, etc. In addition the Flood Control District has established a Local Projects Flood Control Program by which the District participates equally with municipalities or other governmental agencies in the planning and construction of non-Federal flood control projects.

Information concerning major activities of the Flood Control District during the period July 1, 1975, through June 30, 1976, is included in this Report.

SECTION II

ORGANIZATION CHART



List of Members Follows

* Dual Assignment

6-30-76

Board of Directors of the Flood Control District

Bob Stark, Chairman, July 1, 1975, to January 5, 1976
Henry Haws, Chairman, ~~July~~ JANUARY 5, 1976, through June 30, 1976
Eldon Rudd
Bob Corbin
Joe Eddie Lopez

Citizens' Advisory Board

H. Lynn Anderson, Chairman, July 1, 1975, to November 20, 1975
Donald K. Chambers, Chairman, November 20, 1975, through June 30, 1976
Wilbur Weigold
Henry E. Brodersen
Hugh Nichols (Term expired November 15, 1975)
Elijah A. Cardon (Replaced Hugh Nichols)
James E. Attebery, Phoenix City Engineer
Reid Teeples, Salt River Project

Larry J. Richmond, Legal Counsel

CITIZENS' ADVISORY BOARD

Advisory Group*

Mr. Robert A. Murphy, American Society of Civil Engineers
Mr. David McDowell, Arizona Conservation Council
Mr. John Carr, Arizona Game and Fish Department
Mr. Robert E. Yount, Arizona State Land Department
Mr. Roger Baker, Arizona Public Service Company
Mr. William D. Mathews, Arizona Water Commission
Mr. John H. Tanner, Arizona Rock Products Association
Mr. Roger Evans, Bureau of Indian Affairs
Mr. Guy E. Baier, Bureau of Land Management
Mr. George Thompson, Chamber of Commerce, Mesa
Mr. Walter D. White, Hohokam Resource Conservation and Development Project
Mr. Marvin Larson, Home Builders Association of Central Arizona
Mr. Edwin K. Delph, John Jacobs Properties
Mrs. Marjorie Wallace, League of Women Voters
Mr. Harold Hauf, Valley Forward Association
Mr. Harold Trago, Arizona Wildlife Federation
Mr. James Soudriette, Phoenix Metropolitan Chamber of Commerce

Consulting Group*

Mr. Jerald Johnson, Avondale
Mr. Ken Fooks, Chandler
Mr. Cecil Skaggs, El Mirage
Mayor Willis A. Williams, Gila Bend
Mr. Lynn R. Stuart, Gilbert
Mr. Harold Goodman, Glendale
Mr. Alvin E. Thrasher, Goodyear
Mr. Charles Luster, Mesa
Mr. Charles H. Atkinson, Paradise Valley
Mr. Oscar R. Recker, Peoria
Mr. George Iannella, Scottsdale
Mayor George Cumbie, Surprise
Mr. Grover Serenbetz, Tempe
Mr. Jack Phillips, Tolleson
Mr. Vernon Troy, Wickenburg
Mayor Frank L. Brown, Youngtown

* Membership as of June 30, 1976

SECTION III

PROJECT ACTIVITIES DURING FY 75-76

PROJECT ACTIVITIES

A. Buckeye Watershed

Phase II of the Buckeye Watershed Protection Project was formally accepted as being complete on September 2, 1975. The low bidder for this project, M. M. Sundt Construction Company of Tucson, Arizona, commenced work on Phase II on July 27, 1974. Their contract called for construction of two earthfill floodwater retarding structures, with interconnecting floodways, which when complete would augment the existing 6½ mile earthen structure completed under Phase I.

The completed project, consisting of Phases I and II, was designed to detain and release to the Hassayampa River the 100-year storm runoff from 58,896 acres of land. In doing so, valuable agricultural land, a 14 mile segment of I-10, and the Town of Buckeye, Arizona would be provided flood protection.

Total construction cost of the Buckeye Watershed Protection Project was $3,647,400, with the Soil Conservation Service, USDA paying $3,544,000 and the Flood Control District of Maricopa County funding the remaining $103,400. Project right of way was acquired by the Arizona Department of Transportation. Flood easements were granted to the Flood Control District. The project was constructed under the authority of the Watershed Protection and Flood Prevention Act, Public Law 566, 83rd Congress.

B. Wickenburg Watershed

A contract for construction of two earthfill floodwater retarding structures at Wickenburg, Arizona was awarded to M. M. Sundt Construction Company of Tucson, Arizona on March 23, 1976.

The scope of the contract consists of building earthen flood retarding structures across Sunset Wash and Sunnycove Wash with an underground interconnecting concrete pipeline to release the detained floodwaters to the Hassayampa River. When these structures are completed, floodwater and sediment damage to residential properties along Sunset and Sunnycove Washes will be greatly alleviated.

The construction cost of the project, $776,700, is being funded by the Soil Conservation Service, USDA under authority of the Watershed Protection and Flood Prevention Act, Public Law 566, 83rd Congress. The Flood Control District of Maricopa County provided approximately $160,000 for project right of way and relocation of utilities. Estimated completion date for the project is September 15, 1976.

C. Harquahala Valley

Activity on the Harquahala Valley Project centered around preparation and circulation of the Environmental Impact Statement and Supplemental Watershed Workplan. During the past year several copies of these documents were sent to various public and governmental agencies for review and comment. As of June 1976, no significant adverse comments have been received in opposition to the project.

The most significant concern over the future of the project at the present time is whether or not the Flood Control District of Maricopa County will be able to provide the $1,500,000 needed for right of way acquisition and relocation of utilities. As of June 1976, local funding for this project was very uncertain.

Local support for the project is continuing as evidenced by the fact that the Flood Control District commenced work in June 1976 to acquire "Right of Entry" permits for survey and subsurface exploration on private, state and federal lands located within the proposed project construction boundaries. Present plans call for completion of survey and geology work by March 1977.

Planning for the Harquahala Valley Project is being carried out by the Soil Conservation Service with the assistance of the Arizona Water Commission under authority of the Watershed Protection and Flood Prevention Act, Public Law 566, 83rd Congress.

D. Buckhorn Mesa Watershed

1. Spook Hill Flood Retarding Structure

Considerable progress was made on this project during FY 75-76. Except for 10 parcels of land owned by United Development Corporation, all private property for the project has been acquired. Negotiations for the 10 remaining parcels is underway and should be completed by September 1976. Acquisition of federal and state land is proceeding on schedule and should not delay construction.

In October 1975 mining claims were unexpectedly found which had been filed in the Tonto National Forest. With the help of the National Forest Service, attempts are being made to have these claims relinquished.

Also, in October 1975, preliminary design plans for the Spook Hill structure were received from the Soil Conservation Service. The plans were reviewed by several agencies and numerous meetings were held to discuss various aspects of the project. The Flood Control District worked closely with the Maricopa County Highway Department to coordinate design and construction of ramps over the dam at McKellips Road, McDowell Road, and Brown Road.

The Soil Conservation Service expects to have final plans completed and the final Environmental Impact Statement filed by August 1976 so construction can be underway by early 1977.

One aspect of major concern was landscaping. The Soil Conservation Service contracted with a landscape architect, A. Wayne Smith and Associates, to provide a landscaping plan for the structure. This firm submitted a preliminary proposal which was circulated among several agencies for review and will be incorporated into a final landscaping plan.

An interesting observation was made by the Fish and Wildlife Service in October 1975 when a pair of Yuma Clapper Rails were discovered nesting in a marshy area of the Salt River just upstream of the Granite Reef Dam. Concern was expressed that floodwaters from the Spook Hill structure might eventually accumulate enough sediment in this marshy area to destroy the birds' nesting sites. This problem was resolved by designing a sediment basin at the floodway outlet.

2. Signal Butte Floodway

A review of the floodway alignment proposed by the Soil Conservation Service disclosed several right of way problems. Numerous private properties would be bisected by the project imposing considerable hardships on the owners and subjecting the Flood Control District to paying substantial severance damages when acquiring the property.

As a result of this problem some alternate alignments have been proposed and are currently under study by the Soil Conservation Service.

E. RWCD Floodway

Progress on this project has not advanced as rapidly as expected during the past fiscal year. In October 1975 the Fish and Wildlife Service declared several hundred acres of wildlife habitat in the Gila River Indian Reservation would be lost if the project were constructed. After several meetings with interested agencies, a mitigation plan was developed that would allow the project to proceed.

Another significant obstacle was cleared during the past year when an agreement was reached with the Pima Indian Agency to firmly establish project right of way and spoil disposal areas through the reservation boundaries.

Tentative time schedules project the preliminary Environmental Impact Statement to be out for review in September 1976 in order that a November 1977 construction start can be achieved. Present plans call for the Floodway to be built in six phases with each phase taking about a year to complete.

The coming year will find the Flood Control District acquiring the remaining right of way for the project and designing and constructing bridges to span the floodway at its intersection with county roads. The Arizona Department of Transportation will design and construct bridges over the floodway for State Highways 87 and 93. Railroad bridges will be financed out of federal funds.

F. Lower Queen Creek

The Arizona Water Commission is currently assisting the Soil Conservation Service with this project by making a feasibility study and formulating a preliminary work plan. This study and work plan should be complete by December 1976.

G. Indian Bend Wash

1. Outlet Channel

The Outlet Channel extends from one quarter mile north of McKellips Road in a southwesterly direction to the point where the Scottsdale Road Bridge crosses the Salt River Channel. The Corps of Engineers completed the construction plans and specifications for the Outlet Channel and related structures during the first half of the fiscal year. The Flood Control District secured all of the necessary right of way for this construction during approximately the same period. Construction of the low flow bridges for the McKellips Road and Princess Drive wash crossings was completed in August 1975 by the Flood Control District's contractor at a total cost of $357,035. Approximately 83% of the cost of the two bridges was paid from FY 1976 funds. The District has spent $1,341,048, of its FY 1976 funds for right of way, consulting engineer services, bridge construction, and utility system relocation and protection to enable the Corps of Engineers to construct the Channel. The contract for the Channel construction was let on January 9, 1976, by the Corps of Engineers to Lee Construction Company of California for $3,030,054. The notice to proceed was given on January 26, 1976, and groundbreaking was on February 2, 1976.

2. Greenbelt Floodway

The Greenbelt Floodway extends from McDonald Drive through Scottsdale in a southerly direction to one quarter mile north of McKellips Road. This area is being developed by Scottsdale but the Flood Control District is sharing in the cost for certain flood control requirements and features. During FY 1976 the District paid the City of Scottsdale $117,443.63 for its share in the cost of constructing the following:

McDowell Road Bridge approaches and inlet
McDonald Drive Bridge and channelization

Water main relocation
Thomas Road Bridge and its approaches, inlet and outlet

3. Inlet Channel

The main channel of the Inlet will extend from Indian Bend Road to McDonald Drive with a siphon for the Arizona Canal which crosses the channel alignment. In addition, there will also be an Interceptor Channel on the north side of the Arizona Canal from Pima Road to the main channel; and there will be a side channel system to carry floodwaters from the area on the west side of the Arizona Canal between the main channel and 68th Street to the wash by means of storm drains on McDonald Drive, Chaparral Road, and Camelback Road. During the second half of FY 1976 preliminary title information for the proposed construction area was secured and negotiations were made for a consulting engineer to prepare the necessary land rights maps. During this period the Corps of Engineers worked toward its final design for the Inlet Channel and other features to be constructed.

H. Upper Indian Bend Wash (City of Phoenix)

Tanner Brothers Construction Company was awarded the contract for the construction of the Shea Boulevard Bridge across the Indian Bend Wash on December 8, 1975. The low bid was $430,640. Construction began in January 1976. Work continued off and on throughout FY 75-76 improving and maintaining the Indian Bend Wash low flow and main channel area along the City of Phoenix portion of Indian Bend Wash. The portions of Indian Bend Wash lying within private developments are being improved as developments progress in these areas. The Flood Control District was not directly involved in this project.

I. Cave Buttes Dam

Right of way acquisition of private land continued at an active pace with only eight parcels remaining to be acquired. However, problems still exist in reaching an agreement with the State Land Department on the acquisition of flowage easements on State Trust Lands located within the project boundaries. Agreement was reached with the State Land Department on the purchase of State Trust Lands in fee title; the District will make payment for this land based on a valuation established by the State's appraiser. Another right of way issue that remains to be resolved is the disposition of mining claims that have been filed on land required for the project.

Discussions with the Corps of Engineers during the past year indicate the Corps feels the Old Cave Creek Dam, constructed in 1923, could be left in place after the Cave Buttes structure was complete. The concrete arch design of the old dam is rather unique and certainly has historical significance.

J. Adobe Dam

As indicated by the large sum of money expended on this project during the past 12 months, right of way acquisition was continuing at an active pace. The status of acquiring State Trust Lands is identical to that existing for the Cave Buttes project.

At the end of June 1976, the Corps of Engineers was nearing completion on their cost estimates for the one dam versus two dam concept.

K. New River Dam

No activity took place on this project during FY 75-76.

L. Arizona Canal Diversion Channel

Due to the high priorities assigned to Cave Buttes and Adobe Dams, very little activity took place during the past year on the Arizona Canal Diversion Channel. Only one parcel of right of way was acquired.

M. Flowage Easements, Skunk Creek, New and Agua Fria Rivers

No activity took place to acquire flowage easements during FY 75-76.

N. Salt River Channel

An earth lined channel with a design capacity of 35,000 cfs was constructed in the Salt River under the new Scottsdale Road Bridge west to Mill Avenue. The contractor, M. M. Sundt Construction Company of Tucson, Arizona, commenced construction on July 14, 1975, and finished the job 45 days later on August 28, 1975. Engineering and design services were provided by the consulting firm of Hoffman-Miller Engineers, Inc., Phoenix, Arizona.

O. Champion Flood Prevention Project (Old 43rd Avenue Drain)

In January 1974, the City of Phoenix requested assistance from the Flood Control District in establishing a flood control project in the area of southwest Phoenix. In November 1975, the Flood Control District proposed that this project become a Hohokam Resource Conservation and Development Project and invited the City of Phoenix, Salt River Project and the Agua Fria-New River Natural Resource Conservation District to join the District as cosponsors of the project. Agreement was reached between sponsors and work was begun on a proposal to the Hohokam Resource Conservation and Development Project during April 1976. At this time the "Champion Flood Prevention Resource Conservation and Development Measure" proposal is ready for submission to the Hohokam Resource Conservation and Development Measures Review Committee for consideration and adoption as an official Resource Conservation and Development Measure.

P. Local Projects

1. City of Phoenix

The District has agreed to the extent funds are available, to assist the City of Phoenix in funding their flood control program. Although the District made no monetary reimbursements to Phoenix during the past fiscal year, inspections were made by District personnel on the following projects:

a. Detention Dams 2A and 2B. Two earthfill dams located at Thunderbird and 7th Street. Construction was started in August 1975 and completed in April 1976.

b. Old Cross Cut Canal along 47th Street between Washington and Oak Street. An earthlined channel 1.8 miles long with five concrete drop structures along the overall length with baffled discharge aprons for stilling of flow to provide suitable channel gradient. Construction was started in November 1975 and completed in June 1976.

c. Sweetwater Channel. A concrete and gabion lined channel along Sweetwater Avenue between 15th Avenue and Cave Creek. Channel is 1.1 miles long with one concrete drop structure.

2. City of Mesa

The Flood Control District reimbursed the City of Mesa $322,000 during the past fiscal year for right of way acquisition and incidental construction and engineering fees related to the following projects:

a. Center Street Basin

b. Tempe Canal Drainage Channel from Southern Avenue to proposed freeway.

c. Detention basin and floodway channel along Tempe Canal from proposed freeway to the Western Canal.

d. Extension Road Basin.

3. Town of Gila Bend

In order to eliminate a flooding problem to a portion of Gila Bend located along the Sand Tank Wash, the Flood Control District agreed to assist the Town in financing improvements that would eliminate the flooding. The problem was alleviated with the installation of a drainage pipe through a levee along the wash. This pipe has a one way flap valve that allows water to discharge from behind the levee into the wash but will close when the water level in the wash rises above the valve. The District reimbursed the Town $1,931 which was 50% of the installation cost of this item. Some additional earthwork on the levee along Sand Tank Wash remains to be done as part of the cooperative agreement between the District and the Town.

SECTION IV

PROJECT LOCATION MAP AND EXPENDITURES

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

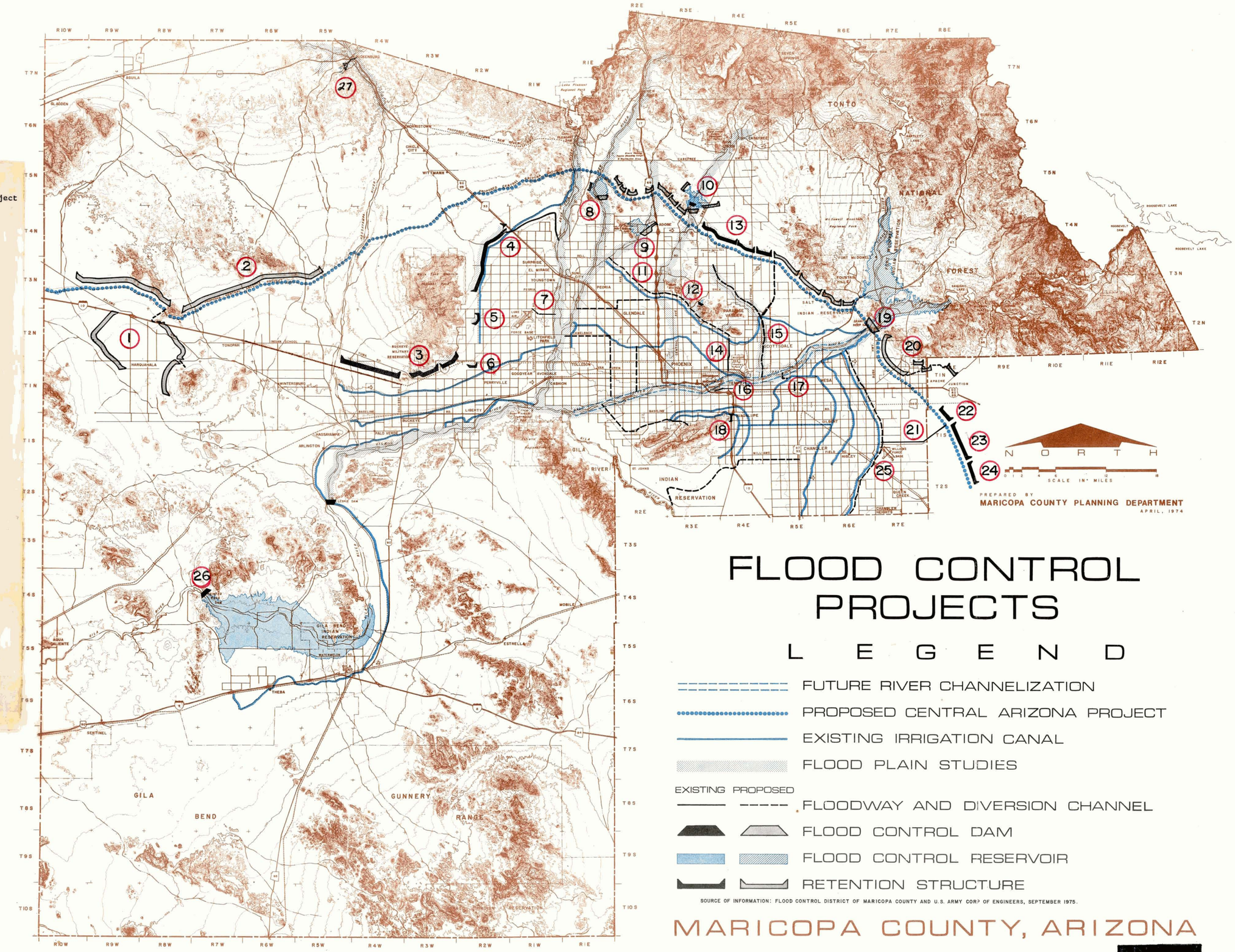
EXPENDITURES BY PROJECT

Project	Expenditures FY 75 - 76	Total Expenditures To June 30, 1976	Estimated Expenditures to Complete Project
Sunset/Sunnycove F.R.S.	$ 15,900	$ 91,400	$ 58,000
Harquahala Valley Watershed	900	900	1,498,200
Spook Hill F.R.S.	41,200	861,900	1,252,658
Signal Butte Floodway	5,000	5,000	4,278,100
RWCD Floodway	8,900	1,624,900	3,145,100
Lower Queen Creek Watershed	200	6,200	Unknown
Lower Indian Bend Wash	1,459,300	3,090,100	2,014,300
Cave Buttes Dam	85,600	899,701	2,453,300
Adobe Dam	798,400	1,402,390	5,031,200
Arizona Canal Diversion Channel	9,200	155,200	37,873,100
Salt River Channel	657,000	863,800	0

LEGEND

1. Harquahala Valley Watershed Project
* 2. Tonopah Watershed Project
3. Buckeye Watershed Project
4. McMicken Dam
5. White Tanks Dam #3
6. White Tanks Dam #4
7. Dysart-Agua Fria Drain
8. New River Dam
9. Adobe Dam
10. Cave Buttes Dam
11. Arizona Canal Diversion Channel
12. Dreamy Draw Dam
* 13. Paradise Valley Structures
14. Old Cross Cut Canal
15. Indian Bend Wash Floodway
16. 48th Street Drain
17. Alma School Drain
18. Guadalupe Watershed Project
19. Orme Dam
20. Buckhorn Mesa Watershed Project
21. Powerline Floodway
22. Powerline Dam
23. Vineyard Road Dam
24. Rittenhouse Dam
25. RWCD Floodway
26. Painted Rock Dam
27. Wickenburg Watershed Project

* Bureau of Reclamation Projects



FLOOD CONTROL PROJECTS

L E G E N D

- FUTURE RIVER CHANNELIZATION
- PROPOSED CENTRAL ARIZONA PROJECT
- EXISTING IRRIGATION CANAL
- FLOOD PLAIN STUDIES

EXISTING PROPOSED

- FLOODWAY AND DIVERSION CHANNEL
- FLOOD CONTROL DAM
- FLOOD CONTROL RESERVOIR
- RETENTION STRUCTURE

SOURCE OF INFORMATION: FLOOD CONTROL DISTRICT OF MARICOPA COUNTY AND U.S. ARMY CORP OF ENGINEERS, SEPTEMBER 1975.

MARICOPA COUNTY, ARIZONA

[redacted]

SECTION V

CONSTRUCTION AND OPERATIONS ACTIVITIES

CONSTRUCTION AND OPERATIONS ACTIVITIES

A. List of Major Items of Equipment - At the end of FY 75-76, the Construction and Operations Division had the following major items of equipment on hand:

1. Two 1974 Chevrolet 4 wheel drive pickup trucks
2. One 1976 Chevrolet 4 wheel drive pickup truck
3. One 1975 Chevrolet 2½ ton dump truck
4. Gasoline powered concrete mixer - one sack capacity
5. 400 gallon portable steel water tank
6. Gasoline powered centrifugal water pump
7. Gasoline powered 14" chain saw

B. Major Project Activities - In addition to the routine maintenance of completed flood control structures, the following projects were given special attention during the past fiscal year.

1. Powerline Floodway - The Powerline Floodway was completed by the Soil Conservation Service in May of 1968 and consists of 6½ miles of a large concrete lined channel. The channel lining has deteriorated as evidenced by the large concrete spalls that have appeared at the expansion joints. Some longitudinal and transverse cracks are also beginning to appear in the concrete lining. The appearance of these failures has been continual since its completion. During the past 12 months a program was initiated to determine the cause of this problem and alleviate it. The concrete liner was cut in about four places to form new expansion joints which were filled with different materials such as asphalt impregnated felt, polyurethane caulking and various other elastic type caulking materials. These new joints will be kept under observation to see which type filler material gives the best performance. Based upon the results of these tests, an extensive program will be undertaken to modify and repair the entire length of the concrete channel. Also a program was initiated to stimulate the Soil Conservation Service to take an active interest in possible reconstruction and repair of the channel. The programs will continue into the next fiscal year.

2. Alma School Drain - The facility was originally constructed by the Salt River Project and is now maintained by the Flood

Control District. This channel is used as a floodway to carry waste irrigation water, surface runoff and storm runoff from the City of Mesa storm drain system into the Salt River. During the past year the Flood Control District had the lined portion of this channel cleaned of silt and vegetative growth while the unlined portion was similarly cleaned and reshaped.

3. 48th Street Drain - This facility was originally constructed by the Salt River Project and is now maintained by the Flood Control District. This channel is used primarily to convey to the Salt River storm water discharged from the City of Tempe storm drain system. During the past year this channel was cleaned of vegetative growth throughout its length from 48th Street to the Salt River.

4. Dreamy Draw Dam - Vandalism initiated the following construction at Dreamy Draw Dam. A six inch reinforced concrete wall was constructed around the existing instrument building and a new steel entrance door was installed. Vandalism also required the repair of the recording instruments within the building. In addition, some riprap pads were constructed along the east edge of the emergency spillway using one foot diameter boulders and concrete grout.

SECTION VI

FLOODPLAIN REGULATIONS AND DELINEATIONS

FLOODPLAIN REGULATIONS AND DELINEATIONS

The Flood Control District of Maricopa County first became involved in establishing Floodplain Regulations in 1961. It was not until February 25, 1974, that the Board of Supervisors of Maricopa County adopted the Floodplain Regulations for the Unincorporated Area of Maricopa County.

The floodplain delineations adopted by the Board under the 1974 Regulations were all from floodplain information studies made by the United States Army Corps of Engineers. The studies delineated the 50 and 100 year flood events. Table "A" lists the delineations and pertinent information regarding them.

On July 14, 1975, the current Floodplain Regulations were adopted by the Floodplain Board (Board of Supervisors) which superseded the 1974 Regulations. The 1975 Regulation is a two district regulation and is more closely aligned with State legislation and the National Flood Insurance Program.

There are two types of floodplain delineations which have been adopted under the existing Regulation. The Two District Delineation provides a delineation of both the Floodway District and the Floodway Fringe District. This type of delineation is needed in conjunction with the Floodplain Regulations to insure fair and adequate control over development in floodplains.

The other type of delineation is referred to as the Interim Delineation. It is a delineation of the Regulatory Floodplain (100-year) made from the most reliable source available for which a delineation of the Floodway District is not available. The Interim Delineations will be replaced by Two District Delineations as they become available.

The delineations which have been adopted were derived from studies made by the Army Corps of Engineers, the United States Geological Survey, the Flood Control District of Maricopa County and local engineering consulting firms. Table "B" is a list of the delineations which have been adopted and regulated to under the 1975 Floodplain Regulations for the Unincorporated Area of Maricopa County, Arizona. These delineations were in effect as of June 30, 1976.

The Floodplain Board has adopted a total of 175 river miles of delineated floodplain as of June 30, 1976. The Interim Delineations account for 103.2 miles of the floodplain, while the other 71.8 miles of floodplains are Two District Delineations. In addition, the Board has adopted delineations of reservoir or ponding areas for ten structures within the Unincorporated Area of Maricopa County.

TABLE "A"

WATERWAY	GENERAL LOCATION	RIVER MILES	DATE OF ADOPTION
Cave Creek	Cave Creek Reservoir to 1 mile east of School House Road	7.8	February 25, 1974
Mexican Wash	Confluence with Rowler Wash to ¼ mile west of 72nd Street	.7	February 25, 1974
New River	Greenway Road to Community of New River	27.0	February 25, 1974
Rowler Wash	Confluence with Cave Creek to 72nd Street	2.3	February 25, 1974
Skunk Creek	Beardsley Road to Black Canyon Highway	5.1	February 25, 1974

TABLE "B"

WATERWAYS OF STRUCTURES	GENERAL LOCATION	RIVER MILES	DATE OF ADOPTION
Agua Fria River	Confluence with Gila River to ½ mile north of Pinnacle Peak Road	24.3	November 3, 1976
Agua Fria River*	½ mile north of Pinnacle Peak Road to Lake Pleasant	9.8	July 14, 1975
Buckeye Structures	Parallel I-10 on the north from ½ mile east of Turner Road to Hassayampa River		July 14, 1975
Cave Creek Reservoir	Two miles northwest of Pinnacle Peak and Cave Creek Road		July 14, 1975
Cave Creek Wash	Bell Road to Beardsley Road	2.0	July 14, 1975
Cave Creek Wash*	Cave Creek Reservoir to one mile east of School House Road	7.8	July 14, 1975
Gila River*	107th Avenue to center Sec. 27, T1S, R5W	27.0	July 14, 1975
Granite Reef Detention Dike	Cave Creek Road to Scottsdale Road		July 14, 1975
Guadalupe Flood Retarding Structure	South of Baseline Road and along west side of I-10		July 14, 1975
Hassayampa River*	Yavapai County line to south section line of Sec. 10, T6N, R4W	14.8	July 14, 1975
Lake Pleasant	Carl Pleasant Dam to County line		July 14, 1975
Mexican Wash*	Confluence with Rowler Wash to ¼ mile west of 72nd Street	.7	July 14, 1975
New River	Confluence with Agua Fria River to ¼ mile north of Pinnacle Peak Road	14.5	January 5, 1976
New River*	¼ mile north of Pinnacle Peak Road to north section line of Sec. 12, T7N, R2E	22.0	July 14, 1975

WATERWAYS OF STRUCTURES	GENERAL LOCATION	RIVER MILES	DATE OF ADOPTION
Painted Rock Reservoir	East along the Gila River northwest of Gila Bend		July 14, 1975
Rowler Wash*	Confluence with Cave Creek to 72nd Street	2.3	July 14, 1975
RWCD Canal	Brown Road to Baseline Road		July 14, 1975
Salt River*	Confluence with Gila River to 27th Avenue	10.5	July 14, 1975
Salt River*	Scottsdale Road to Price Road	2.0	September 29, 1975
Salt River	Price Road to center of Sec. 29, T2N, R6E	9.0	July 14, 1975
Scatter Wash	Skunk Creek Confluence to Black Canyon Highway	4.0	January 5, 1976
Skunk Creek	New River Confluence to Carefree Highway	18.0	January 5, 1976
Sols Wash*	Hassayampa River to Sec. 32, T8N, R4W	4.5	July 14, 1975
Trilby Wash Detention Basin	Extension of Peoria Avenue to Cotton Lane and Grand Ave.		July 14, 1975
Wickenburg Area Washes*	Flying "E" Wash and Powder House Wash	1.8	July 14, 1975
White Tank Detention Basin #3	Southwest Beardsley Canal and Glendale Avenue		July 14, 1975
White Tank Detention Basin #4	Northwest of Van Buren and Jackrabbit Road		July 14, 1975

* Interim Delineations

SECTION VII

NATIONAL FLOOD INSURANCE PROGRAM

NATIONAL FLOOD INSURANCE PROGRAM

Maricopa County's participation in the National Flood Insurance Program began on December 31, 1970 as a result of the Federal Insurance Administrator's approval of a request made by the Board of Supervisors that Maricopa County be declared eligible for flood insurance as authorized by the National Flood Insurance Act of 1968. In order to bring about this approval, the Board of Supervisors passed a resolution dated November 9, 1970 which stated, in part, that the County would adopt land use and control measures designed to reduce exposure to flood losses and that the County would take such other official action as may be reasonably necessary to carry out the objectives of the program. The Flood Control District of Maricopa County was delegated the responsibility, authority, and means to implement the commitments of this resolution.

Admission into the program was under emergency provisions, meaning that the entire unincorporated area of the County was designated as having special flood hazards. The County will remain in this status until a publication of a Flood Hazard Boundary Map (FHBM) which would roughly outline areas of special flood hazard. The next step would normally be the publication of a Flood Insurance Rate Map (FIRM) at which time the County would move from the Emergency Program to the Regular Program. The FIRM is a more detailed version of the FHBM in which areas have been delineated into zones of varying flood hazard. A preliminary FHBM and FIRM for the County have recently been reviewed by this office and by the Los Angeles District, United States Army Corps of Engineers, the authors of the original 1973 Flood Insurance Study on which the maps are based. Both the FHBM and FIRM are presently being revised by Dames and Moore Engineers of Bethesda, Maryland in light of this review and are due to be released concurrently in the near future.

Since admission into the National Flood Insurance Program, Maricopa County has adopted subdivision regulations, zoning ordinances and a system of building permit review which are consistent with criteria set forth by the Federal Insurance Administration (FIA). The District has submitted annual reports to the FIA assuring that it has adopted these land use and control measures and in this way has maintained County eligibility under the program.

A Flood Insurance Study for Maricopa County was undertaken in mid-1976 by the local office of Harris-Toups Corporation under contract with the FIA. The study will take two to three years to complete and will cover 14 communities in Maricopa County as well as selected major washes, creeks, and rivers. A total of 94.3 river miles will be studied using a detailed method and another 146.3 river miles will be studied using an approximate method. Portions of the Salt and Gila Rivers currently having interim delineations will be studied using the detailed method with the result

being an accurate and up-to-date two district floodplain delineation. The Flood Control District has been working with Harris-Toups and the FIA in establishing priorities for the study and in providing technical information necessary to fulfill the requirements of the contract.

SECTION VIII

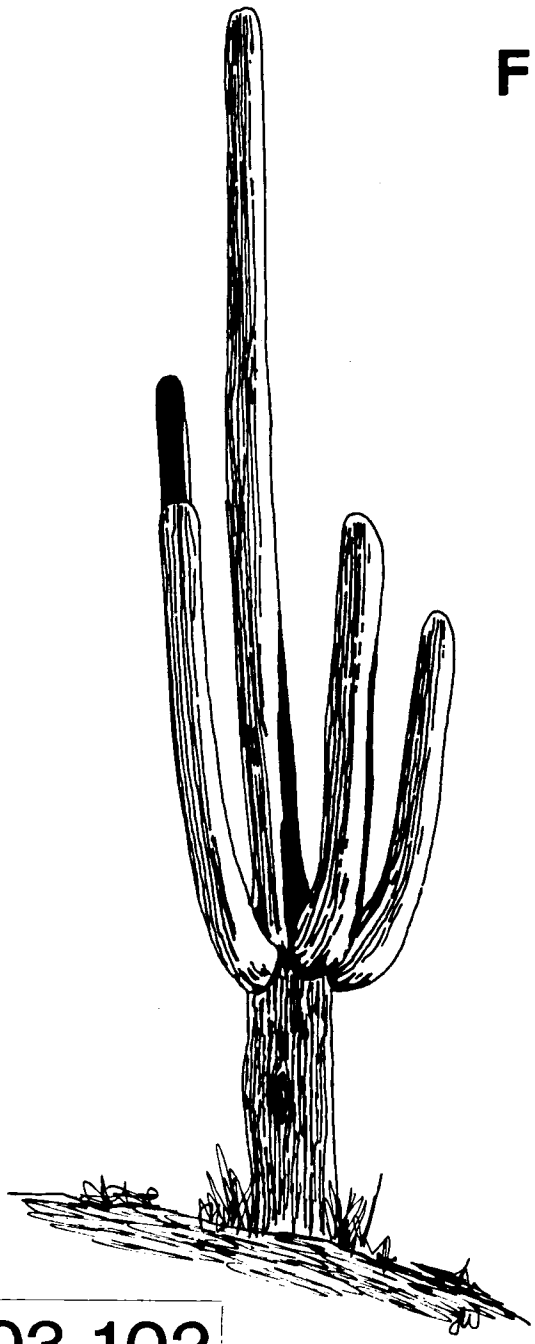
TABULATED DATA ON COMPLETED STRUCTURES

STRUCTURE	DRAINAGE AREA	STORAGE CAPACITY	SURFACE AREA FLOODWATER POOL	VOLUME OF FILL	MAXIMUM HEIGHT OF DAM	LENGTH OF STRUCTURE	TIME TO DISCHARGE	LOCAL COST	FEDERAL COST	STRUCTURE COMPLETED
Powerline F.R.S.	49.6 sq. mi.	4019 ac. ft.	456 ac.	880,000 c.y.	35 ft.	3.9 mi.	30 days	$ 4,800	$ 377,300	1967
Vineyard Road F.R.S.	53.4 sq. mi.	4122 ac. ft.	837 ac.	1,154,400 c.y.	20 ft.	4.5 mi.	30 days	$ 54,900	$ 512,000	1968
Rittenhouse F.R.S.	49.6 sq. mi.	3875 ac. ft.	660 ac.	798,800 c.y.	21 ft.	3.0 mi.	30 days	$ 28,800	$ 400,000	1969
Guadalupe F.R.S.	1191 ac.	273 ac. ft.	30.4 ac.	175,000 c.y.	32 ft.	1.0 mi.	10 days	$160,500	$ 498,000	1975
White Tanks Dam #3	24.1 sq. mi.	2655 ac. ft.	384 ac.	375,000 c.y.	30 ft.	7667 ft.	80 hrs	$218,287	$ 199,088	1954
White Tanks Dam #4	10.3 sq. mi.	1036 ac. ft.	221 ac.	175,000 c.y.	20 ft.	6839 ft.	118 hrs			1954
Buckeye F.R.S. Sites 1,2, & 3	58,896 ac.	8000 ac. ft.	2845 ac.	4,100,000 c.y.	33 ft.	16 mi.	10 days	$103,400	$3,544,000	1975
McMicken Dam	223 sq. mi.	30,500 ac. ft.	2300 ac.	2,400,000 c.y.	38 ft.	9.4 mi.	4.5 days	$180,000	$2,000,000	1956
Dreamy Draw	1.3 sq. mi.	317 ac. ft.	26.7 ac.	83,500 c.y.	50 ft.	1400 ft.	19.5 hrs	$ 25,000	$ 388,870	1973
Sunset F.R.S.	384.0 ac.	55 ac. ft.	8.6 ac.	67,800 c.y.	30.5 ft.	500 ft.	7.6 days	$150,000	$ 776,700	1976
Sunnycove F.R.S.	864.0 ac.	218.7 ac. ft.	18.0 ac.	111,500 c.y.	50.5 ft.	700 ft.	17 days			1976

	LENGTH	AVERAGE BOTTOM WIDTH	AVERAGE CHANNEL DEPTH	VOLUME OF EXCAVATION	VOLUME OF CONCRETE	LOCAL COST	FEDERAL COST	STRUCTURE COMPLETED
Powerline Floodway	8.7 mi.	7'	5'	285,800 c.y.	15,534 cy	$64,000	$871,000	1968

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

ANNUAL REPORT



FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY

JULY 1, 1976
to
JUNE 30, 1977

003.102

TABLE OF CONTENTS

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

		Page
I.	INTRODUCTION	
II.	ORGANIZATION CHART	2
III.	CORPS OF ENGINEERS PROJECT ACTIVITIES	5
	A. Indian Bend Wash	5
	1. Outlet Channel	5
	2. Greenbelt Floodway	5
	3. Inlet Channel	6
	4. Interceptor and Side Channels	6
	B. Cave Buttes Dam	6
	C. Adobe Dam	6
	D. New River Dam	9
	E. Arizona Canal Diversion Channel	9
	F. Flowage Easements, Skunk Creek and New and Agua Fria Rivers	10
IV.	SOIL CONSERVATION SERVICE PROJECT ACTIVITIES	11
	A. Wickenburg Watershed	11
	B. Harquahala Valley Watershed	11
	C. Buckhorn Mesa Watershed	12
	1. Spook Hill Flood Retarding Structure and Floodway	12
	2. Signal Butte Floodway	13
	D. RWCD Floodway	13
	E. Queen Creek Flood Retarding Structure	14
V.	LOCAL PROJECT ACTIVITIES	15
	A. Paradise Valley, Scottsdale, and Phoenix Study (PVSP)	15
	B. Gila Drain	15
	C. Champion Drain	16
VI.	PROJECT LOCATION MAP	17
VII.	CONSTRUCTION AND OPERATIONS ACTIVITIES	18
	A. McMicken Dam	18
	B. 48th Street Drain	18
	C. Soil Conservation Service Structures	19
	D. Old Cross Cut Canal	19

TABLE OF CONTENTS

		Page
VIII.	HYDROLOGY DIVISION ACTIVITIES	21
	A. General Areas of Responsibilities	21
	B. Floodplain Regulations and Delineations	21
	C. Flood Insurance	21
	D. Other Technical Assistance Provided to Maricopa County	22
	E. Review of Subdivision Drainage	22
IX.	EXPENDITURES	27
X.	TABULATED DATA ON COMPLETED STRUCTURES	30

SECTION I

INTRODUCTION

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ANNUAL REPORT
July 1, 1976, to June 30, 1977

INTRODUCTION

The legislation providing for the creation of the Flood Control District of Maricopa County provided for the Flood Control District to be a public political taxing subdivision of the State and a municipal corporation to the extent of the powers and privileges conferred by the legislation or granted generally to municipal corporations by the Constitution and Statutes of the State of Arizona.

Arizona Revised Statutes 45-2364 C authorized the Flood Control Tax Levy to be 20¢ per $100 property evaluation. In addition, Arizona Revised Statutes 45-2701, et seq. established the State Flood Control Assistance Program in 1973. This Program provided for State financial assistance for a period of 15 years and authorized the State to contribute half the local costs for authorized Federal flood control projects.

Stated below are the amount of funds requested and appropriated since the Flood Control Assistance Program was authorized:

Year	Amount Requested	Amount Appropriated
1973	$2,450,000	$2,450,000
1974	2,475,000	895,000
1975	3,688,000	176,000
1976	4,700,000	600,000
Total	$13,313,000	$4,121,000

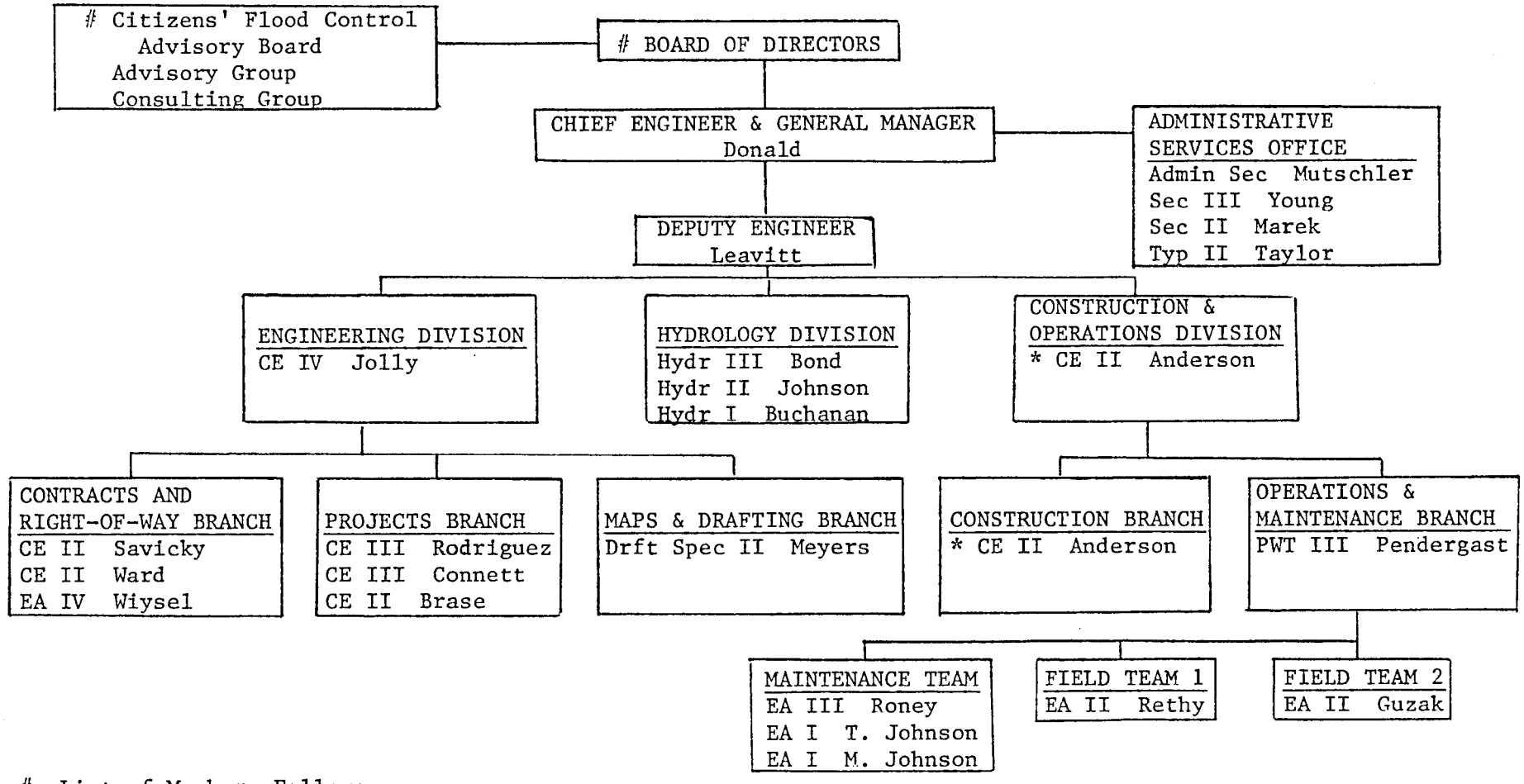
Federal flood control projects are planned, designed and constructed by either the U. S. Army Corps of Engineers or the Soil Conservation Service, U. S. Department of Agriculture. It is the responsibility of the Flood Control District to provide funds for the acquisition of all rights of way necessary for the project and to relocate all facilities such as roads, bridges, utilities, irrigation systems, etc. In addition the Flood Control District has established a Local Projects Program by which the District participates equally with municipalities or other governmental agencies in the planning and construction of non-Federal flood control projects.

SECTION II

ORGANIZATION CHART

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Organization Chart



List of Members Follows

* Indicates Dual Assignment

Total Authorization 24

June 30, 1977

BOARD OF DIRECTORS

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Hawley Atkinson, Member, January 3, 1977, through June 30, 1977
Chairman, June 6, 1977, through June 30, 1977

George L. Campbell, Member, January 3, 1977, through June 30, 1977

Bob Corbin, Member, July 1, 1976, through June 30, 1977
Chairman, January 3, 1977, through June 6, 1977

Henry H. Haws, Member, July 1, 1976, through June 30, 1977
Chairman, July 1, 1976, through January 3, 1977
Vice Chairman, January 10, 1977, through June 30, 1977

Joe Eddie Lopez, Member, July 1, 1976, through December 31, 1976

Ed Pastor, Member, January 3, 1977, through June 30, 1977

Eldon Rudd, Member, July 1, 1976, through December 31, 1976

Bob Stark, Member, July 1, 1976, through December 31, 1976

Rhea Woodall, Clerk of the Board, July 1, 1976, through June 30, 1977

CITIZENS' FLOOD CONTROL ADVISORY BOARD

H. Lynn Anderson

James E. Attebery, Phoenix City Engineer

Henry E. Brodersen, Vice Chairman, July 1, 1976, to November 18, 1976
Chairman, November 18, 1976, through June 30, 1977

Elijah A. Cardon, Vice Chairman, November 18, 1976, through June 30, 1977

Donald K. Chambers, Chairman, July 1, 1976, to November 18, 1976

Reid Teeples, Salt River Project

Wilbur Weigold

SECTION III

CORPS OF ENGINEERS PROJECT ACTIVITIES

CORPS OF ENGINEERS PROJECT ACTIVITIES

A. Indian Bend Wash

The Indian Bend Wash Project is a Corps of Engineers' project sponsored locally by the Flood Control District of Maricopa County and the City of Scottsdale. The purpose is to contain and convey local flows, produced on the watershed, for all storms up to the 100 year event, through the Cities of Scottsdale and Tempe and into the Salt River. The total project is comprised of approximately 7 miles of channelization, 1.7 miles of Outlet Channel, 1 mile of Inlet Channel and about 5 miles of Greenbelt Floodway. Ancillary structures planned are the Interceptor Channel which parallels the Arizona Canal from Pima Road west to the Inlet Channel, approximately 1.5 miles; and the Side Channels System which parallels the Arizona Canal from the Inlet Channel south to 68th Street, approximately 3 miles. The Interceptor and Side Channels will serve to relieve ponding along the uphill side of the Arizona Canal.

1. Indian Bend Wash Outlet

The Outlet portion of the project was designed and constructed by the Corps of Engineers. Construction resumed on July 13, 1976, following a labor dispute, with a priority being completion of work on Yavapai School grounds. Work also resumed on the channelization and levee construction in the Princess Drive (Curry Road) vicinity and proceeded upstream (north). By March 1977 channelization had been completed, the entrance structure constructed and McKellips Lake excavated and lined. At that time McKellips Lake was filled and the project became fully functional for flood control. The remainder of the contract entailed landscape and correction of minor construction deficiencies. By June 30, 1977, the contract was essentially complete. On August 17, 1977, a Dedication Ceremony was held at McKellips Lake with guest speakers Congressmen John Rhodes and Eldon Rudd and General Connell, Division Engineer, South Pacific Division, U. S. Army Corps of Engineers.

2. Indian Bend Wash Greenbelt Floodway

The Greenbelt Floodway is a cooperative effort of the City of Scottsdale and the Flood Control District with additional funding by the State of Arizona through the Arizona Water Commission. The Corps of Engineers acts in a review and advisory capacity for the local flood control developments with the additional responsibility of design and funding of recreational developments within the Greenbelt. During fiscal year 76-77, under direction of the City of Scottsdale, the Thomas Road Bridge project and the Hayden Road flood flow improvements were completed. Planning was initiated in earnest on the El Dorado Park Dikes and the Schrader Ranch

channelization (private development). In addition, a hydraulic analysis was completed by the Corps which identified areas of additional concern where the existing Greenbelt was deficient in ability to carry the 100 year flood. With these areas identified, the City of Scottsdale was able to determine the amount of additional work required to complete the Greenbelt. These deficiencies have been corrected or are scheduled for correction prior to completion of the last link of main channel construction, the Inlet Channel.

3. Indian Bend Wash Inlet Channel

The Inlet Channel is to be constructed by the Corps of Engineers with an award in July 1978. Work done in FY 76-77 consisted of finalization of planning and the initiation of formal design by the Corps. During this time, the Flood Control District initiated a contract with a consulting engineer to map and define the right of way for the acquisition program. The mapping was completed in July 1977. In its review capacity, the Flood Control District recommended modifications to the Corps' concept which brought the project more in line with desires of local interests while decreasing right of way and construction requirements. These changes also required a delay in the preliminary schedule, moving anticipated award from October 1977 to the July 1978 date currently envisioned. By June 1977, the Flood Control District had completed review of the Corps' Feature Design Memorandum for the Inlet and the Corps was able to proceed with finalization of the Feature Design Memorandum and detailed design.

4. Interceptor and Side Channels System

The Interceptor and Side Channels are the final phases of the Indian Bend Wash Project. Right of way for the Interceptor was mapped with the Inlet right of way and preliminary appraisals were completed during FY 76-77. Finalization of planning and design are scheduled for FY 77-78.

B. Cave Buttes Dam

Proceedings for the acquisition of all mining claims on Federal lands required for the construction of Cave Buttes Dam were major items of concern during the year. The Corps of Engineers filed a withdrawal request with the Bureau of Land Management that stopped all future filing of mineral claims and stopped all mining exploration.

A consulting geologist was hired to go out and actually walk the property trying to find mining claims and he found hundreds and also found that there were mining claims on top of mining claims. A professional geologist was retained to appraise the claims. In order to search title, one of the few people in Arizona familiar with this was hired, and he worked a long time trying to search title.

Mining claim condemnation suits were necessary to allow legal right of entry by the Flood Control District on approximately 60 mining claims owned by Frank Melluzzo, about 25 claims held by the Vanguard Properties and a smaller number of unknown claimants because they could not be secured by negotiation.

The major part of February, March and April was spent in preparation and hearings for five separate condemnation lawsuits covering approximately 100 mining claims. By the end of April the court action was completed, and the courts passed summary judgements on the mining claims that were under condemnation and requested that bonds be posted by the Flood Control District. Settlement of the hearings concluded the right of entry actions. Value and validity will be determined by further court action in the future.

One interesting case was a successful suit filed against "nobody". This was necessary to make sure each and every conceivable claim in the area was covered.

Although a preliminary approval was given on the application to purchase State Trust Lands, final settlement could not be made on all of our applications by the State Land Department. In April 1977 the General Counsel for the Flood Control District began negotiations with the State Attorney General's office regarding a possible condemnation lawsuit of State Trust Lands. Litigation was necessary because the State Land Department did not act on a request for immediate right of way by the Flood Control District.

Agreement was finally reached on the Goettl property in December 1976. This was the largest individual land holding within the Cave Buttes impoundment area. By February, all Show Cause Hearings for the remaining private land were either conducted or scheduled as to court dates. This allowed the certification to the Corps of Engineers for all of the private lands to proceed.

The Flood Control District requested the Corps of Engineers to consider the existing Cave Creek Dam Road as the alignment of the access road into the Cave Buttes Dam. In December and in May the Corps of Engineers submitted preliminary plans of Cave Creek Dam Road for the Flood Control District to review and comment. A joint review was made of these plans with the County Highway Department. Also, the Flood Control District requested that Jomax Road be relocated so that it will be centered on the section line and constructed as a paved access road into the overlook area of the recreation facilities.

It was necessary to relocate the buried cable along the west side of Cave Creek Road because of a flood control training dike which was to be located across the cable. Arrangements were made with Mountain Bell for this relocation. Cave Creek Road will also require relocation in order to ramp over the dike.

A hydrologic analysis was made by the Flood Control District to develop peak 50 and 100 year flows in two natural drainage ways that traverse an alternative access road to the proposed Dam.

Cave Creek Dam. There was much discussion about the fate of the Old Cave Creek Dam during the year. The Old Dam will be within the Reservoir area of the new Cave Buttes Dam. The Corps of Engineers was concerned about the safety of the Old Dam since one end of the Dam is not built on bedrock. It might fail during a major flood and cause damage to the upstream side of Cave Buttes Dam.

The Flood Control District had recommended that the Corps put in a bypass channel. The Corps included the bypass channel in their plans in order to prevent water impounded behind the existing Dam from spilling over the top and possibly eroding its foundation.

The Flood Control District does not feel that failure of the Old Dam is a likely occurrence. There is a natural spillway that follows a low area around a hill, and the water has flowed in this watercourse several times, eventually returning to Cave Creek below the Dam.

The structure is a concrete multiple arch dam. It is a good design but very expensive to build because of the labor involved in forming the arches. There will probably never be another dam built like it. The Old Cave Creek Dam catches silt which might be of some commercial value, and it is easier to get the silt out at that point. Also, the Dam could be there for 100 years or more, and it would be a good place for a permanent reservoir to be built at some future date.

The Old Dam was built in 1921 with money contributed by the State of Arizona, Standard Oil Company, Union Oil Company, Santa Fe Railroad, Greenwood Cemetery, Arizona Eastern Railroad, the Salt River Project, the City of Phoenix and the County of Maricopa. The governing body set up to operate and maintain the structure has ceased to exist and the Salt River Project has been taking care of the Dam for many years. It will be necessary for the Flood Control District to have authority to operate and maintain the Old Dam before the completion of Cave Buttes Dam.

B. Adobe Dam

The Corps of Engineers completed their study of the one dam versus two dam concept for Skunk Creek Both concepts would provide adequate flood control; however, the two dam concept would cost $4,000,000 more, and that amount would have to be paid by local interests. Efforts will now be turned toward the construction of one dam on Skunk Creek just south of Deer Valley Drive.

The Flood Control District had previously acquired property within the Saddleback Meadows Subdivision that was in the process of being developed. If construction of these residences had continued, the Flood Control District would have been forced to purchase completed homes rather than vacant land or partially completed residences. When plans were prepared on a more accurate scale, some of the property was found to be in excess of right of way required for construction of the Dam and Reservoir. A

contract was entered into with Dashney and Associates for engineering and surveying services to prepare a base map for a possible grading plan for lots within the Saddleback Meadows Subdivision. This regrading plan showed which lots could be regraded to be raised above the area that will be flooded. About twenty lots can be salvaged and resold to the public at an anticipated average cost of $10,000.

The Corps of Engineers completed studies for the crossing of Skunk Creek at I-17. Their studies revealed two alternatives. One would require a dip section of I-17 and the other alternate would be to leave I-17 as is and to do extensive channelization and diking of Skunk Creek upstream and downstream of I-17. The channelization alternate will be made a part of the final plans.

The Corps requested a right of entry for an area adjacent to the west abutment of the proposed Dam for the purpose of additional core drilling. This is to further explore the possibility of locating the spillway at the west abutment which would empty directly into Skunk Creek. The Flood Control District has long felt that this would be the most logical location and has recommended this site to the Corps of Engineers.

The Corps has also continued its work on proposed recreational features within the Reservoir area. Adobe Dam is adjacent to Thunderbird Park and has particular recreational potential. Recreational features would be constructed in conjunction with the County Parks and Recreation Department.

D. New River Dam

A right of way requirement map has been prepared by the Flood Control District so that right of way acquisition can begin. However, there is only one private land owner in the area in addition to the State lands. Purchase of the necessary right of way will be a very expensive proposition because the private land holding as well as the State lands will have to be purchased at one time.

E. Arizona Canal Diversion Channel

A contract was awarded to International Engineering Company for engineering services to prepare plans on the relocation of portions of the Arizona Canal to improve the hydrologic alignment by cutting out a jog in the Canal. The contract also included preparation of a base land rights map of the required right of way and plans for the relocation of bridges, roads and utilities for portions of the Arizona Canal. The contract covered the area from 49th Avenue to 64th Avenue.

The alignment of the Arizona Canal Diversion Channel would involve the City of Glendale and their proposed water treatment plant which is located on the southern Canal bank at Cholla and 47th Avenue. Possible realignment of the Canal southerly from about 45th to 49th Avenues was discussed. A Change Order was issued for International Engineering

Company to extend their contract from 64th Avenue to 43rd Avenue. It was estimated that the redesign of Glendale's Water Treatment Plant, as agreed to by the City, and the relocation of the Arizona Canal Diversion Channel could save the Flood Control District up to $1.5 million.

During the year the Flood Control District was approached by people wishing to sell their property along the alignment of the Arizona Canal Diversion Channel. However, due to lack of funds, the District's policy was to only purchase vacant land that was in danger of being subdivided and built upon. The Flood Control District did make arrangements with EJM Development Corporation for the acquisition of 3.45 acres of land. The acquisition of this land was necessitated by the right of way limits of the Arizona Canal Diversion Channel extending through a large existing electrical substation. These lands will replace the property taken by the Flood Control District from the Arizona Public Service parcel. Also, it allowed for expansion of the substation that was scheduled at this time therefore avoiding excessive relocation costs in the future.

Flowage Easements, Skunk Creek, New and Agua Fria Rivers

No activity took place to acquire flowage easements during FY 76-77.

SECTION IV

SOIL CONSERVATION SERVICE PROJECT ACTIVITIES

SOIL CONSERVATION SERVICE PROJECT ACTIVITIES

A. Wickenburg Flood Retarding Structures

The labor dispute that had previously halted construction was ended and the contractor, M. M. Sundt Construction Company, resumed work on July 12, 1976. Work was performed as quickly as possible on both the Sunset and Sunnycove structures in order to protect the existing facilities from the rapidly approaching monsoon season. On July 23, the Wickenburg area was hit by a fairly substantial rainstorm. The floodwaters came within a foot of topping the partially constructed Sunnycove structure, but there was no substantial damage to either site.

Construction was completed and a final inspection was conducted on September 15, 1976. The structures were accepted as completed. One week later, a major storm hit the Wickenburg area. The floodwaters from the storm filled the two reservoirs to approximately 75% of their total capacity.

In December the Operations and Maintenance Branch completed a new roadway into three existing dwellings that lie just above the reservoir area at the Sunset structure. The construction was required because the old entrance road was subject to inundation by the waters retained within the reservoir area.

B. Harquahala Valley Watershed

The most serious problem in providing flood control to the Harquahala Valley at the beginning of the fiscal year was concern as to whether or not the Flood Control District would be able to provide the $1,500,000 needed for right of way acquisition and relocation of facilities. The farmers in the Valley had planned an elaborate irrigation system using Central Arizona Project waters and they had to have flood control protection for the Valley before they could receive a loan from the Bureau of Reclamation to build the irrigation system. The Bureau would, if necessary, build a flood control structure to protect its Aqueduct; however, that structure would not be adequate to protect the farms in the Valley. There was also concern that, if the Bureau of Reclamation built a structure to protect the Aqueduct, the other flood control structures necessary to protect the Valley would no longer be economically feasible.

Local farmers in the Valley held a meeting on October 14, 1976, to propose means of financing the local costs of the project. Three proposals were presented: 1. Local residents would provide a portion of the funds needed with an agreement that the Flood Control District would reimburse them later, 2. The local residents would exchange their private lands for State lands, and 3. The local residents would make a concerted effort to stimulate State legislative interests for the funding of the project.

The efforts of the residents of the Harquahala Valley were successful because in May 1977 the State Legislature approved a $560,000 appropriation specifically for the Harquahala Valley Flood Control Project. Therefore, this project was given high priority by the Flood Control District, and, following completion of soil exploration and approval of final structural location plans, the Flood Control District will start right of way acquisition.

Acquisition of right of entry permits for survey work and subsurface investigation were completed and a contract was issued to an archeologist to enter and assess the lands for archeological value. The Supplemental Work Plans were signed by the Flood Control District Board of Directors on May 23, 1977.

C. Buckhorn Mesa Watershed

1. Spook Hill Flood Retarding Structure and Floodway

In October 1975 a pair of Yuma Clapper Rail birds had been discovered nesting in a marshy area of the Salt River. Concern was expressed that floodwaters from the Spook Hill Floodway might eventually accumulate enough sediment in this marshy area to destroy the birds' nesting sites. In order to resolve this problem a sediment basin was designed at the Floodway outlet. The preliminary plans for the sediment retention basin were completed and distributed to all the environmental protection interests and other agencies for their comment and approval in July 1976. This sediment basin will be part of the construction contract and will be paid for by the Soil Conservation Service.

In September, a contract was awarded to Genge/Wheeler, Petterson and Coffeen for the design of the Thomas Road Bridge crossing the Spook Hill Floodway. Following design, a contract for construction was awarded to Breinholt Contracting Company in the amount of $34,660.60. Construction was started in January and, although the contractor experienced extreme difficulty with the excavation having to drill and shoot numerous times, construction was completed in March 1977.

Final plans for the Floodway and the Flood Retarding Structure were delivered to all interested agencies in January 1977. The Flood Control District reviewed the plans (including the landscaping plans) and forwarded their comments to the Soil Conservation Service in February.

The remainder of the private lands required were acquired from United Development Corporation in September. Mining claims had been unexpectedly found on Tonto National Forest land in the Floodway area in October 1975. The resolution of these claims was holding up the permit that would allow the Flood Control District to construct and maintain the Floodway.

However, in January 1977, the Bureau of Land Management declared the mining claims null and void. Permission was received from the Tonto National Forest and the Bureau of Land Management to enter upon Federal lands and construct the structures. This permission cleared the last of the Flood Control District's obligations prior to construction.

In April the Board of Directors of the Flood Control District approved the land rights certification for all the right of way required for the Flood Retarding Structure and the Floodway Channel.

The City of Mesa continued with design and construction for relocation of water mains. The Salt River Project also continued its relocation work; however, only Mountain Bell's relocation work was completed prior to the end of the fiscal year.

The only house within the impoundment area was sold at a public auction by the Board of Directors and was moved out of the area.

The application for a permit to construct the Spook Hill Flood Retarding Structure was prepared and submitted to the Arizona Water Commission in February.

The Project Agreement and the Operations and Maintenance Agreement were drafted by the Soil Conservation Service, and these documents were reviewed by the Flood Control District. Approval by the Board of Directors is expected in August 1977.

The Horticulture Department declared that they would physically count cacti and issue permits for removal. This has been completed.

2. Signal Butte Floodway

The Floodway alignment previously proposed by the Soil Conservation Service would have bisected numerous private properties causing the Flood Control District to pay substantial severance damages. The alternate alignment location, as proposed by the Flood Control District, has been approved by the Soil Conservation Service as a feasible location, and alignment is now fixed. Right of way acquisition can proceed.

D. RWCD Floodway

The Roosevelt Water Conservation District (RWCD) Floodway will be built in six phases with the first phase centered on the Gila River Indian Reservation. The Indian Community has been very cooperative in that they have made Tribal lands available to the Flood Control District. The application for a request of right of entry to survey within the Indian lands was approved by the Tribe in August 1976.

A contract was signed with L. H. Bell and Associates to survey the right of way for the Floodway in the Indian Reservation from the Gila River northward to Hunt Highway. This work was completed by the end of the fiscal year.

Acquisition of right of way from private land holders proceeded very slowly during the year because of lack of local funding. However, planning for the Floodway continued. A Public Meeting was held in November to discuss the Floodway with the citizens of the area. The draft of the Environmental Impact Statement was reviewed by the Flood Control District and comments forwarded to the Soil Conservation Service.

The County Highway Department awarded bids for the construction of Rittenhouse and Higley Road Bridges across the Floodway. The cost of Higley Road Bridge was approximately $700,000 and Rittenhouse Bridge was approximately $300,000. Williams Field Road Bridge will be constructed in the near future as well as the Oueen Creek Bridge.

E. Queen Creek

Planning is continuing in the Queen Creek area. A right of entry for archeological exploration was obtained so that archeological work can begin. Two proposals for flood control of the Queen Creek Wash have been submitted by the Arizona Water Commission which is working in conjunction with the Soil Conservation Service.

SECTION V

LOCAL PROJECT ACTIVITIES

LOCAL PROJECT ACTIVITIES

A. Paradise Valley, Scottsdale, and Phoenix Study (PVSP)

On September 25, 1976, a severe rain storm occurred in a very limited area of Paradise Valley, Scottsdale and Phoenix causing damage. The closest official rain gauge indicated 1.6 inches which is not over a 5 or 10-year storm.

This area has been a problem area for a number of years. Each municipality had been trying to resolve the problem on a piecemeal basis and, in so doing, created problems for the other municipalities. Following this rainstorm the governing body of each municipality requested that the Flood Control District coordinate a program to find a solution to this problem. A Study Committee was formed with a representative from each municipality and the Flood Control District to formulate plans for a solution to flood damages caused by storms of intensities up to a 100-year storm frequency.

The study area involves a large area that centers around 64th Street and Cactus. The area extends northward to the Central Arizona Project, southward to the Indian Bend Wash, eastward to Hayden Road and westward to 56th Street.

A contract was entered into with Collar, Williams and White, Consulting Engineers, for $51,853 to look at the entire area and come up with feasible alternatives. Each of the municipalities involved agreed to participate in the cost of the consulting engineer.

In June the consulting firm presented a summary of existing hydraulics and hydrology and a review of proposed alternatives to the Study Committee. The Study Committee was in the process of reviewing and proposing submittals to the governing bodies as the fiscal year ended.

B. Gila Drain

The Gila Drain area, which includes parts of Tempe, Mesa, Chandler and Gilbert, has been studied by both the Soil Conservation Service and the U. S. Army Corps of Engineers. The Soil Conservation Service was unable to undertake a project in the area because development had increased to the extent that the project could not be justified. The Corps of Engineers conducted an extensive hydrology study but determined that it was not a justified project because the benefit-cost ratio was unacceptable.

In order to develop some kind of drainage relief, the municipalities involved and the Salt River Project asked the District to examine the possibilities of a non-federal project. The concept of the project will be to detain water and release it slowly. The proposed Drain

would utilize portions of the Western Canal and an existing Drain and then empty into the Gila River behind the South Mountains after going through a portion of the Gila River Indian Reservation. Mesa has already constructed detention facilities, and all of the municipalities have detention requirements for new developments.

In March 1977 a preliminary plan with alternates was presented to the Hohokam RC&D Steering Committee. The presentation included estimates for construction costs and land acquisition. The municipalities of Tempe, Chandler, Gilbert and Mesa, the East Maricopa Natural Resource Conservation District, the Salt River Valley Water Users' Association and the Flood Control District were sponsors.

C. Champion Drain Flood Control Project

The Champion Drain Flood Control Project is a local project to provide flood protection in an area of southwest Phoenix. The Project was formerly known as the Old 43rd Avenue Drain. The City of Phoenix, the Salt River Project and the Agua Fria-New River Natural Resource Conservation District joined with the Flood Control District in co-sponsoring the project as a Measure of the Hohokam RC&D Project. The Hohokam RC&D accepted the proposal in 1976 and adopted the Champion Flood Prevention Measure as one of their projects: However, due to their present backlog of pending Measures, it will be at least several years before the Measure would be ready for funding.

D. Sossaman Road Channel

The Maricopa County Highway Department, in conjunction with their proposal to improve Sossaman Road between Baseline and Guadalupe Roads, requested that the Flood Control District conduct a hydrology study in order to determine the minimum right of way requirement for the continuation of an existing drainage channel which essentially ends at Baseline Road just east of Sossaman. This study was completed in September of 1976 and our findings were then presented to the Highway Department for their consideration.

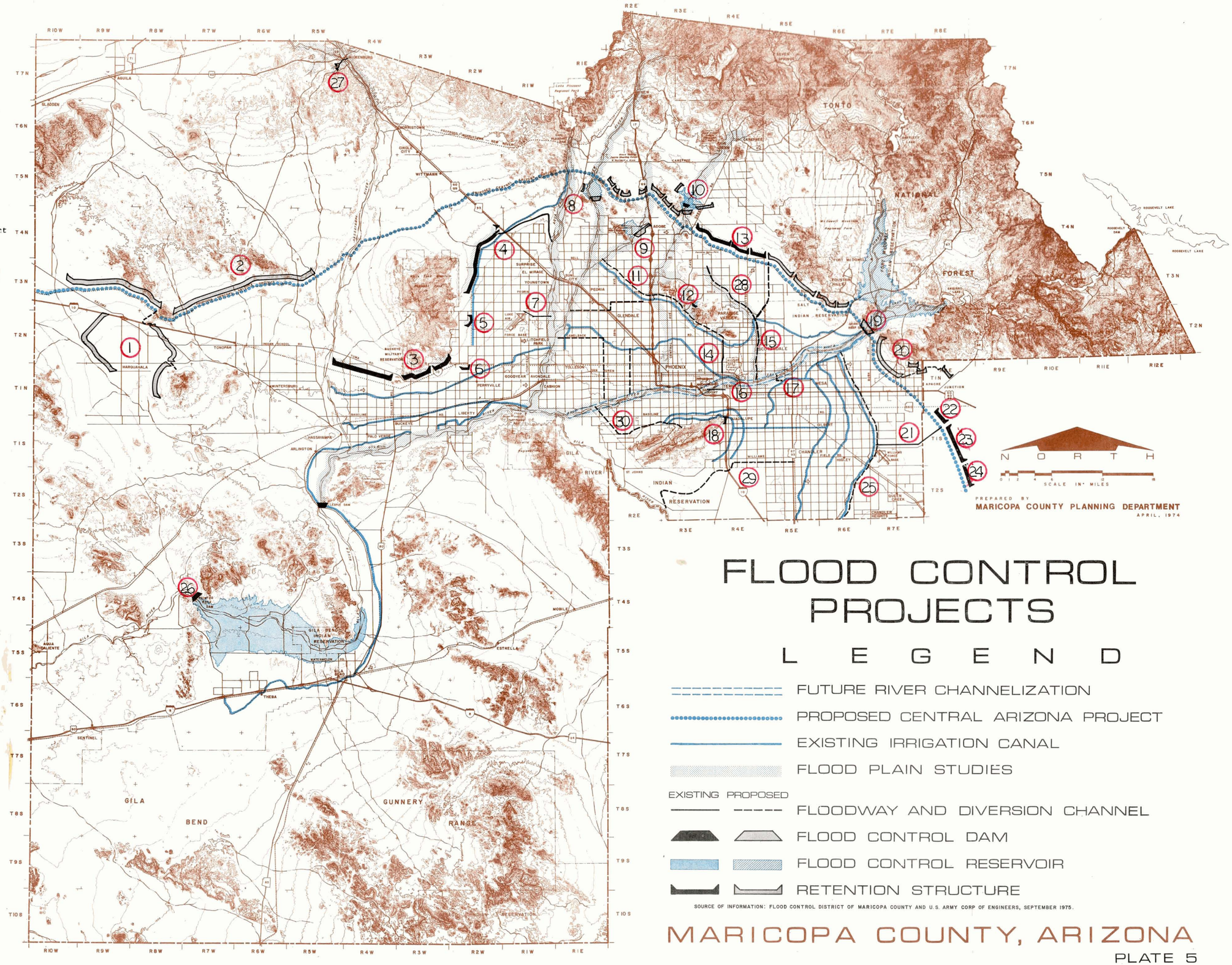
SECTION VI

PROJECT LOCATION MAP

LEGEND

1. Harquahala Valley Watershed Project
* 2. Tonopah Watershed Project
3. Buckeye Watershed Project
4. McMicken Dam
5. White Tanks Dam #3
6. White Tanks Dam #4
7. Dysart-Agua Fria Drain
8. New River Dam
9. Adobe Dam
10. Cave Buttes Dam
11. Arizona Canal Diversion Channel
12. Dreamy Draw Dam
13. Paradise Valley Structures
14. Old Cross Cut Canal
15. Indian Bend Wash Floodway
16. 48th Street Drain
17. Alma School Drain
18. Guadalupe Watershed Project
19. Orme Dam
20. Buckhorn Mesa Watershed Project
21. Powerline Floodway
22. Powerline Dam
23. Vineyard Road Dam
24. Rittenhouse Dam
25. RWCD Floodway
26. Painted Rock Dam
27. Wickenburg Watershed Project
28. PVSP
29. Gila Drain
30. Champion Drain

* Bureau of Reclamation Projects



FLOOD CONTROL PROJECTS

L E G E N D

FUTURE RIVER CHANNELIZATION

PROPOSED CENTRAL ARIZONA PROJECT

EXISTING IRRIGATION CANAL

FLOOD PLAIN STUDIES

EXISTING PROPOSED

FLOODWAY AND DIVERSION CHANNEL

FLOOD CONTROL DAM

FLOOD CONTROL RESERVOIR

RETENTION STRUCTURE

SOURCE OF INFORMATION: FLOOD CONTROL DISTRICT OF MARICOPA COUNTY AND U.S. ARMY CORP OF ENGINEERS, SEPTEMBER 1975.

MARICOPA COUNTY, ARIZONA

PLATE 5

SECTION VII

CONSTRUCTION AND OPERATIONS ACTIVITIES

CONSTRUCTION AND OPERATIONS ACTIVITIES

A. McMicken Dam

McMicken Dam was built in 1959 by the U. S. Army Corps of Engineers to protect Luke Air Force Base and also to protect urban and rural areas in the Trilby Wash area. There had been a very severe rain storm in the area in 1954 that severely damaged the Air Base and the surrounding areas.

The Corps of Engineers was aware that there were problems concerning the integrity of McMicken Dam. The failure of Teton Dam in Idaho brought the problem to the forefront. The Corps of Engineers studied the situation more carefully and the Flood Control District did some testing by digging out some of the cracks. The District found 85 cracks in one 3000 foot reach. Eight thousand gallons of water were put in one crack and, although it was still taking water, the water wasn't coming out anywhere.

The Corps of Engineers decided that it would be necessary to install two emergency spillways in order to avoid the possibility of the dam failing with a major storm and a full reservoir. The Board of Supervisors/Directors, the Citizens' Flood Control Advisory Board and the Maricopa Water District #1 accepted the Corps' suggestion. An emergency appropriation of $70,000 was appropriated by Congress for the purpose of providing two emergency outlets in the structure. Representative Bob Stump has introduced a Bill in Congress to provide funding to make permanent repairs to the structure.

The cause of the cracking appears to be the desiccation of the structures although subsidence has also been considered and may be a factor.

The Corps of Engineers awarded a contract to Magini Leasing and Contracting Company on June 19, 1977. The emergency work was started immediately, and 30% was completed prior to June 30, 1977.

A warning and evacuation plan for the downstream area was prepared by the County Civil Defense Department. A number of agencies are involved including the Sheriff's Office, the Maricopa Water District #1, Luke Air Force Base and the Flood Control District.

B. 48th Street Drain

In 1966 the State of Arizona, the City of Tempe, the Salt River Valley Water Users' Association and the Flood Control District entered into an Agreement concerning the 48th Street Drain. The Flood Control District did not participate in the costs but agreed to maintain the facility upon its completion beginning at 48th Street west to the Salt River and also agreed to indemnify other parties for any injuries, losses or damages. The Agreement also stated the amount of water that any party could discharge into the Drain. In 1969 the Agreement was modified to relieve the Flood Control District from any liability when any party to the Agreement was in breach of the Agreement.

The problem during the 76-77 fiscal year was that Tempe was adding more water to the Drain than the Agreement allowed and the Drain could hold. Various residences along the channel, within the City of Phoenix, were being flooded. Also, the City of Tempe was in the process of making storm drainage plans for the eventual discharge of up to 1000 cfs into the Drain.

During the year short term solutions to the problem were considered as well as possible litigation against the City of Tempe.

The City of Tempe selected an engineering firm, Sverdrup and Parcel and Associates, to design plans for the reconstruction of the channel. The plans are expected early in the next fiscal year. The total cost of the project will be about $1.5 million.

The Cities of Phoenix and Tempe and the Flood Control District began work on a participation agreement for sharing the costs of reconstructing the Drain and building seven bridges. Also, work began on a new Master Agreement concerning the 48th Street Drain that would include the City of Phoenix as one of the signatories.

C. Soil Conservation Structures

Because of the deterioration of McMicken Dam, the Flood Control District took a serious look at its other flood control structures. It was discovered that the same deterioration was occurring on the Rittenhouse, Vineyard and Powerline structures. The worst cracking appears to be in Rittenhouse which is approximately ten years old. There is also some cracking in Buckeye #1 and White Tanks #4 which are approximately three years and twenty years old, respectively. Guadalupe and the Wickenburg structures were studied but no evidence of a problem was discovered.

There has been subsidence in the area of the Pinal County structures. The District has no knowledge of any subsidence in the Buckeye area but because of the cracking there, the District undertook a survey to determine if subsidence had occurred.

The County Civil Defense Department began preparing a warning and evacuation plan for the Pinal County structures.

Engineers Testing Laboratories was requested by the Flood Control District to do a study on the condition of Rittenhouse, Vineyard and Powerline Flood Retarding Structures. The report will be completed within the next few months.

D. Old Cross Cut Canal

The Old Cross Cut Canal was a Salt River Project Canal up until 1976. At that time the Canal was studied by the City of Phoenix, and it was determined that the Canal could be enlarged to carry 2000 cfs. Of the total, 1000 cfs was to be used by the Salt River Project in the event

that they needed to release water from the Arizona Canal. The remaining 1000 cfs was to be used for floodwaters from the surrounding area. The reconstruction of the Canal was a joint project funded equally by the City of Phoenix and the Flood Control District of Maricopa County with the Salt River Project furnished all of the required rights of way. The final contract for the reconstruction of the Canal was awarded to Lattimore and Sons Construction Company. The amount of the contract was $53,000. Upon completion of this final contract, the Flood Control District assumed full maintenance and operation responsibilities for the Old Cross Cut Canal.

SECTION VIII

HYDROLOGY DIVISION ACTIVITIES

HYDROLOGY DIVISION ACTIVITIES

A. General Areas of Responsibility

The Hydrology Division performs studies and acquires information for Flood Control District projects as necessary. These include review of project hydrology performed by the U. S. Army Corps of Engineers and the Soil Conservation Service, preliminary hydrology for certain Local Projects, and other special studies requested by other divisions of the Flood Control District.

In addition the Hydrology Division performs a number of tasks under an agreement with Maricopa County. These tasks include review of floodplain delineations to be adopted by the Floodplain Board (Board of Supervisors) under the 1975 Regulation for the Unincorporated Area of Maricopa County, review of requests for zoning district changes and certain Board of Adjustment cases, review of subdivision drainage, review of building permits requested within floodplains, and the County's participation in the National Flood Insurance Program.

B. Floodplain Regulations and Delineations

The Flood Control District of Maricopa County first became involved in establishing floodplain regulations in 1961. In 1974 the Board of Supervisors of Maricopa County adopted a Regulation. On July 14, 1975, the current Floodplain Regulations were adopted by the Floodplain Board (Board of Supervisors) which superseded the 1974 Regulations. The 1975 Regulation is a two-district Regulation and is closely aligned with State legislation and the National Flood Insurance Program.

Under this Regulation, a total of 175 river miles of delineated floodplain had been adopted by June 30, 1976, (see Table A). Between July 1, 1976, and June 30, 1977, an additional 5.6 miles of delineation were adopted (see Table B). During this year the Federal Insurance Administration signed a contract with Harris-Toups Corporation for a comprehensive flood insurance study for Maricopa County and a number of communities within the County. In conjunction with this contract, the Harris-Toups Corporation will delineate the Salt and Gila Rivers from Arlington to the west side of Phoenix, Cave Creek and several of its tributaries above Carefree Highway, the Skunk Creek above Carefree Highway along with several smaller streams throughout the County. These delineations will be made available to the Floodplain Board as they are completed by the Harris-Toups Corporation.

C. Flood Insurance

A review of the preliminary Flood Insurance Study and Flood Insurance Rate Map for the unincorporated area of Maricopa County was completed by Flood Control District staff on August 4, 1976. This review was coordinated with the Los Angeles District, U. S. Army Corps of Engineers, with comments from both the Flood Control District and the Corps of Engineers being forwarded to the Federal Insurance Administration's

review contractor, Dames and Moore. Our response consisted primarily of a recommendation against the designation, by Dames and Moore, of large areas of the County as AO flood insurance zones subject to 100-year shallow flooding of one to three foot depths.

A revised Flood Insurance Rate Map was submitted to us for review prior to its official presentation to the County by the Federal Insurance Administration during a meeting at the Flood Control District offices on May 31, 1977. Attending the meeting were officials from the Federal Insurance Administration, Dames and Moore, and from various local communities. Among the topics discussed was a floodplain delineation of the Salt and Gila Rivers currently being performed by Toups Engineering under contract with the Federal Insurance Administration and the possibility of including portions of this delineation in the County's Flood Insurance Rate Map. An extensive list of review comments regarding the revised Flood Insurance Rate Map were forwarded to Dames and Moore following the meeting.

D. Other Technical Assistance Provided to Maricopa County

1. Review of Building Permits

The Flood Control District has agreed to review applications for Building Permits for structures to be located within floodplains on a cost-reimbursable basis. During the year, a total of 105 such Building Permits were reviewed by the Hydrology Division.

2. Zoning District Changes

On a similar basis, the Flood Control District reviews all requests for zoning district changes in order to ensure that these requests do not conflict with existing or proposed Flood Control District projects and to provide information to the Planning and Zoning Commission and the Board of Supervisors concerning storm drainage and flood problems. The Hydrology Division reviewed 39 such cases.

3. Board of Adjustment Cases

On a similar basis, the Planning Departments sends certain Board of Adjustment cases to the Flood Control District for review. These are cases where the Planning Department suspects an existing drainage problem or cases for such dense developments as apartment buildings and mobile home parks. The Hydrology Division reviewed 18 such cases during the year.

E. Review of Subdivision Drainage

Review of all preliminary and final subdivision plats within the unincorporated area of Maricopa County was begun as a coordination effort to avoid conflicts between new developments and Flood Control District projects. Currently, however, the Flood Control District provides a detailed review of drainage reports submitted by developers

in compliance with the Subdivision Regulations for the Unincorporated Area of Maricopa County. This task is performed on a cost-reimbursable basis also. During the year, the Hydrology Division reviewed 31 preliminary plats with detailed drainage reports. The Division also reviewed 35 final plats to ensure that they complied with the provisions of the drainage reports. Included for review were an additional 20 preliminary and 6 final plats which had been revised.

Table A

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOODPLAIN DELINEATIONS FOR THE UNINCORPORATED AREA OF MARICOPA COUNTY

WATERWAYS OR STRUCTURES	GENERAL LOCATION	RIVER MILES	DATE OF ADOPTION
Agua Fria River	Confluence with Gila River to ½ mile north of Pinnacle Peak Road	24.3	November 3, 1976
Agua Fria River *	½ mile north of Pinnacle Peak Road to Lake Pleasant	9.8	July 14, 1975
Buckeye Structures	Parallel I-10 on the north from ½ mile east of Turner Road to Hassayampa River		July 14, 1975
Cave Creek Reservoir	Two miles northwest of Pinnacle Peak and Cave Creek Road		July 14, 1975
Cave Creek Wash	Bell Road to Beardsley Road	2.0	July 14, 1975
Cave Creek Wash *	Cave Creek Reservoir to one mile east of School House Road	7.8	July 14, 1975
Gila River *	107th Avenue to center Section 27, T1S, R5W	27.0	July 14, 1975
Granite Reef Detention Dike	Cave Creek Road to Scottsdale Road		July 14, 1975
Guadalupe FRS	South of Baseline Road and along west side of I-10		July 14, 1975
Hassayampa River *	Yavapai County line to south section line of Section 10, T6N, R4W	14.8	July 14, 1975
Lake Pleasant	Carl Pleasant Dam to County line		July 14, 1975
Mexican Wash *	Confluence with Rowler Wash to ¼ mile west of 72nd Street	.7	July 14, 1975
New River	Confluence with Agua Fria River to ¼ mile north of Pinnacle Peak Road	14.5	January 5, 1976
New River *	¼ mile north of Pinnacle Peak Road to north section line of Section 12, T7N, R2E	22.0	July 14, 1975

Table A, Continued

WATERWAYS OR STRUCTURES	GENERAL LOCATION	RIVER MILES	DATE OF ADOPTION
Painted Rock Reservoir	East along the Gila River northwest of Gila Bend		July 14, 1975
Rowler Wash *	Confluence with Cave Creek to 72nd Street	2.3	July 14, 1975
RWCD Canal	Brown Road to Baseline Road		July 14, 1975
Salt River *	Confluence with Gila River to 27th Avenue	10.5	July 14, 1975
Salt River *	Scottsdale Road to Price Road	2.0	September 29, 1975
Salt River	Price Road to center of Section 29, T2N, R6E	9.0	July 14, 1975
Scatter Wash	Skunk Creek Confluence to Black Canyon Highway	4.0	January 5, 1976
Skunk Creek	New River Confluence to Carefree Highway	18.0	January 5, 1976
Sols Wash *	Hassayampa River to Section 32, T8N, R4W	4.5	July 14, 1975
Trilby Wash Detention Basin	Extension of Peoria Avenue to Cotton Lane and Grand Avenue		July 14, 1975
Wickenburg Area Washes *	Flying "E" Wash and Powder House Wash	1.8	July 14, 1975
White Tank Detention Basin #3	Southwest Beardsley Canal and Glendale Avenue		July 14, 1975
White Tank Detention Basin #4	Northwest of Van Buren and Jackrabbit Road		July 14, 1975

* Interim Delineations

Table B

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

FLOODPLAIN DELINEATIONS FOR THE UNINCORPORATED AREA OF MARICOPA COUNTY
July 1, 1976, to June 30, 1977

WATERWAYS OF STRUCTURES	GENERAL LOCATION	RIVER MILES	DATE OF ADOPTION
Agua Fria	River mile 25.42 to 28.30	2.88	August 16, 1976
Agua Fria	River mile 23.0 to 25.5	2.5	January 24, 1977
Indian Bend	County Island near 56th Street and Double Tree Road	.25	February 28, 1977

SECTION IX

EXPENDITURES

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Comparison of Amounts Budgeted and Amounts Expended

July 1, 1976, through June 30, 1977

Account No.	Description of Budgeted Item	Amount Budgeted	Amount Expended	% Exp.
PERSONAL SERVICES				
6-0100	Salaries & Wages	307,488	317,792	103
6-0200	Overtime	4,000	1,330	33
6-0300	Temporary Help	10,000	651	6
6-0600	Employee Benefits	50,445	51,046	101
	TOTAL PERSONAL SERVICES	371,933	370,819	99
SERVICES AND SUPPLIES				
7-1100	Communications	5,200	7,888	152
7-1200	Insurance	20,200	63,338	314
7-1300	Memberships	400	202	51
7-1600	Professional and Special Services (Legal)	20,250	23,604	117
7-1700	Professional and Special Services (Other)	63,600	71,400	112
7-1800	Rents & Leases--Bldgs, Grounds & Equip.	18,550	6,395	34
7-2000	Transportation and Travel	1,200	691	58
7-2100	Utilities	8,150	5,473	67
7-4100	Landscaping	-	1,042	
7-4500	Maintenance Contracts and Repairs	135,491	12,731	9
7-4600	Maintenance and Construction Supplies	5,700	6,276	110
7-4800	Office and Education, Supplies and Expense	5,782	5,143	89
7-4900	Other Supplies and Expense	1,575	1,205	77
	TOTAL SERVICES AND SUPPLIES	286,098	205,388	71
FIXED ASSETS				
8-7200	Land	7,642,800	4,997,226	65
8-7400	Structures and Improvements	30,000	14,243	47
8-8100	Communication Equipment	1,300	1,318	101
8-8200	Furniture and Equipment	15,055	11,185	74
8-8300	Motor Vehicles	9,500	8,653	91
	TOTAL FIXED ASSETS	7,698,655	5,032,625	65
LABOR AND EXPENSE TRANSFERS		31,087	191,088	614
	TOTAL DEPARTMENT	8,387,773	5,799,921	69

The total revenue of the Flood Control District during FY 76-77 was $8,387,773. This revenue was derived from the following sources:

20 Cent Tax Levy	$4,394,979
Treasurer's Carryover	3,392,794
State Allocation	600,000
TOTAL	$8,387,773

The expenditures of the Flood Control District, for accounting purposes, are divided into four main categories. The Personal Services category is composed of salaries and fringe benefits. The Services and Supplies category includes services and supplies of a noncapital nature. The Fixed Assets category is for capital nature items. The Labor and Expense Transfers category is used for transfering funds to various County Departments for services they provide to the Flood Control District. This category is also used for charging the County for services we provide for them.

The expenditures of the Flood Control District during FY 76-77 were divided into the following categories, and the percentage of the total is also shown:

Personal Services	$ 370,819	6.4%
Services and Supplies	205,388	3.5%
* Fixed Assets	5,032,625	86.8%
Labor & Expense Transfers	191,088	3.3%
TOTAL	$5,799,921	100.0%

* Land Acquisition and Relocations accounted for a total of 86.4% of the total Flood Control District expenditures.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

EXPENDITURES BY PROJECT

Project	Expenditures FY 76-77	Total Expenditures To June 30, 1977
Indian Bend Wash	436,100	3,526,200
Cave Buttes Dam	2,590,700	3,490,401
Adobe Dam	29,010	1,431,400
Arizona Canal Diversion Channel	258,100	413,300
Sunset/Sunnycove F.R.S.	88,410	176,575
Harquahala Valley Watershed	1,500	2,400
Spook Hill F.R.S.	1,071,940	1,933,840
Signal Butte Floodway	4,760	10,820
RWCD Floodway	68,400	1,693,300
Lower Queen Creek Watershed	500	6,700

SECTION X

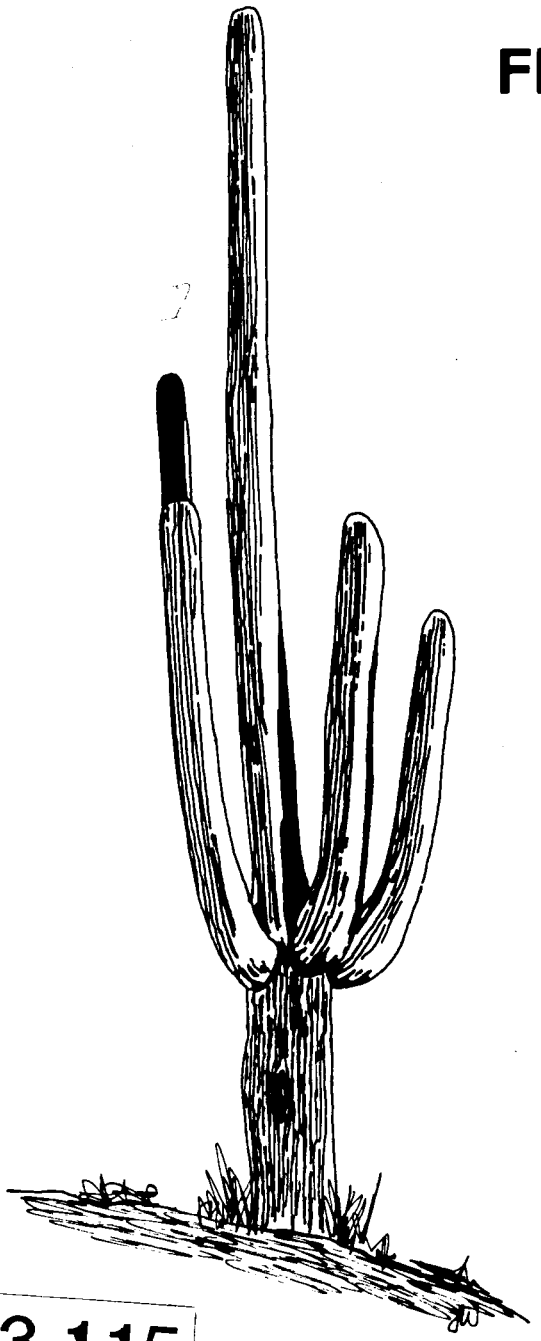
TABULATED DATA ON COMPLETED STRUCTURES

STRUCTURE	DRAINAGE AREA	STORAGE CAPACITY	SURFACE AREA FLOODWATER POOL	VOLUME OF FILL	MAXIMUM HEIGHT OF DAM	LENGTH OF STRUCTURE	TIME TO DISCHARGE	LOCAL COST	FEDERAL COST	STRUCTURE COMPLETED
Powerline F.R.S.	49.6 sq. mi.	4019 ac. ft.	456 ac.	880,000 c.y.	35 ft.	3.9 mi.	30 days	$ 4,800	$ 377,300	1967
Vineyard Road F.R.S.	53.4 sq. mi.	4122 ac. ft.	837 ac.	1,154,400 c.y.	20 ft.	4.5 mi.	30 days	$ 54,900	$ 512,000	1968
Rittenhouse F.R.S.	49.6 sq. mi.	3875 ac. ft.	660 ac.	798,800 c.y.	21 ft.	3.0 mi.	30 days	$ 28,800	$ 400,000	1969
Guadalupe F.R.S.	1191 ac.	273 ac. ft.	30.4 ac.	175,000 c.y.	32 ft.	1.0 mi.	10 days	$160,500	$ 498,000	1975
White Tanks Dam #3	24.1 sq. mi.	2655 ac. ft.	384 ac.	375,000 c.y.	30 ft.	7667 ft.	80 hrs	$218,287	$ 199,088	1954
White Tanks Dam #4	10.3 sq. mi.	1036 ac. ft.	221 ac.	175,000 c.y.	20 ft.	6839 ft.	118 hrs			1954
Buckeye F.R.S. Sites 1,2, & 3	58,896 ac.	8000 ac. ft.	2845 ac.	4,100,000 c.y.	33 ft.	16 mi.	10 days	$103,400	$3,544,000	1975
McMicken Dam	223 sq. mi.	30,500 ac. ft.	2300 ac.	2,400,000 c.y.	38 ft.	9.4 mi.	4.5 days	$180,000	$2,000,000	1956
Dreamy Draw	1.3 sq. mi.	317 ac. ft.	26.7 ac.	83,500 c.y.	50 ft.	1400 ft.	19.5 hrs	$ 25,000	$ 388,870	1973
Sunset F.R.S.	384.0 ac.	55 ac. ft.	8.6 ac.	67,800 c.y.	30.5 ft.	500 ft.	7.6 days	$150,000	$ 776,700	1976
Sunnycove F.R.S.	864.0 ac.	218.7 ac. ft.	18.0 ac.	111,500 c.y.	50.5 ft.	700 ft.	17 days			1976

	LENGTH	AVERAGE BOTTOM WIDTH	AVERAGE CHANNEL DEPTH	VOLUME OF EXCAVATION	VOLUME OF CONCRETE	LOCAL COST	FEDERAL COST	STRUCTURE COMPLETED
Powerline Floodway	8.7 mi.	7'	5'	285,800 c.y.	15,534 cy	$64,000	$871,000	1968

ANNUAL REPORT

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009



FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY

JULY 1, 1978
to
JUNE 30, 1979

LIBRARY

003.115

AR-4

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ANNUAL REPORT

July 1, 1978 to June 30, 1979

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

TABLE OF CONTENTS

Background	1
Board of Directors	2
Citizens' Flood Control Advisory Board	2
Corps of Engineers Project Activities	
Cave Buttes Dam	3
Adobe Dam	3
Arizona Canal Diversion Channel	3
New River Dam	4
Indian Bend Wash	4
Soil Conservation Service Project Activities	
Spook Hill FRS and Floodway	5
Signal Butte Floodway	5
Harquahala Watershed	5
RWCD Floodway	6
Queen Creek Watershed	6
Rittenhouse FRS	7
Local Project Activities	
Salt-Gila Clearing	8
Paradise Valley, Scottsdale, Phoenix Study	8
Gila Drain	9
Hydrology Division Activities	10
Legislation	11
Flood of December 1978	12
Flood Control District Expenditures	13
Structures Chart	14
Projects Map	15

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

BACKGROUND

The Flood Control District of Maricopa County was established in 1959 as a Special Flood Control District pursuant to Arizona Revised Statutes as a municipal corporation and a political subdivision of the State of Arizona for the purpose of providing flood protection for metropolitan, urban and agricultural areas in Maricopa County.

Federal flood control projects are planned, designed and constructed by either the U. S. Army Corps of Engineers or by the Soil Conservation Service. It is the responsibility of the Flood Control District, as the local sponsor, to provide all rights-of-way, to relocate all facilities such as roads, bridges and utilities; to relocate people; and to inspect and maintain the structures after completion. In addition, the Flood Control District participates in the planning and construction of local flood control projects.

The Flood Control District provides technical assistance to the County in checking for conformance with floodplain regulations to protect new homeowners from living within a potential flood hazard area. The Flood Control District has also maintained the coordination necessary to make unincorporated areas of Maricopa County eligible for the Federal Flood Insurance Program.

Arizona Revised Statutes authorized the Flood Control Tax Levy to be 20¢ per $100 property evaluation. In addition, the Statutes established the State Flood Control Assistance Program in 1973. This Program provided for State financial assistance for a period of fifteen years and authorized the State to contribute half the local costs for authorized Federal flood control projects.

Stated below are the funds requested and appropriated since the Flood Control Assistance Program was authorized:

Year		Amount Requested	Amount Appropriated
1973		$2,450,000	$2,450,000
1974		2,475,000	895,000
1975		3,688,000	176,000
1976		4,700,000	600,000
1977		8,000,000	8,000,000
1978		4,000,000	4,000,000
	TOTAL	$25,313,000	$16,121,000

BOARD OF DIRECTORS

Hawley Atkinson, Chairman
George L. Campbell
Tom Freestone
Fred Koory, Jr.
Ed Pastor

Rhea Woodall, Clerk of the Board

CITIZENS' FLOOD CONTROL ADVISORY BOARD

H. Lynn Anderson, Vice Chairman, July 1, 1978, through November 15, 1978
Chairman, November 15, 1978, through June 30, 1979
Henry E. Brodersen
Elijah Cardon, Chairman, July 1, 1978, through November 14, 1978
Donald K. Chambers, July 1, 1978, through November 14, 1978
John E. Miller, Jr., November 15, 1978, through June 30, 1979
Paul E. Perry, Vice Chairman, November 15, 1978, through June 30, 1979
J. E. Attebery, Phoenix City Engineer
Reid Teeples, Salt River Project

Larry Richmond, General Counsel
Herbert P. Donald, Chief Engineer and General Manager

CORPS OF ENGINEERS PROJECT ACTIVITIES

A. Cave Buttes Dam

Construction continued by Washington Construction Company on Cave Buttes Dam during the year and was nearing completion at the end of June 1979. The heavy rains of the winter storm season delayed construction. A drying out period was required before additional material could be taken from the borrow sites located behind the Cave Creek Dam.

The Flood Control District asked the Corps of Engineers to consider the construction of a dike below the spillway area so that it would not be necessary to acquire this land.

A delineation of Cave Creek Wash from the outlet channel of Cave Buttes Dam to the Arizona Canal is being completed by the Corps of Engineers. Property owners were concerned because they had been under the impression that the completion of Cave Buttes Dam would remove property from the floodplain. However, preliminary indications show that, under the criteria of allowing for development downstream of Cave Buttes Dam during the 100 year economic life of the structure, these properties will still remain in the floodplain. The matter was unresolved at the end of the year.

B. Adobe Dam

Planning continued during the year. It has been possible to move several parcels of land out of the reservoir limits by adding fill and regrading the land. Therefore, the land will no longer need to be purchased and can be left on the tax rolls.

Adobe Dam is a feature of Stage II of the New River and Phoenix City Streams Project which the U. S. Congress did not fund in its 1979 Public Works Bill. The Flood Control District continued with its acquisition program; however, the Corps of Engineers has had to give the project a lower priority in preparation of final plans and specifications.

C. Arizona Canal Diversion Channel

The U. S. Congress did not fund in their 1979 Public Works Bill Stage II of the New River and Phoenix City Streams Project of which the Arizona Canal Diversion Channel is a feature. This will delay the Corps of Engineers about a year, but the Flood Control District will continue with its acquisition program.

The final right-of-way plans, prepared by International Engineering Co. Inc. for the reach from 67th to 43rd Avenues and relocation of portions of the Arizona Canal, were recorded. Acquisition of undeveloped lands will now proceed.

Our consultant on the reach from Cave Creek Wash to 43rd Avenue prepared an estimate for right-of-way acquisition and relocations. The estimate included costs for a rectangular channel versus the trapezoidal channel. If the rectangular channel is feasible, there would be a reduction in needed right-of-way.

Several parcels of land along the Arizona Canal Diversion Channel were leased at public auction until they will be needed for construction. This produces revenue for the Flood Control District.

Preliminary design studies have been initiated for new bridges on Thunderbird Road and 59th Avenue which will enable the Flood Control District to determine bridge configuration in order to begin final design.

D. New River Dam

Applications have been submitted to the State Land Department and the Bureau of Land Management to obtain required real property interest. The one ownership in private hands was acquired.

E. Indian Bend Wash

Outlet. The Corps of Engineers is still in the process of settling with the contractor for this project. The contractor believes that he is entitled to more payment for one of the change orders. If the case is decided in favor of the contractor, the Flood Control District will be responsible for payment of any additional amounts since the change order involved a local interest item.

Inlet. The contract for construction of this project was awarded by the Corps of Engineers to M. M. Sundt Construction Company who was the low bidder with a bid of $4,733,228. The Flood Control District's share is $612,358 for local interest work. As of June 1979, approximately $26,000 in change orders had been added to the Flood Control District's costs and another $35,000 or so is projected in change orders before completion.

The contractor had several delays during the year due to the unusually wet winter in this area plus being pulled off the job by the Corps of Engineers to work in other areas of the State on flood problems. Even after all the delays, the overall job is ahead of schedule.

The inverted siphon at the Arizona Canal was completed and water diverted through it in April 1979. Completion of this particular item was behind schedule, but was unavoidable due to the weather.

Interceptor and Side Channels. The Corps of Engineers decided in December 1979 to separate the Interceptor Channel and the Collector channel into two projects as the revision of the hydrology due to developments in the drainage area of the Collector Channel was delaying both projects.

The draft of the Feature Design Memorandum for the Interceptor Channel was received in May 1979.

SOIL CONSERVATION SERVICE PROJECT ACTIVITIES

A. Spook Hill Floodwater Retarding Structure and Floodway

Construction by Mardian Construction Company continued and most of the work was completed by June 1979 except for landscaping and the pump system for irrigation.

Although adverse weather conditions delayed the construction of the McKellips Road ramp, it was completed and opened to traffic on February 5, 1979. The closure of Brown Road followed with construction completed and the ramp opened to traffic on March 16, 1979. Usury Pass Road has been permanently closed.

At the request of the Arizona Wool Growers Association, additional coyote-proof fencing was constructed by the Flood Control District. Historically, the sheep from the east side of the Salt River Valley have been driven along Brown Road in the vicinity of Spook Hill. The sheep fence and watering facilities are required so that this sheep drive could be repeated in the coming years. Special project construction, such as flattening the slopes was also required.

B. Signal Butte Floodway

Final right-of-way plans were substantially completed by Dibble and Associates, the Flood Control District consultant. The consultant also worked on design of two box culverts at Crismon and Ellsworth Roads. Planning for the project continued and areas discussed were spoil sites for waste material, bridge crossing requirements and access road requirements.

C. Harquahala Watershed

The Flood Control District consultant, Dibble and Associates, completed the right-of-way maps for the Saddleback structures, so it was possible to begin land acquisition in Rose View Estates. Rose View Estates had been subdivided and lots sold prior to stricter laws requiring legal access, water and other utilities. A majority of the lots had absentee owners or were held in trust. The buyers, in many cases, had not seen the land prior to buying it. The property owners paid $7500 per lot and the Flood Control District offered them $2000 to $2250 based upon appraisals by an independent fee appraiser. As the owners were not satisfied with the offer, it has been necessary to condemn many of the properties.

The Bureau of Reclamation and the Flood Control District agreed to work together for joint acquisition of lands needed for the Harquahala Floodwater Retarding Structure and the Central Arizona Project Aqueduct. This will save money on negotiating costs and also appraisal costs by using the Bureau of Reclamation staff appraiser. In the event an agreement is not reached with property owners, the Flood Control District will have to proceed alone as the Bureau of Reclamation cannot take legal action on behalf of the Flood Control District.

As construction of the Saddleback Floodwater Retarding Structure and Diversion Channel is scheduled for next year, the Flood Control District contacted utility agencies to plan for utility relocation work prior to the construction starting date. There is concern about the Palo Verde-Devers 500 kV transmission lines which may conflict with our structures.

Toups Corporation completed the road ramp, box culvert and dip crossing designs for the Saddleback Floodwater Retarding Structure and Diversion Channel. Prefinal design plans for the Saddleback structures were received from the Soil Conservation Service and commented upon.

D. RWCD Floodway

The relocation of two railroad crossings and nineteen bridges, where major roads exist, are required for the RWCD Floodway. Several bridges have been completed including Queen Creek Road, Chandler Heights Road, Rittenhouse Road and Higley Road. San Tan Road Bridge has been designed and should be constructed before the end of the calendar year. The Arizona Department of Transportation plans to construct State Highway Bridge 93 during the winter and State Highway Bridge 87 in the middle of 1980.

All utility relocation work in Reach 1 was completed during the first six months of 1979. Final construction plans for Reach 1 have been completed and construction is expected to begin during the next fiscal year.

Adam, Hamlyn and Anderson, the Flood Control District consultant, completed the rights-of-way plans in the Reservation and Governor Alexander Lewis of the Gila River Tribal Community signed the plans in February 1979. About 60% of all the right-of-way required for the RWCD Floodway has been acquired.

E. Queen Creek Watershed

The Soil Conservation Service and the Flood Control District withdrew from the Queen Creek Project because of time restraints. The Soil Conservation Service's estimate for award of a construction contract was December 1983 while the Bureau of Reclamation needed to award a contract for the construction of the Salt-Gila Aqueduct of the Central Arizona Project in June 1980. Therefore, the Bureau of Reclamation will build a structure to protect both the Aqueduct and the Lower Queen Creek Basin. It is estimated that most of the additional cost will be offset by flood protection benefits and will not increase the payback required from the water users. The structure will be similar in design to that protecting the Central Arizona Project above Paradise Valley which provides protection against the Maximum Probable Storm plus a 100 Year Storm as a follow up.

Emergency Watershed Protection Measures. The March 1978 Flood caused changes in the channel along Queen Creek. The repair work was performed by the Soil Conservation Service under provisions of Public Law 216. The Flood Control District obtained the needed easements from property owners. The construction was completed and accepted on May 21, 1979.

F. Rittenhouse Floodwater Retarding Structure

The final inspection of the repair work on Rittenhouse Floodwater Retarding Structure was held in May 1979. The work consisted of installing a blanket of filter material from the crest to the foundation of the structure with outlets to the downstream slope at 1000 foot intervals. The purpose of the reconstruction was the repair of numerous fissures, both longitudinal and transverse, that existed within the structures.

There are five other structures built by the Soil Conservation Service and maintained by the Flood Control District where a similar reconstruction or repair is anticipated in the near future.

LOCAL PROJECT ACTIVITIES

A. Salt-Gila Clearing

A contract was signed in August 1978 with the consulting engineering firm of Benham, Blair, Ditzler and Elling to map and stake a channel alignment from Gillespie Dam to Palo Verde Road and from Bullard Road to 91st Avenue. Applications were filed with the State Land Departmet and the Bureau of Land Management to acquire the necessary rights-of-entry.

A coordination meeting was held in December 1978 at the Arizona Game and Fish Commission with representatives of interested Federal, State and local organizations. The Commission passed a motion to participate in a "Blue Ribbon Committee" to recommend action. It also adopted a motion to grant a right-of-entry in order to establish channel alignment.

The organizational meeting of the Blue Ribbon Committee was held on January 16, 1979. The Committee's charge was to consider alternatives and to recommend an interim solution to the flooding problem which will maintain the Fred J. Weiler Greenbelt, maintain the wildlife habitat, prevent further destruction of public and private property by controlling expansion of the floodplain limits caused by silt deposits and phreatophyte growth, and consider modifications to Gillespie Dam to permit passage of floodwaters.

A presentation was made to the Governor's Task Force on Flood Control, and State funding was requested to accomplish an environmental study and to do some clearing on private lands, on Indian Community lands and on public lands where authorization has already been obtained. Matching funds were appropriated by the State Legislature for this purpose.

B. Paradise Valley, Scottsdale, Phoenix Study (PVSP)

The consultant, Collar, Williams and White, completed Phase II of the preliminary design. The estimated construction cost was $6,677,000.

A proposal for financing and construction was circulated to the participating municipalities for their comments and approval by their governing bodies. In December 1979, the Councils of the Town of Paradise Valley and the City of Scottsdale approved the project concept and funding arrangements.

In April 1979 the City of Phoenix City Council decided to withdraw from the project and, although it plans to proceed with design and construction of facilities within its city limits as bond funds become available, it will not be participating financially in joint funding with Scottsdale, Paradise Valley and the Flood Control District. The reasons given were that full participation could result in additional liabilities for the City and the City does not want to be burdened by the capital improvement schedules of the other municipalities involved. The City also estimated the final cost as being much greater than projected.

It is anticipated that the project will continue without Phoenix. The new estimated cost will be $3,707,000.

C. Gila Drain

The Flood Control District Board of Directors on August 14, 1978, approved a contract with Coe and Van Loo for engineering services, including preliminary design and right-of-way determination for the Gila Drain Project. The fee for this contract was $39,366 plus a $10,634 contingency fund, a total of $50,000. The consultant was given an order to proceed in August 1978.

The Preliminary Design Report for the Gila Drain was completed and submitted by the consulting engineer in May 1979. The Report recommended an $11.5 million project that utilized Salt River Project facilities to the maximum extent and required enlargement of the existing drain channel to the Gila River to accept maximum flows resulting from a 100 Year Storm.

HYDROLOGY DIVISION ACTIVITIES

In addition to performing hydrologic studies for the Flood Control District, the Hydrology Division performs a number of tasks for Maricopa County on a cost reimbursable basis. This includes review of floodplain delineations to be adopted by the Floodplain Board (Board of Supervisors). During the year, no additional delineations were adopted and 17.8 miles of delineated floodplains were incorporated by cities and towns.

Other reviews included:

	FY 78-79	Percent Change from 77-78
Building Permits	192	7% Increase
Zoning District Changes	167	27% Increase
Board of Adjustment Cases	29	71% Increase
Subdivision Drainage Cases	254	32% Increase

Due to complaints of adjacent property owners, the Chairman of the Floodplain Board ordered an investigation of sand and gravel operations in the Agua Fria River. Preliminary investigation of eleven operations indicated that all were violating the provisions of the floodplain regulations. The Flood Control District will continue to provide technical assistance to the County in this investigation.

LEGISLATION

A major piece of legislation which affects the Flood Control District in a number of ways, House Bill 2457, was signed by the Governor on May 2, 1979, to become effective July 31, 1979. Among other things, the legislation:

1. Grants authority for the Flood Control District to dispose of real and personal property valued in excess of $25,000 without a vote of the electorate.

2. Authorized reimbursement to the Flood Control District of 50% of the land enhancement costs charged by a Federal agency.

3. Appropriated $3 million under an "Alternative Assistance Program" to reimburse 50% of costs on local projects. The Flood Control District is eligible to apply for $900,000 of this appropriation, perhaps for the PVSP and the Gila Drain Projects.

4. Appropriated $5 million for a loan fund for local projects. The Flood Control District is eligible to apply for $1.5 million of the current appropriation.

5. Appropriated $4 million for rechanneling the Salt River near Sky Harbor Airport.

6. Appropriated $455,000 as matching funds for the Salt-Gila Clearing Project. The County was requested to provide the matching funds with Revenue Sharing Funds.

7. Authorized the Board of Supervisors to levy a flood control tax not to exceed 50¢ per $100 of assessed real property valuation. However, due to a technicality, yet to be resolved, the Board of Supervisors has not yet increased the flood control tax levy.

In addition, $4 million was appropriated for reimbursement through the Water Commission for 50% of Flood Control District costs for relocations and rights-of-way on Federal projects.

FLOOD OF DECEMBER 1978

A major flood emergency occurred on December 18 and 19, 1978. Flood Control District personnel were sent to monitor rainfall and stream flows at Cave Creek, McMicken And Rittenhouse Dams as well as the progress of flood peaks down the Salt and Agua Fria Rivers. Other streams within the County were also monitored.

Releases from Cave Creek Dam did not exceed 500 cfs and all of this flow was handled by the Arizona Canal with no significant damage. Careful management of these releases was necessary to prevent damage to the partially completed Cave Buttes Dam.

Peak flows into the Salt River Project Reservoirs exceeded 286,000 cfs, and, by management of releases, the Salt River Project was able to limit the maximum releases at Granite Reef to an estimated 115,000 cfs. These peak releases occurred between 12:30 p.m. on December 19 and 3:00 a.m. on December 20. The total volume released from Granite Reef was approximately 725,000 acre feet during the period from December 18 through December 19.

The flow of floodwaters caused serious damage in the Salt and Gila Rivers. All bridges across the Salt River except Mill Avenue, Interstate 10 and Central Avenue were inundated and approaches were destroyed. Some of the bridges destroyed had only recently been put back into operation following the March 1978 Flood.

There was major concern about the buildup of floodwaters in the Agua Fria River. During the evening of December 18, inflow into Lake Pleasant (Waddell Dam) increased as available storage was decreasing. At about 11:00 p.m., inflows were estimated at 78,000 cfs. Disaster Defense Center personnel were informed that evacuation of the Agua Fria floodplain below Lake Pleasant would very likely be required.

By midnight, Waddell Dam officials confirmed they were making major releases. Flood Control District personnel estimated the area to be evacuated along the Agua Fria River for a flood of 60,000 cfs and recommended that area for evacuation. The Disaster Defense Center advised the Sheriff's Department and local police to begin the evacuation.

The advance of the flood crest on the Agua Fria was monitored by helicopter and by ground observers traveling from crossing to crossing. Continual advisories were sent to the Sheriff and local police. This information enabled Flood Control District personnel to more accurately estimate the lead time for evacuation of the floodplain from Waddell Dam to the Gila River, and floodplain residents had from one to ten hours of advance warning.

Subsequent information from Waddell Dam officials indicated that the peak discharge was approximately 60,000 cfs from 1:30 a.m. until 4:00 a.m. on December 19. Total volume of water released was approximately 52,500 acre feet or about one third the capacity of Lake Pleasant. Most of that volume was discharged on December 19.

FLOOD CONTROL DISTRICT EXPENDITURES

FY 1978-1979

48th Street Drain	52,671.90
Indian Bend Wash	1,424,466.50
Gila Drain	50,496.52
RWCD Floodway	797,585.14
Arizona Canal Diversion Channel	2,210,168.09
Spook Hill FRS and Outlet	342,195.60
Signal Butte FRS and Floodway	33,337.56
Harquahala Watershed	228,979.65
Cave Buttes Dam	237,775.16
Adobe Dam	1,996,717.76
New River Dam	2,915,791.10
Salt-Gila Clearing and Channelization	27,140.86
Paradise Valley, Scottsdale, Phoenix Study	18,613.35
Insurance	125,175.50
Flood Warning, Data Collection	51,605.45
Operation and Maintenance of Structures	254,888.49
Other	486,333.20
TOTAL	11,253,941.83

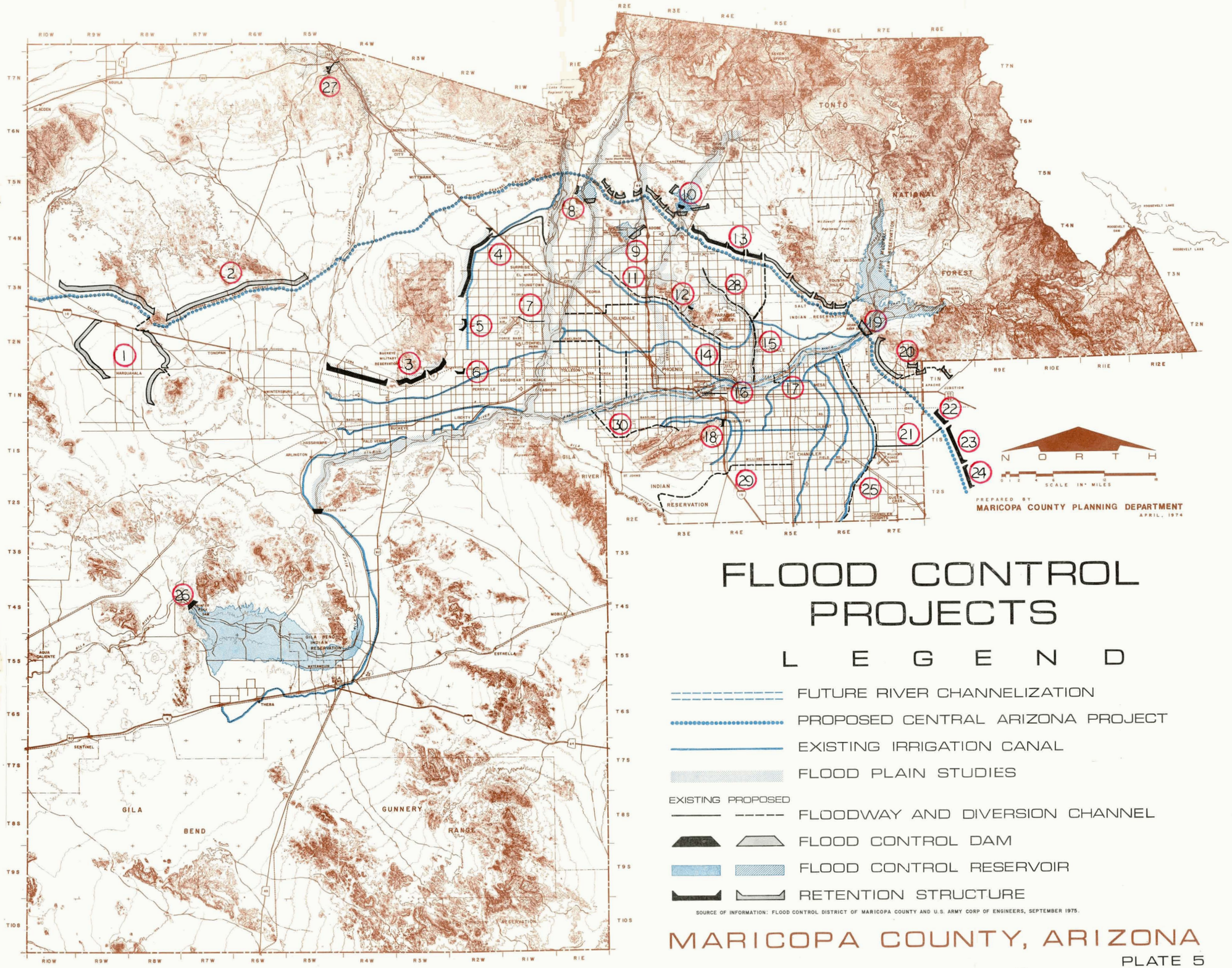
STRUCTURE	DRAINAGE AREA	STORAGE CAPACITY	SURFACE AREA FLOODWATER POOL	VOLUME OF FILL	MAXIMUM HEIGHT OF DAM	LENGTH OF STRUCTURE	TIME TO DISCHARGE	LOCAL COST	FEDERAL COST	STRUCTURE COMPLETED
Powerline F.R.S.	49.6 sq. mi.	4019 ac. ft.	456 ac.	880,000 c.y.	35 ft.	3.9 mi.	30 days	$ 4,800	$ 377,300	1967
Vineyard Road F.R.S.	53.4 sq. mi.	4122 ac. ft.	837 ac.	1,154,400 c.y.	20 ft.	4.5 mi.	30 days	$ 54,900	$ 512,000	1968
Rittenhouse F.R.S.	49.6 sq. mi.	3875 ac. ft.	660 ac.	798,800 c.y.	21 ft.	3.0 mi.	30 days	$ 28,800	$ 400,000	1969
Guadalupe F.R.S.	1191 ac.	273 ac. ft.	30.4 ac.	175,000 c.y.	32 ft.	1.0 mi.	10 days	$160,500	$ 498,000	1975
White Tanks Dam #3	24.1 sq. mi.	2655 ac. ft.	384 ac.	375,000 c.y.	30 ft.	7667 ft.	80 hrs	$218,287	$ 199,088	1954
White Tanks Dam #4	10.3 sq. mi.	1036 ac. ft.	221 ac.	175,000 c.y.	20 ft.	6839 ft.	118 hrs			1954
Buckeye F.R.S. Sites 1,2, & 3	58,896 ac.	8000 ac. ft.	2845 ac.	4,100,000 c.y.	33 ft.	16 mi.	10 days	$103,400	$3,544,000	1975
McMicken Dam	223 sq. mi.	30,500 ac. ft.	2300 ac.	2,400,000 c.y.	38 ft.	9.4 mi.	4.5 days	$180,000	$2,000,000	1956
Dreamy Draw	1.3 sq. mi.	317 ac. ft.	26.7 ac.	83,500 c.y.	50 ft.	1400 ft.	19.5 hrs	$ 25,000	$ 388,870	1973
Sunset F.R.S.	384.0 ac.	55 ac. ft.	8.6 ac.	67,800 c.y.	30.5 ft.	500 ft.	7.6 days	$150,000	$ 776,700	1976
Sunnycove F.R.S.	864.0 ac.	218.7 ac. ft.	18.0 ac.	111,500 c.y.	50.5 ft.	700 ft.	17 days			1976

	LENGTH	AVERAGE BOTTOM WIDTH	AVERAGE CHANNEL DEPTH	VOLUME OF EXCAVATION	VOLUME OF CONCRETE	LOCAL COST	FEDERAL COST	STRUCTURE COMPLETED
Powerline Floodway	8.7 mi.	7'	5'	285,800 c.y.	15,534 cy	$64,000	$871,000	1968

LEGEND

1. Harquahala Valley Watershed Project
* 2. Tonopah Watershed Project
3. Buckeye Watershed Project
4. McMicken Dam
5. White Tanks Dam #3
6. White Tanks Dam #4
7. Dysart-Agua Fria Drain
8. New River Dam
9. Adobe Dam
10. Cave Buttes Dam
11. Arizona Canal Diversion Channel
12. Dreamy Draw Dam
* 13. Paradise Valley Structures
14. Old Cross Cut Canal
15. Indian Bend Wash Floodway
16. 48th Street Drain
17. Alma School Drain
18. Guadalupe Watershed Project
19. Orme Dam
20. Buckhorn Mesa Watershed Project
21. Powerline Floodway
22. Powerline Dam
23. Vineyard Road Dam
24. Rittenhouse Dam
25. RWCD Floodway
26. Painted Rock Dam
27. Wickenburg Watershed Project
28. PVSP
29. Gila Drain
30. Champion Drain

* Bureau of Reclamation Projects



FLOOD CONTROL PROJECTS

L E G E N D

- FUTURE RIVER CHANNELIZATION
- PROPOSED CENTRAL ARIZONA PROJECT
- EXISTING IRRIGATION CANAL
- FLOOD PLAIN STUDIES

EXISTING PROPOSED

- FLOODWAY AND DIVERSION CHANNEL
- FLOOD CONTROL DAM
- FLOOD CONTROL RESERVOIR
- RETENTION STRUCTURE

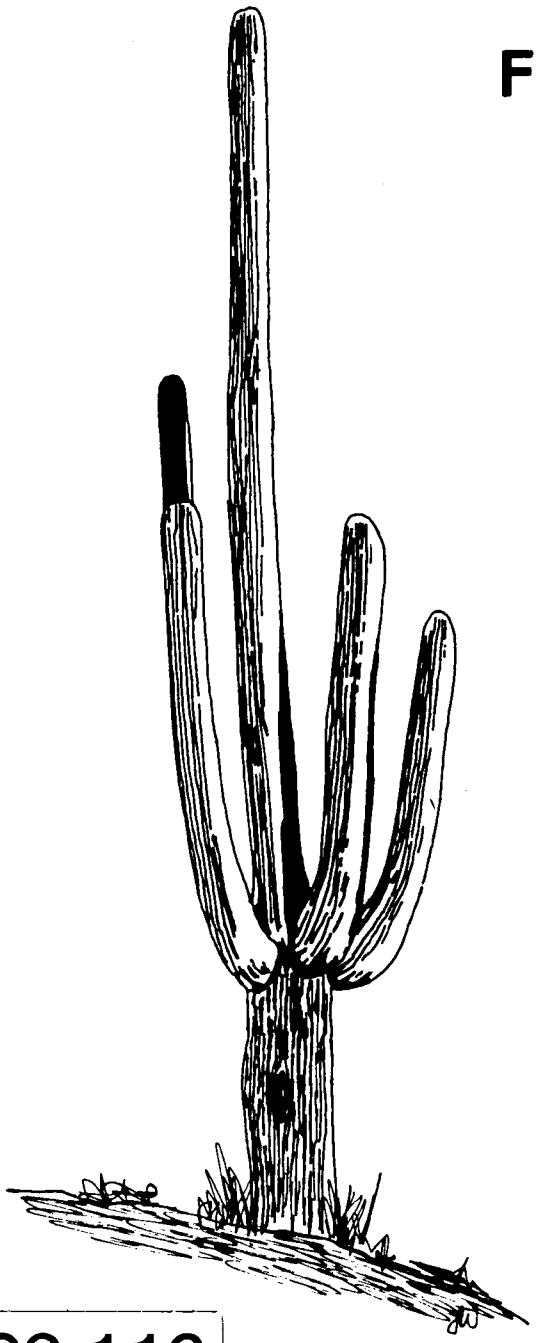
SOURCE OF INFORMATION: FLOOD CONTROL DISTRICT OF MARICOPA COUNTY AND U.S. ARMY CORP OF ENGINEERS, SEPTEMBER 1975.

MARICOPA COUNTY, ARIZONA

PLATE 5

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

ANNUAL REPORT



FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY

JULY 1, 1979
to
JUNE 30, 1980

LIBRARY

003.116

AR-5

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ANNUAL REPORT

July 1, 1979, through June 30, 1980

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

TABLE OF CONTENTS

Background	1
Board of Directors	2
Citizens' Flood Control Advisory Board	2
Accomplishments	3
Corps of Engineers Project Activities	4
Soil Conservation Service Project Activities	4
Local Projects	5
Flood Control District Expenditures	6
Flood of 1980	7

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

BACKGROUND

The Flood Control District of Maricopa County was established in 1959 as a Special Flood Control District pursuant to Arizona Revised Statutes as a municipal corporation and a political subdivision of the State of Arizona for the purpose of providing flood protection for metropolitan, urban and agricultural areas in Maricopa County.

Federal flood control projects are planned, designed and constructed by either the U. S. Army Corps of Engineers or by the Soil Conservation Service. It is the responsibility of the Flood Control District, as the local sponsor, to provide all rights-of-way, to relocate all facilities such as roads, bridges and utilities; to relocate people; and to inspect and maintain the structures after completion. In addition, the Flood Control District participates in the planning and construction of local flood control projects.

The Flood Control District provides technical assistance to the County in checking for conformance with floodplain regulations to protect new homeowners from living within a potential flood hazard area. The Flood Control District has also maintained the coordination necessary to make unincorporated areas of Maricopa County eligible for the Federal Flood Insurance Program.

BOARD OF DIRECTORS

Hawley Atkinson, Chairman, July 1, 1979, to January 7, 1980
George Campbell
Tom Freestone
Fred Koory, Jr., Chairman, January 7, 1980, through June 30, 1980
Ed Pastor
Rhea Woodall, Clerk of the Board

CITIZENS' FLOOD CONTROL ADVISORY BOARD

H. Lynn Anderson, Chairman, July 1, 1979, through November 14, 1979
Henry E. Brodersen, July 1, 1979, through November 14, 1979
Elijah Cardon
John E. Miller, Jr., Vice Chairman, November 15, 1979, through June 30, 1980
Paul E. Perry, Vice Chairman, July 1, 1979, through November 14, 1979
Chairman, November 15, 1979, through June 30, 1980
Charles A. (Bill) Sykes, November 16, 1979, through June 30, 1980
J. E. Attebery, Phoenix City Engineer
Reid Teeples, Salt River Project

Larry J. Richmond, General Counsel
Herbert P. Donald, Chief Engineer and General Manager, July 1, 1979, through January 1, 1980
William D. Mathews, Chief Engineer and General Manager, January 1, 1980, through June 30, 1980

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ANNUAL REPORT
FY 1979-1980

Accomplishments

Fiscal Year 1979-1980 was a very successful year for the Flood Control District. Cave Buttes Dam was completed by the Corps of Engineers and became operational. Cave Creek had been a notorious destroyer of property. Now that danger is a thing of the past. Cave Buttes Dam has taken Cave Creek out of the newspaper reports of areas of concern.

Spook Hill Floodwater Retarding Structure and Floodway were completed and became operational. This is the first segment of a series of structures to be built by the Soil Conservation Service in the Buckhorn-Mesa Watershed.

Another major project to be completed was the Inlet of Indian Bend Wash. Although there are segments still to be completed by the Corps of Engineers, Indian Bend Wash is no longer considered a major threat to the lives and property of the residents of Scottsdale.

The State Legislature raised the Flood Control Tax Levy ceiling to $.50 per $100 of assessed valuation. It is expected that the Board of Supervisors will take advantage of the increased ceiling and will raise the Tax Levy.

The Flood Insurance Rate Map for the Unincorporated Area of Maricopa County was adopted by the Floodplain Board on July 1, 1979, and became effective July 2. This moved Maricopa County into the regular phase of the National Flood Insurance Program and added over 200 miles of delineated floodplains and 2000 acres of areas of shallow flooding to the County's maps. The Flood Control District was instrumental in this effort.

Real-time data acquisition began for the emergency flood warning system. A Hydrometeorologic Technician began work in October 1979. Telemetered rain gauges were installed at mountaintop microwave facilities. The acquisition process began for the communications and computer hardware for the system. The Technician began taking over maintenance of rain and stream gauges that had been maintained by the U. S. Geological Survey for many years.

In March 1980, part of the Operations and Maintenance Branch began working out of the Chandler-Germann facilities. The satellite operation has resulted in fuel savings for both the Flood Control District and the individual employees and in increased on-the-job productivity due to travel reduction. Additional savings were realized by having the Operations and Maintenance Branch work four, ten-hour days each week.

MAJOR PROJECT ACTIVITIES

Corps of Engineers Projects

The Federal Flood Control Act of 1965 authorized an extensive flood control plan for the Phoenix Metropolitan area. The first phase of this plan is Indian Bend Wash. Indian Bend Wash runs in the north-south direction through the City of Scottsdale and a small part of Tempe. The Outlet was completed in 1977 and the Inlet was completed in 1980. The Interceptor Channel is expected to be under construction by the fall of 1980. The Collector and Side Channels system will be constructed in mid-1982.

The second phase of this flood control plan (known as Phase B) is a series of five dams and a diversion channel. Dreamy Draw Dam, in the Phoenix North Mountains, was completed in 1973. Cave Buttes Dam, on Cave Creek, was completed in early 1980. Adobe Dam will be constructed on Skunk Creek north of Bell Road. All rights-of-way for the dam and reservoir have been acquired. Some additional rights-of-way below the spillway and along the channelization area are in the final process of acquisition. It is expected that construction will begin in the fall of 1980. New River Dam will be constructed on New River above Jomax Road. The one large private parcel was acquired in 1978. It is anticipated that construction will begin in 1983.

The Arizona Canal Diversion Channel will run from near 40th Street to Skunk Creek north of the Arizona Canal. Some undeveloped property has been acquired to preclude development. Changes in design from a trapezoidal to a rectangular channel in several sections will reduce the total right-of-way requirements. It is anticipated that construction will begin in 1985.

Soil Conservation Service Projects

Soil Conservation Service projects are funded under the provisions of Public Law 566.

Harquahala Valley Watershed. This watershed is in the northwestern part of Maricopa County and is highly valuable agricultural lands. Features of the project include:

The Saddleback Floodwater Retarding Structure and Diversion Channel are on the eastern, or downstream, side of the Valley. All rights-of-way have been acquired and all relocations have been completed. It is anticipated that construction will begin in the fall of 1980.

The Harquahala Floodwater Retarding Structure and Floodway on the northerly side of the Valley are to be built by the Soil Conservation Service and the Water and Power Resources Service in conjunction with construction of the Central Arizona Project Aqueduct. All private land necessary for the FRS has been acquired. Construction in expected in 1981.

The Centennial Levee is on the southwesterly side of the Valley. Preliminary planning is continuing on this feature.

Buckhorn-Mesa Watershed. This watershed is in eastern Maricopa County and extends into Pinal County. The structures will protect several municipalities and valuable irrigated farm lands. Spook Hill Floodwater Retarding Structure and Floodway were completed in 1980. Acquisition of rights-of-way valued at $663,000, was started for the Signal Butte Floodway. Plans have been completed for the three bridges at Crismon Road, Brown-Ellsworth Roads and Signal Butte Road. Preliminary planning is continuing on the other features of the project.

RWCD Floodway. This Floodway will begin slightly north of Brown Road and outlet into the Gila River, a distance of 22.5 miles. Bids were opened for Reach 1 in June 1980 and construction should begin shortly. Reaches 1 and 2 are entirely within the Gila River Indian Community and the land rights were made available to the Flood Control District at no cost.

Buckeye Watershed. These three structures are located north of Buckeye and were completed in 1975. Inspection showed deterioration caused by dissication. The Soil Conservation Service will begin repair work in the summer of 1980.

Local Projects

Paradise Valley, Scottsdale, Phoenix Study (PVSP). To be eligible for the Alternate State Assistance Program, the Flood Control District has contracted with the Natelson Company to provide a benefit-cost study, including the portion in the City of Phoenix. The various segments will be built by the municipality in which they are located, and operation and maintenance will be provided by that municipality.

Salt-Gila Clearing. Work began to reclear a 300 foot-wide channel from Gillespie Dam to Powers Butte. High water forced the contractor to move out of the area when the work was 70% complete. The contract was later terminated because the flooding had changed the course of the river to the point where further clearing was not practical.

In June, a contract was awarded to clear a 1000 foot-wide channel between 91st and 123rd Avenues. Further clearing to Gillespie Dam is dependent on an Environmental Assessment required by the U. S. Fish and Wildlife Service. A contract was also awarded for an analysis of Gillespie Dam.

The State Legislature appropriated $1.1 million to be matched for projects on the Salt-Gila River.

48th Street Drain. The City of Tempe awarded a construction contract to build a roadway bridge at Lindsey Drive, two pedestrian bridges, two canal flumes for the San Francisco Canal, and channel lining and a rock gabion settling basin.

FLOOD CONTROL DISTRICT EXPENDITURES

FY 1979-1980

Adobe Dam	$2,138,557.36
Cave Buttes Dam	145,575.98
Arizona Canal Diversion Channel	814,069.65
Indian Bend Wash	1,617,852.38
Harquahala Watershed	723,480.90
Spook Hill FRS and Floodway	193,668.77
Signal Butte Floodway	306,184.03
RWCD Floodway	705,004.05
Salt Gila Clearing and Channelization	42,005.22
Town of Paradise Valley (Cost Sharing)	63,114.94
Operation and Maintenance of Structures	272,518.73
Insurance	117,562.37
Technical Assistance of Maricopa County ($16,704.37 reimbursed)	45,225.40
Flood Warning, Data Collection ($27,459.29 reimbursed)	67,881.92
Other	469,261.65
Total	$7,721,963.35

FLOOD OF 1980
February 14 to 22, 1980

The flood in February 1980 was the worst flood in Maricopa County since the flood in 1891. Flows peaked at 170,000 cfs on the Salt River and 66,000 cfs on the Agua Fria.

During the night of February 15-16, releases on the Salt-Verde River system rose rapidly. Based on potential flows of up to 200,000 cfs at Granite Reef, Flood Control District personnel delineated floodplain areas to be evacuated and provided this information to County Civil Defense and Emergency Services who then implemented the evacuation plan. District personnel also designated critical points of concern along the Salt and Gila Rivers, including potential breakout locations and areas susceptible to erosion and bridge damage.

On the Agua Fria River, severe flooding conditions were also encountered. With releases from Waddell Dam at 44,000 cfs on February 15, the District recommended that people in low lying areas such as El Mirage, Hound Dog Acres and Rose Garden Lane be notified of impending hazard, and many people were evacuated. On February 19, releases reached 66,000 cfs with even higher releases possible. On that basis, we established evacuation limits for flows of 90,000 cfs. This information was used by Civil Defense officials in making recommendations to unincorporated and incorporated areas along the banks of the Agua Fria River.

During this same period, flows in the New River were very heavy, necessitating the evacuation of a portion of the community of New River.

Flows in the Hassayampa through the Town of Wickenburg caused evacuation of low lying areas and these flows contributed to damages in the Arlington Valley areas along the Gila River.

The Gila River above the confluence of the Salt River provided relatively minor flows estimated at a high of 10,000 cfs. No flood releases were made from Coolidge Dam although San Carlos Reservoir filled almost to capacity.

Flood Control District structures had a dramatic affect on attenuating floodwaters, a prime example being Cave Buttes Dam which had just been completed. This Dam virtually prevented all damages. The spillway elevation is 98 feet above the outlet and the structure filled to a maximum height of about 43 feet. The peak inflow into Cave Buttes Dam Reservoir was at least 7,200 cfs and the maximum outflow was 324 cfs, all of which flowed harmlessly into the Arizona Canal which had been lowered by the Salt River Project to avoid flooding. Without this attenuation of the peak, the flows from Cave Creek would have spilled out of the Arizona Canal into central Phoenix causing considerable damage, similar to that which occurred in March and December 1978 and in many previous floods such as 1967 when Christown was under water.

The Spook Hill Floodwater Retarding Structure was completed in November 1979 and had water stored to a height of three feet.

Sunset and Sunnycove Floodwater Retarding Structures in Wickenburg had water stored to a height of about four feet. West of the Phoenix area, floodwaters were retained by the Buckeye structures, White Tanks 3 and 4 and McMicken Dam.

Indian Bend Wash received flows of about 1,200 cfs spilled from the Arizona Canal in the recently completed Inlet works. That spill, combined with inflow of Indian Bend Wash watershed, caused inundation of portions of the Greenbelt area. The flows in Indian Bend Wash were entirely contained in the Wash and no damages were sustained except minor erosion damage to the Greenbelt area.

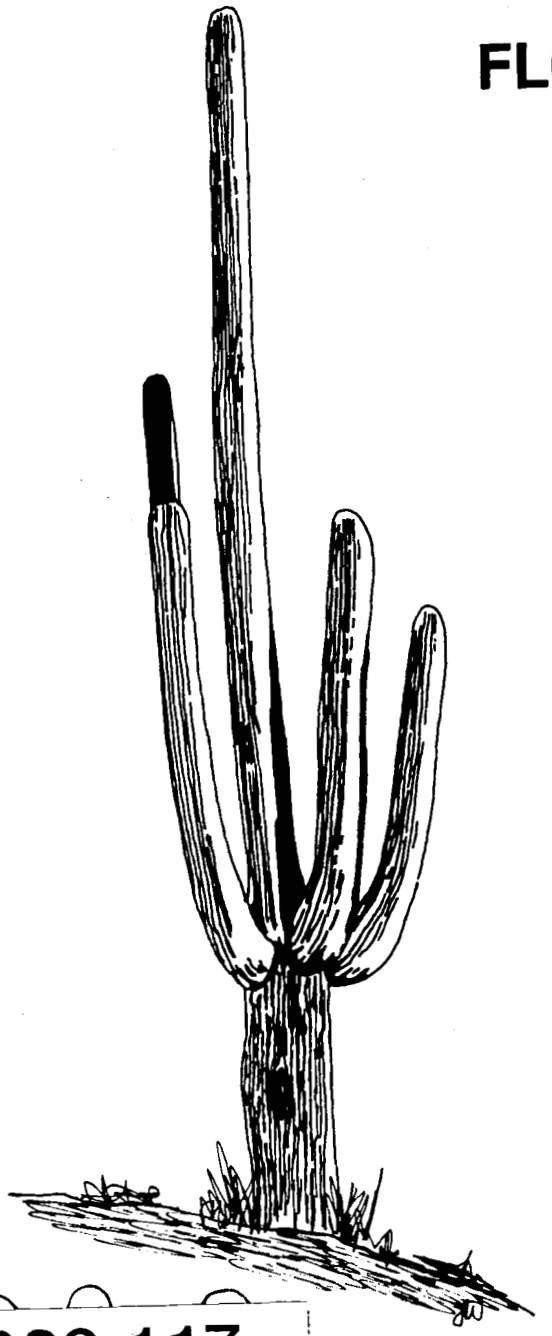
Our structures in Pinal County collected some minor flows which were ultimately discharged into Powerline Floodway.

During this flood emergency, Flood Control District personnel were involved in surveillance of critical stream and rain gauges as well as surveillance of flooding conditions. Representatives were provided to the Emergency Operations Center. This resulted in about 1,000 employee hours at a cost of approximately $12,000.

ANNUAL REPORT

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY

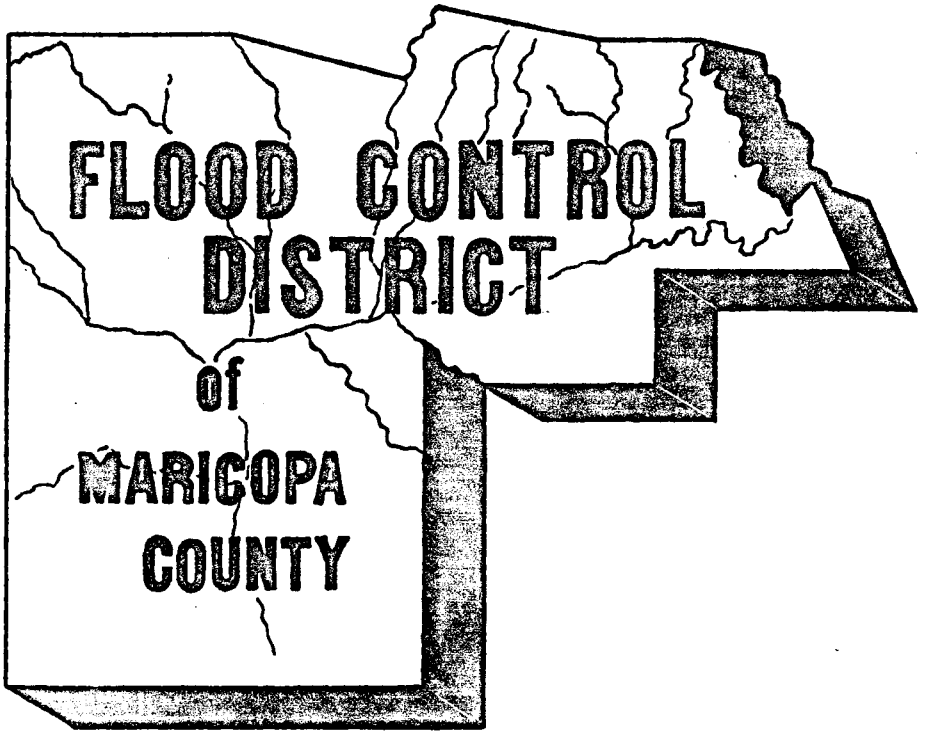


JULY 1, 1980
to
JUNE 30, 1981

003.117

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

ANNUAL REPORT



JULY 1, 1980 to JUNE 30, 1981

CONTENTS

	Page
Financial Highlights	1
Summary of Activities	2
Project Map	7
Financial Report	8
Boards and Principal Officers	11
Organization Chart	12

BACKGROUND

The District founded in 1959, is a municipal corporation and political subdivision of the State of Arizona. The District is governed by the Board of Directors with the advice of the Citizens' Flood Control Advisory Board. The Directors are also Supervisors of Maricopa County.

The purpose of the District is to provide flood control facilities to prevent the flooding of property and the endangering of lives within Maricopa County.

In fulfilling its purpose, the District

1. Acts as the local sponsor of federal flood control projects designed and constructed by the Army Corps of Engineers and the Soil Conservation Service. The District acquires the necessary rights-of-way and relocates facilities and people affected by the projects.

2. Plans and constructs flood control projects alone or in cooperation with State and local organizations.

3. Maintains and operates completed structures.

4. Assists in providing early warning of potential floods and provides technical leadership during flood emergencies.

5. Provides technical guidance related to floodplain management on a reimbursable basis.

Federal agencies pay the construction costs on federal projects. Land rights and relocations on federal projects are paid from the flood control tax on real property and half of these costs are reimbursed by the State.

Local (nonfederal) projects are funded by a variety of State, Flood Control District, County and City cost sharing arrangements.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
FINANCIAL HIGHLIGHTS
FOR THE YEAR ENDED JUNE 30, 1981

	DOLLARS	PERCENT
REVENUES		
Flood Control Tax	$11,824,832	69%
State Assistance	4,284,274	25%
Interest	540,152	3%
County Reimbursement for Services	20,386	--
Miscellaneous	438,338	3%
Total Revenues	17,107,982	100%
EXPENDITURES		
Administration and Maintenance	1,348,496	9%
Flood Control Capital Improvements	13,514,642	91%
Total Expenditures	14,863,138	100%
Excess (deficiency) of Revenues Over Expenditures	2,244,844	
Fund Balance at Beginning of Year	1,633,879	
Fund Balance at End of Year	$ 3,878,723	

Expenditures by Task		
Administration and Reimbursable Work	$ 1,140,375	8%
Land Acquisition	10,355,931	70%
Relocation of Utilities, Bridges and Other Facilities	1,215,673	8%
Construction	484,462	3%
Maintenance	690,300	5%
Cost Sharing in Projects Managed by Others	976,397	6%
Total	$14,863,138	100%

ACTIVITIES FISCAL YEAR 1980 - 1981

ACCOMPLISHMENTS

Flood Warning System - The flood warning system is still growing with 18 telemetered rain gauges and six telemetered stream gauges now installed. The first piece of hardware for the Flood Warning and Data Base Station was received in July 1980, and now the Station is nearly complete with respect to hardware. Computer links are now available to obtain satellite relayed data and special weather statements from the National Weather Service, U. S. Geologic Survey and other sources.

Indian Bend Wash Interceptor Channel - An important accomplishment this year was the completion of the Indian Bend Wash Interceptor Channel. Bids were opened for the project on October 7, 1980, and a contract for $2.06 million was awarded to Stimple, Baker and Associates of California on October 15. Construction began in November of that year. The Channel was essentially completed in February 1981, and the final inspection of the project took place on March 20, 1981.

Located parallel and north of the Arizona Canal from Pima Road west to the Indian Bend Wash Inlet Channel (approximately 1.5 miles), the Interceptor serves to relieve ponding along the uphill side of the Arizona Canal and to eliminate breakouts of the canal by intercepting excess water and disposing of it into the Indian Bend Wash.

Paradise Valley, Scottsdale, Phoenix Project (PVSP) - In November 1980, a benefit/cost study for the PVSP Project was completed by the Natelson Company. The goal of the project is the protection, using detention basins and channels, of a large area centering around 64th Street and Cactus Road which is often adversely affected by severe rain storms. The results of the study were quite good, with the lowest benefit-to-cost ratio for a project feature being 5.3 to 1. The report was then sent to Paradise Valley, Phoenix and Scottsdale for review and comment. Early in 1981, the report was also submitted to the Arizona Department of Water Resources, and in March they requested that additional work be done. Natelson Company is presently continuing work on the benefit/cost study.

Buckeye #1 - This is one of a number of dams that developed cracks after construction. This fiscal year a contractor hired by the Soil Conservation Service repaired the dam by excavating a trench down the centerline of the dam two and a half feet wide to a depth of three feet below the bottom of the deepest cracking. That trench was backfilled with a specially designed granular material, and the outlet drains were provided to drain potentially erosive water out of the structure.

Spook Hill Dam - Work was completed on restoration of the Spook Hill Sediment Basin and Dike, which were damaged during the storms of February 1980.

Capital Improvements Program - The Citizens' Flood Control Advisory Board approved the FY 81-82 Capital Improvements Program based on a $13.5 million income from the flood control tax. It was felt that it would be sound financial management to recommend a five-year program based on bottom line income dollars, rather than a specific tax rate. This $13.5 million represents a ten percent increase over the current year's expected tax income and is sufficient to maintain the momentum of our current program.

State Trust Lands - Because of the State Supreme Court decision on political subdivisions purchasing State Trust Lands without public auction, we will be condemning all State land in the future rather than negotiating with the State Land Department. The effect of the Supreme decision on past acquisitions is undetermined at this time.

CORPS OF ENGINEERS PROJECTS

Phoenix, Arizona, and Vicinity (including New River) Flood Control Measures - This set of flood control measures designed to protect Phoenix and much of the area around it consists of a number of features, including four dams north of Phoenix-Dreamy Draw Dam and Cave Buttes Dam, which are complete and Adobe Dam, and New River Dam. Also part of this system are the Skunk Creek Channel and Levees system, and the extremely important Arizona Canal Diversion Channel. When all these projects reach completion, they will work together to provide major flood protection for the Valley.

This fiscal year work was in progress on the following projects:

Arizona Canal Diversion Channel (ACDC) - The Flood Control District is working closely with the Corps of Engineers in planning for the construction of the ACDC to help protect parts of Phoenix, Glendale and Peoria. This fiscal year, the acquisition of land for this project, to be located parallel to the Arizona Canal from 40th Street to 75th Avenue, and the use of this land until construction were two of the District's major activities; 193 of the 496 land parcels needed for the ACDC have already been acquired. Also, as required by federal law, the District paid, in addition to the actual purchase price, moving expenses, cost differential and mortgage differential under the relocation assistance program.

Three proposals dealing with the use of acquired land until needed for ACDC construction have been accepted. The first of these makes houses available to the City of Phoenix for its Scattered Site Housing program. Also, the County Senior Village housing program is being organized, and the District plans to deed seven houses to the County for this program by mid-July 1982. These seven houses will not be affected directly by the ACDC; they will only be losing their backyards. Finally, in May 1981, the District started a housing

rental program to make the best use of the acquired property. The District plans to rent the houses on this property to the public. This program is just beginning, and the District has high hopes for its success.

Adobe Dam - Bids were opened on Adobe Dam on September 23, 1980, and on September 29 a contract was awarded to M. M. Sundt of Tucson for $8,388,025. A ground breaking ceremony was held for the dam on October 30. Presently, the dam is well over 25 percent complete. It is located on Skunk Creek about one mile west of Black Canyon Highway at Deer Valley Road and is the third of the four dams to be constructed north of Phoenix to give protection from a standard project flood, a flood which is normally greater than any past recorded flood.

New River Dam - The Corps of Engineers should complete the preliminary plans for New River Dam and submit them for review sometime in July 1981. The District acquired all necessary private and federal lands for the dam and reservoir this fiscal year and in Novmeber 1980 applied for the 470 acres of State Trust Lands needed. Because of the new State Trust Land decision, these lands must be condemned and acquired next year. The Dam will be located on the New River about one mile north of Jomax Road at 83rd Avenue and is the last of the four major dams to be constructed north of Phoenix.

Cave Buttes Dam - Because of the constant problem of vandalism, Cave Buttes Dam is being completely fenced through a private contractor.

Indian Bend Wash Collector and Side Channels - Construction by the Corps of Engineers on this last segment of the Indian Bend Wash System is due to begin in mid-1982. When complete, the Collector and Side Channels, which will parallel the Arizona Canal from the Indian Bend Wash Inlet Channel south to 68th Street, will relieve ponding along the uphill side of the Arizona Canal.

This fiscal year, all utilities that are in conflict with the Collector and Side Channels were identified. Plans for relocation will be submitted to the Corps of Engineers.

SOIL CONSERVATION SERVICE PROJECTS

Harquahala Valley Projects - There are three projects planned in the Harquahala Valley in northwestern Maricopa County. They are:

Saddleback Floodwater Retarding Structure and Diversion Channel - A great deal was accomplished on this project, located on the eastern side of the Harquahala Valley, this fiscal year. On August 14, 1980, bids were opened by the Soil Conservation Service

for the Saddleback FRS and Diversion. The low bidder, to whom the contract was awarded, was M and B Contracting Corporation of Michigan; and Notice to Proceed was given in November. Presently the project is running behind schedule, but the contractor still hopes to meet his February 2, 1981, deadline.

Harquahala Floodwater Retarding Structure and Floodway - The design of the Harquahala FRS was completed in December 1980. It will be constructed on the north side of the Valley. In early 1981, the Project Agreement, the Operation and Maintenance Agreement and the Land Rights Certification for the project were approved; and bids opened on April 22, 1981.

The Harquahala FRS and Floodway, as well as the Central Arizona Project aqueduct, will be built jointly by the Soil Conservation Service and the Water and Power Resources Service. It is expected that the FRS and Floodway portions will cost about $13,000,000 and will take about two years to build. The Flood Control District has acquired all necessary rights-of-way.

Centennial Levee - This last project in the Valley is located on the west side. In July 1980, the Soil Conservation Service requested rights-of-entry for survey and geological work for the Levee. Also, a public meeting was held at the Harquahala Community Meeting Hall on November 18, 1980, in order to keep residents affected by the project up to date on the progress being made.

Roosevelt Water Conservation District (RWCD) Floodway - The RWCD Floodway, when completed, will extend nearly 27½ miles and will provide a major drain for storm runoff from the cities of Mesa and Chandler and rural areas in southeastern Maricopa County. Excavation for the project began during the summer of 1980, and Reach 1 is now over half finished. The Williams Field Road Bridge near Williams Air Force Base is also under construction, and the Southern Pacific Railroad Bridge over the Floodway has been completed. The Floodway itself is being constructed in six reaches. Reach 1 should be completed in the fall of 1981, and Reach 2 should start in 1982. The District has already begun acquisition of property in Reaches 3 and 4.

Pass Mountain and Signal Butte Floodwater Retarding Structures - Since these structures are planned for the east Mesa-Apache Junction area, a rapidly developing area with many new residents, a public meeting took place on September 9, 1980. The purpose of this meeting was to provide information for the newcomers who did not understand or who were unaware of the flood control structures planned for this area. Also, meetings with residents in the immediate vicinity of Pass Mountain FRS took place in January. The project is to be located entirely wthin Usury Park, and many residents of the area were concerned that the structure would be unsightly. The meetings helped to create a more positive attitude; residents who wanted to stop the project are now trying to work out how the project can be made acceptable to them.

Signal Butte Floodway - Planning continues on Signal Butte Floodway, which like Pass Mountain FRS and Signal Butte FRS, will be part of the Buckhorn-Mesa structures. The Soil Conservation Service, at the District's suggestion, is considering the use of a large underground concrete pipe for part of this project instead of an open concrete channel in order to reduce land costs. The Soil Conservation Service is also investigating the possibility of reducing the height of the berms in the remainder of the channel to make the design more esthetically pleasing.

LOCAL PROJECTS

Salt-Gila Clearing - Several aspects of this project received attention this year. The Intergovernmental Agreement transferring $49,000 to the Flood Control District for work in this area was filed with the Secretary of State. In addition, the final Holly Acres Flood Relief Commission report was released Friday, August 22, 1980, at a press conference.

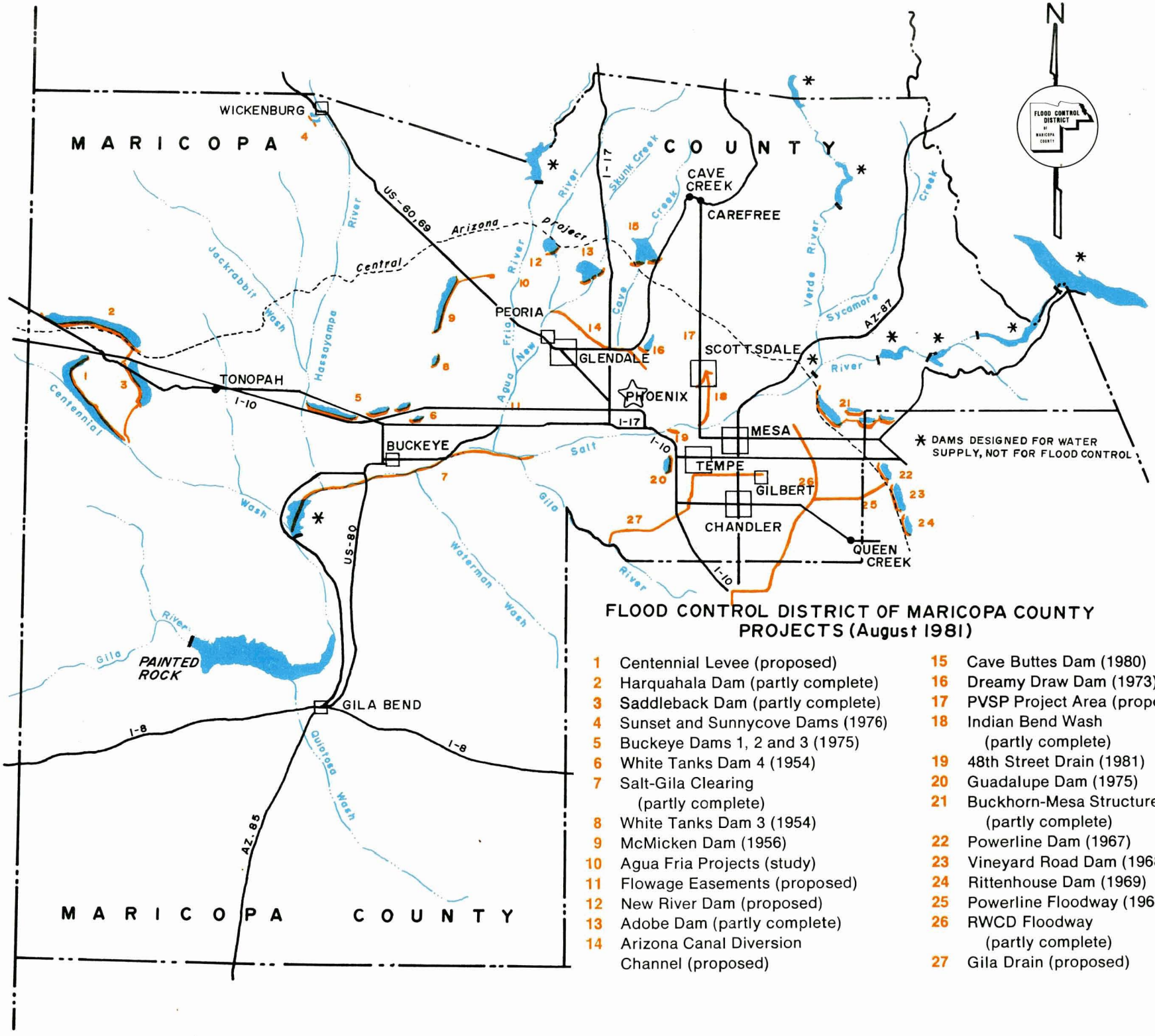
Two segments of the Salt-Gila Clearing were finished this fiscal year, a 1,000 foot wide clearing from 91st Avenue to 123rd Avenue and a 300 foot wide clearing from Gillespie Dam to Powers Butte. Work on the remaining areas of the project cannot proceed until the acceptance of the Environmental Impact Statement. The draft Environmental Impact Statement has been published, and it is anticipated that the final draft will be approved in November 1981.

The Gillespie Dam analysis report was also completed this year. It recommended that the dam be breached to a width of 500 feet and a depth of 20 feet from its bottom. The economic feasibility of this project is doubtful due to the expected cost of approximately $7 million.

McMicken Dam - McMicken Dam has been of major concern to the Flood Control District for a long time. This dam, which originally protected Luke Air Force Base, Sun City West and valuable agricultural lands, developed serious cracks and was breached by the Corps of Engineers during July 1977. Now flood protection to the downstream area is greatly reduced. In hopes of eventually remedying this, the District has prepared a scope of work for the repair and restoration of this Dam and will be asking for proposals from consultants.

48th Street Drain - The 48th Street Drain, which parallels University Road from 48th Street to about 34th Street, is functionally complete. Resolution of a problem concerning 1,800 feet of poor quality channel lining remains to be resolved. The Drain will serve to collect local runoff from the Tempe area and convey it into the Salt River.

Agua Fria River Study - A study of the Agua Fria River area from five miles south of Waddell Dam to the Gila River was undertaken this fiscal year. A contract was negotiated with Willdan Associates in November 1980. The study will give the District an inventory of improvements in the floodplain and an analysis of flooding potential and recommendations for protective measures.



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY PROJECTS (August 1981)

1. Centennial Levee (proposed)
2. Harquahala Dam (partly complete)
3. Saddleback Dam (partly complete)
4. Sunset and Sunnycove Dams (1976)
5. Buckeye Dams 1, 2 and 3 (1975)
6. White Tanks Dam 4 (1954)
7. Salt-Gila Clearing (partly complete)
8. White Tanks Dam 3 (1954)
9. McMicken Dam (1956)
10. Agua Fria Projects (study)
11. Flowage Easements (proposed)
12. New River Dam (proposed)
13. Adobe Dam (partly complete)
14. Arizona Canal Diversion Channel (proposed)
15. Cave Buttes Dam (1980)
16. Dreamy Draw Dam (1973)
17. PVSP Project Area (proposed)
18. Indian Bend Wash (partly complete)
19. 48th Street Drain (1981)
20. Guadalupe Dam (1975)
21. Buckhorn-Mesa Structures (partly complete)
22. Powerline Dam (1967)
23. Vineyard Road Dam (1968)
24. Rittenhouse Dam (1969)
25. Powerline Floodway (1968)
26. RWCD Floodway (partly complete)
27. Gila Drain (proposed)

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
STATEMENT OF REVENUES, EXPENDITURES AND CHANGES IN FUND BALANCE
BUDGET AND ACTUAL
YEAR ENDED JUNE 30, 1981

	BUDGET	ACTUAL	VARIANCE FAVORABLE (UNFAVORABLE)
REVENUES			
Flood Control District Tax Levy	$12,292,400	$11,824,832	$ (467,568)
State Assistance			
Local Projects	1,705,000	248,261	(1,456,739)
Federal Projects	7,462,000	4,036,013	(3,425,987)
County Reimbursement for Services	396,728	20,386	(376,342)
Local Participation	98,000	---	(98,000)
Interest Earnings	---	540,152	540,152
Miscellaneous			
Building Rent	10,000	42,223	32,223
Federal Share	149,225	296,207	146,982
Other	806,610	99,908	(706,702)
Total Revenues	22,919,963	17,107,982	(5,811,981)
EXPENDITURES			
Personnel Services			
Salaries and Wages	1,181,605	1,036,761	144,844
Overtime	30,000	28,668	1,332
Employee Benefits	215,120	184,100	31,020
Total	1,426,725	1,249,529	177,196
Supplies and Services			
Professional Services Contracts	2,164,350	583,434	1,580,916
Maintenance Contracts	317,000	188,295	128,705
Maintenance Supplies	213,435	72,496	140,939
Insurance	129,400	29,283	100,117
Other Supplies and Services	1,380,660	1,228,650	152,010
Total	4,204,845	2,102,158	2,102,687
Capital Outlay			
Real Estate	15,923,480	11,047,461	4,876,019
Communications Equipment	6,780	6,576	204
Engineering and Scientific Equipment	206,895	144,009	62,886
Motor Vehicles and Equipment	113,300	97,078	16,222
Construction and Other Capital Outlay	3,011,335	216,327	2,795,008
Total	19,261,790	11,511,451	7,750,339
Total Expenditures	24,893,360	14,863,138	10,030,222
Excess (deficiency) of Revenues Over Expenditures	(1,973,397)	2,244,844	4,218,241
Fund Balance at Beginning of Year	1,633,879	1,633,879	---
Fund Balance at End of Year	$ (339,518)	$ 3,878,723	$ 4,218,241

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
EXPENDITURES BY ACTIVITY
FOR THE YEAR ENDED JUNE 30, 1981

ACTIVITY	EXPENDITURES OTHER THAN MAINTENANCE	MAINTENANCE EXPENDITURES
Administration	$ 534,712	
Maintenance Overhead		$ 258,775
Cooperative Agreement with U.S. Geological Survey	55,740	
Technical Support of Maricopa County Planning	52,374	
Technical Support of Maricopa County Building Safety	4,101	
Highway Department	2,150	
Floodplain Delineation	219	
Flood Insurance	4,786	
Hydrologic Data Collection	4,114	9,614
Flood Warning System	197,896	6,592
Flood Emergency Activities	2,110	
Technical Support of Maricopa County Floodplain Administration	1,587	
Technical Support - City of Glendale	16	
Project Cost Sharing - City of Mesa	340,000	
Technical Support - City of Peoria	215	
Project Cost Sharing - City of Phoenix	460,000	
Project Cost Sharing - City of Tempe	126,397	
Project Cost Sharing - Town of Paradise Valley	50,727	
Technical Support - Town of Wickenburg	822	
Technical Support - Town of Youngtown	62	
Dysart Road - Agua Fria Drain		14,793
48th Street Drain	14,219	535
Alma School Drain	701	4,975
Old Cross Cut Canal	1,101	11,424
Salt River, Scottsdale Road to Mill Avenue	90	
Salt/Gila Clearing and Channelization	453,028	3,531
Sossaman Road	9,796	
Agua Fria River	61,775	
Indian Bend Wash Outlet	43,504	32,867
Indian Bend Wash Inlet	374,222	993
Indian Bend Wash Greenbelt	621,211	11
Indian Bend Wash Interceptor and Side Channels	314,056	3,169
Gila Drain	6,724	2,044
Champion Drain	22	111
Arizona Canal Diversion Channel	8,657,197	56,218

ACTIVITY	EXPENDITURES OTHER THAN MAINTENANCE	MAINTENANCE EXPENDITURES
Paradise Valley, Scottsdale, Phoenix Study	$ 34,220	$
RWCD - Williams Chandler	289,189	889
RWCD - Apache Junction/Gilbert	96,545	
RWCD - Buckhorn Mesa	72,623	34
White Tanks Dam #3	2,967	24,502
White Tanks Dam #4	2,334	12,145
McMicken Dam	5,059	11,286
Dreamy Draw Dam	11	5,608
Guadalupe Dam	136	3,302
Lower Queen Creek		29
Buckeye Dam #1	1,845	7,313
Buckeye Dam #2		9,084
Buckeye Dam #3	68	4,093
Spook Hill Dam and Outlet	40,569	103,893
Signal Butte Floodway	439,837	322
Pass Mountain Dam and Outlet	4,634	66
Apache Junction Dam/Bulldog Floodway	1,877	
Powerline Dam	135	16,382
Powerline Floodway	77	25,748
Vineyard Road Dam	72	12,845
Rittenhouse Dam	1,060	9,609
Harquahala Dam and Floodway	54,293	182
Saddleback Dam	32,779	289
Saddleback Diversion	116,301	354
Centennial Levee	2,176	113
Sunset Dam	548	726
Sunnycove Dam		473
Sunset/Sunnycove Pipeline		126
Cave Buttes Dam	61,845	26,466
Adobe Dam	505,900	8,769
New River Dam	1,929	
Flowage Easements, Skunk Creek, New River, Agua Fria	8,135	
Total	$14,172,838	$690,300

Boards and Principal Officers

Board of Directors

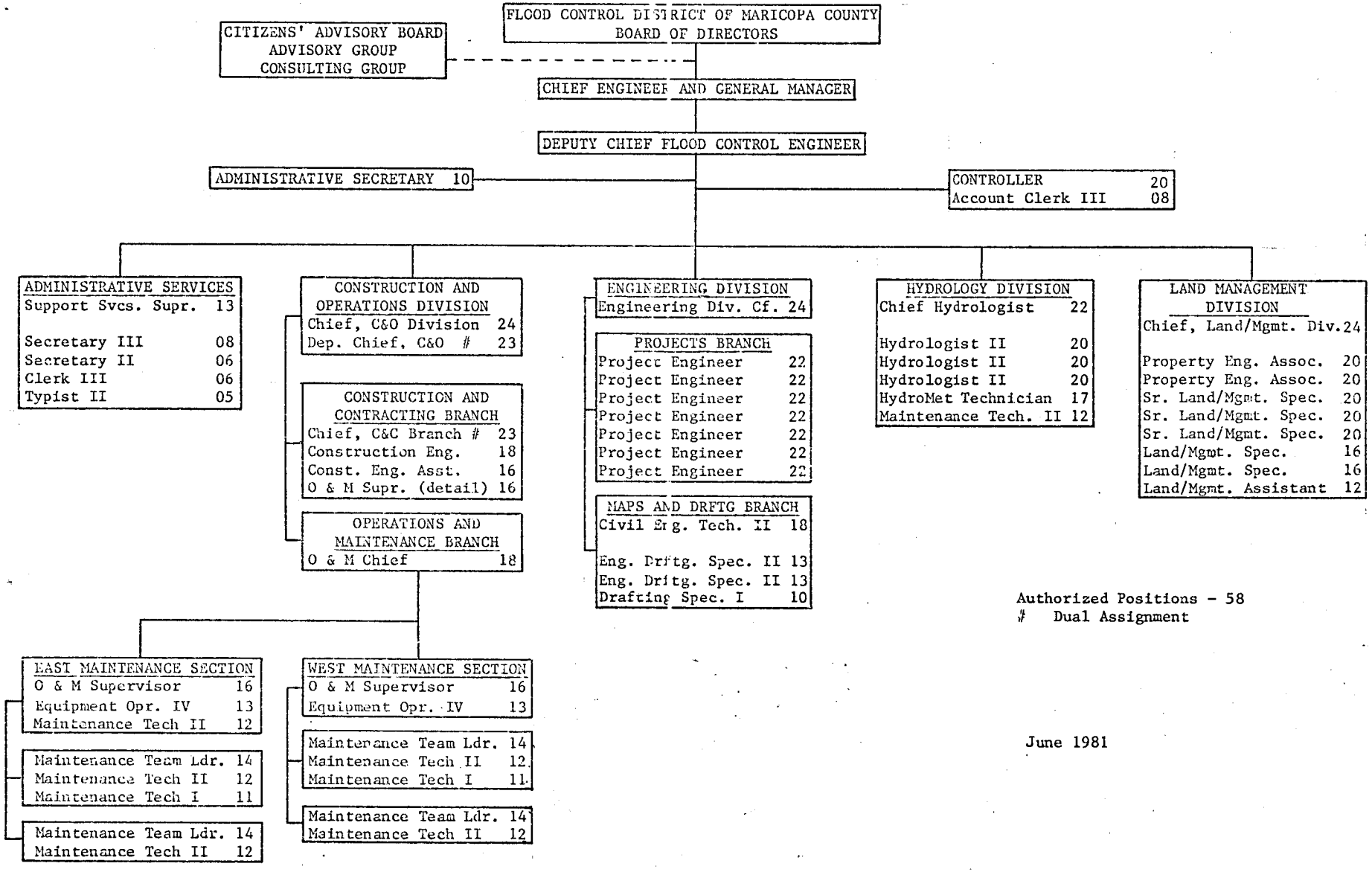
Tom Freestone (Chairman, January 5, 1981 to June 30, 1981)
Fred Koory, Jr. (Chairman, July 1, 1980 to January 5, 1981)
Hawley Atkinson
George L. Campbell
Ed Pastor

Citizens' Flood Control Advisory Board

John E. Miller, Jr. (Chairman, November 26, 1980 to June 30, 1981)
Paul E. Perry (Chairman, July 1, 1980 to November 26, 1980)
H. Lynn Anderson
Elijah Cardon (July 1, 1980 through October, 1980)
Charles A. (Bill) Sykes
Dean Sellers (February, 1981 to June 30, 1981)
J. E. Attebery
Reid Teeples

Principal Officers

William D. Mathews	Chief Engineer and General Manager
Daniel E. Sagramoso	Deputy Chief Engineer
Larry J. Richmond	General Counsel
John J. Randall	Controller
Sue Mutschler	Support Services Supervisor
Stanley L. Smith	Chief, Construction and Operations Division
Nicholas P. Karan	Chief, Engineering Division
David R. Johnson	Chief, Hydrology Division
John E. Burke	Chief, Land Management Division



Authorized Positions - 58
Dual Assignment

June 1981

ANNUAL REPORT

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

FLOOD CONTROL DISTRICT of MARICOPA COUNTY

JULY 1, 1981 to JUNE 30, 1982

003.103

CONTENTS

Letter from the Chief Engineer and General Manager 1

Financial Highlights 2

Accomplishments 3

Finished Projects 3

Activities in Progress 4

Financial Report 8

Statement of Revenues, Expenditures and Changes in Fund Balance.... 8

Expenditures by Activities 9

Expenditures on Land 10

Income Figures for the ACDC Rental Program 10

Tax Rate History 10

Boards and Officers 11

Project Map 12

Organization Chart .....inside back cover

BACKGROUND

The District founded in 1959, is a municipal corporation and political subdivision of the State of Arizona. The District is governed by the Board of Directors with the advice of the Citizens' Flood Control Advisory Board. The Directors are also Supervisors of Maricopa County.

The purpose of the District is to provide flood control facilities to prevent the flooding of property and the endangering of lives within Maricopa County.

In fulfilling its purpose, the District

1. Acts as the local sponsor of federal flood control projects designed and constructed by the Army Corps of Engineers and the Soil Conservation Service. The District acquires the necessary rights-of-way and relocates facilities and people affected by the projects.
2. Plans and constructs flood control projects alone or in cooperation with State and local organizations.
3. Maintains and operates completed structures.
4. Assists in providing early warning of potential floods and provides technical leadership during flood emergencies.
5. Provides technical guidance related to floodplain management on a reimbursable basis.

Federal agencies pay the construction costs on federal projects. Land rights and relocations on federal projects are paid from the flood control tax on real property and half of these costs are reimbursed by the State.

Local (nonfederal) projects are funded by a variety of State, Flood Control District, County and City cost sharing arrangements.

FLOOD CONTROL DISTRICT
of
Maricopa County

3335 West Durango Street • Phoenix, Arizona 85009
Telephone (602) 262-1501

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

BOARD of DIRECTORS
George Campbell, Chairman
Harvey Atkinson
Tom Freestone
Fred Koory, Jr.
Ed Pastor

D. E. Sagramoso, P.E., Chief Engineer and General Manager

LETTER FROM MANAGEMENT

Fiscal year 1981-82 was a very active and successful year for the Flood Control District. The Federal-State-District partnership added three major new flood control dams to the inventory of functional structures. The District also completed two major studies which will be springboards for action for restoration of McMicken Dam and flood control measures on the Agua Fria River.

This year we acquired more right-of-way, accomplished more maintenance and made greater advances in a large number of approved projects than any year since our founding in 1959. This total effort was worth $22.9 million, 92% of which was for capital improvements. That these accomplishments were attained in spite of the shortfall in the State appropriation for matching funds for lands and relocations on federal projects is a great credit to our employees and the tradition of excellence established over the years as well as to our Directors for their foresight in allocating resources. The dwindling of State appropriations appears to be a trend at least over the next two fiscal years, and will present a great challenge to our Board of Directors and staff to maintain the momentum of our program for providing flood protection to Maricopa County.

We also had some spin-off benefits that are worth noting. Our acquisition of Arizona Canal Diversion Channel properties gave us the opportunity to produce income by fully implementing a housing rental program and to cooperate with other governmental agencies for the benefit of the taxpayer. First, we were able to participate in the County's innovative long term care program for senior citizens by transferring seven homes to Maricopa County; we have earmarked eight houses to be moved by the City of Phoenix for their scattered housing program. We have leased a mobile home to the Town of El Mirage for a branch library and have leased four mobile homes to the County for use in conjunction with their program for rehabilitating low income housing in Guadalupe.

We have again been active in the Rio Salado Development District and in the planning process for flood control measures associated with the Central Arizona Project.

The year witnessed a change in leadership. Bill Mathews, our Chief Engineer and General Manager until March 1982, left for the opportunity to head the Phoenix office of a nationally known engineering consulting firm. This led to the advancement of myself and Stan Smith to the Chief and Deputy Chief Engineer positions, and the arrival of Bob Payette to head Construction and Operations Division.

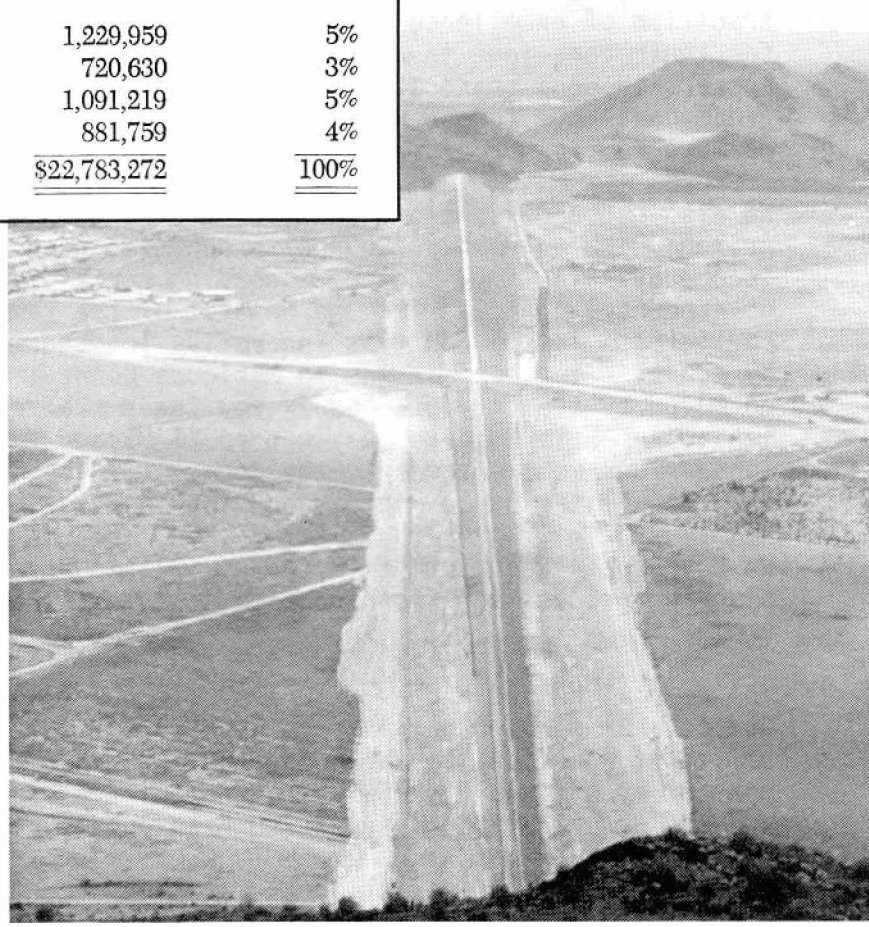
The Flood Control District looks forward to continuing challenges and progress in the coming year.

D E Sagramoso

D. E. Sagramoso, P.E.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
FINANCIAL HIGHLIGHTS FOR THE YEAR ENDED JUNE 30, 1982

	DOLLARS	PERCENT
REVENUES		
Flood Control Tax	$13,720,276	61%
State Assistance	6,730,144	30%
Interest	1,673,593	7%
County Reimbursement for Services	71,047	—
Miscellaneous	477,459	2%
Total Revenues	22,672,519	100%
EXPENDITURES		
Administration and Maintenance	1,923,935	8%
Flood Control Capital Improvements	20,859,337	92%
Total Expenditures	22,783,272	100%
Excess (Deficiency) of Revenues Over Expenditures	(110,753)	
Fund Balance at Beginning of Year	3,878,723	
Fund Balance at End of Year	$ 3,767,970	
EXPENDITURES BY TASK		
Administration and Reimbursable Work	$ 1,118,818	5%
Land Acquisition	17,740,887	78%
Relocation of Utilities, Bridges and Other Facilities	1,229,959	5%
Construction	720,630	3%
Maintenance	1,091,219	5%
Cost Sharing in Projects Managed By Others	881,759	4%
Total	$22,783,272	100%



Adobe Dam. Aerial view along the dam centerline, looking to the west.

ACCOMPLISHMENTS — FISCAL YEAR '81 - '82

Adobe Dam Principal Outlet and Channel as viewed from downstream.

FINISHED PROJECTS

ADOBE DAM – One of the major accomplishments of this fiscal year was the completion by the Corps of Engineers of Adobe Dam, which was dedicated April 8, 1982. Adobe is part of a four-dam system north of Phoenix which will provide protection from a standard project flood which is normally larger than any past recorded flood and should be very rarely exceeded. Adobe is the third of these dams to be finished, preceded in 1973 by Dreamy Draw Dam and in 1980 by Cave Buttes Dam. The fourth, New River Dam, is being designed. These dams represent a real advance in flood protection for Phoenix and the surrounding areas.

Adobe Dam, located on Skunk Creek about one mile west of Black Canyon Highway near Deer Valley Road, is an earthfill structure 11,245 feet in length and 63 feet high at its highest point. It will control 89.6 square miles of drainage area and can take in up to 18,350 acre feet of floodwater flowing at 66,000 cubic feet of water per second, releasing this water at a maximum rate of only 1890 cubic feet per second. By trapping floodwater and releasing it downstream slowly and safely, the dam will turn potentially destructive floods into manageable streams.

The Corps of Engineers paid $9.7 million for construction of the dam. In addition to this, the District spent $9.0 million for land rights and relocation of facilities in its capacity as local sponsor. With the acceptance of the dam, the District assumed responsibility for operation and maintenance of the structure.

48TH STREET DRAIN – This project, cost-shared by the District, Phoenix, Salt River Project and the City of Tempe, was finished in August, 1981.

The drain is located ¼ mile south of University Road and parallels that thoroughfare from 48th Street to about 34th Street, where it empties into the Salt River. The purpose of the drain is to collect storm water, irrigation waste or other local runoff from the Tempe and east Phoenix area and convey it safely into the Salt River. The entire project cost $1,828,000, with the District contributing 12.15%.

REPAIR OF WHITE TANK DAMS 3 and 4 – Many earthfill dams constructed since the early 1950's for flood control purposes have shown evidence of cracks which could pose a hazard to the integrity of the structures. The White Tank 3 and 4 structures, completed by the Soil Conservation Service in 1954, are no exception. The extensive cracking in these structures was verified by intense investigations by the District and the SCS in 1977. Inspections of the dams under the provisions of the National Dam Inspection Act, PL 92-367, in April, 1981, revealed the structures to be unsafe, nonemergency condition.

Repair of the White Tank dams was started by the SCS in late 1981 and will be completed in July, 1982, except for seeding of the disturbed embankment surfaces. The contracted repair measures include excavation of a centerline trench and backfill with an engineered drain aggregate. The centerline drain and outlets were excavated to a depth at least three feet below the bottom of the cracks and will convey any water entering through cracks safely through the dams without causing erosion damage. The repair contract with GRL Construction Company, Inc. will cost about $703,000 in federal funds.

SADDLEBACK FLOODWATER RETARDING STRUCTURE AND DIVERSION – This important project was completed in March 1982 by the Soil Conservation Service. It is the first of three projects designed to control flooding in the Harquahala Valley, and is located about thirteen miles west of Tonopah south of Interstate 10. The dam provides protection from floods due to runoff from Saddle Mountain, Burnt Mountain and several northern washes. The water which collects behind Saddleback Dam will be carried safely through the diversion channel into Centennial Wash, avoiding valuable agricultural land.

The Saddleback FRS is an earthfilled structure, 22 feet at its maximum height and over five miles in length. The diversion channel is earthlined and four miles long. Construction of the project cost the Soil Conservation Service approximately $3.4 million. As in the cost of Adobe Dam, the District as local sponsor, was an active participant, paying approximately $186,000 in expenses, and has now assumed operation and maintenance responsibility for the completed structures.

ACTIVITIES IN PROGRESS

Corps of Engineers Projects

ARIZONA CANAL DIVERSION CHANNEL (ACDC) – The Diversion Channel, when finished, will parallel the Arizona Canal, diverting floodwaters from Cudia City Wash, Dreamy Draw and Cave Creek. In addition, it will collect runoff from the Phoenix Mountains and urban areas uphill from the Canal between 40th Street and 75th Avenue. The water will flow down the channel, spilling harmlessly into Skunk Creek rather than causing break-outs in the Arizona Canal like those that have occurred in the past. The project is an important one and will provide 100-year flood protection to large parts of Phoenix and Glendale which previously suffered extensive flooding damage.

In preparation for the start of construction in 1985, 57% of the needed land parcels have already been acquired, and bridges at three crossing sites in Glendale are being designed. This fiscal year, 100 land parcels have been purchased at a cost of over $9,000,000.

THE ACDC RENTAL PROGRAM – Until homes and businesses bought to make way for project construction must be removed, the District manages them by renting to the public. This rental program benefits the taxpayers by supplying income to supplement tax dollars, and avoids the expenses incurred in maintaining vacant property. The rental program has been quite successful; at the close of the fiscal year in June, 1982, the District was renting 115 houses and eight commercial properties with a projected annual gross income of about $450,000 and an expected net income of over $200,000.

SKUNK CREEK CHANNELS AND LEVEES – Due to be finished by the end of this year, the Channel and Levees Project crosses Interstate 17 one mile north of Happy Valley Road, preventing Skunk Creek from breaking out of its channel in the area between the Central Arizona Project aqueduct and the Adobe Dam reservoir area.

In March of this year, the Corps of Engineers awarded a contract to Lufkin Construction Company for the building of the Channel and Levees. They have a full year to do the job, but the contractor expects to be done in December, 1982. Construction of the project will cost the Corps approximately $3,082,474. The Flood Control District's costs will be approximately $1,600,000.

NEW RIVER DAM – New River Dam, the last of the four major dams north of Phoenix, is now under design, with construction to begin in August, 1983. The dam will be located on the New River about a mile north of Jomax Road at 83rd Avenue. The dam will serve to drastically reduce the floodplain below the dam, and a number of realtors have shown interest in this new area for possible development.

INDIAN BEND WASH COLLECTOR AND SIDE CHANNELS SYSTEM – This last part of the Indian Bend Wash System is soon to be under construction. Phase I of the program should be under construction in mid-August, 1982, and the second half, Phase 2, is expected to go under construction in mid-December, 1982. All work should be finished during 1983. The side channels will collect floodwaters that originate from Mummy and Camelback Mountains and back up on the west side of the Arizona Canal. These waters will be conveyed in channels and pipes parallel to the Arizona Canal, eventually be siphoned under the Canal at McDonald, Chaparral and Camelback Roads, and then by underground conduits be discharged into Indian Bend Wash. The system will provide 50-year flood protection to the area north of Lincoln Drive and 25-year flood protection to the rest of the area west of the Arizona Canal to 68th Street.

Soil Conservation Service Projects

HARQUAHALA FLOODWATER RETARDING STRUCTURE AND FLOODWAY – This is the second of the Harquahala Valley projects. This project has been progressing steadily for the past year and is now 95% complete. It should be finished by December, 1982, ahead of schedule. Water collected by the completed structure will be conducted through the floodway to the Saddleback structures, and eventually into Centennial Wash.

ROOSEVELT WATER CONSERVATION DISTRICT (RWCD) FLOODWAY – The RWCD Floodway is a 27½ mile long project to be built parallel to the RWCD Canal and finshed in 1989. It will accomplish three objectives: collect sheetflow from three watersheds, the Buckhorn-Mesa, the Apache Junction-Gilbert, and the Williams-Chandler; provide an outlet for three existing dams, Powerline, Rittenhouse and Vineyard; and intercept natural channels, including Queen Creek, conveying all these floodwaters safely into the Gila River.

The RWCD will be constructed in six reaches. The right-of-way necessary for construction, operation and maintenance of the first two reaches was provided by the Gila River Indian Community. Reach 1 was completed in November, 1981, and construction on Reach 2 should start in October or November, 1982, and is due to be finished in a year. The District continues to acquire right-of-way for the remaining reaches in this project.

CENTENNIAL LEVEE – This third and final project in the Harquahala Valley is still being planned. It will be an embankment of compacted earth up to ten feet high constructed on the west side of the valley. When it is finished, it will act to keep floodwater in the Centennial Wash from breaking out across the valley and damaging agricultural lands, roads and homes as it has done previously.

The Harquahala Valley Irrigation District is planning to construct an irrigation canal into the valley from the Central Arizona Project, and this will affect the design of Centennial Levee. Consequently, the Irrigation District, the Soil Conservation Service and the Flood Control District are working closely together. This cooperation should not only take care of any problems that might arise, but also lead to cost savings for all three agencies. The entire Harquahala flood control system is due to be finished in 1985.

SIGNAL BUTTE PROJECTS – Part of the Buckhorn-Mesa Structures, Signal Butte Floodway will connect the soon to be constructed Signal Butte Dam to the existing Spook Hill Dam. Both the Signal Butte Floodway and Dam are due to be under construction by September, 1983.

Although the floodway was originally designed as an open channel, the Soil Conservation Service, at the suggestion of the District, agreed this year to construct 1.4 miles of it as an underground conduit. The conduit will be more expensive, but the District is willing to pay the additional cost, which would be recouped in savings on the land acquisitions needed for an open channel. The conduit will also make it easier for adjacent property owners to develop the area to its fullest, as most structures could be built over the conduit with no problem.

Local Projects

McMICKEN DAM STUDY – McMicken Dam, which was breached in 1977 to prevent potential catastrophic failure after large cracks were found in the structure, has been the subject of intense research this past year. A consultant hired to study the problem found that repairs were feasible and recommended alternative solutions. The most cost effective solution would involve creating a centerline drain by lining a two or three-foot wide trench down the length of the embankment with filter fabric and back-filling the trench with rock. This repair has an estimated cost of $3.0 million. The District plans to contribute one-third of this, and the Maricopa County Municipal Water Conservation District Number One has also committed to financing one-third of the repairs. Luke Air Force Base is the third partner and has applied for funds from the Air Force for the project. McMicken Dam protects the Base, as well as Goodyear, Litchfield Park, Surprise and El Mirage. If all goes well, the final report on the dam should be completed in August, and repairs could start early in 1983.

SALT/GILA CLEARING – The Salt/Gila Clearing project involves the removal of vegetation in a 1,000 foot wide corridor in the 35-mile reach of the Salt and Gila Rivers from 91st Avenue to Gillespie Dam. The project is divided into segments to facilitate contract awards. The first of these, from 91st Avenue to 123rd Avenue, and Segment 2, which consisted of only a 300-foot wide clearing corridor from Gillespie Dam to Powers Butte, were finished by 1981. Since much of the river bottom land subjected to clearing is federally owned or controlled, the District initiated the process of identifying environmental impacts of the work late in 1979. The final Environmental Impact Statement was published in 1982, and the authority to begin clearing was received in late June, 1982. The contract for work on the third segment, from 123rd Avenue to Bullard Avenue (147th), was awarded in June, 1982. Bids on Segment 4, from Gillespie Dam to Palo Verde Road (291st Avenue) will be opened at the end of July, and plans and specifications are being written, and easements are being acquired for the fifth segment, which is located between Palo Verde Road and Airport Road (211th Avenue). The contract cost of work completed or under contract to date, including the Environmental Impact Study, is $526,200. The work on Segments 4 and 5 is estimated to cost $827,000. The funding for this project has been 50% from a special State appropriation and 50% from District funds.

PARADISE VALLEY SCOTTSDALE PHOENIX PROJECT (PVSP) – This project is designed to control flood problems in the area bound by 56th Street east to Scottsdale Road and Greenway Road on the north to Indian Bend Wash in the south. The plan would employ detention basins, open channels and pipes to direct floodwater to Indian Bend Wash.

In March and April, the District entered into agreements with the communities and the State so that work could begin. Since then, the City of Phoenix has started work on two detention basins, and Scottsdale has submitted a plan to the District concerning work between Shea and Cactus Boulevards along Scottsdale Road. Paradise Valley is negotiating a contract for design of project features in its area.

GILA DRAIN – The goal in the planning of the Gila Drain is to create an outlet for floodwaters collecting in the Tempe-Mesa-Gilbert area and the northern part of the Gila River Indian Reservation. The proposed drain would direct these floodwaters into the Gila River. The original plan would have followed an old drainage ditch built through the Indian reservation in the 1920's. However, the Indian community found problems with this idea. Since there were also problems with the hydrology study done by the Corps of Engineers in 1977, the District began a review of the area's hydrology. This reveiw is nearing completion, and alternative plans for the drain should be brought out by the end of the year.

In the meantime, the City of Tempe has proposed proceeding with a detention basin north of Ray Road by Interstate 10 out of an existing borrow pit.

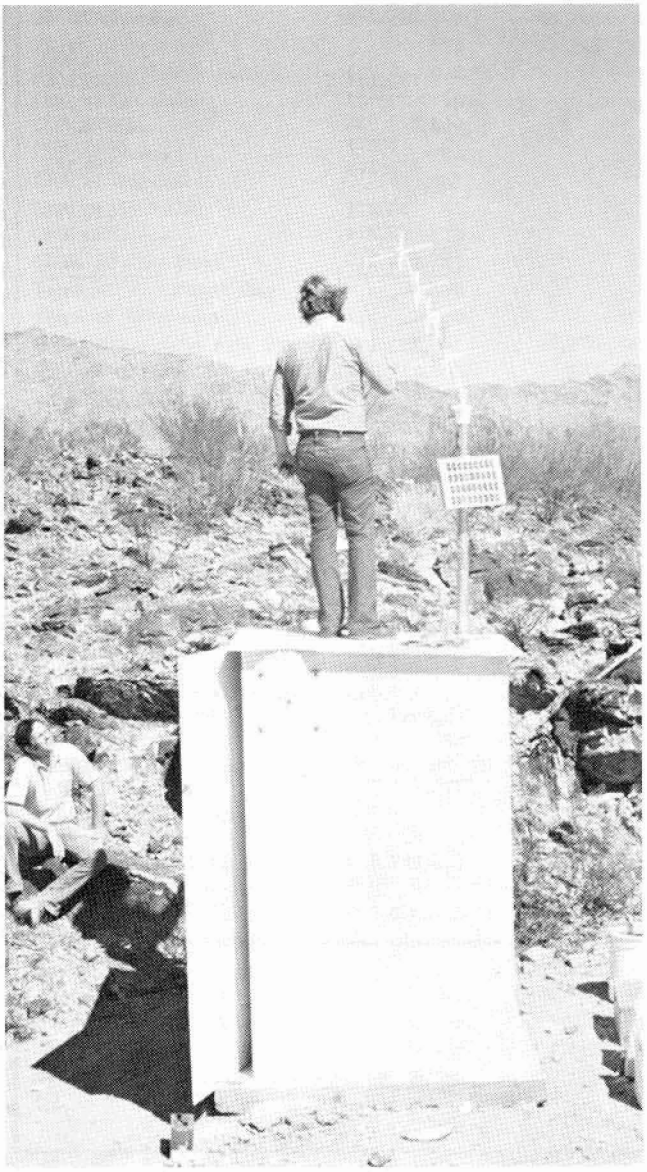
AGUA FRIA RIVER STUDY – During this fiscal year, a detailed report on the Agua Fria River area was drafted, the final version of which is due early in July, 1982. The study covered a large area, extending along the Agua Fria Riverbed from its confluence with the Gila River at Southern Avenue and 139th Avenue to the Beardsley Canal Flume four miles north of Jomax Road, a length of approximately 24 miles. The report offered a number of alternatives for flood control in this area, and those with a satisfactory benefit/cost ratio will be studied in more depth. The entire study cost the District approximately $71,000.

Although there is no overall plan of action yet, excavation of a mile long channel between McDowell and Thomas started this June. The channel will improve the river flow conditions through the proposed McDowell Road bridge and the I-10 bridges, and it was economically advantageous to start construction at this time.

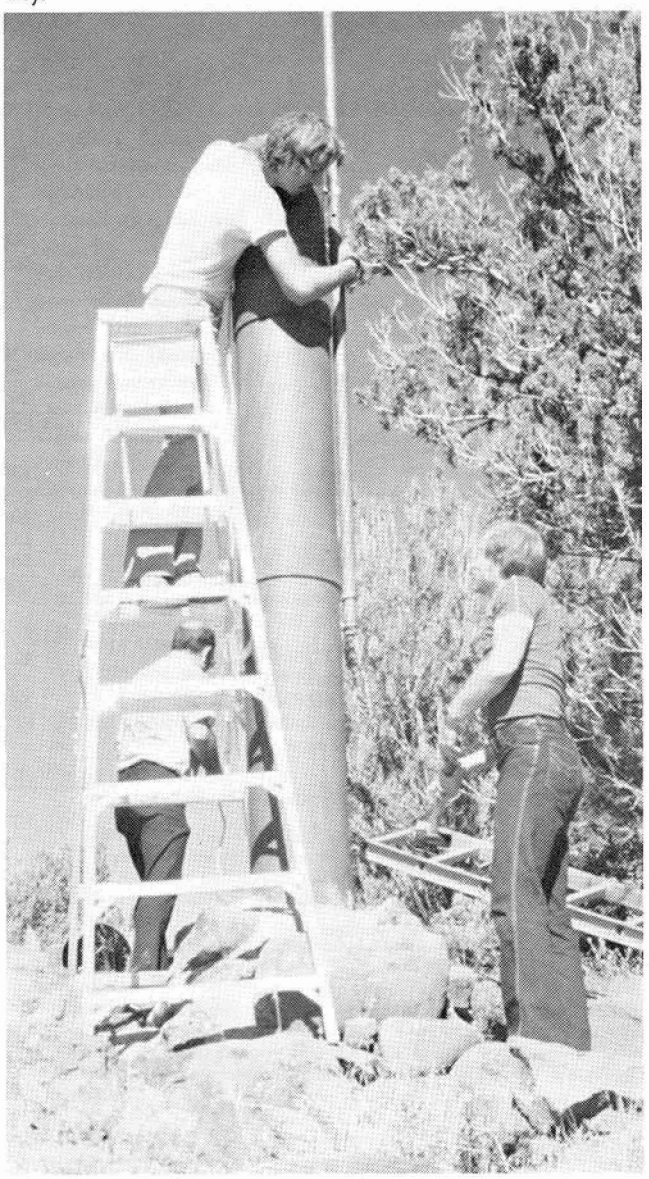
FLOOD WARNING SYSTEM – There are two systems used by the District to predict flooding, and this fiscal year work was done involving both. The first system employs stream gauges cost-shared by the District and the U.S. Geological Survey and maintained by the Survey. These gauges measure stream flows and transmit the information via an earth satellite. Presently, the District uses six of these stream gauges, and is participating in a cost-sharing program this year to install a satellite receiver station at Salt River Project. Now we can receive flood information directly rather than less reliably from a receiver station on the East Coast.

The other system used by the District depends on telemetered rain gauges which the District installs and maintains on its own. The information collected by these gauges is picked up by the County's microwave relay system and processed by the District's own data base station. This system is independent of other similar systems run by Salt River Project or the State Department of Water Resources, but ultimately an integrated state-wide system should evolve, with a central access point where all information is available to each agency.

This fiscal year twelve telemetered rain gauges were added to the District's system (bringing the total to 30).



Flood Warning System. Installation of a satellite telemetered stage and rain gauge on Centennial Wash Watershed.



Flood Warning System. Installation of a microwave telemetered rain gauge on the Cave Creek Watershed.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
STATEMENT OF REVENUES, EXPENDITURES AND CHANGES IN FUND BALANCE — BUDGET AND ACTUAL
YEAR ENDED JUNE 30, 1982

	BUDGET	ACTUAL	VARIANCE FAVORABLE (UNFAVORABLE)
REVENUES			
Flood Control District Tax Levy	$13,500,000	$13,720,276	$ 220,276
State Assistance			
Local Projects	1,433,000		(1,433,000)
Federal Projects	8,000,000	6,730,144	(1,269,856)
County Reimbursements for Services	602,330	71,047	(531,283)
Interest Earnings	---	1,673,593	1,673,593
Local Participation	446,000	7,971	(438,029)
Rental	193,000	412,313	219,313
Miscellaneous			
Federal Share of Costs	149,000	33,821	(115,179)
Other	306,670	23,354	(283,316)
Total Revenues	24,630,000	22,672,519	(1,957,481)
EXPENDITURES			
Personnel Services			
Salaries and Wages	1,410,313	1,253,464	156,849
Overtime	25,000	10,232	14,768
Employee Benefits	232,029	216,012	16,017
Total	1,667,342	1,479,708	187,634
Supplies and Services			
Professional Service Contracts	3,139,954	1,618,046	1,521,908
Maintenance Contracts	509,637	339,832	169,805
Maintenance Supplies	124,332	62,066	62,266
Insurance	129,400	69,027	60,373
Other Supplies and Services	186,965	263,185	(76,220)
Total	4,090,288	2,352,156	1,738,132
Capital Outlay			
Real Estate	21,650,000	18,473,911	3,176,089
Engineering and Scientific Equipment	137,370	64,932	72,438
Motor Vehicles and Equipment	73,500	75,469	(1,969)
Construction and Other Capital Outlay	2,148,500	337,096	1,811,404
Total	24,009,370	18,951,408	5,057,962
Total Expenditures	29,767,000	22,783,272	6,983,728
Excess (Deficiency) of Revenues Over Expenditures	(5,137,000)	(110,753)	5,026,247
Fund Balance at Beginning of Year	3,878,723	3,878,723	---
Fund Balance at End of Year	$(1,258,277)	$ 3,767,970	$ 5,026,247

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
EXPENDITURES BY ACTIVITY FOR THE YEAR ENDED JUNE 30, 1982

Activity	Expenditures Other Than Maintenance	Maintenance Expenditures
Administration	$ 683,422	$ 1,675
Maintenance Overhead	144	312,567*
United States Geological Survey	72,976	
Planning Department	69,107	
Highway Department	92	
Floodplain Delineation	323	
Flood Insurance	6,127	
Hydrologic Data Collection	525	5,599
Flood Warning	102,808	35,624
Flood Emergency	334	196
Floodplain Administration	1,018	
City of Glendale	10	
City of Mesa	340,644	
City of Peoria	88	
City of Phoenix	461,587	
City of Scottsdale	42	
City of Tempe	48,276	
Town of Gila Bend	2,142	
Town of Paradise Valley	33,536	
Town of Wickenburg	35	
Dysart Road-Agua Fria Drain		3,976
48th Street Drain	2,856	137
Alma School Drain	35,387	28,270
Old Cross Cut Canal	596	15,442
Salt/Gila Clearing and Channelization	74,506	13,027
Salt/Gila Control Works	8,310	134
Channel at Sky Harbor	168	
Sossaman Road	868	5732
Agua Fria River	51,654	
Indian Bend Wash Outlet	4,301	55,092
Indian Bend Wash Inlet	6,159	2,460
Indian Bend Wash Greenbelt	1,516	72
Indian Bend Wash Interceptor and Side Channels	873,017	2,356
Gila Drain	8,723	
Arizona Canal Diversion Channel	10,544,877	305,702**
Paradise Valley, Scottsdale, Phoenix Study	17,416	
RWCD-Williams/Chandler	1,876,389	9,797
RWCD-Apache Junction/ Gilbert	1,680,643	7,818
RWCD-Buckhorn Mesa	13,269	1,003
Rio Salado	182	
White Tanks No. 3	17,453,	4,745
White Tanks No. 4	3,700	6,923
McMicken Dam	127,415	13,114
Dreamy Draw Dam	5,766	10,225
McMicken Dam Outlet Channel		433
Guadalupe Dam	89	3,734
Buckeye Dam No. 1	13	25,872
Buckeye Dam No. 2	19	3,916
Buckeye Dam No. 3	31	4,951
El Mirage Road Drain Channel		16
Spook Hill Dam and Outlet	45,162	100,489***
Signal Butte Floodway	105,127	7,749
Pass Mountain Dam and Outlet	3,523	
Apache Junction Dam/Bulldog Floodway	2,511	
Signal Butte Dam	3,588	297
Powerline Dam	1,069	5,768
Powerline Floodway	180	9,906
Vineyard Road Dam	5,883	9,678
Rittenhouse Dam	79	6,750
Harquahala Dam and Floodway	5,752	325
Saddleback Dam	43,697	5,216
Saddleback Diversion	154,476	1,574
Centennial Levee	11,475	
Sunset Dam	73	3,011
Sunnycove Dam	157	3,153
Sunset/Sunnycove Pipeline	157	2,283
Cave Buttes Dam	52,796	39,376
Adobe Dam	1,773,932	15,036
New River Dam	191,678	
Flowage Easements, Skunk Creek, New River, Agua Fria	2,112,179	
	$21,692,053	$1,091,219

* The following represents significant portions of the $312,567 expended on Maintenance Overhead:

$114,139	was expended for maintenance of vehicles.
$ 20,301	was expended for maintenance of communications equipment.
$ 81,608	was expended for maintenance and/or construction equipment vehicles.
$216,048	

** The $305,702 expended on maintenance of the Arizona Canal Diversion Channel included $289,790 for maintenance of properties involved in the Rental Program. These properties generated revenue of $392,561 during this time period.

*** The $100,489 expended on maintenance at Spook Hill Dam and Outlet included $26,112 expended on the operation and maintenance of the irrigation system at this project between January 1, 1982 and June 30, 1982. Prior to January 1, 1982, the operation and maintenance costs of the irrigation system were not distinguishable from other maintenance costs at the Spook Hill Dam and Outlet.

EXPENDITURES ON LAND
(Breakdown by Project)

Project	Number of Parcels Bought This Year	Acquisition Cost	Relocation Assistance Cost	Other Cost*	Total Cost	% Of Land Acquired To Date
ACDC	100	$ 9,290,337.00	$702,499.08	$166,707.16	$10,159,543.24	57%
Skunk Creek	18	1,475,759.00	2,424.40	32,857.92	1,511,041.32	100%
Adobe Dam	2	205,000.00	---	40,818.00	245,818.00	100%
RWCD	4	2,594,760.00	---	14,425.68	2,609,185.68	70%
Signal Butte	6	345,239.00	2,423.00	48,067.00	395,729.00	85%
IBW Side Channel	4	265,127.00	---	32,780.97	297,907.97	76%
Agua Fria	8	2,000,000.00	---	63,428.08	2,063,428.08	5%
TOTALS	142	$16,176,222.00	$707,346.48	$399,084.81	$17,282,653.29	

*"Other Cost" includes Escrow and Title Fees, Legal Fees, Title Report Fees, Litigation Guarantees, Appraisals, Prorated Taxes, etc.

Note on condemnations: 57 parcels of land were referred for condemnation this year. Some State land needed for New River Dam was condemned as well. Of these condemnations, 19 came to negotiated settlements.

INCOME FIGURES FOR THE ACDC RENTAL PROGRAM

Month	Gross Income	Expenditures	Net
July, 1981	$ 15,292	$ 19,921	$ −4,629
August	24,697	24,493	204
September	24,724	23,469	1,255
October	27,473	19,820	7,653
November	33,660	19,661	13,999
December	31,506	25,674	5,832
January, 1982	32,845	26,977	5,868
February	35,600	25,293	10,307
March	46,579	20,855	25,724
April	31,200	19,802	11,398
May	39,281	29,891	9,390
June	49,704	33,934	15,770
Total for Fiscal Year	$392,561	$289,790	$102,771

As of June 26, 1982:

Total Rentable Houses	131
Grantor Rent-backs (renting to former owner at low rate)	9
30 day hold-overs (renting free to former owner for 1 month)	1
Houses Rented to Public	103
Houses (or Offices) Vacant	18

HISTORY OF THE TAX LEVY RATE FOR THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

For fiscal year ending	Levy Rate per $100 assessed value	Tax Revenue
1961	0.05	$ 253,451
1962	0.05	$ 288,197
1963	0.02	$ 126,115
1964	0.02	$ 135,304
1965	0.02	$ 144,905
1966	0.02	$ 153,160
1967	0.02	$ 158,482
1968	0.02	$ 163,978
1969	0.05	$ 445,666
1970	0.05	$ 453,589
1971	0.05	$ 479,560
1972	0.04	$ 425,103
1973	0.05	$ 644,561
1974	0.20	$ 3,427,676
1975	0.20	$ 3,747,369
1976	0.20	$ 4,153,705
1977	0.20	$ 4,394,979
1978	0.20	$ 4,674,825
1979	0.20	$ 5,026,367
1980	0.20	$ 5,342,316
1981	0.43	$11,824,832
1982	0.34	$13,720,276

BOARD OF DIRECTORS

HAWLEY ATKINSON

GEORGE CAMPBELL, Chairman, January 4, 1982 to June 30, 1982

TOM FREESTONE, Chairman, July 1, 1981 to January 4, 1982

FRED KOORY, JR.

ED PASTOR

CITIZENS' FLOOD CONTROL ADVISORY BOARD

H. LYNN ANDERSON

JOHN E. MILLER, JR., Chairman, July 1, 1981 to November 30, 1981

PAUL E. PERRY

DEAN K. SELLERS

CHARLES A. SYKES, Chairman, November 30, 1981 to June 30, 1982

JAMES E. ATTEBERY, ex officio member, City of Phoenix

REID TEEPLES, ex officio member, Salt River Project

PRINCIPAL OFFICERS

WILLIAM D. MATHEWS, Chief Engineer and General Manager, July 1, 1981 to March 5, 1982

DANIEL E. SAGRAMOSO, Deputy Chief Engineer, July 1, 1981 to March 5, 1982, Chief Engineer and General Manager, March 5, 1982 to June 30, 1982

STANLEY L. SMITH, Chief, Construction and Operations Division, July 1, 1981 to March 5, 1982, Deputy Chief Engineer, March 5, 1982 to June 30, 1982

NICHOLAS P. KARAN, Chief, Engineering Division

ROBERT C. PAYETTE, Chief, Construction and Operations Division, May 18, 1982 to June 30, 1982

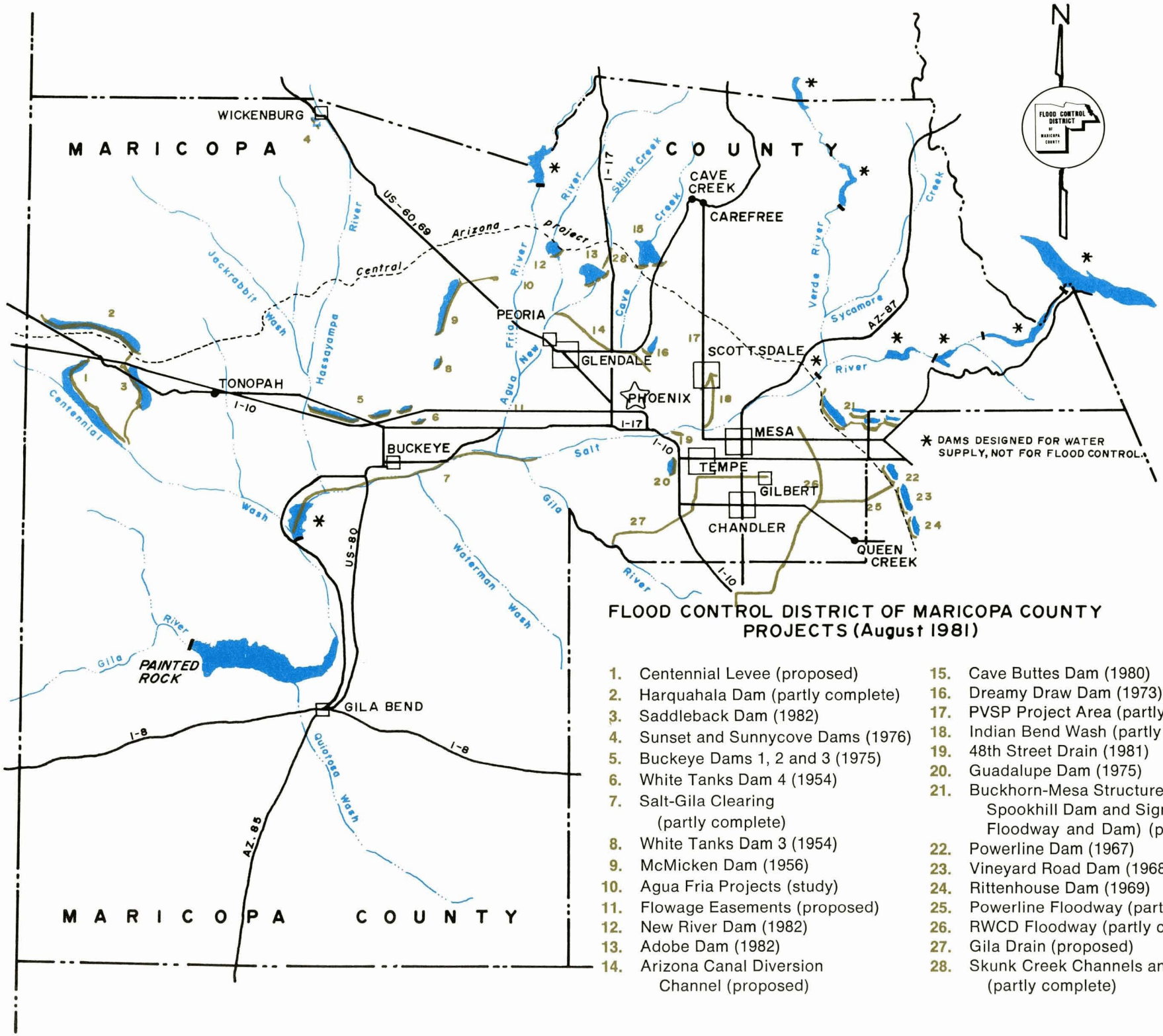
JOHN E. BURKE, Chief, Land Management Division

DAVID R. JOHNSON, Chief, Hydrology Division

MICHAEL J. CUNEO, Controller

SUE MUTSCHLER, Support Services Supervisor, July 1, 1981 to May 24, 1982

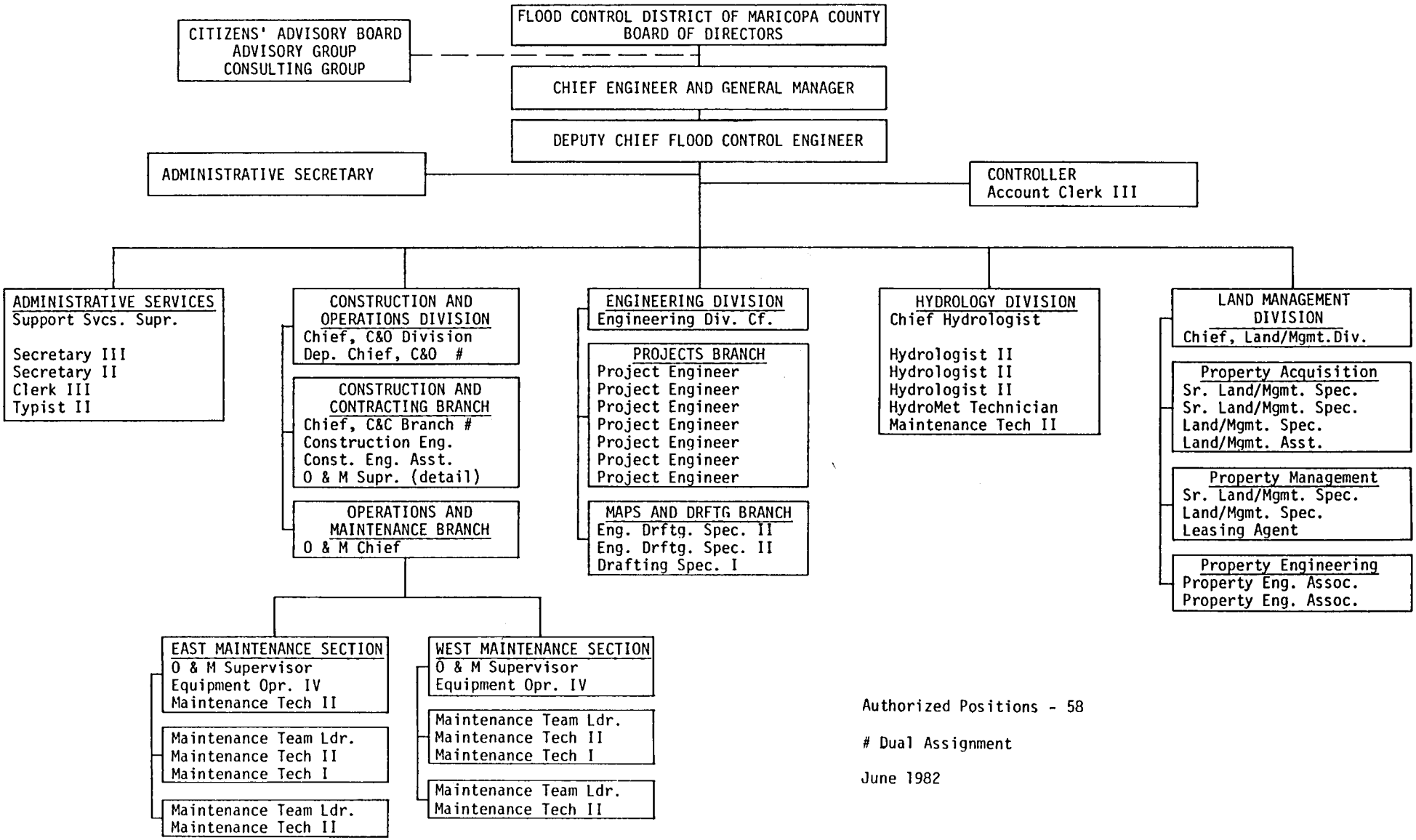
LINDA YOUNG, Support Services Supervisor, May 24, 1982 to June 30, 1982



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY PROJECTS (August 1981)

1. Centennial Levee (proposed)
2. Harquahala Dam (partly complete)
3. Saddleback Dam (1982)
4. Sunset and Sunnycove Dams (1976)
5. Buckeye Dams 1, 2 and 3 (1975)
6. White Tanks Dam 4 (1954)
7. Salt-Gila Clearing (partly complete)
8. White Tanks Dam 3 (1954)
9. McMicken Dam (1956)
10. Agua Fria Projects (study)
11. Flowage Easements (proposed)
12. New River Dam (1982)
13. Adobe Dam (1982)
14. Arizona Canal Diversion Channel (proposed)
15. Cave Buttes Dam (1980)
16. Dreamy Draw Dam (1973)
17. PVSP Project Area (partly complete)
18. Indian Bend Wash (partly complete)
19. 48th Street Drain (1981)
20. Guadalupe Dam (1975)
21. Buckhorn-Mesa Structures (including Spookhill Dam and Signal Butte Floodway and Dam) (partly complete)
22. Powerline Dam (1967)
23. Vineyard Road Dam (1968)
24. Rittenhouse Dam (1969)
25. Powerline Floodway (partly complete)
26. RWCD Floodway (partly complete)
27. Gila Drain (proposed)
28. Skunk Creek Channels and Levees (partly complete)

ORGANIZATIONAL CHART



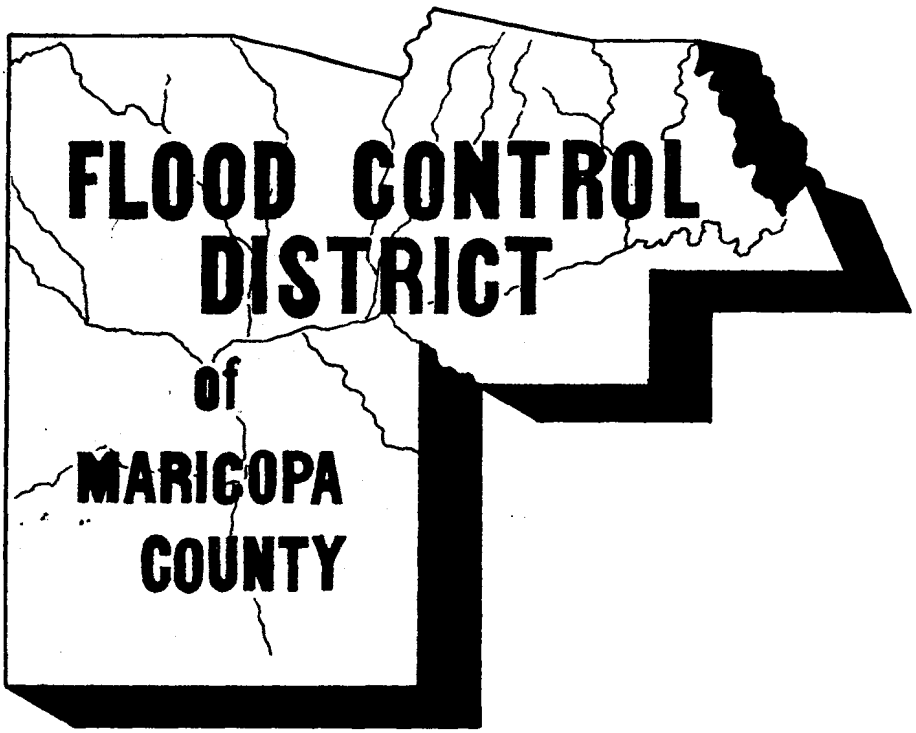
Authorized Positions - 58

Dual Assignment

June 1982

ANNUAL REPORT

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009



JULY 1, 1984 to JUNE 30, 1985

CONTENTS

Letter from the Chief Engineer and General Manager 1

Financial Highlights 2

Accomplishments 3

- Finished Projects 3
- Activities in Progress 4

Financial Report 8

- Statement of Revenues, Expenditures and Changes in Fund Balance ... 8
- Expenditures by Activities 9
- Expenditures on Land 10
- ACDC Rental Program 10

Tax Rate History 10

Boards and Officers 11

Project Map 12

Organization Chart .....inside back cover

BACKGROUND

The District, founded in 1959, is a municipal corporation and political subdivision of the State of Arizona. The District is governed by the Board of Directors with the advice of the Flood Control Advisory Board. The Directors are also Supervisors of Maricopa County.

The purpose of the District is to prevent flooding of property and endangering of lives within the geographical limits of Maricopa County by providing flood control facilities or by other means.

In fulfilling its purpose, the District

1. Acts as the local sponsor of federal flood control projects designed and constructed by the Army Corps of Engineers and the Soil Conservation Service. The District acquires the necessary rights-of-way and relocates facilities and people affected by the projects.
2. Studies flooding problems and plans and constructs flood control projects alone or in cooperation with State and local organizations.
3. Operates and maintains completed structures.
4. Assists in providing early warning of potential floods and provides technical leadership during flood emergencies. Provides hydrometerological data collected by the District's rain and stream gauge network.
5. Provides floodplain management for Maricopa County and other municipalities within the County.
6. Provides stormwater drainage review for the unincorporated area of Maricopa County.

The activities of the District are funded by a Flood Control Tax Levy assessed on all real property within Maricopa County and by a variety of State, County, and local government cost sharing arrangements. Federal agencies pay for the cost of design and construction of federal projects.

FLOOD CONTROL DISTRICT
of
Maricopa County

3335 West Durango Street • Phoenix, Arizona 85009
Telephone (602) 262-1501

D. E. Sagramoso, P.E., Chief Engineer and General Manager

BOARD of DIRECTORS
Tom Freestone, Chairman
George L. Campbell
Carole Carpenter
Fred Koory, Jr.
Ed Pastor

LETTER FROM MANAGEMENT

In August of 1984, the Flood Control District celebrated the 25th anniversary of its establishment. The accomplishments over the last 25 years are impressive. In partnership with the Federal Government we are providing a large measure of flood control to Metropolitan Phoenix as well as urban and rural areas throughout the County. We are providing additional flood control with local projects in cooperation with other agencies and the State. We have assumed a high responsibility for nonstructural solutions to flood control through the administration of the floodplain regulations and drainage review of proposed development. We have developed an extensive computer-based rain and stream gauge information collection system and work closely with the Department of Emergency Services and Civil Defense to issue alerts of potential flooding situations.

The future direction of the Flood Control District is unclear. We know that the Federal projects, on which most of our energies have been focused for the last 25 years, are being completed. Only the Arizona Canal Diversion Channel on the Corps of Engineers side and the last phases of the RWCD Floodway, the Buckhorn-Mesa Watershed, and the Harquahala Watershed on the Soil Conservation Service side are still to be be completed. However, flooding in many areas is still a problem as can be seen by inspecting the damages after rain storms.

One of the major tasks facing the District is the development of goals - the determination as to the direction the District will take in resolving flooding problems. More people, both consultants and staff, will be involved in planning and public involvement. In the past the Federal agencies had this responsibility. Now the District will be studying flooding problems, determining project feasibility, analyzing alternatives, and project planning. We now have five area drainage master studies under way with additional studies planned over the next several years. This is but the first step in the process.

D. E. Sagramoso, P. E.

FINANCIAL HIGHLIGHTS

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
FINANCIAL HIGHLIGHTS FOR THE YEAR ENDED JUNE 30, 1985
(UNAUDITED)

	DOLLARS	PERCENT
REVENUES		
Flood Control Tax	$28,697,000	87%
State Assistance	383,000	1%
Interest	1,928,000	6%
Local Participation	129,000	--
Rental Income	1,016,000	3%
Miscellaneous	831,000	3%
Total Revenues	$32,984,000	100%
EXPENDITURES		
Administration and Maintenance	3,085,000	17%
Flood Control Capital Improvements	15,181,000	83%
Total Expenditures	$18,266,000	100%
Excess (Deficiency) of Revenues Over Expenditures	14,718,000	
Fund Balance at Beginning of Year	13,158,000	
Fund Balance at End of Year	27,876,000	

Indian Bend Wash Side Channels System in Scottsdale.

Board of Directors: George Campbell, Fred Koory, Jr., Tom Freestone, Carole Carpenter, Ed Pastor.

FINISHED PROJECTS

NEW RIVER DAM — One of the most important accomplishments in a year of many accomplishments was the completion of construction of New River Dam by the Corps of Engineers. The Dedication Ceremony was held February 7, 1985. New River Dam is the last of the four-dam system north of Phoenix which, in conjunction with the proposed Arizona Canal Diversion Channel (ACDC), will provide a high measure of flood control to the Metropolitan area. The other dams in this system are Dreamy Draw completed in 1973, Cave Buttes Dam completed in 1980 and Adobe Dam completed in 1982.

New River Dam serves two major purposes. One purpose is to detain and then slowly release floodwaters so the peak flow below the Skunk Creek confluence is not increased by the diversion of waters into New River from the ACDC. Another purpose is to provide flood protection to homes and commercial establishments between the Dam and the confluence with Skunk Creek at about Greenway Road.

New River Dam is located on New River about a mile north of Jomax Road at 83rd Avenue. The 2,320 foot earthfill dam will reduce the peak inflow from the standard project flood from 45,000 cfs to 2,655 cfs. The Dam is 104 feet in height with a reservoir capacity of 43,520 acre feet and a reservoir area of 1,780 acres. The combined federal and local costs were $15.5 million.

INDIAN BEND WASH — The Flood Control District takes great pride in the completion of the Indian Bend Wash Project. We began working on a solution to the flooding problems along Indian Bend Wash in Scottsdale almost from the time the District was created in 1959. Through innovative thinking and cooperation, the District, the City of Scottsdale and the Corps of Engineers created a flood control greenbelt which contains parks, open space, lakes, golf courses, trails and other recreation facilities.

The Indian Bend Wash project is actually composed of five parts. The Indian Bend Wash **Outlet** is an unlined, entrenched channel from McKellips Road south to the Salt River and was completed in 1977. The **Inlet** is an unlined channel extending from Indian Bend Road south to McDonald Drive and was completed in 1979. The Inlet collects flows above the Arizona Canal, conveys them across the Canal and discharges them into the Greenbelt Floodway. A **siphon** passes water in the Arizona Canal under Indian Bend Wash and permits diversion of Canal flows into the Wash. The **Interceptor,** north of the Arizona Canal and east of the Wash between Pima and Hayden Roads, intercepts floodwaters that pond behind the north bank of the Arizona Canal. It was completed in 1981. The **Collectors and Side Channels** are a series of open channels and underground conduits to collect floodwaters from the north and west side of the Arizona Canal to prevent ponding and over-

topping of the Canal. They were completed in 1985. The **Greenbelt Floodway** was the responsibility of the City of Scottsdale and was entirely funded with local money. If runs from McDonald Drive to McKellips Road.

The Flood Control District spent approximately $12.5 million for its local sponsor costs on the Indian Bend Wash project. Except for the Greenbelt Floodway, the Corps of Engineers funded all the flood control construction costs. The City of Scottsdale and the Corps funded the recreation facilities. The City hosted a Dedication Ceremony on April 26, 1985.

SIGNAL BUTTE FLOODWAY — This project, constructed by the Soil Conservation Service, was completed this fiscal year and the Dedication Ceremony was held in August 1984. This Floodway and the other elements of the Buckhorn-Mesa Project, when complete, will help reduce flooding in the eastern Maricopa County area resulting from high intensity storms that can occur during the monsoon season. The first element of the Buckhorn-Mesa Watershed Project, the Spook Hill Dam and Floodway, was completed in November 1979. The Signal Butte Dam and Pass Mountain Diversion are scheduled for construction beginning in September 1985.

The Signal Butte Floodway is a 2.66 mile earthen trapezoidal and concrete rectangular channel. The channel is 14 to 20 feet wide and 5.5 feet deep. The elements of the Buckhorn-Mesa Watershed system are designed to provide flood protection to the areas downstream and work in concert with the others to convey floodwaters through the system into the Salt River above Granite Reef Dam.

McMICKEN DAM RESTORATION — McMicken Dam was constructed in 1956 by the Corps of Engineers primarily to protect Luke Air Force Base. Maricopa County was the original local sponsor but the responsibility for operation and maintenance has since been assumed by the District. In 1977 the Dam was declared unsafe because cracking of the compacted soil embankment and was breached by the Corps of Engineers under emergency authority in order to prevent possible catastrophic failure. The restoration was undertaken as a local project with one-third of the $1.85 million construction cost provided by the Maricopa Water District No. 1 and the Del E. Webb Development Company. The District supplied the other two-thirds of the funds.

McMicken Dam has now been restored and provides flood protection to Luke Air Force Base and communities in the area. The repair method was designed to restore the integrity of the structure regardless of whether subsidence and/or soil collapse caused the cracking. The repair method consists of trenching along the centerline of the dam, lining the trench with filter fabric to keep fine soil particles from washing into it, and then loosely backfilling the trench with a coarse stone drain material to collect and convey water entering the embankment through the cracks.

Maintenace Technician Ed Loy.

A dedication Ceremony was held on September 27, 1984.

SALT-GILA CLEARING — All the initial clearing has been completed and we are now in the operations and maintenance phase of the project. The last segment involved in the initial clearing was four scattered pieces starting about Cotton Lane and ending at Palo Verde Road. The total project involved the removal of vegetation in a 1,000 foot wide corridor in the 35-mile reach of the Salt and Gila Rivers from 91st Avenue to Gillespie Dam. The District's costs in the initial clearing were in excess of $1.3 million. The District will need to continue reclearing since the vegetation grows back very quickly.

ACTIVITIES IN PROGRESS

Federal Projects

ARIZONA CANAL DIVERSION CHANNEL (ACDC)
The ACDC will be the last feature of the "Phoenix, Arizona and Vicinity (Including New River) Flood Control Project" to be constructed by the Corps of Engineers. The Channel will be constructed north of the Arizona Canal between approximately 75th Avenue and 40th Street. It will divert floodwaters from Cudia City Wash, Dreamy Draw, Cave Creek and other washes into Skunk Creek eliminating breakouts in the Arizona Canal like those that have occurred in the past. The ACDC will provide 100 year flood protection to large parts of the Phoenix Metropolitan area.

Approximately 85% of the land rights for the ACDC have been acquired. Two of the 25 required bridges have been completed, and five are under construction. Five additional bridges are being or have been designed. Reach 1 of the ACDC will be under construction by the fall of 1985.

The District has completed a successful program to dispose of a large quantity of dirt from the channel right-of-way in Reach 1. Earth moving contractors and others removed approximately 700,000 yards of material at no cost to the District or the Corps of Engineers. This saved the District the compaction costs and saved the Corps of Engineers approximately $1.4 million in earth moving costs.

Opposition to Reach 4 of the ACDC has arisen from homeowners in the Biltmore area and also from the Biltmore Hotel. The "Citizens Against Reach 4" are concerned that the ACDC will be unsightly and might lower property values. The group has issued statements which exaggerate the cost and impact of the project and give a misleading or untrue picture of the project. The Phoenix City Council has formed a Task Force to investigate and report back to the Council.

RWCD FLOODWAY — The Roosevelt Water Conservation District Floodway is being constructed on the upstream side of the RWCD Canal in Eastern Maricopa County. The 27.6 mile-long Floodway is composed of six reaches and will extend from the Gila River to a little north of Brown Road in Mesa. Reach 1 was completed in 1981 and Reach 2 in 1983. Reach 3 should be completed by early fall 1985. The timing of future reaches is uncertain as the funding of all Soil Conservation Service Watershed activities has been cut drastically.

Only two land parcels and several small segments for ramp construction are still to be acquired for the Floodway. Leisure World will use three miles of the Floodway area for golf course and recreation purposes, actually constructing our Floodway as well as providing future operations and maintenance. This saved the District approximately $3 million in land rights acquisition costs, alone. Of the 19 bridges over the Floodway to be constructed by the District, fifteen have been completed and two are under construction.

Maintaining Buckeye Dam.

BUCKHORN-MESA WATERSHED—The Buckhorn-Mesa Watershed Project is a system of interrelated structures being built by the Soil Conservation Service to provide flood protection to rural and urban lands in the Eastern Maricopa County and Pinal County area, generally south of Brown Road from about Bush Highway to Idaho Road. The first structures, the Spook Hill Dam and Floodway and the Signal Butte Floodway, have been constructed and the Soil Conservation Service expects to begin construction of the Signal Butte Dam and Pass Mountain Diversion in September 1985. The other structures, the Bulldog Floodway and the Apache Junction Dam and Floodway, will follow.

CENTENNIAL LEVEE — Construction began on Reach 1 of the Centennial Levee in November 1984, and should be completed in about a year. This Levee is being built on the west side of the Harquahala Valley to protect the Valley from flows from the west and to keep floodwater in Centennial Wash from breaking out across the Valley and damaging agricultural lands, roads and homes. The structure is being built in coordination with the Harquahala Irrigation District's distribution system for Central Arizona Project water. Reach 2 will be constructed later.

Local Projects

HOLLY ACRES LEVEE AND BANK STABILIZATION — The homes in Holly Acres and the surrounding area suffered heavy damages from flooding on the Salt/Gila River from 1978 through 1980. The District is working on a project to protect the Holly Acres Subdivision by constructing a levee four to six feet high and stabilizing the north bank of the Gila River. The levee is designed to provide protection for Holly Acres from a flow of 115,000 cfs in the Salt River which is 100 year protection after the construction of the Plan 6 flood control features. The cost of $1.2 million includes a State appropriation of $600,000. The Dedication Ceremony was held April 20, 1985; however, due to continuing flows in the River, the project is not completely finished.

AGUA FRIA CHANNELIZATION PROJECT—Construction began on the first segment of the 4.5-mile Agua Fria Channelization Project. At $8.14 million, this is the largest individual transaction, including land purchases, in which the District has been involved. The entire project will cost approximately $30 million, about a third of which will be cost shared by others. The project was developed to resolve some of the flooding problems along the Agua Fria River that became evident during the flooding of 1978 to 1980. It will extend from half a mile north of Indian School Road south to Buckeye Road and is designed to safely contain and convey the Standard Project Flood estimated to be 142,000 cfs. The project consists of levees on both sides of the River, the replacement of the

Roosevelt Irrigation District flume with a new irrigation canal and inverted siphon, construction of grade control structures, protection of utility towers, extension of the I-10 diversion channel to the Agua Fria, protection of the I-10 Bridge piers, and protection of the railroad crossing and Buckeye Road Bridge. A landfill located immediately north of Buckeye Road will be removed. The project will reduce the floodplain making more land available for development thus adding to the tax base of the County and the City of Avondale.

GILA DRAIN — The communities of Chandler, Gilbert, Mesa, and Tempe have agreed with the District to abandon the concept of collecting stormwaters and draining them through the Gila River Indian Reservation. An alternative plan consisting of three major elements is now being pursued with each element being a separate project. One element being developed by the City of Tempe and cost shared by the District consists of a trapezoidal collector channel parallel to I-10 south from Elliot Road to the existing ADOT Borrow Pit which will be used to detain stormwaters. This element is being designed and is expected to be under construction in January 1986. Another element is a storm drain to be constructed in 48th Street from Baseline Road north to the Salt River. This element is to be cost shared by Phoenix, Tempe and the District and will include an outlet from the Salt River Project Western Canal. The third and largest element (Price Road Drain) consists of a pressure/gravity conduit system from the City of Mesa's Carriage Lane Detention Basin north to the Salt River along the alignment of Price Road and the Arizona Department of Transportation Outer Loop. This element should provide a stormwater discharge for Chandler, Gilbert, and Mesa. Studies will be conducted to determine if this facility should be combined with ADOT drainage facilities for the Outer Loop.

OLD CROSS CUT CANAL—The Corps of Engineers and the Flood Control District signed an Intergovernmental Agreement for cost sharing the feasibility study for constructing an enlarged floodway along the alignment of the Old Cross Cut Canal. The Corps should have the study completed in about two years. The District currently maintains the Canal as a flood control project through an intergovernmental agreement with the Salt River Project and the City of Phoenix. The Canal is used to drain the Arizona Canal and provide an outlet for local storm water.

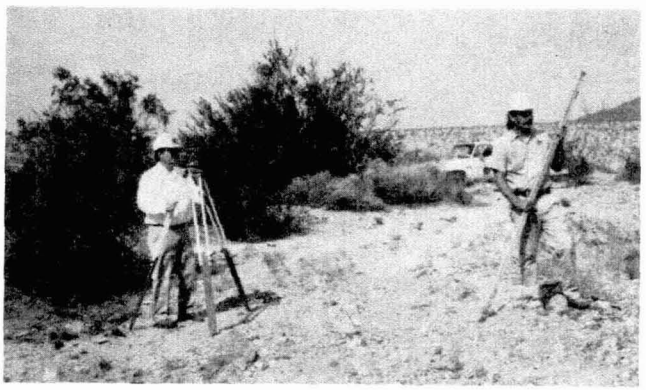
AREA DRAINAGE MASTER STUDIES — During the last year the District has become involved in drainage studies that will impact on development and flooding problems in many areas of Maricopa County. The purpose is to solve local watershed flooding problems either alone or in cooperation with other agencies. Several studies are under way and a number of other studies are proposed.

PVSP — This project is designed to control flooding problems in the area bounded by 56th Street east to Scottsdale Road and Greenway Road on the north to Indian Bend Wash on the south. The plan employs detention basins, open channels and pipes. One project was constructed in the City of Scottsdale consisting of a 140 acre-foot capacity detention basin at the intersection of Scottsdale Road and Cactus Road and several sections of pipe, open channel and culverts along Scottsdale Road between Cactus Road and Thunderbird Road, and on 70th Street between Cholla Street and Mountain View Road. The total cost of the flood control improvements was $1,852,158. The District funded 45.56% of the costs and the remainder was paid from funds on deposit with the District by Paradise Valley and Scottsdale. This work substantially completes the three miles of pipe and channel construction along Scottsdale Road between Thunderbird Road and Indian Bend Wash. Three detention basins remain to be built to complete the system in Scottsdale.

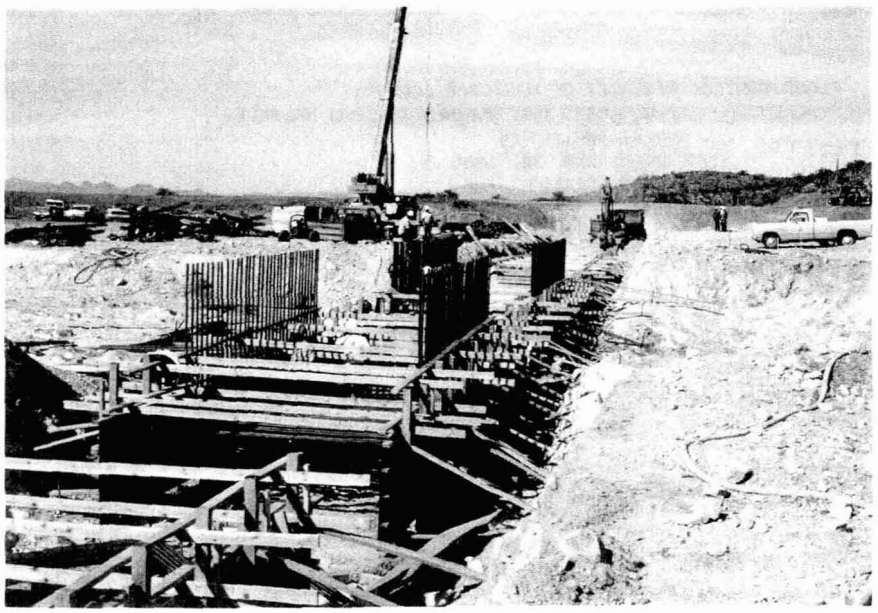
INDIAN SCHOOL ROAD BRIDGE PIER PROTECTION — The February 1980 Flood seriously damaged the Indian School Road Bridge across the Agua Fria River. Several spans failed because the piers washed out. The caissons of the washed out piers were replaced, but it was felt that the remaining lower capacity piers needed to be protected. This project was undertaken by the Flood Control District as the first part of our Agua Fria Channelization project.

Other Activities

STATUTE CHANGES — FLOODPLAIN BOARD OF REVIEW — The State Legislature, effective August 3, 1984, made a number of changes in the Statutes regarding flood control and floodplain management that have significantly increased our responsibilities. One change transfers jurisdiction for floodplain management in the unincorporated areas from the counties to the county flood control districts and gives county flood control districts responsibility for floodplain management within the cities unless a municipality chooses to retain the responsibility in its own jurisdiction. The Flood Control District of Maricopa County thus has responsibility for floodplain management for the unincorporated area of the County as well as Carefree, Chandler, Buckeye and Gila Bend.



Operations & Maintenance Crew
Tony Guzak and Ed Loy.



New River Dam—
Forming for Discharge Pipe Through the Dam.

A significant change removed the ceiling on the taxing authority of flood control districts and the Board of Directors will no longer be limited to a ceiling of 50 cents per $100 of assessed value.

Another change gives the Flood Control Advisory Board, as the Floodplain Board of Review, the responsibility for approving or denying floodplain variances as well as making interpretations of regulations.

PLAN 6 FLOOD CONTROL MEASURES — The District will be participating in upfront funding for the Plan 6 flood control measures for the Central Arizona Project. The Board of Directors has pledged the District to provide up to 20% of the costs allocated to the flood control function to help ensure completion of facilities in a reasonable time frame and help assure that the project will receive continued federal support. Through studying the cash flow requirements and estimating the future assessed value of real property in the County, we estimate that the District can contribute the funds from current income. The maximum payment of $20.4 million in FY 94/95 would require a tax levy of 12.3 cents per $100 of assessed value.

FLOOD WARNING SYSTEM—This year we started a program with private developers whereby they buy equipment compatible with our flood warning system, and we install the equipment and have access to the information. With this program we have instrumented an area in Carefree with telemetered recording and nonrecording rain gauges. It is our intention to use the resultant data in future rainfall studies such as for the Area Drainage Master Studies. The information will also help in the refinement of the County Drainage Standards for the Maricopa Association of Governments (MAG) and aid in the review of subdivision design. We have taken the system beyond only flood warning into the data collection area to perform hydrologic studies and research.

The District has upgraded the quality of the observer network by removing nonproductive observers and recruiting new observers in critical areas.

Maintenance Activities

The District has experienced tremendous growth in its requirements for maintenance activities in the last few years. In addition to all the structures we maintain, there are hundreds of acres of rights-of-way maintenace for the ACDC and the RWCD Floodway. In the last year we have added several structures which require operation and maintenance; New River Dam, the last phases of Indian Bend Wash, Signal Butte Floodway, and additional segments of the Salt-Gila River Clearing. This maintenance activity is accomplished by innovative use of existing staff and use of prisoners from the Department of Corrections. The DWI inmates and the prisoners from Perryville perform labor intensive projects freeing out personnel for work where a higher skill level is required.

Drainage Review

During the past fiscal year, fulfilling the responsibilities as the Drainage Administrator for the Unicorporated Area of Maricopa County, the Drainage Branch of the Hydrology Division reviewed approximately 680 cases directly pertaining to new development. In addition to responding to drainage complaints and inquiries, we conducted field inspections and review of new and existing developments to assure compliance with the drainage requirements. Remedial measures were recommended in some areas that were subjct to inundations from runoff as well as coordination between neighbors, Building Safety, Planning and Development, and the County Highway Department where deemed necessary.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
STATEMENT OF REVENUES, EXPENDITURES AND CHANGES IN FUND BALANCE-
BUDGET AND ACTUAL
YEAR ENDED JUNE 30, 1985
(UNAUDITED)

	BUDGET	ACTUAL	VARIANCE FAVORABLE (UNFAVORABLE)
REVENUES			
Flood Control District Tax Levy	$31,425,000	$28,697,000	$ <2,728,000>
State Assistance			
Local Projects	2,260,000	383,000	<1,877,000>
Federal Projects	385,000		<385,000>
County Reimbursements for Services	4,815,000		<4,815,000>
Interest Earnings	1,000,000	1,928,000	928,000
Local Participation	1,429,000	129,000	<1,300,000>
Rental	900,000	1,016,000	116,000
Miscellaneous			
Settlements	629,000		<629,000>
Other	168,000	831,000	663,000
Total Revenues	43,011,000	32,984,000	<10,027,000>
EXPENDITURES			
Personnel Services			
Salaries and Wages	2,148,000	2,067,000	81,000
Overtime	57,000	5,000	52,000
Total	2,205,000	2,072,000	133,000
Supplies and Services			
Professional Services Contracts	5,632,000	1,457,000	4,175,000
Maintenance Contracts	603,000	292,000	311,000
Maintenance Supplies	194,000	112,000	82,000
Insurance	20,000	20,000	
Other Supplies and Services	303,000	330,000	<27,000>
Total	6,752,000	2,211,000	4,541,000
Capital Outlay			
Real Estate	7,810,000	5,729,000	2,081,000
Engineering and Scientific Equipment	208,000	185,000	23,000
Motor Vehicles and Equipment	438,000	222,000	216,000
Construction and Other Capital Outlay	27,608,000	7,847,000	19,761,000
Total	36,064,000	13,983,000	22,081,000
Total Expenditures	45,021,000	18,266,000	26,755,000
Excess (Deficiency) of Revenues Over Expenditures	<2,010,000>	14,718,000	16,728,000
Fund Balance at Beginning of Year	13,158,000	13,158,000	
Fund Balance at End of Year	$11,148,000	$27,876,000	$16,728,000

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
EXPENDITURES BY ACTIVITY
(UNAUDITED)

ACTIVITY	EXPENDITURES OTHER THAN MAINTENANCE	MAINTENANCE EXPENDITURES
Administration	493,000	
Maintenance Overhead	4,000	509,000 *
United States Geological Survey	40,000	
Planning Department	119,000	
Floodplain Delineation	34,000	
Flood Insurance	23,000	
Hydrologic Data Collection	2,000	9,000
Flood Warning	77,000	46,000
Floodplain Administration	56,000	
Computer Systems	23,000	9,000
Dysart Road-Agua Fria Drain	1,000	32,000
48th Street Drain		7,000
Old Cross Cut Canal	1,000	38,000
Salt/Gila Clearing & Channelization	86,000	71,000
Salt/Gila Control Works	922,000	4,000
Sossaman Road		22,000
Agua Fria River	20,000	
Agua Fria River (ADOT Agreement)	117,000	
Indian Bend Wash Outlet	1,000	10,000
Indian Bend Wash Interceptor & Side Channels	70,000	14,000
Gila Drain	34,000	1,000
Arizona Canal Diversion Channel	10,677,000	409,000 **
Paradise Valley, Scottsdale, Phoenix Project	466,000	1,000
RWCD-Williams/Chandler	243,000	26,000
RWCD-Apache Junction/Gilbert	903,000	19,000
RWCD-Buckhorn Mesa	490,000	3,000
White Tanks Dam #3	1,000	22,000
White Tanks Dam #4	1,000	7,000
McMicken Dam	430,000	155,000
Dreamy Draw Dam		7,000
Buckeye Dam #1		15,000
Buckeye Dam #2		7,000
Buckeye Dam #3		9,000
Spookhill Dam and Outlet	1,000	39,000
Signal Butte Floodway	71,000	17,000
Pass Mountain Dam and Outlet	8,000	2,000
Apache Junction Dam/Bulldog Floodway	9,000	
Signal Butte Dam	14,000	4,000
Powerline Dam		10,000
Powerline Floodway		34,000
Vineyard Road Dam		5,000
Harquahala Dam and Floodway		19,000
Saddleback Dam		11,000
Centennial Levee	47,000	
Harquahala Floodway		10,000
Sunset/Sunnycove Pipeline		6,000
Cave Buttes Dam	1,000	19,000
Adobe Dam	2,000	17,000
New River Dam	32,000	6,000
Skunk Creek/New River Flowage Easements	33,000	
Agua Fria River Flowage Easements	882,000	
Spookhill Watershed Drainage	60,000	
East Maricopa Drainage	83,000	
Various Projects With No Major Expenditures	11,000	27,000
	$16,588,000	$1,678,000

* The following represents significant portions of the $509,000.00 expended on maintenance overhead:

$155,000	was expended for the purchase of maintenance and construction equipment vehicles.
$120,000	was expended for maintenance of vehicles.
$ 19,000	was expended for maintenance of communications equipment.
$294,000	

** The $409,000 expended on maintenance of the Arizona Canal Diversion Channel included $293,000 for maintenance of properties involved in the Rental Program. These properties generated revenue of $968,000 during this time period.

CONTRACTS IN EFFECT THIS YEAR

Type of Contract	Number	Contract Amount Including Contingencies
Appraisals	32	$ 41,313
Architect and Engineering Services	28	3,026,086
Construction	16	15,025,421
Maintenance	2	525,000
Relocation Assistance	2	25,900
Property Management	40	144,173
		$18,787,893

ACCOUNT CLERK Francess Peake.

INCOME FIGURES FOR THE ACDC RENTAL PROGRAM
(UNAUDITED)

Month	Gross Income	Expenditures	Net
July 1984	$ 72,000	$ 10,000	$ 62,000
August	88,000	24,000	64,000
September	52,000	20,000	32,000
October	94,000	24,000	70,000
November	84,000	31,000	53,000
December	81,000	27,000	54,000
January 1985	84,000	26,000	58,000
February	83,000	19,000	64,000
March	101,000	25,000	76,000
April	71,000	25,000	46,000
May	76,000	24,000	52,000
June	82,000	38,000	44,000
Total for Fiscal Year	$968,000	$293,000	$675,000

As of June 1985

Total Rentable Properties 171

Properties Rented to Public 161

Vacancy Rate 6%

Percent Net is of Gross 70%

HISTORY OF THE TAX LEVY RATE FOR THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

For fiscal year ending	Levy Rate per $100 assessed value	Tax Revenue
1961	0.05	$ 253,451
1962	0.05	$ 288,197
1963	0.02	$ 126,115
1964	0.02	$ 135,304
1965	0.02	$ 144,905
1966	0.02	$ 153,160
1967	0.02	$ 158,482
1968	0.02	$ 163,978
1969	0.05	$ 445,666
1970	0.05	$ 453,589
1971	0.05	$ 479,560
1972	0.04	$ 425,103
1973	0.05	$ 644,561
1974	0.20	$ 3,427,676
1975	0.20	$ 3,747,369
1976	0.20	$ 4,153,705
1977	0.20	$ 4,394,979
1978	0.20	$ 4,674,825
1979	0.20	$ 5,026,367
1980	0.20	$ 5,342,316
1981	0.43	$11,824,832
1982	0.34	$13,720,276
1983	0.50	$21,778,807
1984	0.48	$25,780,096
1985	0.50	$28,696,527

DRAFTING BRANCH
Shon Wu, Lawrence D. Wong, Cory M. Miller.

EXPENDITURES ON LAND
(Breakdown by Project)

Project	Number of Parcels Bought This Year	Total Land Acquisition Costs	% of Land Acquired To Date
Arizona Canal Diversion Channel	23	$5,466,401	85
Signal Butte Floodway	1	50,475	95
Centennial Levee	2	33,732	96
Agua Fria River Flowage Easements	11	310,760	20
Salt/Gila Control Works	7	23,155	95

Flood Control Advisory Board—Charles A. Sykes, H. Lynn Anderson, David B. Harmon (for Attebery, City of Phoenix), Louis R. Scatena (for Teeples, Salt River Project), William LoPiano, John E. Miller, Jr.

BOARD OF DIRECTORS

HAWLEY ATKINSON, July 1, 1984, to December 31, 1984

GEORGE CAMPBELL

CAROLE CARPENTER, January 1, 1985, to June 30, 1985

TOM FREESTONE, Chairman, January 7, 1985, to June 30, 1985

FRED KOORY, JR., Chairman, July 1, 1984, to January 7, 1985

ED PASTOR.

FLOOD CONTROL ADVISORY BOARD

H. LYNN ANDERSON

JOHN E. MILLER, JR., Chairman, November 1, 1984 to June 30, 1985

WILLIAM LOPIANO

PAUL E. PERRY, Chairman, July 1, 1984, to October 31, 1984

CHARLES A. SYKES

JAMES E. ATTEBERY, ex officio member, City of Phoenix

REID TEEPLES, ex officio member, Salt River Project

PRINCIPAL STAFF MEMBERS

DANIEL E. SAGRAMOSO, Chief Engineer and General Manager

STANLEY L. SMITH, JR., Deputy Chief Engineer

NICHOLAS P. KARAN, Chief, Engineering Division

ROBERT C. PAYETTE, Chief, Construction and Operations Division

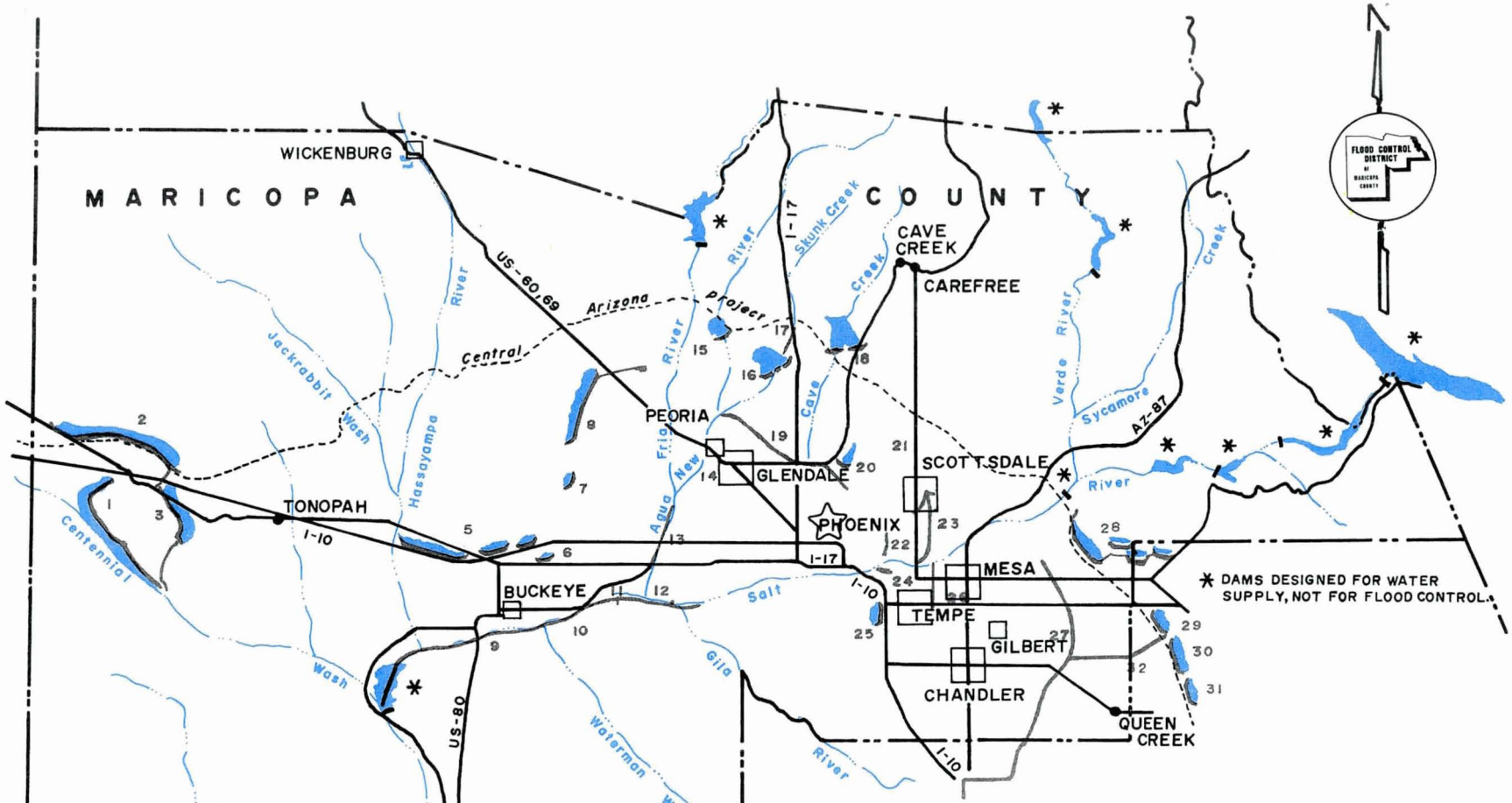
JOHN E. BURKE, Chief, Land Management Division, July 1, 1984 to November 9, 1984

EDWARD D. OPSTEIN, Chief, Land Management Division, December 3, 1984, to June 30, 1985

DAVID R. JOHNSON, Chief, Hydrology Division

MICHAEL J. CUNEO, Controller

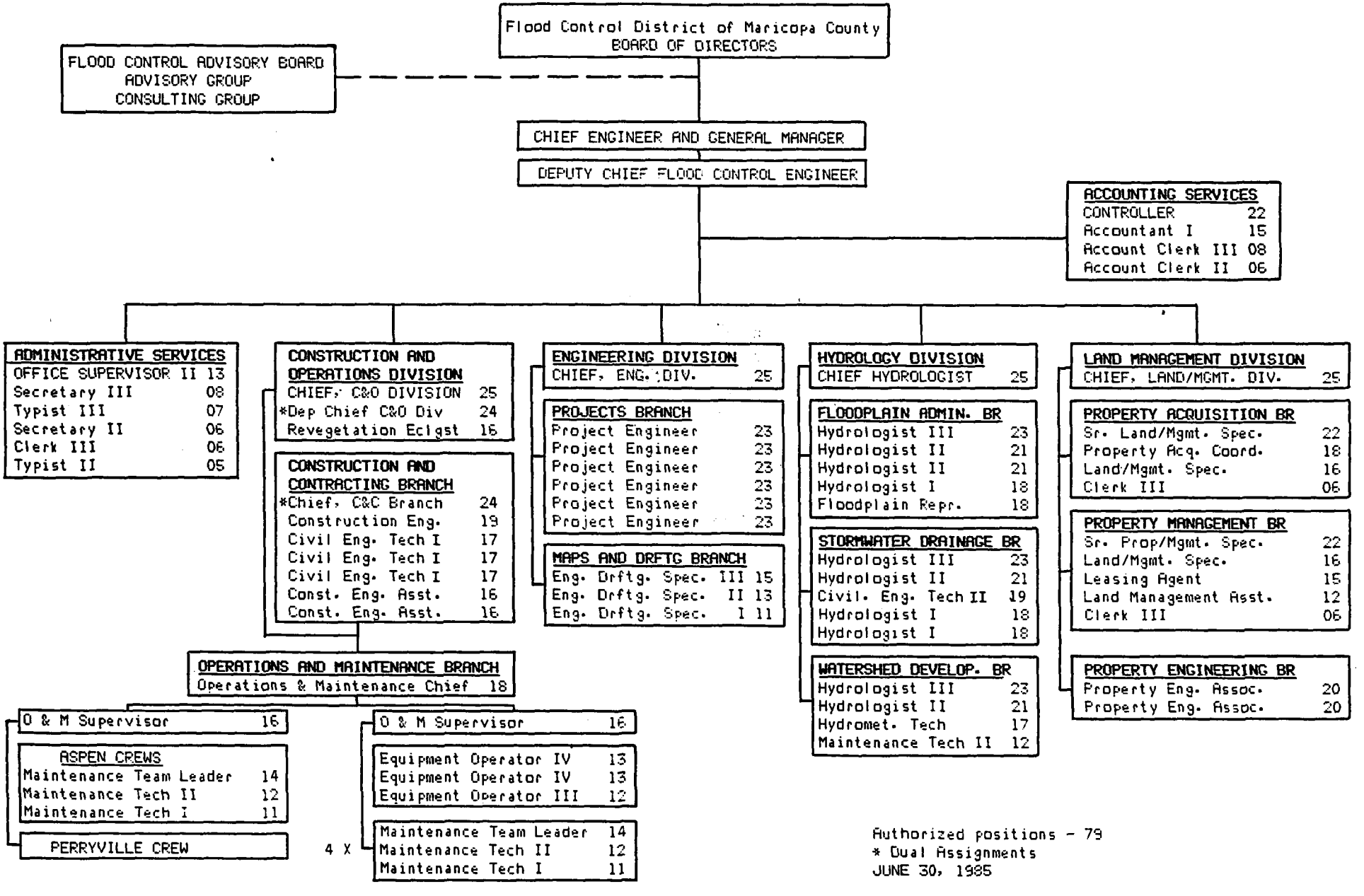
GWEN LOVING, Office Supervisor



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY PROJECTS (June 30, 1985)

1. Centennial Levee (Partly complete)
2. Harquahala Dam and Floodway (1982)
3. Saddleback Dam and Diversion (1981)
4. Sunset and Sunnycove Dams (1976)
5. Buckeye Dams 1, 2 and 3 (1975)
6. White Tanks Dam 4 (1954)
7. White Tanks Dam 3 (1954)
8. McMicken Dam (1956) (Restored 1984)
9. SR 85 Bridge Channel Maintenance
10. Salt-Gila Clearing (1985)
11. Perryville Bank Stabilization (1984)
12. Holly Acres Levee and Bank Stabilization (1985)
13. Agua Fria Channel Projects (Partly complete)
14. Flowage Easements (Partly complete)
15. New River Dam (1985)
16. Adobe Dam (1984)
17. Skunk Creek Channels and Levee (1983)
18. Cave Buttes Dam (1980)
19. Arizona Canal Diversion Channel (Proposed)
20. Dreamy Draw Dam (1973)
21. PVSP Project (Partly complete)
22. Old Cross Cut Canal (1975) (Restudy)
23. Indian Bend Wash (1985)
24. 48th Street Drain (1981)
25. Guadalupe Dam (1975)
26. Price Road Drain (Proposed)
27. RWCD Floodway (Partly complete)
28. Buckhorn-Mesa Projects (including Spook Hill Dam, Signal Butte Floodway and Dam, Pass Mountain Diversion, Bull Dog Floodway, and Apache Junction Dam) (Partly complete)
29. Powerline Dam (1967)
30. Vineyard Road Dam (1968)
31. Rittenhouse Dam (1969)
32. Powerline Floodway (1968)

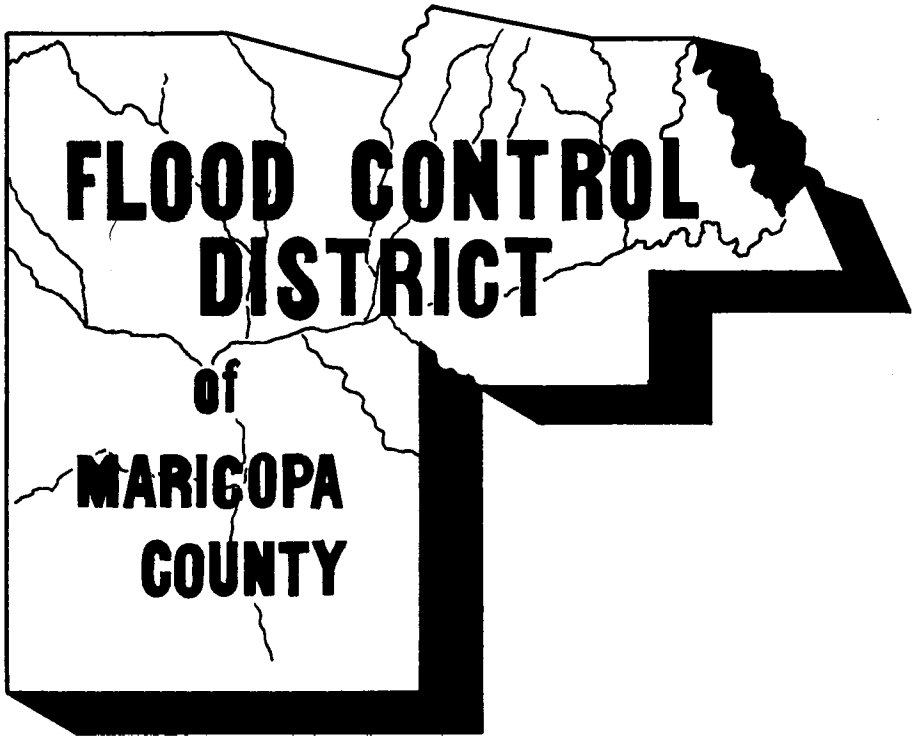
ORGANIZATIONAL CHART



Authorized positions - 79
* Dual Assignments
JUNE 30, 1985

ANNUAL REPORT

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009



JULY 1, 1985 to JUNE 30, 1986

003.105

CONTENTS

Letter from the Chief Engineer and General Manager 1

Financial Highlights 2

Accomplishments 3

- Finished Projects 3
- Activities in Progress 5

Financial Report 11

- Statement of Revenues and Expenditures 11
- Expenditures by Activities 12
- Expenditures on Land 14
- Income Figures for Rental Program 14

Tax Rate History 14

Boards and Officers 15

Project Map 16

Organization Chart ..... inside back cover

BACKGROUND

The District, founded in 1959, is a municipal corporation and political subdivision of the State of Arizona. The District is governed by a Board of Directors which is also the Board of Supervisors of Maricopa County. A Flood Control Advisory Board advises the Board of Directors.

The purpose of the District is to prevent loss of life or injury to residents of Maricopa County and the elimination or minimizing of flood damages to real and personal property. In fulfilling its purpose, the District:

1. Provides floodplain management for Maricopa County and certain municipalities within the County.
2. Provides stormwater drainage review for the unincorporated area of Maricopa County.
3. Studies flooding and drainage problems and plans and constructs projects alone or in cooperation with others.
4. Acts as the local sponsor of federal flood control projects designed and constructed by the U.S. Army Corps of Engineers and the Soil Conservation Service. The District acquires the necessary rights-of-way and relocates facilities and people affected by the projects.
5. Operates and maintains completed flood control structures.
6. Assists in providing early warning of potential floods and provides technical leadership during floor emergencies. Collects and distributes hydrometerological data from the District's rain and stream gauge network.

The activities of the District are funded by a Flood Control Tax Levy assessed on all real property within Maricopa County and a variety of cost sharing arrangements with the State, Maricopa County and local governments.

FLOOD CONTROL DISTRICT
of
Maricopa County

3335 West Durango Street • Phoenix, Arizona 85009
Telephone (602) 262-1501

D. E. Sagramoso, P.E., Chief Engineer and General Manager

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

BOARD OF DIRECTORS
George L. Campbell, Chairman
Carole Carpenter
Tom Freestone
Fred Koory, Jr.
Ed Pastor

LETTER FROM MANAGEMENT

Probably the most exciting event of the year was the start of construction of the Arizona Canal Diversion Channel (ACDC). This project has been the focal point of flood control protection for the Phoenix Metropolitan area for many, many years. It was with a great deal of pride and sense of accomplishment that the Corps of Engineers and the Flood Control District participated in a ground breaking ceremony and watched the first bucket of earth being moved. Although the project won't be completed until approximately late 1991, at the fiscal year's end the "Reach 1" contract was 65% complete and we are well under way.

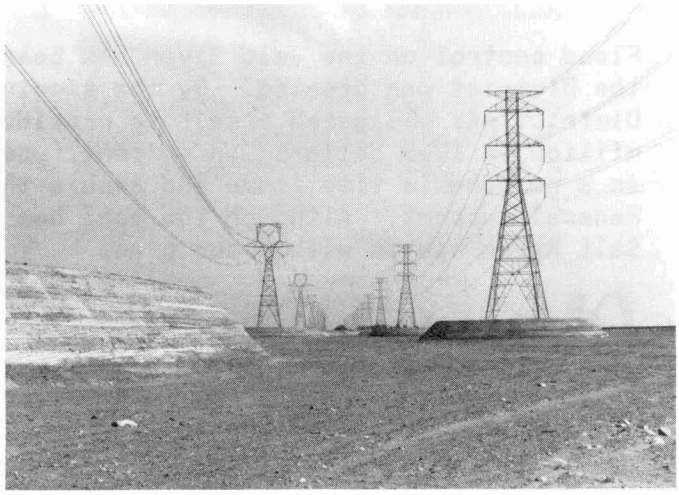
Perhaps the most unusual event was agreeing to advance money to the Federal Government for the construction and construction engineering costs of Federal projects. Flood protection in the eastern Maricopa County area is extremely important to us and when Soil Conservation Service funding faltered, we agreed to advance funds for the last two segments of the Buckhorn-Mesa Project at a cost of $10.5 million and Reach 4 of the RWCD Floodway at a cost of $1.5 million.

Flood control on the Salt River has been an elusive goal of the District since the District was created. By the signing of the Plan 6 Agreement, the District has obligated itself to provide 20% of the flood control costs ($60 million in 1985 dollars) in upfront funding to assure completion of the project in a reasonable time frame and assure that the project will receive continued Federal support. Although the goal has not been reached, flood control on the Salt River now is within our grasp.

D. E. Sagramoso

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
FINANCIAL HIGHLIGHTS FOR THE YEAR ENDED JUNE 30, 1986
(Preliminary and Unaudited)

	DOLLARS	PERCENT
REVENUES		
Flood Control Tax	$33,644,000	73%
Rental Income	935,000	2%
Interest	2,140,000	5%
State Assistance - Local Projects	4,428,000	10%
Local Participation	3,867,000	8%
Miscellaneous	843,000	2%
Total Revenues	45,857,000	100%
EXPENDITURES		
Administration and Maintenance	4,451,000	8%
Flood Control Capital Improvements	51,370,000	92%
Total Expenditures	55,821,000	100%
Excess (Deficiency) of Revenues Over Expenditures	(9,964,000)	
Fund Balance at Beginning of Year	28,457,000	
Fund Balance at End of Year	$18,493,000	
EXPENDITURES BY TASK		
Administration	$ 2,947,000	5%
Land Acquisition	11,325,000	20%
Relocation of Utilities, Bridges and Other Facilities	11,719,000	21%
Construction	21,726,000	39%
Maintenance	2,186,000	4%
Cost Sharing in Projects Managed by Others	5,918,000	11%
Total	$55,821,000	100%



Agua Fria Channelization. Soil cement on banks and around high voltage overhead power towers in the Agua Fria Channel is 8 feet thick and approximately 21 feet above and 8½ feet below the channel bottom.

Board of Directors: George Campbell, Fred Koory, Jr., Tom Freestone, Carole Carpenter, Ed Pastor.

FINISHED PROJECTS

AGUA FRIA CHANNELIZATION PROJECT — Reach 1 of the Agua Fria Channelization Project was completed in April 1986 at a cost of $8,433,355.30, and Reach 2 was completed in June 1986 at a cost of $8,230,364.44. The Agua Fria Channelization Project was developed to resolve some of the flooding problems along the Agua Fria River that became evident during the flooding of 1978 to 1980. It is designed to safely contain and convey the Standard Project Flood estimated to be 142,000 cfs. The total project is expected to cost approximately $40 million, a portion of which will be shared by others and is, by far, the largest and most expensive project of the District other than our Federal projects.

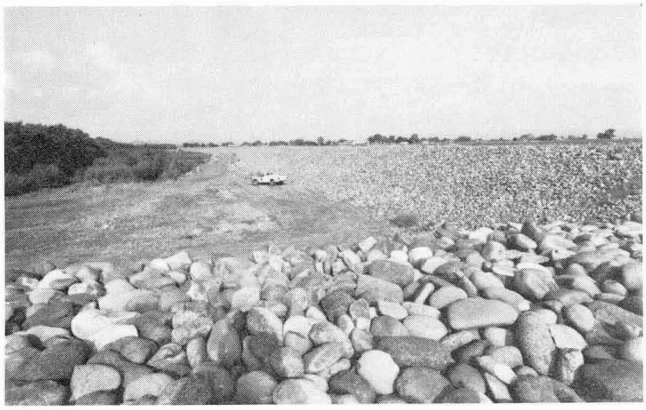
Reach 1 extends from north of Indian School Road to Thomas Road. The construction contractor was Ball, Ball & Brosamer. The job involved filling two large sand and gravel pits, construction of levees and dikes protected with soil cement or riprap, construction of a grade control structure, installation of a 108 inch inverted siphon, and construction of a new irrigation district canal replacing an existing elevated metal flume. A special challenge was designing the relocation of the only water line serving Avondale so the water line would not have to be shut down more than a few hours. Another challenge involved the uncertainties of constructing the new irrigation facilities through an existing sand and gravel operation waste water sump. The unanticipated poor soil conditions of saturated clay, silt and muck required additional geotechnical studies and application of innovative engineering techniques to drain the water.

Reach 2 extends from Thomas Road to approximately 500 feet south of I-10. The construction contractor was M. M. Sundt. Soil cement levees were constructed through the new McDowell Road Bridge and the I-10 Bridge, three grade control structures were constructed, the I-10 diversion channel was extended to the Agua Fria River, and seven large power utility towers were protected.

Reach 3, which extends from south of I-10 to Buckeye Road, is expected to be under construction during the next fiscal year.

Soil cement was used on this project for erosion protection and stability of levees, riverbeds and other features. It has not been used extensively in Maricopa County before and is a new engineering application for the District.

CENTENNIAL LEVEE — Reach 1 of the Centennial Levee in the Harquahala Valley in Western Maricopa County was completed in February 1986 by the Soil Conservation Service. This Levee protects the Valley from flows from the west and helps keep floodwater in Centennial Wash from breaking out across the Valley and damaging agricultural lands, roads and homes. The structure was built in coordination with the Harquahala Irrigation District's distribution system for Central Arizona Project water. The combined Federal and local costs for Reach 1 of the Centennial Levee were approximately $1.8 million. The Soil Conservation Service has completed the compiling of survey data necessary to start the design of Reach 2.

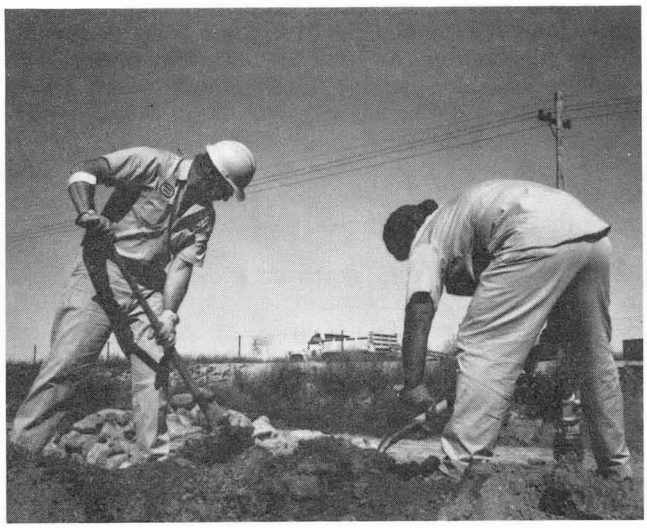


Holly Acres Levee and Bank Stabilization.

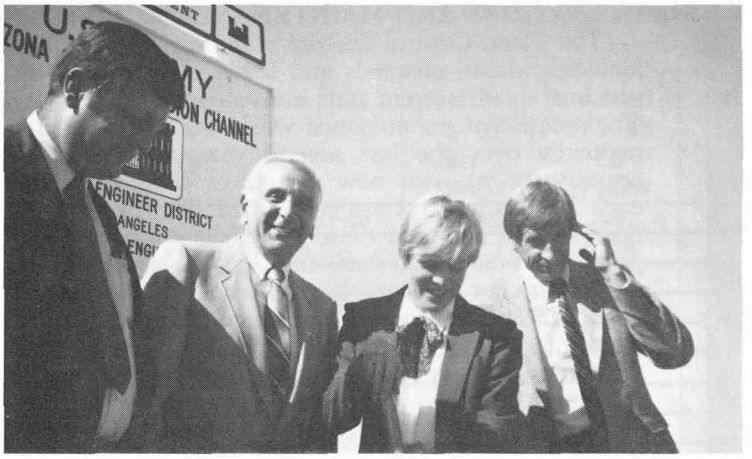
HOLLY ACRES LEVEE AND BANK STABILIZATION — The homes in Holly Acres and the surrounding area suffered heavy damages from flooding on the Salt/Gila River from 1978 through 1980. The District has completed a project to protect the Holly Acres Subdivision by constructing a levee four to six feet high and stabilizing the north bank of the Gila River. The levee is designed to provide protection for Holly Acres from a flow of 115,000 cfs in the Salt River which is 100 year protection after the construction of the Plan 6 Flood Control features. Flows in the River delayed completion of the project for many months, but is was finally finished in October 1985. The project cost approximately $1.2 million and half of this was paid by the State of Arizona.

RWCD Floodway—Reach 3 from Chandler Heights Bridge.

RWCD FLOODWAY, REACH 3 — The third reach of the RWCD Floodway was completed in August 1985. Reach 3 extends from the Gila River Indian Reservation (Hunt Highway) to Queen Creek Road, a distance of 4.43 miles. It is an earthen channel approximately 200 feet wide and ten feet deep. Queen Creek, which often caused flooding in the area and on the Indian Reservation, enters the Floodway in Reach 3, and controlling these floodwaters is one of the main benefits of the Floodway. Because of the tremendous amount of excess soil generated by excavation of the Floodway, the District acquired several spoil disposal sites. The spoil sites can now be sold by the District to recover acquisition costs and to return the land to the tax rolls. A bridge at Queen Creek Road and one at Chandler Heights Road were constructed to cross the Floodway. The combined federal and local costs of Reach 3 were approximately $6.3 million.



Chuck Smith, Carlos Rivera, at RWCD Floodway.



Fred Koory, Jr., Board of Supervisors; Ron Travers, Mayor of Peoria; Carole Carpenter, Board of Supervisors; George R. Renner, Mayor of Glendale, at ACDC Groundbreaking; October 24, 1985.

ACTIVITIES IN PROGRESS

ARIZONA CANAL DIVERSION CHANNEL (ACDC) — The ACDC is the last feature of the "Phoenix, Arizona and Vicinity (Including New River) Flood Control Project" to be constructed by the Corps of Engineers. The Channel is being constructed north of the Arizona Canal between approximately 75th Avenue and 40th Street. It will divert floodwaters from Cudia City Wash, Dreamy Draw, Cave Creek and other washes into Skunk Creek eliminating breakouts in the Arizona Canal. The ACDC will provide 100 year flood protection to large parts of the Phoenix Metropolitan area.

Reach 1 from Skunk Creek to Cactus Road is now under construction. The Corps of Engineers awarded a construction contract to Kiewit Western Company of Peoria in the amount of $12,600,000 in September 1985 and construction was approximately 65% complete at the end of the fiscal year.

At an auction held in the spring, the District sold options to purchase 40 of the houses in Reach 2. These houses will be moved off the property and placed on lots elsewhere.

Approximately 85% of the land rights for the total ACDC have been acquired. Seven of the 25 required bridges have been completed and one is under construction. Three additional bridges are being or have been designed.

The Task Force appointed by the Phoenix City Council to study Reach 4 completed its study in April 1986. By 6 to 4 votes, the Task Force voted both to endorse Reach 4 subject to aesthetic conditions, and to delay Reach 4 to study the use of a tunnel as an alternative drain (possibly down 40th Street). The Task Force indicated the tunnel alternative should receive further study because it was not presented to the Task Force until late in the Task Force's deliberations.The Phoenix City Council has not yet reached a decision as to the future of Reach 4.

RWCD FLOODWAY — The RWCD Floodway is being constructed by the Soil Conservation Service on the upslope (east) side of the Roosevelt Water Conservation District Canal in Eastern Maricopa County. The 27.6 mile-long Floodway is being built in six reaches and will extend from the Gila River to a little north of Brown Road in Mesa. Reach 1 was completed in 1981, Reach 2 in 1983, and Reach 3 in 1985. Reach 4 is scheduled for construction in the fall of 1986.

Approximately three miles of Reach 5 were constructed this year by Leisure World and will be used for golf course and recreation purposes. This was a substantial savings to the District and the Soil Conservation Service in land acquisition and construction costs.

All the major parcels for the Floodway have been acquired leaving only several small segments for ramp construction. All but two of the 19 crossings of the Floodway have been bulit.

ACDC house on blocks prior to being moved.

Roger Lough, Eric Olsen, George Lindop, checking equipment.

FLOWAGE EASEMENTS — As part of the Corps of Engineers' Phoenix, Arizona and Vicinity (Including New River) Flood Control Project, the District will acquire flowage easements for the 100-year floodplains of Skunk Creek, New River and the Agua Fria. Some levees will be constructed along the Agua Fria as well as some bank stabilization on New River and Skunk Creek.

The District must acquire these flowage easements to protect itself from liability for flood damages since the ACDC will divert floodwaters from the northern metropolitan drainage area to Skunk Creek, New River and the Aqua Fria. Through the flowage easements, the District can ensure that development is limited in the floodway even if present laws governing floodplain management are changed. The flowage easements will also preserve open space which is an authorized purpose of the project.

The acquisition of flowage easements was complicated because the State of Arizona has potential ownership claims to the beds of navigable rivers in Arizona. A study conducted at the request of the District could find no evidence that Skunk Creek or New River fall within the definition of navigable riverbeds, and the District is purchasing these rights-of-way through our normal acquisition process. The researchers found records of extended flood flows on the Agua Fria, but no evidence that the flows were used for trade, commerce or navigation, and therefore we believe the Agua Fria is not navigable as defined by the Supreme Court. Until the State takes a position on this issue, acquisition of rights-of-way on the Agua Fria is proceeding through the courts.

OPERATIONS AND MAINTENANCE ACTIVITIES — The Flood Control District maintains 45 structures including dams, channels and levee systems, and approximately 30% of our staff is involved in this activity. The amount of maintenance work has increased dramatically over the last several years (see chart on opposite page) with new structures coming on line each year as projects are completed. The District has been able to maintain these structures, without a proportional increase in staff, through the extensive use of Department of Corrections' prisoners. This year we used 60,504 man-hours of prisoner labor to perform hand-intensive maintenance such as clearing vegetation and trash removal. The cost to the District was $30,252.

The Department of Corrections' prisoners were used on the following projects:

Project	Hours
ACDC	3,508
Adobe Dam	520
Buckeye Dams	1,364
Cave Buttes Dam	1,472
Harquahala Dam & Floodway	18,540
Indian Bend Wash	2,616
McMicken Dam	1,288
New River Dam	604
Old Cross Cut Canal	604
Powerline Floodway	1,240
RWCD Floodway	2,344
Saddleback Dam	1,600
Salt/Gila Clearing	12,716
Spook Hill Dam	9,912
Wickenburg	612
Other	1,564

Klod buster—used to scarify slopes prior to seeding. Being checked by Carlos Rivera.

MAINTENANCE RESPONSIBILITIES

	Inventory as of Jan 1 1980	Added 1/1980 to 1/1984	Added 1/1984 to 1/1986	Added 1/1986 to 7/1986	Total	Percent Increase 1/80-7/86
Bank Protection - Riprap	158.9	463.6	20.5	.2	643.2 acres	304.8
Bridges - Pedestrian	2	4	1	-	7 each	250.0
Bridges - Vehicle	9	5	-	-	14 each	55.6
Culverts, Box	5	2	-	-	7 each	40.0
Culverts, Pipe	5	4	4	-	13 each	160.0
Dip Crossings	3	2	2	-	7 each	133.3
Drainage Channel - Lined	48576	18900	926	600	69002 feet	42.0
Drainage Channel - Unlined	7.5	10.7	96.5	1.8	116.5 miles	1326.7
Drop Structure	18	36	11	7	72 each	300.0
Embankment	409.7	588.3	185.4	29	1212.4 acres	195.9
Embankment, Soil Cement	-	-	39	8.8	47.8 acres	
Fencing	342748	450061	174657	49190	1016656 feet	196.6
Flap Gates	-	13	14	10	37 each	
Floodway - Lined	-	4561	863	-	5424 feet	
Floodway - Unlined	92.6	951.2	757.3	503.8	2304.9 acres	2389.1
Gabions	-	6192	18250	-	24442 sq.yd.	
Gated Outlet	17	6	2	1	26 each	52.9
Gates	91	151	45	42	329 each	261.5
Grade Control Structures	-	-	-	4	4 each	
Gutters, Concrete	430	920	4800	-	6150 feet	1330.2
High Flow	494.5	79	445	-	1018.5 acres	106.0
Landscape	-	11	-	-	11 acres	
Low Flow	563.7	371	264.2	54.3	1253.2 acres	122.3
Manholes	12	22	-	-	34 each	283.0
Meter Houses	3	5	2	-	10 each	233.3
Outlet Structure	10	9	2	1	22 each	120.0
Pilot Channel	-	-	1	-	1 miles	
Pool Area	4644.9	5555	5738.8	1.3	15940 acres	243.2
Principal Outlet	5286	1459	621	145	7511 feet	42.1
Ramps, Asphalt	-	100	-	-	100 feet	
Ramps, Concrete	-	2803	960	120	3883 feet	
Ramps, Earth	300	1250	480	1600	3630 feet	1110.0
Ramps, Grouted Riprap	-	-	-	1260	1260 feet	
Ramps, Soil Cement	-	-	-	1800	1800 feet	
Retaining Wall	-	-	3554		3554 feet	
Right-of-Way	3.5	745	-	86	834.5 acres	23742.8
River Clearing	-	4365	-		4365 acres	
Roads - Asphalt	-	10.9	2.5	3.2	16.6 miles	
Roads - Dirt	104.9	147.7	60.1	8.7	321.4 miles	206.4
Side Inlet	37	195	36	8	276 each	645.9
Spillway - Earth	237.9	37.2	183.5		458.6 acres	92.8
Spillway - Lined	40	410	3000	1813	5263 feet	13057.5
Stilling Basins	25	28	5		58 each	132.0
Stormdrain Pipe	13588	22163	1787	1425	38963 feet	186.7
Trash Racks	20	55	4	11	90 each	350.0
Vegetative Drains	9	14	5	1	29 each	222.2

FLOODPLAIN AND DRAINAGE MANAGEMENT — One of the main responsibilities of the District is to protect people and property before an emergency arises by regulating the use of floodplains and by reviewing residential, commercial, and industrial development plans so that new developments will not have or cause drainage problems. In regulating the floodplains, the District delineates floodplains and determines what uses are compatible with the floodplain and whether the proposed uses are adequately protected from flood flows. The District reviews development plans in areas outside the floodplains to be sure the development won't adversely affect adjoining property by diverting or increasing runoff or cause drainage and flooding problems within the development itself.

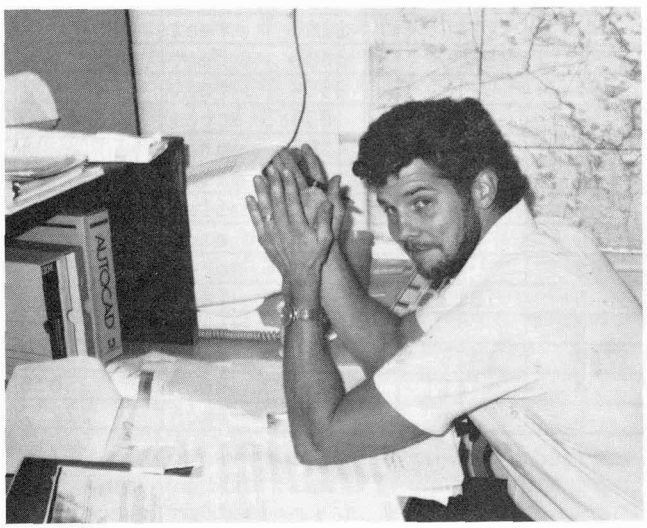
The chart shows the work load during the last three years.

Floodplain Management

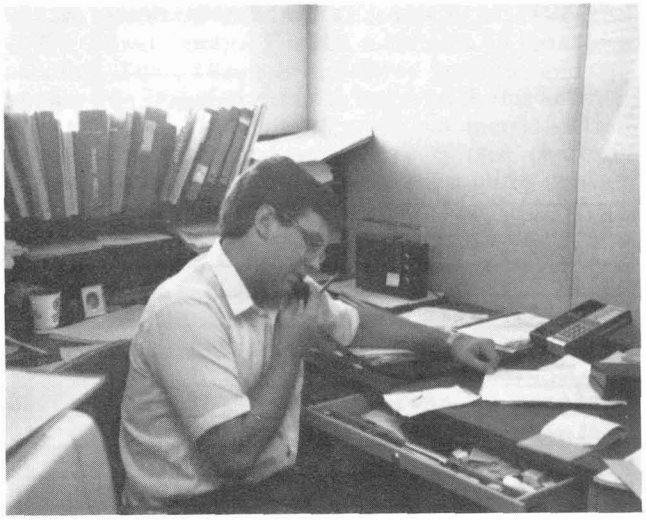
	FY 83-84	FY 84-85	FY 85-86
Floodplain Use Permits	11	16	20
Floodplain Variances	15	23	20
Appeals	0	3	4
New Delineations	1	2	10
FCD Clearances	82	64	78
Violation Cases	15	14	11
Referrals to County Attorney	1	2	0

Drainage Management

	FY 83-84	FY 84-85	FY 85-86
Zoning Cases Reviewed	230	212	259
Subdivision Cases Reviewed	NA	55	55
Master Plans Reviewed	4	5	10
Board of Adjustment Cases Reviewed	27	14	21
Drainage Inspections	NA	NA	462



Brian Dieterrick, Hydrologist.



Doug Plasencia, Hydrologist.

AREA DRAINAGE MASTER STUDIES — The District is conducting a number of Area Drainage Master Studies (ADMS's) throughout the County. Each ADMS takes a certain area of the County and studies the past and potential stormwater drainage problems on a watershed basis and proposes solutions. The costs of the studies are often shared with municipalities and other governmental agencies. Most ADMS's include a public involvement effort to inform and hear the reactions of the residents concerning the study and the proposed solutions.

Eastern Maricopa County ADMS — The Study boundaries of this ADMS extend from approximately Brown Road on the north to Ray Road on the south and from the RWCD Canal on the west to beyond the County line on the east. Other agencies involved in the Study are the City of Mesa and the County Highway Department. Several alternatives were considered and the recommended plan consists of a series of detention basins and open channels to outlet into the RWCD Floodway. The Plan is expected to cost approximately $80 million. At present, no houses or other buildings are in the right-of-way of the basins and channels. Public meetings were held in May and June. The response of the public was positive except for the location of a proposed channel near University Drive. Further study will be done on this location. The public has experienced flooding in that area and is anxious to have stormwater drainage facilities installed.

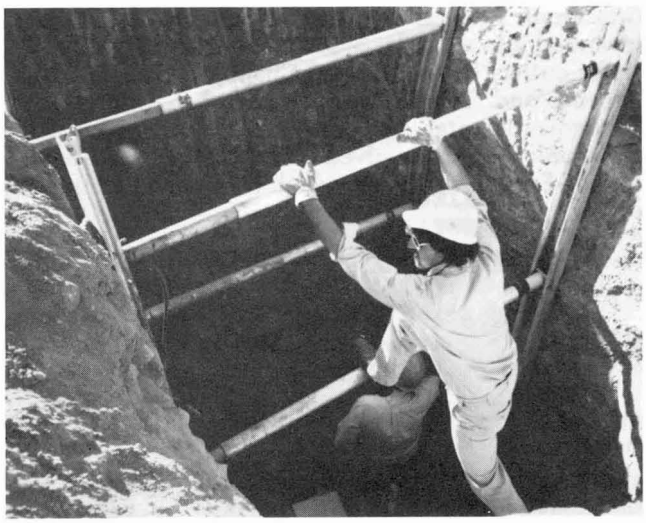
Glendale-Peoria ADMS — Each city was preparing a separate drainage study and requested District cost-sharing. The District, in cooperation with the two cities, has undertaken an ADMS for an area affecting both cities. The proposed plan is composed of underground pipes and a few retention basins designed generally for the ten-year storm event and outletting into New River. The proposed plan is presently being reviewed by the sponsors.

Wittmann ADMS — A consulting engineer and a public involvement consultant have been selected for this area which is northwest of McMicken Dam. The engineering consultant has gathered stormwater drainage information about the area and will prepare alternatives for solving drainage problems. The public involvement consultant has held one meeting during the information gathering stage and other meetings are planned.

Spook Hill ADMS — The Study area is north of the Buckhorn-Mesa Watershed Projects to the National Forest boundary. Other agencies involved in the Study are the City of Mesa, the County Highway Department, and the Soil Conservation Service. After reviewing several alternatives, a plan was proposed which consists of a series of retention basins, underground pipes, open channels, and a dam outletting into the Signal Butte Floodway and Spook Hill Dam. The Plan is expected to cost approximately $30 million. A public meeting was held in May and those present informed us that they are concerned about preserving the natural desert environment and feel that the costs of the plan in terms of disruption of the natural environment and their lifestyles would be a greater burden than potential flood damages. The District will be studying lower levels of flood protection.

East Fork Cave Creek — The District, in cooperation with the City of Phoenix and the Maricopa County Highway Department, has hired an engineering consultant to study the drainage in this area in northeast Phoenix and Maricopa County generally between the CAP Aqueduct to Greenway Road and between 7th Street to 32nd Street. The engineering study and the public involvement effort are just getting underway.

Pete Martinez at Spook Hill Dam.



Oscar Lozano at Spook Hill Dam.

BUCKHORN-MESA WATERSHED—The Buckhorn-Mesa Watershed Project is a system of interrelated structures being built by the Soil Conservation Service to provide flood protection to rural and urban lands in the Eastern Maricopa County area, generally south of Brown Road from about Bush Highway to Idaho Road.

The Soil Conservation Service awarded a contract to Pulice Construction Company in September 1985 in the amount of $2.9 million for the construction of the Pass Mountain Diversion and Signal Butte Dam and they are under construction now. As of June 1986 the structures were 70% complete.

Our staff worked for several months with State, local and private agencies to salvage the cacti that would have been destroyed because of the construction. Several thousand saguaro, ocotillo and others were salvaged.

The Signal Butte Dam is being built with an unusal feature. An impervious membrane, the first to be used in any of our SCS structures, will extend from the base of the cut-off trench to above the high water line of the Dam. The heavy plastic membrane is being installed in lieu of the gravel center drain system used in other structures.

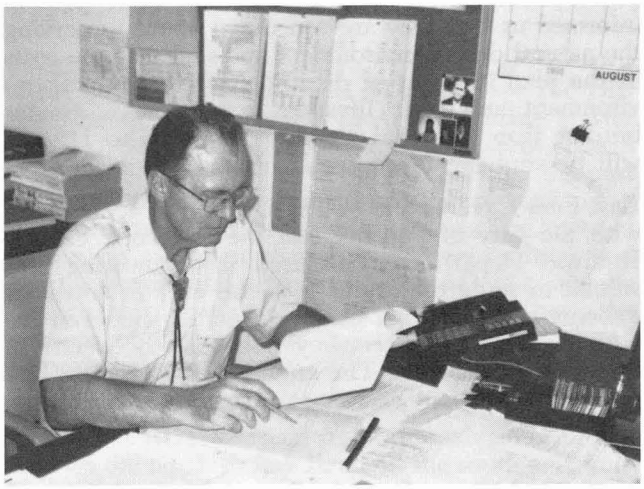
The Bulldog Floodway and Apache Junction Dam are the last two structures in the Buckhorn-Mesa Watershed Project. They are presently being designed and are expected to be under construction by the end of 1986.

Gila Drain Projects — This overall project has been separated into several major elements to provide storm-water outlets for portions of Chandler, Gilbert, Mesa, Phoenix and Tempe. The District has entered into Intergovernmental Agreements for cost sharing with the municipalities involved on all the elements except for the Price Road Drain which is still in the planning stage.

Project	Parties	District Contribution	Construction Date
48th Street Storm Drain	Gilbert Phoenix Tempe	$300,000	Start Fall 1986
Gila Drain Storm Drain	Tempe	$2,758,700	Start Fall 1986
ADOT Pit and Diversion	Tempe	$1,293,076	Completion Fall of 1986
Gilbert Downtown Retention Basin	Gilbert	$287,500	Start Fall 1986
Lindsay Road Regional Basin	Gilbert	$978,900	Completion Spring 1987
Price Road Drain	Mesa	Not Known	Not Known

SALT/GILA RIVER CONTROL WORKS — In 1982 the District had finished a channel upstream of the State Route 85 Bridge. Flows in the River changed the riverbed and washed out the south bank. In the fall of 1985, we awarded a contract to Breinholt Construction Company to repair the damage and rebuilt the south bank. The contract also includes channelization work upstream on the Gila River and some cleanout work near the SR 85 Bridge. High flows in the River during most of the year prevented the contractor from beginning work, but he was able to start in May 1986.

Jan Warriner, Leonard Eddy, Construction Inspectors.



Earl Kirby, Deputy Chief, Construction and Operations Division.

CONTRACTS AWARDED THIS YEAR

Type of Contract	Number	Contract Amount Including Contingencies
Appraisal	25	$ 77,950
Engineering Services	21	1,867,620
Construction	11	14,603,036
Maintenance of Structures	2	325,000
Rental Property Maintenance	26	113,342
Public Involvement	3	135,000
Relocation Assistance	1	7,680
Total	89	$17,129,628

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
STATEMENT OF REVENUES, EXPENDITURES AND CHANGES IN FUND BALANCE
BUDGET AND ACTUAL
YEAR ENDED JUNE 30, 1986
(Preliminary & Unaudited)

REVENUES	BUDGET	ACTUAL	VARIANCE FAVORABLE (UNFAVORABLE)
Flood Control District Tax Levy	$36,170,000	$33,644,000	$(2,526,000)
State Assistance			
Federal Projects			
Local Projects	5,305,000	4,428,000	(877,000)
County Reimbursement			
Local Participation	6,827,000	3,867,000	(2,960,000)
Rental	1,000,000	935,000	(65,000)
Interest Earnings	2,000,000	2,140,000	140,000
Miscellaneous		843,000	843,000
Total Revenues	51,302,000	45,857,000	(5,445,000)
EXPENDITURES			
Personnel Services			
Salaries and Wages	3,007,000	2,560,000	447,000
Overtime	75,000	8,000	67,000
Total	3,082,000	2,568,000	514,000
Supplies and Services			
Professional Services Contracts	1,187,000	865,000	322,000
Maintenance Contracts	390,000	139,000	251,000
Maintenance Supplies	400,000	189,000	211,000
Insurance	35,000	35,000	
Other Supplies and Services	675,000	698,000	(23,000)
Total	2,687,000	1,926,000	761,000
Capital Outlay			
Real Estate	15,300,000	10,476,000	4,824,000
Engineering & Scientific Equip.	4,425,000	2,725,000	1,700,000
Motor Vehicles & Equipment	941,000	360,000	581,000
Const. & Other Capital Outlay	42,251,000	37,766,000	4,485,000
Total	62,917,000	51,327,000	11,590,000
Total Expenditures	68,686,000	55,821,000	12,865,000
Excess (Deficiency) of Revenues over Expenditures	(17,384,000)	(9,964,000)	7,420,000
Fund Balance at Beginning Year	28,457,000	28,457,000	
Fund Balance at End of Year	$11,073,000	$18,493,000	$ 7,420,000

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
EXPENDITURES BY ACTIVITIES AND FUNCTIONS *
FY 85/86
(Preliminary & Unaudited)

ACTIVITY	OPERATIONS EXPENDITURES		CAPITAL IMPROVEMENTS PROGRAM		
	Administrative	Maintenance	Engineering	Lands	Relocation & Construction
Administrative Overhead	$1,521,000	$ 24,000	$	$	$ 162,000
Maintenance Overhead	3,000	755,000			
USGS Service Work	99,000				
Enforcement of Flood-plain Regulations	10,000				
Work done for Planning & Development	168,000	1,000			
Watershed Hydrology	25,000				
Floodplain Delineation	74,000				
Flood Insurance	28,000				
Hydrologic Data Collection	1,000	9,000			
Flood Warning System	37,000	55,000			62,000
Floodplain Admin.	69,000				
Computer Systems	33,000	8,000			
City of Chandler	1,000				
City of Scottsdale	1,000				
City of Tempe					4,652,000
Town of Gilbert		1,000			1,266,000
Town of Wickenburg	1,000	7,000			
Dysart Road - Agua Fria Drain	1,000				
48th Street Drain	1,000	6,000			
Alma School Drain		4,000			
Old Cross Cut Canal	1,000	21,000	125,000		
Broadway Rd. Bank Stabilization			3,000		
Salt/Gila Clearing & Channelization		375,000			
Salt/Gila Control Works	3,000	6,000	35,000	30,000	482,000
Sossaman Road		3,000			
Agua Fria River	2,000	15,000	2,000	20,000	27,000
Agua Fria River (ADOT Agreement)			38,000	3,000	658,000
Indian Bend Wash Outlet		13,000			
Indian Bend Wash Inlet	2,000	8,000			
Indian Bend Wash Greenbelt	1,000				
Indian Bend Wash Interceptor and Side Channels	3,000	10,000	1,000	2,000	
Gila Drain	2,000		39,000		
ACDC	10,000	348,000	457,000	1,233,000	8,644,000
Paradise Valley, Scottsdale, Phoenix			3,000		
RWCD-Williams/Chandler	6,000	100,000	6,000	42,000	1,552,000
RWCD-Apache Junc./Gilbert	10,000	8,000	87,000	8,000	1,710,000
RWCD-Buckhorn/Mesa	1,000	8,000	4,000	62,000	13,000
Rio Salado	1,000				

ACTIVITY	OPERATIONS EXPENDITURES		CAPITAL IMPROVEMENTS PROGRAM		
	Administrative	Maintenance	Engineering	Lands	Relocation & Construction
White Tanks Dam #3		8,000			
White Tanks Dam #4		17,000			
McMicken Dam		29,000	35,000	1,000	40,000
Dreamy Draw Dam		8,000			
McMicken Dam Outlet Channel		26,000			
Guadalupe Dam		8,000			
Buckeye #1		30,000			
Buckeye #2		6,000			
Buckeye #3		7,000			
Spook Hill FRS & Outlet	11,000	55,000			
Signal Butte Floodway	8,000	10,000			
Pass Mountain FRS & Outlet	3,000	4,000			
Apache Jct. FRS, Floodway, Outlet and Bulldog	2,000		14,000	3,274,000	25,000
Signal Butte FRS	1,000	2,000			
Powerline Dam		5,000			
Powerline Floodway		13,000			
Vineyard Road FRS		35,000			
Rittenhouse FRS		16,000			
Harquahala FRS & Floodway		30,000			65,000
Saddleback FRS	4,000	8,000			58,000
Saddleback Diversion Channel		1,000			
Centennial Levee	1,000		1,000	106,000	1,000
Harquahala Floodway		6,000	1,000		
Sunset FRS		2,000			
Sunnycove FRS		1,000			
Sunset/Sunnycove Pipeline		2,000			
Cave Buttes Dam	1,000	26,000			
Adobe Dam	1,000	14,000	1,000	7,000	
Skunk Creek Channel at I-17		5,000			
New River Dam	3,000	26,000	20,000	110,000	14,000
Skunk Creek and New River Flowage Easements	9,000		32,000	5,096,000	3,000
Agua Fria River Flowage Easements	2,000	1,000	1,660,000	1,270,000	17,816,000
Guadalupe and Spookhill Flowage Easements			21,000		
Spookhill Watershed ADMS	7,000		33,000		
Glendale/Peoria Drainage	72,000				
East Maricopa ADMS	12,000		124,000		75,000
Glendale-Peoria ADMS	5,000		35,000		
East Fork Cave Creek ADMS	5,000		3,000		
White Tanks-Agua Fria ADMS	1,000		1,000		
Queen Creek ADMS	1,000				
Gilbert-Chandler ADMS	1,000				
Total	$2,265,000	$2,186,000	$2,781,000	$11,264,000	$37,325,000

* Expenditures by Activities and Function will not always agree with Expenditures by Task on page 2 except in total.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
RENTAL PROGRAM FY 85/86
(Preliminary & Unaudited)

Project Name	# of Leasible Properties *	# Leased *	Vacancy Rate *	Gross	Net
Arizona Canal Diversion Channel	89	86	3.4%	$870,000	$615,000
RWCD Floodway	3	3	0.0%	34,000	31,000
Cave Buttes Dam	1	1	0.0%	10,000	9,000
New River Dam	2	2	0.0%	7,000	6,000
Agua Fria River	1	1	0.0%	5,000	5,000
Signal Butte FRS	2	2	0.0%	7,000	4,000
Indian Bend Wash	3	3	0.0%	1,000	1,000
Adobe Dam	1	1	0.0%	$ 1,000	(1,000)
Total	102	99	2.9%	$935,000	$670,000

* Data as of June 30, 1986.

HISTORY OF THE TAX LEVY RATE FOR THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

For fiscal year ending	Levy Rate per $100 assessed value	Tax Revenue
1961	0.05	$ 253,000
1962	0.05	$ 288,000
1963	0.02	$ 126,000
1964	0.02	$ 135,000
1965	0.02	$ 145,000
1966	0.02	$ 153,000
1967	0.02	$ 158,000
1968	0.02	$ 164,000
1969	0.05	$ 446,000
1970	0.05	$ 454,000
1971	0.05	$ 480,000
1972	0.04	$ 425,000
1973	0.05	$ 645,000
1974	0.20	$ 3,428,000
1975	0.20	$ 3,747,000
1976	0.20	$ 4,154,000
1977	0.20	$ 4,395,000
1978	0.20	$ 4,675,000
1979	0.20	$ 5,026,000
1980	0.20	$ 5,342,000
1981	0.43	$11,825,000
1982	0.34	$13,720,000
1983	0.50	$21,779,000
1984	0.48	$25,780,000
1985	0.50	$28,697,000
1986	0.50	$33,644,000

EXPENDITURES ON LAND
(Breakdown by Project)
(Preliminary and Unaudited)

Project	Number of Parcels Bought This Year	Total Land Acquisition Costs	% of Land Acquired To Date
Salt/Gila Control Works	10	$ 30,000	100%
Agua Fria River	23	1,293,000	40%
Indian Bend Wash	-	2,000	100%
Arizona Canal Diversion Channel	17	1,233,000	86%
RWCD Floodway (Williams/Chandler)	3	42,000	100%
RWCD Floodway (Apache Junction/Gilbert)	1	8,000	98%
RWCD Floodway (Buckhorn/Mesa)	2	62,000	98%
McMicken Dam	-	1,000	70%
Apache Junction FRS & Bulldog Floodway	8	3,274,000	85%
Centennial Levee	3	106,000	100%
Adobe Dam	-	7,000	100%
New River Dam	2	110,000	100%
Skunk Creek/New River Flowage Easements	1	5,096,000	5%
Total		$11,264,000	

Darlene Wolf, Receptionist

Flood Control Advisory Board—Charles A. Sykes, John E. Miller, Jr., Donald L. Weesner (Salt River Project), James E. Attebery (City of Phoenix), William LoPiano, Paul E. Perry. Lynn Anderson not in picture.

BOARD OF DIRECTORS

GEORGE CAMPBELL, District 2*, Chairman, January 6 to June 30, 1986

CAROLE CARPENTER, District 4*

TOM FREESTONE, District 1*, Chairman, July 1, 1985 to January 6, 1986.

FRED KOORY, JR., District 3*

ED PASTOR, District 5*

*Supervisoral Districts (Directors are also Supervisors of Maricopa County).

FLOOD CONTROL ADVISORY BOARD

H. LYNN ANDERSON

JOHN E. MILLER, JR., Chairman, July 1, 1985 to October 30, 1985

WILLIAM LOPIANO, Chairman, November 1, 1985 to June 30, 1986

PAUL E. PERRY

CHARLES A. SYKES

JAMES E. ATTEBERY, ex officio member, City of Phoenix

REED TEEPLES, ex officio member, Salt River Project, July 1, 1985 to October 30, 1985

DONALD L. WEESNER, ex officio member, Salt River Project, November 1, 1985 to June 30, 1986

PRINCIPAL STAFF MEMBERS

DANIEL E. SAGRAMOSO, Chief Engineer and General Manager

STANLEY L. SMITH, JR., Deputy Chief Engineer

DAVID A. BROZOVSKY, Flood Control Administrator

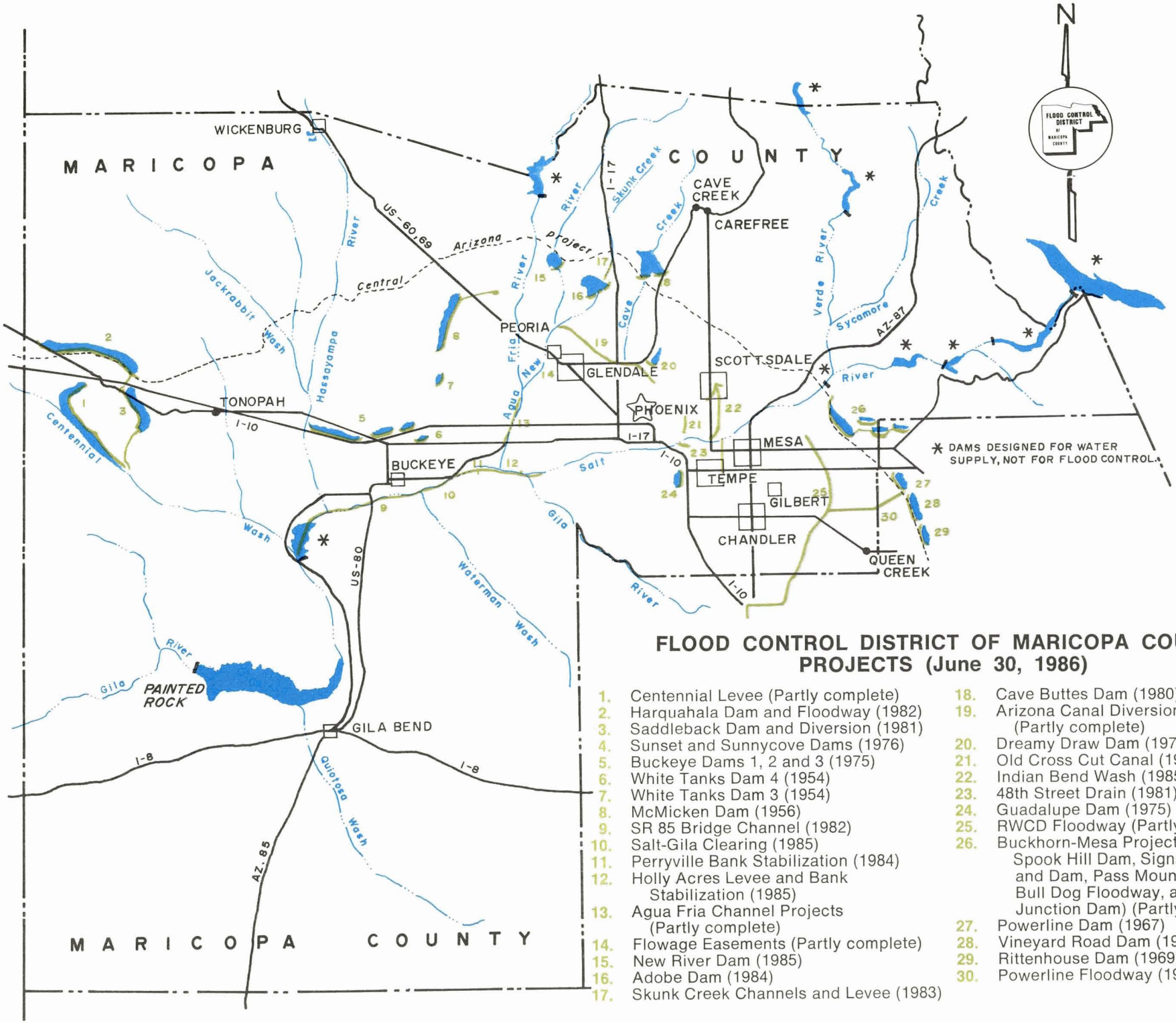
ROBERT C. PAYETTE, Chief, Construction and Operations Division

NICHOLAS P. KARAN, Chief, Engineering Division

DAVID R. JOHNSON, Chief, Hydrology Division

EDWARD D. OPSTEIN, Chief, Land Management Division

JOHN E. RODRIGUEZ, Chief, Planning and Projects Management Division



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY PROJECTS (June 30, 1986)

1. Centennial Levee (Partly complete)
2. Harquahala Dam and Floodway (1982)
3. Saddleback Dam and Diversion (1981)
4. Sunset and Sunnycove Dams (1976)
5. Buckeye Dams 1, 2 and 3 (1975)
6. White Tanks Dam 4 (1954)
7. White Tanks Dam 3 (1954)
8. McMicken Dam (1956)
9. SR 85 Bridge Channel (1982)
10. Salt-Gila Clearing (1985)
11. Perryville Bank Stabilization (1984)
12. Holly Acres Levee and Bank Stabilization (1985)
13. Agua Fria Channel Projects (Partly complete)
14. Flowage Easements (Partly complete)
15. New River Dam (1985)
16. Adobe Dam (1984)
17. Skunk Creek Channels and Levee (1983)
18. Cave Buttes Dam (1980)
19. Arizona Canal Diversion Channel (Partly complete)
20. Dreamy Draw Dam (1973)
21. Old Cross Cut Canal (1975) (Restudy)
22. Indian Bend Wash (1985)
23. 48th Street Drain (1981)
24. Guadalupe Dam (1975)
25. RWCD Floodway (Partly complete)
26. Buckhorn-Mesa Projects (including Spook Hill Dam, Signal Butte Floodway and Dam, Pass Mountain Diversion, Bull Dog Floodway, and Apache Junction Dam) (Partly complete)
27. Powerline Dam (1967)
28. Vineyard Road Dam (1968)
29. Rittenhouse Dam (1969)
30. Powerline Floodway (1968)

ORGANIZATIONAL CHART

Flood Control District of Maricopa County
BOARD OF DIRECTORS

FLOOD CONTROL ADVISORY BOARD
ADVISORY GROUP
CONSULTING GROUP

COUNTY MANAGER

ASSIST. COUNTY MANAGER/DIRECTOR OF PUBLIC WORKS

CHIEF ENGINEER AND GENERAL MANAGER
DEPUTY CHIEF FLOOD CONTROL ENGINEER

Flood Control Administrator 24

ACCOUNTING SERVICES

CONTROLLER	22
Accountant I	15
Account Clerk III	08
Account Clerk II	06

ADMINISTRATIVE SERVICES

OFFICE SUPERVISOR II	13
Secretary III	08
Typist III	07
Secretary II	06
Clerk III	06
Clerk III	06
Typist II	05

Pub. Inv. Coord. 18

PLANNING & PROJECTS MANAGEMENT DIVISION

CHIEF. P&PM DIVISION	25
Wtr Resources Plnr	23
Project Engineer	23
Project Engineer	23
Project Engineer	23
Project Engineer	23

CONSTRUCTION AND OPERATIONS DIVISION

CHIEF, C&O DIVISION	25
*Dep Chief C&O Div	24
Revegetation Eclgst	16
Const. & Opr Asst.	12

CONSTRUCTION AND CONTRACTING BRANCH

*Dep Chief C&O Div	24
Chief, FC Cstr. Insp	22
Civil Eng. Tech I	17
Civil Eng. Tech I	17
Civil Eng. Tech I	17
Civil Eng. Tech I	17
Civil Eng. Tech I	17
Civil Eng. Tech I	17

OPERATIONS AND MAINTENANCE BRANCH

Operations & Maintenance Chief 20

O & M Supervisor 18

ASPEN CREWS

Maintenance Team Leader	14
Maintenance Crew Leader	13
Maintenance Crew Leader	13

PERRYVILLE CREW

O & M Supervisor 18

Equipment Operator IV	13
Equipment Operator IV	13
Equipment Operator IV	13
Equipment Operator III	12

6 X

Maintenance Team Leader	14
Maintenance Tech II	12
Maintenance Tech I	11

ENGINEERING DIVISION

CHIEF, ENG. DIV. 25

DESIGN & TECH REVIEW BR

Civil Engineer II	23
Civil Engineer II	23
Civil Engineer I	21

MAPS AND DRFT BRANCH

Eng. Drftg. Spec. III	15
Eng. Drftg. Spec. II	13
Eng. Drftg. Spec. I	11

HYDROLOGY DIVISION

CHIEF HYDROLOGIST 25

FLOODPLAIN ADMIN. BR

Hydrologist III	23
Hydrologist II	21
Hydrologist II	21
Hydrologist I	18
Floodplain Repr.	18

STORMWATER DRAINAGE BR

Hydrologist III	23
Hydrologist II	21
Civil. Eng. Tech II	19
Hydrologist I	18
Hydrologist I	18

WATERSHED DEVELOP. BR

Hydrologist III	23
Hydrologist II	21
Hydromet. Tech	18
Hydromet. Tech Asst	14

LAND MANAGEMENT DIVISION

CHIEF, LAND MGMT. DIV. 25

PROPERTY ACQUISITION BR

Sr. Land Mgmt. Spec.	22
Property Acq. Coord.	18
Land Mgmt. Spec.	16
Clerk III	06

PROPERTY MANAGEMENT BR

Sr. Prop Mgmt. Spec.	22
Leasing Agent	18
Land Management Spec.	16
Land Management Asst.	12
Clerk III	06

PROPERTY ENGINEERING BR

Property Eng. Assoc.	20
Property Eng. Assoc.	20

Authorized positions - 94
* Dual Assignments
June 30, 1986

FLOOD CONTROL DISTRICT

of MARICOPA COUNTY

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

ANNUAL REPORT

JULY 1, 1986 to JUNE 30, 1987

003.106

BACKGROUND

The District, founded in 1959, is a municipal corporation and political subdivision of the State of Arizona. The District is governed by a Board of Directors which is also the Board of Supervisors of Maricopa County. A Flood Control Advisory Board advises the Board of Directors.

The purpose of the District is to prevent loss of life or injury to residents of Maricopa County and the elimination or minimizing of flood damages to real and personal property. In fulfilling its purpose, the District:

1. Provides floodplain management for Maricopa County and certain municipalities within the County.
2. Provides stormwater drainage review for the unincorporated area of Maricopa County.
3. Studies flooding and drainage problems and plans and constructs projects alone or in cooperation with others.
4. Acts as the local sponsor of federal flood control projects designed and constructed by the U.S. Army Corps of Engineers and the Soil Conservation Service. The District acquires the necessary rights-of-way and relocates facilities and people affected by the projects.
5. Operates and maintains completed flood control structures.
6. Assists in providing early warning of potential floods and provides technical leadership during flood emergencies. Collects and distributes hydrometeorological data from the District's rain and stream gauge network.

The activities of the District are funded by a Flood Control Tax Levy assessed on all real property within Maricopa County and a variety of cost sharing arrangements with the State, Maricopa County and local governments.

CONTENTS

Background ..... inside front cover

Letter from the Management 1

Financial Highlights 2

Activities 3

- Completed Projects 3
- Projects in Progress 6
- Other District Activities 9

Financial Report 11

- Revenues and Expenditures 11
- Expenditures by Activities 12
- Expenditures on Land 12
- Income of Rental Program 14
- Tax Rate History 14

Boards and Officers 15

Project Map 16

Organization Chart ..... inside back cover

COVER PHOTO — This vehicle washed down Cudia City Wash from Stanford Drive during a severe thunderstorm in August 1986. Thirty houses below the Arizona Canal were flooded as a result of this storm. When completed, Reach 4 of the ACDC will prevent similar flooding.

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

FLOOD CONTROL DISTRICT
of
Maricopa County

3335 West Durango Street • Phoenix, Arizona 85009
Telephone (602) 262-1501

D. E. Sagramoso, P.E., Chief Engineer and General Manager

BOARD of DIRECTORS
Fred Koory, Jr., Chairman
George L. Campbell
Carole Carpenter
Tom Freestone
Ed Pastor

LETTER FROM THE MANAGEMENT

The District was proud this year to receive several awards for our work from the National Association of Counties (NACo) and the Valley Forward Association. We were delighted when the Valley Forward Association, which recognizes significant projects of environmental benefit each year, selected Adobe Dam as a finalist in its Environmental Action category. In designing and building Adobe Dam, the Corps of Engineers made every effort to blend it into the surrounding landscape, to preserve the petroglyphs in the area, and to revegetate the area in a thorough and realistic manner.

One of our NACo awards was for the Clearing of Right-of-Way Through the Sale of Improvements project, in which the District sold options to purchase houses for relocation from the Arizona Canal Diversion Channel property. This gave buyers time to arrange for the removal and salvage of the houses, allowed the District to continue to receive rental on the properties until the last minute, and guaranteed that the neighborhood would remain intact as long as possible. The District received a net of $36,000 from the project instead of spending $100,000.

NACo also recognized three of our environmental projects. The Protected Native Plant Salvage Operation gave thousands of native cacti, trees, and shrubs, which might otherwise have been destroyed, to educational and scientific organizations and to the general public. The Dormant Stub Mitigation Plantings and Erosion Control project took stubs from dormant healthy willow, cottonwood, and athel tamarisk and planted them at a site adjacent to the Salt/Gila River Clearing. The new trees replaced poor quality wildlife habitat lost during clearing with less common, but very valuable, native trees and provided erosion control protection to the banks of the Gila River at minimal cost. The Flood Control District also shared a NACo award with the Maricopa County Landfill Department for the Excavation, Relocation and Redisposal of the Avondale Landfill.

We are especially proud of the original thinking and hard work that went into these projects, and look forward to continuing challenges and progress in the coming year.

D. E. Sagramoso, P. E.

Board of Directors: George Campbell, Fred Koory, Jr., Tom Freestone, Carole Carpenter, Ed Pastor.

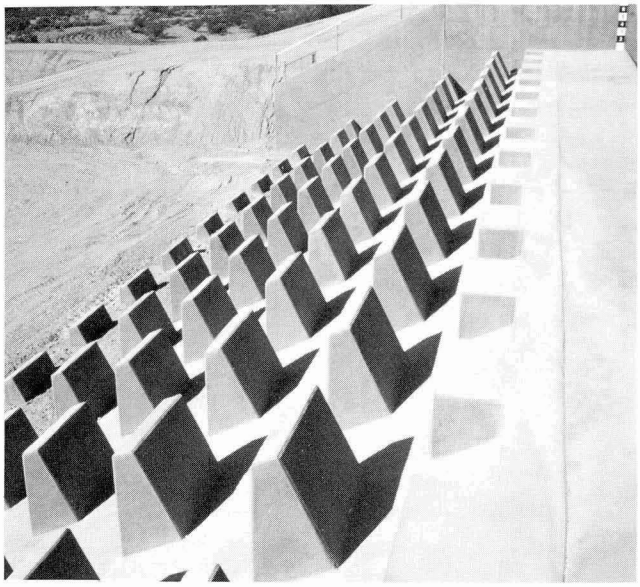
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
FINANCIAL HIGHLIGHTS FOR THE YEAR ENDED JUNE 30, 1987
(Preliminary and Unaudited)

	DOLLARS	PERCENT
REVENUES		
Flood Control Tax	$41,566,000	90%
Rental Income	711,000	2%
Interest	2,061,000	4%
State Assistance - Local Projects	637,000	1%
County and Local Participation	718,000	2%
Miscellaneous	461,000	1%
Total Revenues	46,154,000	100%
EXPENDITURES		
Administration and Maintenance	5,676,000	13%
Flood Control Capital Improvements	38,516,000	87%
Total Expenditures	44,192,000	100%
Excess (Deficiency) of Revenues Over Expenditures	1,962,000	
Fund Balance at Beginning of Year	24,645,000	
Fund Balance at End of Year	$26,607,000	
EXPENDITURES BY TASK		
Administration	$ 3,945,000	9%
Land Acquisition	19,785,000	44%
Relocation of Utilities, Bridges and Other Facilities	6,275,000	14%
Construction	7,464,000	17%
Maintenance	2,451,000	6%
Cost Sharing in Projects Managed by Others	4,272,000	10%
Total	$44,192,000	100%

COMPLETED PROJECTS

ARIZONA CANAL DIVERSION CHANNEL (ACDC) REACH 1 — The ACDC is the last feature of the "Phoenix, Arizona and Vicinity (Including New River) Flood Control Project" to be constructed by the Corps of Engineers. The Channel is being constructed north of the Arizona Canal between approximately 75th Avenue and 40th Street. It will divert floodwaters from Cudia City Wash, Dreamy Draw, Cave Creek and other washes into Skunk Creek, eliminating breakouts in the Arizona Canal. The ACDC will provide 100-year flood protection to large parts of the Phoenix Metropolitan Area. Reach 1 of ACDC, which extends from Skunk Creek to Cactus Road, was completed in April of 1987 at a cost of approximately $52,190,000. The construction contractor was Kiewit Western Company of Peoria.

ADC Reach 1.

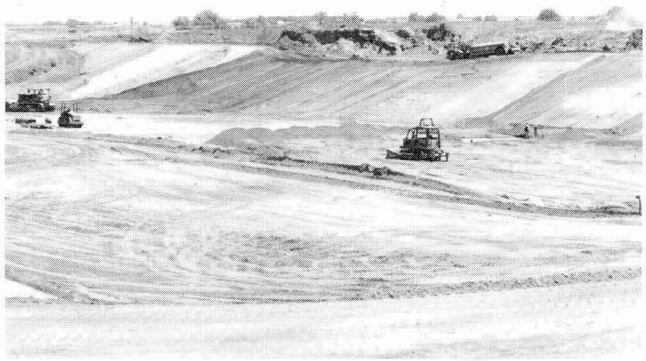


Signal Butte Floodway energy dissipators.

PASS MOUNTAIN DIVERSION/SIGNAL BUTTE DAM — Construction of the Pass Mountain Diversion and Signal Butte Dam was completed in January 1987. These two sections of the Buckhorn-Mesa Watershed project are north of Brown Road from the Crismon Road area to Meridian Drive. The combined Federal and District cost was approximately $4,622,000, of which the District paid $65,000.

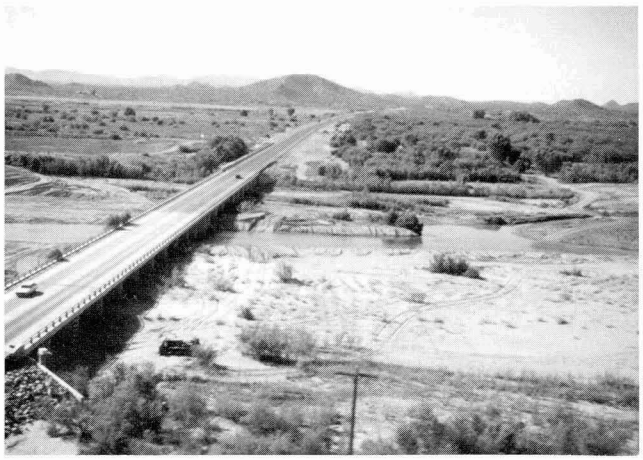
The contractor, Pulice Construction Company, had some difficulties in the placement of a moisture barrier curtain on the Signal Butte Dam and took longer than expected. This impervious membrane, the first to be used on any of our Soil Conservation Service structures, extends from the base of the cut-off trench to above the high water line of the Dam. The curtain was installed in lieu of the gravel center drain system used in other structures. Extreme heat during the day prompted the contractor to work on this curtain in a midnight to 8 a.m. shift.

AVONDALE LANDFILL — This landfill, which was last used in 1980, was in the way of our Agua Fria Channel/Levee Project. There was also a risk that it would contaminate the groundwater or be exposed to river floods. As a result, the Maricopa County Landfill Department, the Flood Control District and the City of Avondale relocated the landfill to a vacant adjacent site, and the District provided $500,000 to the City of Avondale to develop a new City park on the 11.2 acre site. This project was completed in November 1986, ahead of schedule and under budget. The relocated landfill is double lined and has a leachate collection system, groundwater monitoring wells and a passive gas venting system. It is protected from the Standard Project Flood by soil cement levees. The City and County will coordinate the maintenance responsibilities and park development plans. The total cost of this project was $3,331,500.



Avondale Landfill

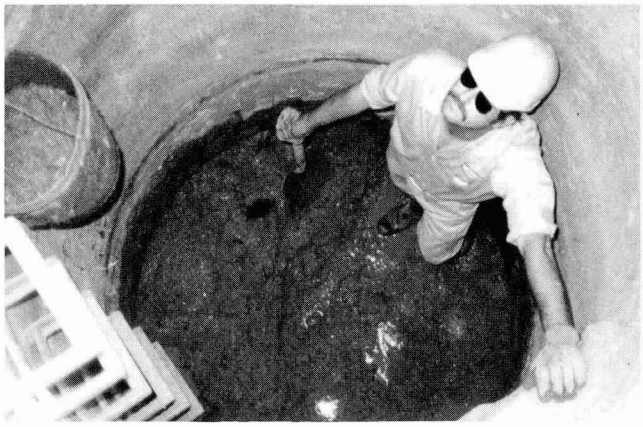
SR 85 BRIDGE CHANNEL MAINTENANCE PROJECT/GILA RIVER — The SR 85 Bridge Channel Maintenance Project, located on the Gila River south of Buckeye, was completed in December 1986 as a part of the Salt/Gila River Control Works. This $290,000 project excavated approximately 250,000 cubic yards from the river channel upstream of the bridge and restored the bank to improve the conveyance capacity of the channel. Incorporated within this mile long excavation was the first segment of our low flow channel project. Low flow channels will be excavated in the Salt/Gila River Clearing to redirect existing river meanders into the clearing and away from the river banks. Additional low flow segments will be excavated next year.



Low flow channel at the State Route 85 Bridge on the Gila River.

OPERATIONS AND MAINTENANCE ACTIVITIES

The Operations and Maintenance Branch maintains 45 completed structures such as dams, channels and levee systems, and approximately 25% of our staff is involved in this activity. The amount of maintenance work has increased dramatically over the last several years (see the chart on the next page) with new structures coming on line each year as projects are completed. The District has been able to maintain these structures, without a proportional increase in staff, through the extensive use of Department of Corrections' prisoners. This year we used 47,349 man-hours of prisoner labor to perform hand-intensive maintenance such as clearing vegetation and trash removal. The labor of each prisoner cost the District 50 cents per hour.



Greg Long removing sludge from the Sunset/Sunnycove Pipeline.

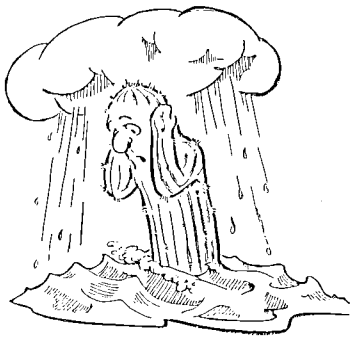
David McClain, Aspen Crew Leader

The Department of Corrections' prisoners were used on the following projects:

PROJECT	HOURS
ACDC	5,527
Adobe Dam	1,598
Buckeye	1,433
Cave Buttes Dam	2,765
Harquahala	21,085
Indian Bend Wash	1,739
McMicken Dam	815
New River Dam	1,427
East Maricopa Floodway	1,722
Salt/Gila Projects	964
Sossaman Road	720
Spook Hill	4,233
White Tanks	662
Wickenburg	248
Other	2,411

MAINTENANCE RESPONSIBILITIES

	Inventory as of Jan 1 1980	Added 1/1980 to 1/1984	Added 1/1984 to 7/1986	Added 7/1986 to 7/1987	Total		Percent Increase 1/80-7/87
Bank Protection - Riprap	43076	43221.2	327184	3328152	3741633.2	sq yd	8586.0
Bank Protection - Grouted Riprap	-	-	-	65340	65340	sq yd	-
Bank Protection - Soil Cement	-	-	-	22273	22273	sq yd	-
Bridges - Pedestrian	2	4	1	1	8	each	300.0
Bridges - Vehicle	6	12	1	1	20	each	233.0
Culverts, Box	4	5	-	-	9	each	125.0
Culverts, Pipe	5	5	4	-	13	each	160.0
Dip Crossings (Asphalt)	3	2	1	1	7	each	133.0
Drainage Channel - Lined	48576	19500	926	-	69002	feet	042.0
Drainage Channel - Unlined	7.7	14.5	2.75	-	24.95	miles	224.0
Drop Structure	20	38	14	3	75	each	275.0
Embankment	531.4	588.3	214.4	19	1353.10	acres	154.0
Embankment, Soil Cement	-	7.6	5.1	-	12.70	acres	-
Energy Dissipator	-	-	-	-	-	each	-
Erosion Protection (Concrete Block)	-	-	-	8000	8000	sq ft	-
Fencing	424663	469281	233677	99300	1226921	feet	188.0
Fencing - Wrought Iron	-	-	-	10470	10470	feet	-
Flap Gates	1	13	18	-	32	each	3100.0
Floodway - Lined	-	4561	863	12.550	179.74	feet	-
Floodway - Unlined	92.6	951.2	1261.1	15.452	2320.35	acres	2405.0
Gabions	-	6192	18250	6192	30634	sq yd	-
Gated Outlet	19	6	1	-	26	each	037.0
Gates	129	182	74	59	444	each	244.0
Gates - Wrought Iron	-	-	4	1	5	each	-
Gates - Pipe	-	-	-	-	-	each	-
Grade Control Structure	1	3	2	1	7	each	600.0
Gutters, Concrete	430	920	4800	200	6350	feet	1376.7
High Flow	782.5	79	445	-	1306.50	feet	67.0
Landscaping							
Landscaping/Erosion control	174.5	1787.6	422.4	25	2409.5	acres	1281.0
Seeding							
Heads	-	1694	-	-	-	each	-
Irrigation Controls	-	5	-	-	5	each	-
Irrigation Lines	-	62960	-	350000	97960	feet	-
Plantings	1889	4116	1159	99480	106644	each	5545.5
Low Flow	563.7	371	264.2	7.0	1205.9	acres	114.0
Low Flow - SG	-	-	-			feet	-
Manholes	12	22	-		34	each	183.0
Meter Houses	5	5	2	-	12	each	140.0
Outlet Structure	12	9	3	-	24	each	100.0
Pilot Channel	-	-	23760	-	23760	feet	-
Pool Area	6970.6	5555	5868.8	-	18394.40	acres	164.0
Principal Outlet	13	5	3		21	each	62.0
Principal Outlet - Pipe	2486	1459	761	-	4706	feet	89.0
Railing - Pipe	240	240	240	60	780	feet	225.0
Ramps, Asphalt	-	100	-	113	213	feet	-
Ramps, Concrete	360	2480	960	790	4590	feet	1175
Ramps, Earth	1900	1450	2180	1105	6635	feet	249.0
Ramps, Grouted Riprap	-	-	1260	985	2245	feet	-
Ramps, Soil Cement	-	-	1800	1870	3670	feet	-
Retaining Wall	-	-	3554	780	4334	feet	-
Right-of-Way	3.5	745	86	169	1003.5	acres	28571.4
River Clearing	-	4365	-	-	4365	acres	-
Roads - Asphalt	0.2	10.9	5.7	5.7	22.5	miles	11150.0
Roads - Dirt	105.3	147.7	68.8	27.6	349.4	miles	232.0
Settlement Basins	-	-	-	1	1	acres	-
Side Inlet - Concrete	6	-	2	40	48	each	700.0
Side Inlet - Drop	5	26	28	-	59	each	1080.0
Side inlet - flap gate	1	13	18		32	each	3100.0
Side Inlet - Grouted	-	44	44	51	139	each	-
Side Inlet - Pipe	1	15	6	-	22	each	2100.0
Spillway - Earth	241.4	37.2	183.5	-	462.1	acres	091.0
Spillway - Lined	40	410	4813		5263	feet	13058.0
Stilling Basins	26	28	5	5	64	each	146.0
Stormdrain Pipe	13588	22163	3212	1008	39971	feet	194.0
Trash Racks	20	55	15	36	126	each	530.0
Vegetative Drains	9	14	6	1	30	each	233.0



PROJECTS IN PROGRESS

ARIZONA CANAL DIVERSION CHANNEL (ACDC) — Because Reach 1 was completed well ahead of schedule, the Corps sectioned Reach 2 into three reaches and began construction on Reach 2A in November 1986. Reach 2A extends from 53rd Avenue to 47th Avenue. The Corps of Engineers awarded a construction contract for Reach 2A to CS Construction for $4,663,450. Construction was approximately 88% complete at the end of the fiscal year.

From 53rd Avenue west, the channel has an earth-lined trapezoidal section, and from 47th Avenue east it will have a rectangular concrete section. A concrete trapezoidal length will form the transition between the east and west ends. The width of the channel will vary from 36 feet to 500 feet and the channel will be covered from Central to Dunlap, from 30th Street to 24th Street, and along Stanford Drive east of 32nd Street. Eight of ACDC's 25 required bridges have been completed and three are under construction. Five bridges are currently being designed.

The Task Force appointed by the Phoenix City Council to study Reach 4 completed its work in April 1986. The "Citizens Against Reach 4" continued their active opposition to the project, and the City Council considered Reach 4 on a number of occasions during the year. The engineering firm hired by the "Citizens Against Reach 4" reported less runoff at Cudia City Wash than the Corps of Engineers indicated, so the Council ordered two separate engineering studies of the problem. Both consultants confirmed the Corps' figures, and the Phoenix City Council voted to support Reach 4 on June 23, 1987.

The City Council has appointed an Aesthetics Committee to review the landscaping and aesthetics features for the ACDC and make recommendations to the Council. The Corps of Engineers and the District are assisting the Aesthetics Committee and attending its meetings. The Committee's report is expected within the coming year.

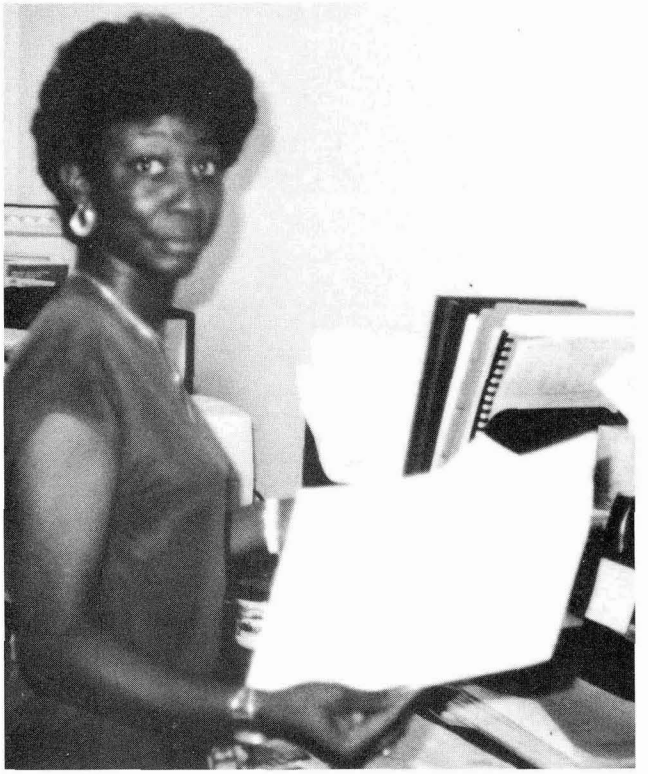
BUCKHORN-MESA WATERSHED — The Buckhorn-Mesa Watershed Project is a system of interrelated structures being built by the Soil Conservation Service to provide flood protection to rural and urban lands in the Eastern Maricopa County area, generally south of Brown Road from about Bush Highway to Idaho Road.

The first structures, the Spook Hill Dam and Floodway, the Signal Butte Dam and Floodway, and the Pass Mountain Diversion, have been completed; and the Soil Conservation Service awarded a construction contract to the Ashton Construction Company in May 1987 in the amount of $7,063,600 for the Apache Junction Dam and Bulldog Floodway. They are now under construction.

AGUA FRIA RIVER — The Agua Fria Channelization Project was developed to resolve flooding problems along the lower Agua Fria River that became evident during the flooding of 1978 to 1980. It is designed to contain and convey the Standard Project Flood, which is 142,000 cfs. The total project is expected to cost approximately $40 million, a portion of which is being shared by others. This project is, by far, the largest and most expensive local project of the District.

Reaches 1 and 2, which run from Indian School Road to 500 feet south of I-10, were completed in 1986. Soil cement is being used on this project for erosion protection and stability of levees, riverbeds, and other features. It has not been used extensively in Maricopa County before and is a new engineering application for the District.

The District awarded a construction contract for Reach 3 to Pulice Construction, Inc. for $6,781,234 in May, and construction was 7% complete as of June 1987.



Connie Bailey, Word Processing Operator

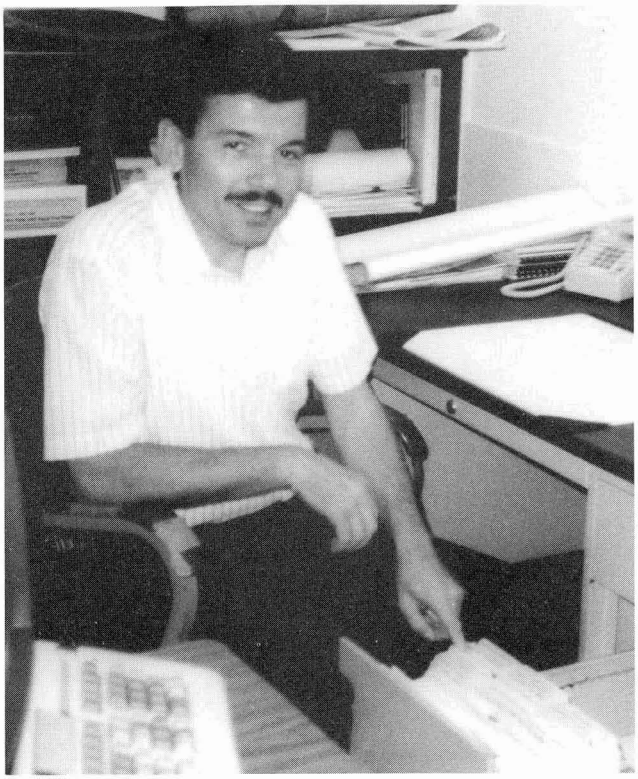
EAST MARICOPA FLOODWAY (Formerly RWCD Floodway) — The East Maricopa Floodway is being constructed by the Soil Conservation Service on the upslope (east) side of the Roosevelt Water Conservation District Canal in eastern Maricopa County. The 27.6 mile long Floodway is being built in six reaches and will extend from the Gila River to a little north of Brown Road in Mesa. Reach 1 was completed in 1981, Reach 2 in 1983, and Reach 3 in 1985.

Because it lies parallel to the RWCD Canal, there was confusion among residents as to the agency responsible for the RWCD Floodway. This confusion would have increased as eastern Maricopa County became more urbanized, so the District had the name changed to East Maricopa Floodway.

At the end of Fiscal Year 86-87, Reach 4 was approximately 85% complete, and the contractor, Kiewit Western, expected to complete contract work early in the new fiscal year. The total cost of their work will be approximately $4,755,000.

The Soil Conservation Service advertised for bids for Reach 5 early in June. Three miles of Reach 5 were constructed in 1985 by Leisure World at substantial savings to the District and the Soil Conservation Service.

Construction of a box culvert at Apache Boulevard and Higley Road in Reach 6 was completed by the JWJ Contracting Company in April of 1987 at a cost of approximately $1,468,898.



Don Rerick, Civil Engineer Technician

Jan Farmer, Hydrologist

SKUNK CREEK/NEW RIVER/AGUA FRIA — A flowage easement guarantees the right to run water through the land the easement is on while protecting the bearer from liability for any damages caused by the water. As part of the Corps of Engineers' Phoenix, Arizona and Vicinity (Including New River) Flood Control Project, the District is acquiring flowage easements for the 100-year floodplains of Skunk Creek, New River and the Agua Fria as well as performing some bank stabilization on New River and Skunk Creek.

The District must acquire these flowage easements to protect itself from liability for flood damages since the ACDC will divert floodwaters from the northern metropolitan drainage area to Skunk Creek, New River and the Agua Fria. Through the flowage easements, the District can also insure that development is limited in the floodway even if present laws governing floodplain management are changed. The flowage easements will also preserve open space, which is an authorized purpose of the Project.

GUADALUPE DAM — The Flood Control District is working with the Soil Conservation Service and the Gosnell Development Co., which is building a golf course and other recreation facilities in Guadalupe Dam reservoir. Currently, Gosnell is excavating the lakes in and around the reservoir and building the golf course. This development will not interfere with the flood control purposes of Guadalupe Dam.

GILA DRAIN PROJECTS — This project has been separated into several major elements to provide storm-water outlets for portions of Chandler, Gilbert, Mesa, Phoenix and Tempe. The District has entered into intergovernmental agreements for cost sharing on all the elements except for the Price Drain, which is in the planning stage.

PROJECT	PARTIES	DISTRICT CONTRIBUTION	CONSTRUCTION DATE
48th Street Storm Drain	Gilbert Phoenix Tempe	$300,000	Complete Phase I Spring 1987
Gila Drain Storm Drain	Tempe	$2,758,700	Completion Fall 1987
ADOT Pit and Diversion	Tempe	$1,293,076	Complete Spring 1987
Gilbert Downtown Retention Basin	Gilbert	$287,500	Complete Summer 1987
Lindsay Road Regional Basin	Gilbert	$976,900	Completion Fall 1987
Price Drain	ADOT Chandler Gilbert Mesa	$7,000,000 (estimated)	Start Fall 1987

OLIVE DRAIN — The Olive Avenue Storm Drain developed from the Glendale/Peoria Area Drainage Master Studies and will be along Olive Avenue from 67th Avenue to 91st Avenue, outletting into New River. It is proposed that it be a regional storm drain, composed of a pipe conduit and detention basins to handle flows from both Glendale and Peoria. The design is being accomplished with the two cities and the District contributing funds. The agencies are now working out cost sharing arrangements for construction of the Drain.

The eastern entryway of the Flood Control Building, torn down prior to construction of the new wing and roof.

The new wing of the Flood Control Building

CONTRACTS AWARDED THIS YEAR

Type of Contract	Number	Contract Amount Including Contingencies
Appraisal	16	$ 41,050
Engineering Services	27	3,905,626
Construction	8	12,276,000
Maintenance of Structures	1	175,000
Rental Property Maintenance	34	97,895
Relocation Assistance	1	8,650
Title and Escrow Services	1	25,000
Total	88	$16,529,221

OTHER DISTRICT ACTIVITIES

FLOODPLAIN AND DRAINAGE MANAGEMENT — One of the main responsibilities of the District is to protect people and property before an emergency arises by regulating the use of floodplains and by reviewing residential, commercial, and industrial development plans so that new developments will not have or cause drainage problems. In regulating the floodplains, the District delineates floodplains and determines what uses are compatible with the floodplain and whether the proposed uses are adequately protected from flood flows. The District reviews development plans in unincorporated areas outside the floodplains to be sure the development will not adversely affect adjoining property by diverting or increasing runoff or cause drainage and flooding problems within the development itself.

The charts below show the work load during the last three years.

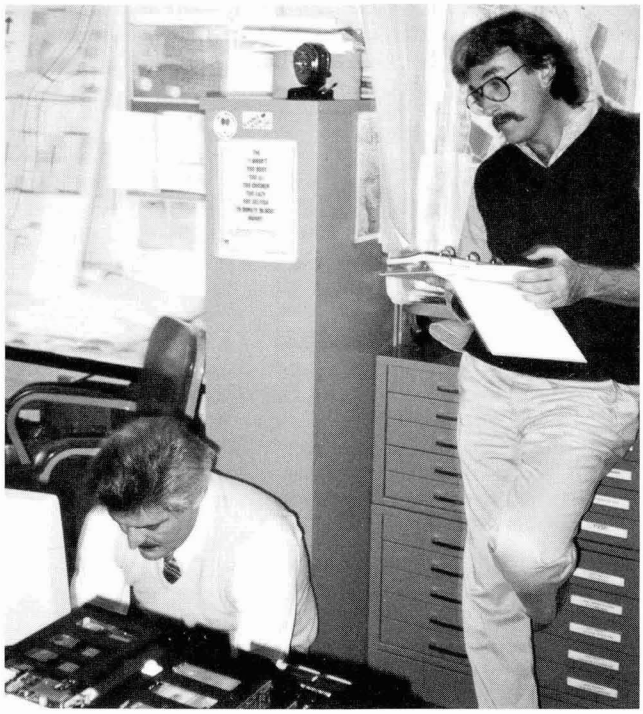
Floodplain Management

	FY 84-85	FY 85-86	FY 86-87
Floodplain Use Permits	16	20	49
Floodplain Variances	23	20	13
Appeals	3	4	0
New Delineations	2	10	7
FCD Clearances	64	78	55
Violation Cases	14	11	10
Referrals to County Attorney	2	0	3

Drainage Management

	FY 84-85	FY 85-86	FY 86-87
Zoning Cases Reviewed (Including Resubmittals)	212	259	370
Subdivision Cases Reviewed	55	55	94
Master Plans Reviewed	5	10	11
Board of Adjustment Cases Reviewed	14	21	106
Drainage Inspections	NA	462	916

Mark Williams and Elroy Stone demolishing an ACDC house on Carol Ave.



Tom LaMarche, Water Resources Planner, and Tim Sutko, Hydrologist.

UNIFORM DRAINAGE STANDARDS FOR MARICOPA COUNTY — In response to a need for more uniform drainage requirements for the various jurisdictions in Maricopa County, the District facilitated a task force on Uniform Drainage Standards. This group planned a set of standards for all cities, towns and the County. This information is being compiled in the following three phases:

Phase 1: The Uniform Drainage Policies and Standards for Maricopa County, Arizona is a policies and standards report on various agencies' common approach to drainage management. It was approved by the Maricopa County Board of Supervisors and Flood Control District Board of Directors on April 20, 1987. The Policies advocate master drainage planning, a central library for drainage reports, multiple uses of drainage works, and common storage facilities rather than on-lot retention. The standards are primarily modifications of existing criteria for storage, drainage of storage facilities and street conveyance.

Phase 2: This two-part design manual will outline the application of the policies and standards. One part presents methods for calculating peak discharges and volumes of water for which the drainage engineers must design. The other outlines the criteria and methods for these designs. Both parts are currently being prepared.

Phase 3: Reviews and updates Maricopa County area rainfall maps to insure that the best available precipitation data is used as a basis for drainage design.

OLD CROSS CUT CANAL STUDY — The Flood Control District is working with the Corps of Engineers on a study of flooding in the Arcadia and Old Cross Cut Canal areas. The preliminary study results show that it may be possible to incorporate the Arizona Canal into an interceptor/collection system to convey the stormwater to the Salt River using the Old Cross Cut Canal.

The Old Cross Cut Canal will be affected by the location of the East Papago and Hohokam Freeways as well as the proposed widening of 48th Street. The effect of these issues on the Old Cross Cut Canal is still being studied.

AREA DRAINAGE MASTER STUDIES — The District has been conducting several Area Drainage Master Studies (ADMS's) in various parts of the County. Each ADMS takes a certain area of the County and studies the past and potential stormwater drainage problems on a watershed basis and proposes solutions. The costs of the studies are often shared with municipalities and other governmental agencies.

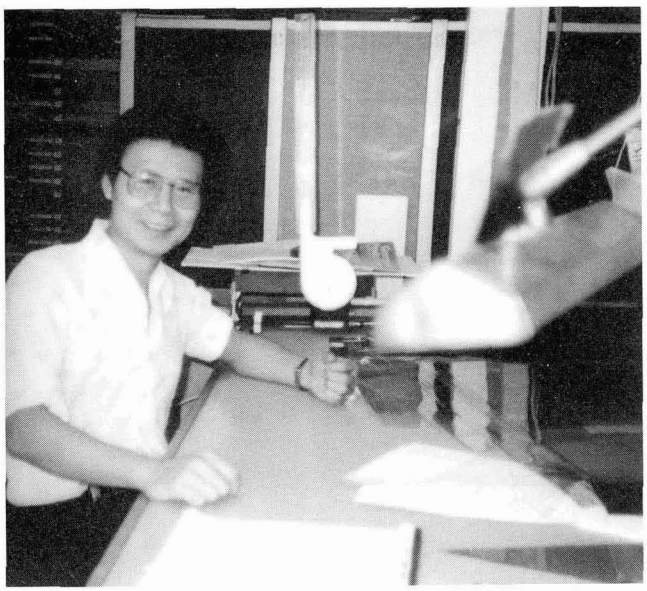
Eastern Maricopa County ADMS — The study boundaries extend from approximately Brown Road on the north to Ray Road on the south and from the RWCD Canal on the west to beyond the County line on the east. Other agencies involved in the study are the City of Mesa and the County Highway Department. The original study was for 100-year flood protection but, because of the high cost of $80 million, we asked the engineering consultant to study lower levels of protection. During the year, the District worked with ADOT sharing hydrology information and studying the possibility of early implementation of joint projects in critical areas.

Queen Creek ADMS — An engineering consultant was hired and the study is expected to continue through the end of 1987. The study is in the stage of watershed delineation and development of the hydrology.

Spook Hill ADMS — The study area is north of the Buckhorn-Mesa Watershed Projects to the National Forest boundary. Other agencies involved in the study are the City of Mesa, the County Highway Department, and the Soil Conservation Service. In response to the public's concern about preserving the natural desert environment and their lifestyles, the District is having the engineering consultant investigate lower levels of protection. The alignment of ADOT's Red Mountain Freeway will have an impact on the ADMS. ADOT has proposed moving our Spook Hill Dam in about eight years for the construction of the Freeway.

Wittmann ADMS — Our engineering consultant is working in the watersheds around Wittmann, located northwest of Metropolitan Phoenix. New topographic mapping of the area has been produced, a verified hydrology model has been developed, and potential flooding and drainage problems are being analyzed. Preliminary results of the study have been incorporated into the design of the Sun Valley Parkway crossing of McMicken Dam and the development of the Northwest Landfill. The study will be completed during the next fiscal year.

East Fork Cave Creek — The study area is generally between the CAP Aqueduct to Greenway Road and between 7th Street to 32nd Street. Other involved agencies are the Maricopa County Highway Department and the City of Phoenix. The engineering consultant completed the hydrology and developed alternatives for stormwater management within the watershed. Public meetings were held in November and the people attending the meetings were supportive of the study and expressed the desire to have the open channels and detention basins used for recreation as well as flood control. Cost estimates for implementation of the plan are approximately $50 million. The study was for 100-year flood protection; however, project planning in some areas other than the 100-year floodplain of East Fork Cave Creek will be for a reduced level of protection. The hydrology developed in the study is being used to develop a new floodplain delineation for submittal to the Federal Emergency Management Agency.



Shon Wu, Engineering Drafting Specialist

PLAN 6 — Plan 6 is a part of the Central Arizona Project (CAP), a program of the Bureau of Reclamation. The purposes of Plan 6 are to provide flood control, to provide regulatory storage of excess Colorado River water, and to provide for the structural safety of existing Salt and Verde River Dams. The features of the Plan most important to the District were a new Waddell Dam on the Agua Fria, Cliff Dam on the Verde, and a modified Roosevelt Dam on the Salt River. The Flood Control District has committed itself to provide upfront funding for up to 20 percent of the flood control costs.

In June 1987, to the intense disappointment of flood control and other interests, Cliff Dam on the Verde River was removed from the Plan by agreement with a coalition of environmental groups. The U.S. Army Corps of Engineers has been requested to further investigate alternatives to provide flood protection on the Verde River.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
STATEMENT OF REVENUES, EXPENDITURES AND CHANGES IN FUND BALANCE
BUDGET AND ACTUAL
YEAR ENDED JUNE 30, 1987
(Preliminary & Unaudited)

REVENUES	BUDGET	ACTUAL	VARIANCE FAVORABLE (UNFAVORABLE)
Flood Control District Tax Levy	$44,850,000	$41,566,000	$(3,284,000)
State Assistance			
Federal Projects	525,000	0	(525,000)
Local Projects	2,750,000	637,000	(2,113,000)
County Reimbursement	5,580,000	506,000	(5,074,000)
Local Participation	876,000	212,000	(664,000)
Rental	725,000	711,000	(14,000)
Interest Earnings	3,000,000	2,061,000	(939,000)
Sale of Excess Land	15,147,000	0	(15,147,000)
Miscellaneous	116,000	461,000	345,000
Total Revenues	73,569,000	46,154,000	(27,415,000)
EXPENDITURES			
Personnel Services			
Salaries and Wages	4,170,000	3,367,000	803,000
Overtime	50,000	2,000	48,000
Total	4,220,000	3,369,000	851,000
Supplies and Services			
Professional Services Contracts	1,735,000	1,038,000	697,000
Maintenance Contracts	511,000	427,000	84,000
Maintenance Supplies	292,000	148,000	144,000
Insurance	16,000	16,000	0
Other Supplies and Services	661,000	538,000	123,000
Total	3,215,000	2,167,000	1,048,000
Capital Outlay			
Real Estate	33,981,000	19,200,000	14,781,000
Engineering & Scientific Equip.	6,150,000	1,754,000	4,396,000
Motor Vehicles & Equipment	1,128,000	618,000	510,000
Const. & Other Capital Outlay	36,761,000	17,084,000	19,677,000
Total	78,020,000	38,656,000	39,364,000
Total Expenditures	85,455,000	44,192,000	41,263,000
Excess (Deficiency) of Revenues over Expenditures	(11,886,000)	1,962,000	13,848,000
Fund Balance at Beginning of Year	24,645,000	24,645,000	
Fund Balance at End of Year	$12,759,000	$26,607,000	$13,848,000

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
EXPENDITURES BY ACTIVITIES AND FUNCTIONS *
FY 86/87
(Preliminary & Unaudited)

ACTIVITY	OPERATIONS EXPENDITURES		CAPITAL IMPROVEMENTS PROGRAM		
	Administrative	Maintenance	Engineering	Lands	Relocation & Construction
Administrative Overhead	$1,847,000	$ 3,000	$ 12,000	$	$ 165,000
Maintenance Overhead	2,000	1,096,000			
FCD Yard Maintenance		14,000			
USGS Service Work	59,000				
Enforcement of Flood-plain Regulations	22,000				
Work done for Planning & Development	250,000				
Watershed Hydrology	84,000				
Work done for County Highway Department	3,000				
Floodplain Delineation	70,000				
Flood Insurance	28,000				
Hydrologic Data Collection	23,000	20,000			
Flood Warning System	44,000	46,000			117,000
Floodplain Administration	340,000				
Computer Systems	31,000	2,000			
City of Chandler	1,000				
City of Mesa					550,000
City of Phoenix	24,000				
City of Scottsdale	1,000				72,000
City of Tempe					3,809,000
Town of El Mirage	1,000				
Dysart Road - Agua Fria Drain		5,000			
48th Street Drain	2,000	10,000			
Alma School Drain		11,000			
Old Cross Cut Canal	36,000	49,000			
Broadway Rd. Bank Stabilization			1,000		
Salt/Gila Clearing & Channelization		100,000			
Salt/Gila Control Works		56,000	27,000	12,000	228,000
Sossaman Road	3,000	26,000			
Agua Fria River	1,000	15,000			
Agua Fria River (ADOT Agreement)	8,000		254,000	2,000	2,493,000
Indian Bend Wash Outlet	5,000	9,000			
Indian Bend Wash Inlet	2,000	6,000			
Indian Bend Wash Greenbelt		1,000			
Indian Bend Wash Interceptor and Side Channels		15,000			
Gila Drain	4,000		80,000		
ACDC	21,000	368,000	347,000	5,081,000	5,351,000
EMF-Williams/Chandler	9,000	166,000	12,000	15,000	93,000
EMF-Apache Junc./Gilbert	3,000	4,000	10,000	19,000	1,772,000
EMF-Buckhorn/Mesa	3,000	2,000	5,000	1,000	584,000

ACTIVITY	OPERATIONS EXPENDITURES		CAPITAL IMPROVEMENTS PROGRAM		
	Administrative	Maintenance	Engineering	Lands	Relocation & Construction
White Tanks Dam #3	3,000	2,000		890,000	
White Tanks Dam #4	2,000	9,000		2,229,000	
McMicken Dam	1,000	33,000		8,185,000	
Dreamy Draw Dam		5,000			
McMicken Dam Outlet Channel		3,000			
Guadalupe Dam	5,000	7,000			
Buckeye #2		5,000			
Buckeye #3		6,000			
Spook Hill FRS & Outlet	1,000	54,000			
Signal Butte Floodway		6,000			1,000
Pass Mountain FRS & Outlet		1,000			
Apache Jct. FRS, Floodway, Outlet and Bulldog Floodway	9,000	3,000	22,000	279,000	149,000
Signal Butte FRS		11,000	3,000		
Powerline Dam		7,000			
Powerline Floodway		26,000			
Vineyard Road FRS		11,000			
Rittenhouse FRS		13,000			
Harquahala FRS & Floodway		30,000			
Saddleback FRS		36,000			
Saddleback Diversion Channel		6,000		2,000	
Centennial Levee		11,000		28,000	1,000
Harquahala Floodway		6,000			
Sunset FRS		2,000			
Sunnycove FRS		5,000			
Sunset/Sunnycove Pipeline		1,000			
Wittmann ADMS	11,000		262,000		
Cave Buttes Dam		47,000			
Adobe Dam	6,000	33,000	1,000	38,000	
Skunk Creek Channel at I-17		6,000			
New River Dam		22,000			
New River Area Drainage Master Study		2,000			
Skunk Creek and New River Flowage Easements	1,000	14,000	20,000	2,595,000	39,000
Agua Fria River Flowage Easements	6,000		428,000	263,000	1,593,000
Spook Hill Watershed ADMS	11,000				
East Maricopa ADMS	12,000		20,000		75,000
Glendale-Peoria ADMS	17,000		56,000		
East Fork Cave Creek ADMS	55,000		71,000		
Queen Creek ADMS	2,000		148,000		
Bell Road Expansion	160,000		6,000		
Total	$3,229,000	$2,447,000	$1,785,000	$19,639,000	$17,092,000

* Expenditures by Activities and Function will not always agree with Expenditures by Task on page 2 except in total.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
RENTAL PROGRAM FY 86/87
(Preliminary & Unaudited)

Project Name	# of Leasible Properties	# Leased	Vacancy Rate	Gross	Net
Arizona Canal Diversion Channel	87	83	4.6%	$658,000	$373,000
Indian Bend Wash	2	2	0.0%	1,000	0
East Maricopa Floodway	3	3	0.0%	26,000	20,000
Apache Junction FRS & Bulldog Floodway	2	2	0.0%	5,000	4,000
Cave Buttes Dam	1	1	0.0%	2,000	0
New River Dam	1	1	0.0%	1,000	1,000
Agua Fria River	1	1	0.0%	4,000	5,000
Signal Butte FRS	2	2	0.0%	10,000	9,000
Adobe Dam	1	1	0.0%	4,000	0
Total	100	96	4.0%	$711,000	$412,000

* Data as of June 30, 1987.

Helen Ortiz, Land Management Assistant; Kay Stevens, Senior Property Management Specialist; and Hedy Hall, Land Management Specialist.

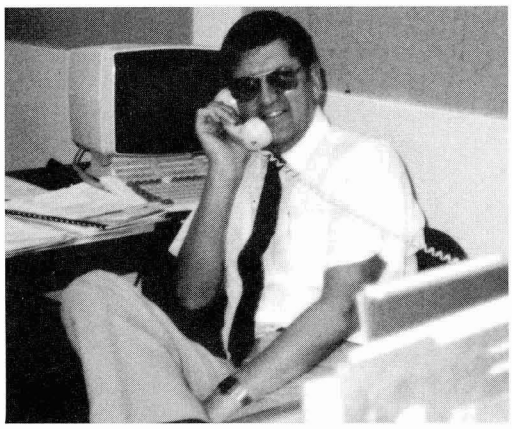
Dick Bryce, Bob Mauney, and Stan Smith at the dedication of Signal Butte Dam.

HISTORY OF THE TAX LEVY RATE FOR THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

For fiscal year ending	Levy Rate per $100 assessed value	Tax Revenue
1961	0.05	$ 253,000
1962	0.05	$ 288,000
1963	0.02	$ 126,000
1964	0.02	$ 135,000
1965	0.02	$ 145,000
1966	0.02	$ 153,000
1967	0.02	$ 158,000
1968	0.02	$ 164,000
1969	0.05	$ 446,000
1970	0.05	$ 454,000
1971	0.05	$ 480,000
1972	0.04	$ 425,000
1973	0.05	$ 645,000
1974	0.20	$ 3,428,000
1975	0.20	$ 3,747,000
1976	0.20	$ 4,154,000
1977	0.20	$ 4,395,000
1978	0.20	$ 4,675,000
1979	0.20	$ 5,026,000
1980	0.20	$ 5,342,000
1981	0.43	$11,825,000
1982	0.34	$13,720,000
1983	0.50	$21,779,000
1984	0.48	$25,780,000
1985	0.50	$28,697,000
1986	0.50	$33,644,000
1987	0.50	$41,566,000

EXPENDITURES ON LAND
Breakdown by Project
(Preliminary and Unaudited)

Project	Number of Parcels Bought This Year	FY 86/87 Total Land Acquisition Costs	% of Land Acquired To Date
Adobe Dam	0	$ 38,000	99%
Arizona Canal Diversion Channel	22	5,081,000	87%
Agua Fria River	5	265,000	11%
Apache Junction/Bulldog Floodway	10	279,000	44%
Centennial Levee	3	28,000	100%
East Maricopa Floodway	7	35,000	94%
Skunk Creek/New River Flowage Easements	24	2,595,000	19%
McMicken Dam	10	8,185,000	100%
Saddleback Diversion	0	2,000	100%
Salt/Gila Control Works	2	12,000	75%
White Tanks #3	1	890,000	100%
White Tanks #4	1	2,229,000	100%
Total	85	$19,639,000	



Dick McNamara, Property Acquisition Manager

Flood Control Advisory Board — Donald E. Womack, John E. Miller, Jr., William LoPiano, H. Lynn Anderson, Charles A. Sykes, Ross Blakely, Jr. Robert Towner not in picture.

FLOOD CONTROL ADVISORY BOARD

H. LYNN ANDERSON

JAMES ATTEBERY, ex officio member, City of Phoenix

WILLIAM LOPIANO, Chairman, July 1, 1986 to October 30, 1986

JOHN E. MILLER, JR.

CHARLES A. SYKES, Chairman, November 1, 1986 to June 30, 1987

ROBERT TOWNER

DON WOMACK, ex officio member, Salt River Project

PRINCIPAL STAFF MEMBERS

DANIEL E. SAGRAMOSO, Chief Engineer and General Manager

STANLEY L. SMITH, JR., Deputy Chief Engineer

DAVID A. BROZOVSKY, Flood Control Administrator

ROBERT C. PAYETTE, Chief, Construction and Operations Division

NICHOLAS P. KARAN, Chief, Engineering Division

DAVID R. JOHNSON, Chief, Hydrology Division

EDWARD D. OPSTEIN, Chief, Land Management Division

JOHN E. RODRIGUEZ, Chief, Planning and Projects Management Division

BOARD OF DIRECTORS

GEORGE CAMPBELL, District 2*, Chairman, July 1, 1986 to January 5, 1987

CAROLE CARPENTER, District 4*

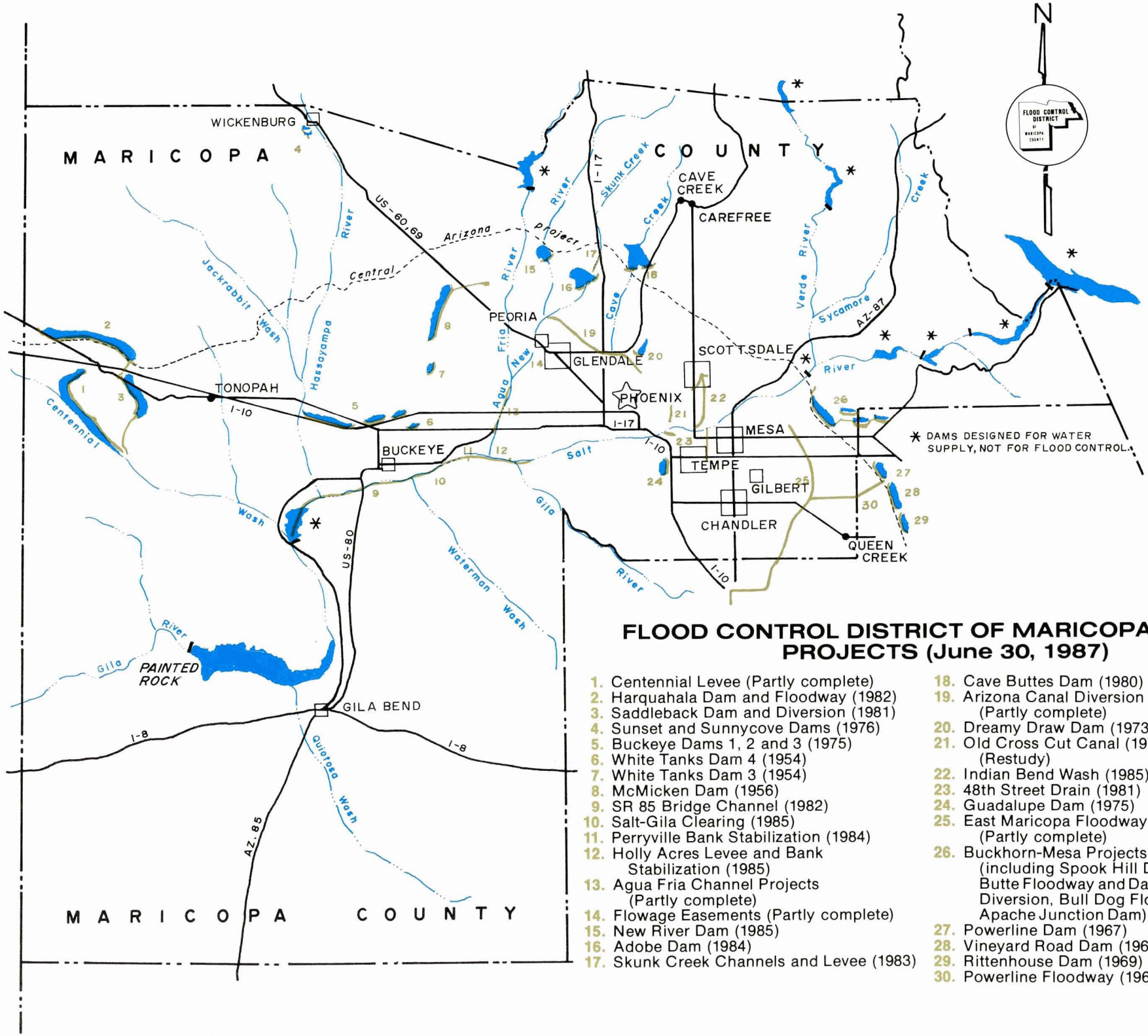
TOM FREESTONE, District 1*

FRED KOORY, JR., District 3*, Chairman, January 5 to June 30, 1987

ED PASTOR, District 5*

*Supervisoral Districts (Directors are also Supervisors of Maricopa County)

Roberta Combs, Secretary

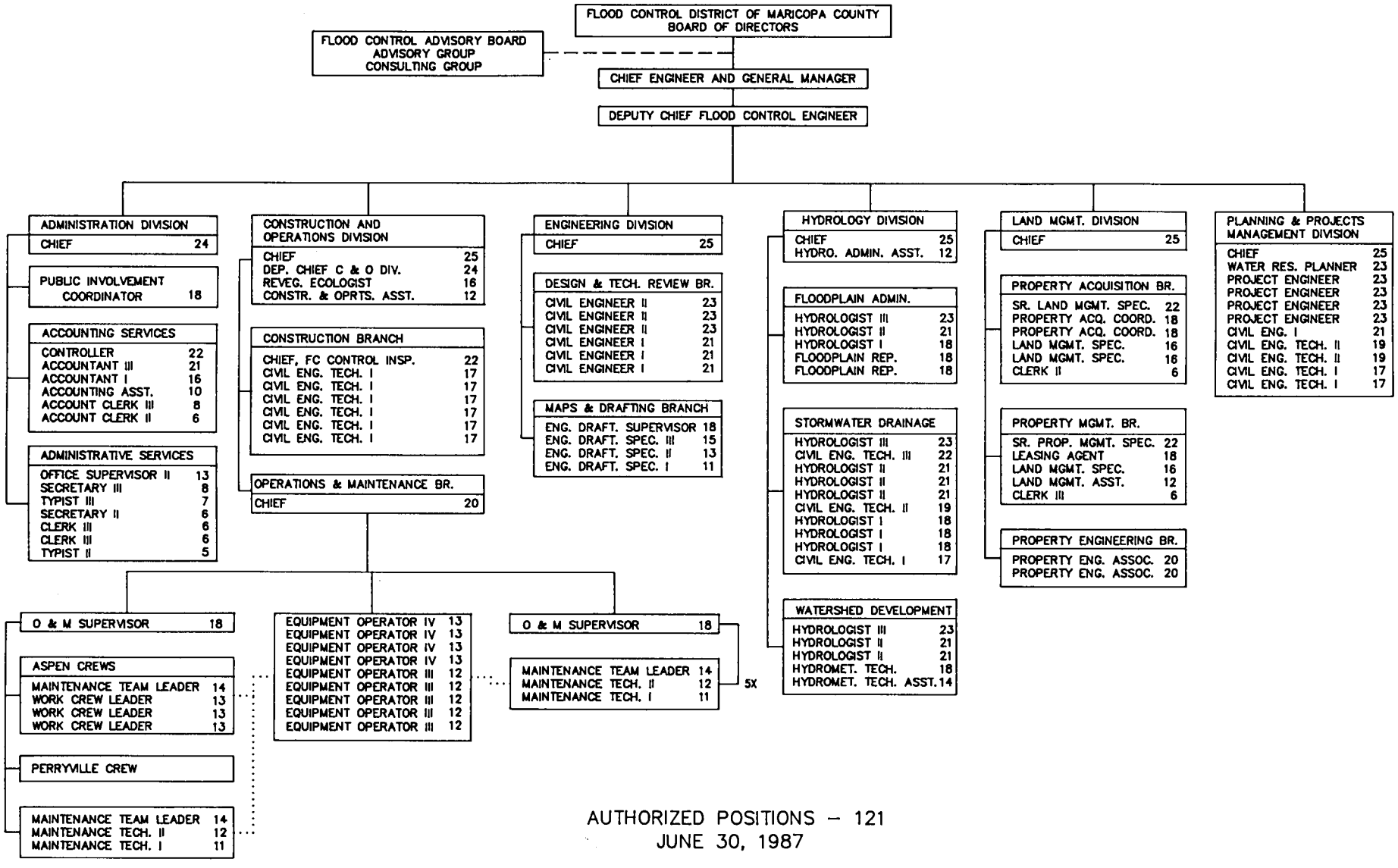


FLOOD CONTROL DISTRICT OF MARICOPA COUNTY PROJECTS (June 30, 1987)

1. Centennial Levee (Partly complete)
2. Harquahala Dam and Floodway (1982)
3. Saddleback Dam and Diversion (1981)
4. Sunset and Sunnycove Dams (1976)
5. Buckeye Dams 1, 2 and 3 (1975)
6. White Tanks Dam 4 (1954)
7. White Tanks Dam 3 (1954)
8. McMicken Dam (1956)
9. SR 85 Bridge Channel (1982)
10. Salt-Gila Clearing (1985)
11. Perryville Bank Stabilization (1984)
12. Holly Acres Levee and Bank Stabilization (1985)
13. Agua Fria Channel Projects (Partly complete)
14. Flowage Easements (Partly complete)
15. New River Dam (1985)
16. Adobe Dam (1984)
17. Skunk Creek Channels and Levee (1983)
18. Cave Buttes Dam (1980)
19. Arizona Canal Diversion Channel (Partly complete)
20. Dreamy Draw Dam (1973)
21. Old Cross Cut Canal (1975) (Restudy)
22. Indian Bend Wash (1985)
23. 48th Street Drain (1981)
24. Guadalupe Dam (1975)
25. East Maricopa Floodway (Partly complete)
26. Buckhorn-Mesa Projects (including Spook Hill Dam, Signal Butte Floodway and Dam, Pass Mountain Diversion, Bull Dog Floodway, and Apache Junction Dam) (Partly complete)
27. Powerline Dam (1967)
28. Vineyard Road Dam (1968)
29. Rittenhouse Dam (1969)
30. Powerline Floodway (1968)

ORGANIZATIONAL CHART

POSITIONS AND PAY GRADES



AUTHORIZED POSITIONS – 121

JUNE 30, 1987

FLOOD CONTROL DISTRICT of MARICOPA COUNTY

ANNUAL REPORT

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

JULY 1, 1987 to JUNE 30, 1988

003.107

ANNUAL REPORT

July 1, 1987 to June 30, 1988

CONTENTS

Published by:

Flood Control District of Maricopa County
3335 West Durango Street
Phoenix, Arizona 85009

Editor: Helen Hayes

Maintenance Activities 2
Development of Flood Control Structures 4
Sharing Costs to Prevent Flooding 6
Non-Structural Protection from Flooding 7
Innovations Gain Recognition for the District 9
Financial Report 10
Boards and Officers 14
Project Map 16
Organization Chart ..... inside back cover

FINANCIAL HIGHLIGHTS

On the cover: An April storm rolls in over the Agua Fria River.

Photo by Ed Karnafel

FOR THE YEAR ENDED JUNE 30, 1988
(Preliminary and Unaudited)

	DOLLARS	PERCENT
REVENUES		
Flood Control Tax	$46,059,000	89%
Rental Income	554,000	1%
Interest	1,904,000	4%
State Assistance - Local Projects	526,000	1%
County and Local Participation	712,000	1%
Sale of Excess Land	2,187,000	4%
Miscellaneous	80,000	--
Total Revenues	52,022,000	100%
EXPENDITURES		
Administration and Maintenance	7,285,000	13%
Flood Control Capital Improvements	48,759,000	87%
Total Expenditures	56,044,000	100%
Excess (Deficiency) of Revenues Over Expenditures	(4,022,000)	
Fund Balance at Beginning of Year	27,138,000	
Fund Balance at End of Year	$23,116,000	
EXPENDITURES BY TASK		
Administration	$ 5,181,000	9%
Land Acquisition	15,121,000	27%
Relocation of Utilities, Bridges and Other Facilities	10,336,000	19%
Construction	22,281,000	40%
Maintenance	2,996,000	5%
Cost Sharing in Projects Managed by Others	129,000	--
Total	$56,044,000	100%

FLOOD CONTROL DISTRICT
of
Maricopa County

3335 West Durango Street • Phoenix, Arizona 85009
Telephone (602) 262-1501

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

BOARD OF DIRECTORS
Tom Freestone, Chairman
George E. Campbell
Carole Carpenter
Fred Koory, Jr.
Ed Pastor

Memo from the Chief Engineer and General Manager
Cooperation Brings Success on the Agua Fria

The most significant event of the year was the completion of construction of the Agua Fria Channelization project. This $45 million project extends from north of Indian School Road to the Gila River and was made possible by the cooperation of a number of organizations and a number of people with different interests and goals. We now have something to be proud of - the flooding potential of the Agua Fria has been greatly reduced.

Through cooperation with the County Highway Department, new bridges were constructed at McDowell and Van Buren across a much narrower Agua Fria River channel resulting in considerable cost savings to the County with a portion of these savings being used for the channel project. The Indian School Bridge was reconstructed, and a channel was constructed using land dedicated by sand and gravel operators.

ADOT needed 850,000 cubic yards of earth for construction of Interstate 10 east of the river, and the District needed to have a channel dug. An agreement was worked out whereby ADOT dug part of our channel and used the earth to build its freeway thus saving everyone money.

Cooperation with the Federal government was also an integral part of this project. The Corps of Engineers' levees will protect an existing subdivision on Lower Buckeye Road and Avondale's Wastewater Treatment Plant.

From the beginning of the project, the City of Avondale worked with us to find the best solutions to the challenges posed by the project. The water lines were a particular challenge, but by putting in two temporary bypass lines, service was not interrupted for more than two hours at a time during construction. The old Landfill needed to be moved out of the riverbed and, working together, we found a new location immediately adjacent to the new channel. Avondale will be building a park over the relocated landfill, partially with money supplied by the District.

All of us can be proud of the Agua Fria Channelization Project.

D. E. Sagramoso

The District performs a wide variety of maintenance activities, such as erosion control, fence repair, and irrigation of landscaped areas. In some cases, the work is simple and straightforward. For instance, there are 4,363 acres of natural streambed in the Gila and Salt Rivers which we have cleared of water loving plants called phreatophytes. These plants would otherwise change the course of the river and slow the flow of water. They cause the deposit of sediment in the riverbed which reduces the depth of the river and contributes to flooding. The Salt/Gila Clearing Project keeps the channel cleared, grubbed, and raked, enabling the unrestricted passage of stream flows.

A more complex project is the Arizona Canal Diversion Channel (ACDC). The District assumes maintenance responsibility for each reach of this project as it is completed, and for landscaping along both sides of its 17-mile length. Because Arizona's arid environment requires an irrigation system capable of supporting plants throughout the long hot summer, we had to design an extremely efficient water application system to irrigate long distances. We also needed a means of monitoring and controlling this extensive system from a single remote location at the District main office.

We are using drip irrigation, which applies small amounts of water over a period of several hours. The system we found enables us to deliver very accurate amounts of irrigation water over a wide range of pressures, allowing its use over much longer distances than conventional drip systems.

Looking upstream from Gillespie Dam at the Salt/Gila Clearing, which includes 36 miles of dirt road.

Maintenance Activities

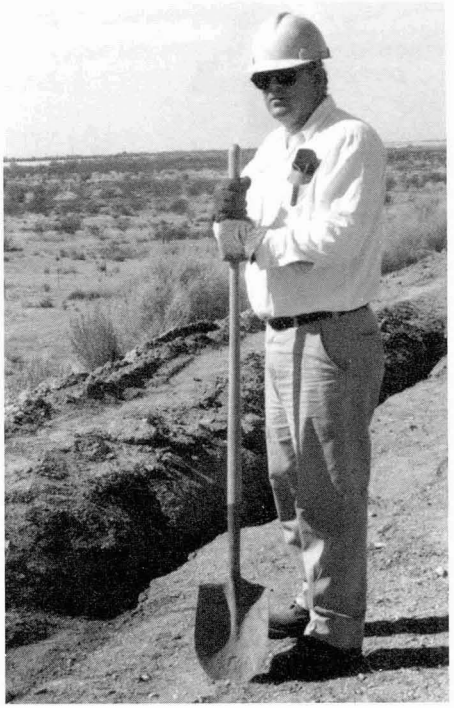
We combined this with a computer-based control system. It is capable of controlling the irrigation system on-site as well as from a remote location, i.e., the District main office, some miles distant from the project.

Because it is undergound, this system saves costs associated with vandalism and broken pipes. Because it can discern soil moisture, it can tell us when and how much an area needs to be irrigated. This saves the expense of sending field crews to inspect the system on a daily basis and prevents the inaccurate or excessive application of irrigation water. The system can also remotely change irrigation scheduling, remotely and automatically fertilize, and provide automatic sequential irrigation.

The District anticipates a savings in water use of 50-60% over the original irrigation and irrigation control design from this system. This translates to a substantial, though presently unquantifiable savings, both in dollars and conserved resources.

The District maintains 22 flood retention structures and is responsible for 50 different facilities throughout Maricopa County. Approximately 43% of our staff is involved in these activities.

The amount of maintenance work has increased dramatically over the last several years (see the chart on the next page), with new structures coming on line each year as projects are completed. The District has been able to maintain these structures without a proportional increase in staff through the extensive use of Department of Corrections prisoners.



Tony Guzak, a Maintenance Team Leader, supervising erosion control work at McMicken Dam.

This year we used 39,622 hours of prisoner labor to perform hand-intensive maintenance such as clearing vegetation and trash removal. The labor of each prisoner cost the District 50 cents per hour, saving taxpayers several hundred thousand dollars.

Cost-savings at the District

As part of an agreement with the Game and Fish Department and the U.S. Fish and Wildlife Service, the District agreed to perform wildlife mitigation around Gillespie Dam and the area north of the Dam. This entailed planting barley, canary grass, and bermuda grass to compensate for wildlife habitat losses elsewhere in the area. It was a large operation, covering about 400 acres, but staff at the District did some creative problem solving to come up with inexpensive, labor-saving solutions.

A District employee knew of a cooperative effort between the University of Arizona and the Soil Conservation Service to develop a barley variety that required only a single irrigation per growing season. They were interested in seeing how the barley variety would work in an actual, non-irrigation situation. The District agreed to provide updates on the progress of the plants and got the seeds free.

Because of the large area of the planting (400 acres), we decided to use aerial seeding. By this method, the seed's fall from the plane would create enough velocity to embed it into the ground on impact. Of course, the ground had to be softened first using tractor and farm implements (disking), but it is a much less labor-intensive and less expensive method of planting a large area than hand-seeding or pulling a seeder behind a tractor.

Growth of Maintenance Responsibilities

	Inventory as of Jan 1 1980	Added 1/1980 to 1/1984	Added 1/1984 to 7/1987	Added 7/1987 to 7/1988	Total		Percent Increase 1/80-7/88
Access Ladder	-	-	10	-	10	each	-
Bank Protection - (R/R)	45025	271124	122057	23355	461561	sq yd	925
Bank Protection - (G R/R)	50	29671	64429	20165	114315	sq yd	228530
Bank Protection - Soil Cement	-	8850	-	-	8850	sq yd	-
Bank Protection - Shot Crete	-	4104	-	883	4987	sq yd	-
Bridges - Pedestrian	3	4	1	-	8	each	167
Bridges - Vehicle	8	6	-	-	14	each	75
Culverts, Box	5	8	1	-	14	each	180
Culverts, Pipe	14	29	34	-	77	each	450
Dip Crossings - Asphalt	-	3	1	-	4	each	-
Drainage Channel - Lined	48068	12144	6109	-	66321	feet	38
Drainage Channel - Lined (R/R)	-	2033	870	-	2903	feet	-
Drainage Channel - Lined (G R/R)	-	689	219	-	908	feet	-
Drainage Channel - Unlined	12.4	6.4	1.5	-	20.3	miles	64
Drop Structure	15	32	11	1	59	each	293
Embankment - Dirt	501	393	213	32	1139	acres	127
Embankment - Soil Cement	-	6.2	6.8	6	19	acres	-
Energy Dissipator	11	6	16	1	34	each	209
Erosion Protection - Conc Paving	-	-	-	8000	8000	sq ft	-
Fencing - Wire	401021	452012	172544	27209	1052786	feet	163
Fencing - Wrought Iron	-	-	-	10440	10440	feet	-
Floodway - Lined	-	4693	-	11405	16098	feet	-
Floodway - Lined (R/R)	-	8633	-	-	8633	feet	-
Floodway - Lined (G R/R)	-	974	650	-	1624	feet	-
Floodway - Unlined	802	397	422	67	1688	acres	111
Gabions	1200	-	16133	-	17333	sq.yd.	1344
Gated Outlet	15	4	1	-	20	each	33
Gates - Wire	29	10	-	3	42	each	45
Gates - Wrought Iron	-	-	-	1	1	each	-
Gates - Pipe	108	116	84	1	309	each	186
Grade Control Structures	8	8	3	1	20	each	150
Guardrail	327	1593	420	-	2340	feet	616
Gutters - Concrete	130	3940	6100	-	10170	feet	7723
High Flow	586	13	-	-	599	acres	2
Landscape - Erosion Control	351	1879	327	70	2627	acres	648
Irrigation Heads	-	147	-	17	164	each	-
Irrigation Controls	-	2	-	11	13	each	-
Irrigation Lines	-	2676	-	20921	23597	feet	-
Plantings	927	3666	2202	1748	8543	each	822
Low Flow - Structures	990	112	13	-	1115	acres	13
Manholes	18	12	-	-	30	each	67
Meter Houses	5	2	1	-	8	each	60
Outlet Structure	3	4	1	-	8	each	167
Pilot Channel - Gila River	-	5300	17424	-	22724	feet	-
Pool Area	8879	45474	5504	-	59857	acres	574
Principal Outlet	11	5	2	-	18	each	64
Principal Outlet - Pipe	11230	1458	580	-	13268	feet	18
Railing - Pipe	-	358	486	-	844	feet	-
Ramps - Asphalt	-	64	800	70	934	feet	-
Ramps - Concrete	348	90	-	221	659	feet	89
Ramps - Earth	2684	11178	7445	919	22226	feet	728
Ramps - Grouted Riprap	-	2080	2744	-	4824	feet	-
Ramps - Soil Cement	-	690	147	480	1317	feet	-
Retaining Wall	-	1085	290	267	1642	feet	-
Right-of-Way	8547	15460	7272	613	31892	acres	273
River Clearing	-	2480	1815	-	4295	acres	-
Roads - Asphalt	2.6	10.3	14	5.5	32.4	miles	1146
Roads - Dirt	152	144	45	10	351	miles	131
Sediment Basins	13	17	7	-	37	each	185
Side Inlet - Concrete	26	12	6	7	51	each	96
Side Inlet - Drop	3	6	-	-	9	each	200
Side Inlet - Flap Gate	10	23	16	4	53	each	430
Side Inlet - Grouted	11	67	50	10	138	each	1155
Side Inlet - Pipe	31	72	13	38	154	each	397
Spillway - Earth	484	27	1	-	512	acres	6
Spillway - Lined	944	260	53	-	1257	feet	33
Stormdrain Pipe	8186	18179	505	-	26870	feet	228
Trash Racks	44	40	22	11	117	each	166
Vegetative Drains	16	31	12	-	59	each	269

(R/R) = Rip/Rap
(G R/R) = Grouted Rip/Rap

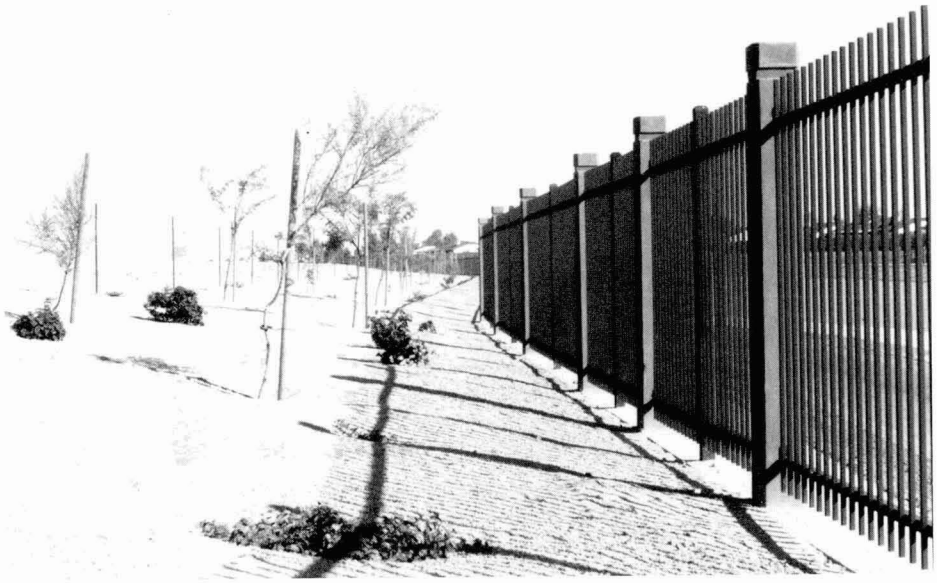
Rev. 3/16/88

Bob Pendergast, a maintenance supervisor who celebrated his 20th year of working with the County this year.

Department of Corrections' prisoners were used on the following projects:

Project	Hours
ACDC	5,983
Agua Fria	845
Buckeye	1,359
Buckhorn-Mesa	2,521
Cave Buttes	1,282
EMF	1,196
Harquahala	1,191
Indian Bend Wash	2,391
McMicken	10,172
Old Cross Cut	714
Powerline	1,320
Rittenhouse	688
Salt/Gila	947
Skunk Creek/New River	2,590
Sunset/Sunnycove	1,392
White Tanks	853
Other	4,078

Development of Flood Control Structures



Recently completed fencing and landscaping along the Arizona Canal Diversion Channel (ACDC), Reach 2A.

The Flood Control District has many roles. We function as a local sponsor for federal flood control projects, acquire needed rights-of-way for flood control, coordinate intergovernmental agreements, oversee contracts, and maintain completed structures. There is an intricate array of activities associated with each project. Below is an update on some of the work associated with our major projects.

Arizona Canal Diversion Channel

The Arizona Canal Diversion Channel (ACDC) will provide 100-year protection to large parts of the Phoenix Metropolitan Area south of the Cave Creek drainage area, which includes the state capitol complex, Glendale and Peoria. The channel will intercept Cudia City Wash and Dreamy Draw floodwaters as well as runoff from the Phoenix Mountains, Cave Creek and residential street flows north of the channel. It will divert these flows into Skunk Creek, eliminating stormwater flow into and subsequent breakouts of the Arizona Canal.

The Flood Control District is sponsoring this project for the U.S. Army Corps of Engineers. Approximately 40% of its overall cost will be paid by the District, and we will provide maintenance of the completed structure.

Because so much of this project is in the Phoenix Metropolitan Area, it requires 25 bridges and a special sensitivity to urban aesthetics. Many public meetings have been held, and a citizens' aesthetics committee was created in response to concern among members of the community. The District and Corps of Engineers staff attended the committee's meetings and have incorporated some of their ideas into the planning of the channel, such as curved fence tops and specific plant types and sizes for landscaping.

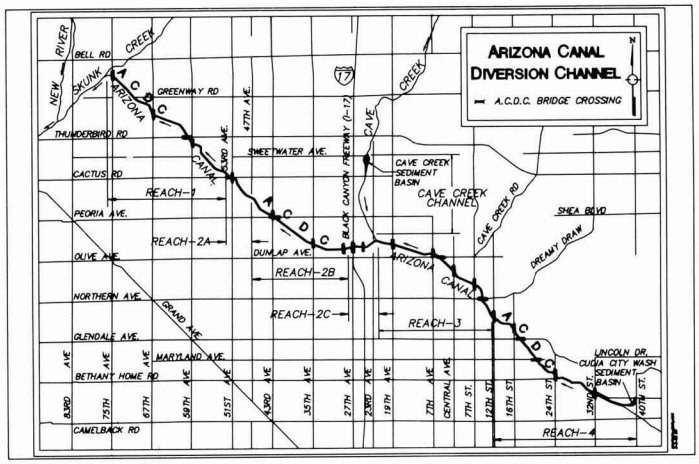
In the area of the Biltmore Hotel, CRS Sirrine, Consulting Engineers, are performing a study to investigate the possibility of constructing the channel as a tunnel in this area. It is likely that this would cost more than the usual method of digging and covering, but it would avoid the 6-month disruption of the area that would be caused by a cut and cover operation.

The width of the 17-mile channel will vary from 36 to 500 feet. In organizing design and construction, the Corps of Engineers has divided the channel into four reaches. Reach 1 was completed in 1986, and Reach 2 is being completed in three sections. The District's projected expenditure for Reach 2 is $24,700,000.

Construction began on Reach 2A in November 1986 and was completed in January of this year. This reach extends from 53rd to 47th Avenue. The construction contractor was CS Construction. At the end of this fiscal year, Reach 2B was 63% complete. The construction contractor is Kasler Corporation.

From 53rd Avenue west, the channel has an earth-lined trapezoidal cross section, and from 47th Avenue east it will have a rectangular concrete cross section. Reach 2A forms the transition between the east and west ends of the channel, and has a concrete trapezoidal cross section.

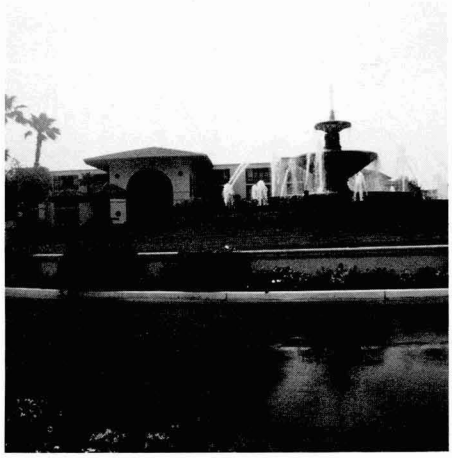
The channel will be covered from Central to Dunlap Avenue, so that Sunnyslope High School can maintain use of its athletic fields; along Stanford Drive east of 32nd Street to avoid



Left: The ACDC runs from Skunk Creek to 40th Street. The estimated date of completion for the project is 1992.

The Agua Fria Dedication Ceremony, where County Supervisor Carole Carpenter was the Master of Ceremonies.

David McClain operating a roller compactor to perform erosion control on the East Maricopa Floodway.



The Pointe at South Mountain, where the District operates Guadalupe Dam.

the cost of relocating Stanford Drive; and from 30th to 24th Street, in front of the Biltmore Hotel, where costs of covering are less than additional costs required to replace the disrupted facilities.

Of the 25 bridges required for the project, 11 have been completed, 3 are under construction, and 4 are being designed and will be constructed by the Corps.

Agua Fria

At a total cost of approximately $45,225,000, the Agua Fria Channelization Project is by far the largest and most expensive local project to have been completed by the District. It was completed in February 1988, and a dedication ceremony was held in April with Board of Directors members Carole Carpenter and Ed Pastor officiating.

The project was developed to resolve flooding problems along the lower Agua Fria River that became evident during the flooding of 1978 to 1980. It is designed to contain and convey the Standard Project Flood, which is 142,000 cfs, and runs from north of Indian School Road south to Buckeye Road.

The Corps of Engineers has constructed levees south of the District's project. These levees protect existing residential areas on both sides of the river and the Avondale Wastewater Treatment Plant on the west bank.

Soil cement was used on the project for erosion protection and stability of levees, riverbeds, and other features. This material had not been used extensively in Maricopa County before and is a new engineering application for the District. It works like concrete, but the color blends into the natural channel bottom and it is more economical than other protection methods.

As a part of the project, the District relocated the old Avondale Landfill. This opened the channel for the passage of floodwaters and helped clear up public health concerns about potential contamination of the ground water.

The City of Avondale plans to develop a park on the new landfill site, with ball fields, picnic areas, and other recreation activities. The Flood Control District will operate and maintain the channel, the County Landfill Department is responsible for the closed landfill, and Avondale will operate and maintain the park.

Buckhorn-Mesa

The Buckhorn-Mesa Watershed Project is a system of interrelated structures being built by the Soil Conservation Service to provide flood protection to rural and urban lands in the eastern Maricopa County area, generally south of Brown Road from about Bush Highway to Idaho Road.

The first structures, the Spook Hill Dam and Floodway, the Signal Butte Dam and Floodway, and the Pass Mountain Diversion, have been completed. The final structures, Apache Junction Dam and Bulldog Floodway, are now 85% complete. The construction contract for this portion is with Ashton Construction Company for $7,063,000.

East Maricopa Floodway

The East Maricopa Floodway is being constructed alongside the Roosevelt Water Conservation District (RWCD) Canal in Eastern Maricopa County, on the upstream (east) side. The 27.6-mile long Floodway is being built in six reaches and will extend from the Gila River to a little north of Brown Road in Mesa.

The Floodway is complete through Reach 4, which the construction contractor, Kiewit Western, finished this year. Reach 5 is expected to be complete in July 1988. The construction contractor for this reach is R.E. Monks, and it is expected to cost about $1,411,703. Three miles of Reach 5 were constructed in 1985 by Leisure World at substantial savings to the taxpayers.

Construction of Reach 6 has not yet begun, but the District has worked out an intergovernmental agreement with the City of Mesa concerning a part of this reach. Mesa is rebuilding Brown Road, where the District needs a box culvert as a part of the Floodway. The City of Mesa will build this culvert at the same time that they rebuild the road. The District will later reimburse Mesa at a cost lower than would have been paid had we built it ourselves.

Guadalupe Dam

The Flood Control District is working with the Soil Conservation Service and the Gosnell Development Company on this project. Gosnell, which has developed the Pointe at South Mountain in this area, is building a golf course and other recreation facilities in the Guadalupe Dam reservoir.

The District is pleased that this cooperative effort between business and government has worked to the mutual advantage of both. While Gosnell's development will not interfere with the flood control purposes of the Dam, it productively uses the reservoir area. It also will save the District from maintenance costs and liability, since Gosnell is taking on these two responsibilities.

Plan 6. Plan 6 is a part of the Central Arizona Project (CAP), a Bureau of Reclamation program to provide flood control, regulatory storage of excess Colorado River water, and the structural safety of existing Salt and Verde River Dams. The Flood Control District has committed itself to provide upfront funding for up to 20 percent of the flood control costs. The District is presently contributing $900,000 each quarter for the flood control features of Plan 6.

Sharing Costs to Prevent Flooding

One of the ways in which the District prevents flooding within Maricopa County is by helping other agencies and cities pay for the costs of design and construction of flood control projects.

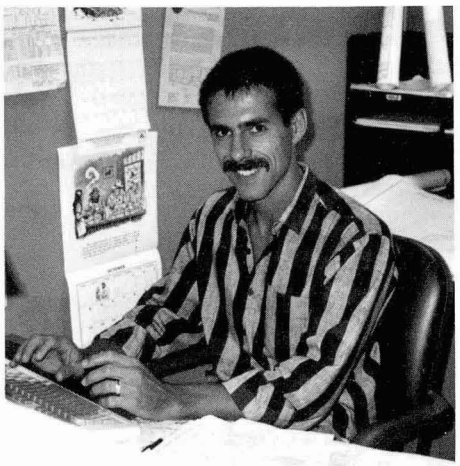
Bell Road. A six-lane divided major urban arterial street has been proposed along the 24.5-mile Bell Road Alignment from Grand Avenue to Scottsdale Road. The cost of the street construction is to be shared by the jurisdictions involved, with the County Highway Department as the coordinating agency. The District has agreed to contribute approximately $13 million for drainage improvements which include the 51st, 59th and 67th Avenue Drains. The communities of Glendale, Peoria, Phoenix, and Surprise, as well as the County Highway Department, are involved in this project.

51st Avenue Drain. A part of the Bell Road project is a drain along 51st Avenue. Glendale, Phoenix, and the County wanted to improve the road and it was logical to build the storm drain at the same time. The District will contribute $3 million for the storm drain.

Olive Drain. The County Highway Department was planning to reconstruct Olive Avenue from 99th Avenue to 67th Avenue, and the Cities of Glendale and Peoria proposed constructing the Olive Avenue Storm Drain at the same time. This drain includes detention basins in the vicinity of 79th, 75th and 67th Avenues. The District has agreed to contribute 50%, or up to $4.5 million, for this project.

Union Hills Storm Drain. A storm water drainage problem exists along Union Hills Drive between Skunk Creek, at approximately 59th Avenue and the Black Canyon Freeway. Union Hills Drive is an inverted crown roadway, established while the area was unincorporated, whose elevation is low with respect to adjacent properties and intersection roadways. The drainage area includes runoff from Phoenix, Glendale, and runoff pumped from the Black Canyon Freeway. Phoenix, Glendale, and the District shared the study costs and are now proposing to share construction costs. It is proposed that the District's contribution be approximately $3.5 million. An agreement is presently being negotiated.

East Fork Cave Creek. A study of flooding problems along the East Fork of Cave Creek was completed in 1987. The area is growing rapidly and rights-of-way for basins and channels must be purchased soon while some land is still vacant. Phoenix and the District have proposed sharing the costs of design and right-of-way acquisition for the later construction of flood control projects. The District contribution for land rights is proposed to be approximately $5.5 million. Phoenix and the District are now discussing an intergovernmental agreement.



H. Scott Clement, a Project Manager who helped negotiate the Price Drain agreement. This agreement provides for an outlet for flood waters from the Mesa/Chandler area.

Price Drain. The District has been working with communities in the east valley to find an outlet for storm waters. A number of projects have been developed, including the 48th Street Storm Drain, the Gila Drain, the ADOT Pit and Diversion Channel, and two basins in Gilbert. The last project in this group, the Price Drain, is now under construction. The Price Drain will provide drainage facilities for the Price/Pima Expressway and a storm water outlet for Mesa and Chandler. The District has agreed to contribute about $8.4 million for the Price Drain.

Old Cross Cut Canal. The Flood Control District is sharing the cost of a feasibility study with the U.S. Army Corps of Engineers for flood control in the Arcadia area. The proposed project would use the Old Cross Cut Canal as an outlet to the Salt River.

Concurrently, the City of Phoenix and ADOT have plans to build the Hohokam Freeway/Parkway north to Indian School Road using the right-of-way of the Old Cross Cut Canal. This requires that the canal be relocated and placed in a closed conduit north of McDowell Road. The District and Phoenix have agreed to pay the incremental cost of upsizing a replacement for the Old Cross Cut Canal from McDowell Road to the Salt River. The District's share for upsizing the canal is estimated to be $2 million. Future cost sharing agreements are anticipated for the project north of McDowell Road.

East Maricopa Floodway Extension. Mesa would like to provide an outlet for storm drainage facilities to the north and east of the East Maricopa Floodway. This outlet would extend the floodway to a point approximately 700 feet north of Brown Road. The District proposes to share the cost of this project with Mesa at a cost of $218,500.

Non-structural Protection from Flooding

Valerie Rice, a hydrologist working on computer modeling of District watersheds. Her work often takes her into the field to update data and check conditions, but much of her time is spent indoors with maps, data books, the computer, and her football cup.

A flood in an urban area can wipe out thousands of dollars in business and personal property. In rural areas, it can destroy unprotected homes and farms. Worst of all, flooding endangers lives. The Flood Control District has worked to prevent such damages, in part through structural solutions such as dams. But an increasing component of the District's work is in non-structural solutions, such as floodplain and drainage regulation, which can alleviate flood damages and protect people and property before an emergency arises.

Floodplain Management—"Floodplain" means the areas adjoining the channel of a watercourse, including areas where drainage may be restricted by man-made structures which may be covered partially or wholly by floodwater from the 100-year flood. The District delineates floodplains and restricts development to uses that are compatible with the floodplain and adequately protected from flood flows.

By regulating the use of floodplains and by reviewing residential, commercial, and industrial development plans, the District sees that new developments will not have or cause drainage problems. It reviews development plans in unincorporated areas outside the floodplains to be sure the development will not adversely affect adjoining property by diverting or increasing runoff or cause drainage and flooding problems within the development itself.

The *Floodplain Regulation for Maricopa County* is a resource for this work. This regulation guides developers and property owners in obtaining permits for development within various areas of a floodplain. They specify the areas in which development can take place, the types of development to be permitted in each area, and the permitting and insurance requirements for different uses of the land within the floodplain.

The District has used great care in putting together these regulations under the review of the Flood Control Advisory Board and the Board of Directors. This year they were updated and revised to reflect changes in federal and state policies. The District will continue to maintain them and other such protective measures in the coming years.

The chart below shows the floodplain management work load during the last three years.

Fiscal Year:	85-86	86-87	87-88
Floodplain Use Permits	20	49	57
Floodplain Variances	20	13	6
Appeals	4	0	1
New Delineations	10	7	14
FCD Clearances	78	55	31
Violation Cases	11	10	6
Referrals to County Atty	0	3	2

Drainage Criteria—The District reviews and inspects drainage facilities in the unincorporated areas of Maricopa County to insure that no development alters the course or amount of drainage downstream of its own lot. Proposed drainage regulations for the county would require that every developer retain all surface runoff water originating in that lot. Our staff reviews development plans to see that such requirements are met in the design of a structure and later inspect the facility to see that all goes as designed.

Besides performing drainage review for the unincorporated areas of Maricopa County, the District also performs reviews for jurisdictions that request our services, on a fee-for-service basis. This year, we took over drainage review for the newly incorporated town of Cave Creek and the City of Litchfield Park.

The chart below shows the work load of the Drainage Branch during the last three years.

Fiscal Year:	85-86	86-87	87-88
Zoning Cases Reviewed (including Resubmittals)	259	370	357
Subdivision Cases Reviewed	55	94	94
Master Plans Reviewed	10	11	2
Board of Adjustment Cases Reviewed	21	106	128
Drainage Inspections	462	916	579

Drainage Regulation—Until recently, each city has operated by its own set of regulations on drainage. While each of these, in itself, is competently handled, the result is a multitude of regulations, each slightly varying from the other, by which engineers in the valley must design. The District is working to improve and standardize drainage policies throughout the county.

In response to the need for more uniform drainage requirements for the various jurisdictions in Maricopa County, the District facilitated a task force on Uniform Drainage Standards. This group planned a set of standards

for all cities, towns, and the county, which is being compiled in three phases.

Phase I: *The Uniform Drainage Policies and Standards for Maricopa County, Arizona* is a consolidation of various agencies' common approach to drainage management. The policies advocate master drainage planning, a central library for drainage reports, multiple uses of drainage works, and common storage facilities rather than on-lot retention. The standards provide criteria for water storage facilities and their drainage.

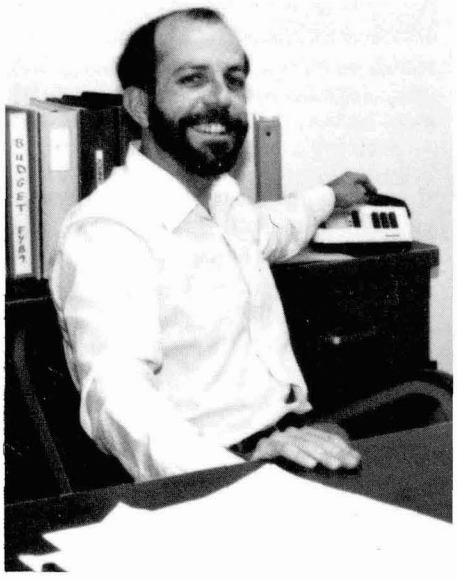
Phase 2: This two-part design manual is currently being prepared. It will outline the application of the policies and standards. One part will present methods for calculating peak discharges and volumes of water for which drainage engineers must design. The other will outline criteria and methods for these designs.

Phase 3: Maricopa County area rainfall maps will be reviewed and updated to insure that the best available precipitation data is used as a basis for drainage design.

Watershed Management Branch—A watershed, for a given point, is all the upstream land area that would drain to that point. The Watershed Management Branch is a new branch of the District, developed to facilitate the planning functions of the District, and ultimately to help make drainage design throughout the county more uniform. It generates mathematical models of watersheds based on hydrologic and hydraulic information.

The District's goal is to provide complete, accurate, and up-to-date information on any aspects of the watershed that would effect water flow, such as storm drains, land development, and highways. There are many uses for such information.

It can be used to **quantify flood hazards** within a given location, to predict the magnitude and frequency of potential flooding, and to assess whether they warrant a project's development.



Greg Rodzenko, a hydrologist who wrote a paper on overbank storage and urban development which he presented at a national conference on floodplain management (see next page).

It can be used to **generate data for floodplain mapping studies.**

It saves time and money that would otherwise be spent "recreating the wheel." Currently, a developer preparing to design drainage facilities for an area must pull together various data for assessing drainage patterns in that area, creating a new study any time an area is to be developed. Instead the Watershed Management Branch would **maintain up-to-date models of each area, which could be used by the District, by cities, and by developers.**

It **facilitates consistent design of structures throughout the district.** At present, a variety of methods are used to assess drainage needs. This data would offer a consistent reference on which to base design throughout the county. It would also enable developers to see data for the larger area in which their development is planned.

It allows us to **monitor the impacts of developments on the effectiveness of hydrologic structures,** as when more runoff is getting to a dam and decreasing its level of protection.

Staff began this year to compile the data for this enormous undertaking. In some cases we are detailing areas as large as 30 sq. miles down to 1/10 sq. mile. It is a lengthly process, but there are many benefits to look forward to as a result, and exciting work along the way.

CONTRACTS AWARDED FISCAL YEAR 87/88
(Preliminary and Unaudited)

Type of Contract	Number	Contract Amount Including Contingencies
Appraisal	7	$ 305,000
Aerial and Mapping Services	1	57,000
Construction	10	4,424,000
Engineering Services	30	2,807,000
Legal Services	5	775,000
Relocation Assistance	1	524,000
Rental Property Maintenance	16	58,000
Wellness Program	1	15,000
Total	71	$8,965,000

Innovations Gain Recognition for the District

Employees at the District received local and national recognition for their hard work and original thinking over the last year. These kudos acknowledged the staff's continuing commitment to explore new ways to serve the public. Unfortunately, there are always ideas and activities that get overlooked. We are proud that these didn't.

Award-winning innovators Jay Paxson, Ron Nevitt, Linda Young, David Johnson, Davar Khalili, and Dick McNamara. Each submitted a NACo proposal and won.

NACo Awards

The District received six awards this year from the National Association of Counties (NACo). The NACo awards give national recognition to innovations that improve the organization, management, or services of member counties. Below is a summary of our six winning proposals.

Reconstructive Hydrology Method. A system of volunteer observers and precipitation gauges supplements data from our flood warning system. Through this combination, we can create reliable models of rainfall events after they occur.

Hylink, A Procedure for Efficient Data Management. Data on the geometric shape and flow of local bodies of water has previously been available to the public only by a lengthy and inefficient photocopying process. We now isolate a segment of information in our computer file, then copy it onto a diskette for the person requesting the information, saving both time and money.

Elroy Stone receiving his Suggestion Program Award and check from County Supervisor Fred Koory, Jr.

Rental of Spoil Sites for Flood Control Projects. Usually we buy land for spoil sites for our projects. One owner was unwilling to sell, but was interested in using the soil to increase his land value. We leased the land as a soil disposal site for $2,475.00 instead of paying $1,205,000.00 to buy it—we saved money and the owner benefited.

County-Wide Flood Insurance Mapping Program. We were a pilot program for county-wide mapping for the Federal Emergency Management Association. We coordinated map review by communities in Maricopa County and now have a set of Flood Insurance Maps that offer the most current data available and a consistent county-wide design.

High-Tech Irrigation Technology Using a Telemetered Computer System. On the ACDC, we combined state-of-the-art drip irrigation technology with radio-linked computers and on-site sensors for remote data acquisition and analysis. We can now monitor and manage the ACDC irrigation remotely from District offices.

Lease of Flood Control Property to Maricopa County Human Resources Department. We have arranged with Human Resources to lease excess property to a battered womens' shelter. Among the benefits: the public is served, we are in a good position regarding liability, our maintenance burden is reduced, and the land is productively used.

Suggestion Award

In 1987, a Suggestion Award was made to Elroy Stone, a District maintenance technician. Mr. Stone proposed that we purchase a stationary type shielded metal arc welder which could be used in the shop area. Its use frees up our portable welder for field welding operations only, thereby extending the portable unit's life. The stationary welder has more varied uses, and has lower operating costs. This suggestion will save the District $2,685 per year, and it earned Mr. Stone $268 for his resourcefulness.

In 1988, Dr. Davar Khalili received a Suggestion Award for his Hylink procedure, which also earned him a NACo Award (see above). The procedure saved the District $3,770 per year. Dr. Khalili was awarded 10% of the first year's savings, or $377, for this suggestion.

Publications

Three District hydrologists wrote a paper for the District on overbank storage which was delivered at a national conference in May 1988. Greg Rodzenko, Joe Tram, and Doug Plasencia wrote the paper. The primary author, Greg Rodzenko, presented the paper at the Association of State Floodplain Managers' Annual Conference in Nashville, Tennessee.

This paper reminds the country's floodplain managers that overbank storage is damaged or eliminated by encroachment caused by urban development. Each jurisdiction must compensate for this encroachment to maintain the floodplain's balance, or cause significant flooding problems in downstream communities. Most importantly, alterations to rivers cannot be made in a piecemeal fashion, but must be system-wide.

On his own time, Dr. Davar Khalili, one of the District's hydrologists, has co-authored a paper which is to be published in the Water Resources Bulletin. The paper describes the ecological processes that a rangeland watershed goes through because of human activities such as land development and cattle grazing.

Because of limited rainfall and soil moisture content in these areas, human activities tend to aggravate a process called desertification. Growth of native grasses decreases, increasing soil erosion and crusting. This in turn makes it harder for native grasses to grow. In this situation, more rugged plant species increase, such as scrub brush.

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
STATEMENT OF REVENUES, EXPENDITURES AND CHANGES IN FUND BALANCE
BUDGET AND ACTUAL
YEAR ENDED JUNE 30, 1988
(Preliminary & Unaudited)

REVENUES	BUDGET	ACTUAL	VARIANCE FAVORABLE (UNFAVORABLE)
Flood Control District Tax Levy	$48,000,000	$46,059,000	$(1,941,000)
State Share of Costs			
Federal Projects	0	498,000	498,000
Local Projects	0	28,000	28,000
County Reimbursement	739,000	11,000	(728,000)
Local Participation	1,774,000	701,000	(1,073,000)
Rental	625,000	554,000	(71,000)
Interest Earnings	1,360,000	1,904,000	544,000
Sale of Excess Land	8,000,000	2,187,000	(5,813,000)
Miscellaneous	800,000	80,000	(720,000)
Total Revenues	61,298,000	52,022,000	(9,276,000)
EXPENDITURES			
Personnel Services			
Salaries and Wages	5,496,000	4,419,000	1,077,000
Overtime	56,000	4,000	52,000
Total	5,552,000	4,423,000	1,129,000
Supplies and Services			
Professional Services Contracts	3,040,000	1,301,000	1,739,000
Maintenance Contracts	552,000	472,000	80,000
Maintenance Supplies	410,000	243,000	167,000
Insurance	24,000	25,000	(1,000)
Other Supplies and Services	994,000	680,000	314,000
Total	5,020,000	2,721,000	2,299,000
Capital Outlay			
Real Estate	25,769,000	14,791,000	10,978,000
Engineering & Scientific Equip.	5,839,000	2,311,000	3,528,000
Motor Vehicles & Equipment	721,000	1,037,000	(316,000)
Const. & Other Capital Outlay	33,779,000	30,761,000	3,018,000
Total	66,108,000	48,900,000	17,208,000
Total Expenditures	76,680,000	56,044,000	20,636,000
Excess (Deficiency) of Revenues over Expenditures	(15,382,000)	(4,022,000)	11,360,000
Fund Balance at Beginning of Year	26,607,000	27,138,000	531,000
Fund Balance at End of Year	$11,225,000	$23,116,000	$11,891,000

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
EXPENDITURES BY ACTIVITIES AND FUNCTIONS *
FY 87/88
(Preliminary & Unaudited)

ACTIVITY	OPERATIONS EXPENDITURES		CAPITAL IMPROVEMENTS PROGRAM		
	Administrative	Maintenance	Engineering	Lands	Relocation & Construction
Administrative Overhead	$2,270,000	$ 37,000	$ 1,000	$1,761,000	$ 36,000
Maintenance Overhead	6,000	1,456,000			
FCD Yard Maintenance		88,000			
USGS Service Work	24,000				
Enforcement of Flood-plain Regulations	27,000				
Work done for Planning & Development	277,000				
Watershed Hydrology	140,000				
Work done for County Highway Department					
Floodplain Delineation	768,000				
Flood Insurance	67,000				
Hydrologic Data Collection	95,000	4,000			
Flood Warning System	51,000	47,000			46,000
Flood Emergency Operations	1,000	1,000			
Floodplain Administration	199,000				
Computer Systems	83,000				
City of Glendale	2,000				
City of Mesa		2,000			
City of Phoenix	8,000				
City of Scottsdale					19,000
City of Tempe					225,000
Dysart Road - Agua Fria Drain	2,000	7,000			
48th Street Drain		5,000			
Alma School Drain	2,000	7,000			
Old Cross Cut Canal	15,000	46,000	83,000		
Broadway Road Bank Stabilization			1,000		
Salt/Gila Clearing & Channelization	12,000	192,000			
Salt/Gila Control Works	5,000	11,000	46,000	12,000	322,000
Sossaman Road		9,000			
Agua Fria River	4,000	24,000			
Agua Fria River (ADOT Agreement)	4,000		484,000		5,532,000
Indian Bend Wash Outlet	1,000	17,000			
Indian Bend Wash Inlet	4,000	17,000			
Indian Bend Wash Interceptor and Side Channels	1,000	25,000			
Gila Drain	3,000		286,000		931,000
ACDC	10,000	340,000	772,000	9,026,000	10,010,000
EMF-Williams/Chandler	4,000	104,000	1,000	2,000	39,000
EMF-Apache Jct./Gilbert	1,000	1,000	10,000	92,000	147,000
EMF-Buckhorn/Mesa	2,000		16,000	11,000	300,000
Rio Salado	1,000				
Salt River Channel - ADOT	3,000				

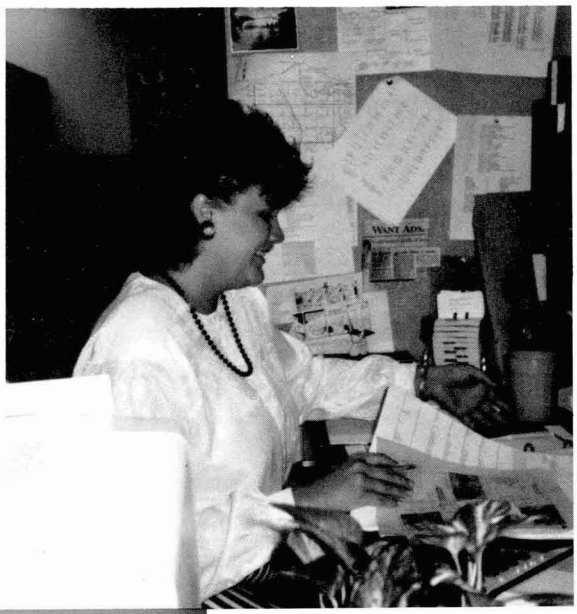
ACTIVITY	OPERATIONS EXPENDITURES		CAPITAL IMPROVEMENTS PROGRAM		
	Administrative	Maintenance	Engineering	Lands	Relocation & Construction
White Tanks Dam #3		25,000			
White Tanks Dam #4		8,000			
McMicken Dam	3,000	29,000			
Dreamy Draw Dam		8,000			
McMicken Dam Outlet Channel	2,000	42,000			
Guadalupe Dam	7,000	2,000			
Buckeye #1		45,000			
Buckeye #2		10,000	1,000		
Buckeye #3		8,000			
El Mirage Rd. Drain Channel		14,000			
Spook Hill FRS & Outlet	4,000	39,000			
Signal Butte Floodway		9,000			
Pass Mountain FRS & Outlet		3,000			37,000
Apache Jct. FRS, Floodway, Outlet and Bulldog Floodway	1,000	11,000	13,000	3,000	6,529,000
Signal Butte FRS		9,000			
Powerline Dam		4,000			
Powerline Floodway		22,000			
Vineyard Road FRS		19,000			
Rittenhouse FRS		10,000			
Harquahala FRS & Floodway		18,000			
Saddleback FRS		6,000			
Saddleback Diversion Channel		2,000			
Centennial Levee	2,000	2,000		127,000	
Harquahala Floodway	1,000	1,000			
Sunset FRS		5,000			
Sunnycove FRS		3,000			
Sunset/Sunnycove Pipeline		5,000			
Wittmann ADMS	5,000		82,000		
Cave Buttes Dam	1,000	39,000			
Adobe Dam	3,000	32,000		807,000	
Skunk Creek Channel at I-17		11,000			
New River Dam		40,000		18,000	
Skunk Creek and New River Flowage Easements	6,000	74,000	395,000	1,976,000	3,939,000
Agua Fria River Flowage Easements	10,000		37,000	1,214,000	609,000
East Maricopa ADMS			11,000		
Glendale-Peoria ADMS	14,000		196,000		
East Fork Cave Creek ADMS	3,000		13,000		
Queen Creek ADMS	3,000		35,000		
Bell Road Expansion	27,000		36,000		3,000
Plan VI Funding	2,000				2,466,000
Groundwater Recharge	105,000				
Total	$4,291,000	$2,995,000	$2,519,000	$15,049,000	$31,190,000

* Expenditures by Activities and Function will not always agree with Expenditures by Task in the Financial Highlights chart (inside front cover) except in total.

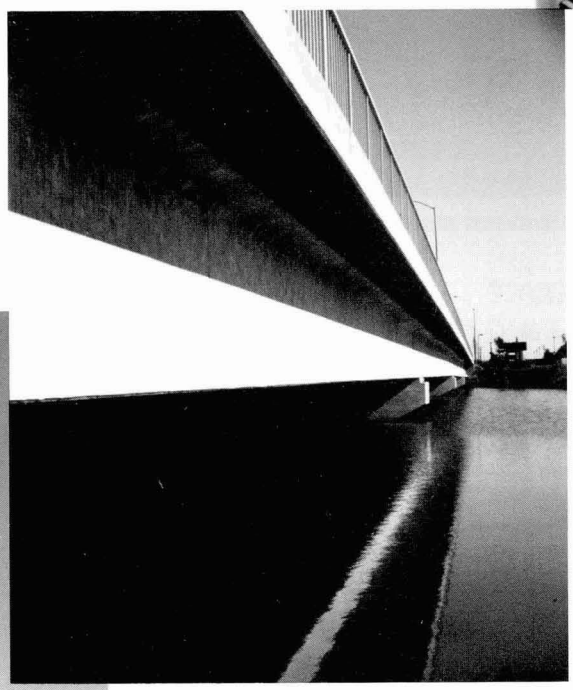
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
RENTAL PROGRAM FY 87/88
(Preliminary & Unaudited)

Project Name	# of Leasable Properties*	# Leased*	Vacancy Rate	Gross	Net
Arizona Canal Diversion Channel	88	78	11.4%	$497,000	$287,000
East Maricopa Floodway	3	3	0.0%	31,000	30,000
Signal Butte Floodway	2	2	0.0%	11,000	10,000
Apache Junction FRS & Bulldog Floodway	2	2	0.0%	7,000	(2,000)
Skunk Creek/New River	3	3	0.0%	5,000	(1,000)
Agua Fria River	1	1	0.0%	4,000	4,000
New River Dam	1	1	0.0%	3,000	3,000
Adobe Dam	1	1	0.0%	2,000	0
Cave Buttes Dam	1	1	0.0%	2,000	1,000
Indian Bend Wash	2	2	0.0%	$ 1,000	1,000
Total	104	94	9.6%	$563,000	$333,000

* Average of Beginning and End of FY 87/88

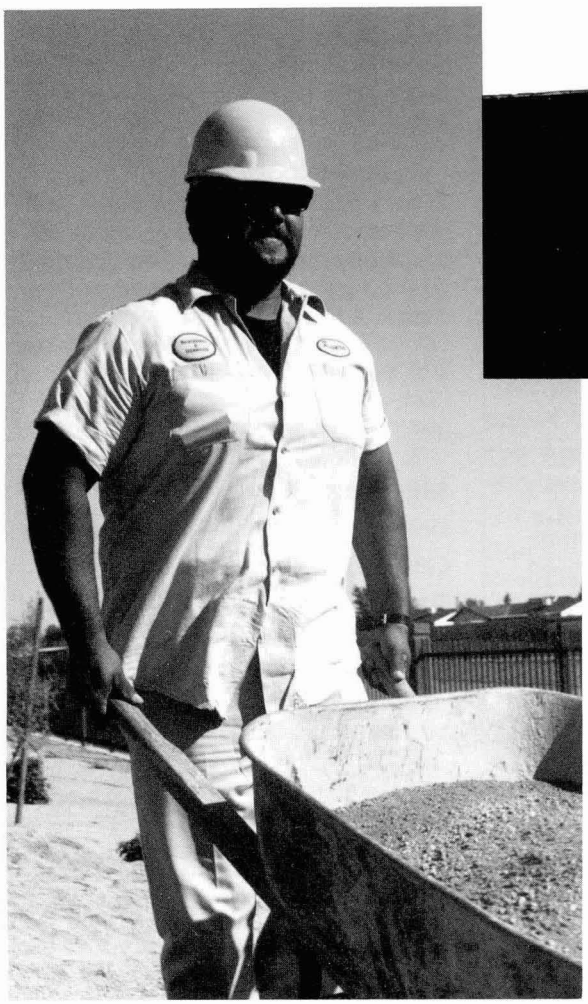


Above: Beth Jensen, Administrative Coordinator in the Land Management Division.



Right: A bridge over the Arizona Canal Diversion Channel (ACDC). Because the ACDC is through Metropolitan Phoenix, the District has been able to lease much of the project's property, pending construction.

Below: Carlos Rivera, a Maintenance Technician II, landscaping ACDC Reach 2A.



EXPENDITURES ON LAND
BREAKDOWN BY PROJECT
(Preliminary and Unaudited)

Project	Number of Parcels Bought This Year	FY 87/88 Total Land Acquisition Costs	% of Land Acquired To Date
Administrative Facility	1	$ 1,761,000	100%
Adobe Dam	1	807,000	100%
Agua Fria River	34	1,214,000	60%
Apache Junction/ Bulldog Floodway	7	3,000	100%
Arizona Canal Diversion Channel	43	9,026,000	90%
Centennial Levee	1	127,000	100%
East Maricopa Floodway	20	105,000	99%
New River Dam	2	18,000	100%
Salt Gila	1	12,000	75%
Skunk Creek/New River	54	1,976,000	25%
Total	164	$15,049,000	

Board of Directors

Board of Directors: George Campbell, Robert Mauney (County Manager), Fred Koory, Jr., Tom Freestone, Carole Carpenter, Ed Pastor.

Flood Control District

The Flood Control District of Maricopa County, founded in 1959, is a municipal corporation and political subdivision of the State of Arizona. The District is governed by a Board of Directors which is also the Board of Supervisors of Maricopa County. A Flood Control Advisory Board advises the Board of Directors.

The purpose of the District is to prevent loss of life or injury to residents of Maricopa County and to eliminate or minimize flood damages to real and personal property. In fulfilling its purpose, the District:

1. Provides floodplain management for Maricopa County and certain municipalities within the County.
2. Provides stormwater drainage review for the unincorporated area of Maricopa County.
3. Studies flooding and drainage problems and plans and constructs projects alone or in cooperation with others.
4. Acts as the local sponsor of federal flood control projects designed and constructed by the U.S. Army Corps of Engineers and the Soil Conservation Service. The District acquires the necessary rights-of-way and relocates facilities and people affected by the projects.
5. Operates and maintains completed flood control structures.
6. Assists in providing early warning of potential floods and provides technical leadership during flood emergencies. Collects and distributes hydrometeorological data from the District's rain and stream gauge network.

The activities of the District are funded by a Flood Control Tax Levy assessed on all real property within Maricopa County and a variety of cost sharing arrangements with the State, Maricopa County and local governments.

HISTORY OF THE TAX LEVY RATE
FOR THE FLOOD CONTROL DISTRICT

For fiscal year ending	Levy Rate per $100 assessed value	Tax Revenue
1961	0.05	$ 253,000
1962	0.05	$ 288,000
1963	0.02	$ 126,000
1964	0.02	$ 135,000
1965	0.02	$ 145,000
1966	0.02	$ 153,000
1967	0.02	$ 158,000
1968	0.02	$ 164,000
1969	0.05	$ 446,000
1970	0.05	$ 454,000
1971	0.05	$ 480,000
1972	0.04	$ 425,000
1973	0.05	$ 645,000
1974	0.20	$ 3,428,000
1975	0.20	$ 3,747,000
1976	0.20	$ 4,154,000
1977	0.20	$ 4,395,000
1978	0.20	$ 4,675,000
1979	0.20	$ 5,026,000
1980	0.20	$ 5,342,000
1981	0.43	$11,825,000
1982	0.34	$13,720,000
1983	0.50	$21,779,000
1984	0.48	$25,780,000
1985	0.50	$28,697,000
1986	0.50	$33,644,000
1987	0.50	$41,566,000
1988	0.50	$46,059,000

Board of Directors

The Board of Directors of the Flood Control District is also the Board of Supervisors of Maricopa County. The Board consists of five elected representatives, one from each of the five Supervisorial Districts of the County. Under the Board's supervision, the District has all the powers, privileges and immunities granted generally to municipal corporations. The Board of Directors exercises all powers and duties in the acquisition and operation of District properties, contracting, and in carrying out regulatory functions as ordinarily exercised by governing bodies.

Members

George Campbell, District 2

Carole Carpenter, District 4

Tom Freestone, District 1, *Chairman* January 4, 1988 to June 30, 1988

Fred Koory, Jr., District 3, *Chairman,* July 1, 1987 to January 4, 1988

Ed Pastor, District 5

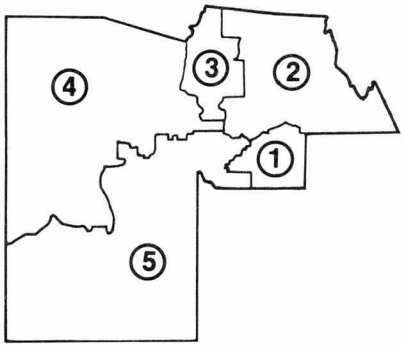
Flood Control Advisory Board

Flood Control Advisory Board: Charles A. Sykes, John E. Miller, Jr., Robert Towner, H. Lynn Anderson, David Harmon (City of Phoenix), William LoPiano, Tim Phillips.

Flood Control Advisory Board

The Flood Control Advisory Board advises the Board of Directors on flood control, water conservation and related matters. It reviews planning, operations, and maintenance of flood control facilities, and recommends an annual budget to the Board of Directors.

The Advisory Board consists of seven members, appointed by the Board of Supervisors to five-year terms. At least one member must be a resident of the City of Phoenix. The Phoenix City Engineer and the General Manager of the Salt River Project, or their representatives, are ex-officio members of the Advisory Board.



The boundaries of the Supervisorial Districts are drawn by the Maricopa County Board of Supervisors to give each an equal share of the population.

Members

H. Lynn Anderson, District 4, *Chairman,* November 1987 to June 1988

James Atteberry, *ex-officio member,* City of Phoenix, July 1987 to March 1988

William LoPiano, District 1

Ramon Miguez, *ex-officio member,* City of Phoenix, March 1988 to June 1988

John E. Miller, Jr., District 2

Charles A. Sykes, District 3, *Chairman,* July 1987 to October 1987

Robert Towner, District 5

Tim Phillips, *ex-officio member,* Salt River Project, September 1987 to June 1988

Don Womack *ex-officio member,* Salt River Project, July 1987 to September 1987

Principal District Staff

D. E. Sagramoso, Chief Engineer and General Manager

Stanley L. Smith, Jr., Deputy Chief Engineer

David A. Brozovsky, Flood Control Administrator

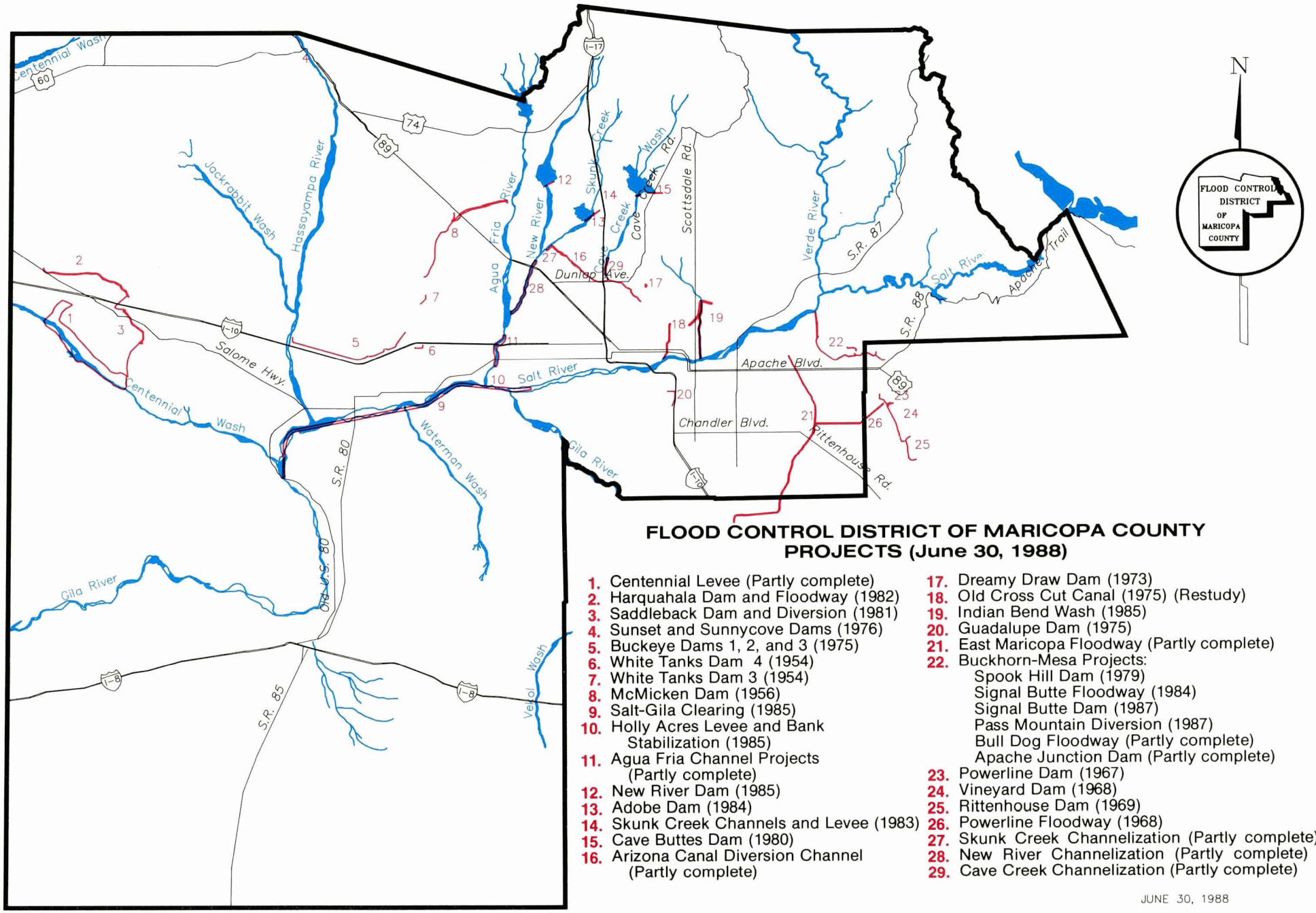
Robert C. Payette, Chief, Construction and Operations Division

Nicholas P. Karan, Chief, Engineering Division

David R. Johnson, Chief, Hydrology Division

Edward D. Opstein, Chief, Land Management Division

John E. Rodriguez, Chief, Planning and Projects Management Division



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY PROJECTS (June 30, 1988)

1. Centennial Levee (Partly complete)
2. Harquahala Dam and Floodway (1982)
3. Saddleback Dam and Diversion (1981)
4. Sunset and Sunnycove Dams (1976)
5. Buckeye Dams 1, 2, and 3 (1975)
6. White Tanks Dam 4 (1954)
7. White Tanks Dam 3 (1954)
8. McMicken Dam (1956)
9. Salt-Gila Clearing (1985)
10. Holly Acres Levee and Bank Stabilization (1985)
11. Agua Fria Channel Projects (Partly complete)
12. New River Dam (1985)
13. Adobe Dam (1984)
14. Skunk Creek Channels and Levee (1983)
15. Cave Buttes Dam (1980)
16. Arizona Canal Diversion Channel (Partly complete)
17. Dreamy Draw Dam (1973)
18. Old Cross Cut Canal (1975) (Restudy)
19. Indian Bend Wash (1985)
20. Guadalupe Dam (1975)
21. East Maricopa Floodway (Partly complete)
22. Buckhorn-Mesa Projects:
    - Spook Hill Dam (1979)
    - Signal Butte Floodway (1984)
    - Signal Butte Dam (1987)
    - Pass Mountain Diversion (1987)
    - Bull Dog Floodway (Partly complete)
    - Apache Junction Dam (Partly complete)
23. Powerline Dam (1967)
24. Vineyard Dam (1968)
25. Rittenhouse Dam (1969)
26. Powerline Floodway (1968)
27. Skunk Creek Channelization (Partly complete)
28. New River Channelization (Partly complete)
29. Cave Creek Channelization (Partly complete)

JUNE 30, 1988

ORGANIZATIONAL CHART

POSITIONS AND PAY GRADES

FLOOD CONTROL ADVISORY BOARD
ADVISORY GROUP
CONSULTING GROUP

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
BOARD OF DIRECTORS

COUNTY MANAGER

ASSISTANT COUNTY MANAGER
PUBLIC WORKS DIRECTOR/COUNTY ENGINEER

CHIEF ENGINEER AND GENERAL MANAGER

DEPUTY CHIEF FLOOD CONTROL ENGINEER

PLANNING & PROJECTS MANAGEMENT DIVISION

CHIEF	26
WATER RES. PLANNER	24
PROJECT ENGINEER	24
PROJECT ENGINEER	24
PROJECT ENGINEER	24
PROJECT ENGINEER	24
CIVIL ENG. I	22
CIVIL ENG. TECH. II	20
CIVIL ENG. TECH. II	20
CIVIL ENG. TECH. I	18
CIVIL ENG. TECH. I	18
WORD PROC. OPER. II	7

LAND MGMT. DIVISION

CHIEF	26

PROPERTY ACQUISITION BR.

SR. LAND MGMT. SPEC.	22
PROPERTY ACQ. COORD.	18
PROPERTY ACQ. COORD.	18
LAND MGMT. SPEC.	16
LAND MGMT. SPEC.	16
ADMIN. COORD. I	15
LAND ACQ. ASST.	12
WORD PROC. OPR. II	7

PROPERTY MGMT. BR.

SR. PROP. MGMT. SPEC.	22
LEASING AGENT	18
LAND MGMT. SPEC.	16
LAND MGMT. ASST.	12
LAND MGMT. AIDE	10

PROPERTY ENGINEERING BR.

PROPERTY ENG. ASSOC.	20
PROPERTY ENG. ASSOC.	20
ENG. DRAFT. SPEC. III	17

CONSTRUCTION AND OPERATIONS DIVISION

CHIEF	26
DEP. CHIEF C & O DIV.	25
REVEG. ECOLOGIST III	21
REVEG. ECOLOGIST II	18
CONTRACT AND OPS. ASST.	12
OFFICE SUPERVISOR I	11
AUTO. RECORDS PROC. II	8

CONSTRUCTION BRANCH

CHIEF, FC CONTR. INSP.	22
CIVIL ENG. TECH. II	20
CIVIL ENG. TECH. II	20
CIVIL ENG. TECH. I	18
CIVIL ENG. TECH. I	18
CIVIL ENG. TECH. I	18

OPERATIONS & MAINTENANCE BR.

CHIEF	20

ENGINEERING DIVISION

CHIEF	26

DESIGN & TECH. REVIEW BR.

CIVIL ENGINEER II	24
CIVIL ENGINEER II	24
CIVIL ENGINEER II	24
CIVIL ENGINEER I	22
CIVIL ENGINEER I	22
CIVIL ENGINEER I	22

STORMWATER DRAINAGE BR.

CIVIL ENGINEER II	24
CIVIL ENG. TECH. III	23
HYDROLOGIST II	22
CIVIL ENG. TECH. II	20
CIVIL ENG. TECH. II	20
HYDROLOGIST I	19
HYDROLOGIST I	19
CIVIL ENG. TECH. I	18
CIVIL ENG. TECH. I	18

MAPS & DRAFTING BRANCH

ENG. DRAFT. SUPERVISOR	20
ENG. DRAFT. SPEC. III	17
ENG. DRAFT. SPEC. II	15
ENG. DRAFT. SPEC. I	13

HYDROLOGY DIVISION

CHIEF	26
HYDRO. ADMIN. ASST.	12

WATERSHED MANAGEMENT

HYDROLOGIST III	24
HYDROLOGIST II	22
HYDROLOGIST II	22
HYDROLOGIST I	19

FLOODPLAIN MANAGEMENT

HYDROLOGIST III	24
HYDROLOGIST II	22
HYDROLOGIST II	22
HYDROLOGIST II	22
FLOODPLAIN REP. II	20
HYDROLOGIST I	19
FLOODPLAIN REP. I	18

SPECIAL PROJECTS

HYDROLOGIST III	24
HYDROLOGIST II	22
HYDROLOGIST II	22
HYDROMET. TECH.	18
HYDROMET. ASST. II	14
HYDROMET. ASST. I	12

ADMINISTRATION DIVISION

CHIEF	26
ADMIN. COORD III	19

PUBLIC INVOLVEMENT COORDINATOR 18

TECH. COMM. SPEC. 16

ACCOUNTING SERVICES

CONTROLLER	23
ACCOUNTANT III	21
ACCOUNTANT I	16
ACCOUNTING ASST.	10
ACCOUNT CLERK III	8
ACCOUNT CLERK II	6
CLERK III	6

ADMINISTRATIVE SERVICES

OFFICE SUPERVISOR II	13
OFFICE SUPERVISOR I	11
WORD PROC. OPER. III	9
WORD PROC. OPER. II	7
RECORDS TECH. II	9
RECORDS TECH. I	6
CLERK III	6

DATA SYSTEMS

DATA SYSTEMS MANAGER	25
SC. PGM/ANAL. II	20
SC. PGM/ANAL. I	17
OFF. AUTOMATION SPEC.	11

O & M SUPERVISOR 18

O & M SUPERVISOR 18

ASPEN CREWS

MAINTENANCE TEAM LEADER	14
WORK CREW LEADER	13
WORK CREW LEADER	13
WORK CREW LEADER	13
WORK CREW LEADER	13
WORK CREW LEADER	13

MAINTENANCE TEAM LEADER	14	
MAINTENANCE TECH. II	12	4X
MAINTENANCE TECH. I	11	

EQUIPMENT OPERATOR IV	13
EQUIPMENT OPERATOR IV	13
EQUIPMENT OPERATOR IV	13
EQUIPMENT OPERATOR IV	13
EQUIPMENT OPERATOR IV	13
EQUIPMENT OPERATOR IV	13
EQUIPMENT OPERATOR III	12
EQUIPMENT OPERATOR III	12
EQUIPMENT OPERATOR III	12
EQUIPMENT OPERATOR III	12
EQUIPMENT OPERATOR III	12
EQUIPMENT OPERATOR III	12
EQUIPMENT OPERATOR III	12

O & M SUPERVISOR 18

MAINTENANCE TEAM LEADER	14	
MAINTENANCE TECH. II	12	6X
MAINTENANCE TECH. I	11	

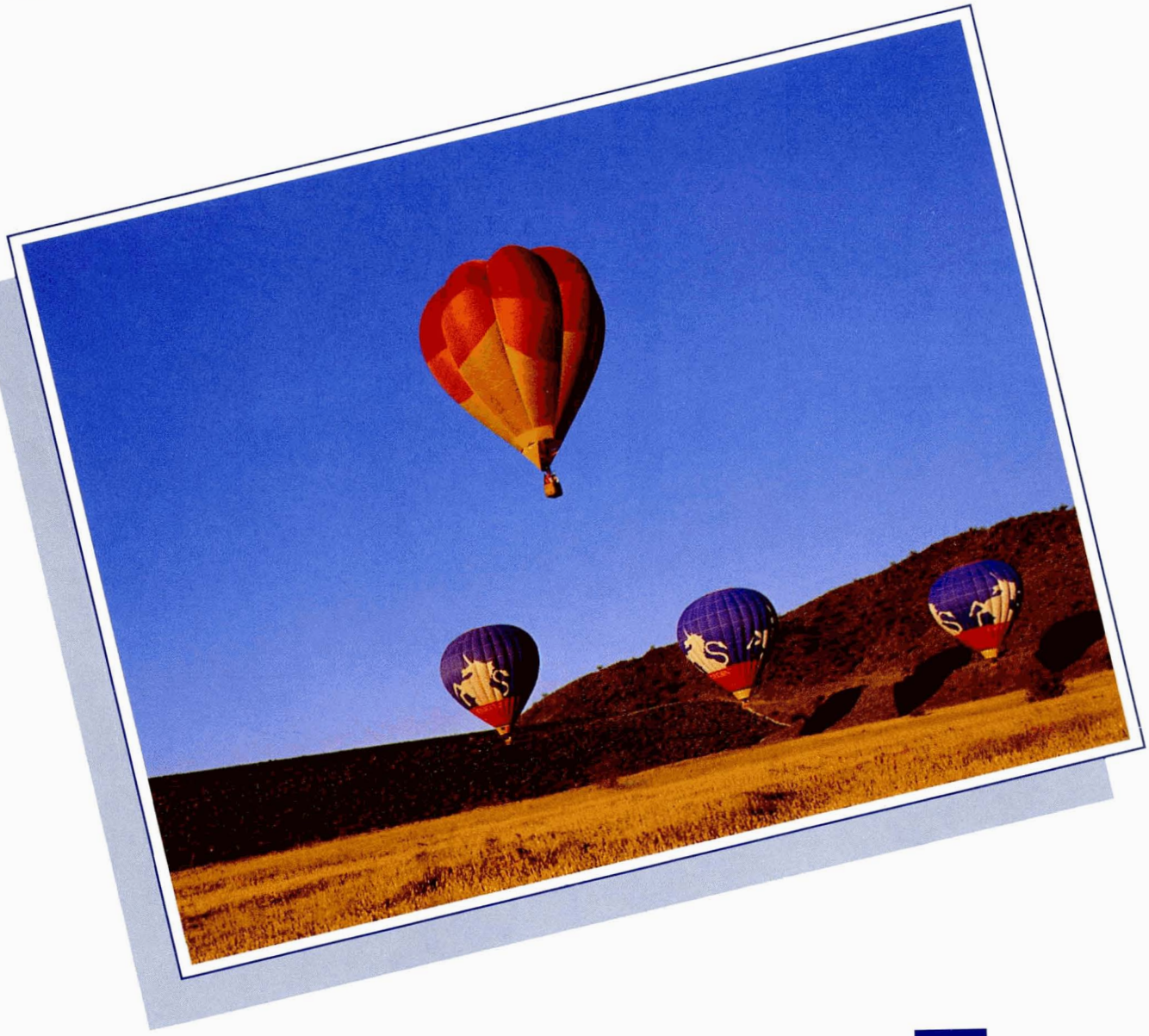
OPS. & MAINT. RES. COORD. 13

AUTHORIZED POSITIONS – 159
JUNE 1988

Flood Control District of Maricopa County

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

Annual Report
1988–1989



30 Years
1959 1989

003.108

Annual Report

July 1, 1988 to June 30, 1989

Contents

Operations and Maintenance 2

Development of Flood Control Structures 4

Nonstructural Flood Protection Activities 6

Thirty Years of Flood Control 8

Financial Report 10

Boards and Officers 14

Project Map 16

Organization Chart . . . . . inside back cover

Financial Highlights

Fiscal Year 1988-1989
Preliminary and Unaudited

	Dollars	Percent
Revenues		
Flood Control Tax	$ 51,345,000	88
Rental Income	219,000	–
Interest	2,564,000	4
State Assistance – Local Projects	0	–
County and Local Participation	3,987,000	7
Sale of Excess Land	0	–
Miscellaneous	343,000	1
Total Revenues	58,458,000	100
Expenditures		
Administration and Maintenance	7,681,000	19
Flood Control Capital Improvements	33,797,000	81
Total Expenditures	41,478,000	100
Excess (Deficiency) of Revenues Over Expenditures	16,980,000	
Fund Balance at Beginning of Year	23,451,000	
Fund Balance at End of Year	$ 40,431,000	
Expenditures by Task		
Administration	$ 5,065,000	12
Land Acquisition	11,279,000	27
Relocation of Utilities, Bridges and Other Facilities	9,181,000	22
Construction	12,688,000	31
Maintenance	3,265,000	8
Total	$ 41,478,000	100

Published by:

Flood Control District
of Maricopa County
3335 West Durango Street
Phoenix, Arizona 85009

Editor: Helen Hayes
Layout & Design: Tina Barnett

On the cover: *Hot air balloons floating near Cave Buttes Dam.*
Photo by: Ed Karnafel

Thirty Years and Counting...

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

FLOOD CONTROL DISTRICT
of
Maricopa County
3335 West Durango Street • Phoenix, Arizona 85009
Telephone (602) 262-1501

D. E. Sagramoso, P.E., Chief Engineer and General Manager

BOARD of DIRECTORS
James D. Bruner
Carole Carpenter
Tom Freestone
Fred Koory, Jr.
Ed Pastor

Memorandum from the
Chief Engineer and General Manager

The thirtieth birthday is a notorious one; a time for acknowledging the passage of youth and embracing adulthood. Inevitably, it is a time of assessment. For the Flood Control District, this year marked the mid-point in completion of the Arizona Canal Diversion Channel, the largest federally-funded project in the District's history. It is a milestone in many respects, marking a period in which we are seeing the construction of many of our larger, federally-funded projects coming to completion and the District's task of maintaining those projects grow by leaps and bounds.

We are now beginning to focus on how to solve remaining drainage and flooding problems without federal help, as well as preparing and implementing master plans that will help avoid those kinds of problems in the future. We are working not only on developing the necessary engineering information, but "team building" with cities and other agencies and dealing with the legal issues associated with such a large scale effort.

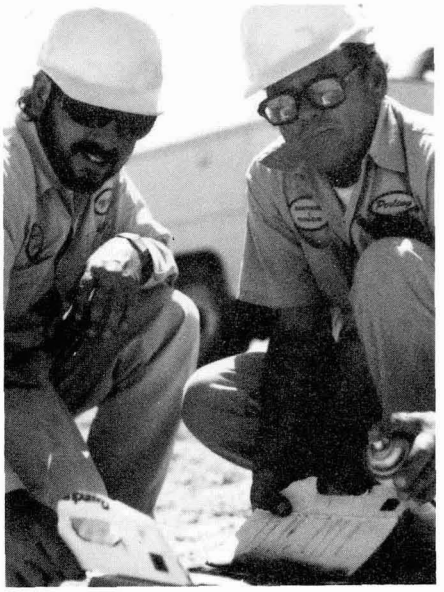
This change in focus clearly must involve both structural and regulatory measures, along with an increased awareness of environmental concerns by local government.

Many things have changed in the last thirty years, but the essential business of flood control remains: we look forward to another thirty years of serving the people of Maricopa County.

D. E. Sagramoso, P.E.

Operations and Maintenance

Below: Tom Mirto and Bob Perling, Maintenance Technicians.



Maintenance Activities

The District maintains 22 flood retarding structures and is responsible for over 50 different facilities throughout Maricopa County. Approximately 40% of our staff is involved in these activities.

The amount of maintenance work has grown dramatically in recent years (see the chart on the next page), with new structures coming on line each year as projects are completed.

The District has been able to maintain these structures without a proportional increase in staff through the extensive use of Department of Corrections prisoners. This year we used 62,246 hours of prisoner labor to perform hand-intensive maintenance such as clearing vegetation and trash removal. The labor of each prisoner costs the District 50 cents per hour, saving taxpayers over three-quarters of a million dollars annually. This year, the District is adding two five-man crews to bring our daily use to 105 prisoners. This is the maximum number that Corrections can provide regularly.

Environmental Concerns

The District has created an Environmental Branch as a result of the developing awareness and emphasis on environmental issues and the ensuing federal and state laws. The Flood Control District is one of thousands of agencies nationwide that will be affected by the National Pollutant Discharge Elimination System (NPDES). This recent proposal by the Environmental Protection Agency (EPA) focuses on controlling urban runoff to promote better water quality. The Branch is working with other concerned agencies to develop guidelines to be used by the EPA in implementing its proposed program.

Photo Point Program

The arid climate of the southwest poses many problems in the management of vegetative resources. A simple, yet effective monitoring program to qualitatively measure the success of revegetation programs along our many structures has been implemented to photographically inventory and document the plants growing on District structures and monitor changes in vegetative cover over time. Brass tags indicating photo number, aspect, structure, photo point and compass bearing have been attached to steel posts set into the ground at each photo location. These locations, as well as the information marked on the tags, are recorded on detailed maps kept in a master Photo Point Notebook.

By referring to either the notebook or the photo point marked in the field, future photographers will capture the identical area. The points are used on a continuing basis to monitor vegetation and to allow for qualitative and quantitative documentation. As a result, the District has a comprehensive, long-term reference tool to facilitate its work. We can monitor changes and respond to assessed needs such as declines in plant population. Because District structures are situated throughout the county, the photo data collected can also be used by numerous agencies to study and monitor our fragile desert environment.

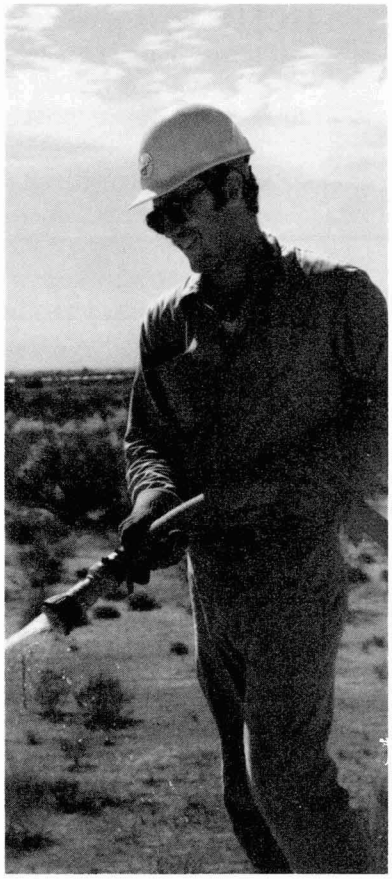
Above top: Art Dubois, Maintenance Technician. Bottom: Dick DeLaMare, Equipment Operator.

Growth of Maintenance Responsibilities

	Inventory as of Jan 1 1980	Added 1/1980 to 1/1984	Added 1/1984 to 7/1987	Added 7/1987 to 7/1989	Total	Increase 1/1980 to 7/1989, %
Access Ladder			10	6	16 ea	
Bank Protection (R)	45,025	271,124	122,057	34,157	472,363 sq yd	949
Bank Protection (GR)	50	29,671	64,429	47,283	141,433 sq yd	282,766
Bridges	11	10	1	1	23 ea	109
Culverts	19	37	35	4	95 ea	400
Drainage Channel	48,068	14,866	7,198	14,981	85,113 ft	77
Drainage Channel–Unlined	12.4	6.4	1.5	0.3	20.6 miles	66
Drop Structure	15	32	11	3	61 ea	307
Embankment	501	399.2	219.8	84.7	1,204.7 acres	140
Energy Dissipator	11	6	16	4	37 ea	236
Erosion Protection–Concrete Paving			8,000		8,000 sq ft	
Fencing	401,021	452,012	172,544	133,427	1,159,004 ft	189
Floodway–Lined		14,300	650	27,175	42,125 ft	
Floodway–Unlined	802	397	422	126	1,747 acres	118
Gabions	1,200		16,133		17,333 sq yd	1,344
Gated Outlet	15	4	1		20 ea	33
Gates	137	126	84	63	410 ea	199
Grade Control Structures	8	8	3	1	20 ea	150
Guardrail	327	1,593	420	80	2,420 ft	640
Gutters–Concrete	130	3,940	6,100		10,170 ft	7,723
High Flow	586	13			599 acres	2
Landscape–Erosion Control	351	1,879	327	101.5	26,58.5 acres	657
Irrigation Heads		147		207	354 ea	
Irrigation Controls		2		62	64 ea	
Irrigation Lines		2,676		102,701	105,377 ft	
Plantings	927	3,666	2,202	38,993	45,788 ea	4,839
Low Flow–Structures	990	112	13		1,115 acres	13
Manholes	18	12			30 ea	67
Meter Houses	5	2	1	1	9 ea	80
Outlet Structures	3	4	1	1	9 ea	200
Pilot Channel–Gila River		5,300	17,424		22,724 ft	
Pool Area	8,879	45,474	5,504	100	59,957 acres	575
Principal Outlet	11	5	2	1	19 ea	73
Principal Outlet–Pipe	11,230	1,458	580	137	13,405 ft	19
Railing–Pipe		358	486	11,205	12,049	
Ramps	3,032	14,102	11,136	4,763	33,033 ft	989
Right-of-way	8,547	15,460	7,272	1,350	32,629 acres	282
River Clearing		2,480	1,815		4,295 acres	
Roads	154.6	154.3	59	39.9	407.8 miles	163
Sediment Basins	13	17	7	2	39 ea	200
Side Inlet	81	180	85	140	486 ea	500
Spillway–Earth	484	27	1		512 acres	6
Spillway–Lined	944	260	53	218	1,475 ft	56
Stormdrain Pipe	8,186	18,179	505		26,870 ft	228
Trash Racks	44	40	22	22	128 ea	191
Vegetative Drains	16	31	12		59 ea	269

(R) = Riprap
(GR) = Grouted Riprap

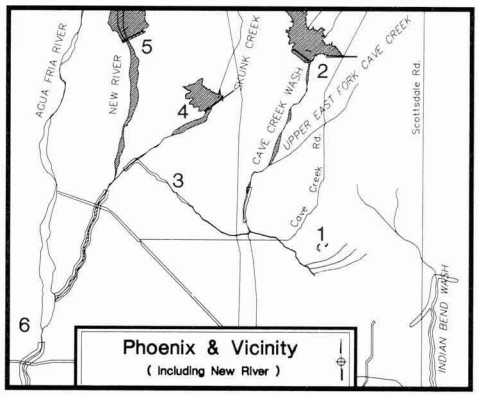
Below: Greg Watts, Maintenance Technician.



Hours Worked by Department of Corrections' prisoners

Project	Annual Hours
ACDC	7,188
Adobe Dam	2,181
Agua Fria River	1,697
Buckeye Dams	2,252
Buckhorn-Mesa	2,420
Cave Buttes Dam	1,704
EMF	4,253
Indian Bend Wash	1,385
McMicken Dam	16,433
Powerline Dam	633
Rittenhouse Dam	695
Saddleback Dam	1,488
Salt/Gila River	14,352
Skunk Creek/New River	3,288
Other	2,277
Total	62,246

Development of Flood Control Structures



Dreamy Draw (1) and Cave Buttes (2) Dams release floodwaters slowly into creek beds to the ACDC. The ACDC (3) takes water to Skunk Creek. Adobe (4) and New River (5) Dams release water down Skunk Creek and New River so that peak flows, after the introduction of the ACDC water, will not be increased. The water will flow into the Agua Fria (6) and then into the Gila River, safely past the homes and citizens of the Phoenix Metropolitan Area to its natural destination southwest of the city, protecting approximately 50,500 acres, much of it urban.

Above: Jim Sutton, Oscar Lozano, and Bob Panasewicz installing a spillway at ACDC.

Phoenix, Arizona and Vicinity (Including New River)

The Phoenix, Arizona and Vicinity (Including New River) Flood Control Project is a project with a scope that lives up to its lengthy title. It protects parts of Phoenix, Glendale, and Peoria. That's not easy to do with a single flood control project, but this is actually a series of smaller projects, linked to provide comprehensive flood protection. This project will provide protection from the mountain and desert drainage area north of Phoenix. The year's progress on several elements of this project is described below.

Arizona Canal Diversion Channel

The Arizona Canal Diversion Channel is the principal component of the Phoenix, Arizona and Vicinity (Including New River) project and the largest flood control project in the District's history. It will be 16.5 miles long, aligned parallel to the Arizona Canal on its northern side from approximately 40th Street and Camelback Road to 75th Avenue and Greenway Road. It has been divided into several reaches to facilitate planning and construction.

The Flood Control District is sponsoring this project for the U.S. Army Corps of Engineers. About 40% of its overall cost will be paid by the District, and we will maintain the completed structure.

Reach 1 (75th Avenue to 53rd Avenue) is complete except for landscaping. During the past year, the Corps of Engineers designed landscaping and will award a contract this fall. Reach 2A (53rd Avenue to 47th Avenue) is complete. Reach 2B (47th Avenue to 29th Avenue) and Reach 2C (29th Avenue to 23rd Avenue) and Cave Creek Channelization began construction this year. By the end of the year, nearly all of the channel excavation was done. Construction is about to begin on Reach 3 (23rd Avenue to 12th Street). The Corps of Engineers' $29.1 million construction contract is with Pulice Construction. The District expects to spend about $24 million for land acquisition and relocations in this reach. Construction is planned to begin by the end of July with completion planned for the Spring of 1991. Construction on the final segment, Reach 4 (12th Street to 40th Street), is scheduled to begin in the Summer of 1990.

Because this project is in the metropolitan area, it required 25 road bridges, seven pedestrian bridges, and a special sensitivity to urban aesthetics. The design of Reach 4 has been slowed by the need to respond to such concerns by local residents and businesses. A citizens' Aesthetics Committee presented its assessment of concerns to the City of Phoenix at the end of the year. The District is working with the City of Phoenix and its Aesthetics Committee to find mutually acceptable solutions.

New River Channelization

The Corps of Engineers is performing design and construction from Grand Avenue to Olive Avenue. This section is being built by Maya Construction Company for $15.8 million. This section was 42% complete at the end of the year. The District is responsible for design and construction from Olive Avenue to Bethany Home Road. This section is currently being designed. When completed, channelization will remove about 1,000 acres from the floodplain.

Skunk Creek Channelization from ACDC to the New River

The Corps of Engineers completed bank stabilization on the southeast bank of Skunk Creek. The District is responsible for a bridge at 83rd Avenue and two drop structures, design of which is nearly completed. Approximately 90% of the channel is being excavated by the Arizona Department of Transportation in conjunction with its work on the Outer Loop.

East Maricopa Floodway

The most important flood control structure on the east side of the valley, East Maricopa Floodway, was completed this year at a cost of approximately $17,361,000 to the District. It was constructed along the upslope (east) side of the Roosevelt Water Conservation District (RWCD) Canal in eastern Maricopa County. The 27.6-mile long

Floodway extends from the Gila River to a little north of Brown Road in Mesa.

Reaches 5 and 6 of the Floodway were completed this year to finish the project. The Soil Conservation Service's construction contractor for Reach 5 was R.E. Monks, and for Reach 6, A/A Construction. Part of the Floodway also serves as a golf course for Leisure World, which constructed the course along with three miles of Reach 5 at substantial savings to taxpayers.

This year, as a part of its Greenfield Road Drain Project, the City of Mesa also constructed an extension of Reach 6, which lengthened the Floodway by 350 feet. The District shared the cost of the extension with Mesa at a cost of $218,500. The City of Mesa Parks Department is working with the District to explore recreational uses for this right-of-way that would not interfere with flood control functions of the floodway.

ACDC Landscaping

Landscaping on the ACDC represents a significant change in the District's responsibilities. When the District was first formed, landscaping was really not a consideration. The main idea was to plant vegetation to keep the structure slopes from eroding. In the 1970s, the District, through Federal projects, began including landscaping as an identifiable step in design and construction. Here, the main purpose was to return the surroundings to as near the original desert environment as possible. The ACDC presents a new and demanding landscaping concept. Because it runs through the metropolitan area, extraordinary landscape efforts were required to promote safety, maintenance, and visual aesthetics. As a result, wrought iron type fencing was installed and various types of desert vegetation were planted (nearly 60,000 plants will grow along Reach 1 and 2).

The ACDC has received our full landscaping attention and will continue to do so. Landscaping along the ACDC features:

- low maintenance requirements,
- drought and heat tolerant plants,
- mitigation of adverse environmental impacts,
- attractive design, and
- trails that combine the needs of walkers, joggers, horse riders, bikers, and the District's own maintenance vehicles.

Buckhorn-Mesa Watershed Project

This project was completed in October 1988 at a cost of approximately $14,835,000 to the District. A dedication ceremony was held that month with Board of Directors member Tom Freestone as Master of Ceremonies. Honored guests included Congressman Jay Rhodes and former Congressman John Rhodes.

The Buckhorn-Mesa Watershed Project is a system of interrelated structures built by the Soil Conservation Service to provide flood protection to rural and urban lands in the eastern Maricopa County area south of Brown Road from about Bush Highway to Idaho Road. The District has accepted maintenance responsibility and plans for landscaping the project are underway.

Upper East Fork/Cave Creek

In 1986, the District was called upon to provide flood relief for an area experiencing drainage problems. The Upper East Fork Cave Creek area was having drainage problems just about every time it rained.

This area had developed very rapidly, and much of this had occurred before development in the wash area had been appropriately regulated. By 1986, there wasn't even a definite channel in some places. To get a handle on the problem, the District commissioned an Area Drainage Master Study, published in 1987.

The resulting Area Drainage Master Plan, prepared for the 100-year flood event, has now been approved by the City of Phoenix, and a cost-sharing agreement has been made between the City and the District. The features of the plan are six detention basins, and an open channel along the historical path of East Fork Cave Creek, with underground channeling in the remaining areas. In developed areas, the District will drain the detention basins through the City's two-year storm drains. Preliminary design of the drainage basins is underway; the City of Phoenix and the District are pursuing right-of-way acquisition for the proposed channel.

Recreational uses, funded by the City of Phoenix, will include areas for City parks and trails.

Above: Some of the recreational uses within floodways include a runway for radio-controlled planes in the Buckhorn-Mesa project, left, and a golf course in the Eastern Maricopa Floodway, right.

Right: Hydrologists Joe Tram and Doug Plasencia advise consultants on road design.

Nonstructural Flood Protection Activities

By regulating the use of floodplains and by reviewing residential, commercial, and industrial development plans, the District sees that new developments will not have or cause drainage problems.

It reviews development plans in unincorporated areas outside the floodplains to be sure the development will not adversely affect adjoining property by diverting or increasing runoff or drainage and flooding problems within the development itself. The District's regulatory tasks include specifying the areas in which development can take place, the types of development to be permitted in each area, and the permitting and insurance requirements for different uses of the land within a floodplain.

Floodplain Management

The Floodplain Board of Review (the same members as the Flood Control Advisory Board—see page 14) is responsible for approving or denying floodplain variances as well as making interpretations of regulations. The District evaluates area hydrology and directs various studies that result in the delineation of floodplains. This information culminates in Federal Emergency Management Agency (FEMA) approved insurance rate maps which define areas subject to flooding. The staff also reviews proposed new construction and structural repair to ensure these activities do not impact the conveyance of water or violate federal, state, and local rules for such construction.

Floodplain Management Work Load

	1986-87	1987-88	1988-89
Floodplain Use Permits	49	57	53
Floodplain Variances	13	6	2
Appeals	0	1	0
New Delineations	7	14	5
FCD Clearances	55	31	10
Violation Cases	10	6	8
Referrals to County Attorney	3	2	0

Drainage Administration

The District has taken action to establish a County drainage standard through development of a County Drainage Regulation. This regulation was adopted for use within the unincorporated areas of the County this year. The document imposed somewhat more stringent requirements and consolidated all the drainage "rules" into one document.

The District reviews and inspects drainage facilities of the unincorporated areas of the County to ensure that no development alters the course or capacity of drainage downstream of its own property. District guidelines require that developers plan to retain all surface runoff water originating in their own property. The District staff then review development plans to see that drainage requirements are met in the design, and later inspect the site to ensure that the design is constructed according to the approved plans.

Drainage Management Work Load

	1986-87	1987-88	1988-89
Zoning Cases Reviewed (including Resubmittals)	370	357	250
Subdivision Cases Reviewed	94	94	68
Master Plans Reviewed	11	2	16
Board of Adjustment Cases Reviewed	106	128	160
Drainage Inspections	916	579	1117

Watershed Management*

Historically, urbanization has resulted in increased runoff along with decreases in the storage and conveyance capacities of existing washes. The result is typically an increase in flooding downstream. An extreme example of urbanization causing increased flooding in Maricopa County is the development in the floodplain that has obliterated the channel in the Cave Creek floodplain downstream of the Arizona Canal.

The degree to which stormwater runoff impacts floodplains is directly related to the degree of development. Increased urbanization, especially in arid environments, blocks the infiltration of stormwater into the soil resulting in an increase in overland runoff and erosion problems. Many problem watersheds cross jurisdictional boundaries, and some cross through three or even four.

Learning from past mistakes, the concept of the drainage master studies and plans applies a concerted approach to stormwater and floodplain management by considering the cumulative effect of development along a river system or within a specific subbasin for a watershed. The program was originally conceived in 1983 as a series of watershed analyses for areas experiencing street flooding and damage to yards and homes. It is now successfully underway.

Area Drainage Master Studies (ADMSs) develop standardized hydrology for watersheds, which define water conveyance corridors and develop flood mitigation options for existing drainage problems. In addition, the studies help in providing sound floodplain management by identifying areas that will be subject to flooding before new development or reconstruction occurs. In contrast to previous studies which did not consider future conditions and focused on areas where development had already occurred, the ADMS studies the effects that future floodplain encroachment and channelization would have on stormwater runoff and how it would affect the study area. The concern is for development that might be safe under existing conditions but could be subject to flooding in the future due to unwise watershed management and floodplain development practices.

The product of an ADMS is a unique Area Drainage Master Plan (ADMP), adopted by the Flood Control District and by the municipalities within the studied watershed. The ADMP provides guidelines for stormwater management as development in each area progresses.

The ADMS/ADMP program provides a tool to manage watersheds by maintaining natural predevelopment runoff characteristics and flow paths. A steady state watershed can be accomplished by not allowing modifications to the floodplain that would adversely change travel time, velocities, peak discharges, and volumes that presently exist for each subwatershed and concentration point.

This planning reduces overall public and private costs, including long and short term costs of new development, while providing a drainage infrastructure that will allow for the implementation of long-term development goals. ADMSs and ADMPs are proving to be a vital tool for effective stormwater management and an important part of a comprehensive flood hazard mitigation program for Maricopa County.

**This information taken from a paper entitled* Management of Urbanizing Arid Watersheds *by Jan Farmer, Flood Control District of Maricopa County, and Jeff Erickson and Mark Gavan, The WLB Group, Inc.*

Below: Volunteer Clark Mutschler preparing to send a rain gauge reading to the District.
Photo by: Len Keso.

Flood Warning System

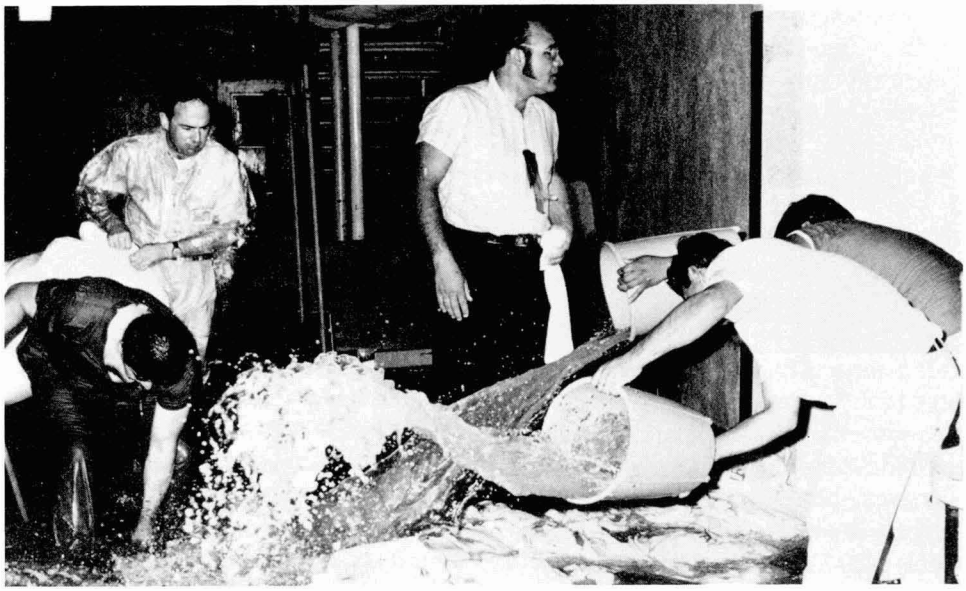
One of the most important elements of nonstructural flood protection in the District is the Flood Warning System, which provides current, or "real time," information about rainfall and runoff across Maricopa County.

The system is a network of telemetered rain and stream gauges linked to send information via radio waves to computers at the Flood Control District and the National Weather Service.

The National Weather Service uses this information to put out its flash flood warnings and advisories. The District uses the information to monitor the conditions at its dams and channels to provide for their safe operation. The data is also used to calibrate computer models of watershed and floodplain delineation studies.

By the end of 1990, the District expects to have 123 telemetered rain gauges and 47 telemetered stream gauges in Maricopa and neighboring counties.

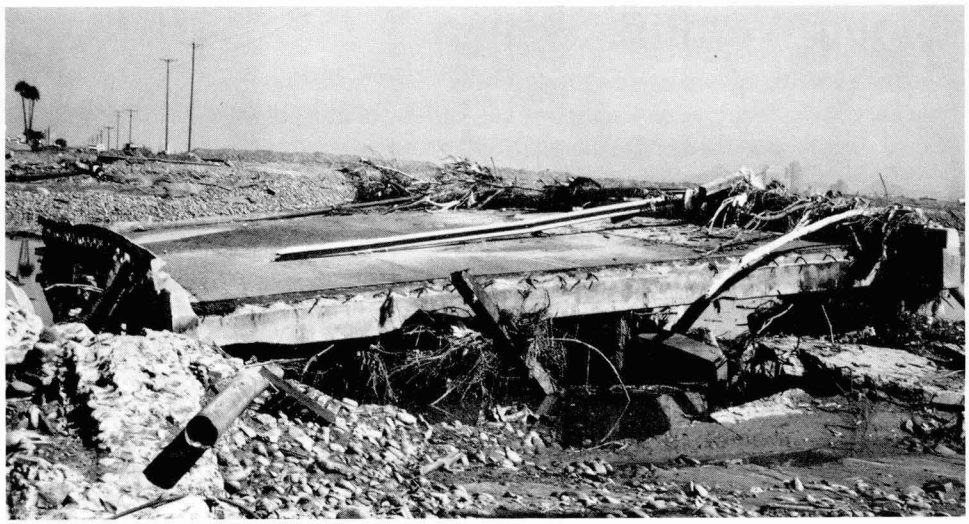
30 Years of Flood Control



The first priority of the newly created Flood Control District in 1959 was the Salt River through Phoenix. Thirty years later, the Salt River is still untamed, but much progress has been made. Many proposals to provide the needed flood protection through channeling or upstream control have been advanced. Some have come to naught, but several are near fruition.

In 1958, the Flood Protection Improvement Committee, which evolved into the Flood Control District in 1959, established three other goals: a "north side floodway, perhaps paralleling the Arizona Canal;" "utilize the Old Cross Cut Wasteway;" and "establish the Indian Bend Wash drainage." These three goals have been met by the District with, respectively, the ACDC, the Old Cross Cut Canal, and Indian Bend Wash projects.

In recent years, Phoenix has witnessed a rapid increase in commercial movement to the area followed by a rapid population increase. A build-up of multiple-unit dwellings has moved single-family units to outlying areas

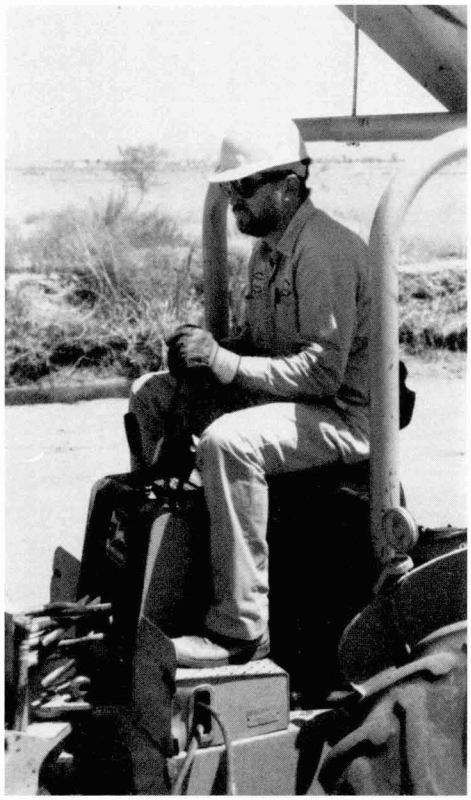


Clockwise, from top: Flooding in Central Phoenix, 1972; Rural Flooding, 1951; Salt River Flood Damage, 1978; and a 1967 cartoon by Reg Manning.

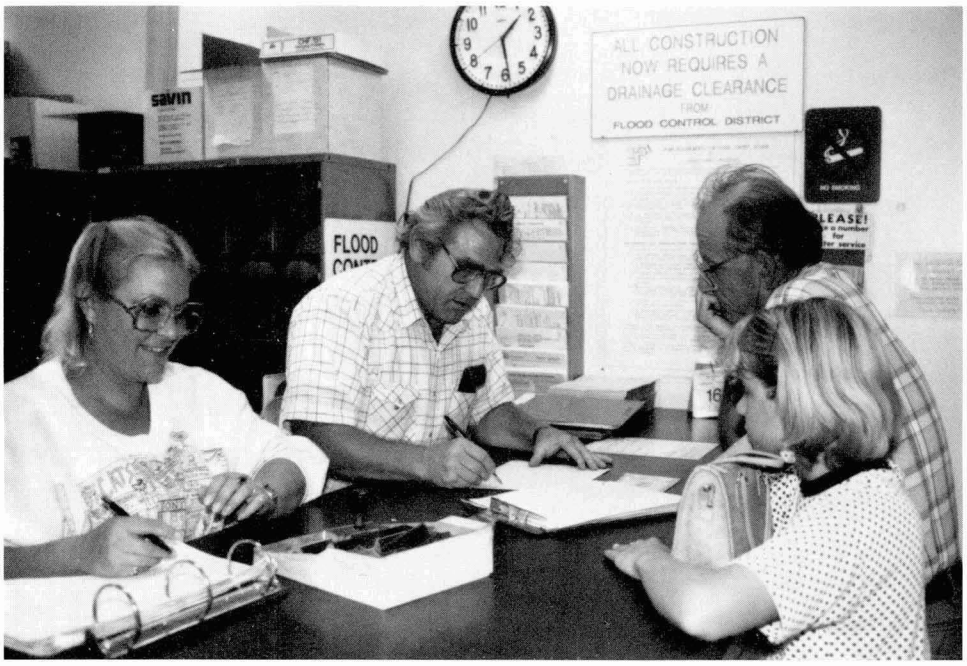
where land and prices are lower. This trend has been accentuated by the existence of large privately-owned tracts of land in the outlying areas that are increasingly attractive to the planned community developer. This trend has thrust the District into areas of concern unheard of thirty years ago: floodplain, drainage, and environmental regulations are just a few of the issues which must now be considered.

Along with the rest of the nation, the Flood Control District has taken advantage of the many opportunities provided by computerization. It's certainly a switch from the days of lengthy mechanical calculations and pencil-drawn maps.

Starting this year, for the first time, we'll have enough infrastructure to prevent the kind of flooding problems we experienced along the Arizona Canal west of Cave Creek and downstream of the Canal on Cave Creek. We can now intercept Cave Creek and have a channel system to divert flows around the greater Phoenix area.

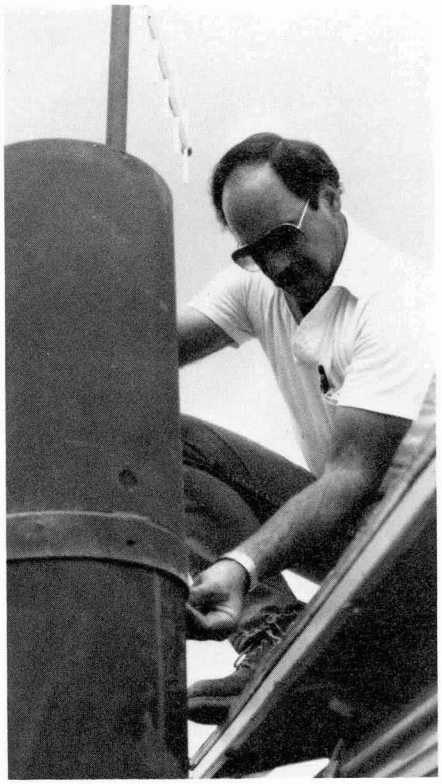


Above: Mike Welch, Equipment Operator, digging test holes for a future box culvert within the East Maricopa Floodway. Top left: Pete Martinez, Team Leader, monitoring computer-controlled landscape irrigation system. Bottom left: Drainage Administrative Coordinator Linda Goertz and Civil Engineering Technician II John Lang conduct a drainage review.



30 Years
1959 1989

Right: Connie Yanez at the Land Management Satellite Office. Below: Randy Elson repairing a rain gauge.



Contracts Awarded
(Preliminary and Unaudited)

Type of Contract	No.	Contract Amount
Appraisal	11	$ 173,000
Construction	8	2,986,000
Engineering Services	15	2,495,000
Title & Escrow	1	100,000
Rental Property Maintenance	7	31,000
Flood Insurance Studies	3	679,000
Total	45	$6,464,000

Rental Program
(Preliminary and Unaudited)

Project	Leasable Properties*	Leased*	Vacancy Rate	Gross	Net
ACDC	25	25	0	$160,300	$ <600>
EMF	3	3	0	33,500	33,300
Signal Buttes	2	2	0	8,800	8,700
Apache Junction FRS & Bulldog Floodway	2	2	0	9,800	9,000
Skunk Creek/New River	1	1	0	400	300
Agua Fria River	1	1	0	4,000	4,000
Cave Buttes Dam	1	1	0	1,500	<200>
Indian Bend Wash Outlet	1	1	0	700	400
Total	36	36	0	$219,000	$54,900

*Average of beginning and end of fiscal year 88/89

Above: Marta Dent, Drafting Supervisor.

Expenditures on Land Breakdown by Project
(Preliminary and Unaudited)

Project	Parcels Acquired	Total Land Acquisition Costs	Land Acquired to Date, %
ACDC	36	$ 2,229,000	93
Agua Fria	17	2,465,000	90
EMF	–	197,000	99
New River/ Skunk Creek	36	1,268,000	80
Salt Gila	–	146,000	80
Sossaman Road	4	242,000	80
Upper East Fork	5	2,474,000	10
Apache Jct. FRS, Floodway, Outlet & Bulldog Floodway	–	25,000	100
Glendale-Peoria ADMS	2	2,280,000	100
Others	N/A	15,000	N/A
Total	100	$11,341,000	

Flood Control District of Maricopa County
Statement of Revenues, Expenditures and Changes in Fund Balance
Budget and Actual
Fiscal Year Ending June 30, 1989
(Preliminary and Unaudited)

	Budget	Actual	Variance Favorable <Unfavorable>
Revenues			
Flood Control District Tax Levy	$52,500,000	$51,345,000	$<1,155,000>
State Share of Costs			
Federal Projects	148,000	0	<148,000>
Local Projects	206,000	0	<206,000>
County Reimbursement	328,000	210,000	<118,000>
Local Participation	2,816,000	3,777,000	961,000
Rental	156,000	219,000	63,000
Interest Earnings	1,500,000	2,564,000	1,064,000
Sale of Excess Land	13,000,000	0	<13,000,000>
Miscellaneous	121,000	343,000	222,000
Total Revenues	70,775,000	58,458,000	<12,317,000>
Expenditures			
Personnel Services			
Salaries and Wages	6,251,000	5,533,000	718,000
Overtime	56,000	3,000	53,000
Total	6,307,000	5,536,000	771,000
Supplies and Services			
Professional Services Contracts	4,310,000	1,008,000	3,302,000
Maintenance Contracts	611,000	667,000	<56,000>
Maintenance Supplies	507,000	216,000	291,000
Insurance	30,000	44,000	<14,000>
Other Supplies and Services	942,000	565,000	377,000
Total	6,400,000	2,500,000	3,900,000
Capital Outlay			
Real Estate	22,894,000	10,943,000	11,951,000
Engineering	5,070,000	1,875,000	3,195,000
Motor Vehicles and Equipment	850,000	607,000	243,000
Construction and Other Capital Outlay	44,804,000	20,017,000	24,787,000
Total	73,618,000	33,442,000	40,176,000
Total Expenditures	86,325,000	41,478,000	44,847,000
Excess <Deficiency> of Revenues over Expenditures	<15,550,000>	16,980,000	32,530,000
Fund Balance at Beginning of Year	23,116,000	23,451,000	335,000
Fund Balance at End of Year	$ 7,566,000	$40,431,000	$32,865,000

Flood Control District of Maricopa County
Expenditures by Activities and Functions*
Fiscal Year 1988-1989
(Preliminary and Unaudited)

Activity	Operations Expenditures		Capital Improvements Program		
	Administrative	Maintenance	Engineering	Lands	Relocation & Construction
Administrative Overhead/Facility	$ 2,726,000	$ 12,000	$ 84,000	$ 3,000	$ 43,000
Maintenance Overhead	3,000	1,302,000			
FCD Yard Maintenance	1,000	144,000			
USGS Service Work	25,000				
Enforcement of Floodplain Regulations	38,000				
Work done for Planning and Development	344,000				
Watershed Hydrology	313,000				
Work done for County Highway Department	8,000				
Floodplain Delineation	259,000				
Flood Insurance	78,000				
Hydrologic Data Collection	10,000	11,000			
Flood Warning System	87,000	68,000			129,000
Flood Emergency Operations	2,000	1,000			
Floodplain Administration	277,000				
Computer Systems	99,000				
City of Mesa	2,000				
City of Tempe					187,000
Town of Cave Creek	1,000				
Dysart Road–Agua Fria Drain	2,000	13,000			
48th Street Drain	3,000	22,000			
Alma School Drain		7,000			
Old Cross Cut Canal	8,000	38,000	43,000		
Broadway Road Bank Stabilization			27,000		
Salt/Gila Clearing and Channelization	3,000	177,000			
Salt/Gila Control Works	2,000	12,000	41,000	146,000	4,000
Sossaman Road	3,000	99,000	15,000	242,000	1,000
Agua Fria River	2,000	79,000			
Agua Fria River (ADOT Agreement)			4,000		121,000
Indian Bend Wash Outlet	1,000	5,000			
Indian Bend Wash Inlet	2,000	32,000		1,000	8,000
Indian Bend Wash Greenbelt		2,000			
Indian Bend Wash Interceptor and Side Channels	1,000	15,000			
Gila Drain	1,000		19,000		6,994,000
ACDC	17,000	383,000	904,000	2,229,000	7,916,000
Paradise Valley—Scottsdale—Phoenix					37,000
EMF–Williams/Chandler	6,000	142,000		72,000	33,000
EMF–Apache Jct./Gilbert	2,000	1,000	8,000	16,000	30,000
EMF–Buckhorn/Mesa	2,000		19,000	109,000	229,000
Salt River Channel–ADOT	14,000				
Salt/Gila River Planning	8,000				
White Tanks Dam #3		9,000			
White Tanks Dam #4		9,000			
McMicken Dam	2,000	59,000			
Dreamy Draw Dam		12,000			

Flood Control District of Maricopa County
Expenditures by Activities and Functions*
Fiscal Year 1988-1989
(Preliminary and Unaudited)

Activity	Operations Expenditures		Capital Improvements Program		
	Administrative	Maintenance	Engineering	Lands	Relocation & Construction
McMicken Dam Outlet Channel	2,000	59,000			
Guadalupe Dam	7,000	6,000			
Buckeye #1		10,000			
Buckeye #2		9,000			
Buckeye #3		9,000			
El Mirage Road Drain Channel		19,000			
Spook Hill FRS & Outlet	3,000	52,000			
Signal Butte Floodway		9,000			
Pass Mountain FRS and Outlet		6,000			
Apache Jct. FRS, Floodway, Outlet and Bulldog Floodway		11,000	3,000	25,000	1,429,000
Signal Butte FRS		11,000			
Powerline Dam		46,000			
Powerline Floodway		22,000	3,000		
Vineyard Road FRS	1,000	13,000			
Rittenhouse FRS		36,000			
Harquahala FRS & Floodway		15,000			
Saddleback FRS		14,000			
Saddleback Diversion Channel	1,000	11,000			
Centennial Levee	1,000	9,000			
Harquahala Floodway		4,000			
Sunset FRS		6,000			
Sunnycove FRS		7,000			
Sunset/Sunnycove Pipeline		4,000			
Wittmann ADMS	4,000		24,000		
Cave Buttes Dam	2,000	54,000			
Adobe Dam	2,000	94,000		3,000	
Skunk Creek Channel at I-17		20,000			
New River Dam	1,000	38,000			
Skunk Creek and New River Flowage Easements	8,000	15,000	363,000	1,268,000	774,000
Agua Fria River Flowage Easements	11,000	1,000	51,000	2,465,000	544,000
East Maricopa ADMS				8,000	
Glendale-Peoria ADMS	3,000		59,000	2,280,000	2,000
East Fork Cave Creek ADMS	1,000	1,000	88,000	2,474,000	
White Tanks—Agua Fria ADMS	3,000				
Queen Creek ADMS	7,000		41,000		
Bell Road Expansion	2,000		250,000		83,000
Plan VI Funding	2,000				1,786,000
Groundwater Recharge			13,000		
Reed Landfill	3,000		2,000		45,000
Total	$ 4,416,000	$ 3,265,000	$ 2,061,000	$11,341,000	$20,395,000

*Expenditures by Activities and Function will not always agree with Expenditures by Task in the Financial Highlights chart (inside front cover) except in total.

Board of Directors

The Flood Control District of Maricopa County is a municipal corporation and political subdivision of the State of Arizona, founded in 1959. The District is governed by a Board of Directors which is also the Board of Supervisors of Maricopa County. A Flood Control Advisory Board advises the Board of Directors.

The purpose of the District is to prevent loss of life or injury to residents of Maricopa County and to eliminate or minimize flood damages to real and personal property. In fulfilling its purpose, the District:

1. Provides floodplain management for Maricopa County and certain municipalities within the County.
2. Provides stormwater drainage review of the unincorporated area of Maricopa County.
3. Studies flooding and drainage problems and plans and constructs projects alone or in cooperation with others.
4. Acts as the local sponsor of federal flood control projects designed and constructed by the U.S. Army Corps of Engineers and the Soil Conservation Service. The District acquires the necessary rights-of-way and relocates facilities and people affected by the projects.
5. Operates and maintains completed flood control structures.
6. Assists in providing early warning of potential floods and provides technical leadership during flood emergencies. Collects and distributes hydrometeorological data from the District's rain and stream gauge network.

The activities of the District are funded by a flood control tax levy assessed on all real property within Maricopa County and a variety of cost sharing arrangements with the State, Maricopa County, and local governments.

The Board of Directors consists of five elected representatives, one from each of the Supervisorial Districts of the County. Under the Board's supervision, the District has all the powers, privileges and immunities granted generally to municipal corporations. The Board of Directors exercises all powers and duties in the acquisition and operation of District properties, contracting, and in carrying out regulatory functions as ordinarily exercised by governing bodies.

Members

James D. Bruner, District 2, January 4, 1989 to June 30, 1989

George Campbell, District 2, July 1, 1988 to January 4, 1989

Carole Carpenter, District 4

Tom Freestone, District 1 (Chairman, June 30, 1989 to January 4, 1989)

Fred Koory, Jr., District 3 (Chairman, January 4, 1989 to June 30, 1989)

Ed Pastor, District 5

History of the Tax Levy Rate for the Flood Control District

Fiscal year ending:	Levy Rate*	Tax Revenue, $
1961	0.05	253,000
1962	0.05	288,000
1963	0.02	126,000
1964	0.02	135,000
1965	0.02	145,000
1966	0.02	153,000
1967	0.02	158,000
1968	0.02	164,000
1969	0.05	446,000
1970	0.05	454,000
1971	0.05	480,000
1972	0.04	425,000
1973	0.05	645,000
1974	0.20	3,428,000
1975	0.20	3,747,000
1976	0.20	4,154,000
1977	0.20	4,395,000
1978	0.20	4,675,000
1979	0.20	5,026,000
1980	0.20	5,342,000
1981	0.43	11,825,000
1982	0.34	13,720,000
1983	0.50	21,779,000
1984	0.48	25,780,000
1985	0.50	28,697,000
1986	0.50	33,644,000
1987	0.50	41,566,000
1988	0.50	46,059,000
1989	0.50	51,345,000

*Per $100 assessed value

Board of Directors: Carole Carpenter, Tom Freestone, Fred Koory, Jr., Ed Pastor, and James D. Bruner.

Flood Control Advisory Board Members: Charles A. Sykes, William LoPiano, John E. Miller, Jr., Ramon Miguez, and H. Lynn Anderson.

Flood Control Advisory Board

The Flood Control Advisory Board advises the Board of Directors on flood control, water conservation, floodplain management, drainage, and related matters. It reviews planning, operations, and maintenance of flood control facilities, and recommends an annual budget to the Board of Directors.

The Advisory Board consists of seven members, appointed by the Board of Supervisors to five-year terms. At least one member must be a resident of the City of Phoenix. The Phoenix City Engineer and the General Manager of the Salt River Project, or their representatives, are ex-officio members of the Advisory Board.

Members

H. Lynn Anderson, District 4 (Chairman, July 1988 to June 1989)

William LoPiano, District 1

Ramon Miguez, City of Phoenix ex-officio member

John E. Miller, Jr., District 2 (Chairman, November 1988 to June 1989)

Tim Phillips, Salt River Project ex-officio member

Charles A. Sykes, District 3

Robert Towner, District 5

Principal District Staff

D.E. Sagramoso, P.E., Chief Engineer and General Manager

Stanley L. Smith, Jr., P.E., Deputy Chief Engineer

David A. Brozovsky, Flood Control Administrator

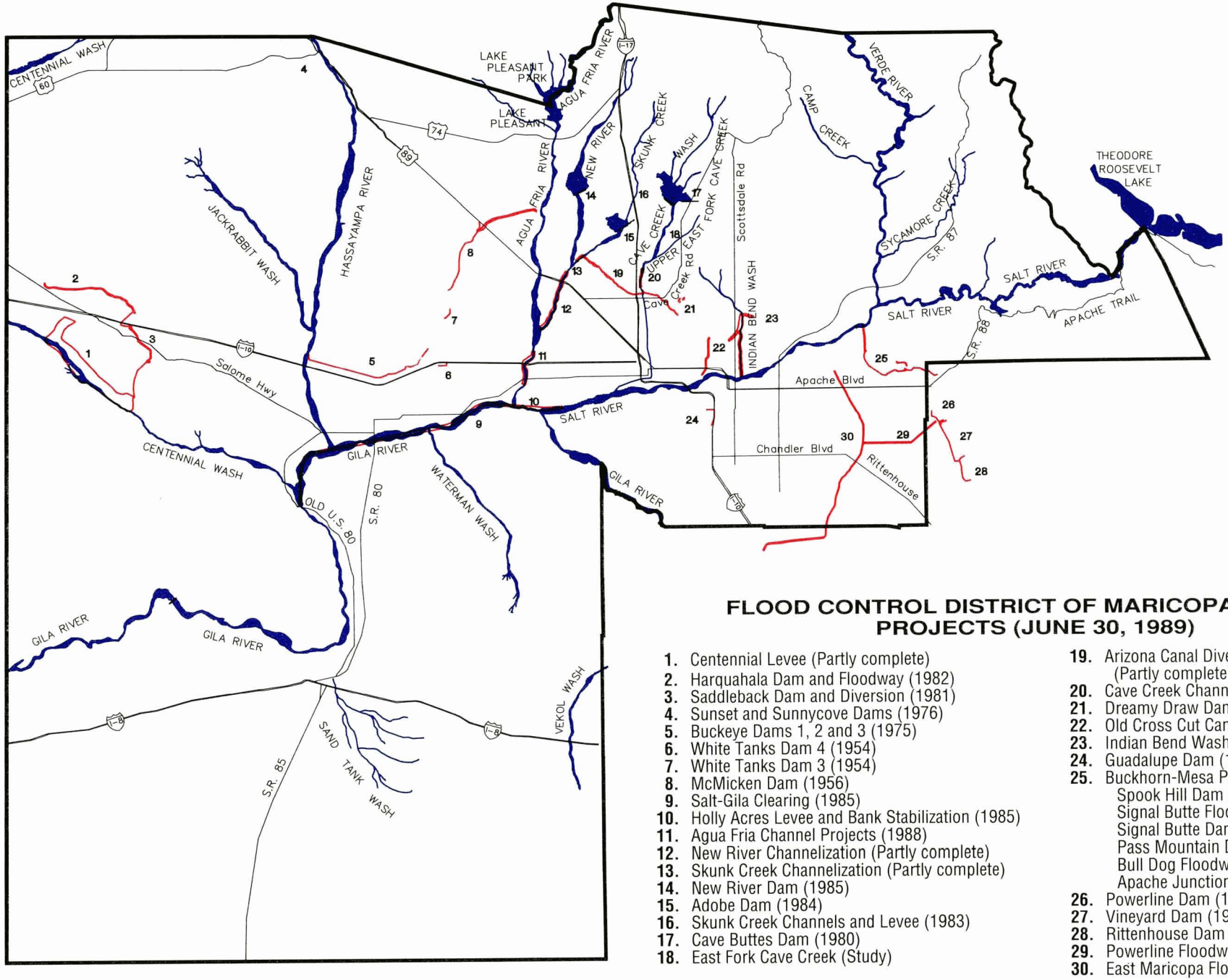
Robert C. Payette, P.E., Chief, Construction and Operations Division

Nicholas P. Karan, P.E., Chief, Engineering Division

David R. Johnson, Chief, Hydrology Division

Edward D. Opstein, Chief, Land Management Division

John E. Rodriguez, P.E., Chief, Planning and Projects Management Division



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY PROJECTS (JUNE 30, 1989)

1. Centennial Levee (Partly complete)
2. Harquahala Dam and Floodway (1982)
3. Saddleback Dam and Diversion (1981)
4. Sunset and Sunnycove Dams (1976)
5. Buckeye Dams 1, 2 and 3 (1975)
6. White Tanks Dam 4 (1954)
7. White Tanks Dam 3 (1954)
8. McMicken Dam (1956)
9. Salt-Gila Clearing (1985)
10. Holly Acres Levee and Bank Stabilization (1985)
11. Agua Fria Channel Projects (1988)
12. New River Channelization (Partly complete)
13. Skunk Creek Channelization (Partly complete)
14. New River Dam (1985)
15. Adobe Dam (1984)
16. Skunk Creek Channels and Levee (1983)
17. Cave Buttes Dam (1980)
18. East Fork Cave Creek (Study)
19. Arizona Canal Diversion Channel (Partly complete)
20. Cave Creek Channelization (Partly complete)
21. Dreamy Draw Dam (1973)
22. Old Cross Cut Canal (1975)
23. Indian Bend Wash (1985)
24. Guadalupe Dam (1975)
25. Buckhorn-Mesa Projects
    - Spook Hill Dam (1979)
    - Signal Butte Floodway (1984)
    - Signal Butte Dam (1987)
    - Pass Mountain Diversion (1987)
    - Bull Dog Floodway (1988)
    - Apache Junction Dam (1988)
26. Powerline Dam (1967)
27. Vineyard Dam (1968)
28. Rittenhouse Dam (1969)
29. Powerline Floodway (1968)
30. East Maricopa Floodway (1989)

JUNE 30, 1989

ORGANIZATIONAL CHART

POSITIONS AND PAY GRADES

FLOOD CONTROL ADVISORY BOARD
ADVISORY GROUP
CONSULTING GROUP

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
BOARD OF DIRECTORS

COUNTY MANAGER

ASSISTANT COUNTY MANAGER
PUBLIC WORKS DIRECTOR/COUNTY ENGINEER

CHIEF ENGINEER AND GENERAL MANAGER

DEPUTY CHIEF FLOOD CONTROL ENGINEER

PLANNING & PROJECTS MANAGEMENT DIVISION

CHIEF	28
ADMIN COORD I	15

PLANNING BRANCH

WATER RES PLANNER	25
WATER RES PLANNER	25
CIVIL ENGR TECH I	18

PROJECT MGMT BRANCH

PROJECT MGMT ENGR	25
PROJECT MGMT ENGR	25
PROJECT MGMT ENGR	25
PROJECT MGMT ENGR	25
PROJECT MGMT ENGR	25
CIVIL ENGINEER I	22
CIVIL ENGR TECH II	20
CIVIL ENGR TECH I	18

LAND MGMT DIVISION

CHIEF	27
ADMIN COORD I	15
WORD PROC OPR II	7

PROPERTY ACQUISITION BRANCH

SR LAND MGMT SPEC	23
PROPERTY ACQ COORD	20
PROPERTY ACQ COORD	20
LAND MGMT SPEC	17
LAND MGMT SPEC	17
LAND ACQ ASST	12

PROPERTY MGMT BRANCH

SR PROP MGMT SPEC	23
ADMIN COORD II	17
ADMIN COORD I	15
LAND MGMT ASST	12
LAND MGMT AIDE	10

PROPERTY ENGINEERING BRANCH

CHIEF RP ENGR ASSOC	23
RP ENGR ASSOC II	20
RP ENGR ASSOC I	17

CONSTRUCTION AND OPERATIONS DIVISION

CHIEF	28
DEP CHIEF C & O DIVISION	25
OFFICE SUPERVISOR I	11
AUTO RECORDS PROC III	10
WORD PROC OPER III	9

ENVIRONMENTAL BRANCH

REVEG ECOLOGIST III	21
REVEG ECOLOGIST II	18

CONSTRUCTION BRANCH

CHIEF, CONST INSPECTOR	23
CONSTRUCTION INSPECTOR II	20
CONSTRUCTION INSPECTOR II	20
CONSTRUCTION INSPECTOR I	18
CONSTRUCTION INSPECTOR I	18
CONSTRUCTION INSPECTOR I	18

OPERATIONS & MAINTENANCE BR

CHIEF	23

OPS & MAINT RES COORD II 17
OPS & MAINT RES COORD I 14

O & M SUPERVISOR 20

O & M SUPERVISOR 20

ASPEN CREWS

MAINTENANCE TEAM LEADER	17
WORK CREW LEADER	15
WORK CREW LEADER	15
WORK CREW LEADER	15
WORK CREW LEADER	15
WORK CREW LEADER	15
WORK CREW LEADER	15

4X MAINTENANCE TEAM LEADER 17
MAINTENANCE TECH II 14
MAINTENANCE TECH I 12

FC OPERATION SPEC III	15
FC OPERATION SPEC III	15
FC OPERATION SPEC III	15
FC OPERATION SPEC II	14
FC OPERATION SPEC II	14
FC OPERATION SPEC II	14
FC OPERATION SPEC II	14
FC OPERATION SPEC I	13
FC OPERATION SPEC I	13
FC OPERATION SPEC I	13
FC OPERATION SPEC I	13
FC OPERATION SPEC I	13
FC OPERATION SPEC I	13
FC OPERATION SPEC I	13

O & M SUPERVISOR 20

6X MAINTENANCE TEAM LEADER 17
MAINTENANCE TECH II 14
MAINTENANCE TECH I 12

O & M SUPERVISOR 20

ENGINEERING DIVISION

CHIEF	28
ADMIN ASST	10

DESIGN & TECH REVIEW BRANCH

CIVIL ENGINEER II	24
CIVIL ENGINEER II	24
CIVIL ENGINEER II	24
CIVIL ENGINEER II	24
CIVIL ENGINEER I	22
CIVIL ENGINEER I	22
CIVIL ENGINEER I	22
ENGR DRAFT SPEC III	17
ENGR DRAFT SPEC I	13

STORMWATER DRAINAGE BRANCH

CIVIL ENGINEER II	24
CE TECH III	23
HYDROLOGIST II	22
CE TECH I	22
CE TECH II	20
CE TECH II	20
HYDROLOGIST I	20
HYDROLOGIST I	20
CE TECH I	18
CE TECH I	18
CE TECH I	18
ADMIN ASST	10

HYDROLOGY DIVISION

CHIEF	27
HYDRO ADMIN ASST	12

WATERSHED MANAGEMENT

HYDROLOGIST III	24
HYDROLOGIST II	22
HYDROLOGIST II	22
HYDROLOGIST II	22
HYDROLOGIST I	20
HYDROLOGIST I	20
HYDROLOGIST I	20

FLOODPLAIN MANAGEMENT

HYDROLOGIST III	24
HYDROLOGIST II	22
HYDROLOGIST II	22
HYDROLOGIST II	22
HYDROLOGIST I	20
HYDROLOGIST I	20
FLOODPLAIN REP II	20
FLOODPLAIN REP I	18
FLOODPLAIN REP I	18

SPECIAL PROJECTS

HYDROLOGIST III	24
HYDROLOGIST II	22
HYDROLOGIST II	22
HYDROLOGIST I	20
HYDROMET TECH	18
HYDROMET ASST III	16
HYDROMET ASST II	14
HYDROMET ASST II	14
HYDROMET ASST I	12
HYDROMET ASST I	12

ADMINISTRATION DIVISION

CHIEF	27
ADMIN COORD III	19

PUBLIC INVOLVEMENT COORDINATOR	19

TECH COMM SPEC	16

ACCOUNTING SERVICES

CONTROLLER	26
BUDGET ANAL II	21
ACCOUNTANT II	19
ACCOUNTING TECH	12
ACCOUNTING TECH	12
ACCOUNTING TECH	12
ACCOUNTING ASST	10
ADMIN AIDE	8

ADMINISTRATIVE SERVICES

ADMIN COORD II	17
OFFICE SUPERVISOR II	13
WORD PROC OPER III	9
WORD PROC OPER II	7
RECORDS TECH II	9
RECORDS TECH I	6
CLERK III	6

CONTRACTING

ENGR CONTR SPEC	25
CONTRACTS ADMIN I	15
CONTRACTS ASST	12

INFORMATION SYSTEMS

DATA SYSTEMS MANAGER	26
SC PGM/ANAL II	20
SC PGM/ANAL I	17
OFC AUTOMATION SPEC	11
COMP SUPPORT TECH	11

GIS/CADM

GIS/CADM SUPERVISOR	22
ENGR DRAFT SUPERVISOR	20
GIS TECH II	18
ENGR DRAFT SPEC II	15
ENGR DRAFT SPEC I	13

AUTHORIZED POSITIONS - 186

JUNE 1989

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

Flood Control District of Maricopa County

Annual Report 1989/1990

003.109

On the cover: Dwarf Oleanders frame this view of a District maintenance vehicle sweeping debris out of the Arizona Canal Diversion Channel west of 28th Drive, north of Dunlap Avenue.

Financial Highlights

Fiscal Year 1989/1990

Preliminary and Unaudited

	Dollars	Percent
Revenues		
Flood Control Tax	$46,408,000	82
Rental Income	167,000	—
Interest	3,326,000	6
State Assistance – Local Projects	0	—
County and Local Participation	6,566,000	12
Sale of Excess Land	0	—
Miscellaneous	247,000	—
Total Revenues	56,714,000	100
Expenditures		
Administration and Maintenance	11,426,000	17
Flood Control Capital Improvements	54,784,000	83
Total Expenditures	66,210,000	100
Excess (Deficiency) of Revenues Over Expenditures	<9,496,000>	
Fund Balance at Beginning of Year	41,552,000	
Fund Balance at End of Year	$32,056,000	
Expenditures by Task		
Administration	$ 8,608,000	13
Land Acquisition	19,896,000	30
Relocation of Utilities, Bridges and Other Facilities	6,962,000	10
Construction	26,974,000	41
Maintenance	3,770,000	6
Total	$66,210,000	100

Flood Control District Tax Levy Rate

1961 to 1990

Fiscal Year Ending	Levy Rate*	Tax Revenue, $
1961	0.05	253,000
1962	0.05	288,000
1963	0.02	126,000
1964	0.02	135,000
1965	0.02	145,000
1966	0.02	153,000
1967	0.02	158,000
1968	0.02	164,000
1969	0.05	446,000
1970	0.05	454,000
1971	0.05	480,000
1972	0.04	425,000
1973	0.05	645,000
1974	0.20	3,428,000
1975	0.20	3,747,000
1976	0.20	4,154,000
1977	0.20	4,395,000
1978	0.20	4,675,000
1979	0.20	5,026,000
1980	0.20	5,342,000
1981	0.43	11,825,000
1982	0.34	13,720,000
1983	0.50	21,779,000
1984	0.48	25,780,000
1985	0.50	28,697,000
1986	0.50	33,644,000
1987	0.50	41,566,000
1988	0.50	46,059,000
1989	0.50	51,345,000
1990	0.43	46,408,000

*Per $100 assessed value

This publication was printed on recycled paper. When discarding: PLEASE RECYCLE!

Published by:

The Flood Control District of Maricopa County
3335 W. Durango Street
Phoenix, Arizona 85009

Editor: Susan M. Fitzgerald
Layout & Design: Tina L. Barnett

KHALILI

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

Mission: Flood Control

Many people are puzzled to learn there is a Flood Control District in Maricopa County. "What floods?" they ask. But it takes just one heavy storm to alter this low profile.

Flood control is not a promise, however, despite what our name implies. It is a task with which we are charged. This report is an overview of our activities during the past year to accomplish our mission of protecting the people of Maricopa County from injury, loss of life and damages caused by flooding.

Our mission encompasses seven primary activities:

♦ **Planning:** In 1963, the four-year-old District developed a blueprint for flood control projects that has kept it busy for the past 26 years. This year, we updated the Comprehensive Plan to report on progress and propose new projects. We have developed an instrument that will guide us in planning future projects, the Area Drainage Master Study. This helps us achieve our goal of identifying flooding and regional drainage problems, and to develop alternative solutions to protect life and property.

♦ **Capital Improvement:** Once a plan is developed, and approved by our Board of Directors, we implement approved structural projects to resolve these flooding and drainage problems. We fund and oversee design and construction of the approved projects.

♦ **Maintenance:** About 38 percent of our personnel resources are devoted to maintaining the 56 flood control facilities already constructed. This includes tasks from monitoring the quality of water discharges to clearing vegetation to maintaining access roads.

♦ **Flood Warning:** No agency can fully control natural events, so we must develop another facet of prevention by the design, implementation and maintenance of an accurate, reliable flood warning system. We are implementing a network of telemetered rain and stream gauges that allow us to receive and evaluate information as the gauges register activity that is relayed electronically to computers in our office. We share this information with other agencies and jurisdictions as part of a network that alerts the public to possible danger.

♦ **Floodplain Administration:** We identify and map areas that may be inundated by 100-year floods. These are floods that have a 1 percent chance of happening in any year. Floodplain delineations are reflected on the National Flood Insurance Program maps. We also regulate development in these areas, to reduce potential damages.

♦ **Drainage Administration:** To enforce drainage building regulations in the unincorporated area, we review new development site plans, issue drainage clearances, inspect building sites, and investigate flooding reports.

♦ **Property Management:** Land acquired by the District for projects must be kept secure and free from hazard. The District also may sell or lease buildings on its land, issue licenses and enter intergovernmental agreements for use.

Our mission is best served when we work with other jurisdictions—cities, counties, state and federal agencies. This cooperation results in greater service to the public—in a regional approach, project effectiveness, overall expertise and cost-sharing that results in the best project for the money.

This report reflects the cooperation that is our hallmark, and the diverse activities required to accomplish our mission.

Mission: Planning

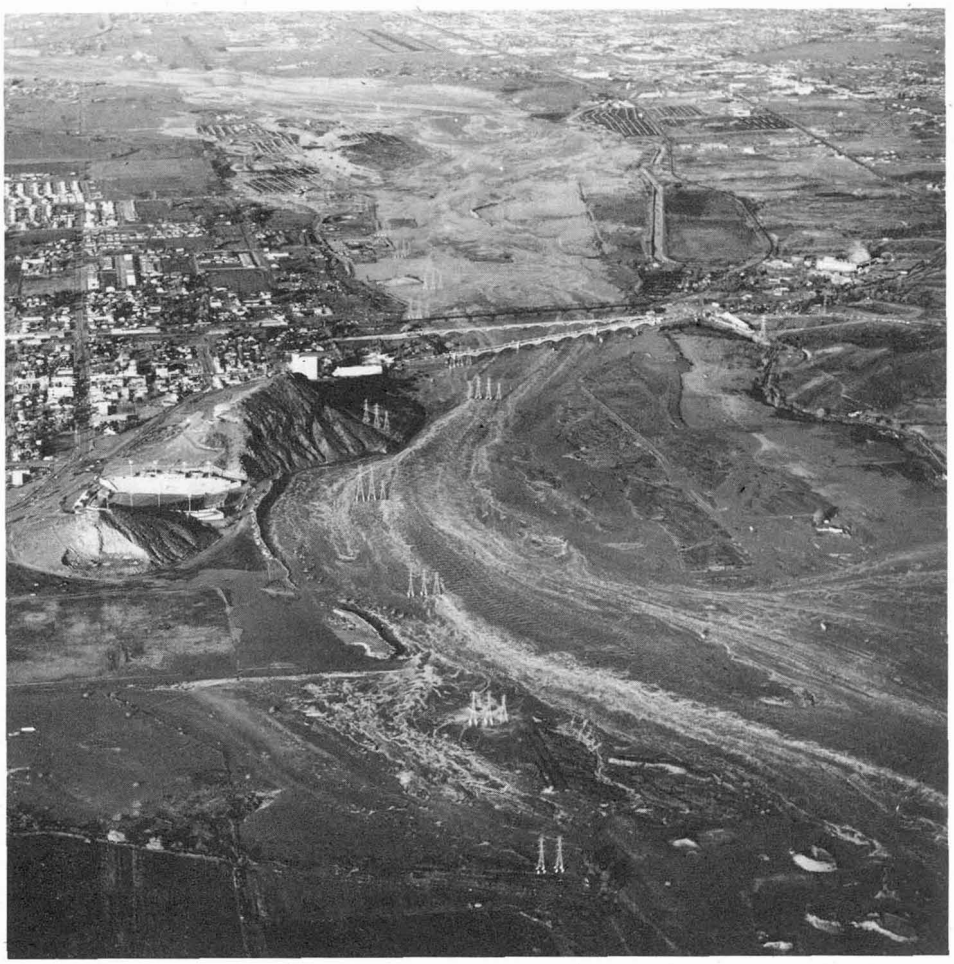
Comprehensive Plan

The District updated its 26-year-old Comprehensive Plan, to report progress toward implementing the plan, and to identify potential projects from more recent sources.

The Draft 1989 Comprehensive Flood Control Report was sent to all cities in the County and to State agencies such as Transportation and Water Resources for information and input. A key reason for advising them of the District's plans was to afford them the opportunity to identify joint projects in areas where other agencies plan work. For example, Transportation identified 19 drainage projects in conjunction with its planned freeways, in which it might share costs with the District. These were included in the report.

In all, 15 of the original 1963 plan's 40 projects have been completed or are in progress; 5 have been incorporated into other projects or eliminated; and 20 have not been constructed. Some of the projects that have not been constructed are environmentally controversial or infeasible, such as Orme Dam. A few are in areas that have been or will be the subject of an Area Drainage Master Study (ADMS), which uses a problem-solving approach uniquely suited to a particular watershed or watershed cluster to identify prospective projects.

The draft also includes projects the District has completed that were not listed in the 1963 report.



Above: *This photo, taken in 1965, shows the area that will be channelized under an agreement between the District, ADOT, and the City of Tempe. When completed, the Salt River will be channelized from McClintock Avenue to Mill Avenue, providing flood protection for the Papago Freeway and enabling Tempe to reclaim land for development and recreation facilities.* (Photo: Don Keller)

Legislation to Restrict Landfills

District personnel and counsel were instrumental in the passage of House Bill 2571, which prevents landfills from being placed within one-half mile of a river or stream with a 100-year discharge of 25,000 cubic feet per second (cfs) or more.

Keeping landfills away from sizeable streams protects the landfill as well as groundwater. According to staff studies on the "meandering" nature of rivers, a landfill built on or near a riverbed is threatened by the possibility that the river could shift and erode the landfill, displacing some of its waste.

Also, even though there may be no water in the streambed, groundwater may be "perched" on a nearby underground shelf. This bill is already threatened, however, by a ballot initiative that would effectively overturn it, backed by a waste management firm.

Area Drainage Master Study (ADMS)

One of the District's chief planning functions is the development of solutions for the drainage system of entire watersheds. This year, the District initiated four regional studies, called Area Drainage Master Studies (ADMS). Contracts were awarded for the White Tanks-Agua Fria and Laveen studies, a consultant was selected for the Wickenburg study and a scope of work was developed for a study in the City of Phoenix north of the Arizona Canal Diversion Channel (ACDC). Additionally, the District's Advisory Board approved in February a five-year priority schedule for future studies. Conceived in 1983, the ADMS program is designed to analyze watersheds, and, in areas prone to frequent flooding, identify homes and businesses that are subject to damages and to recommend alternative solutions.

It takes about two years for a team to study an area and develop a preferred Area Drainage Master Plan (ADMP), based on the particular geographic, hydrologic and development characteristics of the region, including input from residents and other property owners.

Because watersheds often encompass two or more municipalities, as well as unincorporated county land, one city's attempt to solve its drainage problems may worsen matters for its downstream neighbors. With its technical expertise and funding capability, the District's ADMS program can be the instrument for bringing together all the affected jurisdictions within a watershed to develop an overall stormwater management solution.

Area Drainage Master Plan (ADMP)

When the basic hydrology and hydraulics of an ADMS are completed—identifying, defining and quantifying the extent of drainage and flooding problems—the next step is to develop options to address these issues and test the options through computer programs. This process results in an Area Drainage Master Plan (ADMP).

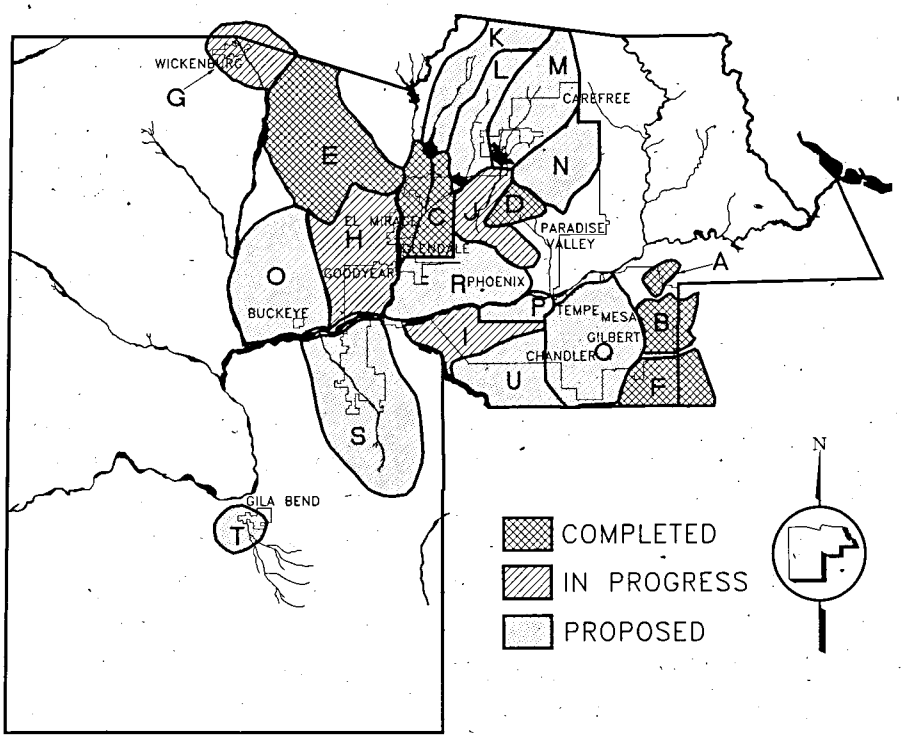
During the past year, several tasks were completed in the ongoing effort toward producing a Queen Creek ADMP:

- finalized hydrology for existing and future conditions
- finalized hydraulics for existing conditions
- initiated the development of selected alternatives
- developed and evaluated an alternative drainage system
- developed preliminary cost estimates for the alternative

Land Acquisition and Utility Relocation

As the planning phase transitions into the project phase, much work has to be done before construction begins. Engineering design must be completed, rights-of-way must be acquired, and utilities must be relocated.

One project in the pre-construction phase is the channelization of the Salt River between Mill Avenue and McClintock Road. This year, the District has been working on an agreement with Tempe and the Arizona Department of Transportation (ADOT). Tempe will obtain all permits and rights-of-way, and the District and ADOT will share construction costs. The end result will be a more scenic transportation facility and an efficient river channel that also provides development and recreation opportunities.



Area Drainage Master Studies As of June, 1990

A. Spook Hill
B. East Maricopa County
C. Glendale/Peoria
D. East ForkCave Creek
E. Wittmann
F. Queen Creek
G. Wickenburg
H. White Tanks/Agua Fria
I. Laveen
J. ACDC
K. New River
L. Adobe Dam
M. Cave Creek/Carefree
N. Pinnacle Peak
O. Buckeye/Sun Valley
P. 48th Street Drain
Q. Mesa/Gilbert/Chandler
R. Maryvale
S. Rainbow Valley/ Waterman Wash
T. Gila Bend
U. Foothills

Mission: Capital Improvement

Regional projects, some shared with other jurisdictions, form the backbone of the District's role in flood control. Projects go through many phases from conception to completion: a need is identified, study parameters are established, an engineering consultant is hired, other agencies, cities or counties may be involved, options are developed.

Then begins the work of evaluating the options, again with input from other agencies, cities or counties, and often the public. An option is selected, another consultant hired for design; plans are reviewed and accepted, a construction contract is awarded.

Even before construction begins, however, rights-of-way must be acquired and cleared, utilities relocated, people and businesses relocated.

In any given year, District projects progress through the various stages of this process. In this portion of the report, the major projects will be tracked through the portions of the process they underwent this year.

New Building Under Construction

March brought the groundbreaking of the District's new administration building, a 72,000 square-foot structure that will accommodate personnel requirements projected through the year 2008. The building was designed by Lescher and Mahoney, Inc., and is being constructed by Meineke-Johnson Company. The facility will be located at approximately 28th Avenue and Durango Street, just east of our current location. The staff is looking forward to occupying the new building in May of next year, when they will be able to enjoy less cramped work areas. The staff is currently packed into a 15,000 square foot building, two leased triple-wide trailers and a leased office.

The new building mirrors the neighboring County Highway Department building in shape and exterior. The major features of the building are its dark brick trimmed by copper patina (copper flashing treated with acid). The building also has a zig-zag design that gives plenty of window space offering natural light to as many offices as reasonably possible.

In addition to the administration building, the District is also in the process of building a new operations facility. This facility, currently in design, will house the District Operations and Maintenance staff and also the Hydrometeorlogic staff. The facility includes a workshop, a tool and equipment storage area, and a training/meeting room. This facility is now planned to be available within one month of the completion of the administration building.

Design

Projects that entered the design phase this year included:

The Guadalupe Channel, along Guadalupe Road from Sossaman to Power Road; plans and specifications were completed and advertisement for a construction contractor took place.

East Fork Cave Creek Channel, from Beardsley Road to Union Hills Drive, and Basin 4, on the campus of Paradise Valley Community College; the design contract was awarded and work is underway. This is a joint project with Phoenix that resulted from an Area Drainage Master Plan.

The bridge at Northern Avenue in conjunction with the channelization of New River; a design contract was awarded. This is a joint project with the County Highway Department.

91st Avenue storm drain, another joint effort with County Highway, is part of the Bell Road improvement project; plans are being finalized.

Union Hills storm drain, from Skunk Creek to I-17, a joint project with Phoenix and Glendale, is being designed by the City of Phoenix.

32nd Street Bridge, part of the preparation for construction of Reach 4 of the Arizona Canal Diversion Channel (ACDC), had the design of its first phase completed.

Land Acquisition

Some or all of the rights-of-way (ROW) were acquired for several projects:

East Fork Cave Creek channel ROW acquisition began in the area from Beardsley to Union Hills.

ACDC Reach 4 ROW was nearly all completed. Major efforts this year focused on negotiations with the Arizona Biltmore, which were concluded satisfactorily; negotiations with Western Savings are ongoing.

Flowage easements, giving the District the right to divert water onto privately owned property in floodplains, were

obtained for the Agua Fria and New River, completing the acquisition for this particular project.

All the necessary Guadalupe Channel easements were acquired, as well as those for the Signal Butte outlet structures. State lands were acquired for the Trilby Wash-McMicken Dam structure.

Acquisition took place for the Salt-Gila River Control Works low-flow channel in the 1,000-foot corridor from Gillespie Dam to 91st Avenue. This project is about 60 percent complete.

Construction

As property is acquired and designs are completed, construction and relocation of utilities can begin. Several projects started construction this year:

In preparation for the ACDC Reach 4 construction, work began on bridges at 12th Street, 32nd Street and Maryland Avenue. Work is nearly complete on the 16th Avenue bridge. The bridge and utility relocation at Glendale was started and finished this year.

Among the Bell Road Drainage Improvement projects, 59th Avenue storm drain is about 60 percent complete; 51st and 67th Avenue drains are completed. These works drain water from Bell Road to the ACDC.

Construction started this year and is 90 percent complete on the Guadalupe Road Box Culvert inlet to the East Maricopa Floodway near Power Road.

On the Salt-Gila Control Works, one fill area was completed and two more got underway. The low-flow channel from Miller to Rainbow Roads contract was awarded and completed. The contract was advertised for low-flow channel from Tuthill to Sarival Roads.

Joint Projects

The District has undertaken many projects with other cities or agencies. This cooperative effort yields a high return to the taxpayer in terms of project effectiveness.

Channelization of the Salt River for the Tempe Rio Salado project is about 50 percent complete, from 40th Street to Mill Avenue, and primary utility relocations are complete.

When channelization is completed to McClintock Road, as planned in the second phase, hundreds of acres will be taken out of the floodplain. The Department of Transportation will build the East Papago Freeway on reclaimed land on the north side of the river, saving considerable money on rights-of-way. Tempe will use the land taken out of the floodplain for recreation and development. These three entities will share the cost of the project.

Another three-way effort is the Old Cross Cut Canal. ADOT awarded two contracts this year for construction of the Hohokam Freeway from Salt River to McDowell Road on the canal alignment. These contracts include relocating and widening of the canal, for which the District will share costs with Phoenix and ADOT.

Price Road Drain, from Carriage Lane to the Salt River, is a District-ADOT-Chandler-Mesa partnership. This year, an 18-foot diameter tunnel was completed and inspected.

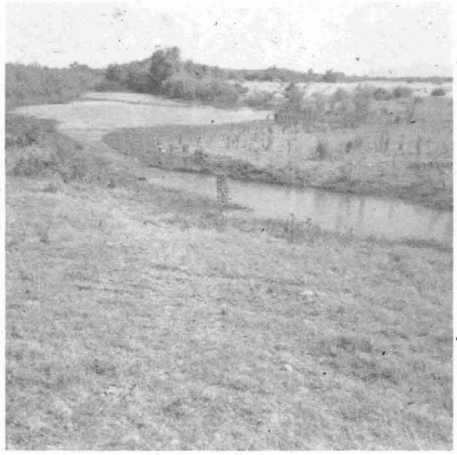
Glendale and Peoria will share costs with the District on the Olive Avenue Storm Drain, Outer Loop to 67th Avenue, which is 96 percent complete after its construction contract was awarded this year. All underground utility work is complete.

Construction is underway for the Scottsdale Airport Basin, among the last of the works in a project cost-shared with Phoenix, Scottsdale and Paradise Valley.

Ongoing Projects

As may be seen, it can take several years for a project to be completed. Many projects already were underway when this fiscal year began, and a progress report is in order.

Much work was accomplished on the ACDC. In Reach 1, which is an earthen channel from 53rd Avenue to Skunk Creek, a low-flow channel is now 75 percent complete. The landscaping, recreation and erosion control contract was awarded and work is 18 percent complete. Work began on waterline trenching, catch basins and other erosion control features.



The Salt-Gila Control Works help keep the rivers within their banks. (Above: Gila River at 319th Avenue)

On Reach 2B, from 43rd to 27th Avenues, the U. S. Army Corps of Engineers is negotiating with a contractor to implement aesthetic changes residents requested. Landscaping work has been completed.

On Reach 2C, from 27th Avenue to Cave Creek Wash, the Cave Creek Channel is now complete, and landscaping and fencing are nearly finished.

On Reach 3, from Cave Creek Wash to 12th Street, a contract was awarded and construction well underway; utility relocations are nearly complete.

Reach 4, from 12th to 40th Streets, the channel design has been completed and the construction contract advertisement scheduled. Landscape plans also were completed.

In the New River project, from Grand Avenue to Olive Road, channelization is 99 percent complete and the irrigation system is 36 percent finished.

To comply with the Clean Water Act on the Olive Road to Bethany Home Road portion of the New River project, the District applied for a 404 permit from the Corps of Engineers and received the 401 permit from Arizona Department of Environmental Quality.

Work on Skunk Creek, downstream of the confluence with the ACDC, is 78 percent complete. The old 83rd Avenue bridge has been removed and the substructure concrete and girders for new bridge are in place. The soil cement bank protection is near completion.

Mission: Maintenance

Personnel and Equipment Needs Increase

Five new areas were assumed as part of the District's Maintenance mission during the past fiscal year:

- New River channelization from Grand Avenue to Olive Road;
- Skunk Creek from New River to the Arizona Canal Diversion Channel (ACDC);
- Indian School Road drain from 105th Avenue to the New River;
- Salt-Gila River low-flow channel from Miller to Rainbow Roads;
- Reach 6 of the East Maricopa Floodway.

These are added to the already extensive maintenance responsibilities of the Division: 56 flood control facilities, including 21 dams, 480 miles of roads, 14,000 feet of underground pipe, plus bridges, fences and hundreds of miscellaneous floodway features such as 65,000 landscaping plants.

This mission accounts for 7 percent of the District's budget and 38 percent of its personnel. Maintenance staff increased 8 percent during the year.

These projects require much labor-intensive maintenance, including weed and brush control, and the removal of rubbish and debris. To help meet this need, the District uses Department of Correction (DOC) prisoner crews from ASPEN and Perryville correction facilities. This year, however, the District has "topped out" on the number of ASPEN crews that DOC can support, using 30 Perryville and 45 ASPEN inmates to perform 63,186 hours of work at 50 cents an hour. The DOC crews were augmented this fiscal year, for the first time, by a regular District crew of laborers.

Equipment needs also increase with responsibilities. A streetsweeping vehicle was added this year to the fleet for maintenance of the Arizona Canal Diversion Channel, as well as the paved service roads (many of which double as bicycle trails) the District maintains.

A 10-yard dumptruck replaced a smaller vehicle; a 3,500 gallon water truck replaced a 1,500 gallon truck; a larger backhoe was acquired to accommodate work on the Salt/Gila River clearing. Other fleet additions were four pickups, a four-wheel-drive crew cab; a three-quarter-ton four-wheel-drive and a Blazer.

Hours Worked by Department of Corrections' Prisoners Fiscal Year 89/90

Project	Annual Hours
ACDC	14,140
Adobe Dam	1,466
Agua Fria River	2,333
Buckeye Dams	1,974
Centennial Levee	1,404
El Mirage Drain	543
EMF	4,693
Harquahala FRS	576
Indian Bend Wash	2,499
McMicken Dam & Outlet	2,052
New River	1,699
Saddleback FRS & Diversion	1,796
Salt/Gila Control Works	589
Salt/Gila River Clearing	21,840
Signal Butte Floodway	629
Spook Hill FRS	913
Other	4,040
Total	63,186

Maintenance Responsibilities

Item	Inventory as of 6/89	Inventory Added FY 89/90	Total Inventory
Access Ladder	16	2	18 each
Bank Protection—Rip Rap	472,363	–	472,363 sq yd
Bank Protection—Grouted Rip Rap	128,180	5,615	133,795 sq yd
Bank Protection—Soil Cement	8,850	8,526	17,376 sq yd
Bank Protection—Shot Crete	4,987	–	4,987 sq yd
Bridges	23	1	24 each
Culverts	93	8	101 each
Curb & Gutter—Concrete	24,815	6,435	31,250 feet
Dip Crossings—Asphalt	4	–	4 each
Drainage Channel—Lined	84,109	7,414	91,523 feet
Drainage Channel—Unlined	20.3	0.5	20.8 miles
Drop Structure	61	2	63 each
Embankment	1201.0	24.4	1,225.4 acres
Energy Dissipator	37	–	37 each
Erosion Protection—Concrete Paving	8,000	31,600	39,600 sq yd
Fencing	1,149,839	127,000	1,276,839 feet
Floodway—Lined	42,125	15,010	57,135 feet
Floodway—Unlined	1,747	37	1,784 acres
Gabions	17,333	–	17,333 sq yd
Gated Outlet	20	–	20 each
Gates	403	41	444 each
Gila River Pilot Channel	22,724	20,000	42,724 feet
Grade Control Structures	20	1	21 each
Guardrail	2,420	100	2,520 feet
High Flow	599	–	599 acres

Response to EPA Pollution Control Proposal

During the past year, the District has responded to the Environmental Protection Agency's (EPA) National Pollutant Discharge Elimination System (NPDES) proposed permit application requirements for stormwater discharge. These requirements would require that any city with a population over 100,000 establish a permit program for entities that discharge water into its stormwater conveyances, in order to monitor and reduce pollutants entering these structures.

The District is taking an early interest in NPDES because it is expected that, by 1992, the requirements will be expanded to include entities besides cities that own and operate stormwater conveyances, such as flood control districts and state departments of transportation.

District staff have met regularly with representatives from the Arizona Department of Environmental Quality and cities that will be impacted by the new regulations, to discuss the implications and to develop a handbook for implementing Best Management Practices for improving the quality of urban stormwater.

The District also participated in the formation of the Coalition of Arid and Semi-Arid Entities (CASE), to petition the EPA to incorporate sufficient flexibility into the regulations to allow arid regions to meet minimum permit requirements. The coalition consists of five county agencies and thirteen cities from states throughout the west.

Clean Water Act—404 Permits

A 404 permit application made this fiscal year is still pending with the Corps of Engineers for the New River channelization from Olive to Bethany Home Roads.

The participation of the District's Environmental Branch in analysis and planning on the East Fork Cave Creek project, on which the District and Phoenix are cooperating for a flood control project of basins and a channel, helped to maintain the rural desert environment of the area and meet the criteria for a Nationwide 404 permit.

Surveying the Landscape

Among the Branch's tasks are taking inventory and surveys of vegetation at District projects. An inventory catalogues the number, type and size of all the vegetation in the area.

An inventory was completed on Reach 4 of the Arizona Canal Diversion Channel (ACDC) as part of the District's response to concern about the fate of hundreds of mature trees there, which might have been cleared for construction.

The Flood Control Advisory Board voted this year to recommend to the Board of Directors that an auction of the trees be conducted, at which commercial tree harvesters could bid for the opportunity to salvage trees from the rights-of-way and sell them.

In this way, the harvested trees retain their beauty and function even though they must be relocated. When completed, Reach 4 will be replanted with hundreds of fast-growing arid-climate young trees that, in a few years, will shade the popular recreation area along the canal bank.

Another inventory was conducted at the New River, in conjunction with the 404 permit application.

Vegetation surveys address such issues as species diversity, trends, general health and density. The vegetation is important in preventing soil erosion, thereby reducing maintenance requirements.

Surveys were conducted this year at Harquahala Dam, Saddleback Dam, Dreamy Draw Dam, Cave Buttes Dam, and Centennial Levee.

Maintenance Responsibilities

Item	Inventory as of 6/89	Inventory Added FY 89/90	Total Inventory
Landscape—Erosion Control	2,581	37	2,618 acres
Irrigation Heads	305	1,082	1,387 each
Irrigation Controls	4	6	10 each
Irrigation Lines	83,012	92,428	175,440 feet
Plantings	44,608	20,724	65,332 each
Low Flow—Structures	1,115	–	1,115 acres
Manholes	30	1	31 each
Meter Houses	9	1	10 each
Outlet Structures	9	–	9 each
Pool Area	59,957	–	59,957 acres
Principal Outlet	19	1	20 each
Principal Outlet—Pipe	13,405	728	14,133 feet
Railing—Pipe	844	36,081	36,925 feet
Ramps	32,592	3,688	36,280 feet
Retaining Wall	2,822	466	3,288 feet
Right-of-Way	32,527	852	33,379 acres
River Clearing	4,295	459	4,754 acres
Roads	404.4	23	427.4 miles
Sediment Basins	39	1	40 each
Side Inlet	510	150	660 each
Spillway—Earth	512	–	512 acres
Spillway—Lined	1,475	–	1,475 feet
Stormdrain Pipe	26,870	–	26,870 feet
Trash Racks	125	70	195 each
Underpass—Pedestrian	1	1	2 each
Vegetative Drains	59	–	59 each

Mission: Property Management

Clearing the Way

During the past year, Property Management has battled bees, demolished a cock-fighting arena, and arranged to auction some trees and to raze a church in order to clear rights-of-way for project construction.

The District must maintain property it acquires for capital improvement projects. The Property Management branch keeps District land secure and free from hazard, issues use permits, leases, sells or demolishes buildings, and generally makes the best use of the property for the District.

This year's activities include clearing rights-of-way for the Arizona Canal Diversion Channel (ACDC) Reaches 3 and 4 and beginning to clear property for the Upper East Fork Cave Creek (EFCC) project. Forty-seven mobile homes were cleared from the EFCC rights-of-way, 26 of which were leased to other government agencies. Preparations were started for a public auction to dispose of the 21 remainning mobile home units.

Homes acquired may be leased until it is time to demolish them for construction. Property Management leased all of its 52 properties during the fiscal year, earning the District $167,000. This program is phasing out as the ACDC nears completion, since most of the properties leased were in the ACDC rights-of-way.

An intergovernmental agreement was concluded with Tempe for a nine-hole golf course on District land in the Indian Bend Wash Outlet. Work began on a similar agreement with Phoenix for an 18-hole golf course at Cave Buttes Dam.

There were 53 licenses issued to those who desired access to District property, such as utility companies that want to install poles.

The District also worked with a developer on activities that affect the Guadalupe Dam.

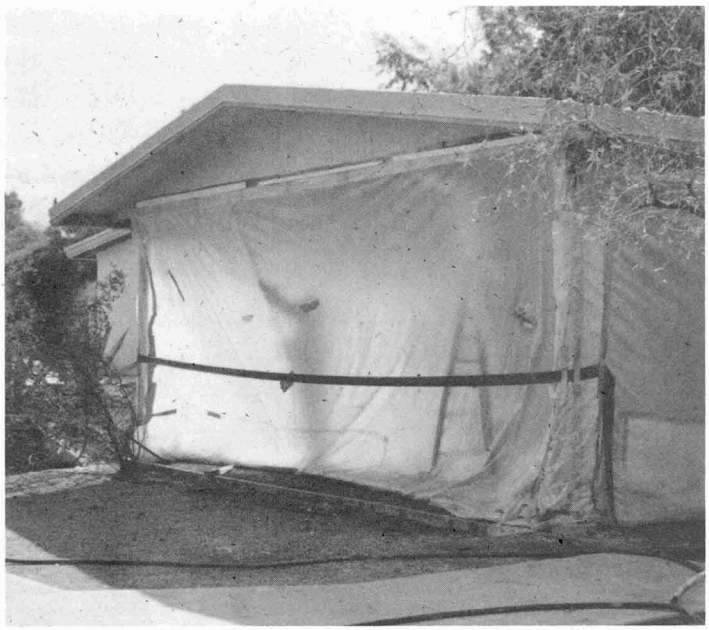
Expenditures on Land (Breakdown by Project)
Fiscal Year 1989/1990
(Preliminary and Unaudited)

Project	Parcels Acquired	Total Land Acquisition Costs	Land Acquired to Date, %
ACDC	37	$ 6,770,000	99
Agua Fria	31	3,421,000	99
EMF	1	129,000	100
New River/ Skunk Creek	7	1,204,000	100
Salt/Gila	19	2,051,000	85
Reed Landfill	3	102,000	100
Sossaman Road	3	20,000	100
EFCC	49	6,093,000	60
Other	N/A	18,000	N/A
Total	150	$19,808,000	

Rental Program
Fiscal Year 1989/1990
(Preliminary and Unaudited)

Project	Leasable Properties*	Leased*	Rents Received
ACDC	17	17	$ 92,000
EMF	3	3	39,000
Signal Buttes	2	2	11,000
Apache Junction FRS	2	2	9,000
Agua Fria River	1	1	4,000
East Fork/Cave Creek	1	1	9,000
Mobile Homes Leased to County Agencies for nominal fee	23	23	N/A
Other	3	3	3,000
Total	52	52	$167,000

*Average of beginning and end of fiscal year 89/90.



Silhouetted against a plastic shroud, a worker removes asbestos before the demolition of a building in the path of the Arizona Canal Diversion Channel.

Mission: Floodplain Management

Studies Result in New Floodplain Delineations

Floodplain delineation involves the study of an area's hydrology (how much rain and runoff occurs) and hydraulics (how the water flows). This complicated process includes ground and aerial surveys to produce topographical maps, analyzing hydrology and hydraulics, soil characteristics and historic data. All this information is processed with a computer to develop a model of the floodplain, which is checked at the site for "ground truth," physical characteristics to verify what the model indicates.

Determining the floodplains helps identify developments that may need protection, updates and expands flood insurance maps, and minimizes potential flood damages that may accrue as a result of allowing development near defined watercourses.

Delineations completed during the past year include: Waterman Wash, Morgan City, Rodgers, and Cline Washes (tributaries to Skunk Creek), Wittmann, upstream of Rittenhouse Road in the East Valley, and the Gila River between Painted Rock and Gillespie dams.

Delineations started and/or still in progress are: Upper Cave Creek (Cave Creek-Carefree area), Middle Cave Creek (between Cave Buttes Dam and the Arizona Canal), Aguila Farms Channel, Upper Centennial Wash/ Grass Wash (all in the far northwest corner of the county), Apache Wash, Skunk Creek, and Little San Domingo Wash (near Wickenburg).

When a floodplain is delineated, the District sends a request for a Letter of Map Revision (LOMR) to the Federal Emergency Management Agency (FEMA), and notifies the Arizona Department of Water Resources that the flood insurance map will be revised.

This fiscal year, the District requested LOMRs on the Little San Domingo Wash, Lower Gila River, Wittmann, Cave Creek-Carefree, Morgan City, Rodgers, and Cline Washes, Aguila Farms Channel, Lower Gila River, Skunk Creek-ACDC-New River, Queen Creek, and Lower Waterman Wash.

Activities Lower Insurance Rates

The creek may rise but flood insurance won't—at least, not as quickly—because of the District's participation in the National Flood Insurance Program's new Community Rating System (CRS).

This system was developed to rectify inequities in rates among communities that meet only minimum regulatory standards of flood protection and those that exceed the minimum.

Through the credit incentive, CRS aims to increase activities that reduce flood losses, facilitate accurate insurance rating and promote awareness of flood insurance. Several categories of activity are examined: public information, mapping and regulation, flood damage reduction and flood preparedness.

During this year, the District started examining its procedures to determine and document in what ways it already meets guidelines in the 18 subdivisions of these categories.

The District could accumulate credits qualifying policy-holders for reductions of up to 45 percent of the flood insurance premium. An initial estimate indicates that the District's current activities may qualify for at least partial credit in 16 of the categories, amounting to 20 percent already. The program is set up to recognize only 5 percent reductions the first year, which begins in October 1991.

As a frame of reference, there are:

- 700 linear miles (295,253 acres) of delineated floodplains* in the county, 200 (34,554 acres) of them in incorporated areas.
- 15,000 flood insurance policies issued throughout the County, 630 of them in the unincorporated area.
- 1,782 insurable buildings in the unincorporated area in floodplains, 228 of them residential.
- 866 residents in the unincorporated area living in floodplains.

*A floodplain is the area likely to be inundated in the 100-year event.

Watercourse Master Plan Legislation Enacted

A bill has been signed into law that provides the tools to stop damages from occurring downstream of new development or other encroachment. District staff and counsel researched and lobbied to pass Senate Bill 1277, which amends the District's enabling legislation.

When delineating floodplains, the District now may take into consideration the cumulative impact of future as well as existing development. The hydraulic information obtained during the delineation will be incorporated into a watercourse master plan, and will establish technical criteria for future development.

The District's Board of Directors may adopt the watercouse master plan, which will guide development of the floodplain to minimize potential flood damages.

Mission: Drainage Administration

Manual Offers Standardization

One of the District's major nonstructural projects is the development of a drainage design manual, for use by jurisdictions and developers countywide. The manual is comprised of two volumes—one on hydrology and one on hydraulic design.

The hydrology volume provides technical procedures, developed especially for Maricopa County, for the estimation of rainfall and resulting flood and runoff amounts. Using information obtained by these techniques, the hydraulics design volume, still in the draft stage, provides a convenient source of technical information for designing structures to handle runoff events.

The drainage design manual had its roots in the county's Uniform Drainage Standards, effective for unincorporated areas of the county. Input from cities and towns was used to formulate the standards, and the District anticipates that process will enhance the prospects of other jurisdictions adopting the drainage design manual.

Criteria for the design manual are based on best available data that is specifically tailored to the unique hydrologic, environmental and social character of Maricopa County.

Drainage Administration staff review development master plans, subdivision plans and other zoning cases to ensure that development will not affect adversely the residents who live downstream. Three major concerns are addressed:

- Increased runoff as a result of building and paving must be accommodated by detention or retention basins to prevent flooding downstream.
- Off-site flows must continue to enter and exit the property in the same place.
- Buildings must be floodproofed by putting the floors above the 100-year event level.

Drainage Management Work Load

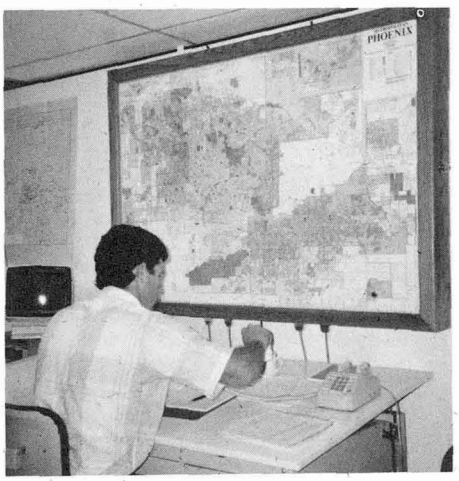
Activity	Fiscal Year 87/88	88/89	89/90
Zoning Cases Reviewed (including resubmittals)	357	250	259
Subdivision Cases Reviewed	94	68	50
Master Plans Reviewed	2	16	4
Board of Adjustment Cases Reviewed	128	160	190
Drainage Inspections	579	1177	3679*

* New drainage regulations implemented in 10/88.

Mission: Flood Warning

Gauging the weather

During the past year, 24 telemetered rain gauges were installed, for a total of 102. Additionally, 16 stream gauges were installed, for a total of 39. These gauges are located throughout the County and adjacent watersheds. Some of the gauge program is implemented through intergovernmental agreements with Phoenix, Mesa and the U.S. Geological Survey (USGS) and the Arizona Department of Water Resources (ADWR). Agreements are underway with Phoenix and Mesa to install more rain gauges.



These telemetered gauges transmit information electronically to the District, which shares information with the National Weather Service. As of this year, the District has installed about three-quarters of the rain gauges it plans as part of an overall flood warning system. Pima County, ADWR and the USGS have requested the District's technicians to service their rain and stream gauges because of the District staff's expertise.

Survey Planned

The District hired a consultant this year to develop a survey of cities and agencies in the county regarding their perceptions about flooding and flood warning. The purpose is to gather information and evaluate their level of knowledge and needs about the subjects so that the District can develop an effective flood warning program.

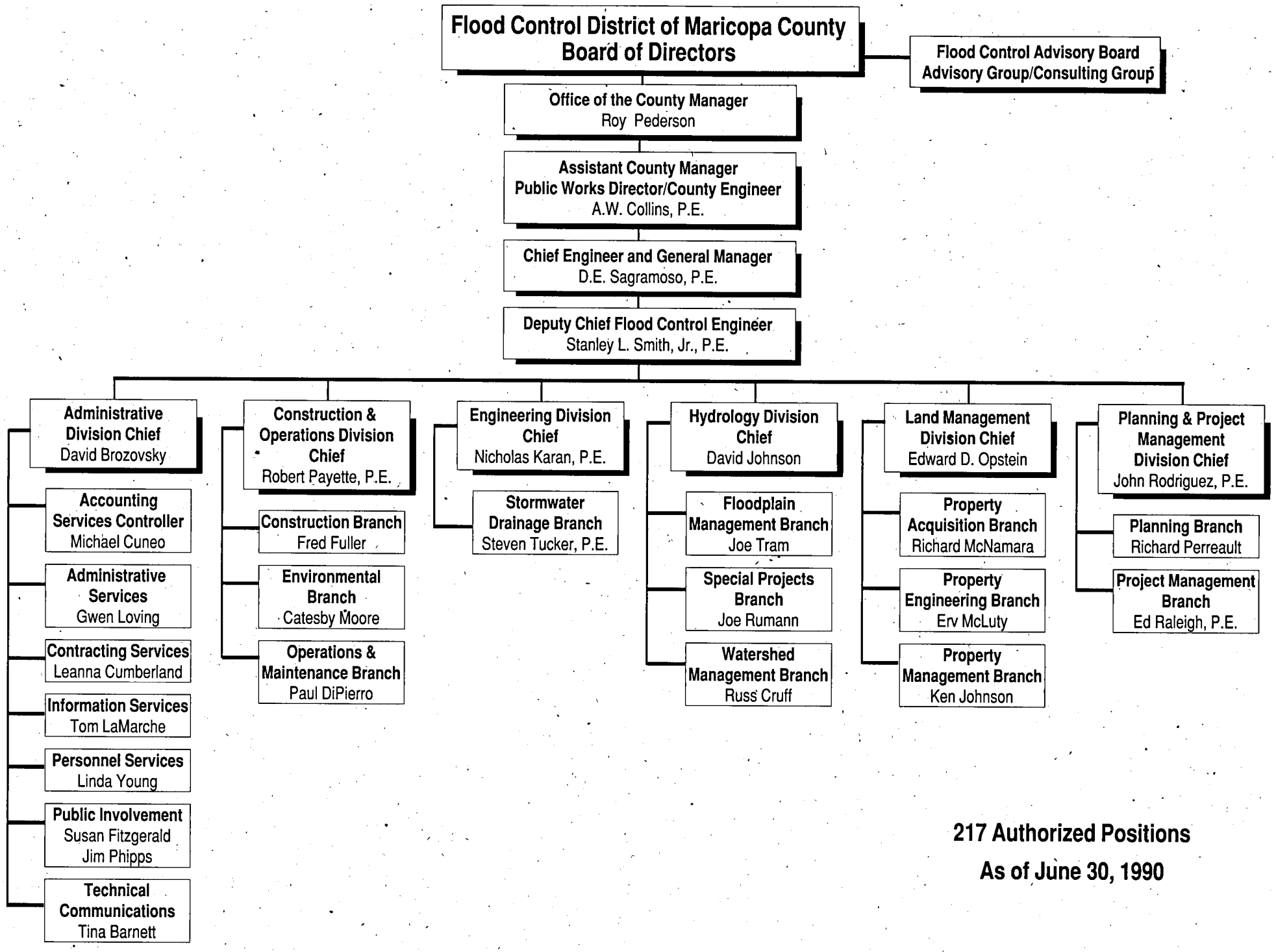
Dam-Break Analyses

Dam break analyses are conducted to comply with structure licensing requirements of ADWR.

During the past year, analyses were completed on Guadalupe Dam, Buckeye Flood Retention Structures 1, 2, and 3, Powerline Dam, Rittenhouse Dam and Vineyard Dam.

Inundation maps were developed as a result of these analyses, and used by the County's Department of Civil Defense and Emergency Services to develop warning and evacuation plans.

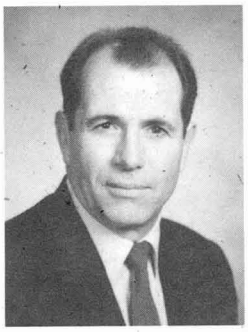
Analyses were initiated last year of Cave Buttes Dam, Harquahala Dam, Saddleback Dam, Spookhill Dam, and White Tanks Dams 3 and 4.



217 Authorized Positions

As of June 30, 1990

Board of Directors

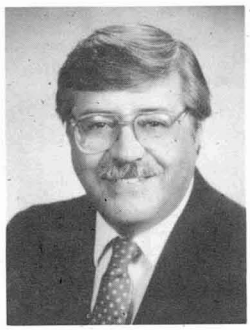


Tom Freestone
District 1

James D. Bruner
District 2
Chair

Betsey Bayless
District 3

Carole Carpenter
District 4



Ed Pastor
District 5

The Flood Control District of Maricopa County, founded in 1959, is a municipal corporation and political subdivision of the State of Arizona. The District is governed by a five-member Board of Directors which consists of the elected Supervisors for the County.

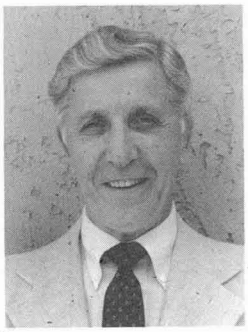
The District has all the powers, privileges and immunities granted generally to municipal corporations. The Board of Directors exercises all powers and duties in the acquisition and operation of District properties, contracting, and in carrying out regulatory functions as ordinarily exercised by governing bodies. The activities of the District are funded by a flood control tax levy assessed on all real property within Maricopa County and a variety of cost sharing arrangements with the State, Maricopa County, and local governments. The tax levy rate for Fiscal Year 89/90 was $0.4303 per $100 assessed value of the property. For a history of the flood control tax levy, see the table on the inside of the front cover.

Flood Control Advisory Board

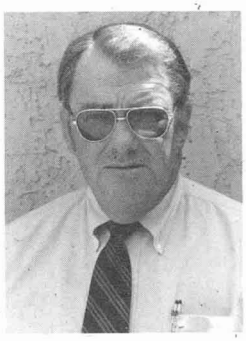
The Flood Control Advisory Board (FCAB) advises the Board of Directors on flood control, water conservation, floodplain management, drainage, and related matters. It reviews planning, operations, and maintenance of flood control facilities, and recommends an annual budget to the Board of Directors.

The Advisory Board consists of seven members, appointed by the Board of Supervisors to five-year terms. At least one member must be a resident of the City of Phoenix. The Phoenix City Engineer and the General Manager of the Salt River Project, or their representatives, are ex-officio members of the Advisory Board.

Charles A. Sykes (not pictured) represented District 3 during fiscal year 1989/90. Kenny Harris (not pictured) is currently the ex-officio member on the FCAB for the City of Phoenix.



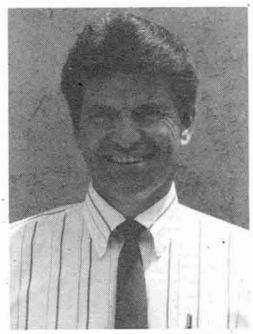
William LoPiano
District 1



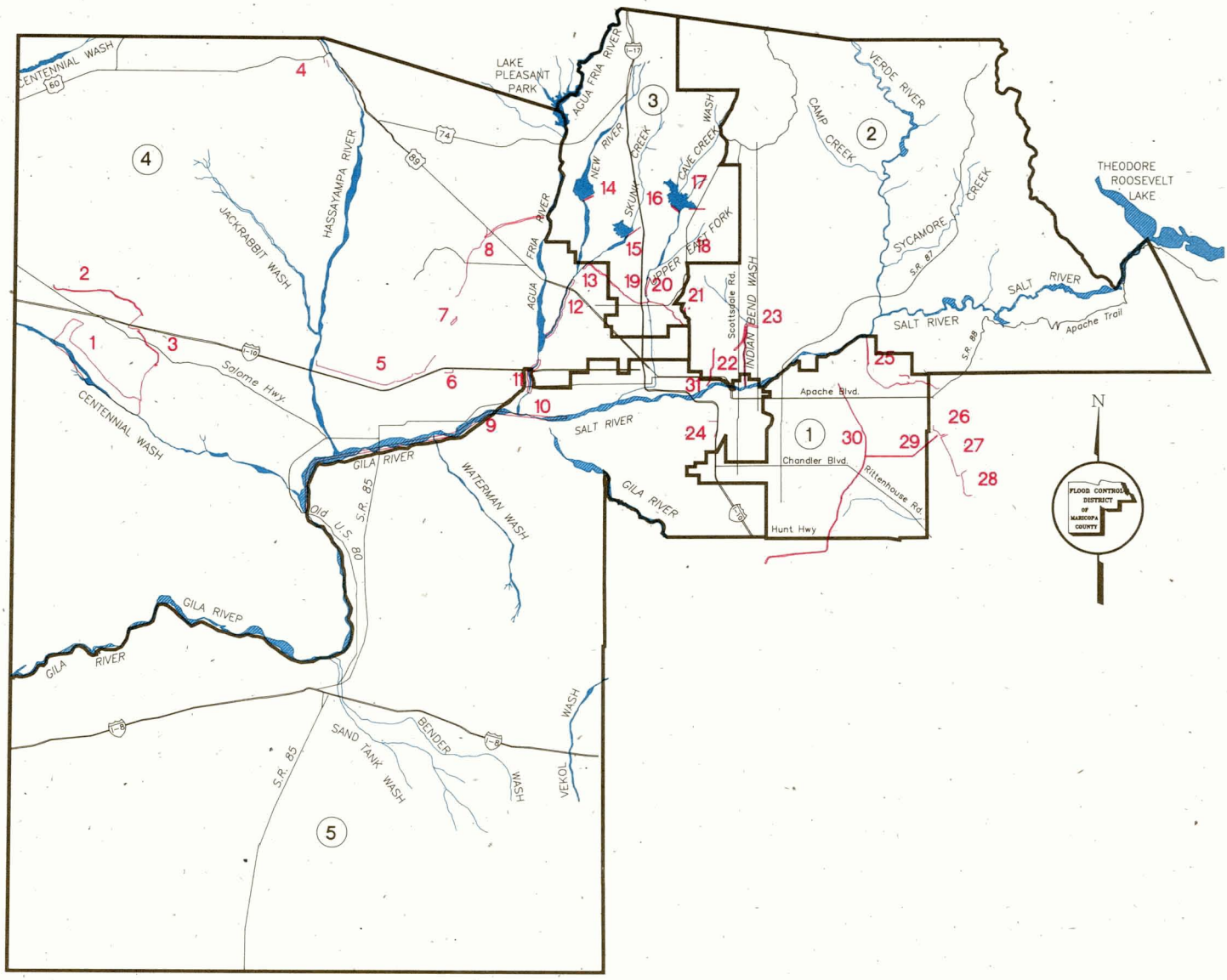
John E. Miller, Jr.
District 2

Lynn Anderson
District 4

Marcela Peters
District 5



Paul Cherrington
Salt River Project



Flood Control District of Maricopa County Projects (As of June 30, 1990)

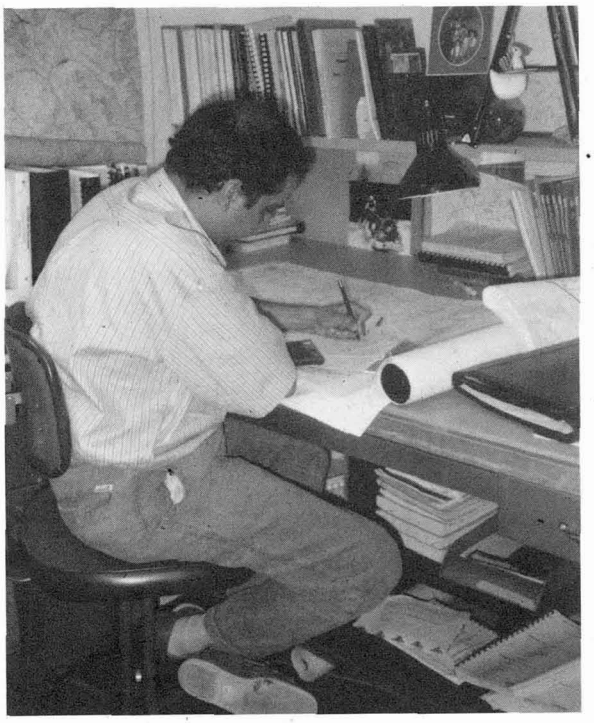
1. Centennial Levee (Partly complete)
2. Harquahala Dam and Floodway (1982)
3. Saddleback Dam and Diversion (1981)
4. Sunset and Sunnycove Dams (1976)
5. Buckeye Dams 1, 2, and 3 (1975)
6. White Tanks Dam 4 (1954)
7. White Tanks Dam 3 (1954)
8. McMicken Dam (1956)
9. Salt-Gila Clearing (1985)
10. Holly Acres Levee and Bank Stabilization (1985)
11. Agua Fria Channel Projects (1988)
12. New River Channelization (Partly complete)
13. Skunk Creek Channelization (Partly complete)
14. New River Dam (1985)
15. Adobe Dam (1984)
16. Skunk Creek Channels and Levee (1983)
17. Cave Buttes Dam (1980)
18. East Fork Cave Creek (Study)
19. Arizona Canal Diversion Channel (Partly complete)
20. Cave Creek Channelization (Partly complete)
21. Dreamy Draw Dam (1973)
22. Old Cross Cut Canal (1975)
23. Indian Bend Wash (1985)
24. Guadalupe Dam (1975)
25. Buckhorn-Mesa Projects
    - Spook Hill Dam (1979)
    - Signal Butte Floodway (1984)
    - Signal Butte Dam (1987)
    - Pass Mountain Diversion (1987)
    - Bull Dog Floodway (1988)
    - Apache Junction Dam (1988)
26. Powerline Dam (1967)
27. Vineyard Dam (1968)
28. Rittenhouse Dam (1969)
29. Powerline Floodway (1968)
30. East Maricopa Floodway (1989)
31. Salt River Channel (Partly complete)

District Personnel

Every Tuesday morning, the District's Chief Engineer and General Manager, Deputy Chief Engineer, and Division Chiefs meet to address District-wide concerns.

Principal District Staff

D.E. Sagramoso, P.E., Chief Engineer and General Manager
Stanley L. Smith, Jr., P.E., Deputy Chief Engineer
David A. Brozovsky, Flood Control Administrator
Robert C. Payette, P.E., Chief, Construction and Operations Division
Nicholas P. Karan, P.E., Chief, Engineering Division
David R. Johnson, Chief, Hydrology Division
Edward D. Opstein, Chief, Land Management Division
John E. Rodriguez, P.E., Chief, Planning and Project Management Division



Hydrologist Afshin Ahouraiyan works in the Watershed Management Branch of the District.

NACo Awards

Two award-winning programs were developed during the past year, winning recognition from the National Association of Counties (NACo) for four staff members. The organization recognizes significant, innovative activities that improve organization, management or services.

The East Maricopa County High Resolution Hydrologic Model was developed by Hydrologist Besian Khatiblou based on information developed in an Area Drainage Master Study (ADMS). This model will help the District to simulate various rainfall events in order to assess the degree of protection provided by existing structures and by proposed structures. Furthermore, it can locate critical areas that may be damaged during severe flooding and test the effects of future development (such as freeways, housing and businesses) on current drainage facilities and make certain that proposed structures will not create an adverse impact on the overall drainage system.

Water Resources Planner Greg Rodzenko, and Hydrologists Russ Cruff and Joe Tram collaborated to create a manual that would be used to standardize the means of determining roughness coefficients (or "friction factors") for stream channels in the County. While national and regional roughness coefficient manuals had been compiled previously, there was no single document that specifically addressed this issue for Maricopa County. The District contracted with the U.S. Geological Survey to create a technical document that would standardize the calculation of the roughness coefficient from a technical standpoint with pictorial representations of appropriate values. Standardization of the roughness coefficients will ensure that floodplain delineations throughout the County are consistently and uniformly performed.

Flood Control Operations Specialist I David Pettijohn operates a backhoe near the Guadalupe Box Culvert to clear the channel after a summer monsoon.

Flood Control District of Maricopa County
Statement of Revenues, Expenditures and Changes in Fund Balance
Budget and Actual
Fiscal Year Ending June 30, 1990
(Preliminary and Unaudited)

	Budget	Actual	Variance Favorable <Unfavorable>
Revenues			
Flood Control District Tax Levy	$ 51,155,000	$ 46,408,000	$ <4,747,000>
State Share of Costs			
Federal Projects	0	0	
Local Projects	0	0	
County Reimbursement	60,000	87,000	27,000
Local Participation	9,026,000	6,479,000	<2,547,000>
Rental	250,000	167,000	<83,000>
Interest Earnings	2,000,000	3,326,000	1,326,000
Sale of Excess Land	1,190,000	0	<1,190,000>
Miscellaneous	60,000	247,000	187,000
Total Revenues	63,741,000	56,714,000	< 7,027,000>
Expenditures			
Personnel Services			
Salaries and Wages	7,614,000	6,375,000	1,239,000
Overtime	56,000	1,000	55,000
Total	7,670,000	6,376,000	1,294,000
Supplies and Services			
Professional Services Contracts	3,201,000	2,833,000	368,000
Maintenance Contracts	1,312,000	826,000	486,000
Maintenance Supplies	560,000	214,000	346,000
Insurance	40,000	69,000	< 29,000>
Other Supplies and Services	718,000	810,000	< 92,000>
Total	5,831,000	4,752,000	1,079,000
Capital Outlay			
Real Estate	14,791,000	19,464,000	<4,673,000>
Engineering	5,523,000	3,019,000	2,504,000
Motor Vehicles and Equipment	2,020,000	1,283,000	737,000
Construction and Other Capital Outlay	44,396,000	31,316,000	13,080,000
Total	66,730,000	55,082,000	11,648,000
Total Expenditures	80,231,000	66,210,000	14,021,000
Excess <Deficiency> of Revenues over Expenditures	< 16,490,000>	< 9,496,000>	6,994,000
Fund Balance at Beginning of Year	40,431,000	41,552,000	1,121,000
Fund Balance at End of Year	$ 23,941,000	$ 32,056,000	$ 8,115,000

Flood Control District of Maricopa County
Expenditures by Activities and Functions*
Fiscal Year 1989/1990
(Preliminary and Unaudited)

	Operations Expenditures		Capital Improvements Program		
Activity	**Administrative**	**Maintenance**	**Engineering**	**Lands**	**Relocation & Construction**
ACDC	$ 32,000	$ 619,000	$ 1,216,000	$ 6,770,000	$ 6,524,000
Administrative Overhead/Facility	3,611,000	28,000	7,000		973,000
Adobe Dam	2,000	54,000			
Agua Fria River Flowage Easements	60,000	4,000	6,000	3,421,000	261,000
Agua Fria River	3,000	116,000			
Agua Fria River (ADOT Agreement)		3,000			
Alma School Drain	1,000	10,000			
Apache Jct. FRS, Floodway, Outlet and Bulldog Floodway	1,000	27,000			136,000
Bell Road Expansion			191,000		2,135,000
Buckeye #1		27,000			
Buckeye #2		11,000			
Buckeye #3		12,000			
Cave Buttes Dam	78,000	38,000			
Centennial Levee		16,000			
City of Mesa	1,000				
City of Phoenix			122,000		
City of Scottsdale	2,000				
City of Tempe					1,016,000
Computer Systems	157,000				
Dreamy Draw Dam		8,000			
Dysart Road–Agua Fria Drain		6,000			
East Maricopa ADMS	1,000				
East Fork Cave Creek ADMP	1,000	35,000	199,000	6,093,000	3,000
El Mirage Road Drain Channel		3,000			
EMF–Apache Jct./Gilbert			4,000		4,000
EMF–Buckhorn/Mesa	6,000		11,000	129,000	13,000
EMF–Williams/Chandler	2,000	188,000	1,000		127,000
Enforcement of Floodplain Regulations	44,000				
FCD Yard Maintenance		154,000			
Flood Insurance	1,380,000				
Flood Warning System	118,000	78,000			174,000
Floodplain Administration	202,000				
Floodplain Delineation	363,000				
48th Street Drain	1,000	27,000			
Glendale-Peoria ADMP	2,000		357,000		6,232,000
Guadalupe Dam	115,000	8,000			
Harquahala FRS	4,000	25,000			
Harquahala Floodway	2,000	4,000			
Hydrologic Data Collection	182,000	10,000			
Indian Bend Wash Greenbelt	1,000	3,000			
Indian Bend Wash Inlet	1,000	15,000			
Indian Bend Wash Interceptor and Side Channels	5,000	25,000			
Indian Bend Wash Outlet	4,000	14,000			
Laveen Area Drainage Master Study	35,000				
Maintenance Overhead	19,000	1,536,000			

Flood Control District of Maricopa County
Expenditures by Activities and Functions*
Fiscal Year 1989/1990
(Preliminary and Unaudited)

	Operations Expenditures		Capital Improvements Program		
Activity	**Administrative**	**Maintenance**	**Engineering**	**Lands**	**Relocation & Construction**
McMicken Dam	9,000	23,000			
McMicken Dam Outlet Channel	3,000	36,000		17,000	
New River Dam	1,000	44,000			
New River ADMS	4,000				
Old Cross Cut Canal	10,000	15,000	3,000		2,282,000
Paradise Valley–Scottsdale–Phoenix					309,000
Pass Mountain FRS and Outlet		5,000			27,000
Plan VI Funding	1,000		1,000		3,103,000
Powerline Dam	1,000	19,000			
Powerline Floodway		18,000			
Price Drain	1,000		77,000		2,999,000
Queen Creek ADMP	7,000		122,000		
Reed Landfill		2,000	122,000	102,000	731,000
Rittenhouse FRS		38,000			
Saddleback Diversion Channel		32,000			
Saddleback FRS		52,000			
Salt/Gila Clearing and Channelization	2,000	218,000			
Salt/Gila Control Works	7,000	19,000	61,000	2,051,000	632,000
Salt/Gila River Planning	8,000				
Salt River Channel–ADOT	43,000				232,000
Signal Butte Floodway	2,000	11,000			
Signal Butte FRS		12,000		1,000	123,000
Skunk Creek Channel at I-17		7,000			
Skunk Creek and New River Flowage Easements	30,000	18,000	435,000	1,204,000	3,209,000
Sossaman Road	28,000	15,000	29,000	20,000	480,000
Spook Hill FRS & Outlet	1,000	17,000			
Spook Hill Watershed ADMS	1,000				
Sunnycove FRS	1,000	4,000			
Sunset FRS	3,000	5,000			
Sunset/Sunnycove Pipeline	4,000	6,000			
Town of Cave Creek	1,000				
Town of El Mirage	1,000				
USGS Service Work	227,000				
Vineyard Road FRS		33,000			
Watershed Hydrology	371,000				
White Tanks Dam #3	5,000	9,000			
White Tanks Dam #4	4,000	8,000			
White Tanks–Agua Fria ADMP	12,000		287,000		
Wickenburg ADMS	9,000				
Work done for County Highway Department	3,000				
Work done for Planning and Development	420,000				
Total	$ 7,656,000	$ 3,770,000	$ 3,251,000	$19,808,000	$31,725,000

*Expenditures by Activities and Function will not always agree with Expenditures by Task in the Financial Highlights chart (inside front cover) except in total.

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

Flood Control District of Maricopa County

Annual Report 1990/91

003.110

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Published by:

The Flood Control District of Maricopa County, 3335 West Durango Street, Phoenix, Arizona 85009, (602) 262-1501.

Susan Fitzgerald, writing, photography. Tina Porter, editing, layout, and design.

This report was printed on paper made of recycled fiber.

On the Cover

This oasis, otherwise known as the Superstition Springs Golf Course, is an example of combining recreational uses with flood control structures. The privately developed golf course contains floodwaters as part of the East Maricopa Floodway—a 27-mile earthen channel in the East Valley built in partnership with the U.S. Soil Conservation Service and completed in 1989. For more information on this structure, see page 4.

Photo by Jim Phipps.

Financial Highlights

Fiscal Year 1990/1991
Preliminary and Unaudited

	Dollars	Percent
Revenue		
Flood Control Tax	$45,797,000	91
Rental Income	160,000	—
Interest	2,633,000	5
State Assistance—Local Projects	0	0
County and Local Participation	1,228,000	3
Sale of Excess Land	168,000	—
Miscellaneous	216,000	1
Total Revenue	50,202,000	100
Expenditures		
Administration and Maintenance	15,970,000	27
Flood Control Capital Improvements	42,731,000	73
Total Expenditures	58,701,000	100
Excess (Deficiency) of Revenues over Expenditures	(8,499,000)	
Fund Balance at Beginning of Year	32,056,000	
Fund Balance at End of Year	23,557,000	
Expenditures by Task		
Administration	9,872,000	17
Land Acquisition	12,765,000	22
Relocation of Utilities, Bridges, and Other Facilities	4,893,000	8
Engineering	2,438,000	4
Construction	22,635,000	39
Maintenance	6,098,000	10
Total	$58,701,000	100

Contents

Introduction 1
Planning & Project Management 2
Project Highlights 3
Project Map 7
Engineering 8
Hydrology 9
Land Management 11
Construction & Operations 12
Administration 14
Board of Directors 16
Flood Control Advisory Board 16
Organizational Chart 17
Statement of Revenues & Expenditures 19
Expenditures by Activities and Functions 20

Property of
Flood Control District of MC
Please Return to
2801 W. Durango
Phoenix, AZ 85009

Partnership: A Winning Proposition

Lewis & Clark. Gilbert & Sullivan. Burns & Allen.

What do these have in common? They're partners. In every successful partnership, each party brings its specialty to the team and together they create something that neither could have done without the other.

That's what the Flood Control District of Maricopa County strives to achieve when it teams up with such players as Phoenix, Mesa, Tempe, Glendale, Peoria, Scottsdale, Maricopa County, the State of Arizona, the U.S. Army Corps of Engineers, the U.S. Soil Conservation Service, and the U.S. Weather Service.

While the dams and channels, basins and storm drains, studies and plans that are the fruit of these partnerships may not be physically impossible without each party, the financial burden on any one party alone would be enough to render such projects infeasible.

But partnership is more than combining funds, or even technical expertise. Each government agency has its own constituency to satisfy, whose needs must be communicated and negotiated. In an effective partnership, enough needs of each party are met to justify the necessary accommodation to the others.

The not-so-silent partners are the citizens, on whose behalf these efforts are made. The day is long past when the government can plunk down a public works project without regard for residents. Citizen involvement is a vital component of any major project. Presentations are made, input is solicited, and ideas are incorporated into the finished project.

This annual report highlights some of the major partnerships in which the District has participated during the 1990/91 fiscal year, whether structural, such as channelization of the Salt River, or conceptual, such as the adoption and distribution of the first volume of our Drainage Design Manual.

Partnership among government agencies is a case of the whole being greater than the sum of its part(ner)s. In one of the nation's 10 largest counties, encompassing the 22nd largest metropolis and a sizeable river system, there can scarcely be such a thing as a unilateral public works program.

The Flood Control District actively seeks to foster the partnership that makes possible a county-wide, comprehensive response to flooding, drainage, and planning for the future.

Planning & Project Management

The District has many partners throughout the county who help in design, implementation, and funding of needed flood control projects. Whether the partner is a governmental entity or a private citizen, their involvement is always important.

The following pages feature only a few of the District's many completed or in-progress projects—but each project's story illustrates how the District provides optimum flood protection at reduced costs by obtaining partners with shared needs and goals.

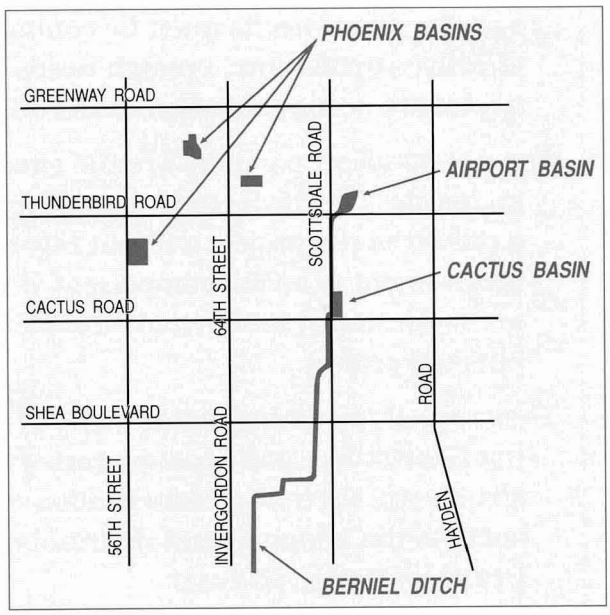
← *The City of Scottsdale is responsible for maintaining the aesthetic and recreational amenities at the Cactus Basin.*

PVSP: Partnership Proves Profitable

A recently completed detention basin at the end of Scottsdale Municipal Airport is also the end of the road for a regional flood control project that spanned several years and established itself as an outstanding example of interjurisdictional cooperation.

First discussed in 1976, the Paradise Valley-Scottsdale-Phoenix (PVSP) Flood Control Project consists of five detention basins and about 2.5 miles of channels and pipes that drain storm runoff south of the Central Arizona Project to the Indian Bend Wash.

Paradise Valley-Scottsdale-Phoenix Flood Control Projects



The project originally included the City of Phoenix as one of the main contributors; however, Phoenix withdrew from the partnership in order to construct three of the basins and the interconnecting storm drain piping with its own funding and on its own time schedule. By 1983, those three basins were complete and now double as Sandpiper, Sereno, and Crossed Arrows parks.

The first of the features to be built under the PVSP agreement was the Cactus Basin Outlet in Scottsdale. The outlet routes stormwater through a series of channels and 60-inch pipes south along Scottsdale Road/71st Street down to the Berniel Ditch. Berniel Ditch was later improved to accept increased flows and direct stormwater into Indian Bend Wash.

Construction of the 17-acre Cactus Basin and the pipes and channels that would later serve as an outlet for the Scottsdale Airport Basin, was begun in 1984. The City of Scottsdale has since turned Cactus Basin into a park complete with an Olympic size swimming pool, picnic facilities and a recreation building with classrooms and exercise rooms. All of the buildings were constructed on a raised plateau in the middle of the basin in order to avoid flood damage.

The formula used to determine each municipality's cost share was based on four elements: the drainage area, assessed valuation of the property that would be protected by the project, the amount of stormwater runoff generated under existing conditions, and the anticipated amounts of future runoff.

The final cost of the project, including the features installed by the City of Phoenix, was $4.7 million.

Construction begins on East Fork Cave Creek

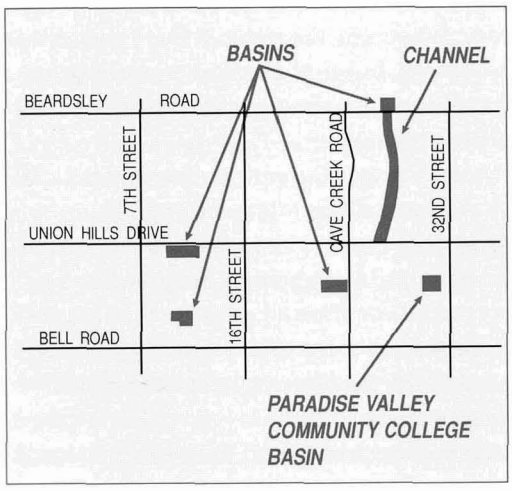
A joint effort to control storm runoff and reduce flooding is underway after agreements were signed this spring with the City of Phoenix and the Maricopa County Community College District, acting for Paradise Valley Community College.

The East Fork Cave Creek (EFCC) Flood Control Project consists of a series of five basins as well as channel improvements between Union Hills Drive and Beardsley Road. When completed, the EFCC will attenuate peak flows by detaining stormwater in the basins and release runoff from the basins slowly so it can be accommodated by the city's stormdrain system. Completion of the project will also remove property from the floodplain.

The City of Phoenix and the District will share equally the $15 million cost of four of the basins and the channel improvement. The fifth basin is located on the grounds of Paradise Valley Community College and will be constructed at a cost of $2 million—to be paid by the District. Because it sits on a community college campus, obtaining land use rights for this basin required lengthy, intricate negotiations.

All five basins and the improved channel will convey stormwater to Phoenix's Greenway Channel via the city's stormdrains. From there, flows are directed to Cave Creek Wash, which empties into the District's Arizona Canal Diversion Channel (ACDC). The ACDC will then convey the stormwater safely across northcentral Phoenix, Glendale, and Peoria to Skunk Creek Wash.

East Fork Cave Creek Channel and Basins



↑ *Installation of a 48-inch pipe will allow stormwater to drain from the basin on the campus of Paradise Valley Community College into the Phoenix stormdrain system.*

The EFCC project was one of several alternatives developed as a result of the District's Area Drainage Master Study of the 16 square-mile area from the Central Arizona Project to Greenway Road, and from east of 32nd Street to about 19th Avenue. Extensive public involvement efforts during the study phase confirmed that residents wanted a flood control system that might also double as a recreational amenity.

While the District has no authority to fund recreational facilities, its agreement with Phoenix allows the city to fund amenities—such as jogging, biking, and equestrian trails and picnic areas—in its basins and the channel.

Landscaping plans for the EFCC range from park-like in the Phoenix basins to low-water use or desert foliage in the channel and the College basin.

Project Highlights

Reach 2C of the Arizona Canal Diversion Channel (from Metrocenter to the confluence with Cave Creek) was completed in May 1991.

The Cave Creek Sediment Basin north of Cactus Road was completed and an adjacent Phoenix park was dedicated in May 1991.

The 83rd Avenue Bridge was upgraded to handle ACDC stormwater discharge. Final inspection was held in December 1990 and the bridge was accepted by the District and the City of Peoria as 100% complete.

The Salt/Gila Low Flow Channel from Tuthill to Sarival Roads was completed in March 1991.

The Union Hills Storm Drain, which channels stormwater runoff to Skunk Creek and 59th Avenue from the Outer Loop at 51st Avenue, was completed in December 1990. The project was cost-shared by the cities of Phoenix and Glendale.

Project Highlights

Construction was completed in September 1990 on the Olive Avenue Storm Drain which channels stormwater runoff to New River. One of the projects identified in the Glendale/Peoria ADMS, this project was cost-shared by Peoria (25%) and Glendale (25%).

Landscaping, aesthetic treatment, and erosion control were completed on the Buckhorn-Mesa structure in January, 1991. The Soil Conservation Service shared costs in this project.

The Board of Directors adopted the *Comprehensive Flood Control Program Report* in May 1991, making the report available for public distribution.

Cooperation Leads to Landscaping Features for Floodway

The District will soon install landscaping on a section of the East Maricopa Floodway (EMF) to control erosion and reduce dust. The landscaping will also provide an attractive backdrop for recreational uses that the City of Mesa may plan in the future.

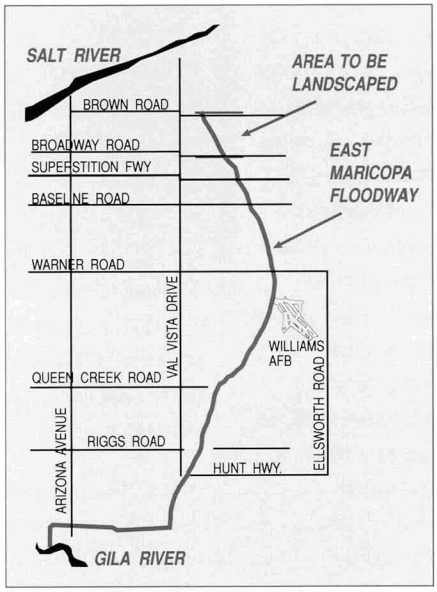
In 1989, residents of neighborhoods near the EMF between Brown and Broadway Roads presented to County Supervisor Tom Freestone and Congressman John Rhodes a petition that protested the appearance of and the dust from the project. The petition was signed by more than 880 residents.

Although the Environmental Impact Statement required landscaping for the project, the Soil Conservation Service (SCS)—the federal partner responsible for landscaping—did not have funds available upon completion of the project. Nor would they have funds available for several years.

In response to the petition, the staff approached the Flood Control Advisory Board and the Board of Directors, seeking authority to landscape the area. The Boards approved the appropriation of funds and a landscaping design contract for the area was awarded in November 1990.

The design, completed in June 1991, includes varieties of Acacia and Palo Verde trees; ground cover such as Sweet Acacia with accents of Ocotillo, Cassia, Bird of Paradise; and seeded grasses and shrubs like Bursage, Creosote, and Fillaree. During the design phase, the District worked hand in hand with the SCS and with a residents committee appointed by the City of Mesa to ensure that the project addressed all of the residents' concerns.

East Maricopa Floodway



Installation of the landscaping and the erosion and dust control features is expected to be completed by February 1992. The District will pay the landscaping costs of $906,000, but the District's expenses may be reduced through a unique "tree donation" program. Although details of the program are not yet final, citizens will be able to donate money to the project and choose the type of tree they would like installed—as long as they choose from a list of low-water-use and heat-resistant plants provided by the District. Not only does this reduce the cost to the District, but it allows the area residents to become an involved partner in this landscaping project.

Under an agreement with the District, the City of Mesa will be allowed to install recreational amenities on the project at its own expense. Any changes proposed by the city require the District's review and approval to ensure that these additions do not diminish the flood control capacity of the floodway.

← *This desolate stretch of the East Maricopa Floodway will soon be planted with Palo Verde and Acacia trees as well as Ocotillo, Cassia, and Bird of Paradise.*

Permit Allows Project to Proceed

In October 1990, the City of Tempe and the District entered into an agreement for the improvement of the Salt River from McClintock Drive to the railroad bridge just west of Mill Avenue. This partnership could only be formed, however, after a lengthy discourse between the city, the District, the U.S. Army Corps of Engineers, and the Environmental Protection Agency (EPA).

Because the Salt River is classified as "Waters of the U.S.," Section 404 of the Federal Clean Water Act directs the Corps to prohibit the discharge of dredged or fill material into the river unless they issue a permit allowing such action. Although the Corps issues the permit, the EPA retains veto power. In the fall of 1990, the Corps announced that the 404 permit would be issued to the City of Tempe for channelization of the Salt River in this section, but that it would be issued over the objection of the EPA.

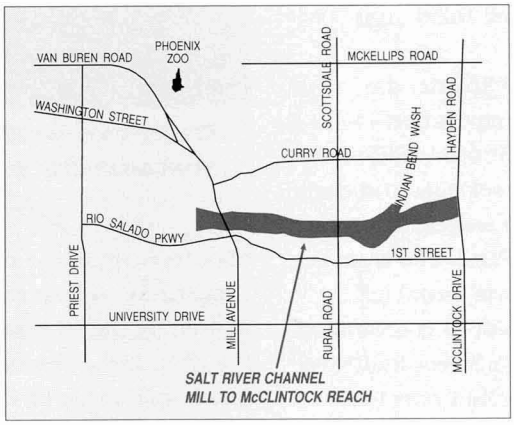
The decision was handed down just in time for the city and the District to take advantage of partnership with the Arizona Department of Transportation (ADOT). ADOT agreed to channelize the Salt River to District specifications and contribute $5.67 million toward the cost. The City of Tempe is providing the rights-of-way and the District is paying the remaining construction costs—estimated at $13 million. Channelization will confine the river to a narrower course, taking hundreds of acres out of the floodplain. This allows ADOT to construct the East Papago Freeway along the north side of the river, and the City of Tempe to prepare development of the south bank into the recreational and multi-use Rio Salado Project.

Since narrowing the channel increases the velocity of flood flows, several changes to existing bridges were required for structural safety. Most notably, the 79 year-old Ash Avenue Bridge was removed after it was determined unable to withstand increased flood flows. Also, the piers of the nearby railroad bridge were reinforced, and the bridge is now tied into bedrock.

Channelization of the river in this area will result in a second Mill Avenue highway bridge being built next to the existing one.

Construction of the Mill to McClintock stretch of the Salt River Channel is scheduled to be completed in the spring of 1993. When this portion of the channel is completed, it will tie into the channelization of the stretch from Mill Avenue west to 40th Street, which is scheduled for completion late in the summer of 1991.

Salt River Channelization
Mill Avenue to McClintock Drive



→ ***ADOT construction contractor begins work on the north bank of the Salt River. Work was not deterred by the flow of water in the normally dry river after heavy late-winter rainfall caused Salt River Project to release water from Roosevelt Dam.***

Project Highlights

The revised final report for the Queen Creek Area Drainage Master Study (ADMS) was accepted by District staff in May 1991.

The District received a Federal 404 permit for the New River Channel from Olive Avenue to Bethany Home Road and negotiated the design contract to meet the requirements of the permit.

Design requirements include landscaping with native plants a 32-acre parcel at the confluence of the Agua Fria and Gila Rivers. Landscaping was planned by the District's Environmental Branch staff.

Project Highlights

In November 1990, the Board of Directors authorized the initiation of a watercourse master plan for the Salt/Gila River from Granite Reef Dam to Gillespie Dam. Consultants have been selected for floodplain delineation and sediment transport as well as for the Master Plan and Regional Environmental Impact Statement. Regular meetings of the Study Management Committee include representatives of affected communities.

Landscaping/erosion control/aesthetic treatment is 85% complete in Reach 1 (Skunk Creek to Cactus Road) of the ACDC.

Old Cross Cut Canal Gets New Look

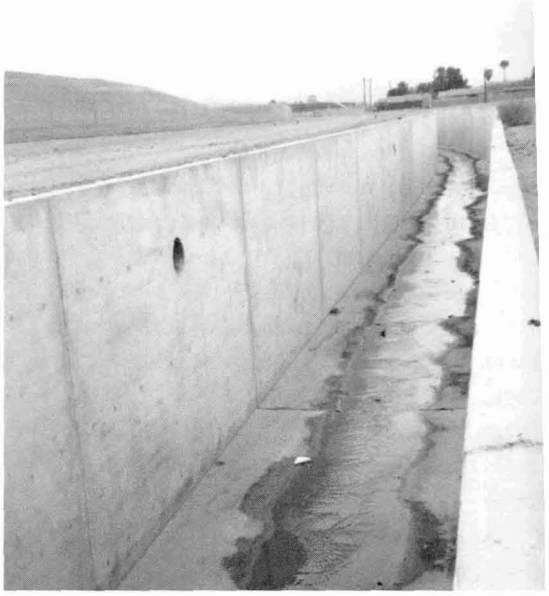
The 100-year-old Old Cross Cut Canal, which links the Arizona and Grand Canals, is being upgraded and relocated, in part, to allow room for the Hohokam Freeway. Upgrading will allow for future upstream flood control and storm drainage connections by raising the present capacity of about 1,500 cubic feet per second (cfs) to 3,000 cfs at the Arizona Canal, 4,100 cfs at McDowell Road, and 4,900 cfs at Grand Canal.

The District, the City of Phoenix, the Arizona Department of Transporation (ADOT), and the Salt River Project (SRP) have entered into agreements to relocate and cover portions of the canal in two stages: from the Grand Canal to McDowell Road, and from McDowell Road to the Arizona Canal (at Indian School Road). This also is coordinated with the Mill Avenue to 40th Street Salt River Channelization so that the Old Cross Cut discharges through the stabilized bank to the Salt River.

In the first stage, the section from McDowell Road to Van Buren Street—where the Hohokam Freeway is routed—was completed in May 1991. The section from Van Buren to the Grand Canal is slated for completion in September 1991. The state has paid $4.8 million and Phoenix and the District have each paid $2.28 million for construction in this stage.

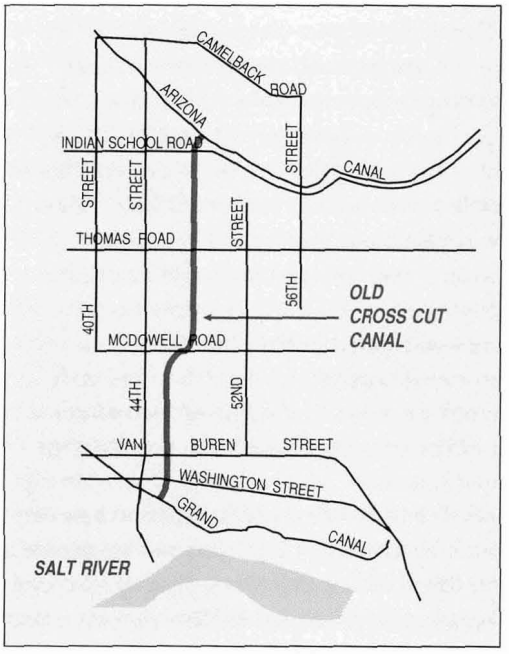
The District, Phoenix, and SRP entered into an agreement for the design, cost-sharing, construction, operations and maintenance of the reach from McDowell Road to the Arizona Canal. The costs will be shared by the District, 75%, and the City of Phoenix, 25%. The design contract for this reach was awarded in December 1990.

Phoenix, in a separate agreement, plans a linear park in the section from McDowell Road to Indian School Road, and is conducting a public survey to determine what area residents want in the park.

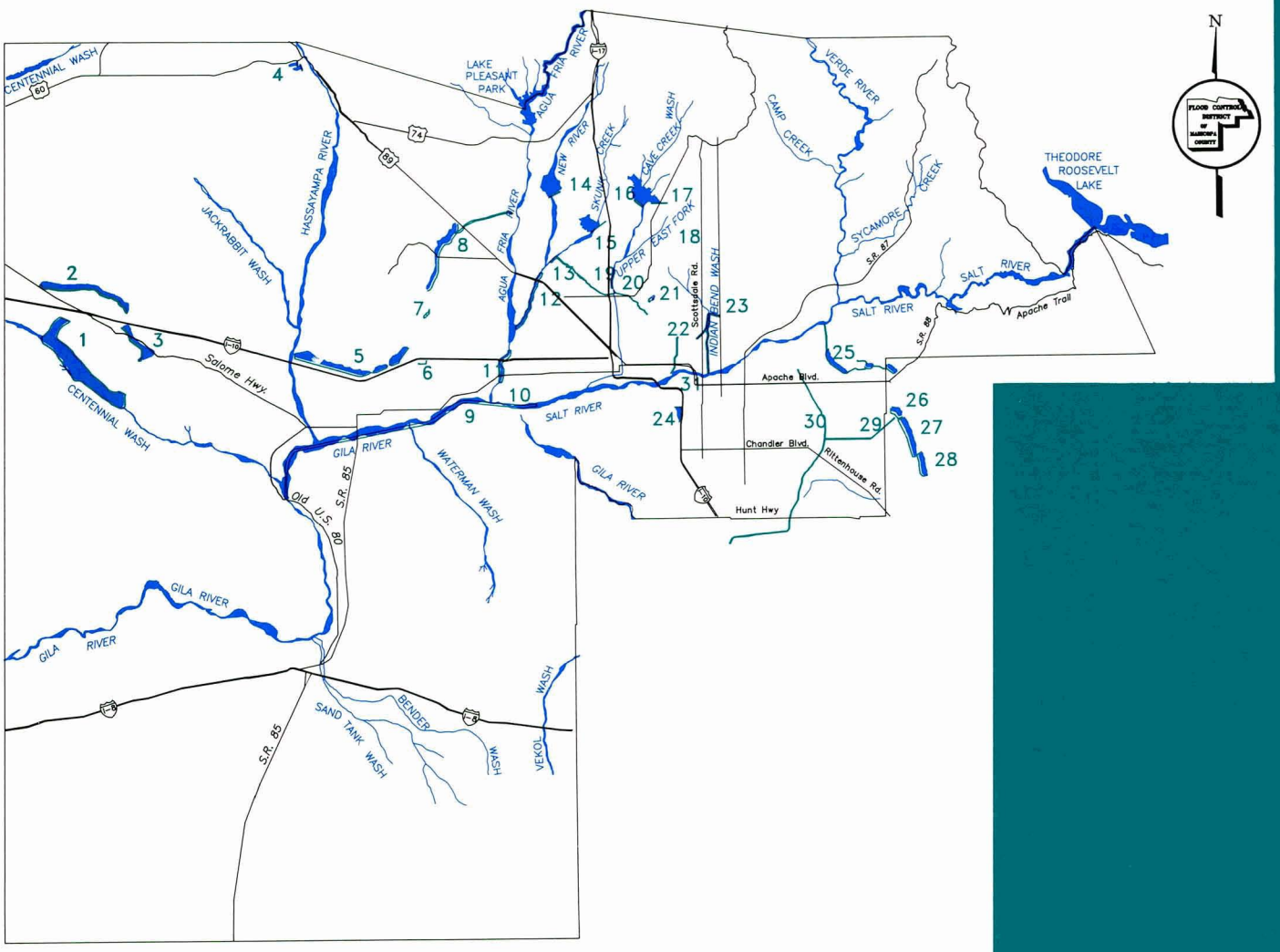


↑ *Realigning and upgrading the Old Cross Cut Canal allows construction of the Hohokam Freeway.*

Old Cross Cut Canal Improvements



↓ *Landscaping features are being installed on Reach 1 of the ACDC.*



Flood Control District of Maricopa County Project Map as of June 30, 1991

1. Centennial Levee*
2. Harquahala Dam and Floodway (1982)
3. Saddleback Dam and Diversion (1981)
4. Sunset and Sunnycove Dams (1976)
5. Buckeye Dams 1, 2, 3 (1975)
6. White Tanks Dam 4 (1954)
7. White Tanks Dam 3 (1954)
8. McMicken Dam (1956) (restored 1954)
9. Salt/Gila Clearing (1985)
10. Holly Acres Levee and Bank Stabilization (1985)
11. Agua Fria Channel Projects (1988)
12. New River Channelization*
13. Skunk Creek Channelization (1991)
14. New River Dam (1985)
15. Adobe Dam (1984)
16. Skunk Creek Channels and Levee (1983)
17. Cave Buttes Dam (1980)
18. East Fork Cave Creek**
19. Arizona Canal Diversion Channel*
20. Cave Creek Channelization (1991)
21. Dreamy Draw Dam (1973)
22. Old Cross Cut Canal (1975)
23. Indian Bend Wash (1985)
24. Guadalupe Dam (1975)
25. Buckhorn-Mesa Projects
    - Spook Hill Dam (1979)
    - Signal Butte Floodway (1984)
    - Signal Butte Dam (1987)
    - Pass Mountain Diversion (1987)
    - Bull Dog Floodway (1988)
    - Apache Junction Dam (1988)
26. Powerline Dam (1967)
27. Vineyard Dam (1968)
28. Rittenhouse Dam (1969)
29. Powerline Floodway (1968)
30. East Maricopa Floodway (1989)
31. Salt River Channel*

*Partly Complete **Design

Engineering

The District's Engineering Division plays a key partnership role during the design phase of any project. By providing technical engineering services for District-funded or cost-shared projects, the division ensures that the project designs are in agreement with District standards and sound engineering principles and practices as well as with planning and zoning regulations.

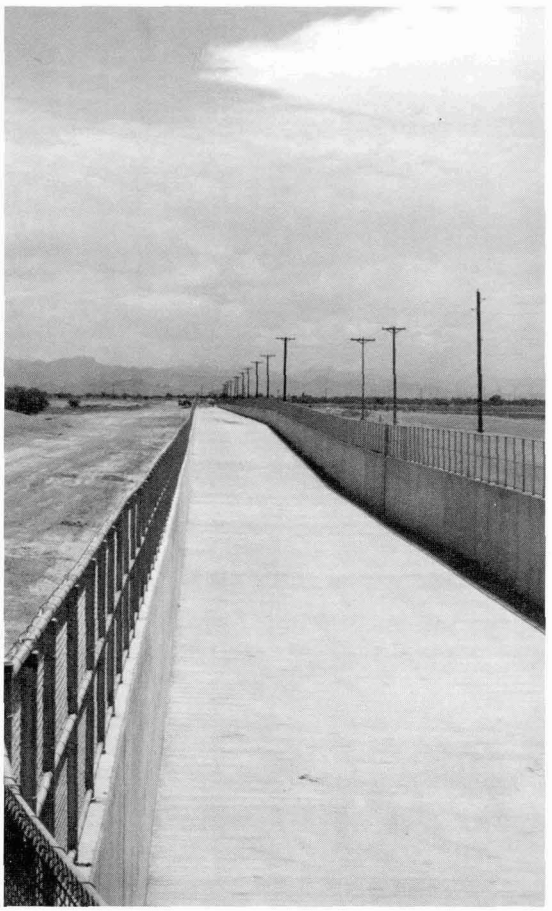
The Drainage Review section also ensures that new developments will not adversely alter drainage patterns for downstream residents.

Guadalupe Road Channel and Box Culvert End Flooding

Historically, floodwaters completely covered Guadalupe Road from Sossaman Road to the East Maricopa Floodway (EMF), several times a year. But since the completion of a two-stage project involving the City of Mesa, the Maricopa County Highway Department, and the District, Guadalupe Road is now dry and may be expanded to the six-lane arterial the area needs.

In order to convey storm runoff from Sossaman Road Drain to the EMF (a distance of about one mile), District staff designed a channel on the north side of Guadalupe Road and a box culvert to convey the runoff from the north side of Guadalupe Road to the south. Once the runoff reaches the south side of Guadalupe Road, it drains into the EMF and, ultimately, into the Gila River.

Although design contracts are usually awarded to private firms, the District decided to have its Engineering staff design this project in-house. The additional hands-on design experience was crucial for young engineers with little practical design experience, and also for veteran engineers who had spent most of their District career performing design review.



↑ *Designing the Guadalupe Channel and Box Culvert in-house provided District personnel with valuable hands-on design experience.*

The District's Construction Inspection staff performed the construction engineering and inspection duties on the Guadalupe Channel and Box Culvert. In-house construction inspection saved the District approximately $100,000.

The channel was completed in April at a cost of just over $2 million, paid by the District. The construction contract was completed ahead of schedule and there were no change orders, indicating both good design and construction administration.

The cost of the completed $399,000 Guadalupe box culvert was shared by the three parties in the following proportions: City of Mesa, 41.67%; Maricopa County Highway Department, 12.5%; and the District, 45.83%. The City of Mesa and the District split 50-50 the $80,000 cost of utility pole relocations.

Drainage Management Workload

	Fiscal Year		
	88/89	89/90	90/91
Zoning Cases Reviewed (including resubmittals)	250	259	169
Subdivision Cases Reviewed	68	50	25
Master Plans Reviewed	16	4	10
Board of Adjustment Cases Reviewed	160	190	152
Drainage Inspections	1,177	3,679*	2,899

*New drainage regulations implemented in 10/88.

District Adopts First Volume of the Drainage Design Manual

Six years of discussion and study reached the first phase of completion in April when the District Board of Directors adopted Volume I of the *Drainage Design Manual for Maricopa County*.

The Drainage Design Manual is the result of a multi-jurisdictional task force that convened in 1985. First, the task force developed the *Uniform Drainage Policies and Standards*, which were then adopted by the District's Board of Directors in 1987. Adoption of the drainage regulations and development of the *Drainage Design Manual* were the next steps in reaching the important goal of establishing a common basis for drainage management for all jurisdictions within Maricopa County.

Volume I, *Hydrology*, provides technical procedures for estimating runoff for the purpose of designing stormwater drainage facilities in Maricopa County. Volume I also contains a computer disk of programs that perform some of the recommended hydrologic calculations. Volume II, *Hydraulics*, when completed, will provide the technical procedures and standards for designing the facilities once the hydrology is calculated.

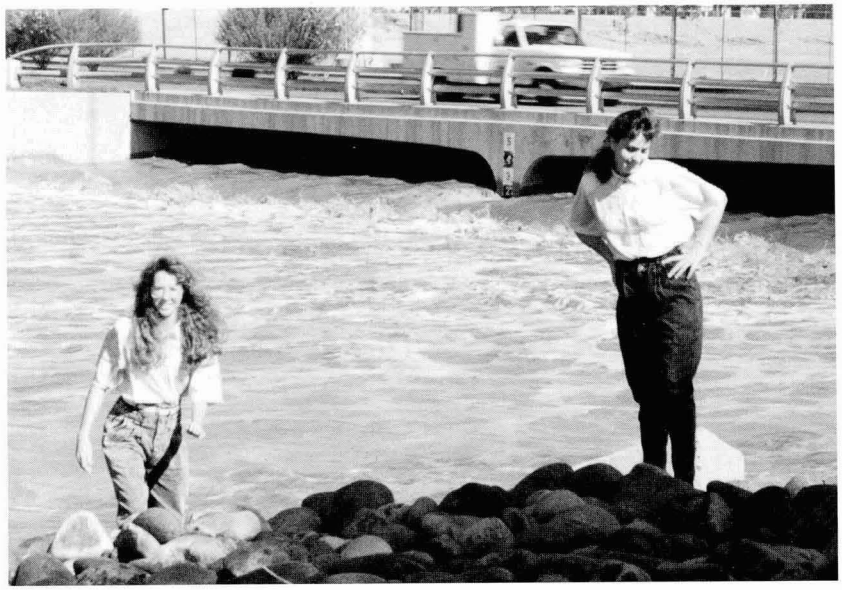
The District will require that the procedures and standards outlined in the *Drainage Design Manual* are used in the design of its future projects as well as on projects in which the District cost-shares with other jurisdictions.

To familiarize the engineering community with Volume I of the *Drainage Design Manual*, District staff members conducted workshops and distributed copies of the manual to city engineers throughout the county.

Although Volume I has been approved by the Board of Directors and is already being used, a revised version will be released in early 1992. A review draft of Volume II will be available to government agencies, developers, and consultants late in 1991.

Engineering/ Hydrology

Partnership between the Engineering Division, the Hydrology Division, local municipalities, and the private hydrology and engineering communities has resulted in the near completion of the *Drainage Design Manual for Maricopa County.*



↑ *Felicia Terry, Civil Engineer II, and Sandy Story, Hydrologist I, review flood damages at Indian Bend Wash after a spring storm left the wash full. Engineering and Hydrology staff must work together when surveying such damages.*

The Hydrology Division has always had a strong partnership role with the Federal Emergency Management Agency, but the District's latest efforts includes a public information drive to reduce flood insurance premiums.

This latest effort is in addition to the division's normal floodplain and watershed management and flood warning roles.

Initial CRS Program Efforts Reduce Flood Insurance Premiums

The National Flood Insurance Program granted a 5% reduction in flood insurance premiums for the unincorporated area of Maricopa County based on the District's successful application for the initial phase of the new Community Rating System (CRS) Program.

The CRS program was developed by the Federal Emergency Management Agency (FEMA) to recognize the efforts of municipalities using any of 20 different floodplain management activities that reduce flood losses. These activities include floodplain mapping and regulating, providing public information, and promoting flood preparedness.

The District already performs many of the functions for which points may be accumulated for CRS. For example, floodplain mapping and regulating of floodplain development are required of the District by federal and state law and by County ordinance. Furthermore, the District already studies areas of chronic and potential flooding, plans structural measures of protection, provides flood warning to local agencies, and builds and maintains dams and channels.

The application process is mainly a matter of documenting District activities in the manner required for the program. Current activities have since resulted in the 5% insurance premium reduction that will be effective in October 1991, and will probably result in a 15 to 20% reduction by October 1992.

One area where the District has greatly increased its effort is public information. The District has acquired and placed in County libraries various FEMA and local publications about floodproofing and reducing flood damages to buildings, and has publicized that availability. The District also contacted real estate groups, lenders, and the insurance industry about map determination services.

Floodplain Delineations

The following floodplains were approved by the Federal Emergency Management Agency (FEMA) during fiscal year 1990/1991:

Area	River miles	Watershed (mi^2)	Date
Centennial/Grass Wash	27	451	April 1991
Morgan City, Rodgers, and Cline Creeks (tributaries to Skunk Creek)	25	47	November 1990
Gila River from Gillespie Dam to Gila Indian Reservation	18	—	January 1991
Cave Creek from ACDC to Cave Buttes Dam	13	—	February 1991
Jackrabbit Wash	22	442	April 1991
Southern Pacific Railroad/ Queen Creek	8	—	August 1990

Wagner Wash delineation was completed and submitted to FEMA in May 1991, but has not yet been approved by FEMA. The Central Arizona Project (CAP) Overchutes delineation was submitted to FEMA in June 1991, and, also, has not yet been approved. Wagner Wash represents 12 river miles and 42 square miles of watershed. The CAP Overchutes delineation includes 12 linear miles.

Floodplain Management Workload

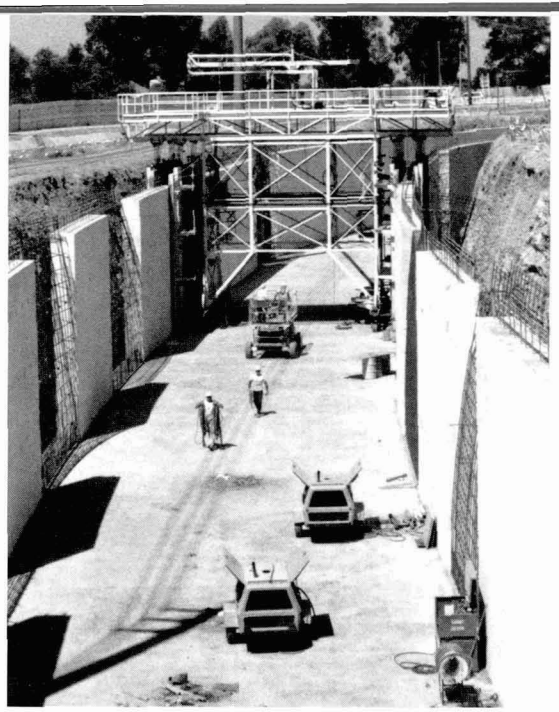
	Fiscal Year		
	1988/89	1989/90	1990/91
Floodplain Use Permits	53	52	3
Floodplain Variances	2	2	0
Appeals	0	0	0
New Delineations	11	8	7
FCD Clearances	10	24	26
Violation Cases	8	3	7
Referrals to County Attorney	0	0	2

Difficult Negotiations Completed

Several complicated negotiations were completed and land acquisition for more than a dozen projects was certified or submitted for certification during the past year, clearing the way for project starts. Certification is a laborious but necessary process in which the District's General Counsel checks hundreds of acquisition documents one by one against the project map to ensure that all legal requirements are met and all necessary parcels are acquired.

In order to obtain all the parcels, the District also enlists the support of the Maricopa County Highway Department which generally serves as the initial contact and negotiator for all privately-owned parcels.

Land rights were certified for Reach 4 of the Arizona Canal Diversion Channel (ACDC) this year, involving 79 parcels totalling over 55 acres between 12th and 40th Streets. Several major land transactions in Reach 4 were completed after long and complex negotiations with entities such as Western Savings Corporate Center, the Arizona Biltmore Hotel, and Desert Crest Retirement Center. All of these properties abut the Arizona Canal, in the path of the ACDC.



↑ *Certification of land rights lead to the beginning of construction on Reach 4 of the ACDC. Photo courtesy Ed Karnafel, County Highway Department.*

Certifications for East Fork Cave Creek, New River channelization and Salt/Gila control works were also completed this year. These projects encompassed 385 parcels with a total of over 10,000 acres.

Land Managment

The Land Management Divsion acquires the property necessary for flood control projects and, once it is acquired, manages all District-owned property.

Innovative property management results in partnerships such as one with the City of Tempe who leased District property in the Indian Bend Wash for development of a public golf course.

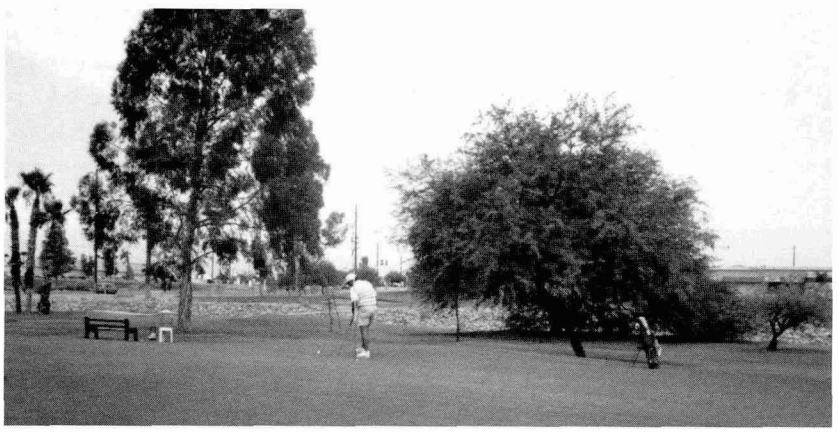
Property "Managed" to Serve Public

The District, through its Property Management Branch, maintains over 1,814 parcels of land in excess of 30,000 acres of fee/easement right-of-way. Hundreds of these acres are being leased by city and county agencies for the development of recreational facilities. One such development is the golf course managed by the City of Tempe in the Indian Bend Wash on property the city is leasing from the District.

In the past fiscal year, the property management branch has leased eighteen commercial and residential properties to private sector entities and 30 mobile home units to various county and state agencies.

The District has also sold twenty-three mobile home units that were acquired in the East Fork Cave Creek project area and an excess parcel from the ACDC which was sold to Golf 'N Stuff at Metrocenter.

Another project started by the Property Management Branch this year is creating a catalog and inventory of the land resources owned by the District. The catalog will help to identify excess parcels and formulate a sound strategy to manage District property.



↑ *Golfers enjoy a public golf course in the Indan Bend Wash which is managed by the City of Tempe under a lease agreement with the Flood Control District.*

Construction & Operations

The Construction and Operations (C&O) Division comprises nearly 45% of District staff and is involved in projects from the planning stage through construction and after completion.

The Environmental Branch has become deeply involved with reducing pollution as the Environmental Protection Agency enforces new legislation regarding stormwater quality.

The Construction Inspection Branch makes certain that all projects are built to District specifications and provides construction management for in-house projects.

By far the largest of all District branches, the Operations and Maintenance Branch performs the last step in project partnership: keeping the completed flood control structures in top working and aesthetic condition.

Branching Out to Environmental Issues

The District, through its Environmental Branch, made its first applications to the Environmental Protection Agency (EPA) in March 1991 to comply with the Clean Water Act's new National Pollutant Discharge Elimination System (NPDES) program. This complex program is intended to reduce the amount of pollutants that enter waters of the United States through storm sewers, using a variety of management practices. Government agencies as well as private businesses will be monitored through an extensive permit program.

The District sought and obtained cooperation from local municipal governments to apply for group permits for nine municipal landfills and for twelve vehicle maintenance yards. Parties to these group applications include Maricopa County, Chandler, Glendale, Wickenburg, Gilbert, Apache Junction, Peoria, Goodyear, and El Mirage.

The Environmental Branch is in the process of developing management plans for the facilities in these groups to prevent stormwater pollution. The management plans will be submitted to the EPA as Part Two of the NPDES application process.

↑ *Danny Upshaw, Laborer II, and Darry Brown, Laborer III, build a pump house for a Phoenix well on the ACDC near 25th Avenue.*

Municipally owned stormwater drains that outlet into waters of the United States also will be required to be permitted under the NPDES program. The District has been working with other government agencies to formulate a regional strategy for compliance with the regulations, with the goal of obtaining a regional permit. A regional approach would facilitate the sharing of information and would standardize stormwater management programs. These programs will potentially affect building codes and land uses, and include provisions to detect and eliminate illicit discharge into stormwater drainages.

Ensuring Project Constructability

During the design process before projects are advertised for bid, the Construction Branch helps by ensuring that the engineer's plans are constructable. Once a construction contract has been awarded, the Branch really becomes involved to ensure that all projects are being built to specification.

On some projects, this Branch manages contract engineers who provide construction engineering and inspection services. On others, such as the Guadalupe Box Culvert and Channel (see page 8), Branch members provide these services directly.

Completed projects for fiscal year 1990/91 include:

- Six bridges for Reach 4 of the ACDC.
- The 83rd Avenue Bridge over Skunk Creek.

Continued work on existing structures includes:

- Landscaping of Buckhorn Mesa.
- New River from Olive Avenue to Grand Avenue.
- Plating of the Vineyard Flood Retarding Structure.
- Installing a center drain in Powerline FRS.
- Improving the side inlets for Pass Mountain Diversion Channel and Signal Buttes Floodway.

O&M Branch Protects Partners' Investment

When flood control projects are completed, the District becomes responsible for the safe operation and maintenance of the facilities. The Operations & Maintenance (O&M) Branch is currently responsible for maintaining—among other things—more than 446 miles of roadway, 5,400 acres of river clearing, and 710,000 square yards of bank protection.

During fiscal year 1990/1991, the following projects were completed and turned over to the District for maintenance and operation:

- Reach 2C of the Arizona Canal Diversion Channel (27th Avenue to the confluence with Cave Creek Wash at 23rd Avenue). Cave Creek Sediment Basin.
- Guadalupe Channel.
- Sun City drainage channels (existing channels built by the developer and upgraded before dedicating to the District).

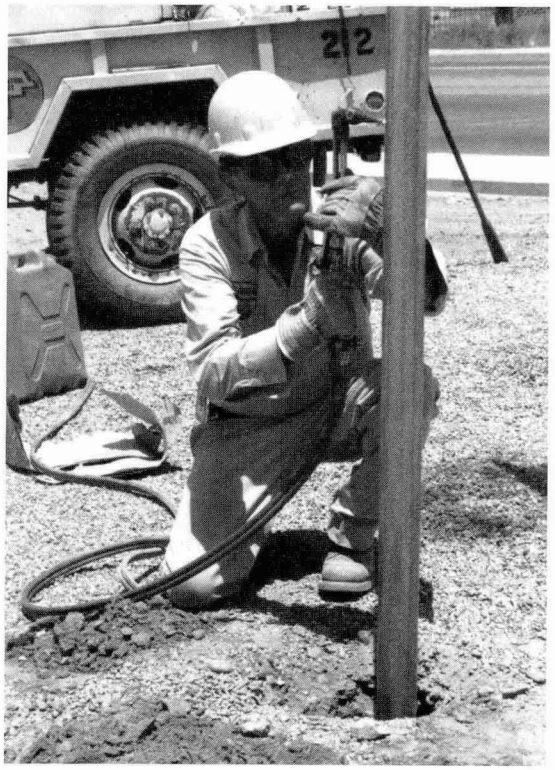
↑ *Bill Craig, Work Crew Leader, clears brush at Cave Creek Sediment Basin.*

Increased maintenance responsibility required an increase of 20 staff positions, bringing the total number to 92 positions.

Because maintenance of the District's dams and channels is labor intensive, the District hires—at 50 cents an hour—Department of Corrections prisoner crews from the Perryville and ASPEN facilities. These crews supplement the work of the District's regular crews and worked on the structures for a total of 78,488 hours during this fiscal year.

The O&M crews maintain landscaping and dual-purpose facilities such as maintenance roads (which double as jogging and bicycle trails) clean. These crews are out in the public eye, working hard to make the District's projects look good and work effectively so that all the members of the partnership can be proud of what has been accomplished.

Both photos on this page are courtesy of Ed Karnafel, County Highway Department.



← *Louis Yager, Maintenance Technician I, welds a post to keep vehicles off a maintenance road at Cave Creek Channel and Cactus Road.*

Maintenance Responsibility Highlights

	Inventory as of 6/90	Added 7/90 to 6/91	Total Inventory
Bank Protection	628,522	82,348	710,870 square yards
Landscape Erosion Control	2,618	510	3,128 acres
Low Flow – Paved	0	138,400	138,400 square feet
Pilot Channel – River	42,724	43,040	85,764 feet
Right of Way	33,379	71,412	104,791 acres
River Clearing	4,754	667	5,421 acres
Roads	427	19	446 miles
Stormdrain Pipe	26,870	848	27,718 feet

Administration

The Administrative Division provides a diverse array of services to support all District staff:

The Accounting Branch plans and manages functions such as payroll, purchasing, accounts payable and receivable, inventory, and budget planning and execution.

The Administrative Services staff provides secretarial and word processing services, as well as central filing, telephone and visitor reception, mail routing and delivery, and reproduction services.

The Contracting Branch coordinates consultant and construction procurement actions; directs preparation of contract documents; and prepares and coordinates items for the Board of Directors' agenda.

The Information Systems Branch serves computer users from word processing to the Geographic Information System. The branch maintains the computer systems, develops programs, and trains staff.

Staff Ideas Net Awards for the District

In June 1991, the District was notified it won five National Association of Counties awards for programs which were developed entirely by District staff and implemented using District resources. The award-winning programs include:

State Legislation for Riverine Master Plans

Developed by Water Resources Planner Greg Rodzenko, Chief Engineer D.E. Sagramoso, and General Counsel Larry Richmond and Julie Lemmon, this legislation, which passed in 1990, allows flood control districts to take into consideration the cumulative impact of such factors as urbanization, channelization, and floodplain encroachment when formulating a plan to guide development of a watercourse.

Each of these factors potentially affects the floodplain, but had not been allowed legally to be considered in watercourse master plans. The new law allows the District to develop a master plan for the Salt-Gila rivers to coordinate the way each of the many jurisdictions along these rivers develops the adjacent land.

Use of Aerial Videotaping in the Assessment of Drainage Patterns and Flooding Problems

As developed by Hydrologists Tom Donaldson and Amir Motamedi, aerial videotaping of drainage basins can reduce days of fieldwork to hours, providing additional advantages that aerial still photography cannot. Most aerial still photos are too small in scale to make readily discernable such features as old stream channels and breached riverbanks, as well as subsidence and alluvial fans, all of which help to determine characteristics of the drainage basin.

Incorporation of County Control Points into Computers to Assist with Mapping

Geographical Information System Supervisor Marta Dent wrote a computer program to specifically include the township and range coordinates as reference points in the many maps generated by the District. This simple step accomplished two goals: to enable the overlapping of maps regardless of scale or source, and to save hours of staff time in transferring the existing maps from the Computer-Aided Design system to the new Geographical Information System (GIS). Mapping is key to all District functions, whether of watersheds, floodplains, parcels, study areas, cities, or roads.

Rainfall Activity Status Boards

Hydrometeorological Assistants Tom Keifer and Charlie Klenner developed a tool to visually track the more than 100 telemetry rain gauges throughout and outside of Maricopa County, which are part of the District's storm warning system. Two display boards, a map of the Gila River watershed and a map of the Phoenix metropolitan area, have red lights for each rain gauge and green lights for each stream gauge, located in the corresponding geographic location. Each lights up or flashes, based on the amount of rainfall registered at the location. The result is a quick, simple way to visualize the extent and severity of a storm. Corresponding information is transmitted to the District's computer, but the lighted maps provide a means of seeing at a glance what each gauge is registering throughout the area.

Public Awareness of Flood Hazards

A series of activity books to heighten children's and parents' awareness of flood hazards and safety measures were developed by Public Involvement Coordinator Sue Mutschler, Hydrologist Joe Tram, GIS Technician Eric Feldman and GIS Aide Jason Sather. The books are focused on three age levels from kindergarten through ninth grade and aim to educate the children to dangers of playing in storm channels. The books include thought games such as crossword puzzles, word-decoding, word searches, connect-a-dot drawings, and water trivia.

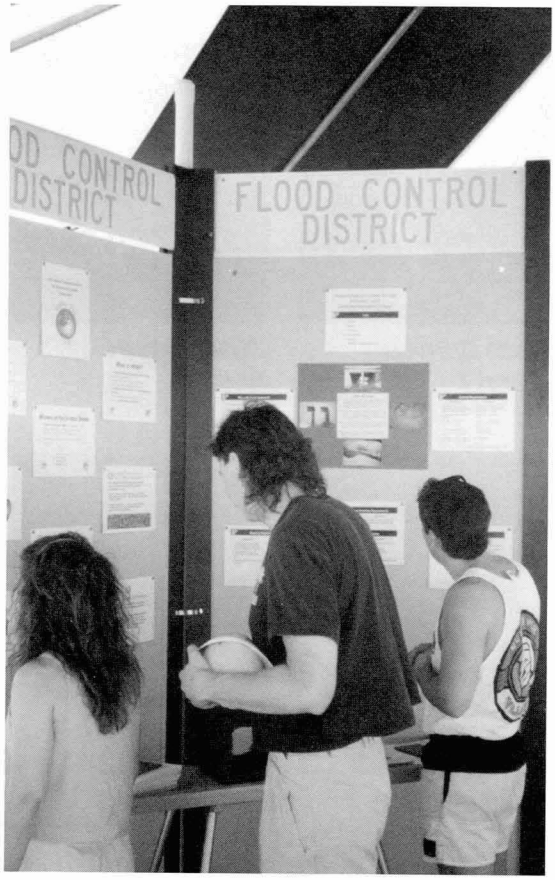
Quality Lessons Learned

Chief Engineer and General Manager D.E. Sagramoso and Deputy Chief Engineer Stanley L. Smith have brought Gateway Community College to the District to teach District personnel the principles of *Total Quality Management.*

The nine-week course introduces the management principles and Statistical Process Control of Dr. W. Edwards Deming, and how to adapt them to the public sector. Dr. Deming is a university statistics professor whose concepts were embraced by the Japanese when he was sent there after World War II to help that government rebuild its economic base.

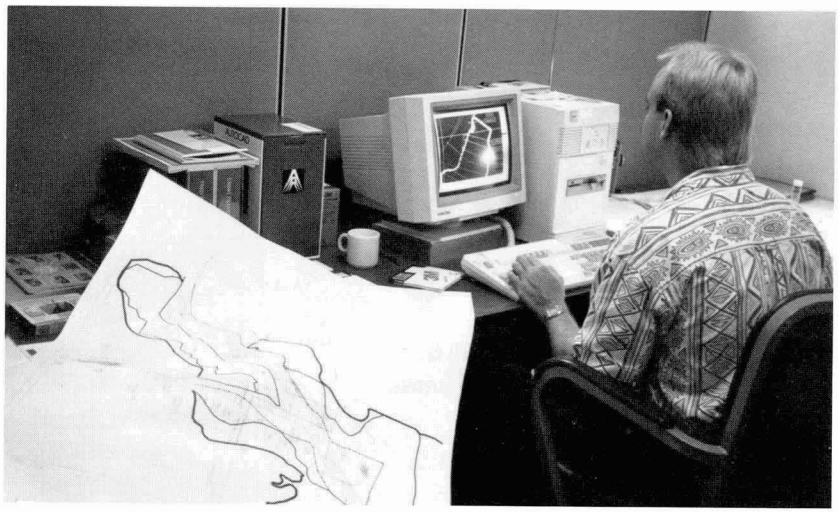
Dr. Deming asserts that 85 percent of all company problems result from the system, which only management can change. Thus, if a company (or public agency) wants significant gains in productivity, it must change the organization's processes, which include changes in management methods and style.

The course aims to help District managers and, indeed, all District staff members apply "Deming" principles and analytic tools to solve specific District problems. Deming's Fourteen Obligations of Management include putting everyone in the District to work to accomplish the transformation to quality. Toward this end, the District held two sessions of the course, and plans to have its own quality training personnel.



↑ *The District's booth at EarthFest '91, draws residents who are interested in environmental issues, such as the District's efforts to establish wetlands, to coordinate regional compliance with federal clean water laws, and to masterplan the Salt-Gila River.*

↓ *Mark Brewer, Engineering Drafting Specialist I in the Administration Division, uses computer-aided drafting tools to prepare watershed, floodplain, and project maps, as well as channel cross sections and other engineering drawings.*



Administration

A Personnel Coordinator recruits and interviews new employees, provides career counseling, and assists employees with grievance procedures.

Two Public Involvement Coordinators plan and conduct meetings to involve the public in project decisions, plan and prepare public meetings, information and news releases to inform the public.

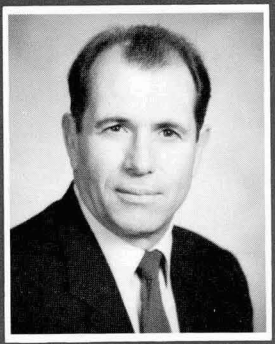
A Technical Communications Specialist edits and electronically designs District publications—such as manuals, reports, brochures, fact sheets—for technical and lay readers.

Contracts Awarded (Preliminary & Unaudited)*

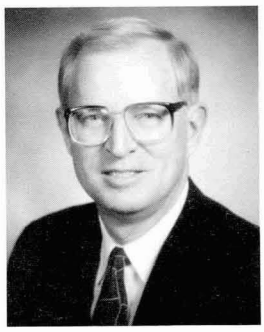
Type of Contract	Number	Contract Amount
Construction	9	$ 5,587,156
Engineering Services	21	3,113,750
Property Acquisition	6	275,000
Rental Property Maintenance	4	19,996
Floodplain Delineation	8	3,118,825
Miscellaneous	1	2,000
Total	49	$12,116,727

* These figures do not reflect the contracts awarded through other agencies in which the District cost-shared. They are only contracts awarded by the District.

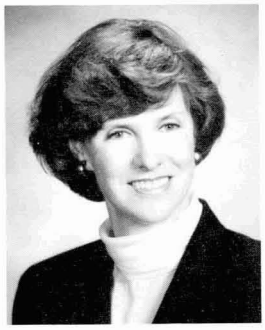
Board of Directors



Tom Freestone
District 1
Chair

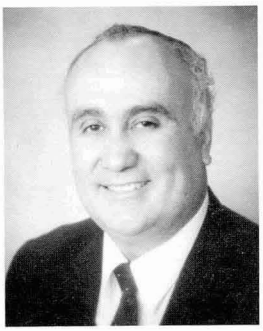


James D. Bruner
District 2



Betsey Bayless
District 3

Carole Carpenter
District 4

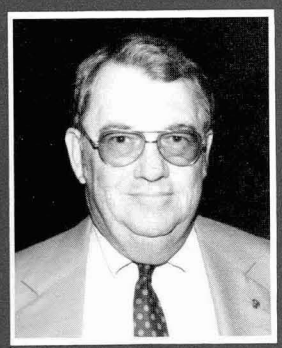


P. Ben Arredondo
District 5

The Flood Control District of Maricopa County, founded in 1959, is a municipal corporation and political subdivision of the State of Arizona. The District is governed by a five-member Board of Directors which consists of the elected Supervisors for the County.

The District has all the powers, privileges, and immunities granted generally to municipal corporations. The Board of Directors exercises all powers and duties in the acquisition and operation of District properties, contracting, and in carrying out regulatory functions as ordinarily exercised by governing bodies. The activities of the District are funded by a flood control tax levy assessed on all real property within Maricopa County and a variety of cost-sharing arrangements with the Federal, State, County, and local governments. The tax levy rate for Fiscal Year 1990/91 was $0.4235 per $100 of assessed value.

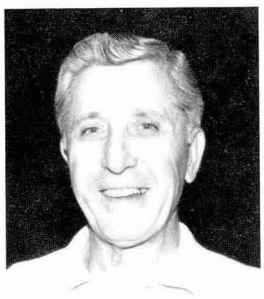
Flood Control Advisory Board



John E. Miller, Jr.
District 2
FCAB Chair

The Flood Control Advisory Board (FCAB) advises the Board of Directors on flood control, water conservation, floodplain management, drainage, and related matters. It reviews planning, operations, and maintenance of flood control facilities, and recommends an annual budget to the Board of Directors.

The Advisory Board consists of seven members, five of whom are appointed by the Board of Supervisors to five-year terms. At least one member must be a resident of the City of Phoenix. The City of Phoenix and the Salt River Project appoint representatives who are ex-officio members of the FCAB. James Matteson (not pictured) currently represents the City of Phoenix on the FCAB, and Paul Cherrington (not pictured) represents Salt River Project.



William LoPiano
District 1

Samuel K. Wu
District 3

Lynn Anderson
District 4

Marcella Peters
District 5

Flood Control District Organizational Chart

244 Total Positions (As of June 30, 1991)

Flood Control District of Maricopa County Board of Directors

Flood Control Advisory Board
Advisory Group/Consulting Group

County Manager
Roy Pederson

Interim Assistant County Manager for Public Works
Carl B. Darden

Chief Engineer and General Manager
D.E. Sagramoso, P.E.

Deputy Chief Flood Control Engineer
Stanley L. Smith, Jr., P.E.

42 — Administrative Division Chief
David Brozovsky

- **Accounting Services Controller** — Michael Cuneo
- **Administrative Services** — Gwen Loving
- **Contracting Services** — Leanna Cumberland
- **Information Services** — Tom LaMarche
- **Personnel Services** — Linda Young
- **Public Involvement** — Susan Fitzgerald; James Phipps
- **Technical Communications** — Tina Porter

109 — Construction & Operations Division Chief
O.D. Park, P.E.

- **Construction Branch** — Fred Fuller
- **Ecology Branch** — Betty Dickens
- **Environmental Branch** — Catesby Moore
- **Operations & Maintenance Branch** — Paul DiPierro

27 — Engineering Division Chief
Ed Raleigh, P.E.

- **Stormwater Drainage Branch** — Steven Tucker, P.E.
- **Design & Technical Review** — Vacant

29 — Hydrology Division Chief
David Johnson

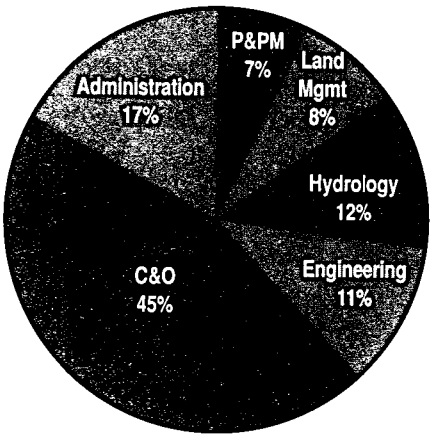
- **Floodplain Management Branch** — Joe Tram
- **Special Projects Branch** — Joe Rumann
- **Watershed Management Branch** — Vacant

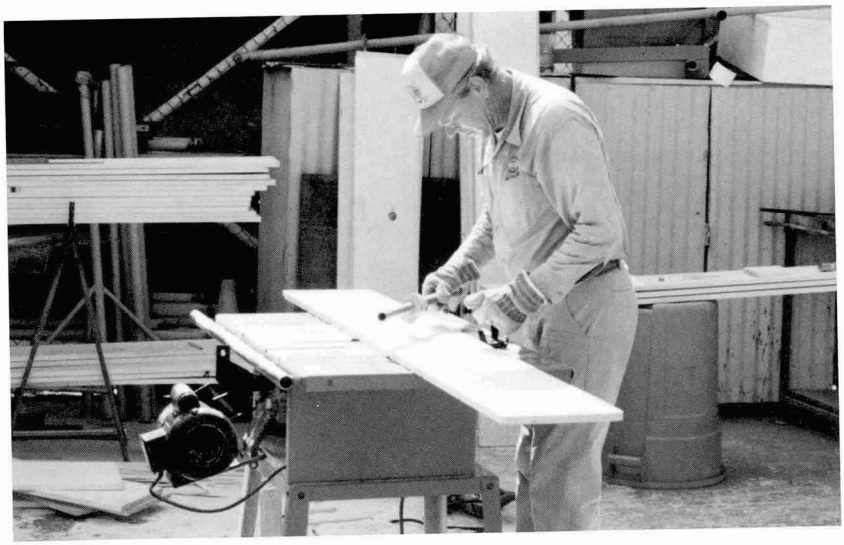
19 — Land Management Division Chief
Jim Schwartzmann

- **Property Acquisition Branch** — Richard McNamara
- **Property Engineering Branch** — Erv McLuty
- **Property Management Branch** — Ken Johnson

18 — Planning & Project Management Division Chief
John Rodriguez, P.E.

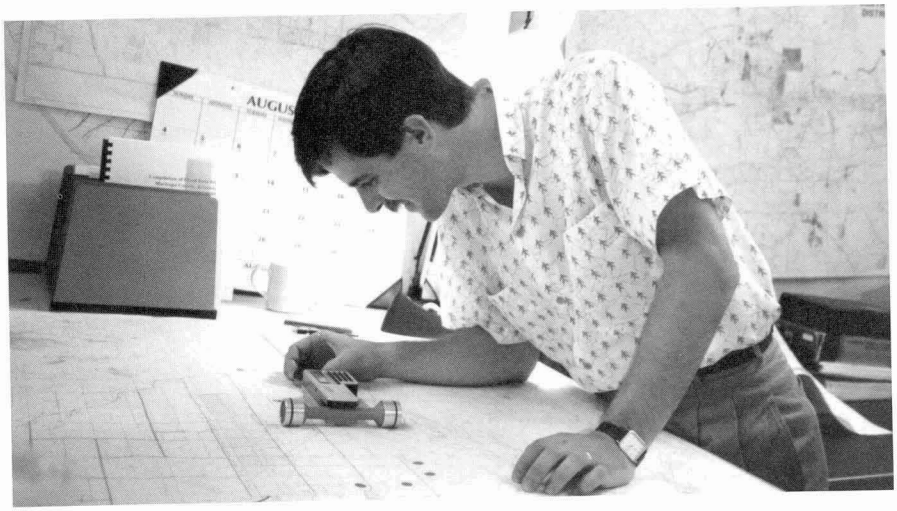
- **Planning Branch** — Richard Perreault
- **Project Management Branch** — Vacant

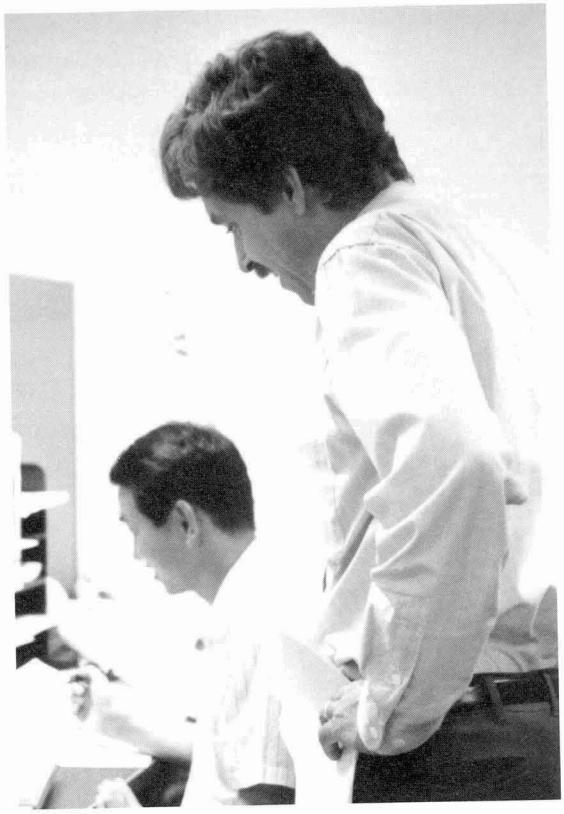




← Ed Leggett, Maintenance Technician II, builds shelves in the maintenance yard.

↓ Engineering Division Chief Ed Raleigh confers with Jay Kim, Hydrologist II.

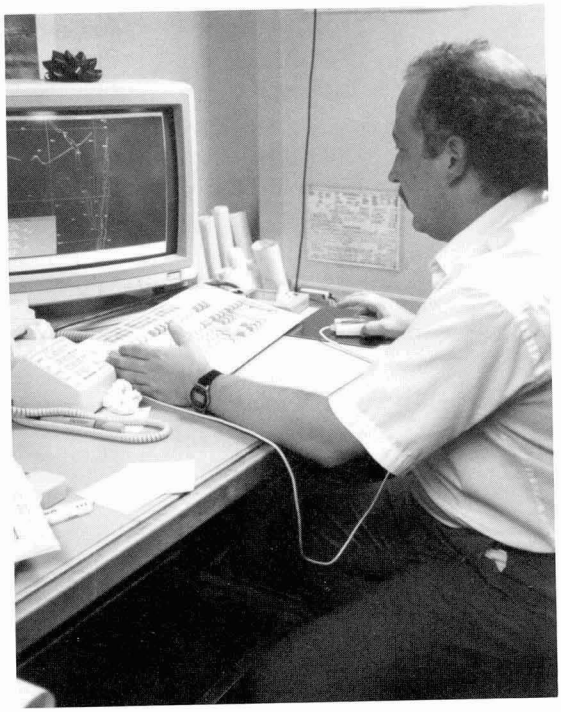




↑ Jorge Garre, Hydrologist I, checks a floodplain delineation map for accuracy.

→ Eric Feldman, GIS Technician II, plots the points of a watershed into the Geographic Information System.

→ Beth Jensen, Land Management Specialist, checks an acquisition file to be certain that all land rights have been obtained before sending it to the District's General Counsel for certification.



Statement of Revenues, Expenditures, & Changes in Fund Balance

Budget and Actual, Fiscal Year Ending June 30, 1991

Preliminary and Unaudited

	Budget	Actual	Variance Favorable (Unfavorable)
Revenues			
Flood Control District Tax Levy	$47,040,000	$45,797,000	($1,243,000)
State Share of Costs			
Federal Projects			
Local Projects			
County Reimbursement			
Local Participation	3,764,000	1,228,000	(2,536,000)
Rental	104,000	160,000	56,000
Interest Earnings	2,000,000	2,633,000	633,000
Sale of Excess Land	3,129,000	168,000	(2,961,000)
Miscellaneous	95,000	216,000	121,000
Total Revenues	56,132,000	50,202,000	(5,930,000)
Expenditures			
Personnel Services			
Salaries and Wages	8,675,000	7,547,000	1,128,000
Overtime	56,000	1,000	55,000
Total	8,731,000	7,548,000	1,183,000
Supplies and Services			
Professional Services Contracts	5,851,000	4,430,000	1,421,000
Maintenance Contracts	1,682,000	1,540,000	142,000
Maintenance Supplies	552,000	277,000	275,000
Insurance	99,000	100,000	(1,000)
Other Supplies and Services	725,000	833,000	(108,000)
Total	8,909,000	7,180,000	1,729,000
Capital Outlay			
Real Estate	8,187,000	12,765,000	(4,578,000)
Engineering	4,220,000	2,438,000	1,782,000
Motor Vehicles and Equipment	2,286,000	1,242,000	1,044,000
Construction and Other Capital Outlay	33,990,000	27,528,000	6,462,000
Total	48,683,000	43,973,000	4,710,000
Total Expenditures	66,323,000	58,701,000	7,622,000
Excess (Deficiency) of Revenues over Expenditures	(10,191,000)	(8,499,000)	1,692,000
Fund Balance at Beginning of Year	31,250,000	32,056,000	0
Fund Balance at End of Year	$21,059,000	$23,557,000	$ 2,498,000

Expenditures by Activities & Functions

Fiscal Year 1990/1991
Preliminary & Unaudited

Note: This table may not always agree with the Expenditures by Task in the Financial Highlights table (inside front cover), except in total.

Activity	Operations Expenditures, in thousands of dollars		Capital Improvements Program, in thousands of dollars		
	Administrative	Maintenance	Engineering	Land	Relocation & Construction
ACDC	$ 43	$ 670	$ 618	$ 2,012	$ 7,048
ACDC Area Drainage Master Study	482				
Administrative Overhead/Facility	4,027	110	328		7,509
Adobe Dam	1	64			
Adobe Dam ADMS	1				
Agua Fria River Flowage Easements	34	2	5	1,000	
Agua Fria River	8	78			
Agua Fria River (ADOT Agreement)		6			
Alma School Drain	1	21			
Apache Jct. FRS, Floodway, Outlet	1	21			175
Bell Road Expansion			32		1,527
Broadway Road Bank Stabilization	1				
Buckeye #1		23			
Buckeye #2		10			
Buckeye #3		18			
Bulldog Floodway		5,			
Cave Buttes Dam	16	44			
Cave Creek Wash	1	2,			
Cave Creek/Carefree Channelization	12				
Centennial Levee		9			
City of Avondale	1				
City of Chandler	1				
City of Glendale	2				
City of Mesa		3			
City of Peoria	1				
City of Phoenix	171				582
City of Scottsdale	10				
Computer Systems	193				
Dreamy Draw Dam		11			
Dysart Road–Agua Fria Drain	5	6			
East Fork Cave Creek ADMP	12	88	450	2,037	106
El Mirage Road Drain Channel		72			
EMF–Buckhorn/Mesa	1	1	100		183
EMF–Williams/Chandler	42	322			3
Enforcement of Floodplain Regulations	41				
FCD Yard Maintenance		216			
Flood Insurance	265				
Flood Warning System	306	92			166
Floodplain Administration	130				
Floodplain Delineation	1,210				
48th Street Drain	3	21			
Glendale–Peoria ADMP	15		176		106
Groundwater Recharge	1				
Guadalupe Dam	11	38			
Guadalupe Road Channel & Box Culvert	11				
Guadalupe & Spook Hill Flowage Easements		4			
Harquahala FRS	4	31			
Harquahala Floodway		5			
Hydrologic Data Collection	196				
Indian Bend Wash Inlet	1	24			
Indian Bend Wash Interceptor & Side Channels	1	24			
Indian Bend Wash Outlet		3			
Laveen Area Drainage Master Study	180				

Expenditures by Activities & Functions

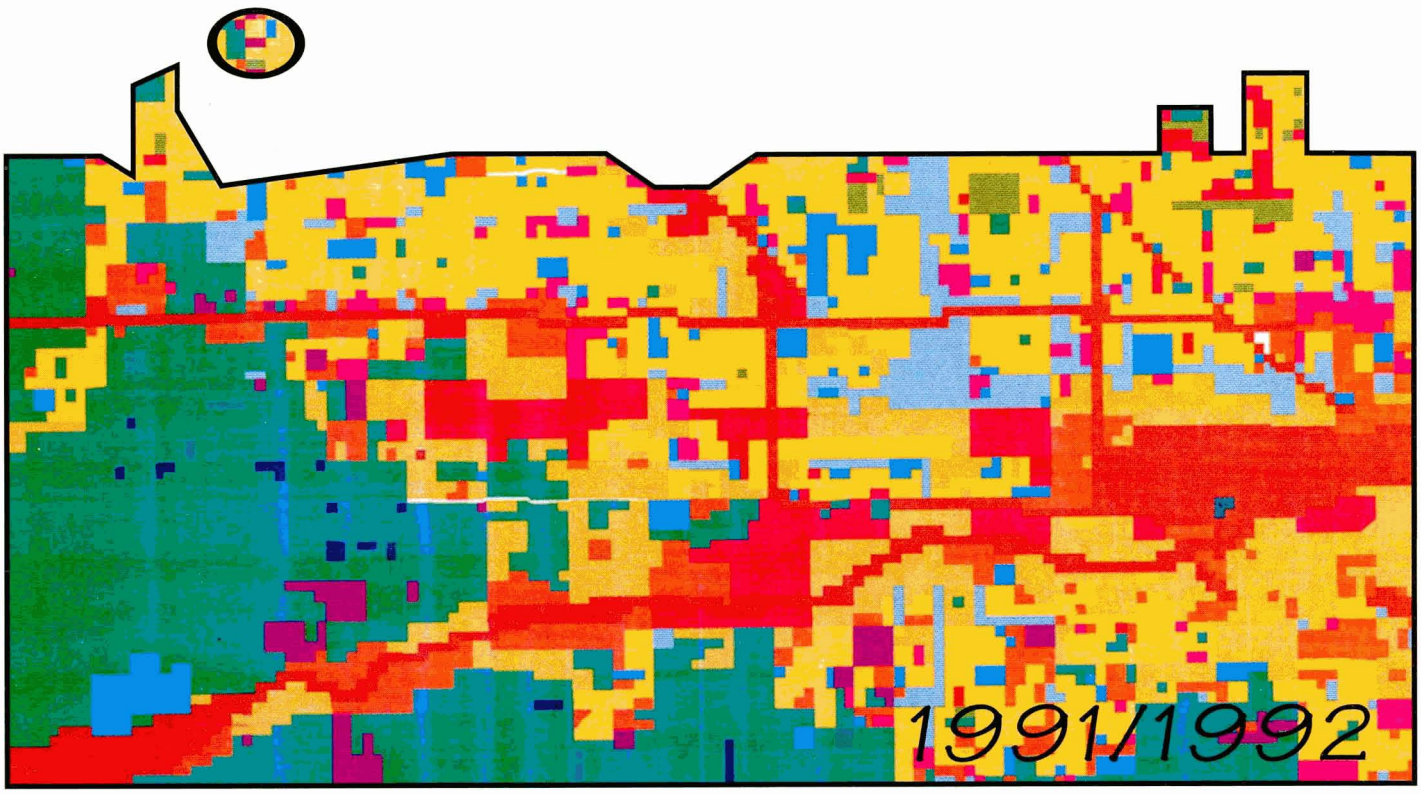
(continued)

Activity	Operations Expenditures, in thousands of dollars		Capital Improvements Program, in thousands of dollars		
	Administrative	Maintenance	Engineering	Land	Relocation & Construction
Maintenance Overhead	146	3,160			
McMicken Dam	1	24			
McMicken Dam Outlet Channel	1	59		1,362	
Mesa/Gilbert ADMS	1				
New River Dam	3	79			
New River ADMS	1	7			
Old Cross Cut Canal	11	30	210		
Paradise Valley–Scottsdale–Phoenix		1			
Pass Mountain FRS and Outlet		33			104
Plan VI Funding	2				1,250
Powerline Dam	1	23			
Powerline Floodway		8			
Price Drain	1				780
Queen Creek ADMS	4				
Red Mountain Parkway	1				
Reed Landfill				48	
Rio Salado	1				
Rittenhouse FRS	1	45			
Saddleback Diversion Channel		17			
Saddleback FRS		60			
Salt River Channel–ADOT	75		68	1	4,068
Salt/Gila Clearing and Channelization	3	146			
Salt/Gila Control Works	5	37	71	3,696	1,094
Salt/Gila River	47				
Salt/Gila Control–Perryville		2			
Scatter Wash Channel	23	3			
Signal Butte Floodway		21		9	44
Signal Butte FRS	3	6			57
Skunk Creek Channel at I-17		10			
Skunk Creek & New River Flowage Easements	5	95	193	740	602
Sossaman Road	38	67		835	2,079
Spook Hill FRS & Outlet	27	29	26		
Sunnycove FRS	1	31			
Sunset FRS	4	6			
Sunset/Sunnycove Pipeline		20			
Town of Cave Creek	1				
Town of Gilbert	12		161	1,025	
Town of Wickenburg	1				
USGS Service Work	278				
Vineyard Road FRS	7	17			45
Watershed Hydrology	399				
White Tanks Dam #3	32	8			
White Tanks Dam #4	15	8			
White Tanks–Agua Fria ADMP	394				
Wickenburg ADMS	432				
Wittmann ADMS	35				
Work done for County Highway Department	6				
Work done for Planning and Development	389	1			
Work done to improve Community Rating System	23	1			
Total	$ 9,872	$ 6,098	$ 2,438	$12,765	$27,528

Flood Control District

OF MARICOPA COUNTY

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009



ANNUAL REPORT

003.111

FINANCIAL HIGHLIGHTS

Fiscal Year Ending June 30, 1992. Preliminary and Unaudited.
See pages 14 through 16 for detailed reporting.

	Dollars	Percent
Revenue		
Flood Control Tax	$46,879,000	88
Local Participation	3,758,000	7
Rental Income	120,000	—
Interest Earnings	1,685,000	3
Sale of Excess Land	1,091,000	2
Miscellaneous	110,000	—
Total Revenue	53,643,000	100
Expenditures		
Flood Control Capital Improvements	28,955,000	62
Other Expenditures	17,851,000	38
Total Expenditures	46,806,000	100
Excess (Deficiency) of Revenues over Expenditures	6,837,000	
Fund Balance at Beginning of Year	22,299,000	
Fund Balance at End of Year	29,136,000	
Breakdown of Expenditures		
Capital Improvements		
Salaries and Wages	1,075,000	2
Real Estate	2,445,000	5
Engineering	1,826,000	4
Relocation of Facilities	2,142,000	5
Construction	21,467,000	46
	28,955,000	62
Other		
Engineering	4,177,000	9
NPDES	431,000	1
Fixed Assets	1,167,000	2
Maintenance	5,841,000	12
Administration	6,235,000	14
	17,851,000	38
Total	$46,806,000	100

The Flood Control District
of Maricopa County
2801 West Durango Street
Phoenix, Arizona 85009
(602) 506-1501

Editors: Susan Fitzgerald and Tina Porter.
Layout and Design: Tina Porter.

Printed on paper made of recycled fiber.

A MISSION TO PERFORM

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

This has been a year of change for the Flood Control District, from within and without.

On the outside, we have a new workplace that enhances our ability to perform our mission.

We also have a change in leadership. Our longtime Chief Engineer and General Manager, Dan Sagramoso, P.E., has been appointed to head the rechristened Maricopa County Department of Transportation. We wish him well and express our appreciation for his warmth, wit and wisdom during his time with us. He helped shape what we are. Since December, Stanley L. Smith Jr., P.E., previously our Deputy and for many years Dan's strong right arm, has taken over leadership of the District, guiding and overseeing our evolution into nationwide leadership in floodplain management until a new Chief Engineer is selected.

From within, we took a searching look at our mission of providing you with flood and stormwater management and framed this mission in terms of performance, the most direct ways we can perform these functions in your daily life.

Our mission is to provide you—the citizens, municipalities, and other governmental agencies—with flood and stormwater protection. We provide these services through regulatory activities, master planning, technical assistance, and structural projects, such as dams, channels, and stormdrains.

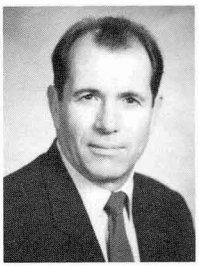
The Flood Control District moved into its new facilities in October, 1991. The facilities include an administrative office building and an operations building, from which our maintenance and flood and storm monitoring objectives are based.

Through much discussion and work, we developed some guiding principles for the performance of our mission:

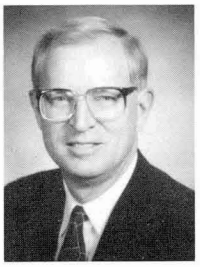
- Contribute to the quality of life, economic development base, and transportation system development by managing flood and stormwater runoff so that damages, transportation delays, and restrictions to development are minimized.
- Contribute to the quality of life of the people of Maricopa County by managing floods and stormwater to enhance the environment or at least to minimize and mitigate negative environmental impacts.
- Develop and sustain a maintenance and operations program that ensures safe and reliable flood control and drainage management facilities.
- Maintain a high-quality, motivated, satisfied work force.
- Be recognized among the county governments of the state as being the best financial managers of flood control and stormwater management programs.

We present our accomplishments of the past fiscal year in terms of how we—as one multi-disciplined department—have applied these guiding principles to perform our mission. This report also documents our continued improvement and development as an organization and as individuals to serve you, our customers, better still.

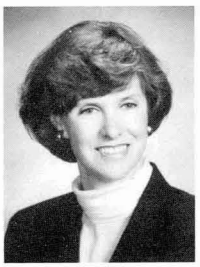
BOARD OF DIRECTORS



Tom Freestone
District 1

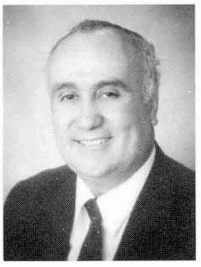


James D. Bruner
District 2



Betsey Bayless
District 3, Chair

Carole Carpenter
District 4



P. Ben Arredondo
District 5

The Flood Control District of Maricopa County, founded in 1959, is a municipal corporation and political subdivision of the State of Arizona. The District is governed by a five-member Board of Directors which consists of the elected County Supervisors.

The District has all the powers, privileges, and immunities granted generally to municipal corporations. The Board of Directors exercises all powers and duties in the acquisition and operation of District properties, contracting, and in carrying out regulatory functions as ordinarily exercised by governing bodies.

The activities of the District are funded by a flood control tax levy assessed on all real property within Maricopa County and a variety of cost-sharing arrangements with the Federal, State, County, and local governments. The tax levy rate for Fiscal Year 1991/92 was $0.4447 per $100 of assessed value.

ORGANIZATIONAL CHART

BOARD OF DIRECTORS ---------- FLOOD CONTROL ADVISORY BOARD
Advisory Group/Consulting Group

- COUNTY MANAGER — Roy Pederson
  - ASSISTANT COUNTY MANAGER TRANSPORTATION AND DEVELOPMENT AGENCY — Louis A. Schmitt, P.E.
    - ACTING CHIEF ENGINEER AND GENERAL MANAGER — Stanley L. Smith, Jr., P.E.
      - DEPUTY CHIEF FLOOD CONTROL ENGINEER — Vacant

ADMINISTRATOR (42)
David Brozovsky, C.P.M.
- Accounting
- Contracting
- Information Systems
- Personnel
- Public Involvement
- Records
- Reception
- Technical Communications

CONSTRUCTION & OPERATIONS (109)
O.D. Park, P.E.
- Construction
- Ecology
- Environmental
- Operations & Maintenance

ENGINEERING (27)
Ed Raleigh, P.E.
- Stormwater Drainage
- Design & Technical Review

HYDROLOGY (29)
David Johnson
- Floodplain Management
- Special Projects
- Watershed Management

LAND MANAGEMENT (19)
Jim Schwartzmann
- Property Acquisition
- Property Engineering
- Property Management

PLANNING & PROJECT MANAGEMENT (18)
John Rodriguez, P.E.
- Planning
- Project Management

257 Authorized Positions — As of June 30, 1992

CITIZENS ADVISORY BOARD

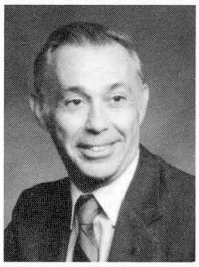
William LoPiano
District 1

John E. Miller, Jr.
District 2

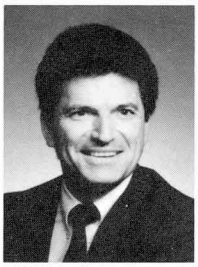
Samuel K. Wu
District 3

Ron Wheat
District 4

Marcella Peters
District 5, Chair



James Matteson
City of Phoenix



Paul Cherrington
Salt River Project

The Flood Control Citizens Advisory Board (FCAB) advises the Board of Directors on flood control, water conservation, floodplain management, drainage, and related matters. The FCAB reviews planning, operations, and maintenance of flood control facilities, and recommends an annual budget to the Board of Directors. The Flood Control Advisory Board members also serve the District as members of the Floodplain Review Board and the Drainage Review Board.

The Advisory Board consists of seven members, five of whom are appointed by the Board of Supervisors to five-year terms. At least one member must be a resident of the City of Phoenix. In addition to those five members, the Salt River Project and the City of Phoenix appoint representatives who are ex-officio members of the FCAB.

This year, Lynn Anderson, who represented Supervisorial District 4, resigned after serving on the citizen's advisory board since November, 1971. Ron Wheat was appointed to serve in his place.

Supervisor Carole Carpenter, District 4, bids farewell to Flood Control Advisory Board member Lynn Anderson, who retired in October, 1991, after serving on the board for 20 years.

"Contribute to the quality of life ... by managing flood and stormwater runoff such that damages, transportation delays, and restrictions to development are minimized."

PLANNING

Managing flood and stormwater runoff requires us to perform a variety of tasks: planning for development, improving capital investments, managing floodplains, regulating drainage plans for development, monitoring floods and storms, and, finally, managing District-owned property to provide flood protection as well as some recreational and aesthetic amenities.

Our planning program calls for the identification of regional drainage problems and development of alternative solutions to protect life and property through the Comprehensive Plan, the Area Drainage Master Study program, Watercourse Master Planning, and other inter-agency cooperative projects.

This year, the updated Comprehensive Plan was adopted by the Board of Directors, providing the framework for our Capital Improvement Program. We are committed to developing scopes of work for each project in the Plan, updating it, and republishing it every five years.

Through our Area Drainage Master Studies (ADMS) program, we evaluate natural drainage systems and watersheds to determine what—if any—additional floodproofing measures are required to meet the current and planned development of the area. This year, several of our projects reached milestones, from commencement to preparation for submittal to the Federal Emergency Management Agency (FEMA):

- The **Salt-Gila Floodplain Delineation** study began in March 1992.
- The **White Tanks Agua Fria** floodplain mapping was completed and made public in two meetings with residents.
- The final floodplain review is underway for the **Laveen** study and we are preparing documents for submittal to FEMA.

A truck distributes crushed granite and a worker sprays it to finish and harden it for the jogging trail it will become in Basin 4 of the East Fork Cave Creek project, on the grounds of the Paradise Valley Community College. (Photo by Ed Karnafel)

CAPITAL IMPROVEMENT

The five-year Capital Improvement Program, also adopted by the Board of Directors this year, calls for implementation of structural projects to resolve flooding and drainage problems through a process of design, land acquisition, relocations, and construction. Some of the projects completed this year are:

Bell Road Improvements: Under an intergovernmental agreement with Maricopa County, we constructed a concrete-lined channel from Bell Road along the 91st Avenue alignment to Greenway Road and east to New River. The channel was completed in April 1992. The City of Peoria will operate and maintain the channel, according to the same agreement.

Upper East Fork Cave Creek: Construction of Basin 4, on the grounds of Paradise Valley Community College, was completed in November 1991. Irrigation installation and landscaping on the basin has begun and is expected to be completed in September 1992. We are working with the City of Phoenix to provide adequate drainage facilities in the area; Phoenix is constructing all of the basins north of Bell Road.

Gilbert Retention Basin: Rain delayed completion of the basin until July 1992, however it did not delay completion of the inlets or the lake there. When complete, the basin will be known as Crossroads Park and will be maintained by the Town of Gilbert. The basin is nestled in the area east of the intersection of the Eastern Canal and the Southern Pacific Rail Road, west of Greenfield Road.

Other projects where work is underway include:

Arizona Canal Diversion Channel, Reach 4: This section, from approximately 12th Street to 40th Street, was estimated to be 71 percent complete by the end of the fiscal year. The Corps of Engineers and the District are working with a committee of Phoenix and Paradise Valley residents to develop final landscape plans for the area east of 30th Street.

Salt River Channelization: Channelization from Sky Harbor Airport to McClintock Drive continues, although work was delayed due to water releases from Salt River Project dams after a particularly wet winter and spring in the Valley of the Sun. The District is cost-sharing with the Arizona Department of Transportation (ADOT) and the City of Tempe for the design and construction of the channel from the Hohokam Freeway to Sky Harbor Freeway. ADOT has paid for all construction west of the Southern Pacific Railroad bridge to McClintock. Tempe is providing all of the rights-of way, and we are cost-sharing with ADOT for construction of the channel east of the bridge. Channelization of the river will extend east of McClintock Drive, however, a "superfund" landfill site in the area must be addressed and a permit from the Corps of Engineers must be obtained before construction can continue. Construction is expected to begin in this area in 1993.

After lengthy negotiations among three parties, an agreement was reached for the protection and exhibition of Native American petroglyphs and artifacts from Flood Control Project sites. The Board signed an agreement in June with the U.S. Army Corps of Engineers and Arizona State University for building and operation of a Cultural Resources Interpretive Center on District property downstream of Adobe Dam. Completion of the Center is expected in June 1993.

Here, Mike Meng, Maintenance Supervisor, plays tour guide for visiting art teachers interested in viewing and drawing the petroglyphs at the future site of the Cultural Resources Interpretive Center. (Photo by Ed Karnafel)

In addition to our planning and capital improvement programs, we also minimize flood damages and restrictions to development by defining and regulating floodplains through our Floodplain Management, Drainage Administration, and Flood and Storm Monitoring programs.

FLOODPLAIN MANAGEMENT

The Floodplain Management program is mandated by Arizona Revised Statutes § 48-3609 and is essentially a program to delineate boundaries of and regulate development within 100-year floodplains using the *Floodplain Regulations for Maricopa County*.

Floodplain Management Workload

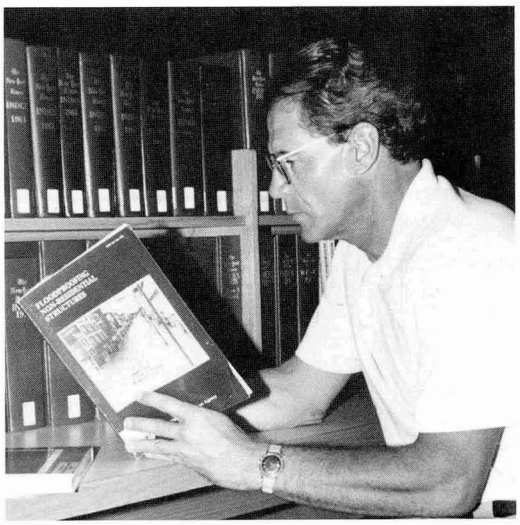
	Fiscal Year		
	1989/90	1990/91	1991/92
Floodplain Use Permits	52	3	40
Floodplain Variances	2	0	3
New Delineations	8	7	3
District Clearances	24	26	27
Violation Cases	3	7	1
Referrals to County Attorney	0	2	0

Last year, the Federal Emergency Management Agency (FEMA) approved the floodplain delineation studies for the following areas: Trilby Wash, Wagner Wash, Gila Bend Canal Study, Caterpillar Tank Wash, East Garambullo Wash, West Garambullo Wash, Twin Buttes Wash, and White Peak Wash. The Sun Valley Parkway North floodplain delineation study was submitted to FEMA last year, but has not yet been approved.

This year we successfully documented our continued compliance with the National Flood Insurance Program and substantiated our improved floodplain management activities through the Community Rating System (CRS). The CRS program was developed by FEMA to recognize the efforts of communities by rating twenty different floodplain management activities that reduce flood losses and rewarding such efforts through flood insurance premium credits to policy holders. Credited activities include floodplain mapping and regulating, providing public information, promoting flood awareness, and flood warning.

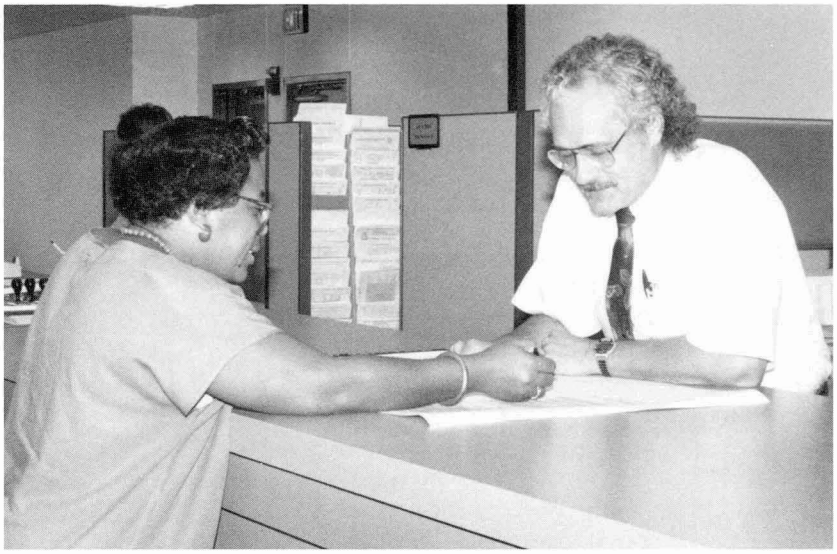
This fiscal year, a five percent flood insurance premium reduction for residents of the unincorporated areas of Maricopa County went into effect. FEMA has confirmed that Maricopa County will obtain an additional ten percent reduction effective October 1, 1992, putting us well on our way to reaching our goal of a twenty percent premium reduction credit in October, 1994.

In one CRS activity, providing public information, the Floodplain Administration section of our Hydrology Division provides flood hazard/map determinations upon request from residents of the unincorporated areas of Maricopa County. We performed more than 6,100 flood hazard/map determinations this fiscal year.



The District accumulates points under the Community Rating System by placing in local libraries publications by the Federal Emergency Management Agency, like this one on how to floodproof structures, and by notifying the public through the media that the publications are available. (Photo by Ed Karnafel)

DRAINAGE ADMINISTRATION



Joe Baker, Administrative Assistant I, and Bill Poppe, Civil Engineering Technician III, provide customer assistance at the downtown planning office, to ease the permit application process for builders and residents who need Flood Control District approval for their plans. (Photo by Ed Karnafel)

Our Drainage Administration program regulates building in the unincorporated area of the County to reduce existing and potential flooding problems caused by local stormwater outside a delineated 100-year floodplain. We coordinate with the Planning and Development, Transportation, and County Health departments to ensure that new development will not increase runoff, divert flows, or cause backwater on other property. We also investigate reports of flooding or possible flooding hazards reported by citizens, and share the information with appropriate departments and agencies.

We conducted a customer satisfaction survey to develop baseline information on our performance and what we can improve. On the whole, respondents indicated the staff was knowledgeable, courteous, helpful and efficient; only one respondent indicated a less-than-satisfactory experience. The survey will be repeated periodically to ensure continued improvement in customer satisfaction.

We reached another milestone in our goal to establish a common basis for drainage management for all jurisdictions within Maricopa County this year as the *Drainage Design Manual for Maricopa County* was prepared for final publication. Volume I, Hydrology, had been published first in April 1991, however, in this fiscal year it underwent significant changes. It was republished in June 1992. A draft of Volume II, Hydraulics, was made available to local governmental agencies and private contractors for review and comment in November 1991, and has since been revised for publication in the fall of 1992. Revisions to both manuals will be made annually, according to our Strategic Plan, beginning July 1, 1993. The District will require that the procedures and standards outlined in the Drainage Design Manual are used in design of its future projects as well as projects in which the District shares costs with other jurisdictions.

Drainage Administration Workload

	Fiscal Year		
	1989/90	1990/91	1991/92
Reviews			
Zoning (including resubmittals)	259	169	144
Subdivision	50	25	26
Master Plans	4	10	8
Board of Adjustment	190	152	108
Drainage Inspections	3,679*	2,899	2,545
Drainage Clearances Issued			2,738

*New drainage regulations implemented in 10/88.

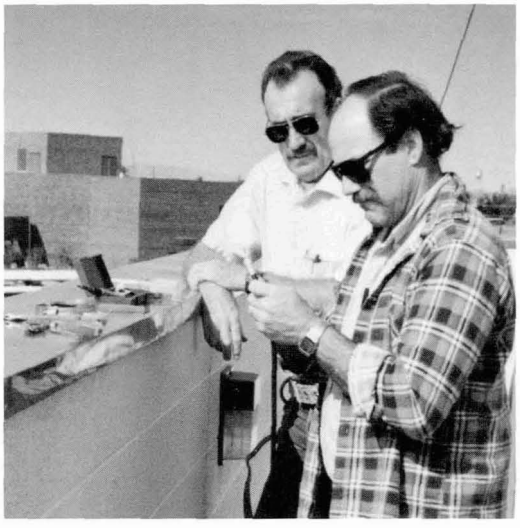
FLOOD AND STORM MONITORING

We have made tremendous strides in improving the technology for gathering "real time" storm data from our precipitation and stream gauge system. This allows us to provide the National Weather Service the information they need to issue flash flood warnings throughout Maricopa County. Highlights of our improvement include:

■ Converting our telemetered data collection system from Ultra High Frequency (UHF) to Very High Frequency (VHF). This increased our system's stability because VHF travels better through mountainous territory and is a stand alone system not dependent on outside support. Total conversion of the gauge system is expected in October 1992.

■ Reducing the downtime of our precipitation and stream gauge system by standardizing maintenance schedules, and through use of on-site and in-lab repair by our Hydrometerologic staff.

■ Participating in a program that allows data-sharing among flood control districts throughout Arizona. The program required coordination between the districts to renumber gauges to eliminate duplication and allow precise identification of gauges throughout the state.



Hydrometeorologic Technician Assistants Randy Elson and Tom Kiefer prepare to rig an antenna atop the District's new operations building. Once installed, the antenna will receive via radio waves information from precipitation and stream gauges throughout Maricopa County, as well as from neighboring counties.

A flood warning market survey was completed during the last fiscal year that surveyed and evaluated the need for and the feasibility of improving flood warning services within Maricopa County. The study found that the District's current telemetered precipitation and stage gauges provide useful rainfall and runoff measurements of storm conditions as they occur, and that weather forecasting tools do aid in forecasting storm conditions before they occur. We continue to work toward implementing one of the five alternatives suggested by the consultant.

PROPERTY MANAGEMENT

In order to help minimize flood damages, we need to acquire land and easements for our flood control projects, and once it is acquired, we manage it, often providing opportunities for other public and private development. For example we lease property to other governmental agencies for multiple-use areas such as the Thunderbird Paseo, a park constructed and maintained by the City of Glendale in Reach 3 of the Arizona Canal Diversion Channel. We allow such development on our land when it does not interfere with the flood control purpose.

We acquired 183 land parcels in this fiscal year, at a cost of more than $3 million. We completed acquisition of property for the New River, ACDC, Trilby Wash, Sossaman Road Drain and the Salt Gila 1000-foot Corridor flood control projects. With the addition of 4,720 acres this fiscal year, we now have 64,354 acres in our land inventory.

We also began the exciting negotiations for a multi-million dollar property exchange to enhance the County's efforts to bring major league baseball to Peoria. The exchange involves 46 acres of District land swapped for 54 acres of privately-owned property, at no cost to the District. The result will be a 76-acre parcel of

District property that Peoria could lease for a portion of a proposed baseball complex. This exchange has the potential of using District land to generate millions of dollars over the life of the agreement with Peoria and the San Diego Padres.

Youngsters play soccer to kick off the opening of the Thunderbird Paseo in Reach 1 of the Arizona Canal Diversion Channel. The District's Land Management Division oversees the arrangement with Glendale, which funded and maintains the park portion of the channel, at about 59th Avenue.

Managing property also allows us to sell or lease excess property after the completion of a flood control structure. This year, we sold property south of Adobe Dam at Beardsley Road to the Arizona Department of Transportation for construction of the Outer Loop. We also sold to a private developer some property that had been acquired for the Arizona Canal Diversion Channel.

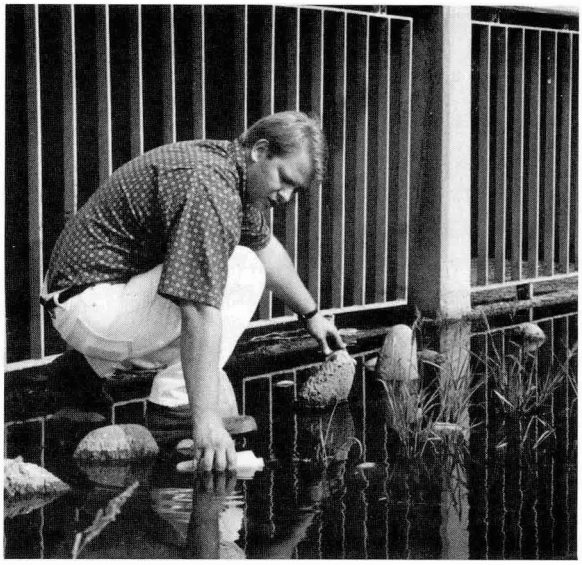
In order to best manage the rights-of-way we have acquired over the years, we have begun a computer-based mapping inventory of all District right-of-way. Our geographic information system allows us to store the inventory as a database that produces a pictorial representation.

"Contribute to the quality of life ... by managing floods and stormwater to enhance the environment or at least to minimize and mitigate negative environmental impacts."

ENVIRONMENT

Our environmental program calls for us to meet requirements set by state and federal government, and to be a catalyst in the definition and coordination of regional roles and responsibilities regarding flood control and stormwater management.

We already are acting to become lead coordinators in meeting the requirements of the Federal Clean Water Act's National Pollutant Discharge Elimination System (NPDES). This program holds municipalities responsible for the quality of the stormwater discharged into waters of the United States. Some examples of such District structures would be the Arizona Canal Diversion Channel discharging into Skunk Creek, and the East Maricopa Floodway discharging into the Gila River.



David Gardner, Civil Engineering Technician I, collects stormwater from the Indian Bend Wash as part of the District's stormwater monitoring program for water quality. (Photo by Ed Karnafel)

We successfully urged the Maricopa Association of Governments (MAG) to form a Stormwater Task Force, which will

Five-gallon cottonwoods planted last winter thrive at a 32-acre site at the Gila-Agua Fria River confluence. The site, planted with 3,200 trees and native grasses, will mitigate the environmental impacts of channelizing the New River.

evaluate the development and implementation of a regional approach to stormwater management that will benefit all NPDES-targeted municipalities. We facilitate and provide administrative support for the task force meetings, the first of which was in June. Issues tackled by the task force include best management practices for erosion control, illicit discharges, and management of stormwater on construction sites of more than 5 acres.

Our progress in meeting the NPDES requirements include:

■ Helping to coordinate the County's NPDES application for its landfills, which was accepted by the Environmental Protection Agency.

■ Drafting and starting negotiations of intergovernmental agreements with Mesa, Phoenix and Glendale to perform stormwater monitoring and other tasks.

■ Preparing a list of 7,000 potentially targeted businesses and mailing NPDES program information, with 23 percent requesting further information.

■ Developing the Erosion Control Manual, a product of a public-private interest task force, which will become Volume III of the *Drainage Design Manual for Maricopa County*.

■ Establishing four stormwater monitoring sites in conjunction with the U.S. Geological Survey.

■ Establishing and publishing the quarterly *Stormwater Monitor* as a forum on regional NPDES issues and information.

The Clean Water Act requires that projects affecting habitat in Waters of the U.S. must make some provisions to protect and/or mitigate that habitat. The New River Channelization project has afforded us the opportunity to perform on-site habitat preservation as well as off-site mitigation.

On-site Preservation: Several acres within the 3-mile channelization will have vegetation preserved, supplemented by native grasses and trees when channelization is completed. There will be no in-channel recreation, partly because of the potential of large, unpredictable flows, but also because it would drive off the wildlife for which the habitat is being preserved.

Off-site Mitigation: The District acquired 32 acres at the confluence of the Agua Fria and Gila Rivers, on the bank of the Gila. Twenty-five acres were planted with 3,200 cottonwoods and mesquites during the past year, with the remaining seven acres seeded with native plant species. The bare-root and five-gallon trees planted at the site will provide cover and food for a variety of wildlife: quail, rabbits, native lizard species, snakes, hawks, coyote and javelina.

"Develop and sustain a maintenance and operations program that ensures safe and reliable flood control and drainage management facilities."

MAINTENANCE

Operating and maintaining our flood control structures to the highest standards of function and aesthetics is one of our most effective methods of managing flood and stormwater. This year, we received a letter of commendation from the U.S. Army Corps of Engineers for our maintenance practices and schedules. The Corps has been a partner on several of our major projects that we now maintain, including the Arizona Canal Diversion Channel.

Maintaining our structures also requires the care of about 120,000 plants that enhance the aesthetics as well as prevent the erosion of earthen structures and slopes.

In total, we maintain 56 flood control facilities, 22 of which are operating structures that must undergo annual dam safety inspections. This year, all of the inspections were completed satisfactorily.

Noel Nunley, Team Leader, trims a Palo Verde, one of hundreds of trees and thousands of landscaping plants maintained by the District along the Arizona Canal Diversion Channel, here shown about 35th Avenue.

Some of the projects we accepted for operation and maintenance this year are:

Arizona Canal Diversion Channel, Reach 3 (23rd Avenue to 7th Street): This project requires maintenance of four miles of lined channel and about 20,000 plants. Because of the additional maintenance responsibilities for this reach and the other two completed stretches of the 17 mile channel, we opened a satellite equipment yard and assigned crews to work six days a week on the Diversion Channel to ensure prompt response to maintenance concerns.

We also accepted landscaping maintenance responsibilities for Reach 1 of the Arizona Canal Diversion Channel (Skunk Creek to Cactus Road) after completion in February 1992. Thunderbird Paseo, a multi-use park, was installed by the City of Glendale, which will be responsible for maintenance of the recreation amenities. We will continue to maintain the paths and the landscaping.

Maintenance Responsibilities Highlights

	Inventory as of 6/91	Added 7/91 to 6/92	Total Inventory	
Bank Protection	710,870	223,704	934,574	square yards
Landscape Erosion Control	3,128	168	3,296	acres
Low Flow — Paved	138,400	150,900	289,300	square feet
Roads	446	21	467	miles
Stormdrain Pipe	27,718	5,232	32,950	feet

East Maricopa Floodway (between Broadway and Brown Roads): Installation of landscaping was completed and a dedication ceremony was held in May 1992. The landscaping project included a "tree donation program" where area residents donated funds to have additional trees planted on the structure. Twenty-three additional drought-resistant trees were planted using the funds donated by 24 individuals and 3 organizations. The District maintains the irrigation system as well as the landscaping while the City of Mesa provides the water.

Other areas we accepted for maintenance include **Scatter Wash** (1,420 feet of channel); **New River Mitigation area** (32 acres); **Sossaman Drain**, north of Baseline Road; and the **Old Cross Cut Canal Improvements**.

Because maintenance is such a labor-intensive job, we use prisoner work crews from the Department of Corrections to assist District workers. The Department of Corrections crews worked 91,455 hours this fiscal year, at a cost of $45,727.50 ($.50 per hour).

"Maintain a high-quality, motivated, satisfied work force."

QUALITY WORK FORCE

A quality work force is required to provide the kind of service our customers deserve, whether those customers are private citizens, developers, other County or governmental agencies, or other District employees. All District employees participated in the District's Total Quality Management (TQM) training program, modeled on the continuous improvement principles of Dr. W. Edward Deming.

The training curriculum was developed by five District employees who served as facilitators for the program: Michael Cuneo, Controller; Betty Dickens, Revegetation Ecologist III; Fred Fuller, Chief Construction Inspector, and Felicia Terry, P.E., Civil Engineer II, and Doug Toy, P.E., Water Resources Manager.

Team Leaders Gary Drake and Noel Nunley discuss the placement of a spillway for stormwater to run off a local parking lot and enter the Arizona Canal Diversion Channel at about Hatcher and 17th Avenue.

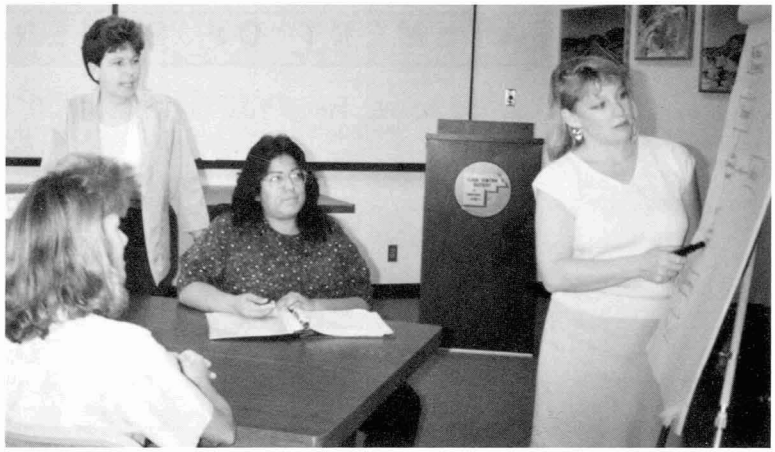
The facilitators attended many training courses which helped them to successfully adapt the TQM principles for service in the public sector.

During the course of each six-week session, five-member teams picked a work-related project and researched means to improve a process. While course projects were meant to be exercises in the Deming principles, some class-time projects provided such clear benefits that they have already been implemented.

A TQM Infrastructure Committee was formed to define a process for evaluating all project proposals. The evaluation would determine if a project proposal was suited to a full TQM analysis and, if so, to track the proposal through implementation or rejection.

Another way of monitoring continuous improvement in the work force is through the awards the organization and its employees receive.

This year, the District was proud to receive the National Association of Floodplain Managers' Award of Excellence, in recognition of our progressive, pro-active efforts to identify flood hazard areas to minimize potential damages and loss.



As the fiscal year closed, the last training sessions of Total Quality Management were underway, fulfilling the District's goal of teaching every employee the continuous improvement process. Here, Kelly Rogers, Accounting Technician, explains to facilitator Betty Dickens, Revegetation Ecologist III, a problem-solving flow chart for the project she and team members Terry Bolligar, Accounting Technician, and Margaret Bejarano, Records Technician II, have chosen.

We are also proud of the initiative and creativity of our individual employees who developed programs that proved to save time and money. These implemented program ideas were then submitted to the National Association of Counties and received Awards of Recognition:

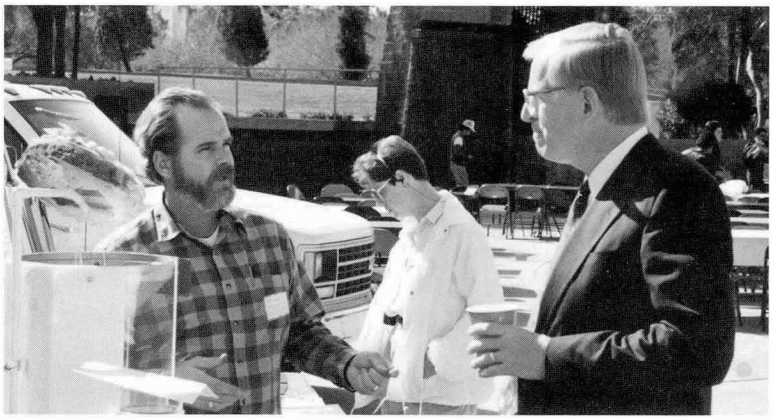
Total Quality Management Training: Stanley L. Smith, Jr., P.E., Acting Chief Engineer and General Manager, proposed and implemented the training of staff to facilitate the Total Quality Management program.

Computer Model Cost Estimator: Anne Blech, C.P., Facilities Planner, developed a computer model to estimate costs of strategic tasks performed in contracted studies.

In-house Construction Inspection: Shewa Shivaswamy, Construction Inspector, took on tasks usually delegated to an outside consultant, at a cost that averages 10 to 15 percent of a construction contract. He performed the inspection duties on a $2 million flood control channel that the District staff also designed, at further cost savings.

Solar-powered Precipitation Gauge: Randy Elson, Hydrometeorologic Asisstant II, adapted an existing telemetry rain gauge to use solar energy to melt snowfall (rather than anti-freeze) to provide instantaneous transmission of data.

Telemetry Calibration Device: Tom Kiefer, Hydrometeorologic Assistant III, developed a testing device to check the pressure accuracy of telemetry stream gauges that will save more than $9,000 annually in staff time, plus $500 a year in lower vehicle use and maintenance, in addition to improving the safety of the testing process.



Bob Naud, Jr., Hydrometeorlogical Technician, explains an automated computerized telemetry rain gauge to Board of Directors member Jim Bruner, District 2.

STATEMENT OF REVENUES

Budget and Actual. Fiscal Year Ending June 30, 1992. Preliminary and Unaudited.

	Budget	Actual	Variance Favorable (Unfavorable)
Revenues			
Flood Control District Tax Levy	$47,040,000	$46,879,000	$ (161,000)
Local Participation	4,027,000	3,758,000	(269,000)
Rental	109,000	120,000	11,000
Interest Earnings	2,000,000	1,685,000	(315,000)
Sale of Excess Land	1,100,000	1,091,000	(9,000)
Miscellaneous	90,000	110,000	20,000
Total Revenues	54,366,000	53,643,000	(723,000)
Expenditures			
Personnel Services			
Salaries and Wages	7,912,000	7,061,000	851,000
Overtime	50,000	4,000	46,000
Total	7,962,000	7,065,000	897,000
Supplies and Services			
Professional Services Contracts	8,995,000	5,773,000	3,222,000
Maintenance Contracts	1,300,000	2,067,000	(767,000)
Maintenance Supplies	301,000	382,000	(81,000)
Insurance	110,000	86,000	24,000
Other Supplies and Services	420,000	1,311,000	(891,000)
Total	11,126,000	9,619,000	1,507,000
Capital Outlay			
Salaries and Wages	1,686,000	1,075,000	611,000
Real Estate	8,751,000	2,445,000	6,306,000
Engineering	4,188,000	1,826,000	2,362,000
Motor Vehicles and Equipment	1,346,800	1,167,000	179,800
Construction and Other Capital Outlay	42,283,000	23,609,000	18,674,000
Total	58,254,800	30,122,000	28,132,800
Total Expenditures	77,342,800	46,806,000	30,536,800
Excess (Deficiency) of Revenues over Expenditures	(22,976,800)	6,837,000	29,813,800
Fund Balance at Beginning of Year	29,890,200	22,299,000	(7,591,200)
Fund Balance at End of Year	$ 6,913,400	$29,136,000	$22,222,600

EXPENDITURES

Fiscal Year Ending June 30, 1992. Preliminary and Unaudited. This table may not always agree with the Breakdown of Expenditures in the Financial Highlights table (inside front cover) except in total.

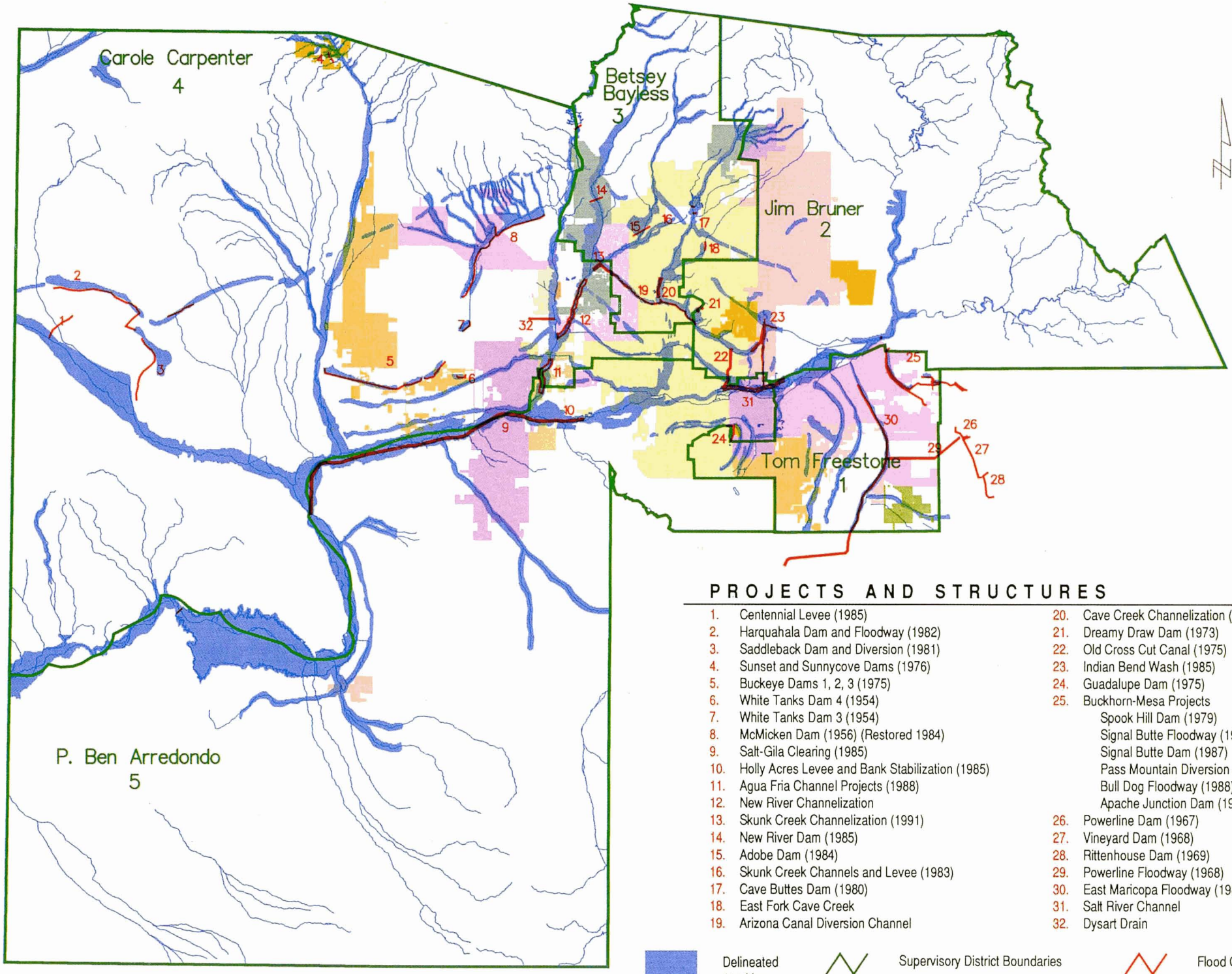
	Engineering	Land	Relocation and Construction	Wages	Total
CAPITAL IMPROVEMENT PROJECTS					
Agua Fria	$ 5,000	678,000		37,000	720,000
Arizona Canal Diversion Channel	222,000	474,000	1,356,000	353,000	2,405,000
Bell Road Expansion			1,217,000	41,000	1,258,000
Cave Creek Improvements	4,000				4,000
District Facility	173,000		1,591,000	8,000	1,772,000
East Fork Cave Creek	43,000	298,000	4,402,000	139,000	4,882,000
EMF: Buckhorn-Mesa	7,000		976,000	34,000	1,017,000
EMF: Williams-Chandler	4,000		75,000	4,000	83,000
Flood Warning			128,000	9,000	137,000
Glendale/Peoria ADMP	279,000		729,000	14,000	1,022,000
McMicken Dam		99,000		3,000	102,000
Old Cross Cut Canal	224,000			48,000	272,000
Plan Six			1,057,000		1,057,000
Price Drain	133,000		1,345,000		1,478,000
Reed Landfill		4,000			4,000
Salt-Gila Control Works	42,000	72,000	765,000	38,000	917,000
Salt River Channelization			1,826,000	36,000	1,862,000
Scatter Wash				6,000	6,000
Skunk Creek/New River	345,000	292,000	1,837,000	164,000	2,638,000
Sossaman Road	136,000	444,000		48,000	628,000
Spook Hill FRS	13,000		183,000	25,000	221,000
Town of Gilbert	196,000	76,000	3,320,000	27,000	3,619,000
Union Hills Storm Drain			2,802,000	3,000	2,805,000
White Tanks ADMP		1,000		29,000	30,000
Wittmann Wash		7,000		9,000	16,000
Total	$ 1,826,000	$ 2,445,000	$ 23,609,000	$ 1,075,000	$28,955,000

	Administration	Maintenance	NPDES	Engineering	Total
AREA DRAINAGE MASTER STUDIES					
Laveen	$ 11,000			$ 129,000	$ 140,000
Salt River	49,000			551,000	600,000
Wickenburg	20,000			304,000	324,000
White Tanks	17,000			271,000	288,000
Mesa/Gilbert	73,000				73,000
Arizona Canal Diversion Channel	11,000			504,000	515,000
4 others with expenditures under $10,000 each	20,000				20,000
Total	201,000			1,759,000	1,960,000
DISTRICT SERVICES					
Administrative Overhead	4,666,000	277,000	282,000	139,000	5,364,000
Maintenance Overhead	142,000	2,350,000	143,000		2,635,000
District Yard		339,000			339,000
USGS Service Work	444,000				444,000
Work to improve CRS	18,000				18,000
Enforcement of Floodplain Regulations	37,000				37,000
Work done for Planning & Development	429,000				429,000
Watershed Hydrology	188,000			45,000	233,000
Work done for MCDOT	11,000	6,000			17,000
Floodplain Delineation	141,000			1,369,000	1,510,000

continued on page 16

	Administration	Maintenance	NPDES	Engineering	Total
Flood Insurance Study	90,000			166,000	256,000
Hydrologic Data Collection	49,000	7,000		219,000	275,000
Flood Warning System	173,000	91,000		182,000	446,000
Floodplain Administration	85,000			8,000	93,000
Computer Systems	216,000				216,000
City of Phoenix	2,000			82,000	84,000
Town of Wickenburg		10,000			10,000
DISCTRICT STRUCTURES					
Dysart Road Agua Fria Drain	2,000	17,000		3,000	22,000
48th Street Drain		15,000			15,000
Old Cross Cut Canal	4,000	38,000		4,000	46,000
Salt-Gila Clearing	4,000	275,000			279,000
Salt-Gila Control Works	6,000	6,000			12,000
Sossaman Road	10,000	28,000			38,000
Agua Fria River	53,000	158,000			211,000
Indian Bend Wash: Outlet	11,000	2,000			13,000
Indian Bend Wash: Inlet	2,000	15,000		1,000	18,000
Indian Bend Wash: Interceptor	1,000	28,000			29,000
Arizona Canal Diversion Channel	112,000	766,000	2,000	30,000	910,000
East Maricopa Floodway	9,000	363,000	2,000	11,000	385,000
Buckhorn-Mesa		1,000		27,000	28,000
Salt River Channel	22,000				22,000
White Tanks #3	1,000	10,000		10,000	21,000
White Tanks #4		23,000			23,000
McMicken Dam	4,000	39,000			43,000
Dreamy Draw Dam	2,000	9,000			11,000
Buckeye #1	10,000	60,000			70,000
Buckeye #3		47,000			47,000
El Mirage Road Drain Channel		18,000			18,000
Spook Hill FRS	10,000	40,000		4,000	54,000
Signal Butte Floodway		15,000			15,000
Apache Junction FRS	5,000	6,000			11,000
Bulldog Floodway		13,000			13,000
Powerline Dam		50,000			50,000
Powerline Floodway	3,000	77,000			80,000
Vineyard Road FRS		37,000			37,000
Rittenhouse FRS		10,000			10,000
Harquahala FRS	1,000	48,000		7,000	56,000
Saddleback FRS		18,000			18,000
Centennial Levee		12,000			12,000
Harquahala Floodway		11,000			11,000
Eagletail FRS	14,000				14,000
Wittmann Area	2,000	4,000		5,000	11,000
Cave Buttes Dam	1,000	83,000		1,000	85,000
Adobe Dam	5,000	53,000			58,000
Skunk Creek Channelization at I-17		21,000			21,000
New River Dam		36,000		3,000	39,000
Skunk Creek/New River	34,000	196,000		62,000	292,000
Agua Fria River	79,000	13,000		3,000	95,000
East Fork Cave Creek	26,000	25,000		15,000	66,000
Bell Road Expansion				15,000	15,000
Cave Creek Channelization	7,000			4,000	11,000
36 others with expenditures under $10,000 each	70,000	75,000	2,000	3,000	150,000
Total	$ 7,201,000*	$ 5,841,000*	$ 431,000	$ 2,418,000	$15,891,000

*Includes fixed assets.



PROJECTS AND STRUCTURES

1. Centennial Levee (1985)
2. Harquahala Dam and Floodway (1982)
3. Saddleback Dam and Diversion (1981)
4. Sunset and Sunnycove Dams (1976)
5. Buckeye Dams 1, 2, 3 (1975)
6. White Tanks Dam 4 (1954)
7. White Tanks Dam 3 (1954)
8. McMicken Dam (1956) (Restored 1984)
9. Salt-Gila Clearing (1985)
10. Holly Acres Levee and Bank Stabilization (1985)
11. Agua Fria Channel Projects (1988)
12. New River Channelization
13. Skunk Creek Channelization (1991)
14. New River Dam (1985)
15. Adobe Dam (1984)
16. Skunk Creek Channels and Levee (1983)
17. Cave Buttes Dam (1980)
18. East Fork Cave Creek
19. Arizona Canal Diversion Channel
20. Cave Creek Channelization (1991)
21. Dreamy Draw Dam (1973)
22. Old Cross Cut Canal (1975)
23. Indian Bend Wash (1985)
24. Guadalupe Dam (1975)
25. Buckhorn-Mesa Projects
    - Spook Hill Dam (1979)
    - Signal Butte Floodway (1984)
    - Signal Butte Dam (1987)
    - Pass Mountain Diversion (1987)
    - Bull Dog Floodway (1988)
    - Apache Junction Dam (1988)
26. Powerline Dam (1967)
27. Vineyard Dam (1968)
28. Rittenhouse Dam (1969)
29. Powerline Floodway (1968)
30. East Maricopa Floodway (1989)
31. Salt River Channel
32. Dysart Drain

Delineated 100-Year Floodplains

Supervisory District Boundaries

Flood Control Structures

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

- Light Industrial
- Heavy Industrial
- Light Residential
- Medium Residential
- Heavy Residential
- Commercial
- Open
- Agricultural
- Transportation
- Public Land

The cover art is a color-coded land-use map generated by our computerized geographic information system.

The District generates land-use and soil maps because these factors help determine the rate and amount of stormwater runoff, which is vital to project planning.

The area on the cover is central Phoenix, including the Salt River, which is identified roughly by the jagged brown line starting from the lower left corner.

The District is conducting a Master Plan Study of the Salt-Gila Rivers from Gillespie Dam to Granite Reef Dam, and mapping such as this will be an important component.

The legend to the left provides a reference of the land uses in this area.

Property of
Flood Control District of MC Library
Please return to
2801 W. Durango
Phoenix, AZ 85009

Flood Control District of Maricopa County

Annual Report 1992/1993

Providing flood control management and leadership throughout Maricopa County

003.112

Flood Control District Tax Levy Rate: 1961 to 1993

Fiscal Year Ending	Levy Rate*	Tax Revenue, $
1961	0.05	253,000
1962	0.05	288,000
1963	0.02	126,000
1964	0.02	135,000
1965	0.02	145,000
1966	0.02	153,000
1967	0.02	158,000
1968	0.02	164,000
1969	0.05	446,000
1970	0.05	454,000
1971	0.05	480,000
1972	0.04	425,000
1973	0.05	645,000
1974	0.20	3,428,000
1975	0.20	3,747,000
1976	0.20	4,154,000
1977	0.20	4,395,000
1978	0.20	4,675,000
1979	0.20	5,026,000
1980	0.20	5,342,000
1981	0.43	11,825,000
1982	0.34	13,720,000
1983	0.50	21,779,000
1984	0.48	25,780,000
1985	0.50	28,697,000
1986	0.50	33,644,000
1987	0.50	41,566,000
1988	0.50	46,059,000
1989	0.50	51,345,000
1990	0.43	46,408,000
1991	0.42	45,797,000
1992	0.44	46,879,000
1993	0.39	39,715,000

*Per $100 assessed valuation.

On the Cover: Photographed on January 9, 1993, New River Dam impounded more than 5 billion gallons of water, releasing it slowly over several weeks into the riverbed. The flow held up work on New River channelization between Olive Avenue and Bethany Home Road for about two months.

The Flood Control District of Maricopa County
2801 West Durango Street
Phoenix, Arizona 85009

Editing, Layout and Design:
Susan Fitzgerald and Tina Porter

Financial Highlights

Fiscal Year 1992/1993, Preliminary and Unaudited. Amounts are rounded to the nearest thousand.

	Dollars	Percent
Revenues		
Flood Control Tax	$39,715,000	89
County and Local Participation	2,413,000	5
Rental Income	123,000	0
Interest Income	938,000	2
Sale of Excess Land	1,162,000	3
Miscellaneous	566,000	1
Total Revenue	44,917,000	100
Expenditures		
Flood Control Capital Improvements	25,910,000	60
Other Expenditures	17,199,000	40
Total Expenditures	43,109,000	100
Excess (Deficiency of Revenues over Expenditures)	1,808,000	
Fund Balance at Beginning of Year	28,038,000	
Fund Balance at End of Year	$29,846,000	
Breakdown of Expenditures		
Capital Improvements		
Salaries and Wages	$ 1,022,000	2
Real Estate	7,593,000	18
Engineering	2,193,000	5
Relocation of Facilities	507,000	1
Construction	14,595,000	34
Total Capital Improvements	25,910,000	60
Other Expenditures		
Engineering	2,751,000	7
NPDES	635,000	1
Fixed Assets	817,000	2
Maintenance	6,800,000	16
Administration	6,196,000	14
Total Other Expenditures	17,199,000	40
Total Expenditures	$43,109,000	100

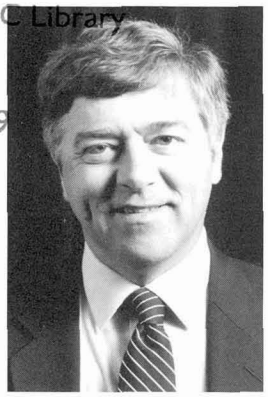
Contents

Flood Control: It Works! 1
Tested by the Waters 2
Drainage Administration 5
Maintenance 6
Floodplain Management 8
Flood Detection and Data Collection 10
Environmental Program 12
Property Management 14
Planning and Capital Improvement Program 15
Awards and Recognition 20
Board of Directors 22
Citizens Advisory Board 22
Statement of Revenues, Expenditures, and Changes in Fund Balance 23
Organizational Chart 23
Expenditures by Activities and Functions 24

Printed on recycled paper.

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

Flood Control: It Works!



For years, the Flood Control District has weathered criticisms that our work is unnecessary; that our floodplain delineations are unrealistic. Despite the criticism, we continued toward our goal of providing flood control management and leadership throughout Maricopa County, knowing that as soon as the rain fell again, our efforts would be proven worthwhile.

And this year, the jeers turned to cheers as most of the County continued to function despite the intense rainfall and runoff we received when a series of storms off the Pacific Ocean brought rain, rain, and more rain in January, 1993.

People have complained that the Arizona Canal Diversion Channel is an unnecessary concrete ditch. But in January and February, that "ditch" safely conveyed billions of gallons of stormwater that otherwise would have swamped the stormdrains, and flowed over streets and into homes and businesses.

Residents protested when we removed hundreds of acres of non-native "salt cedar" trees from the Salt and Gila riverbeds, angered that we were disturbing the wildlife habitat. But removing them, in cooperation with all landowners and state regulations, made room for the water that would otherwise have overflowed onto farmland. In fact, some water did go over the banks in Maricopa County, but far less than during the severe storms of 1980.

A localized storm in September 1992 convinced the U.S. Air Force that District hydrologists and computers can accurately predict where stormwater will go. Luke Air Force Base flooded as a result of that storm, and the Air Force now is willing to spend $6 million in a cost-shared project to keep it from happening again.

But the Flood Control District is not all about building and maintaining structures like the Arizona Canal Diversion Channel. Since the last great storms, we have found methods to reduce flood damages that don't require the building of giant earthen dams or deep concrete channels.

This year, newspaper letter-writers and columnists opined that the best way to prevent flood damages is to keep people out of floodplains. We agree. Since we received legal authorization in 1986, we have delineated more than 1,000 miles of floodplain. And since 1988, when the County drainage regulations went into effect, changing building standards to keep structures from causing or worsening local runoff problems, we have conducted nearly 17,000 inspections to ensure that they comply.

We also have earned residents of the unincorporated area of the County a 15% discount on their flood insurance premiums (effective October 1, 1992) because we met rigorous federal requirements to document our projects, floodplain delineations and public education efforts to reduce flood damages. Some of our projects earn points for city residents also, whose jurisdictions participate in the same federal program.

In this report, you'll read success stories about flood reduction measures we have implemented since the severe flooding of more than a decade ago and the issuance of the 1978 Governor's Task Force Report. We'll show you how our structures passed the test in January, and how we plan to help keep the Valley of the Sun moving during the storms of the future.

Neil S. Erwin, P.E.
Chief Engineer and General Manager

Neil S. Erwin, P.E., took over the helm of the Flood Control District in January, 1993, as the Chief Engineer and General Manager.

He was graduated from the Military Academy at West Point in 1971 and received a commission as a 2nd Lieutenant in the U.S. Army Corps of Engineers. After seven years of participating in military engineering around the world, Mr. Erwin resigned his commission and settled back home in Phoenix, as a civilian with the Los Angeles District Corps of Engineers.

Mr. Erwin has a Masters of Science in Engineering and an M.B.A. from Arizona State University. He is a registered professional engineer in Arizona and Virginia.

Tested by the Waters

When the rain started falling hard in the second week of January, 1993, flows in the Salt River reached 124,000 cubic feet per second (cfs) and members of the media started calling the Flood Control District to ask: "What's different since the last big flood? What have you done to make things better?"

The answer is, quite a lot.

Learning from past flooding

The media and residents alike immediately began to compare the flood of 1993 to the severe flooding that occurred in 1978, 1979, and 1980. Like those events, the flood of 1993 resulted from a series of storms coming off the Pacific Ocean, hitting the State in such quick succession that the soaked ground could absorb no more.

While the flood of 1980 produced a much higher peak flow on the Salt River (more than 170,000 cfs), the storm of 1993 produced much more runoff because of the saturated soil, melting snow pack in the north, and the fact that there was just much more rain falling over a longer period of time.

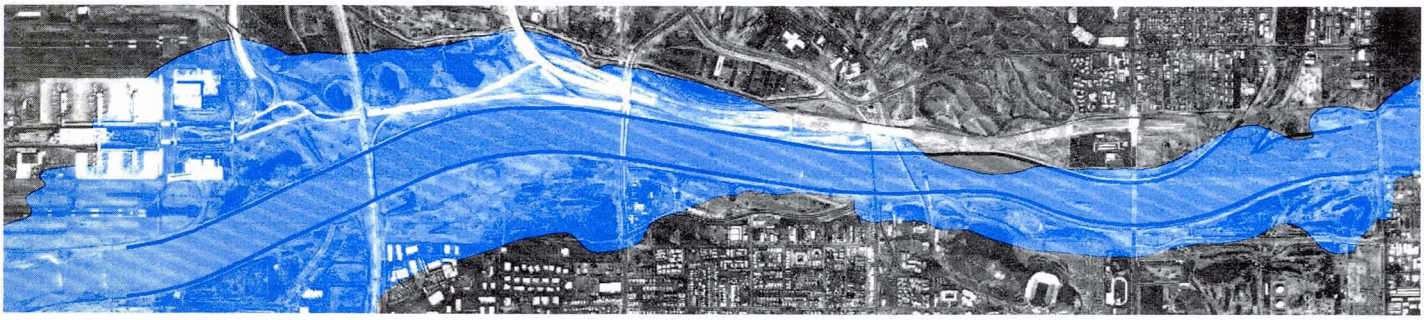
For contrast, consider that in 1980, Painted Rock Dam reservoir (a Corps of Engineers flood control dam on the Gila River near Gila Bend) was nearly 80% full. In 1993, floodwaters overtopped the spillway due to the excessive runoff entering the river system upstream.

Although the severe storms of the late 1970s and early 1980s were comparable to the weather system that hit the Valley of the Sun this last January, there is no comparison to the property damages, the transportation delays, and the loss of life resulting from the storms of more than a decade ago. In fact, damages were so great after the 1978 storms that the Governor ordered a special Task Force to assess the problems and recommend solutions.

Several of those recommendations have been implemented by the District:

- Joined with the Arizona Department of Transportation and the City of Tempe to channelize the Salt River from 40th Street in Phoenix to McClintock Drive in Tempe.

In 1978, Cave Creek Wash overtopped the Arizona Canal at about 23rd Avenue between Peoria and Dunlap, flooding homes to the south. Completion of the Arizona Canal Diversion Channel as well as channelization of the Wash kept floodwater out of streets, yards, and homes during the storms of January, 1993, averting this kind of damage.



The blue area represents where the floodwaters flowed over the banks of the Salt River (between 40th Street and McClintock Road) in the February 1980 storm. The heavy blue line shows where—since that storm—the river has been channelized to withstand 215,000 cfs, successfully containing floodwaters during the January 1993 flows.

- Spent $10 million since 1983 to clear a 1,000-foot wide corridor of non-native salt cedar bush that choked the Salt and Gila Rivers, causing water to overflow the banks. Additionally, a pilot channel was constructed for low flows to help keep the river banks from eroding. All this work was performed with the express consent of, and coordination with, all property owners, jurisdictions, and applicable state and federal agencies.

- Installed and maintained a state-of-the-art network of just under 200 electronic gauges throughout the watersheds that affect Maricopa County. The gauges transmit rainfall and stream flow information instantaneously to the District as well as to the National Weather Service to support flood warning efforts. The gauges also provide data that is valuable for the study and computer modeling of desert storms and floods.

In 1978, when alternatives were being considered to Orme Dam, which had become politically infeasible, it was recommended that Roosevelt Dam be raised to accommodate storage of water for flood control purposes. The District has helped fund that recommendation.

Just as important to reducing flood damages have been the District's efforts to implement non-structural approaches. In the past ten years we have:

- Initiated an aggressive program in 1986, based in state law, to identify 100-year floodplains; so far, more than 1,000 miles of floodplain have been identified.

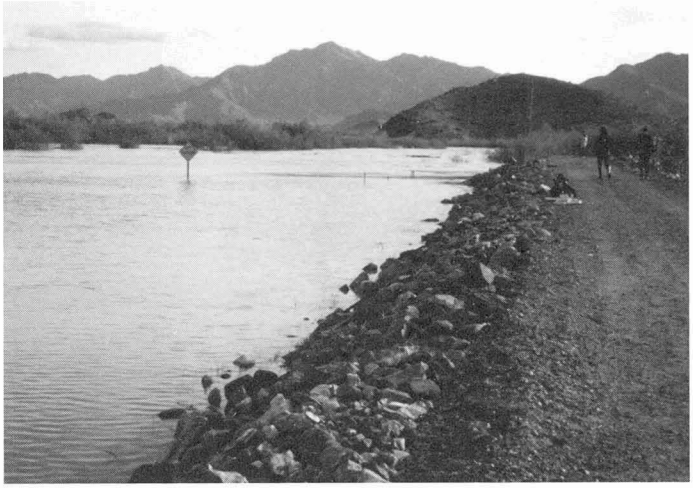
- Encouraged passage in 1988 of a County drainage regulation that requires all building plans in the unincorporated area be reviewed to ensure they do not cause any drainage problems; since then, the District has conducted nearly 17,000 building inspections.

The Flood of '93

Since the last great floods, the District has celebrated the completion of twenty flood control structures across the County. These structures helped contain floodwaters and damages during the 1993 storm. While all of our structures worked as designed without failure, there were some tense and dramatic moments.

District crews worked late into the night on January 8 to supplement a levee we constructed in 1985 near Holly Acres. The small community sits at the confluence of the Salt and Gila rivers and flooded repeatedly in the late 1970s and early 1980s. The levee, built to withstand 115,000 cfs, held against at least 124,000 cfs in January, although the community was evacuated anyway as a precaution. No homes were flooded by the river, and Flood Control District crews sandbagged dip crossings of the river to ensure that water didn't rise up the street and into homes.

Elsewhere around the County, when an embankment on Queen Creek was breached one night in January, Flood Control District crews raced to repair it. Their quick action averted further damage to adjacent farmland and homes and the District's



A traffic sign is marooned by the flowing Gila River at the unbridged crossing of 115th Avenue in January. The flow is checked by the District's rock levee (right), completed in 1985, to protect the nearby community of Holly Acres.

East Maricopa Floodway, which was being eroded by the heavy overland flow.

Not all the flooding action was dramatic enough to require late night vigils—and not all of it occurred along the Salt and Gila Rivers. The Phoenix and Vicinity (including New River) Flood Control Project, which includes four dams and the much-maligned Arizona Canal Diversion Channel, performed perfectly throughout the rainy winter.

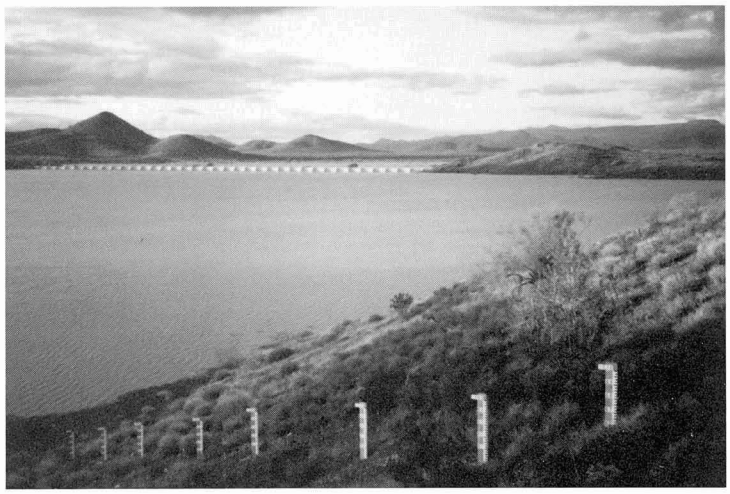
The New River Dam and the Cave Buttes Dam on Cave Creek Wash north of Phoenix each held back more than 5 billion gallons of stormwater. Cave Buttes Dam drained for several weeks into Cave Creek Wash, which now flows into the Arizona Canal Diversion Channel. While several dip crossings of the wash in north Phoenix were closed during those weeks, the water stayed safely in the channel, and out of homes and businesses.

Flows in the Arizona Canal Diversion Channel peaked January 11 at 1,400 cfs, at a depth of 4.5 feet near 67th Avenue—a considerable amount of water, since the channel at that location is 110 feet wide. Water that entered the Channel from Cave Creek Wash, other urban streams and city stormdrains flowed into Skunk Creek. Before construction of the Diversion Channel, this water would have ponded north of or flowed into the Arizona Canal, until it broke over the canal and bank, flooding parts of Phoenix, Glendale, and Peoria.

For a while during this fiscal year, we focused on the task at hand: monitoring the flood flows and making emergency repairs where needed. But as the Salt River dwindled to a trickle and the water drained from behind the dams, the District returned to business as usual:

- Responding to citizen drainage inquiries;
- Maintaining our structures;
- Delineating floodplains;
- Collecting flood data;
- Meeting federal and state environmental guidelines;
- Managing District property;
- Planning, to avoid flood damages in the future; and
- Constructing projects.

These are the everyday activities that prepare us for the unpredictable, yet inevitable, severe desert storms. They are integral to our mission to provide flood control management and leadership throughout Maricopa County.



Cave Buttes Dam held record amounts of water after the January storm before releasing it into Cave Creek Wash. The old Cave Creek Dam, visible here, would have overtopped if it were the only structure on the wash.

Drainage Administration

Even outside 100-year floodplains, improper construction practices can cause drainage problems. County ordinances require that buildings, even walls, do not divert surface flows. Stormwater runoff must enter and exit the property at the same place it did before construction. These actions help avert the cumulative effect of diverting even small surface flows.

All building plans in the unincorporated area of the County, from the do-it-yourselfer to large-scale developers, are reviewed by the Flood Control District. These plans also must be approved by the County's Planning and Development, Transportation, and Health Departments. To make it easier for applicants to have their plans approved, District staff has joined representatives of these departments in "one-stop-shops" in downtown Phoenix and in Sun City West.

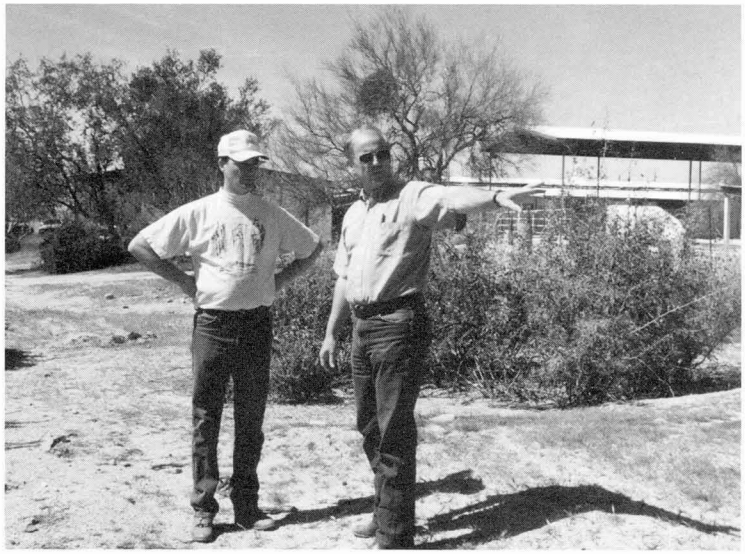
A further improvement in customer service is a plan being developed by the Flood Control District and the County Building Safety office to combine certain inspections conducted by both groups, streamlining the process for builders.

A survey was developed and administered to gauge customer satisfaction with the level of service offered in the District's plan review process. Surveys in November 1992 and March 1993 showed a 95% approval rating, with an average of 83% of the questionnaires returned.

Drainage Administration Activity Chart

	1990/91	1991/92	1992/93
Inspections	2,999	4,389	5,848
Drainage clearances issued	2,208	2,738	3,250
Plan reviews	503	356	415
Complaints investigated	144	60	221*

*Major storms in July 1992 and January 1993 increased the number of complaint investigations significantly during this fiscal year.



Drainage Inspector George Lindop discusses with a property owner how his proposed construction can be accomplished in accordance with County guidelines to keep from causing drainage problems. *Photo by Ed Karnafel.*

In addition to reviewing plans to comply with County regulations, Drainage Administration staff respond to citizen calls about possible violations. An inspector is dispatched to investigate and document the situation. If a violation exists, the inspector notifies the property owner to discuss how to correct the situation. Unresolved complaints are referred to the County Attorney's Office for action.

Drainage Design Manual

Volume II of the Drainage Design Manual, Hydraulics, was completed and more than 100 people from the private and public sector attended a hands-on workshop to learn how to use the material.

The manual has been developed to offer information specific to the desert southwest conditions on how to calculate rainfall runoff amounts (Volume I, Hydrology) and how to develop drainage systems to handle the runoff (Volume II).

By using this standardized information, drainage systems developed by a variety of builders, across jurisdictions, can mesh with each other and accommodate storm runoff to avert local drainage problems.

Maintenance

Routine maintenance of District structures was anything but routine after the storms of January. Record winter rains took a heavy toll on many of the earthen dams and channels—causing erosion that required repair.

During the storms, maintenance crews were dispatched to observe the condition of the structures and to make emergency repairs as necessary. Overtime work required by the crews exceeded 1,000 hours, most of which was supplementing a levee in the Holly Acres area and in repairing a breach in a levee on Queen Creek.

The Holly Acres levee, constructed by the District in 1985, was built to withstand 115,000 cfs, but—with the help of District crews and laborers from the Arizona Department of Corrections and an estimated 15,000 sand bags—held out against the peak flow of 124,000 cfs. To reduce the possibility of flooding, the crews constructed a diversion levee, measuring 1,000 feet long, 12 feet wide, and 8 feet high, at the east end of the dike. Sand bags were placed on the road crossings at 115th Avenue on the north side of the river.

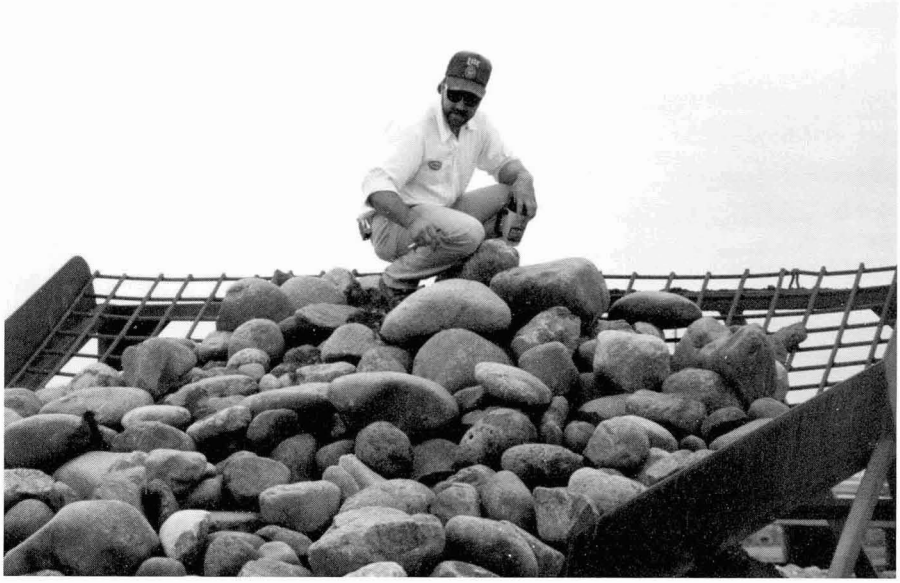
On the other side of the Valley, crews monitoring the District's east side projects found a breach in Queen Creek, which was overflowing onto adjacent farmland and the District's East Maricopa Floodway—causing damage to both. Crews worked into the night to repair the breach, and returned over the next few days to reinforce that breach as well as two other areas that were considered in jeopardy.

In all, District crews spent more than 2,600 hours surveying the structures during the January storms, and nearly 10,500 hours repairing erosion to and removing sediment from the structures since.

Other milestones reached by our Construction and Operation Division over the past year include:

- Accepting into our maintenance program responsibility for the East Fork Cave Creek Channel.
- Completing a comprehensive review of the District's maintenance responsibilities as recorded in Intergovernmental Agreements that dated back three decades. The review uncovered situations where we were taking care of property

Floodwater from the Salt and Gila Rivers threatened the small community of Holly Acres until a levee was reinforced by District personnel and Department of Corrections crews.



Mike Rosiewicz, Team Leader, inspects the work of the "grizzly," a device designed by Team Leader Tim Burkeen to separate rocks from dirt. The grid is made of steel rebar on an angle to allow the dirt to fall below. When the rock is laid to protect a channel, grout will be poured on the rock to keep it in place. It is important to remove the dirt because it affects the ability of the grout to adhere to the rock.

for which we had no jurisdiction. Discussions with the agencies concerned corrected and realigned maintenance responsibilities.

- Beginning a computerized system to track calls from the public, and recording 28 complaints with concerns ranging from weeds or debris on District structures to the need for fence repair or better drainage.

New operations yard saves funds

This year, the District opened a satellite operations yard for crews maintaining the Arizona Canal Diversion Channel. The yard, located on property acquired by the District for the project, allows crews to report to the facility near their work areas, rather than reporting to the Durango complex—nearly half an hour away—and returning to the Durango complex at night. Estimated savings, based on 12 crew members working 208 days per year, is approximately 2,500 hours (of previous commute time), or approximately $35,000.

The District is currently investigating the savings of opening a similar satellite yard in the East Valley.

Dan Davis, Equipment Operator II, removes dirt from a bank of the East Fork Cave Creek at Siesta Lane north of Union Hills, to make way for an inlet. Drainage from an adjacent trailer park was eroding the bank at the location, so the maintenance staff suggested creating the inlet to protect the bank and accommodate the runoff.

Floodplain Management

Floodplain Delineation Studies

This year, the Federal Emergency Management Agency (FEMA) approved floodplain delineation studies for Gila Bend, Little Rainbow Valley Wash and Luke Wash (see map).

Studies were forwarded to FEMA for six other floodplains: Powerline, Daggs, Star, Iona, Deadman, and Apache washes.

Four other delineation studies remain in progress: Waterman Wash, Buckeye Area, White Tanks Wash, and Fountain Hills (North and South Studies).

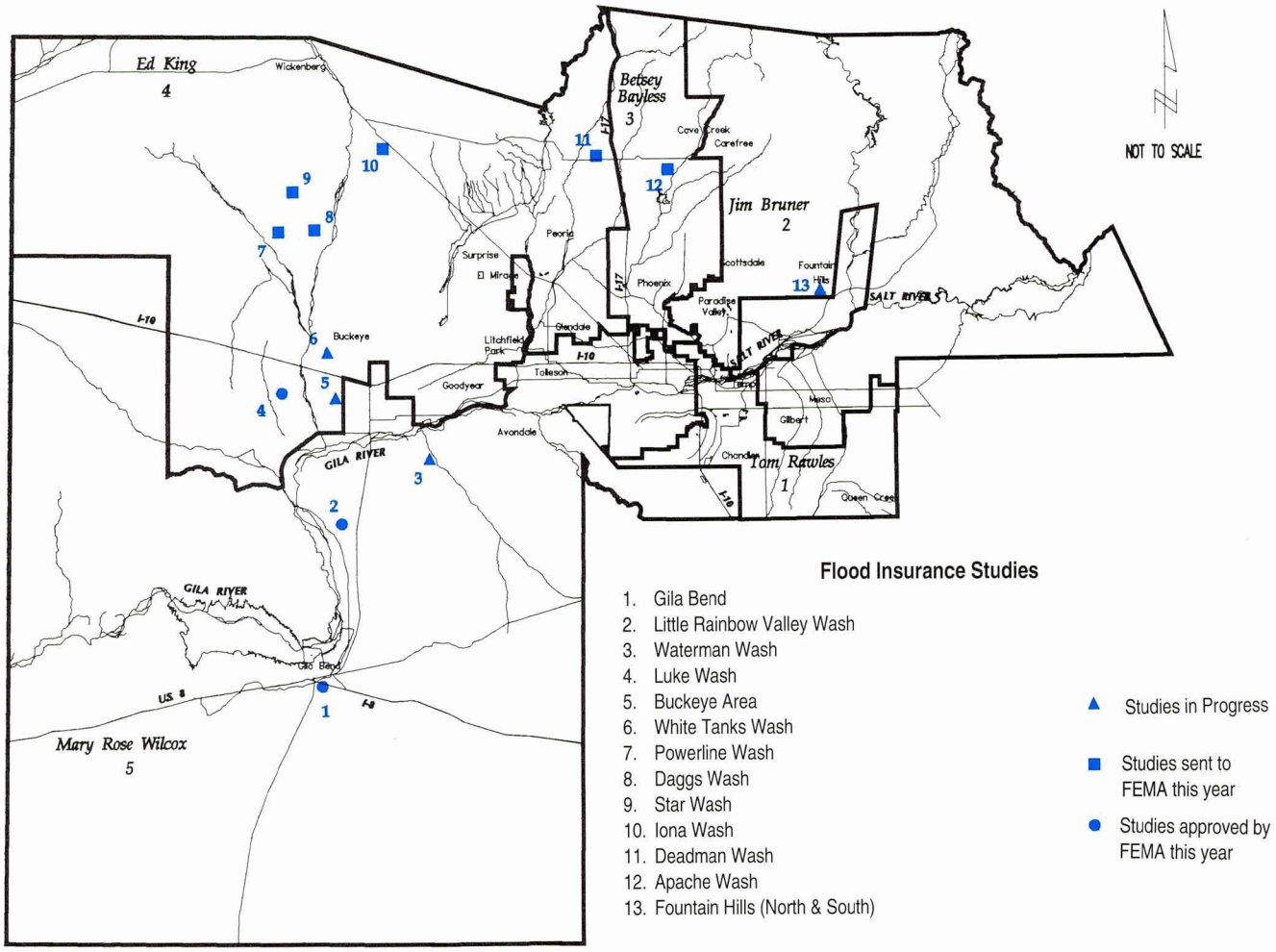
Studies accepted by FEMA are incorporated into Flood Insurance Rate Maps.

Points add up to 15% off flood insurance

The federal government gives credit where credit is due. That means homeowners in the unincorporated areas of the County will receive a 15% discount on flood insurance because of Flood Control District actions.

The Community Rating System (CRS), a program of the Federal Emergency Management Agency, gives communities points for a broad range of activities that result in reduced flood damages.

Only 350 communities nationwide are participating in CRS's rigorous program to document flood reducing activities. The District is one of four communities that has achieved the 15% discount rate; only one



Making points: District staff members conduct an open house for residents in the Arlington area to view newly developed 100-year floodplain maps. This was one of twelve project-related public meetings conducted during the year. The District receives CRS credits for both the study and the meetings.

community has achieved the 20% rate. The District already has assembled the necessary documents and will apply for the 20% rate.

Points are awarded for such activities as structures (dams and channels) and their maintenance; identifying 100-year floodplains and regulating development in them; and for increasing public awareness through placing materials in public libraries, conducting public meetings on floodplain studies, and participation in public events.

Floodplain Management Activity Indicators

- Initiated 6 floodplain studies; submitted 11 new 100-year floodplain delineations to FEMA, and incorporated 5 FEMA-adopted studies into floodplain management maps; involving in all a total of 746,306 acres.
- Processed 72 floodplain use permits; issued 28.
- Investigated 40 complaints; 2 resulted in violation notices, 1 referred to County Attorney.
- Conducted 189 plan reviews.
- Handled 12,899 requests for information, such as floodplain determinations (this will decrease next year because Phoenix has requested we refer its residents to the city).

The District hosted a field trip from the National CRS conference in Phoenix in November to demonstrate how the computerized Geographic Information System of mapping can assist in meeting CRS criteria.

District to help in program to streamline map revision

FEMA notified the District that it is qualified to participate in a pilot program for accelerated revision of 100-year floodplain maps for all jurisdictions within Maricopa County.

Under this program, the District would replace FEMA as the technical reviewer of floodplain delineations submitted by County developers and municipalities for incorporation into Flood Insurance Rate Maps. FEMA would provide technical oversight and formal training of District staff to implement the program.

FEMA is implementing this program to save time in the revision of Flood Insurance Rate Maps by selecting qualified local agencies to perform reviews.

Flood Detection and Data Collection

ALERT system activities

The Flood Detection and Data Collection program involves the design, installation, and maintenance of an accurate, reliable, real-time computerized system to obtain precipitation and runoff information.

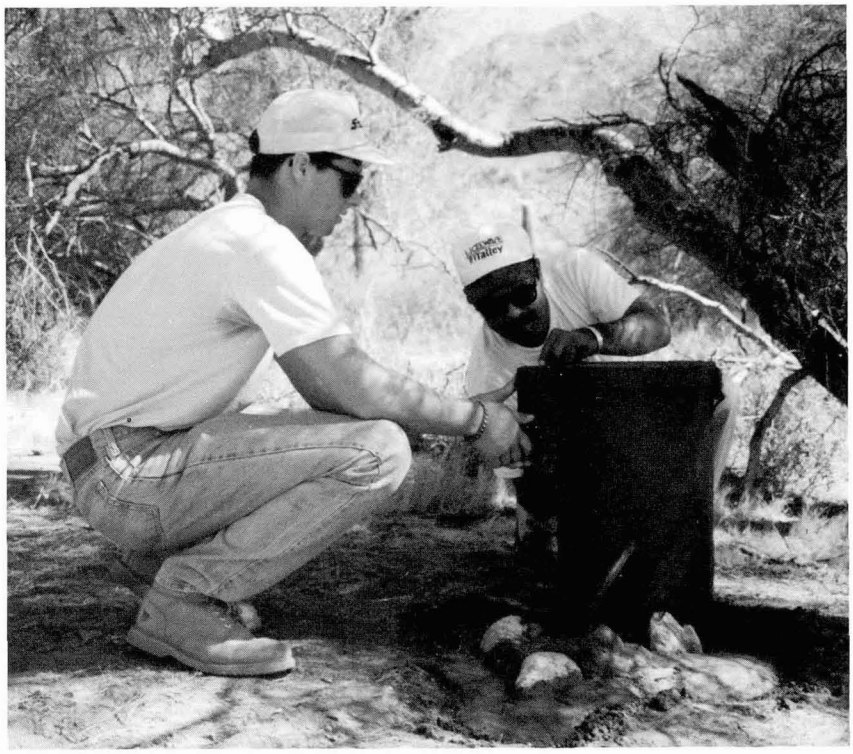
Called Automated Local Evaluation in Real Time (ALERT), the self-contained gauges transmit flood warning information instantaneously by radio waves to the base station at the District office. The data also is used for monitoring flood control structures and for hydrologic studies.

Thanks to the expert hydrologists and technicians, ALERT operated exceptionally well during the January storms, providing a steady flow of timely flood warning information to decision-makers during a state-wide emergency.

Other highlights of the program from the past year include:

- Hosting the fifth Annual Conference of Southwest Association of ALERT systems in October; 87 members attended from nine states, Puerto Rico and Jamaica.
- Linking several computer-accessible information programs, including Geographic Information System, so time is saved during critical storm periods by combining several sources of data in one program (such as inundated areas with streets, roads and bridges to identify when roads should be closed).
- Completing the conversion of ALERT gauges from UHF to VHF radio bands, increasing system reliability.
- Adding 15 precipitation gauges and 5 stage (stream) gauges, bringing the system total to 140 precipitation gauges and 55 stage gauges.
- Performing 216 maintenance actions on gauges, plus 160 repairs, including 71 for vandalism.
- Maintaining a 93% operational level of the gauges during the major storm event in January (some gauges were washed out).

Marta Dent, Senior Decision Support Analyst, shows visiting Guatemalan officials the District's Flood ALERT room, with its metropolitan and watershed maps locating rain and stream gauges that transmit real-time information to the District regarding precipitation and runoff.



Hydrometeorologic Assistant Arnold Ontiveros, right, is assisted by summer intern Tim McGlynn, while installing alluvial fan data collection instrumentation in the Estrella Mountains.

Hydrologic activities

Some of the other accomplishments of our Hydrology Division staff include:

- Completing inundation maps for emergency spillway outflows of all District structures, which were forwarded to the County Department of Emergency Management.
- Revising Volume I of the Drainage Design Manual, Hydrology, to standardize rainfall and runoff projections among all the jurisdictions and consultants who perform such work. Reliable, standardized runoff projections lead to uniform structure designs, as addressed in Volume II, Hydraulics. One hundred and ninety people from the public and private sectors attended a workshop on how to use the manual.
- Continuing cost-sharing studies with several Federal and State agencies to refine floodplain management policy and to improve methods of predicting and measuring floods through data gathered as a result of cost-sharing agreements.

Alluvial fan data collection

The District is conducting what it believes is the only study of alluvial fans in the country. Alluvial fans, in the lower areas of mountains, are popular areas for development, but existing methods of floodplain delineation are not applicable to them.

The District has installed data-gathering instruments on alluvial fans during the past year in the Estrella Mountains and South Mountain, to measure the action of rainfall, runoff and sediment in these changeable areas.

The resulting data will provide the basis for computer models, which will be an important tool for consultants and public works agencies to accommodate safe development in these areas.

Environmental Program

NPDES Stormwater Compliance Activities

The District continues to act as regional coordinator in meeting the requirements of the Federal Clean Water Act's National Pollutant Discharge Elimination System (NPDES). This program holds municipalities responsible for the quality of stormwater discharged into natural waterways, or "Waters of the U.S."

District structures accept runoff from a variety of sources, and all ultimately discharge into Waters of the U.S. The District works with municipalities, private industries, and residents to ensure that the water that empties into rivers and streams through our structures does not degrade those waterways.

In the past year, we have accomplished the following tasks to meet or exceed the NPDES requirements:

- ✧ The Environmental Protection Agency (EPA) accepted the group permit application prepared by the Flood Control District for five County and three other municipally-owned landfills. A sampling program is in place that will identify types of contaminants in stormwater runoff from the various landfills.

- ✧ An intergovernmental agreement between the District and the City of Mesa transfers responsibility for NPDES stormwater monitoring to the District. Mesa will assist in locating and handling illicit discharges into stormdrains and flood control channels. A similar agreement has been negotiated with Phoenix, and is expected to be approved in fiscal year 1993-94. These agreements are the first in the District's efforts to implement a regional stormwater monitoring network.

- ✧ The District received EPA funding for a pilot project using wetland plants and associated microbes to breakdown petroleum in stormwater runoff from a vehicle maintenance yard. The project has proven successful and can be used at gas stations and vehicle maintenance yards where poor quality runoff occurs. Results of this study will be presented at the 1993 Water Environmental Federation Annual Conference in October.

District staff were commended by the Homebuilders Association of Central Arizona for their role in educating government and business about the requirements for the NPDES program: "Your efforts were key in alleviating much fear and confusion about the new federal regulations...no other organization in the state or country has produced the kind of documentation (Erosion Control Manual) we now offer our members...local jurisdictions as well as association members will benefit from your hard work."

- ✧ The Environmental Branch led the development of an erosion control manual by a group of regional public and private sector members. This manual provides guidance to control construction site runoff, part of NPDES permit requirements.

- ✧ Maricopa County Association of Governments has formed the Stormwater Task Force to manage stormwater quality regionally. The task force is coordinated by District staff, who prepared a model ordinance to protect stormwater quality for cities applying for NPDES permits.

- ✧ District staff responded to non-storm discharges that may have been illicit and worked with the public to solve pollution discharge problems.

- ✧ Stormwater pollution prevention plans for our Operations and Maintenance activities have been developed to ensure compliance with the NPDES program.

Hydrologist Roland Wass and Professor Peter Fox of Arizona State University examine an experimental vegetative screen intended to filter contaminants from stormwater that runs off a County vehicle maintenance yard. Wass obtained EPA funding for the project as part of the NPDES program. *Photo by R. Gates, courtesy of Phoenix Gazette.*

- Under the District's joint funding agreement, the United States Geological Survey has two storm events left to monitor before their data collection for the Urban Stormwater Runoff Characterization study is complete. All data will be put into the District database and annual stormwater quality reports will be sent to EPA and impacted agencies.

- The Environmental Branch is spearheading the Urban Runoff Technical Advisory Group effort to evaluate ways of controlling pollutants that enter our structures through variable or untraceable sources. The group's goal is to develop Best Management Practices guidance manuals to minimize stormwater pollution from urban nonpoint sources.

Other Activities

The Environmental Branch is working to modify pollution prevention plans for construction sites so they will meet County Air Quality requirements.

The District is in the final stages of obtaining environmental permits, including 404 permits, for Colter Channel and the Spook Hill Outlet. A 404 permit has been approved for the Wittmann Wash training dike. These permits are part of the Federal environmental compliance for District construction projects in Waters of the U.S.

Other programs include environmental assessments conducted prior to purchase of real property, response and clean up of hazardous materials on District property, and programs to ensure worker safety.

Property Management

The Land Management Division buys, sells, maps and manages land pertaining to various District projects. Highlights of this year's activity include the acquisition of 65 parcels for $6.5 million for projects on the New River, Trilby Wash, the Agua Fria River and the Arizona Canal Diversion Channel.

Negotiations with Westcor will result in the exchange of land that ultimately will enable the City of Peoria to consolidate a parcel large enough for its new stadium to host spring training for the Seattle Mariners and San Diego Padres. The Stadium District and the Flood Control District share the same Board of Directors (Maricopa County Board of Supervisors). Ground was broken for the stadium in June, under a right-of-entry agreement.

This aerial photo of impounded runoff behind Adobe Dam on Skunk Creek also shows the water park in the reservoir area, which is operated according to an agreement negotiated by the Land Management Division, one of several examples of multiple use of project areas that benefit the public.

The Property Engineering and Information Systems staffs coordinated to improve map computerization, which now includes costs, parcel transactions, property management transactions and other information vital to the operational flow of land acquisition and management.

Several District property acquisitions are stalled by an issue that has haunted State courts for decades—who owns the riverbeds? A State commission established by legislation has started the process of determining ownership, which could complicate past District transactions if the State is determined to be the owner of riverbeds rather than private parties from whom the District purchased them.

More than $6 million has been earmarked for the purchase of property on which the Trilby Wash/McMicken Dam project sits, in the northwest valley. This project predates the District, which inherited it with only easements on the property. Those easements did not preclude development inappropriate to flood control purposes.

Other key activities included identifying ownership of more than 4,000 parcels for the Great Salt River Cleanup following the winter floods; and completing some 850 transactions, including preliminary title reports, appraisals, negotiations, openings of escrow, and condemnations.

All property acquired by the District involves extensive legal documentation. Hundreds of documents might be required for a single project, including ownership in fee (outright ownership of the property), easements and rights-of-entry. Documentation for each project must be certified, a painstaking procedure in which each document is examined by staff and legal counsel. Three projects were certified this year; five were re-certified and three are in the process of being re-certified. The Division compiles all these documents, along with a detailed map, into one book for immediate reference.

The District believes in putting its assets to work, as long as they are compatible with the flood control mission. Such activities include leasing property in flood channels for golf courses, and leasing reservoir areas behind dams for parks. We also lease properties in the path of projects until they must be razed.

Planning and Capital Improvement Program

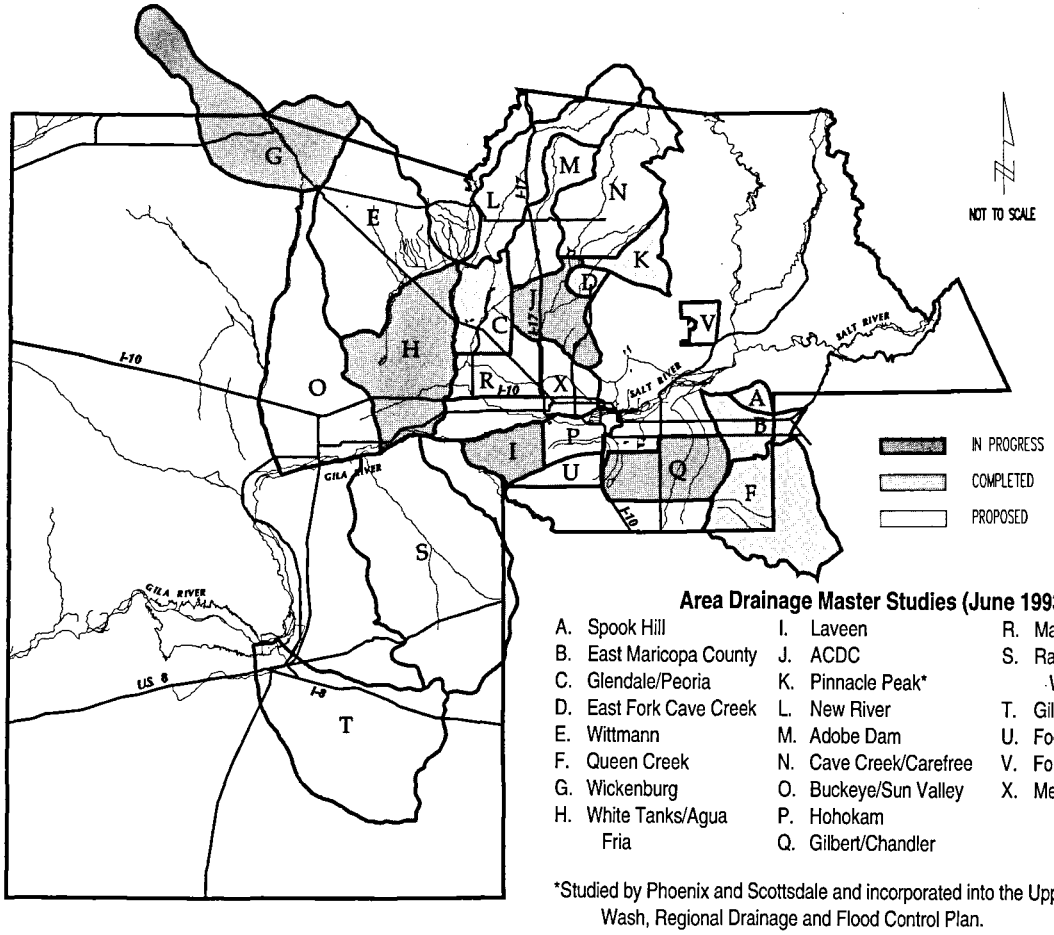
A change in leadership occurred this year, with the retirement of John Rodriguez, P.E., who headed the Planning and Project Management Division for seven years. His post was assumed by Stanley L. Smith, Jr., P.E., who has been with the District nearly 15 years as a Division Chief, Deputy Chief Engineer and Acting Chief Engineer.

The District's planning program identifies drainage problems and develops alternative solutions to protect life and property of County residents. This is accomplished through Area Drainage Master Studies, the Comprehensive Plan, and Watercourse Master Planning, which result in project concepts proposed for inclusion into the Capital Improvement Program.

Area Drainage Master Studies

Through the Area Drainage Master Studies (ADMS) program, we evaluate natural drainage systems and determine what, if any, additional floodproofing measures are required to meet the current and planned development of an area. Some of the highlights of the past year include:

- As a result of the White Tanks/Agua Fria ADMS, a joint project was identified between the District and Luke Air Force Base to develop improvements to Dysart Drain.
- Staff is reviewing the final documents for the Cave Creek watershed in the Arizona Canal Diversion Channel ADMS.
- In the Wickenburg ADMS, the 100-year floodplain has been identified and a public meeting was conducted to inform residents of the results. The consultant is preparing documents to submit the proposed floodplain to the Federal Emergency Management Agency.



Area Drainage Master Studies (June 1993)

A. Spook Hill	I. Laveen	R. Maryvale
B. East Maricopa County	J. ACDC	S. Rainbow Valley/ Waterman Wash
C. Glendale/Peoria	K. Pinnacle Peak*	T. Gila Bend
D. East Fork Cave Creek	L. New River	U. Foothills
E. Wittmann	M. Adobe Dam	V. Fountain Hills
F. Queen Creek	N. Cave Creek/Carefree	X. Metro
G. Wickenburg	O. Buckeye/Sun Valley	
H. White Tanks/Agua Fria	P. Hohokam	
	Q. Gilbert/Chandler	

*Studied by Phoenix and Scottsdale and incorporated into the Upper Indian Bend Wash, Regional Drainage and Flood Control Plan.

Laveen residents challenge floodplain delineation

The ADMS program received its first serious challenge this year, as Laveen residents took issue at a public meeting with the delineation of the 100-year floodplain in their area. Concerns also were expressed by elected officials of State and County government.

As a result, staff departed from FEMA floodplain delineation criteria by taking local factors into account. For example, FEMA rules require that Maricopa Drain, a drainage ditch in the area, be ignored in the delineation because it is intended to drain irrigation off agricultural land, so there is no guarantee how much space would be available at any time for flood control; also, no plan exists to maintain the facility for flood control.

While this makes good sense from a conservative flood insurance standpoint, it also is evident that stormwater runoff *will* drain into the ditch, whether the study acknowledges it or not. Other factors included the irrigation patterns of the area compared to the rainy seasons, and resulting soil absorption rates.

District staff conducted extensive interviews with residents and farmers on their irrigation practices and observations, and gathered additional data to develop alternative computer models. After varying different factors, staff concluded that even using less-conservative criteria, a considerable 100-year floodplain would still exist. But it also found that, if improved, Maricopa Drain could handle the flow. The initial results were presented to the Flood Control Advisory Board in June. Any decision will be made by the Board of Directors.

Salt-Gila Watercourse Master Plan

The District's first watercourse master plan is being approached from two avenues: 100-year floodplain delineation, and a broad-based study to determine the elements of a master plan and Environmental Impact Statement.

The floodplain delineation of the 72 miles between Granite Reef and Gillespie Dams is about 60% complete, despite a major change order in the wake of this year's flooding.

A scoping study is underway to determine the needs and desires of all the public and private parties who have ownership interests and environmental interests in the river. A three-tiered involvement plan was developed to gather this information, comprised of (1) decision-makers from all the local, state, federal and Indian jurisdictions along the 72-mile stretch of river; (2) a working committee of the staffs of these decision-makers; and (3) a study interest committee which serves as a vehicle for direct citizen input.

The first public meeting was conducted this year to unveil the master plan concept to citizens and advise them of the study's progress. Many residents, including several from the much-flooded Holly Acres, said they supported the concept of a holistic approach to planning land use in and along the river. Other residents said the primary focus should be simply to keep all use and development out of the floodplain.

A few were concerned that the scoping study was an attempt to resurrect the "Rio Salado" concept, voted down by residents in the 1980s, which would have used tax dollars to support and encourage development along the river through the metropolitan area.

After the floodplain is delineated, and the scoping study identifies the elements needed in a master plan, the decision to proceed with a plan will be determined by the elected officials of the cities and the District, the most likely parties to fund the plan.

Project prioritization

The District's Strategic Plan calls for implementing a procedure to identify and prioritize flood control and stormwater management projects. A 1991-92 Arthur Anderson performance audit recommended the District analyze its process and reduce its complexity.

A draft of the prioritization procedure was written in October and circulated to 36 cities and agencies with whom the District cooperates on projects. Their comments and concerns were incorporated into the next draft, presented to the Advisory Board in June. The draft includes criteria such as: regional significance, level of protection, level of local participation, public protection benefits vs. future development benefits, total project cost, permit requirements and potential future costs, local priority, and potential for multiple use. Adoption of the plan is expected next fiscal year.

Five-year Capital Improvement Program

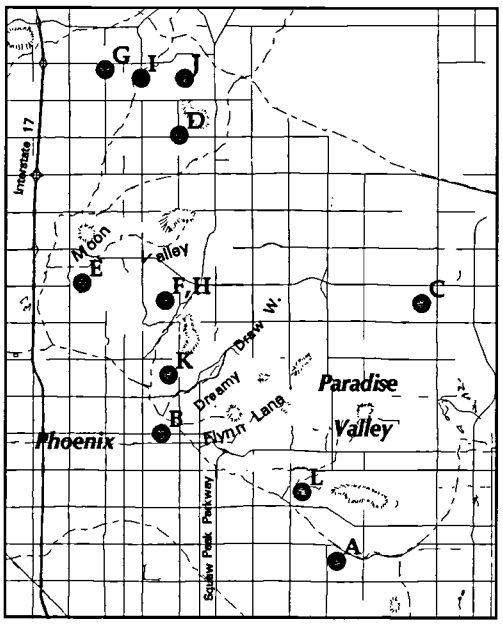
Projects identified through the planning process, and approved by the Board of Directors, become part of the Capital Improvement Program (CIP). The program resolves flooding and drainage problems throughout the County through design and construction of projects, land acquisition, and relocation. Environmental issues and public input are important components of every project.

CIP projects have been grouped into five planning areas: Central Metro, North/Northeast, South/Southeast, West Valley, and Wickenburg. Some of the projects reaching milestones include:

Central Metro Planning Area

Arizona Canal Diversion Channel: The final reach is approximately 98% complete, with nearly all backfill placement performed. Work continues on the excavation of the lower basin at the Phoenix Country Day School, placement of the concrete spillway, placement of landscaping maintenance. Landscaping, coordinated with the Town of Paradise Valley, is scheduled for completion by the middle of September, 1993.

Old Cross Cut Canal (McDowell Road to the Arizona Canal): The second study phase of the design contract is complete. The "Draft Final Study Report" is being reviewed by the City of Phoenix and the District. The District and the City are deciding on what covered channel alternative



Central Metro Planning Area

Current 5-year CIP projects: A) Old Cross Cut Canal; B) Arizona Canal Diversion Channel; C) Paradise Valley-Scottsdale-Phoenix; D) East Fork Cave Creek ADMP; E) ACDC ADMP (Moon Valley Wash); F) ACDC ADMP (10th Street Wash).

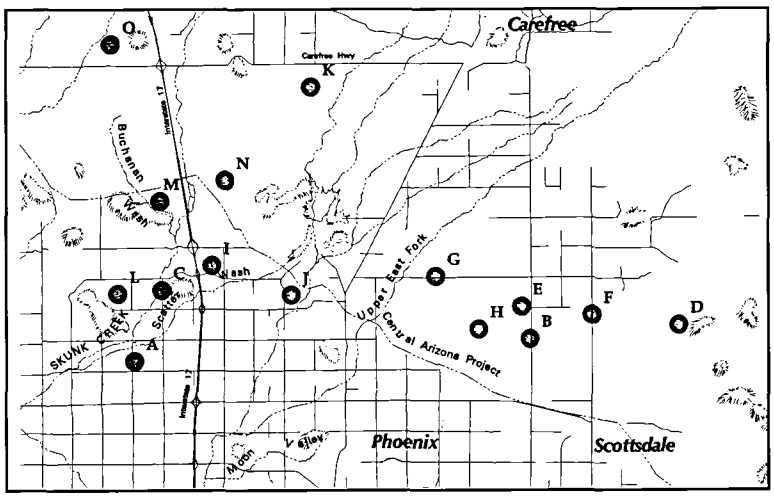
Future CIP projects: G) Beardsley Road Regional Drain; H) ACDC ADMP (10th Street Wash); I) Cave Creek Wash; J) Beardsley Road Regional Drain; K) ACDC ADMP (Dreamy Draw Wash); L) ACDC ADMP (Cudia City Wash).

will be selected and constructed, including input from a series of public meetings. At that time, the preparation of plans and specifications for that option can begin.

North/Northeast Planning Area

Cultural Resources Interpretive Center at Adobe Dam: The contract was awarded to Sigma Construction in January. The project plans are being reviewed by the City of Phoenix; city plan review and inspection fees are being negotiated.

Scatter Wash Channelization: Final plans have been reviewed by the District and ADOT staff prior to bid advertisement, and the 404/401 Federal permit applications have been submitted. The City of Phoenix's current schedule projects awarding a construction contract early in fiscal year 1994.



North/Northeast Valley Planning Area

Current 5-year CIP Projects: A) Scatter Wash and Outer Loop; B) Upper Indian Bend Wash ADMP; C) Adobe Dam Cultural Resources Interpretative Center.

Future CIP Projects: D-H) Upper Indian Bend Wash; I) Scatter Wash; J) Cave Creek Wash; K) Apache Wash; L) Little Deer Valley; M) Buchanan Wash; N) East Biscuit Flat; O) Deadman Wash.

West Valley Planning Area

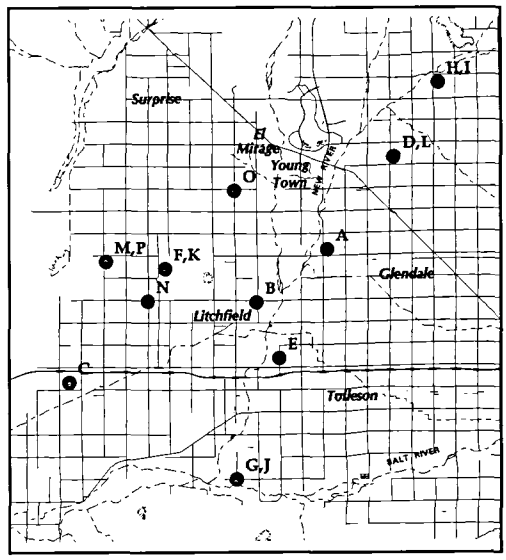
Glendale/Peoria ADMS Projects: The City of Glendale is preparing an invoice for the District's share of the project costs for the Olive Avenue Drain. The final plans and special provisions for the Cactus Road Drain will be signed by the cities of Glendale and Peoria.

Colter Channel Project: The consultant is in the process of preparing the final plans and specifications. The right-of-way acquisition process and utility relocations continue. Public meetings were conducted in January and March of 1993 to advise the public of the planning process.

Dysart Drain/Luke AFB: The feasibility study is complete and the District and Luke AFB have evaluated it and selected an alternative which will be used to formulate the final Alternative Report for use in the design of the project. A design contract consultant was selected.

New River Channelization: Work is about 50% complete on New River between Olive Avenue and Bethany Home Road. Public meetings were conducted in August 1992 and January 1993 to advise residents of the project.

The District is presently evaluating the feasibility of channelizing the portion of New River between Bethany Home Road and Camelback Road, using the plans prepared for the developer.



West Valley Planning Area

Current 5-year CIP Projects: A) New River Channelization; B) Colter Channel; C) White Tanks Structures; D) Glendale/Peoria Storm Drains; E) Agua Fria River; F) Dysart Drain/ Luke AFB; G) Salt-Gila Control Works; H) Skunk Creek Channel.

Future CIP Projects: I) Skunk Creek Channel; J) Salt-Gila Control Works; K) Dysart Drain/Luke AFB; L) Glendale/ Peoria Storm Drains; M) White Tanks Structures; N) Bullard Wash Channel; O) El Mirage Wash Corridor; P) Local Detention Basins/ Channels.

South/Southeast Planning Area

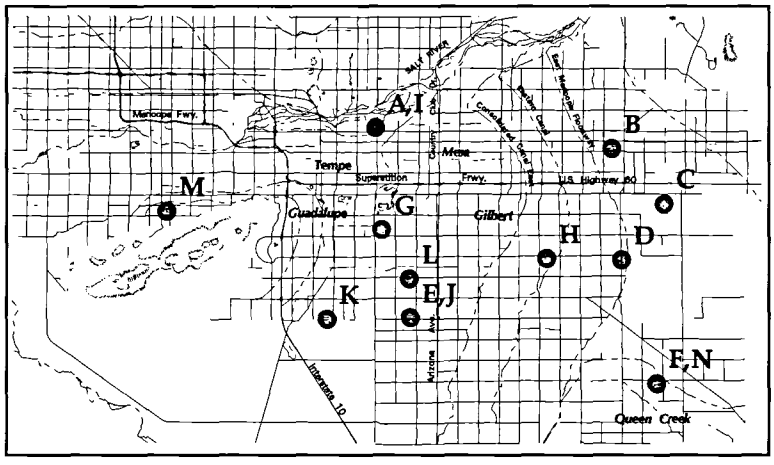
Salt River Channelization: The stretch between Sky Harbor Airport and McClintock Drive is 100% complete, taking property out of the floodplain and allowing ADOT to build a freeway on the north side of the river.

Channelization continues east of McClintock, although work was slowed due to the heavy flows in the river this winter.

Testing of the superfund landfill site was completed and the final report was submitted to the District and ADOT, which will soon make a decision regarding alignment and design for the 100-year level protection south levee east of McClintock.

Gilbert Basin: Gilbert took an interesting approach to a 100-year floodplain delineated in part of the town: it had the basin constructed to capture overland flows. The basin doubles as a park, for which the city funded the recreation amenities, including three soccer fields, a 3.75 acre lake, an amphitheater and four softball fields. The project was dedicated in September 1992. The District contributed $1.9 million of the $4.8 million project.

Sossaman Road Box Culvert: This project is under construction and is 95% complete. The contract is for an additional culvert under Sossaman Road, new culvert entrance wing walls, and extension of the existing Guadalupe Channel to the Sossaman Road Box Culvert.



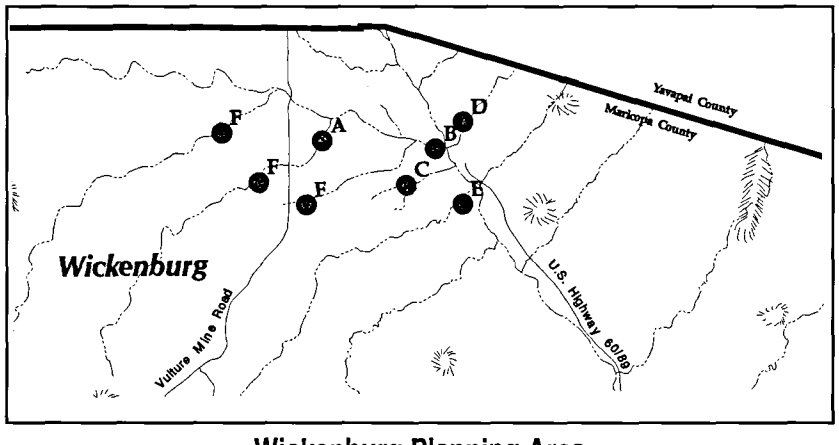
South/Southeast Valley Planning Area

Current 5-year CIP Projects: A) Salt River Channelization; B) University Drive Drainage Improvements; C) Sossaman Road; D) East Maricopa Floodway; E) Southeast Valley Regional Drain; F) Queen Creek ADMP; G) Price Drain; H) Gilbert Basin.

Future CIP Projects: I) Salt River Channelization; J) Southeast Valley Regional Drain; K) Gila Drain Floodway; L) Gilbert/Chandler Lateral Drainage; M) South Mountain Interceptor; N) Queen Creek ADMP.

Wickenburg Planning Area

Casandro Wash Dam: Requests for Letters of Intent are being solicited for the design of Casandro Wash Dam. Staff will design the outlet conduit in-house. A public meeting was conducted to advise residents about the dam construction and the project schedule. The public and city officials expressed overwhelming support for the dam and wished it could be completed sooner.



Wickenburg Planning Area

Current 5-year CIP Projects: A) Casandro Wash Dam and Channel.

Future CIP Projects: B) Sols Wash Stabilization; C) Sunny Cove Wash; D) Powder House Wash Dam/Channel; E) Hartman Wash; F) Miscellaneous Channel Stabilization.

Awards and Recognition

The District took big strides this year toward its goal of being a national leader in flood control.

National Association of Counties

The National Association of Counties (NACo) issued four awards for District-developed programs based on initiative, results, customer service, and cost-savings.

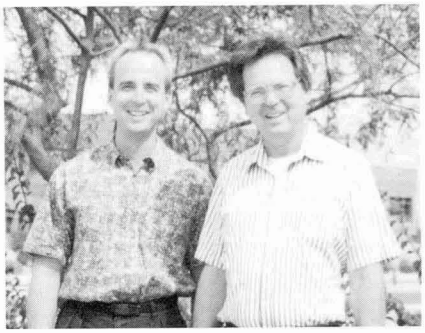
- Tom LaMarche, Information Systems Branch Manager, developed a trouble-reporting form for computer-users to track problems for reporting to vendors and to improve customer service.

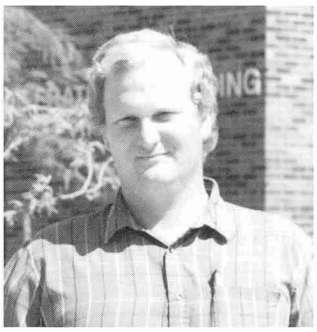
- Steve Waters, Hydrologist, resolved the City of Glendale's concerns that residents using Thunderbird Paseo, the park portion of the Arizona Canal Diversion Channel, could be caught in the stormwater channel. Steve linked the City's fire department to the District's flood warning system, providing instant access to rainfall and runoff information that affects that part of the channel.

- Charles Wainwright, Civil Engineer II, and Jay Kim, Civil Engineer Technician II, designed the cover and associated drainage features for a portion of Reach 4 of the Arizona Canal Diversion Channel. Timing was of the essence to keep the project on track after Congress approved funding of the cover in 1992, resulting in a $6 million change order.

- John Rodriguez, Planning and Projects Division Manager, and Joe Young, Budget Analyst III, developed a report format on Lotus 1-2-3 to track project tasks and funds to significantly improve oversight and fund management.

Below, the employees who made the NACo Awards possible, clockwise from upper left: Mark Brewer and Charles Wainwright; Chuck Brokschmidt, Dave Bryant, Tom LaMarche and Diane Johnson (seated); Joe Young, Celeste Braganza, and Alex Munro; and Steve Waters.





Charlie Klenner, District Hydrometerologic Technician, was presented the Arizona Chapter of the American Public Works Association Award of Merit.

American Public Works Association

The Arizona Chapter of the American Public Works Association presented Charlie Klenner, Hydrometerologic Technician, its Award of Merit for public works employees. Criteria for the award included initiative in suggesting and implementing ideas to save time and money, and to improve safety and efficiency; several of his concepts for improving the District's automated flood warning system have won awards in previous years.

International Right-of-Way Association

The District was named Employer of the Year for its support of on-going staff training and continuing improvement in the workplace.

U.S. Army Corps of Engineers

The Chief of Engineers Design and Environmental Civil Works Honor Award was awarded to the District for its work on Cave Creek Channel and Sediment Basin, part of the Phoenix and Vicinity Project that includes four dams and the 16.5 mile Arizona Canal Diversion Channel.

Cave Creek Wash, a major urban stream, is channelized for 2 miles upstream of its confluence with the Diversion Channel. Because of the fully urbanized area through which the project was built, safety as well as aesthetics had to be considered in the engineering.

One juror commented: "Although this project had all the ingredients for a struggle, it was avoided. Rejecting standardized solutions, a coordinated effort between landscape architects, engineers and local sponsors has created an oasis instead."

The park alongside the channelized Cave Creek was developed in conjunction with Phoenix's master plan for the area.

The channel has already functioned as designed, conveying summer storm runoff up to seven feet deep in 1992.

Association of State Floodplain Managers, Inc.

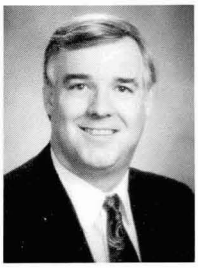
The District was awarded the Local Award for Excellence for our progressive program of 100-year floodplain delineation. More than 1,000 miles of floodplain have been identified since 1986.

Employee of the Quarter

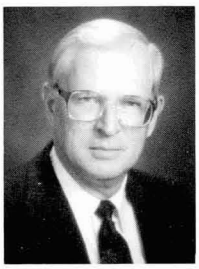
Established this year, criteria set by the employee panel include professionalism, productivity, customer service, teamwork, and initiative. Recipients were:

- Stan Smith, Acting Chief Engineer, for the inaugural quarter, July through September, 1992.
- Don Rerick, Project Manager, and Carlos Rivera, Maintenance Team Leader, for the October to December 1992 quarter.
- Ben Gregg, Civil Engineer Technician I, January to March, 1993.
- Laynie Bell, Administrative Assistant, April to June, 1993.

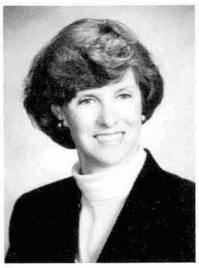
Board of Directors



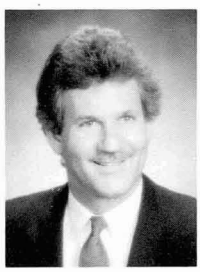
Tom Rawles
District 1



James D. Bruner
District 2, Chair



Betsey Bayless
District 3



Ed King
District 4

Mary Rose Wilcox
District 5

The Flood Control District of Maricopa County, founded in 1959, is a municipal corporation and political subdivision of the State of Arizona. The District is governed by a five-member Board of Directors which consists of the elected County Supervisors.

The District has all the powers, privileges, and immunities granted generally to municipal corporations. The Board of Directors exercises all powers and duties in the acquisition and operation of District properties, contracting, and in carrying out regulatory functions as ordinarily exercised by governing bodies.

The activities of the District are funded by a flood control tax levy assessed on all real property within Maricopa County and a variety of cost-sharing arrangements with the Federal, State, County, and local governments.

Citizens Advisory Board

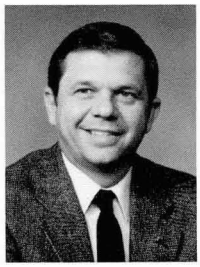
The Flood Control Citizens Advisory Board (FCAB) advises the Board of Directors on flood control, water conservation, floodplain management, drainage, and related matters. The FCAB reviews planning, operations, and maintenance of flood control facilities, and recommends an annual budget to the Board of Directors. The FCAB members also serve the District as members of the Floodplain Review Board and the Drainage Review Board.

The Advisory Board consists of seven members, five of whom are appointed by the Board of Supervisors to five-year terms. At least one member must be a resident of the City of Phoenix. In addition to those five members, the Salt River Project and the City of Phoenix appoint representatives who are ex-officio members of the FCAB.

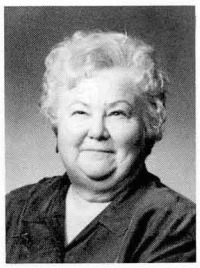
John E. Miller, Jr.

William LoPiano, Chair

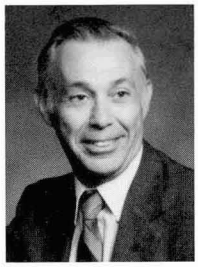
Samuel K. Wu



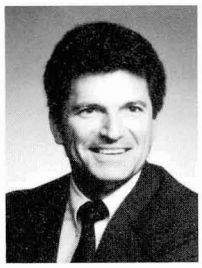
Ron Wheat



Marcella Peters



James Matteson, City of Phoenix



Paul Cherrington, Salt River Project

Statement of Revenues, Expenditures, and Changes in Fund Balance

Budgeted and Actual for the Fiscal Year Ended June 30, 1993

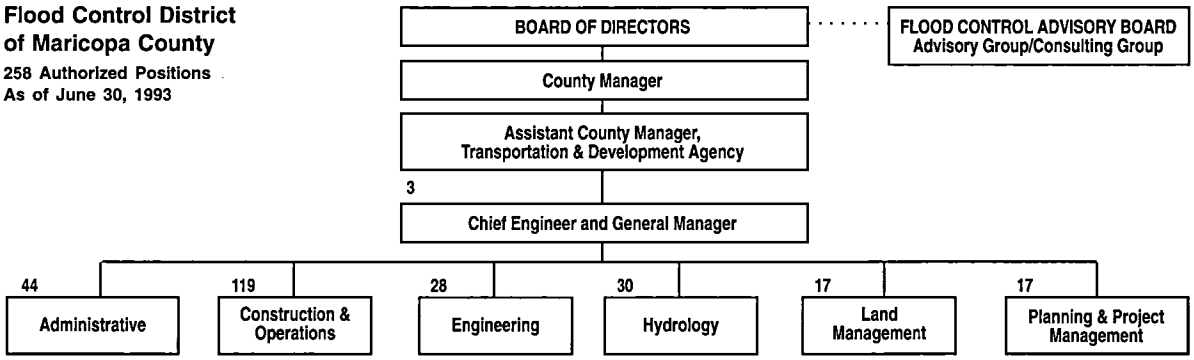
Preliminary and Unaudited. Amounts are rounded to the nearest thousand.

	Budget	Actual	Variance Favorable (Unfavorable)
Revenues			
Flood Control Tax Levy	$39,722,000	$39,715,000	($ 7,000)
Local Participation	1,182,000	2,413,000	1,231,000
Rental Income	124,000	123,000	(1,000)
Interest Income	1,200,000	938,000	(262,000)
Sale of Excess Land	1,185,000	1,162,000	(23,000)
Miscellaneous	94,000	566,000	472,000
Total Revenues	43,507,000	44,917,000	1,410,000
Expenditures			
Personnel Services	7,523,000	7,486,000	37,000
Supplies and Services			
Professional Services	7,184,000	3,705,000	3,479,000
Maintenance Supplies and Services	2,313,000	1,811,000	502,000
Internal Services	1,864,000	2,093,000	(229,000)
Education and Travel	170,000	131,000	39,000
Other Supplies and Services	622,000	1,156,000	(534,000)
Total	12,153,000	8,896,000	3,257,000
Capital Outlay			
Personnel Services	1,950,000	1,022,000	928,000
Real Estate	9,276,000	7,593,000	1,683,000
Engineering	3,752,000	2,193,000	1,559,000
Construction	20,396,000	15,102,000	5,294,000
Vehicle and Equipment	1,130,000	817,000	313,000
Total	36,504,000	26,727,000	9,777,000
Total Expenditures	56,180,000	43,109,000	13,071,000
Excess of Revenues over (under) Expenditures	(12,673,000)	1,808,000	14,481,000
Fund Balance, July 1, 1992	28,038,000	28,038,000	
Project Reserve	3,165,000	17,646,000	14,481,000
Reserve for Unanticipated Repairs	200,000	200,000	
First Quarter Fiscal Year 1993/94 Operating Funds	12,000,000	12,000,000	
Fund Balance, June 30, 1993	$15,365,000	$29,846,000	$14,481,000

Organizational Chart

Flood Control District of Maricopa County

258 Authorized Positions
As of June 30, 1993



Expenditures by Activities and Functions

Fiscal Year Ending June 30, 19[illegible]

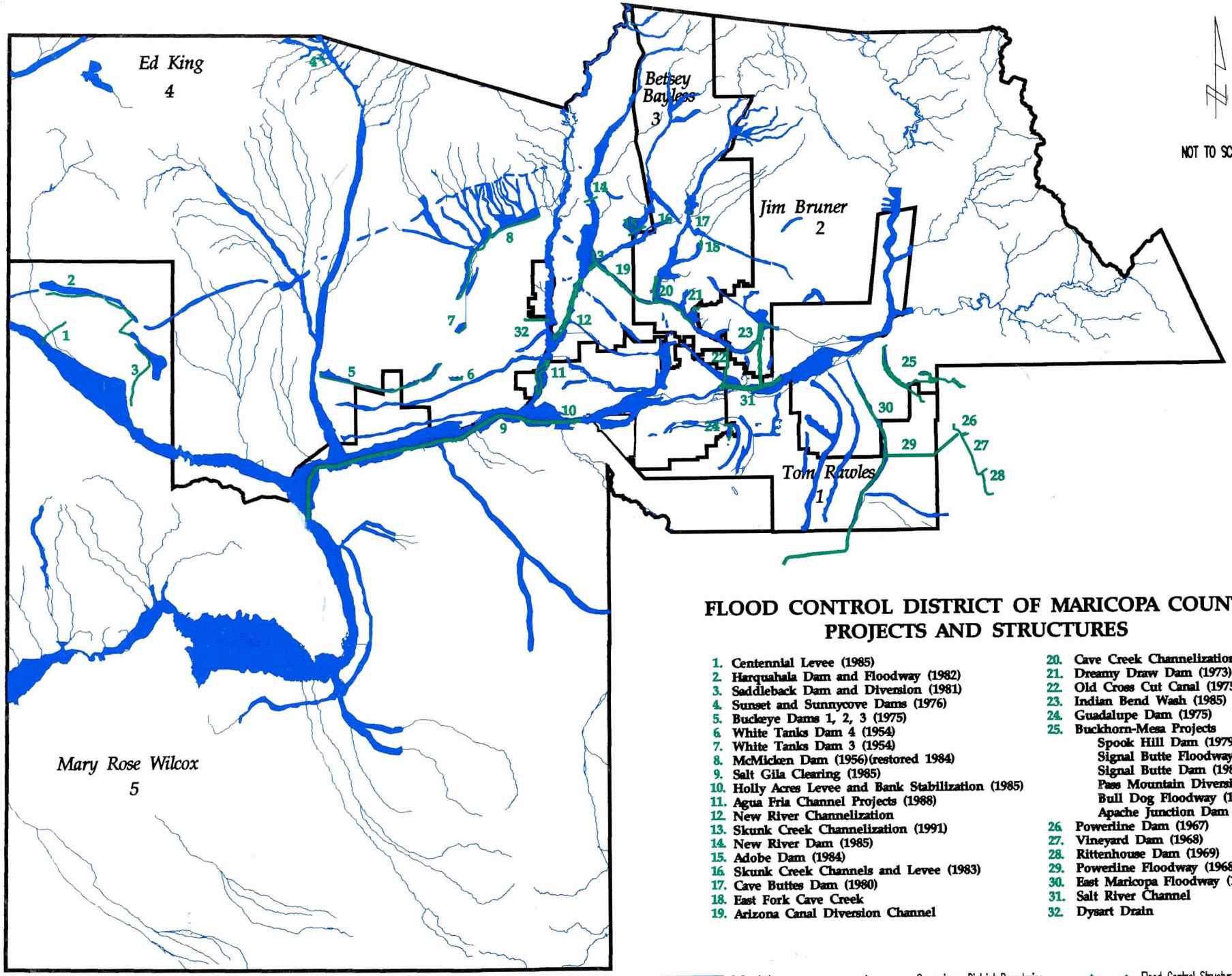
Preliminary and Unaudited. Amounts are rounded to the nearest thousand.

Capital Improvement Projects	Engineering	Land	Relocation and Construction	Wages	Total
Addition to District Facility	$ 42,000	$	$ 734,000	$ 6,000	$ 782,000
Flood Warning System			196,000	21,000	217,000
Town of Gilbert	24,000		160,000	6,000	190,000
Old Cross Cut Canal	109,000			27,000	136,000
Salt-Gila Control Works		13,000		22,000	35,000
Sossaman Road	35,000	15,000	468,000	81,000	599,000
Price Drain	2,000		166,000		168,000
Arizona Canal Diversion Channel	20,000	247,000	361,000	161,000	789,000
East Maricopa Floodway, Williams/Chandler			1,856,000	13,000	1,869,000
Salt River Channel			1,152,000	36,000	1,188,000
McMicken Dam		5,502,000		4,000	5,506,000
Spook Hill				31,000	31,000
Adobe Dam		21,000	1,000	16,000	38,000
Skunk Creek				9,000	9,000
Skunk Creek/New River	979,000	73,000	7,551,000	183,000	8,786,000
Agua Fria River		937,000		46,000	983,000
University Drain	340,000	128,000		49,000	517,000
Glendale/Peoria ADMP	13,000		1,564,000	26,000	1,603,000
East Fork Cave Creek ADMP	194,000	278,000	339,000	112,000	923,000
White Tanks ADMP	286,000	20,000		129,000	435,000
Queen Creek ADMP	99,000	7,000		32,000	138,000
Plan Six Funding			554,000		554,000
Arizona Canal Diversion Channel ADMP				5,000	5,000
Scatter Wash	50,000	350,000		7,000	407,000
Reed Landfill Removal		2,000			2,000
Total	$ 2,193,000	$ 7,593,000	$15,102,000	$ 1,022,000	$25,910,000

	Administration	Maintenance	NPDES	Engineering	Total
Area Drainage Master Studies					
City of Phoenix	$ 2,000			$ 40,000	$ 42,000
Laveen	40,000			8,000	48,000
Salt-Gila Master Plan	61,000			914,000	975,000
Wickenburg	53,000			76,000	129,000
New River	3,000			15,000	18,000
White Tanks/Agua Fria	41,000			225,000	266,000
Arizona Canal Diversion Channel	31,000			241,000	272,000
Gila Drain	7,000			50,000	57,000
Upper Indian Bend Wash	9,000			30,000	39,000
Foothills	3,000				3,000
Four others under $1,000 each	1,000				1,000
Total	$ 251,000			$ 1,599,000	$ 1,850,000
District Services					
Administrative Overhead	$ 4,514,000	$ 216,000	$ 90,000	$ 49,000	$ 4,869,000
Maintenance Overhead	102,000	3,162,000	64,000	1,000	3,329,000
District Yard		276,000			276,000
USGS Service Work	86,000	123,000	254,000		463,000
Work done for the Corps of Engineers	2,000				2,000
Work done to improve CRS	14,000	2,000			16,000
Enforcement of Floodplain Regulations	40,000				40,000
Watershed Hydrology	134,000			28,000	162,000
Floodplain Delineation	153,000			336,000	489,000
Flood Insurance Study	69,000			12,000	81,000
Hydrologic Data Collection	60,000			18,000	78,000
Flood Warning System	194,000	122,000			316,000
Flood Emergency Operation	52,000	2,000			54,000
Floodplain Administration	103,000				103,000
Computer System	259,000	1,000			260,000
City of Mesa			168,000		168,000
Town of Guadalupe	3,000				3,000
Town of Surprise	3,000		6,000		9,000

	Administration	Maintenance	NPDES	Engineering	Total
Town of Wickenburg	4,000				4,000
Town of Cave Creek	3,000				3,000
Town of Fountain Hills	1,000				1,000
Work done for other Maricopa County Departments					
Planning and Development	432,000				432,000
Department of Transportation	10,000	4,000			14,000
Transportation and Development Agency	4,000				4,000
Work done for Arizona State Departments					
Arizona Department of Transportation	4,000				4,000
Arizona Department of Environmental Quality	1,000		1,000		2,000
Arizona Department of Water Resources	3,000				3,000
Nonpoint Source/Surprise			26,000		26,000
14 others, under $1,000 each	3,000		1,000		4,000
Total	$ 6,253,000 *	$ 3,908,000 *	$ 610,000	$ 444,000	$11,215,000
District Structures					
Dysart Road Agua Fria Drain	$ 13,000	$ 20,000	$	$	$ 33,000
48th Street Drain		41,000			41,000
Alma School Drain		17,000			17,000
Old Cross Cut Canal	12,000	30,000	2,000		44,000
Salt-Gila Clearing	1,000	131,000	1,000		133,000
Salt-Gila Control Works	19,000	21,000		10,000	50,000
Sossaman Road	8,000	57,000			65,000
Agua Fria River	6,000	79,000			85,000
Indian Bend Wash: Inlet	3,000	7,000			10,000
Indian Bend Wash: Interceptor	2,000	9,000			11,000
Arizona Canal Diversion Channel	95,000	954,000	6,000	8,000	1,063,000
Cave Creek		25,000			25,000
East Maricopa Floodway	24,000	454,000	12,000	27,000	517,000
Salt River Channel-ADOT	20,000				20,000
White Tanks #3		10,000			10,000
White Tanks #4	2,000	22,000			24,000
McMicken Dam	2,000	51,000		15,000	68,000
Dreamy Draw Dam		10,000			10,000
McMicken Dam Outlet	25,000	20,000			45,000
Buckeye #1	2,000	48,000			50,000
El Mirage Road Drain Channel		11,000			11,000
Fountain Hills # 1	7,000			135,000	142,000
Fountain Hills # 2	6,000			98,000	104,000
Star Wash	7,000			172,000	179,000
Daggs Wash	3,000			100,000	103,000
Iona Wash	10,000			92,000	102,000
Spook Hill FRS	24,000	31,000	1,000		56,000
Signal Butte Floodway	2,000	16,000			18,000
Apache Junction FRS and Floodway	5,000	12,000		10,000	27,000
Signal Butte FRS		12,000			12,000
Guadalupe Road Channel and Box	30,000	3,000		3,000	36,000
Powerline Dam		11,000			11,000
Powerline Floodway	12,000	13,000			25,000
Vineyard Road FRS		21,000			21,000
Rittenhouse FRS	1,000	21,000		8,000	30,000
Harquahala FRS	2,000	18,000		1,000	21,000
Saddleback FRS	2,000	28,000		6,000	36,000
Harquahala Floodway		13,000		1,000	14,000
Sun City Drain		17,000			17,000
Cave Buttes Dam	6,000	101,000		1,000	108,000
Adobe Dam	10,000	147,000			157,000
Skunk Creek Channelization at I-17	2,000	19,000		5,000	26,000
New River Dam	6,000	63,000		1,000	70,000
New River Mitigation	1,000	69,000			70,000
Skunk Creek/New River	18,000	83,000		6,000	107,000
Agua Fria River	31,000	2,000		1,000	34,000
East Fork Cave Creek	5,000	89,000		4,000	98,000
Plan Six	10,000				10,000
37 others under $10,000 each	75,000	86,000	4,000	4,000	169,000
Total	$ 509,000	$ 2,892,000	$ 26,000	$ 708,000	$ 4,135,000

*Includes Fixed Assets.



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY PROJECTS AND STRUCTURES

1. Centennial Levee (1985)
2. Harquahala Dam and Floodway (1982)
3. Saddleback Dam and Diversion (1981)
4. Sunset and Sunnycove Dams (1976)
5. Buckeye Dams 1, 2, 3 (1975)
6. White Tanks Dam 4 (1954)
7. White Tanks Dam 3 (1954)
8. McMicken Dam (1956)(restored 1984)
9. Salt Gila Clearing (1985)
10. Holly Acres Levee and Bank Stabilization (1985)
11. Agua Fria Channel Projects (1988)
12. New River Channelization
13. Skunk Creek Channelization (1991)
14. New River Dam (1985)
15. Adobe Dam (1984)
16. Skunk Creek Channels and Levee (1983)
17. Cave Buttes Dam (1980)
18. East Fork Cave Creek
19. Arizona Canal Diversion Channel
20. Cave Creek Channelization (1991)
21. Dreamy Draw Dam (1973)
22. Old Cross Cut Canal (1975)
23. Indian Bend Wash (1985)
24. Guadalupe Dam (1975)
25. Buckhorn-Mesa Projects
    - Spook Hill Dam (1979)
    - Signal Butte Floodway (1984)
    - Signal Butte Dam (1987)
    - Pass Mountain Diversion (1987)
    - Bull Dog Floodway (1988)
    - Apache Junction Dam (1988)
26. Powerline Dam (1967)
27. Vineyard Dam (1968)
28. Rittenhouse Dam (1969)
29. Powerline Floodway (1968)
30. East Maricopa Floodway (1989)
31. Salt River Channel
32. Dysart Drain

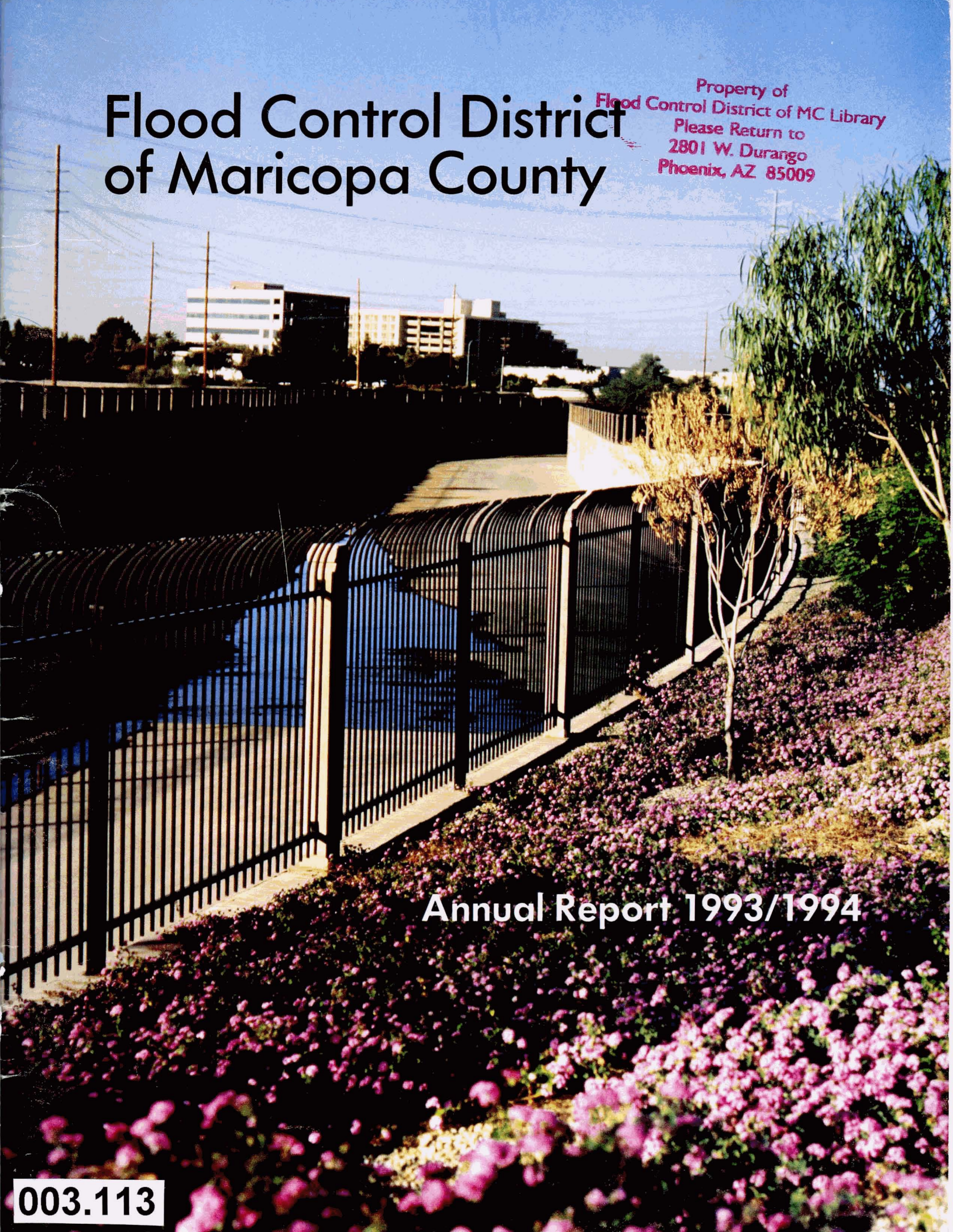
Delineated 100-Year Floodplains

Supervisory District Boundaries

Flood Control Structures

Flood Control District of Maricopa County

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009



Annual Report 1993/1994

003.113

Financial Highlights

Fiscal Year 1993/1994

Preliminary and unauditied. Amounts are rounded to nearest thousand.

	DOLLARS	PERCENT
REVENUES		
FLOOD CONTROL TAX	$35,386,000	86
LOCAL PARTICIPATION	3,463,000	8
RENTAL INCOME	142,000	0
INTEREST INCOME	881,000	3
OTHER LAND REVENUE	861,000	2
MISCELLANEOUS	411,000	1
TOTAL REVENUE	41,144,000	100
EXPENDITURES		
FLOOD CONTROL CAPITAL IMPROVEMENTS	35,673,000	66
OTHER EXPENDITURES	18,333,000	34
TOTAL EXPENDITURES	54,006,000	100
EXCESS (Deficiency of Revenues over Expenditures)	(12,862,000)	
FUND BALANCE AT BEGINNNING OF YEAR	30,901,000	
FUND BALANCE AT END OF YEAR	$18,039,000	
BREAK DOWN OF EXPENDITURES		
CAPITAL IMPROVEMENTS		
SALARIES AND WAGES	$ 984,000	2
REAL ESTATE	14,304,000	26
ENGINEERING	2,829,000	5
CONSTRUCTION	17,556,000	33
TOTAL CAPITAL IMPROVEMENTS	35,673,000	66
OTHER EXPENDITURES		
ENGINEERING	1,890,000	3
NPDES	828,000	2
HYDROLOGY	2,287,000	4
FIXED ASSETS	1,744,000	3
MAINTENANCE	6,274,000	12
ADMINISTRATION	5,310,000	10
TOTAL OTHER EXPENDITURES	18,333,000	34
TOTAL EXPENDITURES	$54,006,000	100

Program Summary - Expenditures

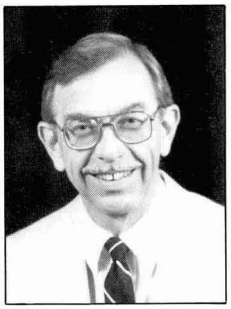
Fiscal Year Ending June 30, 1994

Preliminary and unauditied. Amounts are rounded to nearest thousand.

PROGRAM	FTE's	PERSONNEL SERVICES	SUPPLIES & SERVICES	TRAVEL	CAPITAL OUTLAY	TOTAL
MAINTENANCE	117	$3,295,825	$ 3,673,563	$ 22,950	$1,043,820	$ 8,036,158
ENVIRONMENTAL	10	335,121	744,855	6,826	81,180	1,167,982
FLOODPLAIN MANAGEMENT	19	748,187	1,075,253	12,581	57,446	1,893,467
DRAINAGE ADMINISTRATION	18	818,199	285,098	9,424	58,427	1,171,148
PROPERTY MANAGEMENT	6	229,477	112,105	3,887	16,925	362,393
FLOOD DETECTION & DATA COLLECTION	16	560,842	387,277	15.491	130,391	1,094,001
PLANNING	21	893,084	1,501,287	16,611	82,749	2,493,730
CAPITAL IMPROVEMENT PROGRAM	52	986,355	36,612,340	32,200	155,904	37,786,798
TOTAL PROGRAM EXPENDITURES	259	$7,867,090	$44,391,778	$119,970	$1,626,842	$54,005,677

A Year to Remember

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009



by Dan Sagramoso, P.E.
Chief Engineer and General Manager (Interim)

Fiscal Year 1993-94 was exceptionally challenging, in more ways than one. Maricopa County suffered racking financial crises that led to the resignations of many top managers and caused massive reductions in force and restructuring of the overall County organization and of most departments. At one point the County Manager described the condition of the County's general fund as the "moral equivalent of bankruptcy".

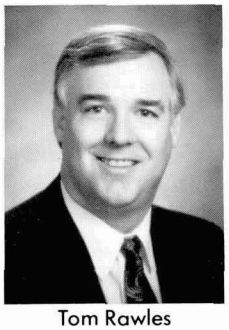
While the Flood Control District in no way contributed to the crises, we were affected in two ways. First, the District was unable to prepare its five-year capital improvement program (CIP) and FY 1994-95 budget with any confidence, because the flood control property tax might be lowered to offset increases in the primary (general fund) tax rate. Second, the District's internal restructuring was put on hold pending setting of the tax rate and approval of the CIP. Naturally, this created prolonged anxiety about the potential loss of jobs.

The departure of Chief Engineer and General Manager Neil Erwin in May 1994 was another destabilizing influence. Neil's leaving was not connected to the County's financial condition, and I want to acknowledge his many contributions to the District. Under Neil's leadership, in spite of the unsettled environment, with the joint efforts of our federal, state, county and municipal partners, lots of work got done. Here are a few examples:

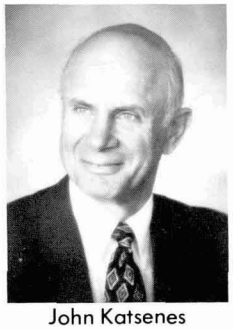
- Managed the construction of $18 million in capital improvements, including the three-mile-long New River channel from Olive Avenue to Bethany Home Road.
- In partnership with the U.S. Army Corps of Engineers, completed the 16.5-mile-long Arizona Canal Diversion Channel (ACDC), the final feature of a system of channels and four dams protecting large parts of Glendale, Peoria, and Phoenix.
- Participated with Arizona Department of Transportation and City of Tempe in completing the Salt River Channel west of McClintock Drive in Tempe.
- Added 30 telemetered rain gauges to our flood warning system.
- Made 8,373 flood hazard determinations, had eight new floodplain delineations approved by the Federal Emergency Management Agency, and responded to 3,205 citizen requests for general information.
- Reviewed 52 subdivision drainage plans in unincorporated areas and 68 projects and proposed developments in cities. Issued 3,719 drainage clearances for construction sites. Our inspectors drove over 100,000 miles in making 5,619 inspections of private sector construction.
- Acquired about 3,000 acres of land in 254 parcels at a total cost of over $13 million. Relocated 34 families and 3 businesses.
- Designed 23 projects in-house and reviewed designs and construction plans for 31 projects produced by consulting engineering firms under contract to the District.
- Repaired storm damage at 48 separate sites, and performed routine maintenance on 56 major flood control structures.

Heavy rains in October 1993 once again demonstrated that our structures work. Runoff pooled behind Dreamy Draw Dam to a depth of 19 feet. There were flows in the Indian Bend Wash Project of nearly 5,000 cubic feet per second and depths of over six feet. The ACDC registered flows of 5 feet in depth.

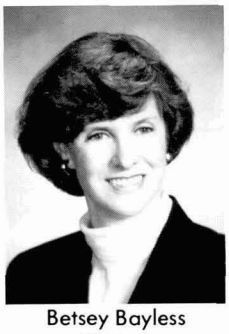
If we can get this much done in a difficult year, just think what can be accomplished next year, when things, hopefully, will be looking up.



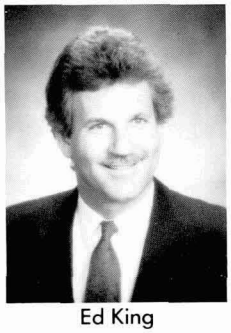
Tom Rawles
District 1



John Katsenes
District 2



Betsey Bayless
District 3
Chairman



Ed King
District 4

Mary Rose Wilcox
District 5

Board of Directors

The Flood Control District of Maricopa County, founded in 1959, is a municipal corporation and political subdivision of the State of Arizona. The District is governed by a five-member Board of Directors which consists of the elected County Supervisors.

The District has all the powers, privileges, and immunities granted generally to municipal corporations. The Board of Directors exercises all powers and duties in the acquisition and operation of District properties, contracting, and in carrying out regulatory functions as ordinarily exercised by governing bodies.

The activities of the District are funded by a flood control tax levy assessed on all real property within Maricopa County and a variety of cost-sharing arrangements with the Federal, State, County, and local governments.

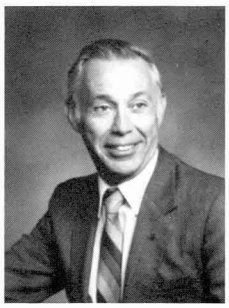
Table of Contents

Financial Highlights ..... Inside front cover
Program Summary - Expenditures ..... Inside front cover
A Year To Remember, by Dan Sagramoso, P.E. 1
Board of Directors 2
Flood Control Advisory Board 3
Channel of Change 4
Drainage Administration Program 7
Maintenance Program 8
Floodplain Management Program 10
Flood Detection & Data Collection Program 12
Environmental Program 14
Property Management Program 15
Status Map of C.I.P. Projects 16
Planning/Capital Improvement Program 17
Awards Recognition 26
Building Renovation 29
Statement of Revenues 30
Area Drainage Master Studies - Expenditures 30
Capital Improvements - Expenditures 31

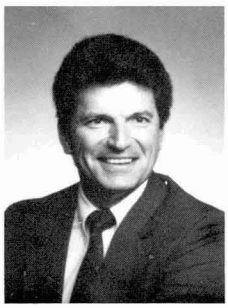
ON THE COVER
District-maintained landscaping enhances the Arizona Canal Diversion Channel, much as the recently-completed structure enhances flood protection for the Phoenix Metropolitan Area.

Published by:
The Flood Control District of Maricopa County
2801 West Durango Street
Phoenix, Arizona 85009
(602) 506-1501

John E. Miller
Chairman

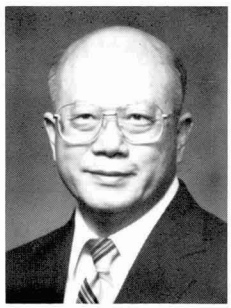


James Matteson
City of Phoenix



Paul Cherrington
Salt River Project

William LoPiano



Samuel K. Wu

Flood Control Advisory Board

The Flood Control Advisory Board (FCAB) advises the Board of Directors on flood control, water conservation, floodplain management, drainage, and related matters. The FCAB reviews planning, operations, and maintenance of flood control facilities, and recommends an annual budget to the Board of Directors. The FCAB members also serve the District as members of the Floodplain Review Board and the Drainage Review Board.

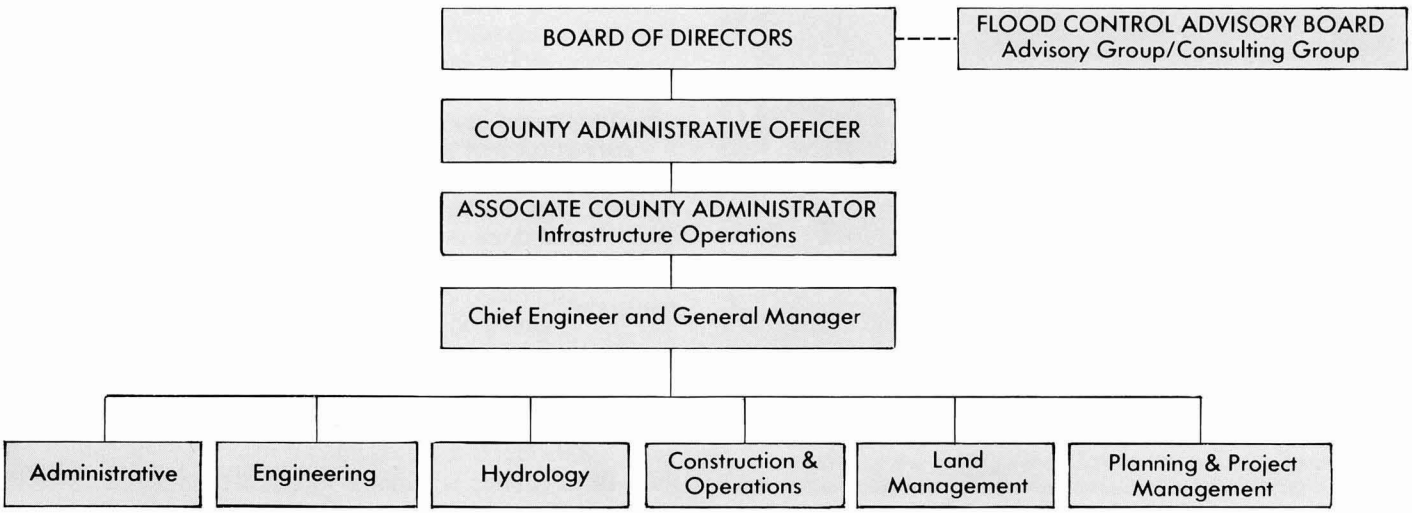
The Advisory Board consists of seven members, five of whom are appointed by the Board of Supervisors to five-year terms. At least one member must be a resident of the City of Phoenix. In addition to those five members, the Salt River Project and the City of Phoenix appoint representatives who are ex-officio members of the FCAB.

Ron Wheat

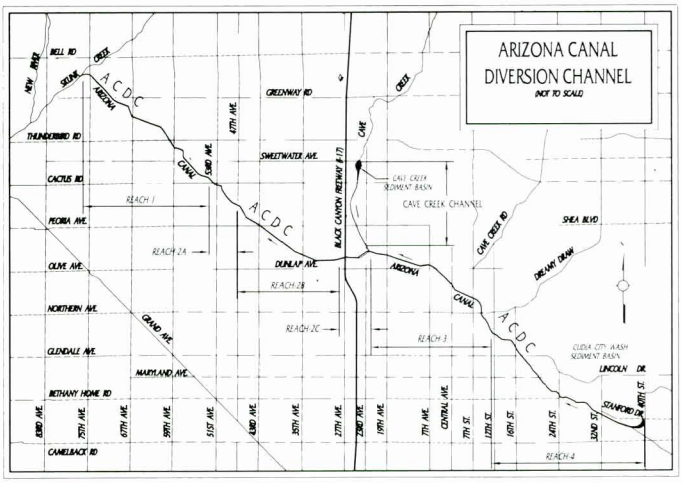
Marcella Peters

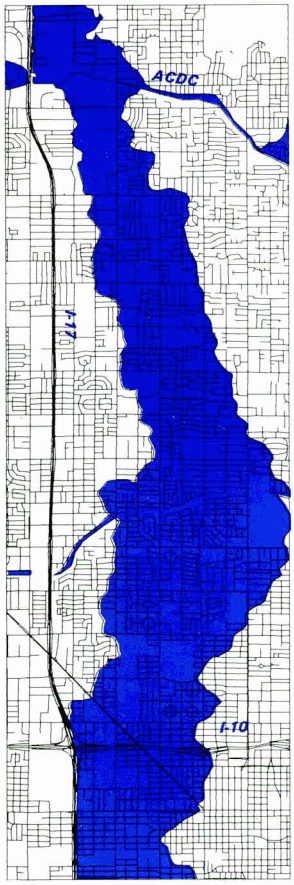
ORGANIZATIONAL CHART

Flood Control District of Maricopa County

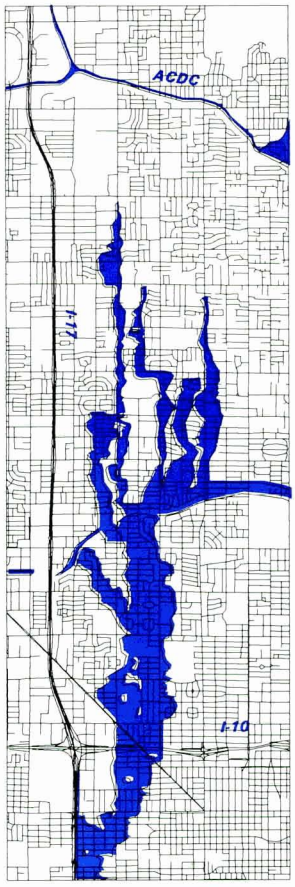


A Channel of Change





Cave Creek Floodplain before ACDC.



Cave Creek Floodplain after ACDC.

After more than eight years of construction at a cost of more than $250 million, the largest and most ambitious federally-funded project in the District's 35-year history was completed.

The 16.5 mile Arizona Canal Diversion Channel (ACDC) was formally dedicated in ceremonies held on October 8th and attended by members of the District's Board of Directors, the Flood Control Advisory Board, three Valley mayors, the Corps of Engineers and others involved in the channel's planning and design.

The ACDC is an integral part of the larger Phoenix and Vicinity (including New River) Flood Control Project developed by the Corps of Engineers in the 1960's and sponsored locally by the District. That project includes already completed dams on Cave Creek, Dreamy Draw, Skunk Creek and New River, plus the acquisition of flowage easements and the construction of bank protection on Skunk Creek, New River and the Agua Fria River.

The ACDC intercepts stormwater runoff that occurs north of the Arizona Canal and conveys it west to Skunk Creek. Large urban washes such as Cudia City Wash, Myrtle Wash, Dreamy Draw Wash, 10th Street Wash, and Cave Creek flow into the channel. Many city storm drains also use the channel as an outfall.

As the project's local sponsor, the District spent approximately $140 million for acquisition of right-of-way, relocation of people, utilities and roads, and construction of bridges over the channel. We also contributed 2.3% of the construction cost and will pay for continued maintenance of the project.

Completion of the channel means thousands of acres of mostly urbanized property in Phoenix, Glendale and Peoria are now protected from the 100-year flood. In central Phoenix, for example, the combination of the ACDC and the new dam on Cave Creek Wash removed 12,700 homes and 670 businesses (including the Arizona Capitol building) from the Cave Creek floodplain. Along with the flood protection has come the reduction or elimination of flood insurance requirements on hundreds of properties, saving people thousands of dollars throughout the life of their mortgage.

The ACDC actually began paying flood control dividends well before it was complete. By constructing the project in segments or "reaches", and by beginning construction at the downstream end, the channel began working as each reach was completed. In one instance an unfinished section between 7th and 12th Streets saved dozens of homes from certain flooding when it filled with stormwater from a sudden flash flood. An estimated 73 million gallons of water pooled in the channel on July 24, 1992, submerging construction equipment, but saving downstream properties. During the January 1993 flooding, the ACDC filled to a depth of over 5 feet and provided an outfall for over 5 billion gallons (17,500 acre ft.) of stormwater runoff drained from behind Cave Buttes Dam.

Aside from its flood control benefits, the channel has also become a recreational mecca for thousands of residents living along its path. The western-most reach was developed into a park by the City of Glendale and features picnic ramadas, basketball courts, soccer fields and playgrounds.

Even in areas where right-of-way restrictions necessitated a rectangular concrete channel, landscaped service roads are havens for joggers, walkers, and bicyclists. Pedestrian underpasses were constructed at many major street crossings to facilitate public access. The channel is landscaped throughout its length and features buff-colored concrete and stylish steel fencing to improve its appearance. But in spite of its benefits and efforts to mitigate its visual impact, opposition to the project was fervent at times.

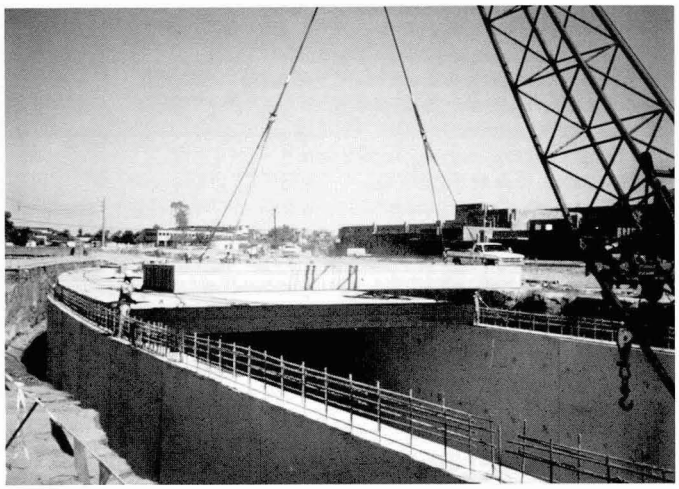
As construction of Reach 1 was getting underway in the Fall of 1985, the Phoenix City Council appointed a Citizen's ACDC Task Force to investigate concerns raised by residents of the Biltmore area opposed to construction of the channel through their community. "Citizen's Opposed to Reach 4" raised questions about the channel's cost-benefit ratio, its appearance and potential impact on property values.

This reach of the channel, which was not part of the original authorized plan, was added to the project in 1977 after the City of Phoenix and local interests requested that flood protection be extended several miles eastward where extensive flooding occurred in June, 1972. In that flood, over $4 million in damages occurred from runoff in this area. Damages were caused by ponding along the north side of the Arizona Canal and from flooding below the canal due to overtopping at five locations between 12th and 40th Streets.

Following two years of public Task Force meetings, which considered several channel alternatives, the Phoenix City Council voted on June 23, 1987 to support Reach 4 as originally conceived. They did, however, appoint an aesthetics committee to work with the District and Corps of Engineers on developing plans to landscape and beautify the channel.

One of the channel alternatives evaluated by the Task Force involved the construction of four detention basins at the upstream end of the channel to reduce the cost and size of Reach 4. The alternative was shown to actually increase the cost of the project and met opposition from the Paradise Valley Town Council which passed a resolution in November, 1985 opposing the basins, but supporting efforts to reduce the channel's impact through aesthetic treatment.

Opposition to Reach 4 persisted in spite of renewed endorsements by Phoenix and Paradise Valley. Opposition by owners of the Biltmore Hotel centered around compensation for lost right-of-way and concern for lost business during channel construction. The Corps of Engineers and District agreed to cover the 1500-foot-long channel segment with a concrete lid and reduced construction time in half by asking the contractor to work double shifts.



Setting of box beams in front of the Arizona Biltmore Hotel

Board member John Katsenes represented Maricopa County and the District at the APWA "Contractor of the Year" award ceremony held May 20th at the ACDC near 20th Street and Maryland Avenue. Paradise Valley Mayor Joan Horne assisted in the unveiling of a plaque which is to remain on the site.

Thank You

It required the efforts of many people to successfully compelete a project as large as the Arizona Canal Diversion Channel. To all those who contributed to the project, we extend our thanks and appreciation for a job well done. While it is impossible to list all those involved, some of the many are listed below:

Flood Control District

Shelby Brown, *Administrative Coordinator*
Mark Brewer, *GIS CADM Technician II*
Roberta Combs, *Administrative Coordinator*
Francis Crosby, *Engineering Drafting Specialist*
Leanna Cumberland, *Eng. Contract Specialist*
Mike Cuneo, *Controller*
Betty Dickens, *Revegetation Ecologist*
Paul DiPierro, *Construction Inspector*
Chris Franklin, *Land Management Specialist*
Fred Fuller, *Chief of Construction Inspection*
Ken Green, R.L.S., *Real Property Engineering Assoc.*
Hedy Hall, *Land Management Specialist*
Kumar Hanumaiah, P.E., *Civil Engineer*
Jonathan Hughes, *Construction Inspector*
David Johnson, *Hydrology Manager*
Diane C. Johnson, *Land Management Aide*
Ken Johnson, *Property Management Specialist*
Bill Knight, *Revegetation Ecologist*
Lisa LaMarche, *Administrative Coordinator*
John Lang, *Civil Engineering Technician*
Paul Lindgren, *O & M Supervisor*
Dick McNamara, *Property Acquisition Manager*
Catesby Moore, *Environmental Program Manager*
Edgar Moreno, *Engineering Associate*
Amir Motamedi, *Hydrologist*
John Palmieri, *Property Acquisition Coordinator*
O. Don Park, P.E., *Construction & Ops Manager*
Bill Poppe, *Civil Engineering Technician*
Edward A. Raleigh, P.E., *Engineering Manager*
Don Rerick, *Project Management Engineer*
Dan E. Sagramoso, P.E., *Chief Eng. & Gen. Mgr.*
John Sanchez, *Real Property Engineering Assoc.*
Jim Schwartzmann, *Land Management Manager*
Gary Shapiro, *Civil Engineering Technician*
Shewa Shivaswamy, *Construction Inspector*
R.W. Shobe, P.E., *Project Management Engineer*
Stanley L. Smith, Jr., P.E., *Deputy Chief Engineer*
Laurence Spanulescu, *Construction Inspector*
Jan Staedicke, *Civil Engineering Technician*
John Svechovsky, P.E., R.L.S., *Water Resources Planner*
Charles Wainwright, P.E., *Civil Engineer*
Ray Warriner, *Property Acquisition Coordinator*
Larry Wong, *Engineering Drafting Specialist*
Connie Yanez, *Administrative Assistant*
Joe Young, *Budget Analyst*
and ACDC Maintenance Crews ... thanks!!!

Former District Employees

Warren "Andy" Anderson, *Chief of Construction Inspection*
John Burke, *Chief of Land Management*
Herbert P. Donald, P.E., *Chief Engineer & General Manager*
Neil S. Erwin, P.E., *Chief Engineer & General Manager*
Susan Fitzgerald, *Public Involvement Coordinator*
Nickolas Karan, P.E., *Chief of Engineering Division*
Joy Ketchum, *Administrative Coordinator*
Jim Langford, *Property Management Assistant*
Emily Marak, *Land Management Assistant*
William Mathews, P.E., *Chief Engineer & General Manager*
Erv McLuty, *Chief of Real Estate Engineering*
Sue Mutschler, *Public Involvement Coordinator*
Edward Opstein, *Chief of Land Management*
Robert Payette, P.E., *Chief of Construction & Operations*
John Rodriguez, P.E., *Chief of Planning & Project Management*
Mary Williams, *Administrative Assistant*
Linda Young, *Adminstrative Coordinator*

General Counsel

Larry J. Richmond, *Attorney*
Julie Lemmon, *Attorney*

Meanwhile, Paradise Valley residents pressed for treatment similar to the Biltmore's, leading the Paradise Valley Town Council in December, 1989 to pass a resolution calling for the channel to be covered through their town. With the eventual support of Arizona's congressional delegation, those in favor of the covered channel successfully lobbied Congress for the additional funding.

By this time (August 1991), construction of Reach 4 was well underway. Fortunately, the District, the Corps of Engineers and the Reach 4 contractor (SundtCorp) had anticipated congressional approval of funding for the cover and altered the construction schedule to accommodate the change order. The District was even designing the cover two months before congressional funding became available, saving thousands of dollars in potential costly delays.

It was the overcoming of such obstacles that lead the American Public Works Association (APWA) in May to recognize the contractor, the District and Corps of Engineers for their outstanding work.

In ceremonies attended by Governor Fife Symington, the APWA presented SundtCorp with the "Contractor of the Year" award for constructing Reach 4. The District and Corps of Engineers were recognized for their roles in supervising the project.

The sense of pride and accomplishment could be seen on the faces of those in attendance at both this event and the October dedication. The ACDC project had indeed been a challenging one, with emotional highs and lows as real as those found on the Castles 'N Coasters roller coaster ride constructed next to the channel near Metrocenter mall.

Everyone involved should take special pride in knowing that their contributions will live on through the successful performance of this remarkable channel. Their efforts will be remembered each time the ACDC flows with stormwater that a few years ago would have forced people from their homes and caused millions of dollars in damages.

Drainage Administration Program

Program FTE's: 18	% District FTE's: 7
Program Budget: $1,060,364	% District Budget: 2
Program Expenditures: $1,171,148	% District Expenditures: 2

The Drainage Administration Program involves the review and inspection of drainage facilities in unincorporated areas to ensure that development will not adversely affect neighboring properties. In order to reduce existing and potential flooding problems caused by local stormwater (outside the jurisdiction of a delineated floodplain), the District administers the *Drainage Regulation for the Unincorporated Area of Maricopa County.*

Drainage Administration Activity Chart

	1991-92	1992-93	1993-94
Inspections	4,389	5,848	5,619*
Drainage Clearances Issued	2,738	3,250	3,719
Subdivision Plan Reviews	26	29	52
Complaints Investigated	60	221**	145

* Reduction in number of inspections as compared to previous year resulted from utilization of building inspectors to perform drainage inspections in Sun City West. This saved customers time and made more efficient use of staff.

** Major storms in January 1993 increased significantly the number of complaints investigated during this fiscal year.

The District coordinates with the Infrastructure Planning Department (and Building Safety), the Maricopa County Department of Transportation, and the Maricopa Health Systems Department to ensure that new developments will not increase runoff, divert flows to another watershed, or cause backwater on other property. The District also investigates reports of flooding and possible flood hazards reported by citizens.

The rebound in the housing industry has meant an increase in the number of subdivision drainage plans submitted to the District for review (up 80%) and in the number of drainage clearances issued (up 14%). Last year marked the first full year of operation for the Sun City West Satellite Office, a One Stop Shop providing westside residents with a single, convenient location to obtain zoning reviews, building permits and drainage clearances.

The Sun City West Office accounted for 23% of all drainage clearances issued by the District last fiscal year and handled 690 telephone inquiries regarding permits, drainage problems and related concerns. Customers of the District gave Drainage Administration staff a 97% approval rating in April, with 93% of the surveys returned. Respondents indicated the staff were knowledgeable, courteous, helpful and efficient. ■

Civil Engineer Tech John Lang of the Sun City West Office talks to Peoria resident Tex Taylor and his son about finished floor elevations.

Maintenance Program

Program FTE's: 117	% District FTE's: 45
Program Budget: $8,730,469	% District Budget: 15
Program Expenditures: $8,036,158	% District Expenditures: 15

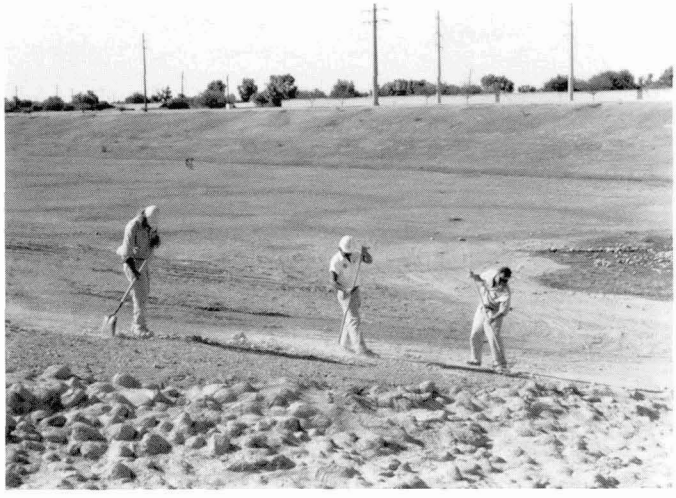
Maintenance of our flood control structures is a high priority function, absorbing about 15% of our budget and 45% of our employees. The District is responsible for the maintenance of 56 major structures extending from far eastern Mesa, west to Wickenburg and the Harquahala Valley.

A maintenance staff of 95 is supplemented with prison labor to accomplish the job of keeping our dams, channels, floodways and drains performing at their optimum level. This past year saw significant effort go into the cleanup and repair of 48 separate sites damaged by the January 1993 floods. The majority of the work involved unclogging principal outlets, repairing erosion damage and removing sediment and debris.

Among the largest repair projects was the rebuilding of the Cave Buttes Dam Outlet and the Perryville Bank stabilization plus the removal of large amounts of silt and debris from the East Maricopa Floodway near Chandler Heights Road. Crews also labored to remove hundreds of tons of trash and debris deposited along the banks of the Salt River between 35th Avenue and 107th Avenue following the erosion of an upstream landfill during the January flood event.

In addition to performing routine maintenance and storm damage repairs, crews readied many structures for annual joint inspections performed by federal agencies such as the Corps of Engineers and Soil Conservation Service. These annual inspections are performed on projects built with federal funds, such as the Arizona Canal Diversion Channel (ACDC). All inspections involving dams must include the Arizona Department of Water Resources which has the legal responsibility for licensing such structures. Less formalized inspections are conducted semi-annually by the District on all major structures.

Helping guide the work of maintenance crews is an Ecology Branch staffed with revegetation specialists expert in the establishment and maintenance of plants as well as the control of insects and noxious weeds. An especially aggressive program to control erosion through the planting of desert grasses was implemented this year. The use of a hydromulcher accelerated this effort and resulted in the ability to seed about 100 total acres involving numerous dams and floodways. Control of unwanted vegetation was also a priority this year, with the development of a Structure Vegetation and Spraying Schedule to ensure timely and consistent application of control techniques.



Tom Siegried, Ed Loy and Bob Hare put the finishing touches on grouted rip-rap placed along Reach 1 of the ACDC.

A major addition to the District's maintenance responsibilities occurred as well, with the completion of Reach 4 of the ACDC. Upkeep of the nearly five-mile section of concrete channel passed from the Corps of Engineers to the District in February. Maintenance costs associated with the total 16.5-mile ACDC are estimated at $40,000 per mile/per year.

Other highlights of the Maintenance Program from the past year include:

- Establishment of a satellite maintenance yard next to the East Maricopa Floodway in Mesa to be used as a staging area for crews responsible for maintaining East Valley structures. The eastside facility saves time and money by reducing travel times and providing storage space for tools and equipment. The idea for the facility was developed by a Total Quality Management (TQM) team made up of maintenance crew members.
- Development of a Work Control Center Cost Accounting System to track maintenance expenditures and material costs by structure and maintenance activity.
- Reorganization of the shop area in the Operations Building and installation of new storage cabinets and tool organizers to improve accessibility and efficiency. ■

DEPARTMENT OF THE ARMY
Los Angeles District, Corps of Engineers

Mr. Don Park
Flood Control District of Maricopa County
Construction and Operations Manager
2801 West Durango
Phoenix, Arizona 85009

Dear Mr. Park:

I would like to extend my appreciation to you and your staff for the way they have maintained the facilities turned over to you by our agency. They are a model for all other flood control agencies within our district.

Please pass on to your maintenance crews our sincere appreciation and tell them to continue the good work. Their work shows their concern for the people and property protected by these facilities and their concern has not gone unnoticed.

Sincerely,

(Signed) Carl F. Enson, P.E.
Chief, Construction-Operations Division

Except when asked to pose for pictures, O & M staff don't have much time for standing around when it comes to maintaining the District's many flood control structures.

Floodplain Management Program

Program FTE's: 19	% District FTE's: 8
Program Budget: $2,270,124	% District Budget: 4
Program Expenditures: $1,893,467	% District Expenditures: 4

The Floodplain Management Program involves the delineation of 100-year floodplains in Maricopa County and the regulation of development within their boundaries.

The District is mandated to perform this function by Arizona State Statute and this past year had eight floodplain delineation studies comprising 266 linear miles approved by the Federal Emergency Management Agency (FEMA).

The study results are used by FEMA to update Flood Insurance Rate Maps (FIRMs) which visually display identified flood hazard areas. The federal government requires home and business owners within these areas to purchase flood insurance if their structures are financed with federally-backed loans, i.e., VA, FHA, Government Small Business Loans, etc.

The FIRMs are used by the District and other jurisdictions to manage development within 100-year floodplains to protect life and property. Guidelines for such management are detailed in the *Floodplain Regulations for Maricopa County.* Enforcement of the regulations can involve on-site inspections by Floodplain Representatives who inspect new construction and structural repairs to ensure compliance. The District's jurisdiction for enforcing the regulations applies to both incorporated and unincorporated areas of the County, unless a municipality specifically resolves to take jurisdiction. The District undertakes floodplain management responsiblities for the following communities: Buckeye, Gila Bend, Surprise, Cave Creek, Carefree, Chandler, Guadalupe, Queen Creek, Litchfield Park and Tolleson.

Floodplain delineations and accompanying regulation result in safer, wiser development and can have monetary rewards, too. The District's active floodplain management program is responsible for the current 15% reduction in flood insurance premiums paid by residents in unincorporated areas of the county. This reduction is the result of District participation in a federal program called the Community Rating System (CRS) which rewards a community's efforts to reduce flood losses by awarding flood insurance premium credits to its residents. The 15% reduction will increase in October, 1994 to 20%, thanks to additional efforts made by the District to improve its floodplain management program.

At the heart of the District's Floodplain Management Program is the delineation of 100-year floodplains. The floodplain delineation program began in 1973 when FEMA completed several delineations. Since then, federal budgeting has shifted the burden to the local level, forcing the District to become more active in this role. Since 1986, the District has delineated 559 miles of 100-year floodplain. This accounts for 58% of the county's total miles of delineated floodplains.

FLOODPLAIN MANAGEMENT ACTIVITY INDICATORS

- 8 new delineations approved by FEMA.
- 64 floodplain use permits processed,
  37 clearances issued,
  1 variance approved.
- 26 violations investigated.
- 382 walk-in customers assisted.
- 2,823 phone requests for general information.
- 8,373 Flood Hazard Determinations made.
- 752 Flood Hazard Determination notices recorded.

District delineations approved by FEMA this past year include: Luke Wash, Apache Wash, Rainbow Wash, Star Wash, Daggs Wash, Powerline Wash and Tank Wash. Also approved were delineations associated with the White Tank/Agua Fria Area Drainage Master Study and the Buckeye Area Floodplain Delinieation Study.

Delineations in progress or awaiting FEMA approval are Rio Verde North and South, Salt-Gila River from Granite Reef to Gillespie Dams, Fountain Hills, White Tank Wash, Deadman Wash, and Iona Wash.

Floodplain Manager of the Year

Floodplain Representative Ron Nevitt received national recognition in May for his contributions to local floodplain management efforts. Ron received the Larry R. Johnston Memorial Award naming him "Local Floodplain Manager of the Year". The award was presented by the Association of State Floodplain Managers in ceremonies held in Tulsa, Oklahoma. The award recognizes outstanding individual efforts and contributions to local floodplain management programs.

Ron has been instrumental in securing a 20% reduction in the cost of flood insurance premiums for residents of unincorporated Maricopa County through his oversight of the Community Rating System program. He also implemented a program of preventing flood losses through disclosure of potential flood hazards to realtors, property buyers and title companies. This is done by recording a **"Notice of Flood Hazard Determination"** to the chain of title of properties identified as being within Special Flood Hazard Areas. The program was selected as a semi-finalist in the Innovation in Government Awards Program sponsored by the Ford Foundation and the Kennedy School of Government at Harvard University. The recordation program placed in the top 75 among 1,200 entries submitted nationwide.

Floodplain Representative Ron Nevitt may need additional wall space to display all the awards he received this year.

Other Accomplishments

Some of the other accomplishments of our Hydrology Division staff include:

- The development of a new computer program called the **Drainage Design Manual System**, which facilitates the input and management of data used in hydrologic analysis. The new system allows rapid updates, corrections and examination of different watershed characteristics which effect hydrologic results.
- Participation in the development of a new multi-level floodplain delineation system for use in setting finished floor elevations for structures in areas outside of FEMA-designated floodplains. The system has been incorporated into State Floodplain Management Standards administered by the Arizona Department of Water Resources. ■

Flood Detection and Data Collection Program

Program FTE's: 16	% District FTE's: 6
Program Budget: $1,378,990	% District Budget: 2
Program Expenditures: $1,094,001	% District Expenditures: 2

The District operates and maintains a network of precipitation gauges and water level sensors (commonly referred to as "stage gauges") which provide current or "real time" information about rainfall and runoff across the County. Called Automated Local Evaluation in Real Time (ALERT), the system transmits information via radio waves to a base station at the District. This information is shared with the National Weather Service for use when issuing weather advisories. The data also is used in hydrologic studies and for monitoring flood control structures during storm events, e.g., monitoring water levels behind dams.

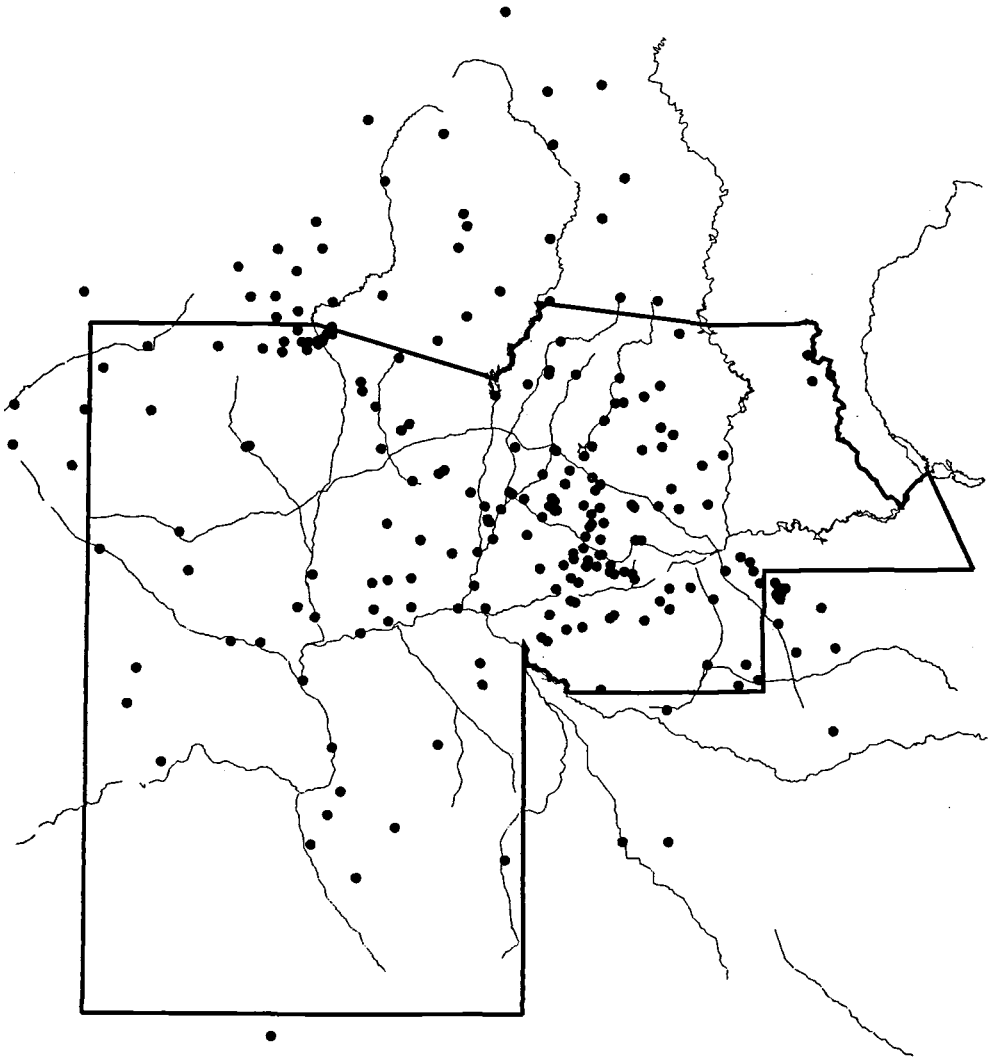
With the system's growth has come increasing interest on the part of other agencies and jurisdictions in obtaining data from the system. Fourteen outside entities have been linked to the network via telephone line, with another eight requesting access. Included among this year's additions were the Arizona Army National Guard, the Pinal County Flood Control District, the Phoenix Office of the U.S. Geological Survey, the City of Scottsdale Emergency Management Department and the Maricopa County Department of Transportation (MCDOT). Scottsdale and MCDOT, for example, will use the water level information from the ALERT system to anticipate road closures necessitated by rising floodwaters in local streams and washes.

With the installation of stage gauges has come the development of "rating curves" for the 55 sites with water level sensors. Rating curves provide a rate of discharge or flow at the gauge, be it in a stream, flood control channel or dam. The information is used to predict downstream flooding potential.

The installation of a Virtual Rain Gauge System was accomplished this year, which, through the use of satellites, radar and computers, can derive rainfall data where there are no actual gauges. In addition, a satellite dish installed at the District receives weather data from radar stations around the state which is then automatically fed into a District computer. The computer is used to generate rainfall depth maps using different colors to denote different rainfall amounts. The depth maps provide hydrologists with overall rainfall distribution patterns useful during flood events and for developing hydrologic forecasting models.

With the increased demand for flood warning information collected by the District has come a growing interest in developing a statewide network to collect and share information. The District is participating with other agencies in the development of a conceptual design for such a system which holds the promise of improving flood-readiness throughout Arizona.

Hydromet Techs Tom Kiefer (L) and Charlie Klenner assemble an antenna during installation of an ALERT gauge.



System Upkeep

In the past year, 30 new data collection sites were added to the system, many of them to fill "gaps" in the system identified during heavy rains in January, 1993. The new gauges bring the system total to 160 precipitation gauges and 64 stage gauges. In addition, ten full weather stations are tied into the system and provide such data as dew point, air temperature, humidity and wind speed.

Installing and maintaining this intricate network of District gauges is the responsibility of a six-member team made up of five Hydrometeorological Technicians (Hydromet Techs) and their supervisor. Travelling thousands of miles each month, these technicians ensure proper gauge operation by regularly calibrating the various sensors and radio transmitters associated with each data collection site.

In addition to performing preventive maintenance, the Hydromet Techs spent considerable time this past year upgrading data transmitters on stage gauges and weather stations. New transmitters were installed which have the ability to store information for later retrieval in the event the "real time" transmission is interrupted due to signal breaks caused by lightning strikes or other weather phenomena.

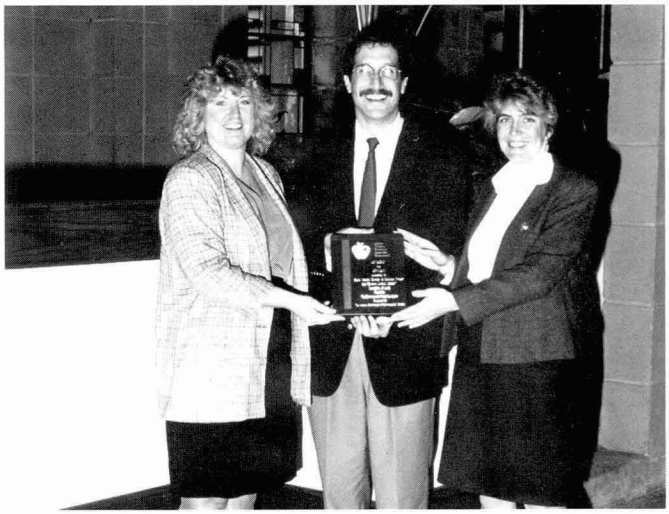
Publications

Other highlights of the Flood Detection and Data Collection Program from the past year include:

- Publication of the Annual Precipitation Report providing documentation of data collected by the District's ALERT system.
- Publication of a Storm Report summarizing rainfall and runoff amounts from the October 6, 1993 storm which impacted northeast Phoenix and Scottsdale. This storm provided the highest rate of rainfall ever recorded at a District gauge (1.5 inches in 15 minutes at Paradise Valley Park near Union Hills and 40th Street). Runoff from this storm sent an estimated flow of 7,600 cubic feet per second down Indian Bend Wash, a 25-year storm for this watershed. ■

Environmental Program

Program FTE's: 10	% District FTE's: 4
Program Budget: $2,445,696	% District Budget: 4
Program Expenditures: $1,167,982	% District Expenditures: 2



ADEQ Director Ed Fox presented Environmental Program Manager Catesby Moore (R.) and Hydrologist Valerie Swick with an award for overseeing development of the Erosion Control Manual.

8-year-old Lynn Erickson displays her winning poster in the company of Board of Director's Chairman Betsey Bayless (R.) and Valerie Swick of the District's Environmental Branch.

The Arizona Department of Environmental Quality recognized the Environmental Branch for their leadership role in developing an Erosion Control Manual providing best management practices for controlling construction site runoff. Staff received the Arizona Pollution Prevention Leadership Enhancement Award for Advocacy in ceremonies held last November.

The District continues to act as the regional coordinator in meeting the stormwater requirements of the federal Clean Water Act's National Pollutant Discharge Elimination System (NPDES). The regulations require large metro politan areas to monitor pollution levels in stormwater and develop programs to reduce pollutant levels.

In January, the Maricopa Association of Governments (MAG) approved a model stormwater ordinance for use by cities in implementing stormwater quality regulations. The ordinance was developed by a MAG Stormwater Task Force coordinated by Environmental Branch staff working cooperatively with District legal counsel.

Another District endeavor receiving considerable recognition is a pilot project to remove petroleum contaminants from stormwater. The District's use of wetland plants and associated microbes to purify stormwater runoff from a vehicle maintenance yard is being recommended by the Arizona Department of Environmental Quality (ADEQ) for use as a Best Available Demonstrated Control Technology. This means ADEQ will accept the methodology for use by other agencies and jurisdictions who cite it in their individual stormwater permits.

Recognizing that a coordinated regional effort is the most effective response to the new federal and state requirements for monitoring stormwater quality, the Environmental Branch is negotiating intergovernmental agreements with Phoenix, Mesa and Tempe to operate and maintain those commuities' stormwater monitoring stations and instream flow sampling sites. These agreements go a long way toward achieving the goal of establishing a regional stormwater monitoring network.

An effort to educate the public about stormwater pollution was also undertaken by staff. Five-hundred children from throughout the Valley competed in a poster contest organized by the Environmental Branch to develop a "spokes-character" for a stormwater pollution campaign.

Eight-year-old Lynn Erickson of Zuni Elementary School in Scottsdale created the character of "**Drippy**" after learning about stormwater pollution in class. A video about stormwater pollution and ways to prevent it was produced in conjunction with the campaign. ■

Property Management Program

Program FTE's: 6	% District FTE's: 2
Program Budget: $400,521	% District Budget: 1
Program Expenditures: $362,393	% District Expenditures: 1

The Property Management Program encompasses activities performed by the District's Land Management Division relating to the lease, sale and management of properties associated with flood control projects.

During the past year, staff have been actively involved in maintaining and securing District-owned property. Nearly $1 million in revenue was generated by the Property Management Branch through easements, rental, lease, license and sale of District property. For example, an agricultural lease on property recently acquired along New River and Skunk Creek (the Willden-Red River purchase) is generating $6,000 per month for the District. Property Management staff have also been promoting the concept of multiple-use flood control projects through formulation of various agreements with local communities for recreational use of District property.

At Cave Buttes Dam, the City of Phoenix wishes to develop recreational amenities on the property. The District has also negotiated an intergovernmental agreement with the City of Peoria to purchase District property which was obtained through an exchange with Westcor Partners. The City of Peoria wants the property for its regional sports complex. The sale will generate in excess of $2 million for the District. The City of Peoria is also negotiating with the District to utilize and develop District right-of-way north of Grand Avenue in the New River Channel for a golf course.

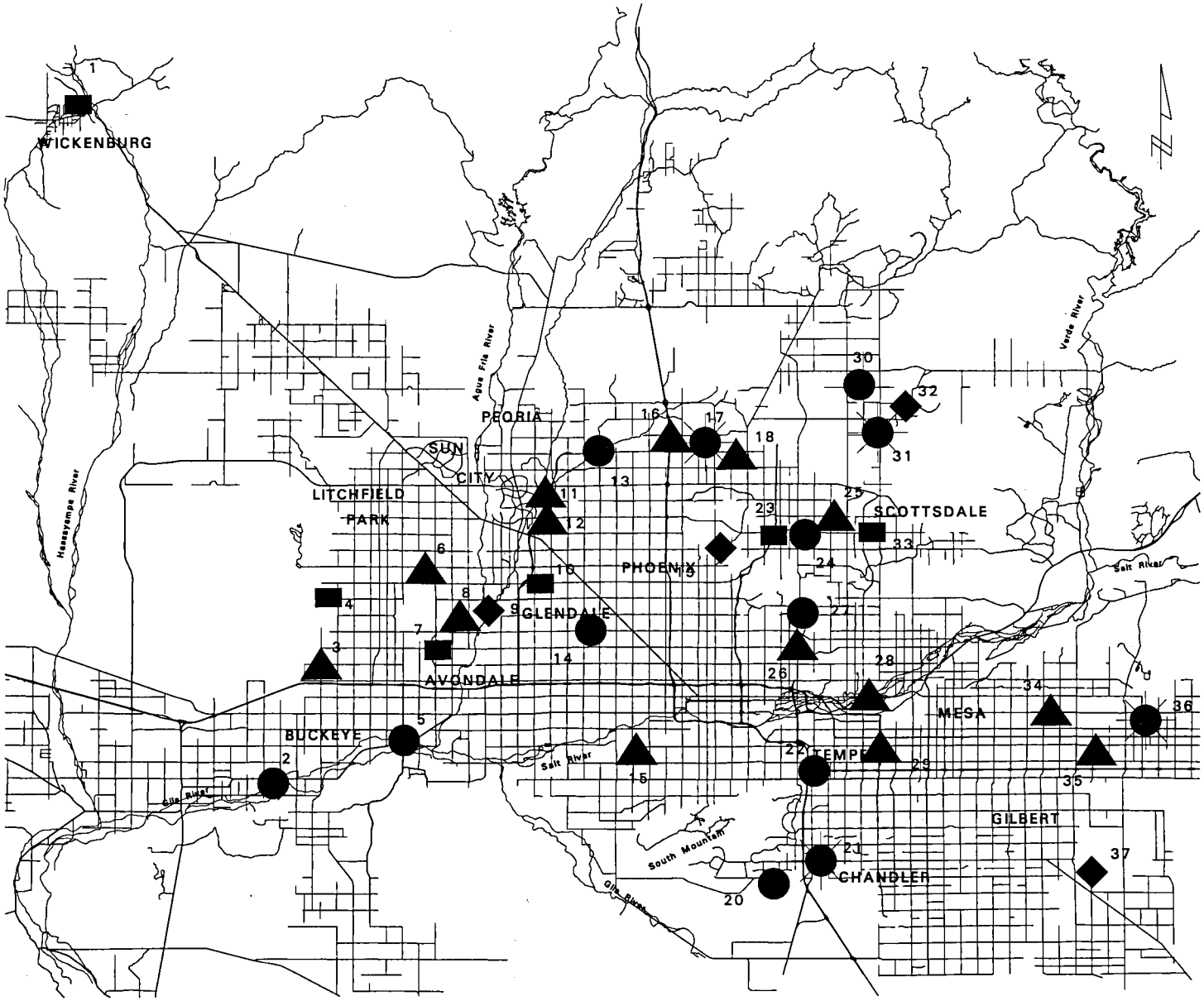
The Property Management Branch also has developed an active identification and disposition program for parcels of property which are considered surplus. During the past fiscal year, six parcels were sold with a total revenue to the District of $200,000. As a result of the District's responsibility to protect the petroglyphs at the south end of Adobe Dam, the District has provided right-of-way to the Corps of Engineers for construction of an Interpretive Center. Arizona State University will manage the center for public use. ■

Portions of the Peoria Sports Complex rest on property presently owned by the District which will be sold to Peoria.

Property Management Branch Activity Summary

Transaction	Parcels/Units	Revenue
Sale at public auction	6	$200,900
Rental/lease	12	$121,990
License/easements	70	$618,998
IGA Agreement	1	$ 15,750
Mobile homes leased to county agencies for nominal fee	23	-0-
Total	112	$957,638

Status of Major C.I.P. Projects



Project Index

1. Casandro Wash Projects
2. Salt-Gila River Study
3. White Tanks 4 Inlet
4. White Tanks 3 Improvement
5. Bullard Wash Overchute
6. Dysart Drain Connector
7. RID Canal Overchute
8. Colter Channel
9. Agua Fria Easements
10. Northern/Orangewood Drain
11. Desert Harbor Drop Structure
12. Cactus Rd. Storm Drain
13. Skunk Creek Improvements
14. Maryvale Flood Mitigation
15. Maricopa Drain
16. Beardsley Rd. Drainage
17. Cave Creek Improvements
18. East Fork Cave Creek
19. 10th Street Wash Basin/Chan.
20. Gila Drain Improvements
21. Southeast Valley Regional Dr.
22. Town of Guadalupe
23. Tatum Wash Channel/Basin
24. Doubletree Ranch Rd. Imp.
25. Cactus Rd. Flood Control Str.
26. Old Cross Cut Canal
27. Arcadia Drainage Project
28. Salt River Channel
29. Price Road Drain
30. Rawhide Wash Channel
31. Pima Road Channel
32. Reata Pass Channel
33. 84th Street and Cholla Project
34. University Dr. Storm Drain
35. Sossaman Channel
36. East Apache Trail at C.A.P.
37. Rittenhouse Road Drainage

Status

- Construction
- Study
- Land Acquisition
- Design
- Planned

As of June 14, 1994

Planning/Capital Improvement Programs

Combined Program FTE's: 73	% District FTE's: 28
Combined Program Budget: $40,179,458	% District Budget: 72
Combined Program Expenditures: $40,280,528	% District Expenditures: 74

The Planning Program identifies areas with existing or potential flooding and drainage problems and develops alternative solutions to resolve such problems. Ever guiding the planner's efforts is the District's mission of protecting life and property of County residents. The Capital Improvement Program (CIP) is an allocation of resources and a timetable for major construction projects and property acquisitions to be undertaken by the District to resolve identified flooding problems. The Planning and Capital Improvement Programs account for over 75% of the District's Budget.

The planning effort involves activities such as obtaining rights-of-entry to property, performing environmental and archeological assessments of potential project sites, developing hydrologic information through drainage studies, negotiating intergovernmental agreements with other agencies and jurisdictions involved in the project, and instituting a public involvement program to educate citizens about the project and to obtain their input.

The CIP effort includes acquiring of right-of-way, relocating utilities and affected property owners, developing design plans, and constructing the project.

One of the ways that CIP projects are identified is by asking local communities and county, state and federal agencies to submit project proposals to the District for funding consideration. The requests are evaluated using a Project Prioritization Procedure adopted this past year which grades each project using community-approved criteria. Individual criteria include; level of flood protection provided by the project, regional significance, level of local participation, public protection benefits, total project cost, permit requirements, local priority, and potential for multiple use. Projects with high scores receive priority status when developing the District's Capital Improvements Budget and 5-Year Capital Improvement Program.

In addition to soliciting community proposals for flood control projects, the District also develops its own information on flooding and flood-prone areas through its Area Drainage Master Study (ADMS) program. These studies identify existing drainage problems as well as potential problems that may occur in the future as development continues. A product of these studies is an Area Drainage Master Plan (ADMP) which proposes alternative solutions to identified problems.

There are 23 ADMS areas identified in Maricopa County, with study areas ranging from 15 to 280 square miles. Ten of the studies have been completed and three are currently underway.

Studies completed this past year include:

White Tanks/Agua Fria ADMS: The hydrology for the 240-square-mile watershed was developed along with 151 linear miles of floodplain delineations. The study area is bounded by Grand Avenue on the north, the Gila River on the south, the White Tank Mountains on the west and Agua Fria River on the east. Study information was approved by the Federal Emergency Management Agency (FEMA) in April and is being used in the development of numerous flood control projects including the Dysart Drain Improvement Project, Colter Channel, and Bullard Wash Outfall.

Wickenburg ADMS: Hydrology for the 280-square-mile watershed was developed along with 105 linear miles of floodplain delinations. The study information has been submitted to FEMA for review and approval is pending. The Casandro Wash Dam and Outlet projects are being undertaken as a result of this study.

Gilbert-Chandler ADMS: Hydrologic information was developed by in-house staff for 120 square miles. The study area is bounded by the Superstition Freeway on the north, the Gila River Indian Community on the south, I-10 on the west and the Eastern Canal on the east. Projects benefitting from the study results include the Gila Drain Floodway and drainage designs for the San Tan and Price Freeways.

On-going ADMS's include:

Arizona Canal Diversion Channel (ACDC) ADMS: Hydrology is nearly complete for the 180-square-mile study area. The study area is bounded generally by Dynamite Road on the north, the ACDC on the south, 99th Avenue on the west and 40th Street on the east. Study information has benefitted pre-design efforts on 10th Street Wash Improvements in Sunnyslope and will help identify optimum locations for additional stormwater inlets along the ACDC.

Laveen ADMS: Hydrology for 43 square miles has been developed and a feasibility study has been undertaken to identify possible solutions to historic flooding problems. The study limits include the area bounded by the Salt River on the north, South Mountain on the south, 67th Avenue on the west and Central Avenue on the east.

Maryvale ADMS: Aerial mapping and topography for portions of the 80-square-mile study are underway, along with a feasibility study to identify possible solutions to recurrent flooding problems along the north side of the Grand Canal at two locations: 47th Avenue and Crittendon Lane and 64th Avenue and Sunset Drive. The study area is bounded on the north by Olive Avenue, on the south by I-10, on the west by the Agua Fria River and on the east by I-17.

Project Manager Michael Lopez (with back to guard rail) conducts a tour of 10th Street Wash with members of a citizen's advisory committee.

Planning Efforts Initiated

Highlights include:

10th Street Wash Detention Basins and Channel Improvements: A project involving detention basins and possible channel improvements was initiated in January to remove 575 homes and businesses from the 10th Street Wash floodplain in Sunnyslope. Through extensive community involvement, two basin locations were identified, land was purchased, and design consultants have been hired to develop final design plans. Concurrent with this effort is a feasibility study to develop alternative channel improvements to remove that portion of the floodplain not eliminated by the basins. A Citizen's Advisory Committee appointed by the North Mountain Village Planning Committee is working with the District to develop a preferred design alternative for channel improvements.

Arcadia Area Drainage Study: A consultant has been selected and a scope of work is being finalized for a pre-design study to solve flooding problems along the north side of the Arizona Canal between 40th and 64th Streets. The study will propose a storm drainage system for about four square miles, using the improved Old Cross Cut Canal as an outlet.

Bullard Wash Outfall Study: A 9-month study initiated in June will develop a preferred drainage master plan for reducing the flood hazard potential associated with Bullard Wash in Goodyear. Approximately $10 million of City of Goodyear infrastructure and several hundred acres of farmland and primary arterials are currently at risk due to sheet flow and ponding north of the Buckeye Irrigation District Canal.

Doubletree Ranch Road Improvements: A consultant has been selected and contract negotiations are underway for a 15-month pre-design study to address flooding problems along an urbanized watershed in Paradise Valley which flows northeast from the Phoenix Mountain Preserve to Indian Bend Wash. The project will be combined with improvements to Doubletree Ranch Road being planned by the Town of Paradise Valley.

Maryvale Area Flood Mitigation Project: A consultant is under contract to identify alternative solutions to flooding problems along the north side of the Grand Canal at two locations in Maryvale. The Grand Canal impedes stormwater flows that historically have flowed in a southwesterly direction toward the Salt River, but now pond behind the canal and flood local residential areas.

RID Canal Overchute: Construction plans and specifications are being developed for a 100-year capacity overchute on the Roosevelt Irrigation District Canal at the Old Litchfield Road alignment. The project will provide an outfall for 1.6 square miles of existing development in Litchfield Park, Avondale and Goodyear and remove some developed areas in Litchfield Park and Avondale from delineated floodplains.

Skunk Creek Improvements: A master drainage study was initiated in April to identify channel improvements needed along Skunk Creek between Adobe Dam and the ACDC. The 100-year floodplain breaks out beyond the mapped floodplain limits at several locations. Conveyance of the 100-year discharge from Adobe Dam into Skunk Creek was a condition of the U.S. Army Corps of Engineers agreement with the District for the Phoenix and Vicinity (including New River) Flood Control Project.

Tatum Wash Channel and Basins: Hydrology for the contributing watershed is being developed along with hydraulic modeling for use in defining the flood hazards associated with Tatum Wash. The information will be used to identify a preferred alternative solution to flooding problems within 2,000 floodprone acres between the Phoenix Mountain Preserve and Indian Bend Wash (IBW) near Shea and Tatum Boulevards. An interim solution has been designed by District and City of Phoenix staff which involves construction of a large drop inlet across Cholla Street which will outfall into the IBW. In addition, five existing storm drain inlets will be enlarged.

Town of Guadalupe Pre-Design Study: A consultant has been selected to develop a preferred alternative drainage master plan for the town of Guadalupe which experiences flooding due to inadequate drainage facilities.

Continuing Project Planning Efforts

Highlights include:

Gila Drain Floodway: Planning efforts continued on the development of a multi-use flood control project along 12 miles of floodplain adjacent to the Gila Drain from Maricopa Road west to the Gila River near 51st Avenue. The floodway will provide an outfall for the Southeast Valley Regional Drainage System, conveying flows from an Arizona Department of Transportation (ADOT) channel near Maricopa Road. The District is funding a study to assess multi-purpose development of the floodway which may result in a non-structural flood control project encompassing the western nine miles of the floodplain.

Laveen ADMP: A consultant has been selected and a scope of work is being developed for identifying alternative solutions to historic flooding problems in the Laveen area between Central and 43rd Avenues, from the Salt River south to South Mountain. The consultant will use hydrologic information previously developed in the Laveen ADMS.

Old Cross Cut Canal: An intergovernmental agreement with the City of Phoenix was amended to accommodate roadway and park improvements desired by Phoenix. The amendment calls for a covered channel to be constructed and 48th Street to be relocated from McDowell Road to Indian School Road. Public meetings have been held to obtain community input on the channel as it relates to development of park amenities. Development of the final design and preparation of construction plans and specifications continues.

Plan 6: Staff continued their coordination with the Bureau of Reclamation and other Plan 6 entities and signed the Modified Roosevelt Dam Operating Agreement which outlines the additional storage space set aside for flood control and water conservation purposes. The dam is being raised 77 feet to increase the flood control space and water supply (conservation) space 557,000 acre-feet and 255,000 acre-feet, respectively, and to ensure the structural integrity of the dam. The District has contributed approximately $10 million towards the modification effort. The Corps of Engineers is under contract with the Bureau to develop a flood control operations plan to guide decisions regarding when and how releases will be made to minimize downstream flood damages. New hydrology for the Salt-Gila Rivers also will be developed by the Corps of Engineers for use by the District in redelineating the 100-year floodplain downstream of Granite Reef Diversion Dam.

Salt-Gila Watercourse Master Plan: The Executive Committee met in September and again in March to approve a master planning approach for the Salt-Gila Rivers between Granite Reef Dam and Painted Rock Reservoir. The planning effort is aimed at developing a coordinated approach to regulating and developing the floodplain to minimize negative impacts and incompatible land uses. At the September meeting the committee selected a "Moderate" planning approach from a list of five planning alternatives developed by a consultant under contract to the District. In the March meeting, however, an alternative approach was presented which changed the planning focus from a "watercourse master plan" to a "land use master plan" to be developed by the ten land use jurisdictions along the study area. The change was made because many committee members believed the water-course master plan as outlined in the Moderate approach was too costly, too comprehensive, would take too long to accomplish, and would have non-land use jurisdictions involved in its management. Under the new approach, the master planning effort will be guided by the Maricopa Association of Governments with technical support provided by jurisdictions without authority to regulate land use, such as the District. The planning effort is going forward as the Salt-Gila Task Force.

Salt River Channelization - McClintock Drive to Price Road: An intergovernmental agreement with ADOT and the City of Tempe has been negotiated for continuation of 100-year channel improvements from McClintock Drive east to Price Road. The project will protect light industrial and commercial developments and multiple landfill sites which are within an EPA-designated Federal Superfund site. Completion of these improvements will provide a minimum of 100-year protection along the Salt River through Tempe.

Upper Indian Bend Wash Regional Drainage and Flood Control Plan: Coordination continues with the Cities of Phoenix and Scottsdale and other appropriate agencies involved in planning Northeast Phoenix-Scottsdale area regional drainage facilities. Included in the planning are the Pima Road Channel along Pima Road between Jomax and Bell Roads, Rawhide Wash Channel Improvements between Jomax and Pinnacle Peak Roads, and the Reata Pass Channel works between Pinnacle Peak and Beardsley Roads. All three of these projects are included in Scottsdale's Desert Greenbelt plan.

Capital Improvement Program

Highlights include:

ACDC Completion: The 16.5 mile channel was dedicated in ceremonies held October 8, 1993. A monument was unveiled and the channel was "christened" with pails of water by members of the District's Board of Directors (Supervisors), Advisory Board, several Valley mayors
and the Los Angeles District Engineer for the U.S. Army Corps of Engineers. In May, the District received special recognition along with the Corps for work performed on Reach 4. The recognition came from the American Public Works Association (APWA) in ceremonies held at the project site to honor SundtCorp as APWA Contractor of the Year.

Colter Channel Groundbreaking: Channel excavation for the 14,000-foot earthen channel got underway in December following formal groundbreaking ceremonies. Located 1/4-mile north of Camelback Road between Litchfield Road and the Agua Fria River, the channel will intercept 100-year storm flows from the north and convey them to the Agua Fria River. The project coincided with improvements being made to Dysart Road by the Maricopa County Department of Transportation (MCDOT). The channel will reduce construction costs associated with planned improvements to Camelback Road and for this reason MCDOT cost-shared in the channel construction.

Ed King of the District's Board of Directors (far left with shovel) joins other dignitaries in groundbreaking ceremonies for the Colter Channel.

New River Channelization: Environmental permitting challenges and delays caused by the January 1993 flood event were successfully overcome, culminating in the completion this year of the New River Channelization project between Olive Avenue and Bethany Home Road. More stringent 404 permitting requirements resulted in $1 million being expended on efforts to mitigate impacts to riparian habitat. The project was seeded with native grasses and a 20-acre site located adjacent to the channel was planted with trees and shrubs. Three locations within the channel bottom were suitable for the establishment of wetlands where cottonwoods, willows and cattails were planted. Off-site mitigation included the planting of 3,200 cottonwood and mesquite trees on a 32-acre parcel at the confluence of the Agua Fria and Gila Rivers.

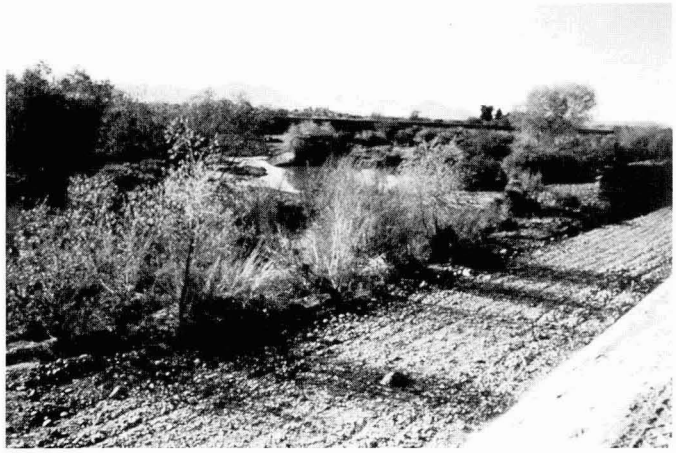
East Fork Cave Creek ADMP: The District reimbursed the City of Phoenix $3.54 million for expenditures associated with construction of channel improvements and basins making up the East Fork Cave Creek Area Drainage Master Plan. The project includes five basins, four laterals, and channelization of East Fork Cave Creek between Union Hills Drive and Beardsley Road. The channel improvements and three of the five basins are complete. The remaining basins are under construction and design of the laterals is underway.

Sossaman Channel Improvements: Improvements to an existing drainage channel maintained by the District east of Sossaman Road and south of Southern Avenue got underway in June. The easily-eroded earthen channel is being lined with concrete to improve its capacity and reduce maintenance costs. A detention basin is also being excavated which will reduce peak flows by capturing the high volume flows and draining them slowly back into the channel.

Casandro Wash Dam and Outlet: A consultant has been selected for the design of a 30-foot-high earthen dam to be built across Casandro Wash in Wickenburg for the purpose of protecting 98 downstream property owners located in the floodplain. District engineers have undertaken the design of an outlet to be constructed downstream of the dam to reduce the floodplain even further and provide a storm drain system for the local streets.

Beardsley Road Regional Drainage System: Staff successfully negotiated an agreement with ADOT and the City of Phoenix for the design and construction of a channel and basins along Beardsley Road from 7th Avenue to 23rd Avenue. The project will protect 1,100 homes and commercial buildings by intercepting stormwater flows and diverting them to an existing ADOT drainage system.

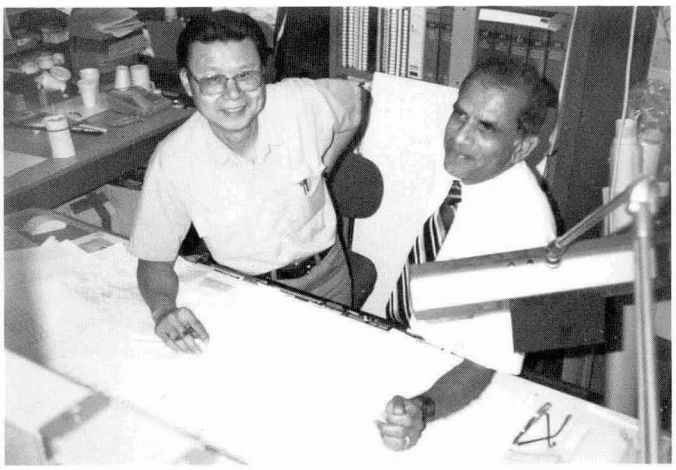
Northern/Orangewood Storm Drain: An intergovernmental agreement with the cities of Glendale and Peoria was approved in April for the design and construction of a 10-year storm drain and two detention basins in the vicinity of the Orangewood and Northern Avenue alignments from 67th Avenue to New River. The project will benefit nine square miles of existing development in Glendale, Peoria and unincorporated Maricopa County and provide an outlet for future municipal storm drains and ADOT's Grand Avenue project.



The District took painstaking efforts to preserve riparian areas in the bottom of New River during construction of channel improvements.

Cactus Road Storm Drain: Design has been completed for a 10-year storm drain along the Cactus Road alignment from 67th Avenue to the Outer Loop following approval in April of a cost-sharing agreement with the cities of Glendale and Peoria. The project will benefit a 3.5-square-mile area in those communities.

Dysart Drain Improvement Project: Design efforts and right-of-way acquisitions were initiated for planned improvements to the Dysart Drain flood control channel in the vicinity of Luke Air Force Base. The improvements to the existing channel and construction of a detention basin will provide 100-year flood protection to the air base.



Shon Wu (L) of the GIS section reviews plan drawings with Civil Engineer Kumar Hanumaiah.

Rittenhouse Channel Improvements: Final design is underway for a six-mile floodway paralleling Rittenhouse Road from the Queen Creek School east of Ellsworth Road to the East Maricopa Floodway. The project will provide 100-year flood protection to the school and reduce the floodplain caused by ponding.

University Drive Road and Drainage Improvements: Construction began in February on a joint project with MCDOT to improve University Drive between Higley and Power Roads and provide flood protection for portions of east Mesa and the County island containing Dreamland Villa Estates. The project involves excavation of detention basins along the north side of University Drive and placement of a large storm drain beneath the road.

Salt River Channelization west of McClintock Drive: Channelization of the Salt River west of McClintock Drive was completed this past year, providing 100-year flood protection to parts of Tempe and enabling the construction of the Red Mountain Freeway and Tempe's Rio Salado development.

Stormwater Drainage Branch Manager Steven Tucker discusses drainage issues with citizens attending a landfill siting public hearing.

Scatter Wash Channelization: Right-of-way acquisition and design was completed and a construction contract was awarded for channelization of Scatter Wash between 40th and 43rd Avenues. The project ties together previous channelization work and will result in uninterrupted bank protection from 35th Avenue downstream to the Skunk Creek confluence.

Cactus Road Flood Control System: An intergovernmental agreement with Scottsdale was signed and construction is 90% complete on portions of a storm drain and channel project to protect approximately 300 residences in a one-square-mile area below Cactus Road between 62nd Street and Scottsdale Road.

Other Planning and CIP-Related Activities:

Engineering Review: Staff from the Engineering Design and Review Branch worked on 23 in-house projects involving engineering design and drafting of construction plans. Staff also reviewed the design calculations and construction plans for 31 projects produced by consulting engineering firms under contract to the District. Some of the larger projects reviewed were: Old Cross Cut Canal Reconstruction, New River Channelization, Dysart Drain Improvements, Cactus Road Storm Drain, and the Beardsley Road Storm Drain.

In addition, the Stormwater Drainage Branch participated in public hearings held in February to obtain public input on potential landfill sites in the Southeast Valley. Staff answered questions about drainage issues associated with the proposed landfill sites.

Construction Inspection: The Construction and Operations Division oversaw the construction of $18 million in capital improvements this past year, including construction of the Colter Channel and Sossaman/Guadalupe Box Culvert and Extensions, channelization of New River from Olive Avenue to Bethany Home Road, bank plating of downstream portions of the East Maricopa Floodway and temporary repairs to the Dysart Drain.

Hydrologic Analysis: Sixty-eight proposed developments and projects within the County were reviewed by the Watershed Management Branch to ensure that none of the projects conflicted with District flood control structures. Hydrologic information associated with the developments were used to update hydrologic models of the affected watersheds. In addition, three hydrologic studies were completed in-house.

Property Acquisition: Over $13 million was expended last year in the acquisition of various land rights involving 3,000 acres, 254 parcels and the relocation of 34 families and three businesses. The property acquisition program encompasses activities performed by the Land Management Division and includes land and easement purchases, appraisal reports and reviews, and the provision of relocation benefits.

Most noteworthy among the property acquisition program's accomplishments was the successful resolution of three long-standing condemnation cases.

The Jones (water company) case dated back some five years and went to trial after plaintiffs refused several offers to purchase their flowage easements along the Agua Fria River for $165,000. The easements were needed to ensure adequate channel capacity for additional flood waters diverted to the Agua Fria River from the northern metropolitan drainage area by the Phoenix and Vicinity (including New River) Flood Control Project. The plaintiffs had requested $400,000 for their easements, even though the appraised value was only $120,000. A jury sided with the District and awarded the plaintiffs the appraised value.

Acquisition Activity Summary
(Preliminary and Unaudited)
FY 1993-94

PROJECT	LAND TRANS.	COST	% ACQUIRED TO DATE
ACDC	14	$ 653,515	100%
Agua Fria Channel	8	3,301,875	100%
Colter Channel	6	653,515	100%
Casandro Wash	21	312,500	5%
Dysart Drain	5	335,975	17%
New River/ Skunk Creek	5	2,010,010	94%
Northern/ Orangewood Drain	3	2,191,400	100%
Old Cross Cut Canal	3	560,000	75%
Skunk Creek Improvements	49	21,000	99%
Rain/Streambed Gauges	20	—	—
Trilby Wash-McMicken Dam	15	212,160	100%
University Drain	2	97,238	100%
White Tanks #3	3	1,000	75%
White Tanks #4	7	674,525	100%
10th Street Wash	53	26,500	88%
10th Street Basins	29	1,630,276	94%
Other/Misc.	11	170,100	100%
Contract Costs		918,863	
TOTALS	254	$13,772,137	

The Barkley-Estes case dates back seven years and involved a trial held in Yavapai County after the District condemned flowage easements along the Agua Fria River owned by business partners who planned to mine the area. The Yavapai County jury decided against the District, awarding the plaintiffs $2 million, which, after interest, would have amounted to twice that amount. The Yavapai verdict was overturned on appeal and sent back to Superior Court for retrial. Before it was retried, however, a negotiated settlement with the plaintiffs was agreed to by the plaintiffs for $900,000.

The Wilden-Red River case involving the need for flowage easements at the confluence of New River and the Agua Fria River was settled by purchasing the property outright. The purchase is expected to save the District millions of dollars in additional easement costs. This is because costly easements would have been necessary for parcels of property which can now be protected by constructing a levee on the Wilden property that will remove the adjacent property from the floodplain.

Damage Assessments Performed: Repair estimates totaling $15 million were developed for the 1,000-foot Salt-Gila Clearing and Pilot Channel Project between 91st Avenue and Gillespie Dam, damaged by flooding in January 1993. Restoration of the clearing project is eligible for federal funding assistance through FEMA. A Damage Survey Report (DSR) was completed and submitted to FEMA for approval. Federal guidelines permit use of the funds for projects unrelated to the clearing project, prompting staff to investigate the possibility of accomplishing other flood control work with the money. Meanwhile, a study of the clearing project will be undertaken to determine its effectiveness and identify possible alternative programs to reduce flood damages along the lower Salt and Gila Rivers. Any plans for restoration of the existing project need to address new requirements for Section 404 permits.

GIS Capabilities Featured: District Geographic Information Systems (GIS) capabilities were featured at the "Arizona First Annual GIS Conference" held in Scottsdale in August, 1993. Staff explained the District's use of GIS software to identify geographic and topographical features along a 39-mile stretch of the Salt River. The District's mapping was used by local and state agencies to target cleanup efforts during the Great Salt River Cleanup, a volunteer effort to remove landfill material washed into the river in January 1993.

The District was host to about 100 people from around the state who gathered in Phoenix for the Spring Conference of the Arizona ARC/INFO Users Group. The association of GIS practitioners discussed "real world" applications of GIS technology and heard presentations on its various uses. District staff gave presentations on how GIS is used by the District's Hydrology, Engineering, and Land Management Divisions, including a demonstration on tracking drainage complaints using GIS.

This non-descript piece of property along the Agua Fria River at Camelback Road was the subject of a lengthy condemnation case finally settled this year.

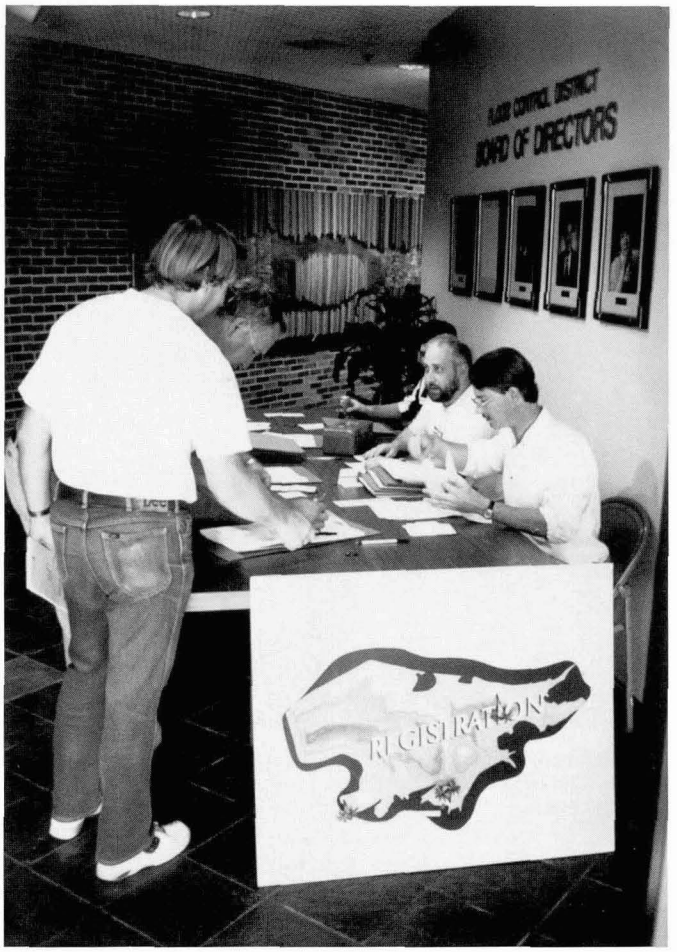
District GIS capabilities were also highlighted at a day-long professional development workshop held at the District in March and sponsored by the Arizona Planning Association (APA). About 60 planners and GIS users from across Arizona attended presentations about GIS applications large and small, with hands-on training provided thanks to a battery of District computers specially installed to support the workshop. The APA presented the District with its 1993 Special Recognition Award for development of the Great Salt River Cleanup GIS application.

Governor's Flood Symposium: Staff assisted in planning the Governor's Flood Symposium held in Tempe in November. The two-day event enabled local, state and federal emergency response agencies to learn more about each other and their respective responsibilities during a flood emergency. The symposium was attended by 130 people and included a panel discussion about flood control issues facilitated by the District's Chief Engineer and General Manager.

Rio Salado Reconnaissance Study: Staff are participating with the U.S. Army Corps of Engineers and the cities of Tempe and Phoenix on a Corps study of water resources along the Salt and Gila Rivers between Tempe and the Agua Fria River confluence. The study will identify problems and opportunities associated with flood control, water quality, recreation and riparian habitat restoration.

Tri-City Landfill Repairs: Technical review and assistance was provided to the U.S. Army Corps of Engineers and the Salt River Pima-Maricopa Indian Community during the design and construction of soil cement protection measures along the Tri-City Landfill. Portions of the landfill eroded into the Salt River during heavy flows in 1992 and 1993. The landfill is now protected from the 100-year flood.

Participation on Riparian Area Advisory Committee: Staff participated with state and federal agencies in evaluating existing riparian management programs and regulations on-going throughout the state. An interim report was submitted to the Governor which inventoried existing conditions and identified future options for preserving, protecting and restoring riparian areas.



Eric Feldman and Steve Bruffy of the GIS section register participants at the District-hosted Arizona ARC/INFO Users Group Spring Conference.

Awards and Recognition

NACo award winning staff included, from left to right, Ron Nevitt, Anne Blech, Chris Franklin, Betty Dickens, Annabel Montoya-Cooper and Ken Johnson.

National Association of Counties (NACo)

Four District programs merited Achievement Awards from the National Association of Counties (NACo) this past year. Headquartered in Washington, D.C., NACo encourages counties to enhance services through innovation. The District's winning programs were:

Aesthetics and Landscaping Policy: In concert with strategic planning efforts, Planner Anne Blech, with input from Revegetation Ecologist Betty Dickens and Property Management Branch Chief Ken Johnson, developed a new policy to incorporate landscaping and aesthetic structural elements in the design and construction of flood control projects. The policy encourages public input in the decision-making process and allows for water conservation and the use of native plants.

Notice of Flood Hazard Determination Program: Floodplain Representative Ron Nevitt instituted this program encouraging full disclosure of a property's flood hazard potential. The program involves recording flood hazard information in a property's chain of title so it cannot be overlooked. This helps assure that flood hazard potential is accounted for when a home is used as collateral for a loan, when a mortgage is being refinanced, or when a change in ownership occurs.

Capital Improvement Program Project Prioritization Procedure: This administrative procedure streamlines project development by providing defined criteria by which the flood control needs of 25 municipalities and the unincorporated county are ranked. Planner Dave Meinhart generated this method as recommended by TQM team efforts to solve problems identified during District strategic planning efforts.

Mapping the Great Salt River Cleanup: The District's Geographic Information System (GIS) capability led the mapping and property access functions essential to the success of the Great Salt River Cleanup, a large-scale community action project. Anne Blech and GIS Supervisor Marta Dent, coordinating with Land Management Specialist Chris Franklin, and assisted by Engineering Drafting Specialist Annabel Montoya-Cooper, utilized the District's technology in this rapidly executed planning project. This support enhanced safety, logistics, transportation, communication and public relations activities for the mult-agency task force coordinating 19,000 volunteers.

American Public Works Association (APWA)

On May 20th, the APWA presented SundtCorp with the "Contractor of the Year Award" for their work on the Arizona Canal Diversion Channel - Reach 4. Ceremonies attended by Governor Fife Symington and District 2 Supervisor John Katsenes were held at the project site near 20th Street and Maryland Avenue in Phoenix. As the local sponsor, the District received special recognition along with the U.S. Army Corps of Engineers for their successful supervision of the project. SundtCorp was also recognized last year by the Associated Builders and Contractors for "Excellence in Construction" for ACDC Reach 4.

Association of State Floodplain Managers (ASFPM)

The originator of a District program that encourages full disclosure of a property's flood hazard potential was recognized in May by ASFPM. Ron Nevitt, a Floodplain representative and 12-year District employee, received the Larry R. Johnston Memorial Award which recognizes individuals responsible for outstanding local floodplain management programs or activities.

Arizona Planning Association (APA)

The District was honored with a "Special Recognition Award" by the APA at their annual conference held in Prescott September 15-17, 1993. The award was given for the District's role in providing mapping and data support for the Great Salt River Cleanup. The volunteer cleanup effort was organized after debris from an upstream landfill washed into the Salt River in January, 1993. The District provided a set of computer-generated base maps, at various scales, to planners and technicians who formulated the details for the cleanup. The District also took on the task of identifying the owners of properties in the target area and notifying them of possible encroachments by volunteers and heavy equipment.

Arizona Consulting Engineers Association (ACEA)

The District, City of Tempe and CRSS Civil Engineers, Inc. received an Award of Substantial Merit from ACEA for the design of a massive roller compacted concrete drop structure located at the confluence of Indian Bend Wash and the Salt River. The award recognized CRSS for the technical value exhibited by their design of the 36-foot-wide drop structure built to protect the wash and numerous bridge piers associated with construction of the Red Mountain Freeway. The District and City of Tempe cost-shared in the design of the drop structure which was built by Pulice Construction under contract to the Arizona Department of Transportation.

NACo winners Marta Dent and Dave Meinhart.

Arizona Department of Environmental Quality (ADEQ)

The District's Environmental Branch received the Arizona Pollution Prevention Leadership Enhancement Award from ADEQ for development of an "Erosion Control Manual" to aid communities in meeting Environmental Protection Agency rules to protect stormwater runoff from pollutants. Realizing the difficulties associated with complying with the new regulations, the District formed a task force of public and private sector representatives, and with the assistance of Camp, Dresser & McKee Consultants, developed a manual of practices to formulate site-specific plans to meet the federal requirements to protect stormwater runoff from construction sites.

Employee of the Quarter

In its second year, this program is administered by a selection committee with representatives from the District's six divisions. Nominations are submitted to the committee for consideration and winners are announced each quarter. Nominees are evaluated on their professionalism, productivity, customer service attitude, teamwork and initiative. Recipients this past year were:

- **Shanna Yager**, Floodplain Representative, for the quarter July through September, 1993.
- **Laurence Spanulescu**, Construction Inspector, for the quarter October to December, 1993.
- **Danny Baker**, Records Clerk, for the quarter January to March, 1994.
- **Jim Phipps**, Public Information Coordinator, for the quarter April to June, 1994.

Certification and Professional Registration

Level II NICET Certification
(National Institute of Certified Engineering Technicians)
Paul DiPierro
Leon Haney
Jan Staedicke

Level III NICET Certification
Bill Poppe
Fred Fuller
Shewa Shivaswamy
Jon Hughes
Laurence Spanulescu

Civil Engineering Technologist Certification
Chuck Feuquay

Engineer in Training Certification
Afshin Ahouraiyan

Registered Professional Engineer
Kofi Awumah
Raju Shah

Continuing Education Achievements

Bachelor's Degree
Gwen Loving - Business Management, ASU

Master's Degree
Bill Knight - Environmental Resources, ASU
Roland Wass - Civil Engineering (Environmental), ASU

Arizona Governmental Training Service (AGTS)
Manager's Academy
Michael Cuneo
Joe Young
Chuck Brokschmidt
Chuck Feuquay
Ben Ganados
Ken Johnson
Mike Ramirez

Supervisor's Academy
Michael Cuneo
Linda Hannan
Lovetta Henry
Alex Munro
Joe Young
Tom Carroll
Ken Johnson
Greg Long
Fred McArthur
Dave Meinhart
Bob Naud, Jr.
John Palmieri
Brit Purifoy
Ray Warriner
Kathy Thiessen

In Fond Memory
of our Colleague and Friend

ERV McLUTY

A dedicated servant of the people of Maricopa County, having performed his duties with integrity and dedication for sixteen years as a faithful and respected employee of the Flood Control District of Maricopa County

February 7, 1978 to June 5, 1994

His contributions to the District shall live on in the memories of those who had the privilege of working with him.

Building Renovation

The Solid Waste Management Department took up residence at the Flood Control District in February. The Department is leasing 3,365 square feet of office space located on the second floor. Solid Waste Management previously resided at the Department of Transportation, but overcrowding necessitated their move to the District which had additional space. The move required the construction of three new hard-walled offices and the relocation of Accounting and Contracting staffs. In conjunction with the move, changes to the District's Flood ALERT room and conference area were made. The work and meeting areas were expanded to accommodate additional work stations for monitoring rain and stream gauges and to provide more space for maps and additional personnel needed during flood emergencies.

Also undertaken at about the same time were building modifications to insure compliance with federal laws associated with the Americans with Disabilities Act (ADA). The 1992 Act requires employers to make their facilities or programs accessible to the disabled.

While many of the ADA requirements were accommodated during construction of the building, some renovations had to be made. Light switches in some areas were lowered to provide access to persons in wheel chairs and ceiling lights were installed in places where light fixtures previously protruded from partitions. In addition, a handicapped parking space large enough to handle a van was added to the parking lot. Still to be completed is the addition of new signs to conform with height, size and braille requirements and modifications to exterior doors that are too heavy or cumbersome for disabled persons to open. ■

Worker builds new wall in expanded Flood ALERT Room

Statement of Revenues, Expenditures, and Changes in Fund Balance

Budgeted and Actual for the Fiscal Year 1993/1994

Preliminary and unauditied. Amounts are rounded to nearest thousand.

	BUDGET	ACTUAL	VARIANCE FAVORABLE (UNFAVORABLE)
REVENUES			
FLOOD CONTROL TAX	$36,326,000	$35,386,000	($ 940,000)
LOCAL PARTICIPATION	2,663,000	3,463,000	800,000
RENTAL INCOME	138,000	142,000	4,000
INTEREST INCOME	1,000,000	881,000	(119,000)
OTHER LAND INCOME	1,219,000	861,000	(358,000)
MISCELLANEOUS	94,000	411,000	317,000
TOTAL REVENUE	41,440,000	41,144,000	(296,000)
EXPENDITURES			
PERSONNEL SERVICES	7,493,000	7,867,000	(374,000)
SUPPLIES AND SERVICES			
PROFESSIONAL SERVICES	4,587,000	2,849,000	1,738,000
MAINTENANCE SUPPLIES & SERVICES	2,460,000	2,236,000	224,000
INTERNAL SERVICES	2,348,000	2,764,000	(416,000)
EDUCATION AND TRAVEL	271,000	120,000	151,000
OTHER SUPPLIES AND SERVICES	693,000	753,000	(60,000)
TOTAL	10,359,000	8,722,000	1,637,000
CAPITAL OUTLAY			
PERSONNEL SERVICES	2,221,000	984,000	1,237,000
REAL ESTATE	7,726,000	14,304,000	(6,578,000)
ENGINEERING	3,379,000	2,829,000	550,000
CONSTRUCTION	22,915,000	17,556,000	5,359,000
VEHICLES AND EQUIPMENT	2,373,000	1,744,000	629,000
TOTAL	38,614,000	37,417,000	1,197,000
TOTAL EXPENDITURES	56,466,000	54,006,000	2,460,000
EXCESS OF REVENUES OVER (UNDER)	(15,026,000)	(12,862,000)	2,164,000
FUND BALANCE JULY 1, 1993	30,901,000	30,901,000	
PROJECT RESERVE	3,675,000	5,839,000	2,164,000
RESERVE FOR UNANTICIPATED REPAIRS	200,000	200,00	
FIRST QUARTER 1994/95 OPERATING FUNDS	12,000,000	12,000,000	
FUND BALANCE JUNE 30, 1994	$15,875,000	$18,039,000	$2,164,000

Area Drainage Master Studies - Expenditures

Fiscal Year Ending June 30, 1994

Preliminary and unauditied. Amounts are rounded to nearest thousand.

DESCRIPTION	ADMINISTRATION	HYDROLOGY	NPDES	ENGINEERING	TOTAL
SALT/GILA MASTER PLAN	$ 24,000	$ 8,000	$	$ 493,000	$ 525,000
WICKENBURG	25,000	1,000	2,000	14,000	42,000
NEW RIVER	3,000	1,000			4,000
WHITE TANKS/AGUA FRIA	16,000	2,000	1,000	176,000	195,000
ARIZONA CANAL DIVERSION CHANNEL	49,000	7,000	2,000	58,000	116,000
MARYVALE	16,000	1,000		324,000	341,000
METRO	1,000	1,000			2,000
FOOTHILLS	5,000				5,000
GILA DRAIN FLOODWAY	3,000			5,000	8,000
FOUNTAIN HILLS				3,000	3,000
THREE OTHERS UNDER $1,000 each	1,000	1,000			2,000
TOTAL ADMS	$143,000	$22,000	$5,000	1,073,000	$1,243,000

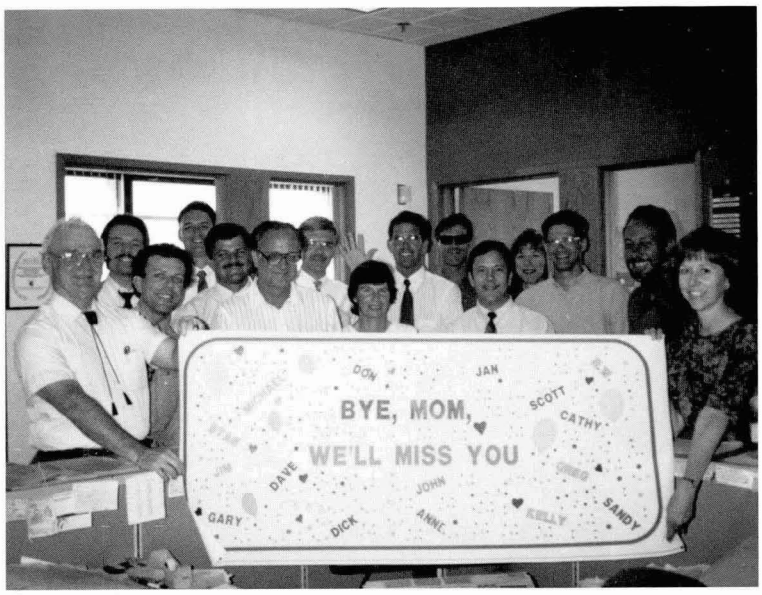
Capital Improvement Projects - Expenditures

Fiscal Year Ending June 30, 1994

Preliminary and unauditied. Amounts are rounded to nearest thousand.

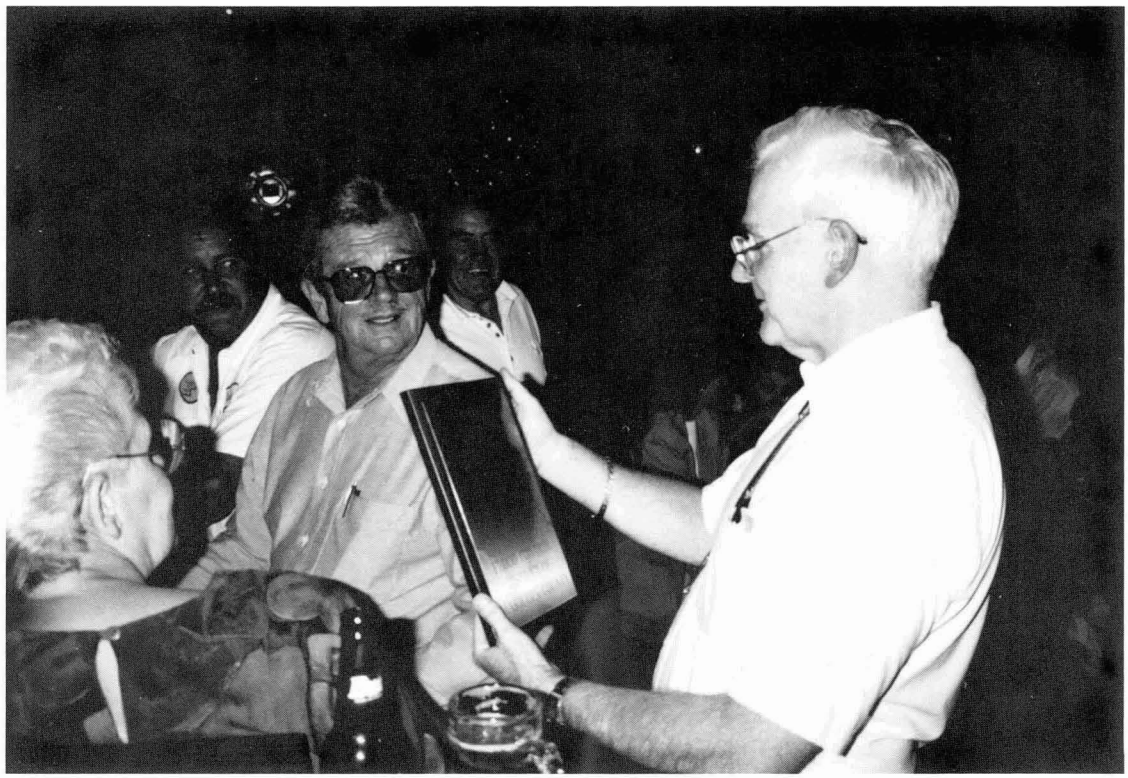
PROJECT	ENGINEERING	LAND	RELOCATION & CONSTRUCTION	WAGES	TOTAL
FCD FACILITY	$	$	$ 126,000	$ 6,000	$ 132,000
STORMWATER MONITORING			21,000		21,000
BEST MANAGEMENT PRACTICE			67,000	26,000	93,000
FLOOD WARNING			268,000	9,000	277,000
OLD CROSS CUT CANAL	406,000	586,000	29,000	46,000	1,067,000
SALT/GILA CONTROL WORKS		28,000		9,000	37,000
SOSSAMAN CHANNEL	55,000	7,000	42,000	21,000	125,000
PRICE DRAIN			17,000	1,000	18,000
LAVEEN ADMP	56,000	170,000		7,000	233,000
ACDC	3,000	739,000	151,000	82,000	975,000
PVSP			1,109,000	4,000	1,113,000
EAST MARICOPA FLOODWAY		1,000	390,000	18,000	409,000
RIVER CHANNEL		5,000	3,754,000	31,000	3,790,000
McMICKEN DAM OUTLET		287,000	9,000	12,000	308,000
WICKENBURG ADMP	202,000	326,000	1,000	26.000	555,000
ADOBE DAM		10,000	2,000	28,000	40,000
SKUNK CREEK	4,000	45,000		24,000	73,000
NEW RIVER				1,000	1,000
SKUNK CREEK/NEW RIVER	504,000	3,605,000	4,028,000	152,000	8,289,000
AGUA FRIA	35,000	1,969,000	2,000	33,000	2,039,000
UNIVERSITY DRAIN	88,000	115,000	721,000	19,000	943,000
GLENDALE/PEORIA ADMP	8,000	2,214,000	744,000	51,000	3,017,000
71st AVE. CHANNEL IMPROVE				3,000	3,000
EAST FORK CAVE CREEK	235,000	74,000	3,396,000	39,000	3,744,000
WHITE TANKS ADMP	545,000	1,781,000	1,745,000	203,000	4,274,000
QUEEN CREEK ADMP	156,000	83,000		29,000	268,000
ACDC ADMP	272,000	1,801,000	1,000	97,000	2,171,000
SCATTER WASH	0		932,000	5,000	937,000
UIBW ADMP	260,000	458,000	1,000	2,000	721,000
TOTALS	$2,829,000	$14,304,000	$17,556,000	$984,000	$35,673,000

Land Management Specialist Hedy Hall dresses up as a clown and entertains children at the Environmental Management and Transportation Agency picnic held November 6, 1993 at Estrella Mountain Regional Park.



Planning staff send farewell wishes to the Department's Administrative Assistant, Joy Ketchum, who retired this year.

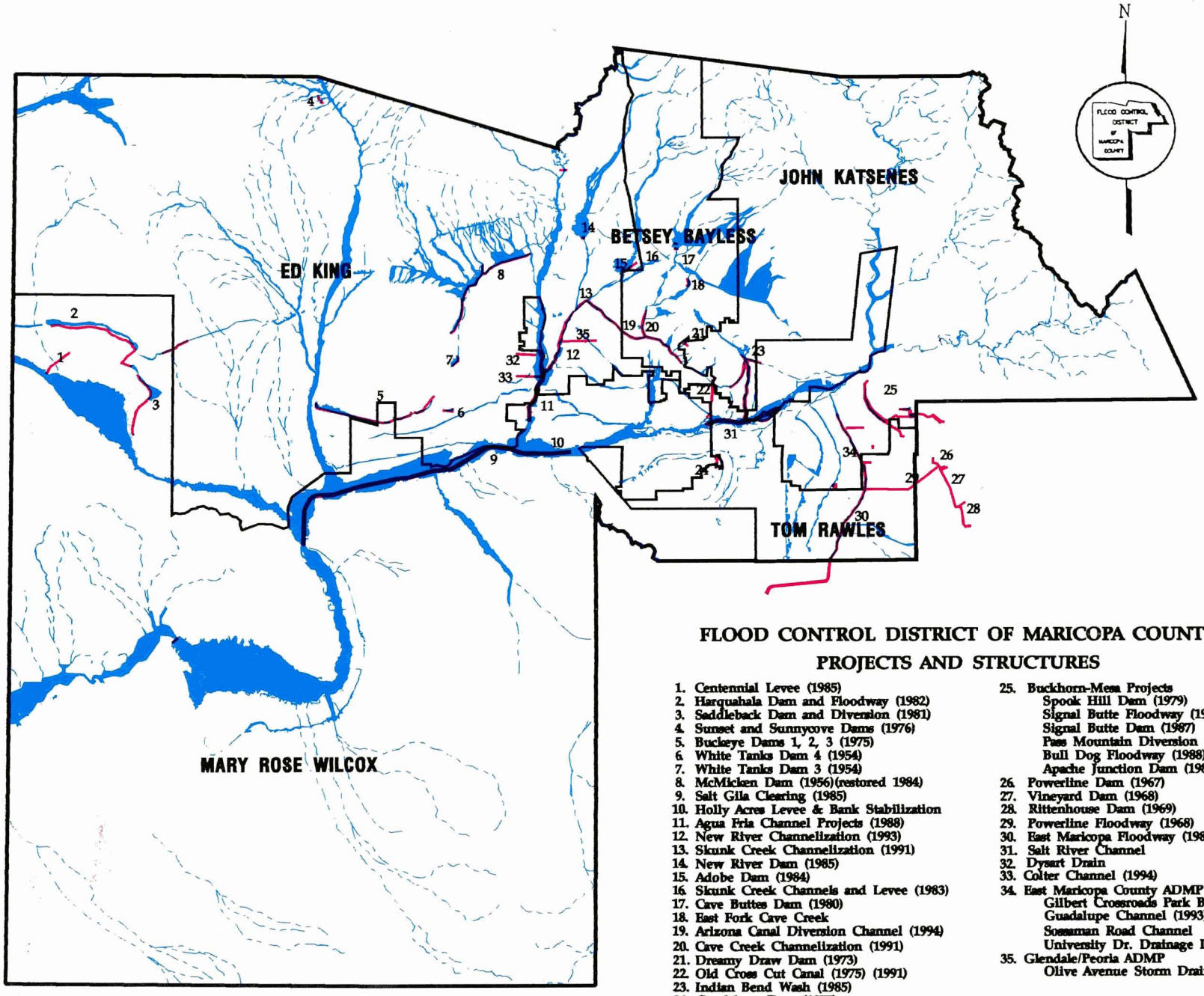
Accounting Technician Alex Munro and Administrative Assistant Heather Zozaya do their Flintstones impression at the annual Halloween bash.



Deputy Chief Engineer Stan Smith presents the retiring Joe Lavin of the Construction and Operations Division with a plaque during a happy hour farewell party.

17-year District employee Larry Wong poses with Linda Young, who left the District after 20 years to work for the Human Resources Department.

GIS Supervisor Marta Dent paints faces at the District's Spring Fling Picnic, held April 30, 1994, at Papago Park.



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
PROJECTS AND STRUCTURES

1. Centennial Levee (1985)
2. Harquahala Dam and Floodway (1982)
3. Saddleback Dam and Diversion (1981)
4. Sunset and Sunnycove Dams (1976)
5. Buckeye Dams 1, 2, 3 (1975)
6. White Tanks Dam 4 (1954)
7. White Tanks Dam 3 (1954)
8. McMicken Dam (1956)(restored 1984)
9. Salt Gila Clearing (1985)
10. Holly Acres Levee & Bank Stabilization
11. Agua Fria Channel Projects (1988)
12. New River Channelization (1993)
13. Skunk Creek Channelization (1991)
14. New River Dam (1985)
15. Adobe Dam (1984)
16. Skunk Creek Channels and Levee (1983)
17. Cave Buttes Dam (1980)
18. East Fork Cave Creek
19. Arizona Canal Diversion Channel (1994)
20. Cave Creek Channelization (1991)
21. Dreamy Draw Dam (1973)
22. Old Cross Cut Canal (1975) (1991)
23. Indian Bend Wash (1985)
24. Guadalupe Dam (1975)
25. Buckhorn-Mesa Projects
    - Spook Hill Dam (1979)
    - Signal Butte Floodway (1984)
    - Signal Butte Dam (1987)
    - Pass Mountain Diversion (1987)
    - Bull Dog Floodway (1988)
    - Apache Junction Dam (1988)
26. Powerline Dam (1967)
27. Vineyard Dam (1968)
28. Rittenhouse Dam (1969)
29. Powerline Floodway (1968)
30. East Maricopa Floodway (1989)
31. Salt River Channel
32. Dysart Drain
33. Colter Channel (1994)
34. East Maricopa County ADMP
    - Gilbert Crossroads Park Basin (1992)
    - Guadalupe Channel (1993)
    - Sossaman Road Channel
    - University Dr. Drainage Improvements
35. Glendale/Peoria ADMP
    - Olive Avenue Storm Drain (1992)

Delineated 100-year Floodplain

Flood Control Structures

Supervisory District Boundaries

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

Flood Control District of Maricopa County

Annual Report 1994/1995

003.114

Financial Highlights

Fiscal Year Ended June 30, 1995

Preliminary and Unaudited. Amounts are rounded to nearest thousand

	DOLLARS	PERCENT
REVENUES		
FLOOD CONTROL TAX	$ 35,281,000	79
LOCAL PARTICIPATION	2,558,000	6
RENTAL INCOME	242,000	1
INTEREST INCOME	1,518,000	3
OTHER LAND REVENUE	4,321,000	10
MISCELLANEOUS	572,000	1
TOTAL REVENUE	44,492,000	100
EXPENDITURES		
FLOOD CONTROL CAPITAL IMPROVEMENTS	31,237,000	65
OTHER EXPENDITURES	16,565,000	35
TOTAL EXPENDITURES	47,802,000	100
EXCESS (Deficiency of Revenues over Expenditures)	-3,310,000	
FUND BALANCE AT BEGINNING OF YEAR	16,999,000	
FUND BALANCE AT END OF YEAR	$ 13,689,000	
BREAK DOWN OF EXPENDITURES		
CAPITAL IMPROVEMENTS		
PERSONNEL SERVICES	$ 870,000	2
REAL ESTATE	3,344,000	7
ENGINEERING	3,403,000	7
CONSTRUCTION	23,620,000	49
TOTAL CAPITAL IMPROVEMENTS	31,237,000	65
OTHER EXPENDITURES		
ENGINEERING	2,094,000	4
NPDES	658,000	1
HYDROLOGY	1,394,000	3
FIXED ASSETS	966,000	2
MAINTENANCE	5,811,000	13
ADMINISTRATION	5,642,000	12
TOTAL OTHER EXPENDITURES	16,565,000	35
TOTAL EXPENDITURES	$ 47,802,000	100

NOTE: Capital Improvements Expenditures do not include Capital Outlay for Vehicles and Equipment.

Flood Control District
Tax Levy Rate
1961 to 1995

Fiscal Year Ending	Levy Rate*	Tax Revenue, $
1961	0.05	253,000
1962	0.05	288,000
1963	0.02	126,000
1964	0.02	135,000
1965	0.02	145,000
1966	0.02	153,000
1967	0.02	158,000
1968	0.02	164,000
1969	0.05	446,000
1970	0.05	454,000
1971	0.05	480,000
1972	0.04	425,000
1973	0.05	645,000
1974	0.20	3,428,000
1975	0.20	3,747,000
1976	0.20	4,154,000
1977	0.20	4,395,000
1978	0.20	4,675,000
1979	0.20	5,026,000
1980	0.20	5,342,000
1981	0.43	11,825,000
1982	0.34	13,720,000
1983	0.50	21,779,000
1984	0.48	25,780,000
1985	0.50	28,697,000
1986	0.50	33,644,000
1987	0.50	41,556,000
1988	0.50	46,059,000
1989	0.50	51,345,000
1990	0.43	46,408,000
1991	0.42	45,797,000
1992	0.44	46,879,000
1993	0.39	39,715,000
1994	0.36	35,386,000
1995	0.36	35,300,000

*per $100 assessed value

Published by:

Flood Control District of Maricopa County
2801 W. Durango St.
Phoenix, Arizona 85009

Tel: 602-506-1501

Contents

Financial Highlights .....Inside Front Cover
District Tax Levy Rate, 1961-1995 .....Inside Front Cover
Letter From the Chief Engineer and General Manager.....1
About the District.....2
Flood Control District Organizational Chart 2
Mission 3
Vision.....3
Values 3
Programs 4
Operational Performance 5
Organizational Improvements 16
Leadership 20
Commitment to Customers 22
Awards and Recognition 25
Board of Directors 26
Flood Control Advisory Board.....26
Statement of Revenues, Expenditures, and Changes in Fund Balance.....27
Capital Improvement Projects - Expenditures 28

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

Letter from Chief Engineer and General Manager...

Continuing Challenges

by Dan Sagramoso

In last year's annual report, I called Fiscal Year 1993-94 "A Year to Remember", because of Maricopa County's financial crisis. While the Flood Control District in no way contributed to the crisis, we were affected primarily by the fear that our five-year capital improvement program would not be fully funded. This caused anxiety in our work force, and some of our customer cities lost confidence in our ability to deliver the expected services, in the long run.

At the end of Fiscal Year 1994-95, the County appears to have handled the crisis, and emerged in healthy financial condition. The District has remained financially healthy, has been able to accelerate some of its projects, and has actually accomplished more work than was projected two years ago.

The traditional program-by-program approach to our report was revised this year to reflect the categories of Operational Performance, Organizational Improvements, Leadership, and Commitment To Customers. We have, again, accomplished a lot, and here are some highlights:

- Our strategic plan was completely revised.
- We restructured to flatten the levels of management, group functions more effectively, and reduce staff by 18 positions.
- In cooperation with other agencies and cities, we completed five major flood control projects. Another seven are under construction, and over 20 are in the design or study phases. We managed $17 million worth of construction.
- An important drainage study of central Phoenix was completed, which is one of 24 such studies completed, in progress, or planned throughout the County. One project to be built next year will remove over 400 homes and businesses from the floodplain.
- Construction began on a $13 million project to protect Luke Air Force from flooding.
- Construction began on the first phase of a flood control channel along Rittenhouse Road near Queen Creek. The District is saving over $700,000, thanks to an agreement with the Williams Air Force Base Closure Agency.
- The District mapped 117 miles of new floodplains, bringing the county-wide total to 1,040 miles.
- Staff made over 5,400 flood hazard determinations, responded to 2,823 phone requests for information, and assisted 517 walk-in customers.
- A new East Valley maintenance yard was completed, which will save taxpayers $117,000 annually by locating crews and equipment closer to their job sites.
- The District sold over $4 million in excess land.

This year, we have been successful in meeting many challenges, and look forward to both continuing and new challenges and opportunities in the future.

ABOUT THE DISTRICT

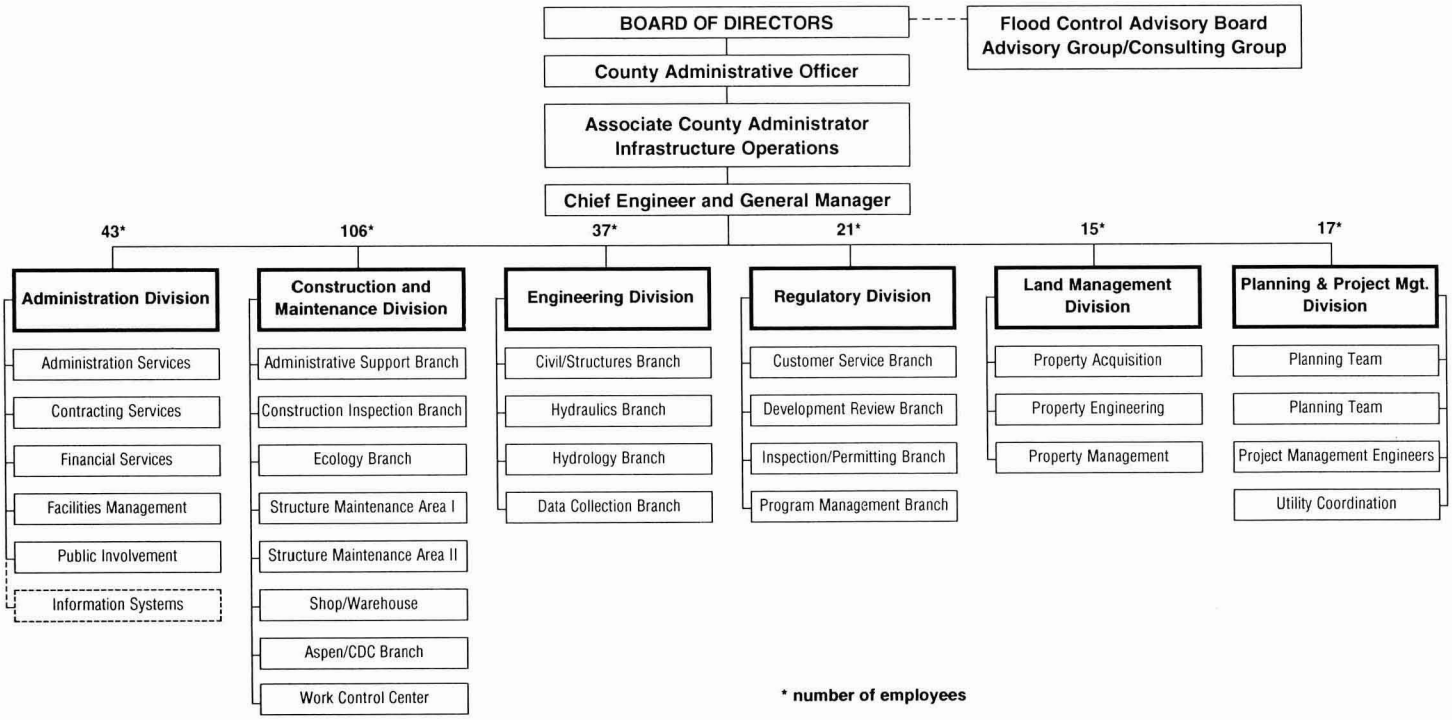
The Flood Control District of Maricopa County was formed on August 3, 1959. Our formation followed passage in March, 1959, of legislation which empowered counties to set up special districts for the purpose of providing flood protection for their residents.

Flood control districts are political subdivisions of the State and have all the powers, privileges and immunities generally given to incorporated cities and towns. We are governed by a Board of Directors who are the elected Board of Supervisors for Maricopa County. This board in turn is advised by a seven member Flood Control Advisory Board.

The activities of the District are funded by a flood control tax levy assessed on all real property within Maricopa County and a variety of cost-sharing arrangements with federal, state, county and local governments. The tax levy rate for Fiscal year 1994/95 was $.3632 per $100 of assessed value.

The District is organized into six functional areas comprised of the following divisions: Administration, Construction & Maintenance, Engineering, Regulatory, Land Management and Planning & Project Management.

FLOOD CONTROL DISTRICT ORGANIZATIONAL CHART
(240 total authorized positions as of June 30, 1995)



MISSION

To reduce flood risks for the people of Maricopa County by providing comprehensive flood and stormwater management services. These services are provided through regulatory activities, master planning, regional coordination, technical assistance, and implementation and maintenance of non-structural and structural projects. Our clients include citizens, municipalities and other government agencies.

Examples of Structural and Non Structural Projects are:

STRUCTURAL
Dams
Channels
Storm Drains
Bank/Bed Stabilization
Basins
Levees

NON-STRUCTURAL
Floodplain Management
Drainage Management
Water Quality Management
Vegetative Management
Acquisition of Flood-prone Property
Development Review
Flood Detection & Data Collection

VISION

We will be known and supported by our customers and employees as the agency of choice for accomplishing our mission.

VALUES

The Flood Control District values are: Fiscal stability, efficient management, appropriate organization size, technical proficiency, quality orientation, high ethics, visionary thinking, environmental responsibility, and aesthetic awareness.

Programs

Eight important programs work together to accomplish the District's mission:

Maintenance Program:

- Maintains over 70 flood control structures and facilities, including 22 dams and numerous channels, basins, levees, culverts, storm drains, and washes.
- Provides erosion and vegetation control and maintenance of roads, landscaping, fencing, gates and signage.
- Monitors structures and provides emergency services during flood events.

Environmental Program:

- Provides guidance and coordination in meeting federal stormwater quality regulations.
- Performs research and provides educational outreach and technical assistance to local municipalities, County agencies and industries impacted by these regulations.

Floodplain Management Program:

- Administers the Floodplain Regulation for the unincorporated areas of Maricopa County, plus 11 municipalities.
- Delineates areas subject to the 100-year flood, evaluates applications and issues permits for use of the floodplain, and identifies violators.
- Provides floodplain information to real estate and insurance agents and the general public.
- Maintains good standing in the National Flood Insurance Program to insure eligibility for Federal Disaster Relief and so that citizens may purchase federally-sponsored flood insurance.
- Participates in the Community Rating System that provides flood insurance discounts to citizens.

Drainage Administration Program:

- Administers the County Drainage Regulation to reduce existing and potential flooding caused by local stormwater.
- Coordinates with County Planning, Transportation, Public Health and Building Safety to insure that new development will not increase runoff, divert flows, or back water onto another property.

Property Management Program:

- Manages all aspects of District real property interests.
- Prepares leases, joint use agreements, licenses for access, and selling excess property (after project construction).

Flood Detection & Data Collection Program:

- Designs, implements and maintains a rainfall and stream gage system to monitor flood control structures and to provide data for use in floodplain studies, computer modeling of watersheds and design of flood control structures.
- Provides information used by the National Weather Service in issuing flood watches and warnings and by the County Emergency Management Department for flood event planning and evacuations.
- Operates and maintains nine stormwater quality sampling sites, along with the inspection and sampling of illicit connections and hazardous spills impacting our structures and the water in them.

Planning Program:

- Identifies regional drainage [illegible] problems and develops alter[illegible] solutions to protect life and [illegible]
- This is accomplished throug[illegible] Drainage Master Studies, the Comprehensive Plan, Water[illegible] Master Plans, and a formal [illegible] prioritization process that ra[illegible] candidate projects.

Capital Improvement Program:

- Implements flood control and water management projects [illegible] through the planning proce[illegible] recommended for inclusion [illegible] Year Capital Improvement Pr[illegible] (CIP) approved by the Board [illegible]
- The CIP includes acquisition [illegible] way, relocation of utilities, [illegible] construction of drainage and [illegible]trol facilities, including aesth[illegible]
- Coordinates public involvem[illegible] insures compliance with en[illegible] laws and regulations integr[illegible] projects.

Flood Control District of Maricopa County Program Summary-Expenditures

Fiscal Year Ended June 30, 1995

Program	Personnel Services Budget	Personnel Services Actual	Supplies and Services Budget	Supplies and Services Actual	Travel Budget	Travel Actual	Capital Outlay Budget	Capital Outlay Actual	Total Budget
Maintenance	$3,103,000	$2,889,000	$ 3,770,000	$ 3,098,000	$ 43,000	$ 19,000	$449,000	$458,000	$ 7,365,000
Environmental	423,000	394,000	772,000	716,000	15,000	7,000	85,000	35,000	1,295,000
Floodplain Management	778,000	724,000	945,000	793,000	23,000	19,000	68,000	49,000	1,814,000
Drainage Administration	828,000	771,000	161,000	241,000	13,000	6,000	50,000	59,000	1,052,000
Property Management	292,000	272,000	24,000	113,000	6,000	3,000	11,000	15,000	333,000
Flood Detection and Data Collection	555,000	517,000	903,000	835,000	14,000	10,000	24,000	131,000	1,496,000
Planning	1,117,000	1,040,000	2,455,000	1,472,000	19,000	11,000	52,000	71,000	3,643,000
Capital Improvement Program	2,102,000	1,956,000	31,991,000	30,901,000	40,000	29,000	168,000	148,000	34,301,000
Total Program Expenditures	$9,198,000	$8,563,000	$ 41,021,000	$ 38,169,000	$173,000	$104,000	$907,000	$966,000	$51,299,000

Planning and Capital Improvement Programs

The Planning Program supports the District's mission of "...reducing flood risks for the people of Maricopa County..." by preparing comprehensive regional studies and analyses to identify locations and facilities that are presently at risk from flooding, or could be in the future.

Once the flooding problems have been quantified, alternative solutions are developed to determine the most cost effective and locally supported project. Recommended projects are then prioritized for inclusion in the District's Capital Improvement Program (CIP).

A CIP is an allocation of resources and a timetable for the implementation of the individual projects, including the project design, relocation of conflicting facilities, acquisition of property and construction.

The combined Planning Program and CIP account for approximately 75% of the District's annual budget. Last year the District, in cooperation with other agencies and municipalities, completed five major flood control projects. Another seven are under construction and more than 20 projects are being designed or studied.

Activities included in the Planning Program include Area Drainage Master Studies (ADMS's); Watercourse Master Plans; the Comprehensive Flood Control Program Report; pre-design studies; and the coordination of interagency cooperative projects and agreements. The District works very closely with the local communities and other county, state and federal agencies.

The cornerstone of the District's Planning Program is the project prioritization process which was put into effect for the Fiscal year 1994/1995 budget. The prioritization process solicits project requests from the District's client communities and pits project against project to ensure that staff effort and CIP dollars are allocated where the need is the greatest. The ADMS Program continues to support the planning effort by providing the physical characteristics and hydrology of the area and helps quantify the drainage and flooding problems reported by the communities from a comprehensive watershed perspective. Selected and approved alternatives to solve the problems become the Area Drainage Master Plan (ADMP) which is implemented through the CIP.

Twenty-four ADMS areas have been identified for Maricopa County, ranging in size from 15 to 280 square miles. To date, 12 ADMS's have been completed and three are underway.

Specific Planning/CIP Program highlights from this past year include;

White Tanks/Agua Fria ADMS: This study was completed last year and covered a 240-square-mile area located between the Agua Fria River and the White Tank Mountains and south of Grand Avenue to the Gila River. The area's population of approximately 56,000 people is expected to grow considerably, making stormwater management a critical issue.

The Pebble Creek development in Goodyear, for example, has plans for 8,566 homes. Hydrologic information developed during the White Tanks/Agua Fria ADMS was used by the developer to plan the community's drainage system. This type of up front planning will preclude the need for future flood mitigation actions.

Other on-going or planned developments in the study area include Sun Village Resort in Surprise; Clearwater Farms near Northern Avenue and Cotton Lane; Goodyear 1000 located south of State Highway 85 between Reems and Bullard Roads; and the Estrella Aerospace Center and the Airport Commerce Center near the Phoenix-Goodyear Municipal Airport.

With development comes the need for flood protection. Several major flood control projects and design studies that have been initiated or completed are the result of the White Tanks/Agua Fria ADMS. Examples include the Colter Channel project, which was completed last year, and the Dysart Drain Improvement Project to protect Luke Air Force Base, which is underway. Another $9 million worth of projects are under design, including the Roosevelt Irrigation District Canal Overchute in Litchfield Park, the Bullard Wash Outfall Channel in Goodyear, and inlet improvements to two existing flood control dams controlling runoff from the White Tank Mountains in Buckeye.

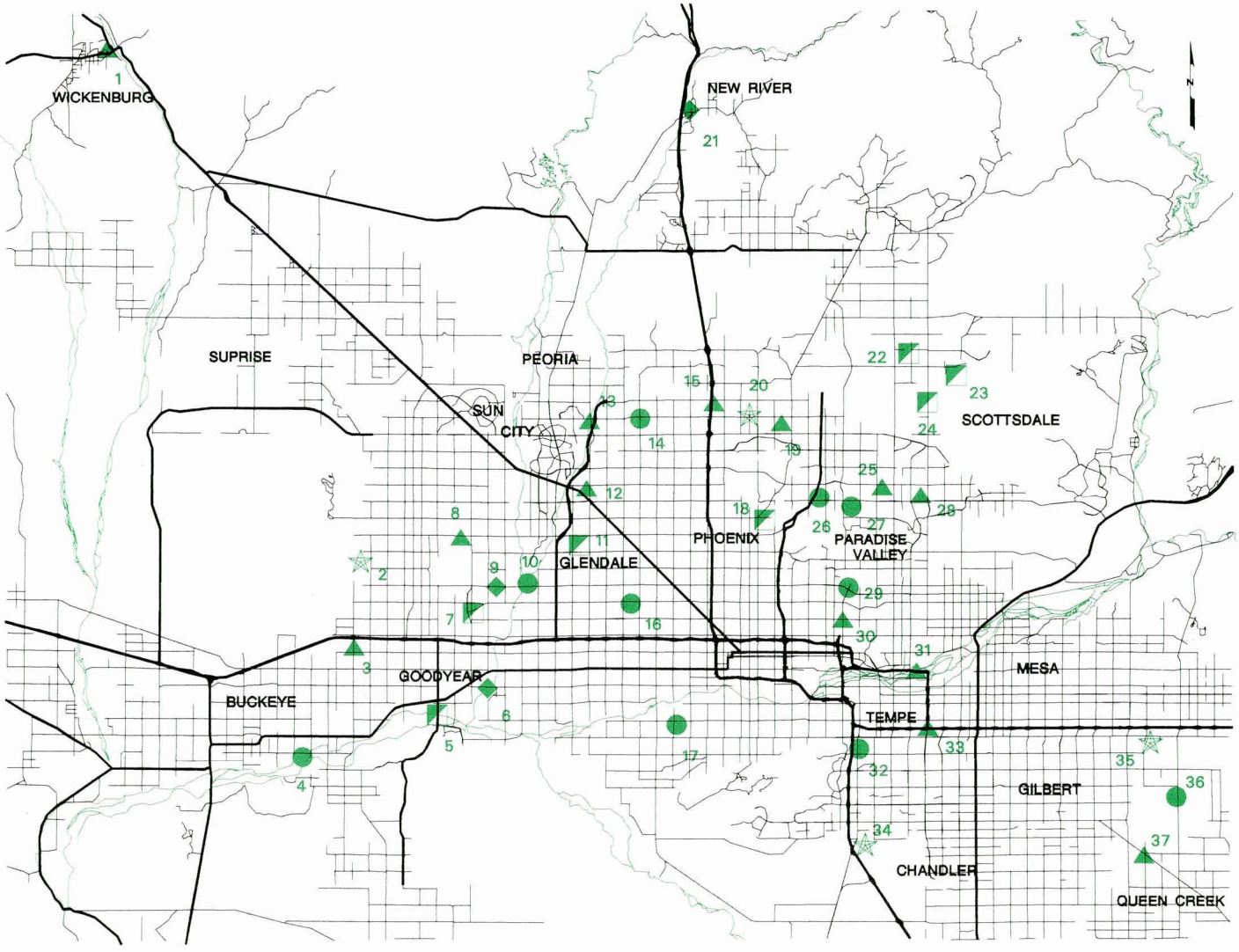
Bullard Wash Outfall Study: A plan was developed to address severe flooding that threatens $10 million in public roads and facilities near the

Area Drainage Master Studies - Expenditures

Fiscal Year Ended June 30, 1995 **Preliminary and unaudited**

Description	Administration	Hydrology	NPDES	Engineering	Total
Salt/Gila Master Plan	$ 2,958	$ 23,770		$ 243,400	$ 270,128
Wickenburg ADMS	4,628	4,219	$ 321	73,025	82,193
New River ADMS	2,347			3,620	5,967
White Tanks/Agua Fria ADMS	31,579	3,037	158	104,850	139,624
ACDC ADMS	85,256	6,362	982	88,946	181,546
Maryvale ADMS	2,707	986		710,034	713,727
Metro ADMS		366		2,197	2,563
Gila Drain Floodway Study	39			67,031	67,070
ADMS under $1,000	663	615		997	2,275
	$ 130,177	$ 39,355	$ 1,461	$ 1,294,100	$ 1,465,093

Status of Major C.I.P. Projects



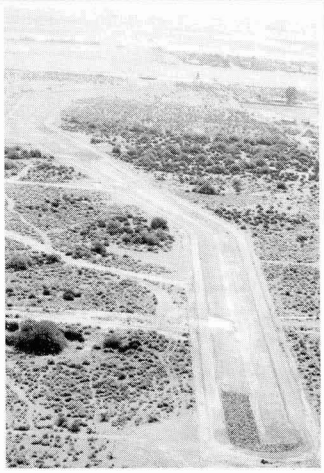
Project Index

1. Casandro Wash Dam & Outlet
2. White Tanks #3 Inlet Improv.
3. White Tanks #4 Inlet Improv.
4. Salt-Gila River Study
5. Bullard Wash Overchute of BID
6. Agua Fria Flowage Easements
7. RID Canal Overchute
8. Dysart Drain/Reems Rd. Connector
9. Colter Channel
10. Camelback Ranch
11. Northern/Orangewood Storm Drain
12. Cactus Rd. Storm Drain
13. 83rd Ave/Union Hills Dr.
14. Skunk Creek Improvements
15. Beardsley Rd. Regional Drainage
16. Maryvale Flooding Mitigation
17. South Phoenix Drainage
18. 10th Street Wash Basin/Channel
19. East Fork Cave Creek ADMP
20. Cave Creek Improvements
21. New River ADMP
22. Rawhide Wash Channel
23. Reata Pass Channel
24. Pima Road Channel
25. PVSP Cactus Rd. Flood Control System
26. Tatum Wash Channel
27. Doubletree Ranch Rd. Improv.
28. 84th St/Cholla Basin & Drain
29. Arcadia Area Drainage Project
30. Old Cross Cut Canal
31. Salt River Channel
32. Town of Guadalupe
33. Price Drain
34. Southeast Valley Reg. Drainage
35. Sossaman Channel
36. Southeast Mesa ADMP
37. Rittenhouse Drainage Improv.

Status (as of 7/26/95)

- Construction
- Study
- Land Acquisition
- Design
- Planned

Phoenix-Goodyear Airport. Public input was instrumental in the development of an acceptable solution to flooding problems along Bullard Wash. It was agreed that a channel should be built east of the Estrella Parkway to transport floodwaters south to the Gila River.



The Colter Channel will capture stormwater runoff and convey it eastward to the Agua Fria River.

Colter Channel Project: Stormwater that previously flooded Camelback Road and threatened homes and properties in the Litchfield Park area will now safely flow into the Agua Fria River. An earthen channel nearly three miles long was excavated north of Camelback Road between Litchfield Road and the Agua Fria River. Portions of Litchfield Park and Camelback and Dysart Roads will now be protected and 20 existing homes have been removed from a federally-designated flood hazard area.

Dysart Drain Improvement Project: Construction began on a $13 million project to protect Luke Air Force Base from flooding. The project is jointly funded by the District and Air Force and includes a 50-acre detention basin and the reconstruction of an existing drainage channel (Dysart Drain). The base has suffered millions of dollars in flood damages over the last few years, including $3.2 million in damages from a flash flood in 1992 and $300,000 in damages from flooding in January, 1993.

Arizona Canal Diversion Channel ADMS: Planners completed an extensive drainage study last year covering a 180-square-mile area of Phoenix, Glendale and Peoria. The ACDC ADMS identified existing drainage problems as well as potential problems within an area generally bounded by the ACDC (and Arizona Canal) on the south, the Central Arizona Project on the north, 99th Avenue on the west and 40th Street on the east. The results are being used to design numerous projects to resolve flooding problems in this area, including projects along Beardsley Road, Doubletree Ranch Road, Tatum Wash and 10th Street Wash. Information developed in this ADMS also is being used by Phoenix, the Arizona Department of Transportation (ADOT), and others to design their drainage structures.

Beardsley Road Regional Drainage System: 1,100 homes and commercial buildings will be protected by storm drains, a flood control channel and two detention basins being constructed along Beardsley Road between 7th and 23rd Avenues. The project is a joint effort involving the District, ADOT and the City of Phoenix. It is scheduled to be completed in November, 1995.

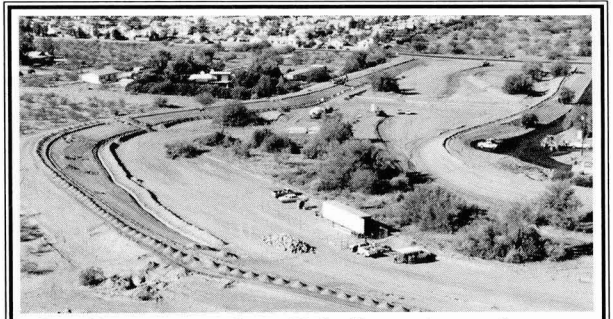
Scatter Wash Channelization: Property along Scatter Wash in north Phoenix is protected from flooding as a result of channel improvements completed between 40th and 43rd Avenues. The District cost-shared in the project with the City of Phoenix. The project ties together previous channelization work performed by the Arizona Department of Transportation and a private developer. There is now uninterrupted bank protection from 35th Avenue downstream to the Skunk Creek confluence near 55th Avenue.

10th Street Wash Basins: The threat of flooding along 10th Street Wash in Sunnyslope will be greatly reduced following community approval of a District plan to build two detention basins along the wash. Staff obtained public support for the controversial project by working closely with community leaders and neighborhood groups. The basins will remove approximately 75% of a floodplain that contains 575 homes and businesses.

New River Channel Improvements: Homes near the confluence of New River and Skunk Creek in Peoria are now protected from flooding thanks to channel improvements made at this location. The Desert Harbor subdivision is protected by the reinforced river banks along New River, north of Thunderbird Road, and the construction of a "drop structure" to protect the river bottom from erosion.

Salt River Channelization: Flood control levees funded by the District were completed along the Salt River channel between Rural Road and McClintock Drive. The project, which is being constructed as part of the Red Mountain Freeway Project, will continue east to Price Road and protects the new freeway, multiple landfill sites and light industrial and commercial developments adjacent to the river. The project may also be incorporated into the future Rio Salado project sponsored by Tempe.

Map improvements take homes out of floodplain: Over 200 homeowners living near Rawhide Wash in north Scottsdale had federal flood insurance requirements removed from their properties thanks to mapping improvements funded partially by the District. The homes were located in an area where new topographic maps showed 288 acres to be less floodprone than previously suspected. The new mapping is part of Scottsdale's Desert Greenbelt project planned for areas north of the Central Arizona Project canal. The District is cost-sharing in the design and construction of three channels to be built to protect existing or planned development.



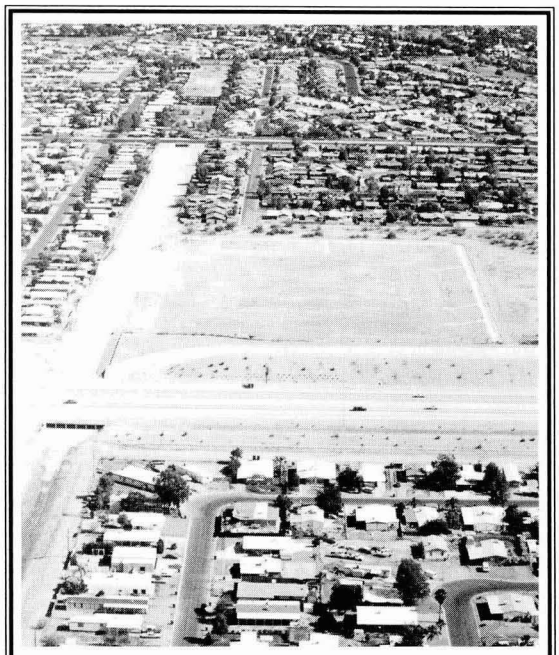
Channel improvements to Scatter Wash will protect homes and property near Beardsley Road and 43rd Avenue.

Cactus Road Flood Control System: Two schools and approximately 300 homes will benefit from a storm drain system completed in Scottsdale. The District contributed $1.4 million dollars towards the drainage improvements along Cactus Road between 62nd Street and Scottsdale Road.

This detention basin along University Drive between Recker and Power Roads will remedy historical flooding problems in this part of East Mesa.

University Drive Road and Drainage Improvements: A large detention basin and storm drain system was constructed east of Higley Road along University Drive in Mesa to protect portions of East Mesa and the County island containing Dreamland Villa Estates. Streets have become impassable and numerous homes were subject to flooding during heavy seasonal rains. The project was cost-shared with the City of Mesa and the County's Transportation Department as part of a road and drainage improvement effort.

Sossaman Channel and Basin Project: Flood protection for homes located along an eroding earthen drainage channel was improved when the channel was enlarged and lined with concrete and a basin was excavated east of Sossaman Road, south of Southern Avenue. The basin will capture heavy flows and slowly releases the water back into the existing smaller-sized channel downstream.



Sossaman Channel and Basin project near the Superstition Freeway and Sossaman Road.

Rittenhouse Drainage Improvement Project: Over $700,000 in project costs were saved through advance construction of a portion of the Rittenhouse Channel by the Air Force Base Conversion Agency near Williams Gateway Airport. This first phase of the construction was completed by the Agency in exchange for the District's purchase of the necessary rights-of-way and permission to use the excavated soil to cap a landfill on the base. When completed, the channel will provide 100-year flood protection to the Queen Creek School and provide an outfall for future storm drain construction in the area.

Land Acquisitions: Over $3 million was spent last year to acquire property needed for various projects. In all, land rights for 253 parcels were purchased and 24 families were relocated. Purchases included farmland north of Luke Air Force Base to construct a large detention basin to protect the base from flooding. Homes and property in Sunnyslope were acquired for two stormwater basins which will protect people living along 10th Street Wash. Property and various land rights were obtained behind McMicken Dam near Sun City West, New River Dam northwest of Peoria and Cave Buttes Dam north of Phoenix to prevent development from encroaching into the reservoir areas.

A large detention basin is being excavated near Reems Road and Northern Avenue as part of the Dysart Drain Improvement project to protect Luke Air Force Base from flooding.

All property acquired by the District involves extensive legal documentation. Hundreds of documents might be required for a single project. The documentation for each project must then be "certified", a pain-staking procedure in which each document is examined by staff and legal counsel. Five projects were certified last year: Upper East Fork Cave Creek Laterals, Skunk Creek Channel, Cactus Road Drain, Dysart Drain Improvement Project and the New River Channel Project.

In addition, site inventories, title reports and appraisals were conducted on a project involving the purchase of flood prone properties in Upper New River.

Maintenance Program

The District maintains over 70 flood control structures and facilities, including 22 dams and numerous channels, basins, levees, dikes, culverts, storm drains and improved river bottoms and washes.

Over 400,000 man-hours were expended on the operation and maintenance of District projects last year.

The amount of maintenance work has grown dramatically in recent years as completed structures are added to the program. Five projects added this past year include a large detention basin along University Drive in Mesa, a detention basin and channel near Sossaman Road in Mesa, a 3-mile-long floodway north of Camelback Road near Litchfield Park, and channel improvements and landscaping along New River between Bethany Home Road and Greenway Road.

Additionally, a dozen small drains and washes previously maintained by the County Department of Transportation were turned over to the District for maintenance. These drains total two-and-a-half miles in length and are located in the unincorporated areas surrounding East Mesa.

Many of the District's structures include landscaping to improve their appearance or to control erosion. Staff trained in proper plant selection, planting, pruning and watering techniques make up an Ecology Branch that helps guide the work of maintenance crews. A significant achievement this past year was the completion of a Native Plant and Wildlife Habitat area established at the eastern end of the Arizona Canal Diversion Channel.

Maintenance crews make improvements to a service road along the ACDC near 71st Avenue.

Team Leader Carlos Rivera repairs a gate at the Powerline Floodway.

Arizona Canal Diversion Channel/Reach 4 Wildlife Habitat Restoration Project

Revegetation Ecologist Donna Ellsworth points out one of the many trees and shrubs making up a Native Plant and Wildlife Habitat area established on soil covering a section of the ACDC in Paradise Valley.

In October 1994, the installation of interpretive signs completed the restoration project at the ACDC/Reach 4 wildlife habitat. Thanks to the combined efforts of the District, Paradise Valley and Phoenix residents, City officials, County, State and Federal agencies, this reach of the ACDC project should serve as a model and inspiration for other urban conservation projects.

This innovative community resource includes the area north of the Arizona Canal from the Arizona Biltmore to the Cudia City Wash just west of 40th Street. Local residents were instrumental in obtaining the federal funding needed to cover the channel and make the wildlife project possible. They also created a landscape committee.

Because their mission was to restore the area to native Sonoran desert plant and animal life, the project gained support and additional sponsorship from the Heritage Funds granted by the Arizona Game and Fish Department. This grant provided the funding needed to replant vegetation to offer prime foraging and nesting material for wildlife. The interpretive signs along the project identify and explain the plant life.

Flood Control Project Manager, Don Rerick, and Revegetation Ecologist, Betty Dickens had the challenge of coordinating the diverse needs and interests of all of the involved governmental agencies and the public. Flood Control Construction and Maintenance staff continue maintenance responsibilities of the area, but local residents still are actively involved with the project.

Many residents and visitors use this area for recreational purposes each day. Among many other benefits, the Wildlife Habitat Restoration project provides education, restores the opportunity for wildlife viewing in an urban area, and provides a model for backyard habitats.

Floodplain Management Program

The Floodplain Management Program involves the mapping of 100-year floodplains in Maricopa County and the regulation of development within their boundaries. Program staff also work to maintain the County's good standing in the National Flood Insurance Program (NFIP) and the Community Rating System.

The NFIP is the federal program which establishes rules and guidelines for regulating land uses within delineated 100-year floodplains. By adhering to these rules, the citizens of the County are eligible for flood insurance and for flood disaster assistance. The federal guidelines are incorporated into local regulations adopted by the County Board of Supervisors and administered by the District (the *Floodplain Regulations for Maricopa County*).

A "100-year flood" has a one percent chance of occurring or being exceeded in any given year. Property that would be flooded by such an event is said to be in the "100-year floodplain".

In Maricopa County, the District regulates floodplains in the unincorporated areas and in the communities of Buckeye, Carefree, Cave Creek, Chandler, Gila Bend, Guadalupe, Litchfield Park, Queen Creek, Surprise, Tolleson and Youngtown.

Through this program, the District assists people wanting to develop floodplain property by reviewing development plans, issuing permits, correcting violations, and educating property owners in appropriate floodplain uses.

By regulating the use of floodplains and by reviewing residential, commercial and industrial development plans, the District sees that new developments will not have or cause flooding problems.

Enforcing floodplain regulations can involve on-site inspections of new construction or inspection of structural repairs to existing buildings located within a floodplain. People wishing to know if their property lies in a 100-year floodplain can call the District for a free "Flood Hazard Determination". Over 5,400 such determinations were processed by staff last year. In addition, staff assisted over 500 walk-in customers and responded to more than 2,000 phone requests for general information.

Floodplain Delineations

Delineating the boundaries of 100-year floodplains is another responsibility of the Floodplain Management Program. These delineations are performed for previously undefined floodplains and to revise the boundaries of existing floodplains reduced or eliminated by flood control projects.

Last year, the program delineated 106 miles of new floodplains in the Wickenburg and Rio Verde areas and 11 miles along Deadman Wash north of Phoenix near 1-17 and the Desert Hills Drive alignment.

Community Rating System

The Community Rating System is a program in which communities agree to be rated by the federal government on their effectiveness in reducing flood losses. Residents in communities with higher ratings pay less for flood insurance that those with lower ratings. The rating given to unincorporated areas of Maricopa County is dependent on the District's floodplain management efforts.

This year, the County attained the second highest rating in the nation, earning residents of unincorporated areas a **20 percent discount** on their flood insurance premiums. District efforts also contributed to lower insurance rates paid by residents of Phoenix and other incorporated communites benefitting from District activities performed on a regional or inter-jurisdictional basis.

Jim Stewart, Shanna Yager and Clarice Kimbell of the Regulatory Division help customers with questions about the flood hazard status of their property.

Program Activity Highlights

Fiscal Year 1994/1995

3	new floodplain delineations approved by FEMA
77	floodplain use permits processed,
62	clearances issued,
1	variance approved
10	violations investigated
517	walk-in customers assisted
2040	phone requests for general information handled
5462	flood hazard determinations made
412	flood hazard determination notices recorded

Drainage Administration Program

Even outside 100-year floodplains, improper development and construction practices can cause flooding problems. For this reason, the District reviews and inspects drainage facilities in unincorporated areas of the county to ensure that no development alters the direction or capacity of existing drainage corridors.

Before drainage regulations were adopted and enforced, development was occurring with little or no regard for stormwater. Left unregulated, new developments were subjected to flooding and created greater flood risk and damages to adjacent property. Floors were built too low, washes and other drainage paths were filled in or diverted onto neighbors, and runoff increased because provisions were not made for the additional runoff caused by driveways, rooftops and roads.

Today, the District works with the County's Planning and Transportation Departments to review drainage plans to ensure that new developments will not increase runoff, divert flows to another property, or cause backwater to pond onto property.

As a result of organizational restructuring, the regulatory functions associated with the Floodplain Administration and Drainage Administration programs were combined into a Regulatory Division. The consolidation is expected to improve internal coordination of the plan review, permitting, inspection and enforcement efforts common to both programs.

Of special note is the fact that District inspectors drove 116,000 miles last year. Over 620,000 miles have been logged by inspectors since 1988 with only two accidents reported (neither was the fault of the inspector).

Richard Harris (L) and Steven Tucker review development plans to ensure proper drainage design.

Program Activity Highlights

for Fiscal Years 91/92 - 94/95

	91/92	92/93	93/94	94/95
Inspections	4,389	5,848	5,619	6,842
Drainage Clearances Issued	2,738	3,250	3,719	3,668
Subdivision Plan Reviews	26	29	52	59
Drainage Complaints Investigated	60	221	145	109
Miles Driven by Inspectors	91,749	103,589	100,130	116,088

Property Management Program

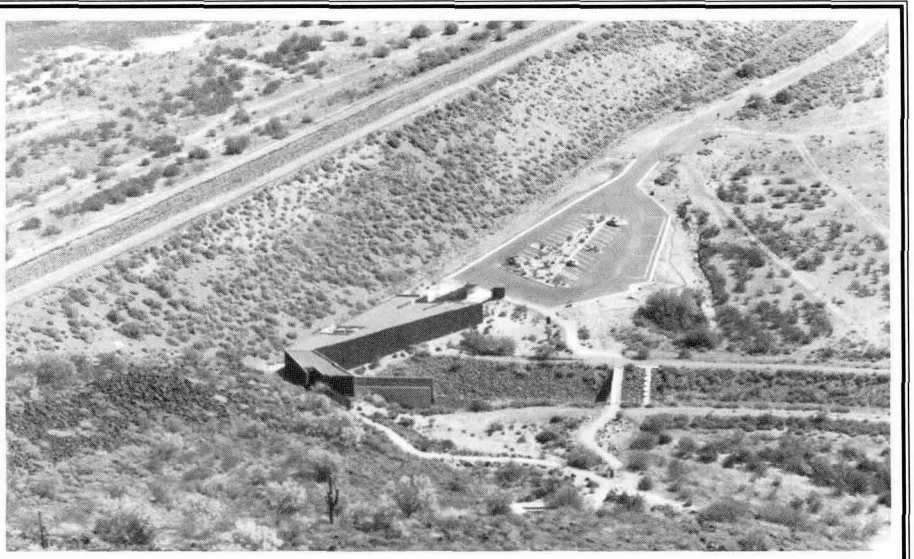
Property owned by the District must be managed and maintained and in some cases sold when no longer needed. Property may be needed for construction projects, flowage easements or to establish protected habitat areas to compensate for habitat lost during the construction of flood control projects. Managing this property is the responsibility of the District's Property Management Branch.

Last year the District sold over $4 million in excess land, the bulk of which involved Peoria's purchase of District property along Skunk Creek for inclusion in their baseball stadium and regional sports complex.

Eight other sales involved several homes along the Arizona Canal Diversion Channel near 32nd Street in Phoenix and property and homes near the Signal Butte Floodway in east Mesa.

Revenue also was generated through the lease of District property, including $200,000 in rental income from agricultural and commercial leases.

In addition, over 60 licenses and easements were granted for use of District lands. In many instances such uses involve the development of parks or other recreational amenities in river beds, ponding areas, basins or channels owned by the District. Such uses are encouraged so long as they don't interfere with the flood control purpose of the structures.



The Property Management Branch developed an agreement between the District, Corps of Engineers and Arizona State University for the construction, operation and maintenance of the Deer Valley Rock Art Center. This unique structure is located at the outlet of Adobe Dam and features 1000-year-old Hohokam petroglyphs discovered at the site.

Administrative Coordinator Shelby Brown helps keep track of the numerous licenses and agreements involving District property.

Flood Detection and Data Collection Program

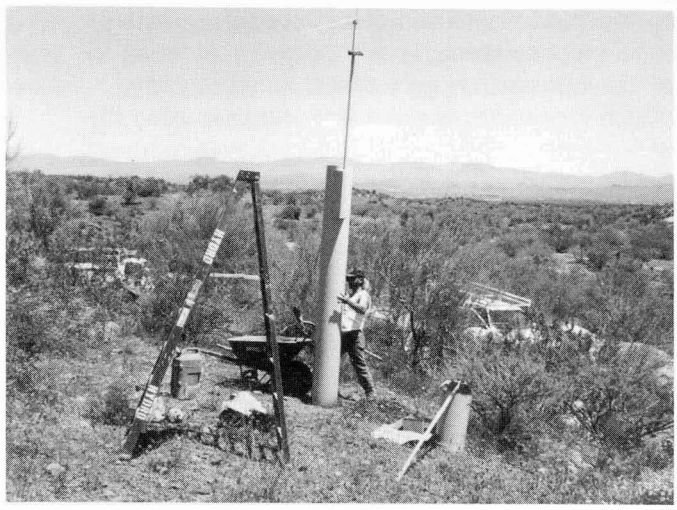
The District operates and maintains a network of 117 rain gages, 67 stream gages and 10 weather stations that provide current or "real time" information about rainfall and runoff across the County.

Called ALERT (Automated Local Evaluation in Real Time), the system automatically transmits information via radio waves to a base station at the District. This information is shared with the National Weather Service for use in issuing flood forecasts and advisories. The data is also used to monitor flood control structures during storm events and to calibrate hydrologic computer models used in floodplain delineations and other studies. Decisions to evacuate flood-prone areas may also occur based on information received from the ALERT system.

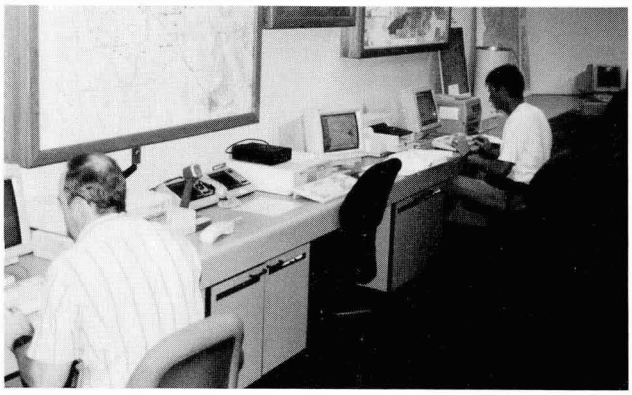
Last year, 18 rain gages, 12 stream gages and two weather stations were added to the system. Most of the new gages were part of a flood warning system installed in the Wickenburg area as an alternative to building costly flood control projects. In addition, programmable transmitters were installed on many of the existing gages to improve data reporting.

Also as a result of organizational restructuring, the responsibilities of the Flood Detection and Data Collection Branch were increased to include the operation and maintenance of nine water quality sampling stations the District operates for the cities of Phoenix and Mesa as part of the National Pollutant Discharge Elimination System (NPDES). In additon to water quality sampling, the Branch also is responsible for the inspection and sampling of illicit connections and hazardous spills impacting our structures. Organizationally, the Branch consisting of six technicians and their supervisor, moved to the Engineering Division.

Two organizations wishing to link up with the District's system were added this year. The Arizona Department of Water Resources and the University of Arizona Atmospheric Sciences Department have joined 14 other outside agencies already connected to ALERT. The ALERT system was accessed over 500 times last year by users outside of the District. The City of Scottsdale, for example, uses the water level information to anticipate road closures needed along Indian Bend Wash. During the same time period, over 75 formal requests for data and products were completed for our customers, along with numerous undocumented data requests received on the phone or from District staff.



Hydromet Tech Rick Church installs an automatic rain gage near Wickenburg.



ALERT System Manager Steve Waters (L) and Hydrologist Tom Donaldson use computer terminals to monitor the District's extensive system of rain and stream gages.

Other program highlights include:

- Staff initiated a program for updating the storage capacity tables which relate water depth to stored volume at District structures. Some of the information had not been updated since the structures were designed in the 1960's. The updated information will improve the accuracy of storage and outflow computations developed during flood events. In addition, the information will be used within the District for planning, land acquisition and floodplain management activities.
- The first Annual Surface Water Report was published using data obtained from the ALERT system, along with discharges and capacities from ratings developed by District hydrologists and the United State Geological Survey. The report was distributed to several local, state and federal agencies.
- Eight flood forecast models were developed last year for four dams (New River, Adobe, Sunset and Sunnycove dams) and four stream gage locations (Casandro, Flying E, Hartman and Powderhouse washes in Wickenburg). These models allow hydrologists to estimate the peak runoff rate and runoff volume of a flood before either occurs.
- An active ALERT computer was installed in the building lobby for use by visitors. The system allows users to access various types of weather-related information, including rainfall and stream flow data and National Weather Service forecasts.

Environmental Program

Environmental staff play a major role in a county-wide effort to comply with stormwater quality requirements of a federal program called the National Pollutant Discharge Elimination System (NPDES).

The NPDES program falls under the federal Clean Water Act and requires large metropolitan areas to monitor pollution levels in stormwater and develop programs to reduce the pollution.

The District believes a coordinated regional effort is needed to effectively respond to the new regulations. Agreements with local, state and federal agencies have been made to monitor pollution levels in stormwater runoff. Staff work with other agencies to identify and stop polluters and provide technical assistance to cities and businesses attempting to comply with the NPDES requirements.

The District headed a regional task force to develop an Erosion Control Manual which explains ways of keeping sediment from construction sites out of stormwater runoff. Staff also educate citizens through outreach programs about the importance of keeping common household pollutants out of storm drains and flood control channels.

The District has taken steps to find solutions to the stormwater pollution problem and received an award last year for one such effort. A District method of removing motor oil and other petroleum products from stormwater using plants and oil-eating bacteria received an award from the National Association of Counties.

Other environmental activites associated primarily with the District's Planning, CIP and Maintenance programs include; identifying and managing environmental hazards located on property owned or being purchased by the District; and performing environmental impact assessments on projects requiring federal environmental permits.

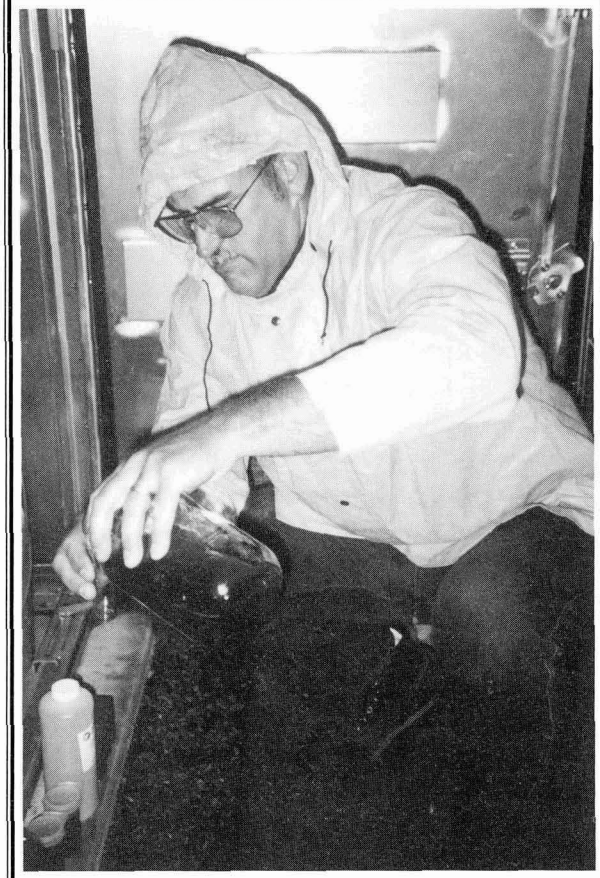
Last year, staff completed 11 site assessments to identify environmental hazards. Leaking underground storage tanks, soil pollution and asbestos contamination are frequently encountered. For example, large amounts of asbestos insulation had to be removed from homes purchased in Sunnyslope before the property could be readied for a future detention basin.

Archeological surveys are sometimes performed as well. This is done to prevent construction activity from damaging historic or prehistoric artifacts. Six such surveys were performed last year, including surveys of a detention basin site in Sunnyslope and portions of Skunk Creek, Bullard Wash and Upper New River.

In the case of the Upper New River site, a circular stone wall was discovered which was historically linked to Basque sheep herders who resided in the area in the early 1900's.

In addition to archeological surveys and hazard assessments, staff performed three exhaustive environmental impact assessments. They were for a dam being planned along Casandro Wash in Wickenburg, a channel outlet at the Agua Fria River near Luke Air Force Base, and two detention basins planned for Sunnyslope.

These assessments must be done to obtain federal environmental permits to construct projects in rivers and washes which fall under federal jurisdiction. Such areas are called "Waters of the U.S." and include most of the rivers and streams in Maricopa County.



Hydromet Tech Roger Miller retrieves a stormwater sample from one of the monitoring stations operated by the District.

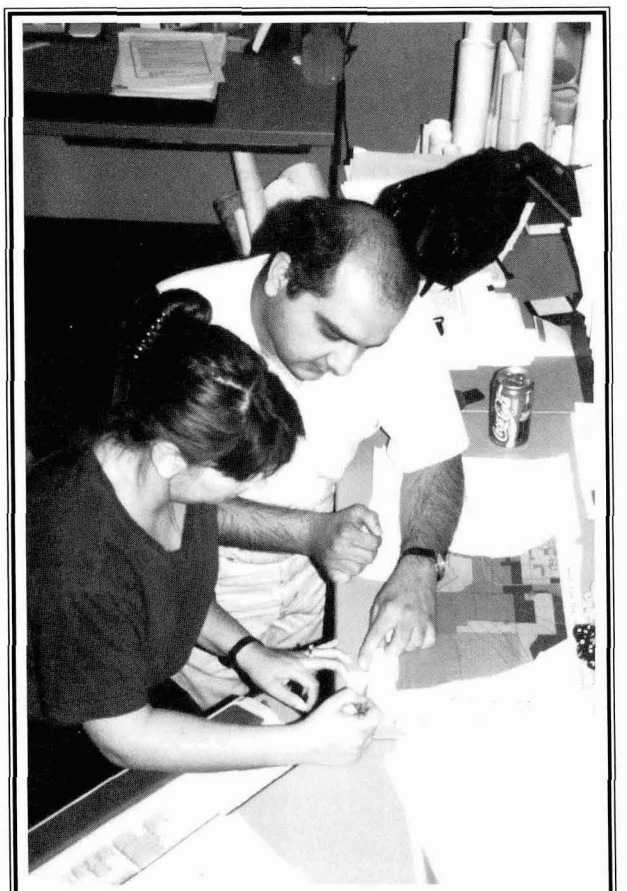
Restructuring

On September 20, 1994 staff began the process of restructuring the District to provide more efficient and effective services to our customers. Our objective was to design an organization appropriate to the workload and funding, while improving the functional organization, increasing management's span of control, reducing the levels of management and facilitating better communications within and between divisions.

A "Restructuring Team" was formed consisting of the Interim Chief Engineer and General Manager, his Administrative Assistant, and the six Division Managers along with a facilitator from the County Human Resources Department.

The team met for several weeks to re-evaluate our basic functions and determine whether we had the right balance of resources among our programs. On November 18, 1994, the results of the restructuring effort were announced. The net result was a modified organizational structure and the reduction of 18 positions from 258 to 240. Employees affected by the elimination of their positions received priority consideration for any vacant positions or new positions created as part of the restructuring process.

The same number of divisions remain in the District's new structure (six), but two have new names. The Construction and Operations Division (C&O) was more appropriately titled the Construction and Maintenance Division (C&M) to better reflect the actual services performed. The Hydrology Division became part of a new Regulatory Division which resulted from the more efficient grouping of functions previously performed in two divisions.



Hydrologists like Lisa Young and Afshin Ahouraiyan became part of the Engineering Division as a result of the organizational restructuring.

The new C&M Division no longer includes an Environmental Branch, which instead was transferred to other divisions with responsibilities more closely related to the functions of the branch. One branch within the old C&O Division was eliminated completely; the Operations and Maintenance Branch. This was done to "flatten" the organizational structure and increase the Division Manager's span of control.

Hydrology and Engineering Divisions were shuffled to combine the technical design and review functions in the Engineering Division, and the people serving the public in drainage review and floodplain administration in a separate Regulatory Division. Combining these functions is expected to reduce overlap in technical design and review and increase efficiency in serving the public.

The Special Projects Branch responsible for the District's rain and stream gage network was transferred to the Engineering Division and became the Data Collection Branch. This new branch will also operate and maintain the nine stormwater quality monitoring stations previously managed by the Environmental Branch.

The Land Management Division was restructured to eliminate one level of management in the Property Management Branch and the licensing function was transferred to the Engineering Division.

In a separate restructuring effort initiated by the County's Enterprise Technology Department (ENTECH), the District's Information Systems Branch (IS) was reassigned to a divison of ENTECH called Business Technology West. This is the same division that manages the information systems for the County's Department of Transportation.

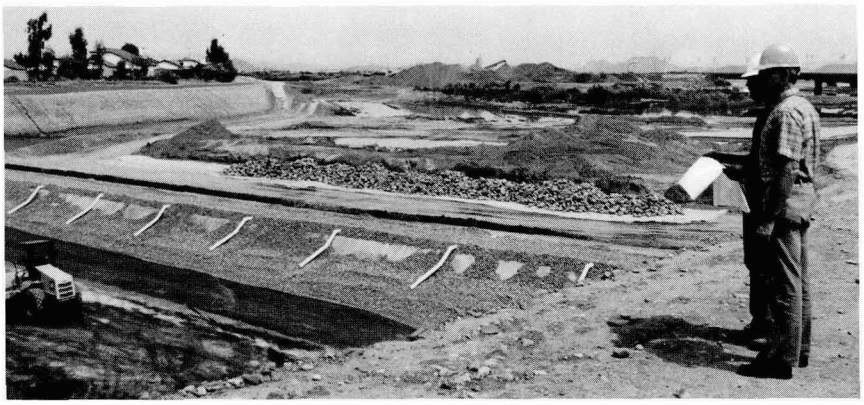
Information Systems involves activities associated with the operation and maintenance of computers, including Geographic Information Systems. The move was part of a county-wide centralization of the IS function to improve standardization and coordination among IS programs. District IS staff continue to perform the same services for the District, but the branch manager now reports to the Manager for Business Technology West.

The District's restructuring effort, though uncomfortable and stressful at times, was met with great understanding and professionalism by everyone affected. The result is an organization better prepared for the challenges that lie ahead.

Construction Management Savings

Construction inspectors at the District oversaw the construction of $17 million in capital improvements last year. Inspectors oversee the work of construction companies on contract with the District to build flood control prjects.

Prior to doing the construction management ourselves, we paid outside consultants to perform this work at an average cost of 12 percent of a project's total cost. By doing the construction management "in-house", such costs now average less than 3 percent. In the case of the $6.5 million Beardsley Road Regional Drainage Project begun this year, approximately $600,000 will be saved by doing the construction management internally.



Civil Engineers Warren Rosebraugh and Scott Clement inspect a drop structure under construction in New River, south of Bell Road.

Substantial savings in time and money also have been realized by stressing teamwork in the accomplishment of a construction project. Known as "partnering", this process of meeting with all involved parties at the outset of a project to identify and resolve potential conflicts before they cause delays is resulting in fewer change orders and a better product.

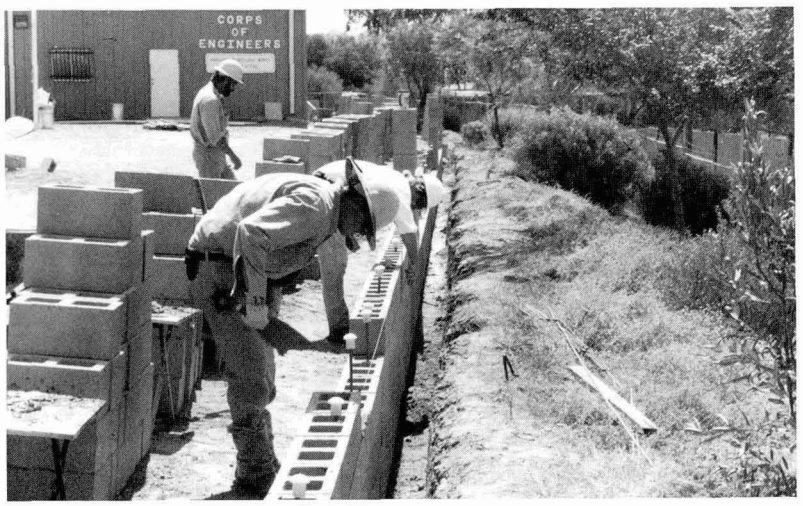
Last year, all projects managed by the District were completed on time and with cost overruns limited to less than one-quarter of one percent. A project of particular interest was the New River Channel project at the confluence of New River and Skunk Creek.

The project involved bank protection and construction of a concrete drop structure. This was the first roller-compacted concrete structure ever designed and built under District contract. It involved the placement of 34,000 cubic yards of soil cement and roller-compacted concrete, a volume equal to a line of wheel barrels 77 miles long.

Satellite Offices Promise Improved Productivity

The upkeep of flood control projects located in the east valley was made more cost effective with the establishment of a satellite maintenance yard near Higley Road and Main Street in Mesa. Two four-person maintenance teams and two equipment operators are assigned to the new facility which formerly was leased to a taxidermy and radiator shop.

Final renovations to the facility occurred last year at a cost of $75,000, but the new yard will save taxpayers an estimated $117,000 annually by locating crews and equipment closer to the structures they maintain. The idea for the yard was developed the previous year by Maintenance Program employees involved in a Total Quality Management project.



Frank Nutter, Bill Casenhiser and Fred McArthur make improvements to property along the ACDC vacated by the Army Corps of Engineers.

Initial efforts also were taken to establish a North Maintenance Yard using a facility previously occupied by the Army Corps of Engineers. The facility is owned by the District but was leased to the Corps for use as a construction office while building the ACDC. The diversion channel is now complete and the Corps of Engineers moved out of the offices when their lease expired in May. The maintenance of 13 large flood control structures in the north and west valley will be coordinated out of the new North Yard.

Safety Program Revitalized

The importance of safely operating and maintaining District projects took on special emphasis this past year in an effort to reduce on-the-job injuries. A safety committee met monthly to formulate policies, conduct risk analysis and review accidents for trends and preventive action.

The existing safety program was revitalized to become more dynamic, educational and positive. Revisions underway or planned include:

- Publishing a monthly *Safety-Gram* newsletter that summarizes recent accidents and preventive measures and provides safety tips.
- Providing meaningful safety awards to increase staff awareness and provide incentives for working safely.
- Developing a comprehensive safety manual.
- Developing a series of workshops on selected short subjects and a yearly training schedule featuring important safety topics.

Early indications are that safety awareness efforts have made a difference. The lost-time injury rate for the second half of the year was down 82% from the previous year's rate.

"In-house" Property Appraisals Save Money

Before any property is purchased by the District, it must be appraised. Traditionally, nearly all appraisals were performed by outside appraisers on contract with the District. Last year, staff who were qualified to perform land appraisals recommended that some of the smaller appraisal projects be performed "in-house". This recommendation was adopted in 64 out of 122 cases last year, saving over $60,000 in appraisal fees.

Property Acquisition Coordinator John Palmieri explains land acquisition process to residents.

GIS Capabilities Enhanced

Information contained in the District's Geographic Information System (GIS) was consolidated and centralized last year to make it more easily accessible. The GIS system contains such information as land uses, soil types, floodplains, property ownership, street locations, and jurisdictional boundaries. A standardized format for entering and accessing this information was implemented and the data was shifted to a land surveying standard more universally accepted. As a result of these and other improvements, the District is recognized as one of the first agencies in Arizona to have a central, clean, normalized working GIS database.

The GIS Team: (L to R) Alicia McLaughlin, Jim Smith, Marta Dent, Mark Brewer, Eric Feldman, Kevin LaValle, Steve Bruffy, Glenn Card.

Informative Planning Document Developed

A "Five Year Capital Improvement Program" report was published last year by the Planning and Project Management Division. The report provides a comprehensive, easy-to-read summary of the numerous flood control projects underway or planned. The document contains a short summary of each project along with a map showing its location. It was distributed to local communities, agencies and others having an interest in the activities of the District.

Job Classifications Streamlined

The consolidation of some District job classifications occurred last year as a result of a reclassification study performed by the County Human Resources Department. The study was requested by the District and the Maricopa County Department of Transportation after concerns arose about equity between job classes. The study objectives were to provide equity among job classifications, place employees into the proper classifications, and consolidate job classes where possible.

Classifications involving Civil Engineers, Construction Inspectors, Equipment Operators, Planners and Maintenance staff were impacted most by the study. Eighty-seven separate job classifications existed at the District prior to the study. This number was reduced to 39 classifications as a result of the study. In addition, 93 positions increased in pay grade, 99 stayed the same and 18 positions went down in pay grade.

Word Processor Kathy Longoria's position was reclassified as an Administrative Assistant position as a result of the Job Study.

Strategic Planning

Developing a vision for the District's future and a means of achieving it became the focus of dozens of employees this year. It was all part of a strategic planning process aggressively undertaken to develop goals and objectives to guide our operations and improve the quality of the services we provide to the public.

Strategic planning meetings began in February and were open to all employees. A committee was formed to organize the effort, with assistance from an organizational development expert on loan from the County's Human Resources Department.

A first step was to review the District's mission and vision statements. Fundamental questions about our "reason for being" were posed, along with questions about customer expectations and changing priorities. The result was a simplified vision statement and a new mission statement which more accurately describes our purpose.

Meetings were held to determine strategic issues to focus on during the year to help move the District closer to achieving its mission. Five strategic issue areas were identified and "Issue Leaders" were assigned to act as project managers.

STRATEGIC ISSUES:

- Customer Satisfaction
- Quality Work Force
- Responsible Fiscal Management
- Flood and Stormwater Management
- Program Improvement

The next step was to develop goals and objectives for each issue to provide direction and a means of accomplishing our desired outcomes. Each objective was assigned to an "Objective Leader" which is the person ultimately responsible for ensuring that progress is made on their particular objective. Action plans describing the specific tasks required to accomplish each objective were prepared in the final phase of the planning process. The time, thought and effort devoted to this process by staff was testament to the District's continued commitment to improving the way we do business.

Jim Schwartzmann and Stan Smith lead a strategic planning team focusing on Program Improvement.

Leadership Training

Improving the way employees work together to accomplish the District's mission is the goal of a new training program implemented last year. Called the Leadership Academy, the program focuses on the basic human interaction skills everyone needs to succeed.

District managers and supervisors participate in a five-module program called *Frontline* and non-supervisory staff enroll in a related program entitled *Working to Win*. The program was selected by a countywide task force which included a member of the District. The impetus for the program comes from the belief that the leadership of all employees, non-managers as well as managers, is needed if the District and County are to continuously improve.

The *Frontline* modules include training in such skills as giving constructive feedback, coaching, recognizing positive results and effectively obtaining information from others. *Working to Win* modules include training in skills associated with getting your point across, requesting help, taking on a new assignment and giving feedback to help others.

Five principles of effective leadership act as the foundation for the program. They are:

- Focus on the situation, issue or behavior, not on the person,
- Maintain the self-confidence and self-esteem of others,
- Maintain constructive relationships,
- Take initiative to make things better, and
- Lead by example.

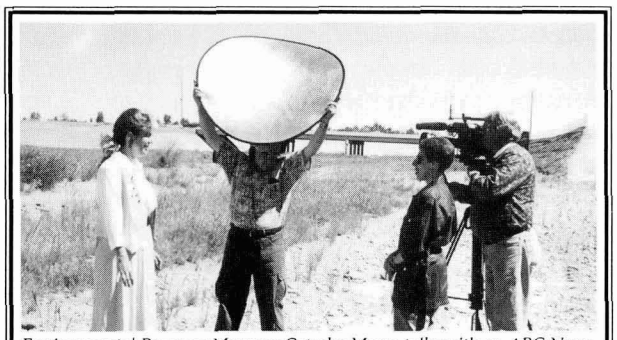
Hydrologist Max DeVera participates in a skills practice session with Connie Ocell of Recreation Services. In addition to enhancing communication skills, the Leadership Academy gave staff an opportunity to meet other county employees.

District Joins War on Graffiti

The District teamed up with the County Attorney's Office to organize a graffiti removal program using juvenile offenders arrested for defacing property. The program is intended to deter juvenile acts of vandalism by making offenders remove graffiti from various places, including flood control structures. A staff member from the District's Construction and Maintenance Division is assigned to the County Attorney's Office to help coordinate the program.

The program also will free up maintenance crews formerly assigned to graffiti removal tasks. The cost of using District staff and equipment to remove graffiti from just one District project, the Arizona Canal Diversion Channel (ACDC), was $16,000 in fiscal year 1993-94.

The Challenge of Stormwater Quality Testing



Environmental Program Manager Catesby Moore talks with an ABC News crew about EPA's WETT stormwater quality test. The interview aired on the network's "Prime Time Live" program.

The District continued its leadership role in county-wide efforts to comply with federal stormwater quality regulations. These regulations require large communities and certain industries to obtain permits to discharge stormwater into "Waters of the United States". These "waters" include most of Maricopa County's usually dry rivers and many of their tributaries.

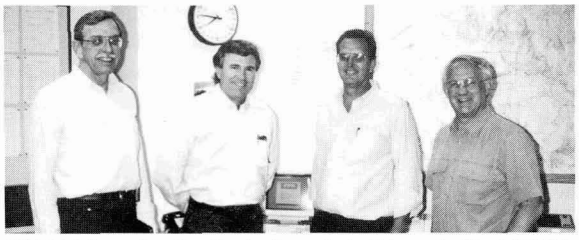
The District's Environmental Program Manager chairs the Arizona Stormwater Permitting Task Force and was appointed vice-chair of the Environmental Policy Development and Advocacy Committee for the Committee on the Arizona Environment.

The District is committed to the reduction of pollutants in stormwater and has assisted communities in monitoring stormwater and developing ways to reduce pollution levels. Last year, however, the District joined other Arizona municipalities in arguing against the application of a testing method proposed by the Environmental Protection Agency (EPA).

Called Whole Effluent Toxicity Testing (WETT), the test places two sensitive aquatic organisms, the flathead minnow and the water flea, into stormwater to see if they survive. The District and others have questioned the applicability of a test using live aquatic organisms in a region where stormwater typically finds its way into dry washes where no aquatic life is present.

The District is asking that further research be conducted using the test on arid region stormwater before it is added to the EPA's stormwater permitting program.

District Joins Task Force to Improve Flood Warning



District 2 Supervisor Don Stapley (beneath clock) tours the Flood ALERT room with Chief Engineer and General Manager Dan Sagramoso (left), Flood Warning Branch Manager Joe Tram and Assistant County Administrator for Infrastructure Operations, Lou Schmitt (right).

Flooding in Arizona during January and February, 1993, was a reminder of the serious flood hazards that exist throughout the State. Record rainfall amounts and stream flows were observed across Arizona with major damage recorded in virtually every county. The floods focused special attention on a number of deficiencies involving flood warning.

To help improve flood warning, the District has joined a multi-agency task trying to develop a statewide flood warning system. Such a system would benefit local efforts because nearly half the State of Arizona consists of the Gila River Watershed which drains through Maricopa County.

Last year, the District sponsored a conceptual design study to examine similar flood warning systems in other states, and identified strategies, equipment needs and potential participants for an Arizona system. Information from the study will be incorporated into an Army Corps of Engineers report calling for the placement of 120 rain and stream gages in seven Arizona watersheds.

If such a system is approved, emergency managers from throughout the State will be linked by computer and have access to up-to-the minute weather, rainfall and stream flow data for use during flood emergencies.

Public Involvement

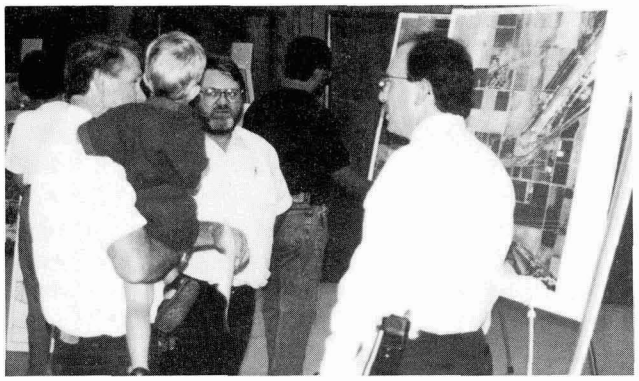
The District is increasingly aware of the importance of effective public involvement if we are to accomplish our mission.

The District actively strives to include the public in its decision-making processes, especially those relating to Area Drainage Master Studies (ADMS), floodplain delineations and project planning and design.

Project Manager Greg Rodzenko explains a storm drain project to residents living near Tatum Boulevard and Cholla Street in Phoenix.

The ADMS program analyzes watersheds to identify flooding and drainage problems. From such studies, potential solutions are developed to reduce or eliminate the flood hazard. Public involvement efforts are utilized to obtain public input on existing flooding problems and to identify possible solutions.

Public involvement also is an important component of the District's floodplain delineation program. This program identifies the limits of 100-year floodplains along rivers, streams, washes and ponding areas in Maricopa County. The District typically performs six to 10 such studies a year and has delineated an average of 65 linear miles of floodplain per year since 1986. It is important that potentially affected property owners are made aware of the study, offered an opportunity to provide input, and informed of the final study results.



Project Manager Russ Miracle (center) discusses the Bullard Wash Outfall Project with property owners during a public meeting in Goodyear.

Construction projects designed with little or no public notice or input invite opposition and may be stopped, changed or delayed as a result. Public meetings, planning workshops, site visits, and open houses all are used to encourage public participation. A project aesthetic and landscaping policy adopted by the District calls for the formation of an Aesthetics Committee with membership to include neighborhood representatives. In addition, Citizen Advisory Committees are sometimes used to identify preferred design alternatives.

This past year, the public provided input or participated in the planning of numerous projects and studies, including; 10th Street Wash Basin Design, Upper New River Flood Mitigation Project, Town of Guadalupe Drainage Study, Bullard Wash Outfall Study, Indian Bend Wash Floodplain Delineation Study, Skunk Creek Channel Improvement Project; Tatum and Cholla Interim Drainage Improvement Project, and the Skunk Creek Improvement Project.

"Good To Do" Policy

In many cases the public's first and sometimes only contact with the District involves a member of our maintenance staff. Over 40 percent of our employees are involved in the maintenance of District structures and the very nature of their job puts them in contact with hundreds of citizens each year.

The professionalism and courtesy shown by these employees has a profound impact on the public's perception of our agency. One example of this occurred in April when a crew repairing erosion damage along the East Maricopa Floodway was recognized by the Rural Metro Corporation for helping fight a brush fire that threatened nearby homes.

In his letter of thanks, Rural Metro General Manager Steve Savage stated; "Your crew was very responsive to our needs and extremely helpful in keeping the fire from the exposed residences. After the incident, your employees advised us of your 'good to do' policy, ie., 'If it's good for the taxpayers, we do it!'. It is refreshing to hear of such a policy..."

Equipment Operator Mike Welch and other maintenance staff frequently provide the only contact the public has with the District.

Municipal Customers Rate District Performance

County municipalities were asked their opinion of the District's performance and continuing mission as part of a Comprehensive Program Budget Review undertaken this past year.

The review of the District's programs and functions was one of several evaluations of county departments/districts initiated by the Board of Supervisors under the direction of the Office of Management and Budget (OMB).

In a letter signed by Board Chairman Tom Rawles, local communities were asked to comment on "what you think the District's mission and functions should be, including comments about which programs serve you and the quality of those services to your community".

Fourteen of the cities and towns responded to the Chairman's letter. The comments were largely supportive of our programs and complimentary about our performance. Excerpts from some of the responses are reprinted below.

"District programs, especially on the major watersheds, have greatly assisted Tempe in the past and have been directly responsible for advancing the Rio Salado Project on the Salt river. In the future, the District's service to Tempe will focus on river operation, maintenance and technical assistance."

- Neil G. Guiliano, Mayor of Tempe

"The City of Goodyear is very supportive of the District's activities such as the District's mission and its programs.....Flooding does not begin and end within the boundaries of a single city. It is a regional issue and should be addressed regionally. The District's programs bring neighboring cities together to address regional flood control problems."

- Carl K. Gow, Mayor of Goodyear

"The City of Glendale supports the mission of the district and appreciates the benefits that the district has provided to Glendale residents....Several examples of their efforts are in place in Glendale and provide flood water management not just to Glendale residents, but benefit citizens of the entire valley area. Examples include: Skunk Creek channelization, maintenance of the Arizona Canal Diversion Channel, the Dysart Drain project at Luke Air Force Base, channelization along New River, flood control dams at Adobe Mountain, New river, Cave Creek and others."

- Elaine M. Scruggs, Mayor of Glendale

West Valley dignitaries join Supervisors Mary Rose Wilcox and Ed King in a ribbon-cutting ceremony marking the completion of the Colter Channel. (L-R): Avondale City Councilman Earl Cooper, Avondale Mayor Raymond "Bill" Bedoya, Litchfield Park Mayor Perry Hubbard, Buckeye Mayor Joseph Schettino, Supervisor Wilcox, Supervisor King, Estrella Mountain Community College Provost Homero Lopez and Goodyear Mayor Carl Gow.

"The District recently completed an Area Drainage Master Study (ADMS) that provided information and direction for systematically dealing with the stormwater problems in this area....The 'team approach' the District has taken has allowed the area communities to better coordinate and benefit from District expertise."

- Wilburn J. Brown, Mayor of Gilbert

"I am happy to say that we have been working with the Flood Control District on a long-term solution to the problem with flooding at the school, participating as a partner in the costs and planning, along with our neighboring communities....Based on my experience with this one project in my community, the District is fulfilling its mission and adequate levels of partnership are being required from municipalities and others."

- Mark Schnepf, Mayor of Queen Creek

"We feel the mission of flood control is extremely important due to our Arizona flash flood possibility. The District diligently fulfills that mission. We are fortunate to see the benefits of their work."

- Gordon Grandy, Apache Junction City Engineer

"My view is that the Flood Control District serves as an essential element for the overall planning, design, construction and maintenance of areawide flood control in the County. Also, as you may be aware, it serves as an essential agency for floodplain administration and areawide management of EPA-mandated stormwater regulation."

- Jay Tibshraeny, Mayor of Chandler

"We feel this funding (for capital improvement projects) should be shared with the municipalities based on the tax base that generates the funds. Whenever possible, the funds should be used on a joint facility that will benefit the City and County."

- Willie Wong, Mayor of Mesa

Comments from the cities were incorporated into OMB's review of the District and a report was made to the Board of Supervisors in April. Recommendations were made by OMB to review ongoing staffing levels, operations and internal CIP projects to ensure full utilization of District resources, but no programs were recommended for reduction or elimination. Recommendations regarding cash management procedures are being implemented, as is a recommendation to evaluate the benefits of privatizing some District functions.

Project Prioritization Procedure Reflects Customer Input

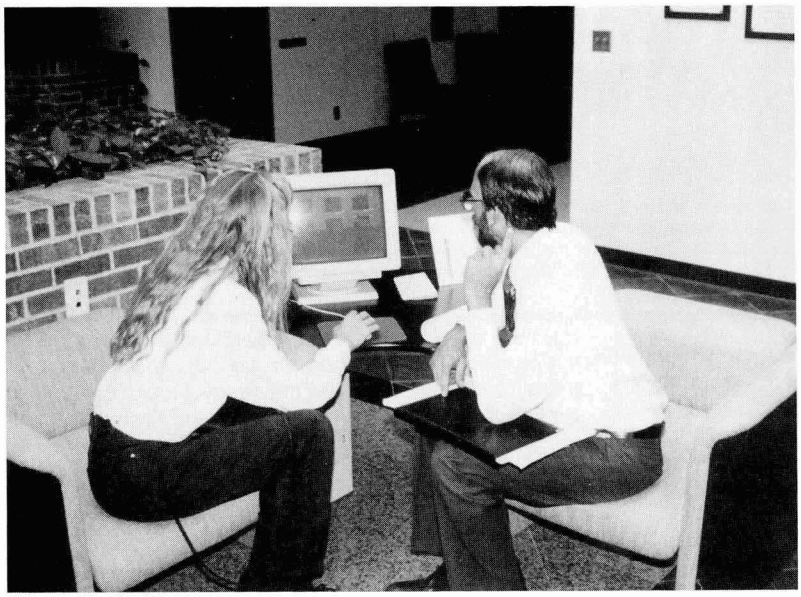
The procedure used by the District to prioritize capital improvement projects was revised last year in response to recommendations made by our customers.

The District held a workshop to improve the Procedure for Identifying and Prioritizing Potential Five-Year CIP Projects. Ten cities and towns, the Salt-River Pima-Maricopa Indian Community and two County departments participated. The procedure uses criteria such as community priority, regional significance and public protection benefits to rank potential capital improvement projects submitted to the District by local communities and county, state and federal agencies. Projects with high scores receive priority status when developing the District's Capital Improvement Budget and Five-Year Capital Improvement Program.

As a result of the workshop, a number of changes were made to the procedure. Two criteria, Developed Area Protected and Total Area Protected were combined into one criterion and an additional two points were added to its weighting. The criterion that rated projects higher if cost-sharing was involved was reduced by two points and the Environmental/Areawide Benefits criterion was simplified by eliminating several subcategories.

Flood Control on the Internet

District customers now are able to obtain information about the District on the Internet. The FCD Home Page can be accessed at http://www. maricopa.gov /flood/fcd.html. Monthly precipitation reports, descriptions of major flood control projects and background information about the District is currently available on the Internet. It is estimated that more than 50 million people in more than 160 countries use the Internet for data gathering and communications.



Visitors use a computer station in our lobby to obtain current weather information from the District's ALERT system. Efforts are underway to make ALERT data available to the public via the Internet.

National Association of Counties (NACo)

An experimental project developed to protect groundwater from petroleum contamination received a 1995 NACo Achievement Award. Roland Wass of the District's Environmental Branch designed and implemented a submerged flow vegetative treatment system to biologically clean stormwater runoff from a County vehicle maintenance yard.

City of Tempe

The City of Tempe in April dedicated a 13-acre wildlife habitat near Papago Park and named it after former Tempe Mayor and current Flood Control Advisory Board member William LoPiano. The "LoPiano Mesquite Bosque" is home to six species of trees, plus numerous rabbits, quail, dove, ground squirrels and an occasional coyote. Dr. LoPiano has served on the District's advisory board since 1982.

National Association of Flood and Stormwater Management Agencies (NAFSMA)

Chief Engineer and General Manager Dan Sagramoso was elected in October, 1994, to serve on the 13-member NAFSMA board. NAFSMA is an organization of state agencies, cities, counties and special districts that deal with flood protection, floodplain management and surface water quality issues.

Employee of the Quarter

This program is administered by a selection committee with representatives from the District's six divisions. Nominations are submitted to the committee for consideration and winners are announced each quarter. Nominees are evaluated on their professionalism, productivity, customer service, attitude, teamwork and initiative. Recipients this past year were: (3rd quarter excluded-no nominees)

Employee of the Quarter winners (L-R) Mark Brewer, Duke Yager and Dave Johnson.

Duke Yager, Maintenance Technician I, for the quarter July through September, 1994

Dave Johnson, Regulatory Division Manager, for the quarter October through December, 1994

Mark Brewer, Decision Support Analyst I, for the quarter April through June, 1995

Employee Suggestion Program

Several employees were recognized last year by the County's Employee Suggestion Program for ideas they developed to improve productivity and save money.

Sal Cerbone
Recommended modifications be made to the irrigation system along a three-mile stretch of the Arizona Canal Diversion Channel to improve coverage and reduce plant mortality.

Bob Gallup
Recommended tire repair kits be placed in vehicles to fix flat tires in the field, significantly reducing down time for equipment.

Art Dubois
Developed a computer program to track and monitor material expenditures.

Bob Panasewicz and Ernie Hammer
Developed a system for placing gravel mulch on high embankment slopes.

Scott Clement
Negotiated an agreement with the Williams Air Force Base Closure Agency for partial excavation of the Rittenhouse Channel, saving the District over $700,000.

Certification and Professional Registration

Level II NICET Certification (National Institute of Certified Engineering Technicians)
Ben Gregg

Level III NICET Certification
Chuck Feuquay
George Lindop
Bill Poppe

Engineer in Training (E.I.T.)
Greg Rodzenko

Registered Professional Engineer (P.E.)
Scott Clement
Maximo DeVera
Richard Harris
Shewa Shivaswamy

American Institute of Certified Planners (A.I.C.P.)
Bert Miller

Certified Public Manager (Level IV)
Mike Cuneo
Mike Ramirez
John Palmieri

Certified Professional in Human Resources
Gwen Loving

Zenger-Miller Leadership Development Certification
Lisa Young
Jim Phipps
Betty Dickens

Continuing Education Achievements

Arizona Governmental Training Service (AGTS)

Supervisor's Academy
Mike Rosiewicz
Bill Craig
Ed Loy
Ben Ganados
John Palmieri
Barbara Hummell
Dick Perreault

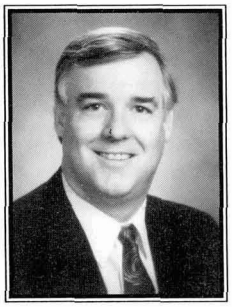
Manager's Academy
Lovetta Henry
John Palmieri
Kathy Thiessen

Maricopa County Leadership Academy

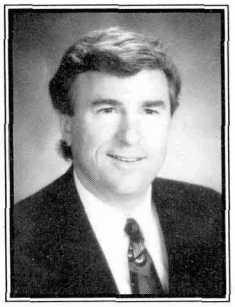
Frontline
Leanna Cumberland
Mike Cuneo
Betty Dickens
Chuck Feuquay
Fred Fuller
Ken Green
Hedy Hall
Lovetta Henry
Dave Johnson
Michael Lopez
Pete Martinez
Michael Meng
Catesby Moore
Amir Motamedi
Ron Nevitt
Dick Perreault
Ed Raleigh
Greg Rodzenko
Dan Sagramoso
Jim Schwartzmann
Chuck Smith
Stan Smith
Olin Sutton
Kathy Thiessen
John Townsend
Joe Tram
Steven Tucker
Lenora Webb
Shanna Yager

Working to Win
Ana Gorbenko
Barbara Hummell
Diane Johnson
Gwen Loving
Hasan Mushtaq
Jan Staedicke
Sandy Walchuk

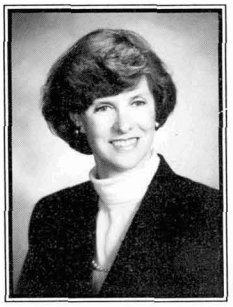
Board of Directors



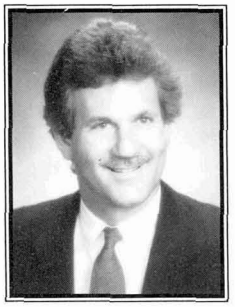
Tom Rawles
District 1
Chairman



Don Stapley
District 2



Betsey Bayless
District 3

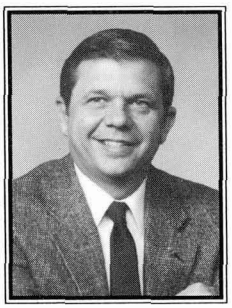


Ed King
District 4

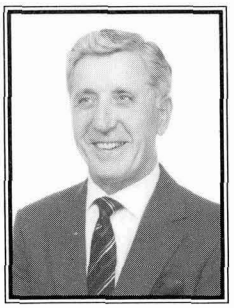
Mary Rose Wilcox
District 5

The District is governed by a Board of Directors which also serves as the elected Board of Supervisors for Maricopa County. Last year, Don Stapley was elected to represent District 2. The Board of Directors exercises all the powers and duties in the acquisition and operation of District properties, contracting, and in carrying out regulatory functions as ordinarily exercised by governing bodies.

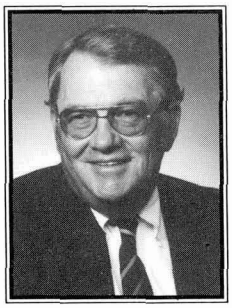
Flood Control Advisory Board



Ron Wheat
District 4
Chairman

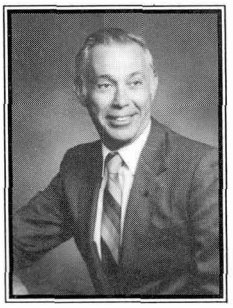


William LoPiano
District 1



John E. Miller
District 2

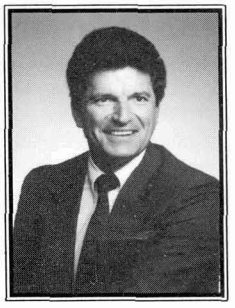
Samuel K. Wu
District 3



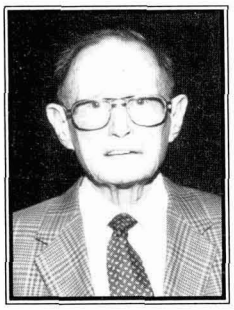
James Matteson
City of Phoenix

The Flood Control Advisory Board (FCAB) works closely with staff and the Board of Directors to accomplish the District's mission of protecting county residents and their property from flooding. The FCAB reviews proposed flood control projects and studies and makes recommendations as to their scope, necessity and priority. These recommendations are forwarded to the Board of Directors for action. Board members also recommend an annual budget to the Board of Directors and serve the District as members of the Floodplain Review Board and the Drainage Review Board.

The FCAB consists of seven members, five of whom are appointed by the Board of Supervisors to five year terms. The City of Phoenix and the Salt River Project appoint representatives who are ex-officio members of the FCAB. This year, Marcella Peters left the Advisory Board after five years of exemplary service to the District and citizens of Maricopa County. South Phoenix businessman Melvin Martin (not pictured) was appointed to fill the position for District 5.



Paul Cherrington
Salt River Project



Lynn Anderson

The District was saddened by the passing in 1995 of long-time FCAB member Lynn Anderson who retired from the Advisory Board in 1991.

Marcella Peters

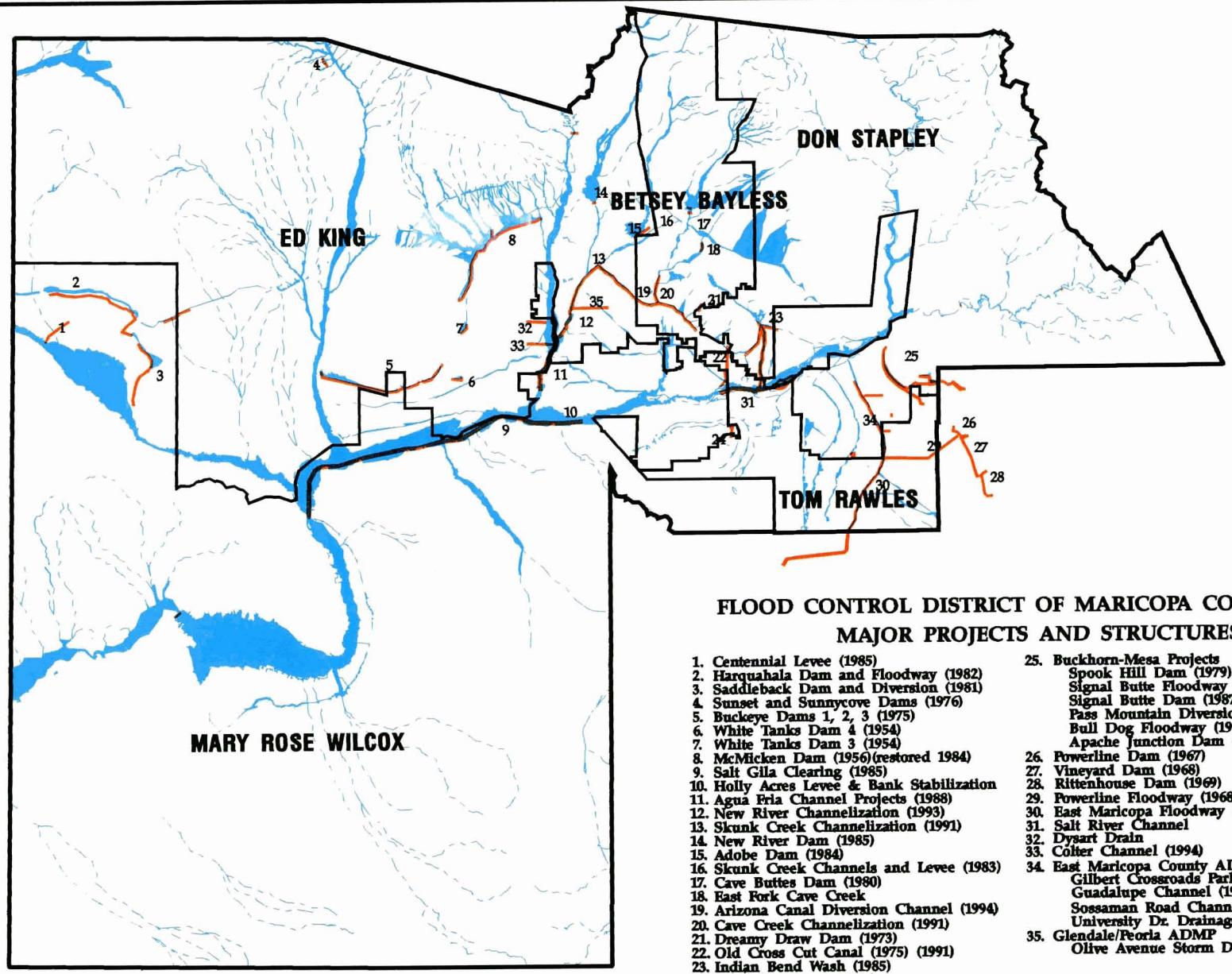
Marcella Peters left the Advisory Board in 1995 after five years of dedicated service.

Statement of Revenues, Expenditures, and Changes in Fund Balance

Budgeted and Actual for the Fiscal Year Ended June 30, 1995
Preliminary and unaudited. Amounts are rounded to nearest thousand.

	BUDGET	ACTUAL	VARIANCE FAVORABLE (UNFAVORABLE)
REVENUES			
FLOOD CONTROL TAX	$ 36,033,000	$ 35,281,000	($ 752,000)
LOCAL PARTICIPATION	7,472,000	2,558,000	(4,914,000)
RENTAL INCOME	188,000	242,000	54,000
INTEREST INCOME	1,000,000	1,518,000	518,000
OTHER LAND INCOME	1,000,000	4,321,000	3,321,000
MISCELLANEOUS	94,000	572,000	478,000
TOTAL REVENUES	45,787,000	44,492,000	(1,295,000)
OPERATING EXPENDITURES			
PERSONNEL SERVICES	7,096,000	7,693,000	(597,000)
SUPPLIES AND SERVICES			
PROFESSIONAL SERVICES	4,886,000	3,081,000	1,805,000
MAINTENANCE SUPPLIES AND SERVICES	1,683,000	1,475,000	208,000
INTERNAL SERVICES	2,923,000	2,696,000	227,000
EDUCATION AND TRAVEL	173,000	104,000	69,000
OTHER SUPPLIES AND SERVICES	535,000	550,000	(15,000)
TOTAL OPERATING EXPENDITURES	17,296,000	15,599,000	1,697,000
CAPITAL OUTLAY			
PERSONNEL SERVICES	2,102,000	870,000	1,232,000
REAL ESTATE	4,401,000	3,344,000	1,057,000
ENGINEERING	5,012,000	3,403,000	1,609,000
CONSTRUCTION	21,581,000	23,620,000	(2,039,000)
VEHICLE AND EQUIPMENT	907,000	966,000	(59,000)
TOTAL CAPITAL OUTLAY	34,003,000	32,203,000	1,800,000
TOTAL EXPENDITURES	51,299,000	47,802,000	3,497,000
EXCESS OF REVENUES OVER (UNDER)	(5,512,000)	(3,310,000)	2,202,000
FUND BALANCE JULY 1, 1994	16,999,000	16,999,000	
FUND BALANCE JUNE 30, 1995	$ 11,487,000	$ 13,689,000	$ 2,202,000

FLOOD CONTROL
DISTRICT
OF
MARICOPA
COUNTY



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
MAJOR PROJECTS AND STRUCTURES

1. Centennial Levee (1985)
2. Harquahala Dam and Floodway (1982)
3. Saddleback Dam and Diversion (1981)
4. Sunset and Sunnycove Dams (1976)
5. Buckeye Dams 1, 2, 3 (1975)
6. White Tanks Dam 4 (1954)
7. White Tanks Dam 3 (1954)
8. McMicken Dam (1956)(restored 1984)
9. Salt Gila Clearing (1985)
10. Holly Acres Levee & Bank Stabilization
11. Agua Fria Channel Projects (1988)
12. New River Channelization (1993)
13. Skunk Creek Channelization (1991)
14. New River Dam (1985)
15. Adobe Dam (1984)
16. Skunk Creek Channels and Levee (1983)
17. Cave Buttes Dam (1980)
18. East Fork Cave Creek
19. Arizona Canal Diversion Channel (1994)
20. Cave Creek Channelization (1991)
21. Dreamy Draw Dam (1973)
22. Old Cross Cut Canal (1975) (1991)
23. Indian Bend Wash (1985)
24. Guadalupe Dam (1975)
25. Buckhorn-Mesa Projects
    - Spook Hill Dam (1979)
    - Signal Butte Floodway (1984)
    - Signal Butte Dam (1987)
    - Pass Mountain Diversion (1987)
    - Bull Dog Floodway (1988)
    - Apache Junction Dam (1988)
26. Powerline Dam (1967)
27. Vineyard Dam (1968)
28. Rittenhouse Dam (1969)
29. Powerline Floodway (1968)
30. East Maricopa Floodway (1989)
31. Salt River Channel
32. Dysart Drain
33. Colter Channel (1994)
34. East Maricopa County ADMP
    - Gilbert Crossroads Park Basin (1992)
    - Guadalupe Channel (1993)
    - Sossaman Road Channel (1995)
    - University Dr. Drainage Improvements (1994)
35. Glendale/Peoria ADMP
    - Olive Avenue Storm Drain (1992)

Delineated 100-year Floodplain

Flood Control Structures

Supervisory District Boundaries

ANNUAL REPORT

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

FLOOD CONTROL DISTRICT of MARICOPA COUNTY

1995 - 1996

606.119

Table of Contents

Letter from the Interim Chief Engineer and General Manager 1

About the District 2

Board of Directors 2

Flood Control Advisory Board 2

Mission, Vision, and Values 3

Flood Control District Organizational Chart 3

A Focus on the Future 4

Programs 6

Planning and Capital Improvement Programs 7

Casandro Wash Dam and Outfall 8

Dysart Drain Improvements Project 9

10th Street Wash Improvements Project.... 10

Property Management Program 11

Floodplain Management Program..... 12

Drainage Administration Program..... 13

Flood Detection and Data Collection Program..... 14

Environmental Program.. 15

Maintenance Program 16

Commitment to Customers 17

Leadership..... 18

Achievements 21

Financial Statements..... 22

Staff Photos..... 24

FINANCIAL HIGHLIGHTS

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Budgeted and Actual for the Fiscal Year Ended June 30, 1996

Preliminary and unaudited.

	DOLLARS	PERCENT
REVENUES		
Flood Control Tax	$36,118,000	79
Local Participation	4,965,000	11
Rental Income	192,000	1
Interest Income	1,114,000	2
Other Land Revenue	2,815,000	6
Miscellaneous	408,000	1
Total Revenue	45,612,000	100
EXPENDITURES		
Operating	14,850,000	35
Flood Control Capital Improvements	27,577,000	64
Vehicles and Equipment	410,000	1
Total Expenditures	42,837,000	100
EXCESS (DEFICIENCY) OF REVENUES OVER EXPENDITURES	2,775,000	
FUND BALANCE JULY 1, 1995	14,081,000	
FUND BALANCE JUNE 30, 1996	$16,856,000	

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

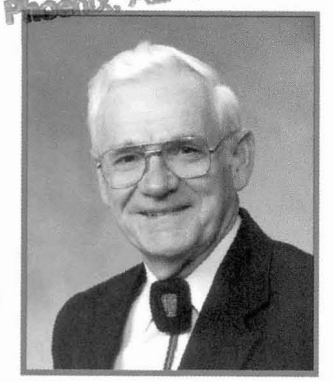
Published by:

Flood Control District of Maricopa County
2801 W. Durango St.
Phoenix, Arizona 85009

Tel. 602-506-1501

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

Letter from Interim Chief Engineer
and General Manager...



Facing the Challenges

by Stanley L. Smith, Jr., P.E.

In last year's annual report, Dan Sagramoso, the District's Chief Engineer and General Manager, cited FY1995/1996 as the year of *Continuing Challenges*, and indeed it has been. District staff has met the challenge and succeeded, as has the County.

During this year we lost the services of several people who have made significant contributions to the success of the District. Dan Sagramoso retired in September 1995. David Meinhart, a planner who developed the CIP Prioritization Process, left in November 1995. Catesby Moore who developed and nurtured our environmental program left us in February 1996 for a similar position with the City of Tucson. Leonard Coleman, an Equipment Operator retired in April 1996 after 30 years of County service, 17 years with FCD. Leanna Cumberland, our Contracts Administrator retired, and Jim Phipps, our personable Public Involvement Coordinator and master of many ceremonies, left us in June 1996 for the private sector. There were others who left, and we miss them all and thank them for the years of dedicated service and contribution on behalf of the citizens of Maricopa County. Yet, in the face of personnel losses and other challenges, the District staff came through and accomplished a lot while continuing to focus on the needs of our customers.

If there was a theme for this year, it was **Focus on the Needs of the Customer**. We have learned that the public involvement process works, but it is costly. Costly in terms of both time and dollars. We are committed to using the public involvement process to the maximum, while pressing to keep projects on schedule and within budget. The following are examples of how we did things right, and the lessons we learned from our mistakes.

- Beardsley Road Regional Drainage system was a guide for improving our process of informing clients of what we are doing and why we are doing it. In the lessons learned category, our good intention of providing flood protection years before the freeway construction was lost because we did not effectively communicate the trade-off of early flood protection for landscaping and aesthetic considerations.

- 10th Street Wash Basins set the standard for working with a community/neighborhood committee to clearly identify the needs and concerns of all the parties resulting in facilities that will provide flood protection and become an amenity to the neighborhood.

- Dysart Drain improvements gave us the opportunity to work with and receive recognition from the Air Force for the quality and timeliness of our project management efforts, and for the cost control effectiveness of our construction management.

- Casandro Wash Dam and Outfall provided us with another opportunity to focus on the needs of our customer, and has earned good marks for public involvement, and also recognition from the construction contractor for resolving issues quickly and effectively avoiding delays and cost increases.

The new fiscal year will present other challenges, and I am confident that the District's staff will deal with them in the professional manner that is our standard. We have demonstrated our ability to provide a quality product. The next challenge is continuing quality improvement to achieve our quality vision to "Be the Best."

About the District

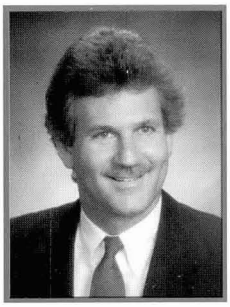
In March 1959, legislation was passed which empowered counties to set up special districts for the purpose of providing flood protection for their residents. As a result of this legislation, the Flood Control District of Maricopa County was formed on August 3, 1959.

Flood control districts are political subdivisions of the State and have all the powers, privileges, and immunities generally given to incorporated cities and towns. The elected Board of Supervisors of Maricopa County serve as the District's Board of Directors, who are advised by a seven member Flood Control Advisory Board.

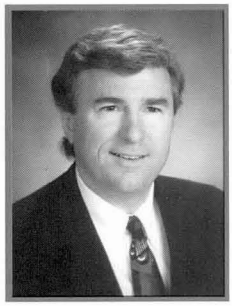
District activities are funded by a flood control tax levy assessed on all real property within Maricopa County and a variety of cost-sharing arrangements with federal, state, county and local governments. The tax levy rate for Fiscal Year 1995/96 was $.3332 per $100 of assessed value.

The District is organized into six functional areas comprised of the following divisions: Administration, Construction & Maintenance, Engineering, Regulatory, Land Management and Planning & Project Management.

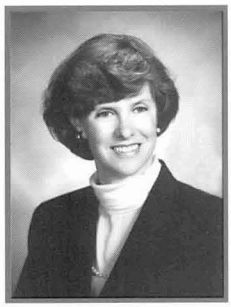
Board of Directors



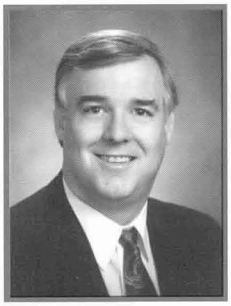
Ed King
District 4
Chairman



Don Stapley
District 2



Betsey Bayless
District 3



Tom Rawles
District 1

Mary Rose Wilcox
District 5

The District is governed by a Board of Directors which also serves as the elected Board of Supervisors for Maricopa County. The Board of Directors exercises all the powers and duties in the acquisition and operation of District properties, contracting, and in carrying out regulatory functions as ordinarily exercised by governing bodies.

Flood Control Advisory Board

Ron Wheat
Chairman
District 4

Gilbert "Shag" Rogers
District 1

John E. Miller, Jr.
District 2

Samuel K. Wu
District 3

Melvin Martin
District 5

Paul Cherrington
Salt River Project

James Matteson
City of Phoenix

The Flood Control Advisory Board (FCAB) works closely with staff and the Board of Directors to accomplish the District's mission of protecting county residents and their property from flooding. The FCAB reviews proposed flood control projects and studies and makes recommendations as to their scope, necessity and priority. These recommendations are forwarded to the Board of Directors for action. Board members also recommend an annual budget to the Board of Directors and serve the District as members of the Floodplain Review Board and the Drainage Review Board.

The FCAB consists of seven members, five of whom are appointed by the Board of Supervisors to five year terms. The City of Phoenix and the Salt River Project appoint representatives who are ex-officio members of the FCAB.

Mission

To reduce flood risks for the people of Maricopa County by providing comprehensive flood and stormwater management services.

These services are provided through regulatory activities, master planning, regional coordination, technical assistance, and implementation and maintenance of non-structural and structural projects. Our clients include citizens, municipalities, and other government agencies.

Examples of Structural and Non-Structural Projects are:

Structural	Non-Structural
Dams	Floodplain Management
Channels	Drainage Management
Storm Drains	Water Quality Management
Bank/Bed Stabilization	Vegetative Management
Basins	Acquisition of Flood-prone Property
Levees	Development Review
	Flood Detection & Data Collection

Vision

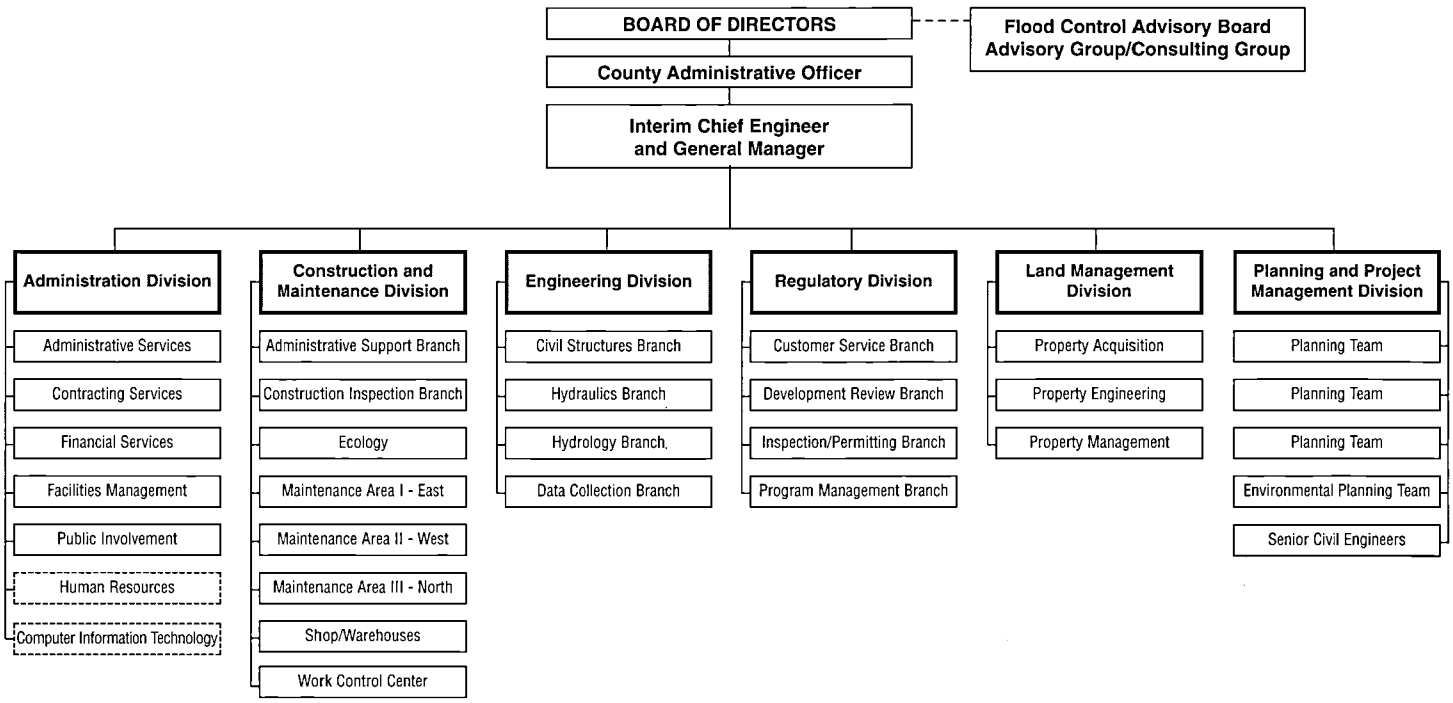
We will be known and supported by our customers and employees as the agency of choice for accomplishing our mission.

Values

The Flood Control District values are: fiscal stability, efficient management, appropriate organization size, technical proficiency, quality orientation, high ethics, visionary thinking, environmental responsibility, and aesthetic awareness.

FLOOD CONTROL DISTRICT ORGANIZATIONAL CHART

(241 total authorized positions as of June 30, 1996)



A Focus on the Future

Maryvale Flood Mitigation Project

Flooding along the north bank of the Grand Canal, between 43rd and 64th Avenues, results in frequent flooding of approximately 150 houses. Approximately 350 homes are within the 100-year flood plain in this area.

In 1994, the District initiated a study to evaluate alternatives to eliminate or reduce the flooding within two neighborhoods in Maryvale.

The project includes construction of two detention basins discharging into existing storm drains and modifications to existing streets and storm drains to divert flows into the basins. The proposed basins will be designed to store runoff from a 10-year storm. A basin located at 51st Avenue and the Grand Canal will be constructed as a multi-use facility. It will incorporate flood water storage into a Cactus League stadium development by depressing a parking lot and practice field(s). The 63rd Avenue basin will require removal of 35 existing houses, relocation of existing residents, construction of a detention basin, and modification of existing streets and storm drains. Each basin's estimated cost is approximately $4.5 million.

Southeast Valley Regional Drainage System

The Southeast Valley Regional Drainage System (SEVRDS) includes a 100-year drainage system to be built within the Santan Freeway corridor, Price Road to 56th Street and a connecting channel from the basin near 56th Street to the Gila Drain Floodway West of I-10. When combined with contributing flows from the Price Freeway drainage system (south of Ray Road), the SEVRDS will intercept and convey municipal and freeway drainage from 58 square miles in Chandler, Tempe, Gilbert and Maricopa County. The project will also protect areas of the Gila River Indian Community located south of Pecos Road and west of Price Road off-community flows.

Open Space Plan

The Flood Control District cost-shared with the Maricopa County Department of Transportation and the Maricopa Association of Government (MAG) for the Development of an Open Space Plan for the County. This Plan, also termed the Desert Spaces Plan, is a regional open space plan designed to guide jurisdictions within Maricopa County to establish and protect suitable open space areas. The Plan is intended to be utilized by Federal, State, County, and local jurisdictions as a framework for decision-making and coordination. The overall goal of the Open Space Plan is to identify a regional system of integrated open space along with a mechanism to establish and manage the system.

The concept behind the Plan is to conserve and enhance environmentally sensitive areas such as floodplains and mountains throughout the County. The Plan identifies rivers and washes as an important component in providing a regional trail system. Many of the goals and policies within the Plan support the Drainage Regulations presently enforced by the District. One of the Plan's major points of focus is the provision of recreational opportunities adjacent to floodplains or flood control structures. Currently, some jurisdictions are actively pursuing a multiple-use concept in the development of proposed flood control facilities.

The District on the Internet

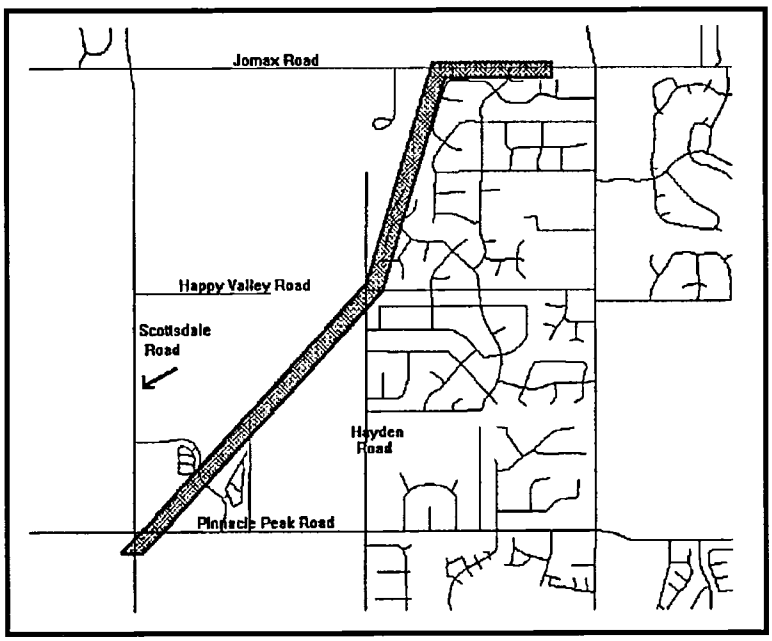
The District has been working on making information including flood ALERT data and weather conditions available to the public on the Internet. The information on the Internet includes:

- Information about the Chief Engineer of the District;
- Announcement of the Employee of the Quarter;
- Information about the Board of Directors;
- Names of the Flood Control Advisory Board;
- A copy of the annual report;
- Information on District projects;
- Downloadable documents and software applications;
- Public meeting schedules;
- Access to the ALERT system reports.

The District has received e-mail from people visiting the District's website. The response has been favorable and recommendations and concerns are being accommodated.

Scottsdale Desert Greenbelt Project

Due to tremendous growth, the City of Scottsdale has been looking into methods to effectively manage stormwaters, while providing passive recreational opportunities for the community. The Desert Greenbelt System will utilize natural washes and preserve the desert landscape while containing the 100-year flooding hazard, north of the CAP canal.



SCOTTSDALE DESERT GREENBELT RAWHIDE WASH IMPROVEMENTS

Planning estimates have indicated that the 52 square mile drainage area, bounded by the Central Arizona Project (CAP) to the south, McDowell Mountains to the east, Desert Mountain to the north, and Cave Creek Road to the west, will reach build out in 20 to 40 years. Due to these estimates, the City of Scottsdale, the Flood Control District of Maricopa County, and the State of Arizona are developing a concept that combines effective flood control and open space amenities within the landscape, while balancing homeowner concerns, development objectives, public landholder requirements and City goals.

The District is cost-sharing on right-of-way, design costs and construction costs for improvements to Reata Pass/Beardsley Wash, Rawhide Wash, and Pima Road Channel. The City of Scottsdale will operate and maintain the completed facilities.

FCD Quality Initiative

As part of the District's continuing effort to improve services to our customers, District top management has developed a quality initiative vision to *Be the Best*, and an action plan detailing how to impart this vision to all employees. Management established a schedule of events to be implemented during the 1996-97 fiscal year to support the change process. The Quality Initiative was a result of a planning session facilitated by The Richard-Rogers Group, Inc. with the purpose of preparing a strategic plan to implement the "quality initiative" at the Flood Control District. All managers and supervisors will be trained in a method to achieve measurable, work-related quality results. This program builds on the existing Leadership Academy and TQM programs. Employees will participate in a one day session to celebrate quality initiative results. The "Results Forum" will allow teams to report the implementation of improvements including practices and user results. The Forum will ensure accountability, celebrate team efforts, evaluate the implementation strategy, and focus on future direction and continuous improvement.

Flood Control District Goals for FY 1996/97

- Strategic Plan
- Comprehensive Flood Control Program Report
- Management and Leadership Training
- Customer Communications
- Safety
- Employee Morale
- Alternative Work Hours
- Utilization of Technology
- Privatization
- Long Term Strategy

PROGRAMS

Eight important programs work together to accomplish the District's mission:

Planning Program:

- Identifies regional drainage and flooding problems and develops alternative solutions to protect life and property.
- This is accomplished through Area Drainage Master Studies, the Comprehensive Plan, Watercourse Master Plans, and a formal project prioritization process that ranks candidate projects.

Capital Improvement Program:

- Implements flood control and stormwater management projects identified through the planning process and recommended for inclusion in the Five-Year Capital Improvement Program (CIP) approved by the Board of Directors.
- The CIP includes acquisition of rights-of-way, relocation of utilities, design and construction of drainage and flood control facilities, including aesthetic features.
- Coordinates public involvement and insures compliance with environmental laws and regulations integral to all CIP projects.

Property Management Program:

- Manages all aspects of District real property interests.
- Prepares leases, joint use agreements, licenses for access, and selling excess property (after project construction).

Floodplain Management Program:

- Administers the Floodplain Regulation for the unincorporated areas of Maricopa County, plus 13 municipalities.
- Delineates areas subject to the 100-year flood, evaluates applications and issues permits for use of the floodplain, and identifies violators.
- Provides floodplain information to real estate and insurance agents and the general public.
- Maintains good standing in the National Flood Insurance Program to insure eligibility for Federal Disaster Relief so that citizens may purchase federally-sponsored flood insurance.
- Participates in the Community Rating System that provides flood insurance discounts to citizens.

Drainage Administration Program:

- Administers the County Drainage Regulation to reduce existing and potential flooding caused by local stormwater.
- Coordinates with County Planning, Transportation, Public Health and Building Safety to insure that new development will not increase runoff, divert flows, or backwater onto another property.

Environmental Program:

- Provides guidance and coordination in meeting federal storm water quality regulations.
- Performs research and provides educational outreach and technical assistance to local municipalities, County agencies and industries impacted by these regulations.

Flood Detection & Data Collection Program:

- Designs, implements and maintains a rainfall and stream gage system to monitor flood control structures and to provide data for use in floodplain studies, computer modeling of watersheds and design of flood control structures.
- Provides information used by the National Weather Service in issuing flood watches and warnings and by the County Emergency Management Department for flood event planning and evacuations.
- Operates and maintains nine stormwater quality sampling sites, along with the inspection and sampling of illicit connections and hazardous spills impacting our structures and the water in them.

Maintenance Program:

- Maintains over 70 flood control structures and facilities, including 23 dams and numerous channels, basins, levees, culverts, storm drains, and washes.
- Provides erosion and vegetation control and maintenance of roads, landscaping, fencing, gates and signage.
- Monitors structures and provides emergency services during flood events.

Flood Control District of Maricopa County Program Summary-Expenditures

Fiscal Year Ended June 30, 1996
Preliminary and Unaudited

	Personnel Services		Supplies and Services		Travel		Vehicles and Equipment		Total	
Program	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual	Budget	Actual
Maintenance	$3,698,000	$3,489,000	$ 4,338,000	$ 2,877,000	$ 17,000	$ 27,000	$303,000	$168,000	$ 8,356,000	$ 6,561,000
Environmental	467,000	489,000	709,000	498,000	6,000	10,000	25,000	18,000	1,207,000	1,015,000
Floodplain Management	624,000	720,000	1,276,000	1,240,000	10,000	9,000	36,000	23,000	1,946,000	1,992,000
Drainage Administration	950,000	910,000	366,000	344,000	12,000	9,000	53,000	55,000	1,381,000	1,318,000
Property Management	319,000	334,000	212,000	150,000	4,000	4,000	16,000	12,000	551,000	500,000
Flood Detection and Data Collection	598,000	584,000	885,000	587,000	8,000	14,000	32,000	29,000	1,523,000	1,214,000
Planning	759,000	735,000	1,253,000	632,000	10,000	11,000	39,000	25,000	2,061,000	1,403,000
Capital Improvement	1,784,000	1,374,000	27,625,000	27,355,000	24,000	25,000	106,000	80,000	29,539,000	28,834,000
Total Program Expenditures	$9,199,000	$8,635,000	$36,664,000	$33,683,000	$ 91,000	$109,000	$610,000	$410,000	$46,564,000	$42,837,000

NOTE: Administrative expenditures are included in program expenditures.

Planning and Capital Improvement Programs

The Planning Program identifies regional drainage and flooding problems and develops alternative solutions to identify locations and facilities that are presently at risk from flooding, or could be in the future to protect life and property. Public Involvement and environmental assessment are integral parts of the planning process.

Once the flooding problems have been quantified, alternative solutions are developed to determine a cost effective and locally supported project. Recommended projects are then prioritized for inclusion in the District's Capital Improvement Program (CIP).

The Five Year CIP is prepared by District staff and reviewed and approved by the Board of Directors annually. The CIP consists of two elements. The first year is the budget which identifies funding for specific capital improvement projects and the last four years indicate staff proposed funding required for continuation of on-going projects or for the implementation of new projects.

Cactus Road Storm Drain

CIP projects are identified by the District's customers (client cities and towns) and District staff based upon their knowledge of flooding problems and from the results of Area Drainage Master Studies (ADMSs). All potential projects are processed and rated based on criteria included in the District's *Procedure for Identifying and Prioritizing Potential 5-Year CIP Projects*. Once the prioritization rating has been determined, a management decision is made to initiate the planning process which moves the project toward inclusion in the CIP. Projects in areas with significant threat to loss of life may circumvent the process as an exception to policy.

Activities included in the Planning Program include ADMSs, Watercourse Master Plans, the Comprehensive Flood Control Program Report, pre-design studies, and the coordination of interagency cooperative projects and agreements. The combined Planning Program and CIP account for approximately 75% of the District's annual budget.

Approximately 30% of the CIP budget is utilized for property acquisition. The District acquired 81 properties for various projects throughout the County and 7 businesses and families were relocated this fiscal year. Of the property rights obtained, 430.52 acres were purchased in fee, 60.64 acres were in permanent easements, and 102.89 acres were temporary construction easements. The total cost for acquiring the necessary land and easements was $6,084,539. The acquisition program also generated over $50,000 in appraisal. Cost savings totaling over $1.5 million were realized as a result of settling condemnation actions on terms favorable to the District. The District has been able to avoid expensive litigation exposure this year by extensive research prior to making offers of purchase, to ensure that the offer is reasonable and equates to just compensation without paying unjust enrichment.

Major Projects Completed During FY 95/96	Major Projects Under Construction (as of June 30, 1996)
Salt River Channel (McClintock Dr. to Pima Freeway)	Casandro Wash Dam and Outfall
New River Channel (Grand Ave. to Greenway Rd.)	Old Crosscut Canal
Outlet for Casandro Wash Dam	Price Drain
Colter Channel	Upper New River Mitigation
Beardsley Road Regional Drainage System	Cactus Road Storm Drain
Skunk Creek Improvements	East Fork Cave Creek ADMP
10th Street Wash Basin #1	10th Street Wash Basin #2
Dysart Drain Basin and Bridges	Dysart Drain

August 1959

Flood Control District of Maricopa County established

1967

Powerline Dam completed

1968

Powerline Floodway and Vineyard Dam completed

1968

Congress passed the National Flood Insurance Act

1969

Rittenhouse Dam completed

1973

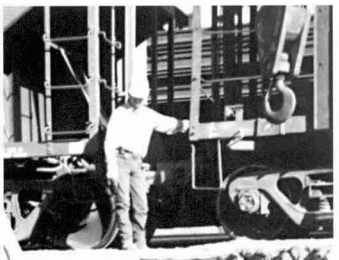
Dreamy Draw Dam completed

Casandro Wash Dam and Outfall

The District entered into a landmark Intergovernmental Agreement (IGA) with the Town of Wickenburg in May 1994 for the purpose of design, construction, and operation and maintenance of the Casandro Wash Dam. The Town of Wickenburg was responsible for granting easements for use of town owned right-of-way and utility easements at no cost to the District. The District was responsible for the design, utility relocation and construction and management of the project as well as obtaining all permits required for the construction.

This is the first dam that the District has been involved in all phases including construction. The outlet was designed in-house by the Civil Branch of the Engineering Division. The construction of the dam was overseen by the Construction and Maintenance Division of the District. Having District personnel on-site at all times allowed for problems to be clarified with minimal downtime and was instrumental in meeting the schedule and budget for this project.

Project Features	
Flood Storage Capacity	143 Acre Feet
Dam Height	32.50 Feet
Crest Length	350 Feet
Peak Inflow	1769 CFS
Peak 100 Year Discharge	150 CFS
Spillway Length	80 Feet
Contractor	Roy E. Ladd, Inc.
Designer	CH2M Hill



This project presented some challenges in obtaining the necessary land rights through a residential area, under a railroad, and through a horse boarding facility. A number of residents and businesses had to be relocated out of the basin site and the horses temporarily moved for construction. The Town of Wickenburg has expressed its enthusiasm for the project and formal dedication is expected in August 1996.

The dam has been constructed to protect residents in the Town of Wickenburg who live adjacent to Casandro Wash from a 100-year flood event. There are about 100 residents along Casandro Wash who will be removed from the floodplain upon completion of the project. The District is responsible for the operation and maintenance of the dam. The dam will be dedicated on August 29, 1996.

Dysart Drain Improvements Project

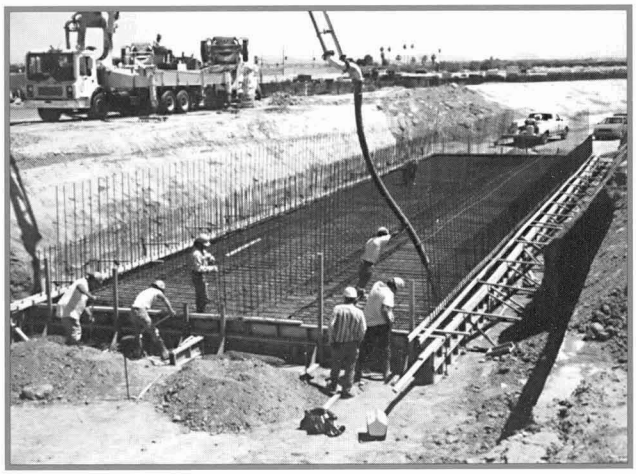
The District entered into an Intergovernmental Agreement (IGA) with the U.S. Air Force in April 1994 for the purpose of design, construction, and operation and maintenance of the Dysart Drain Improvements Project. The Luke Air Force Base (LAFB) has experienced significant flooding in the past, and most recently in 1992 and 1993. At the request of LAFB, the District was invited to evaluate the flooding problems and recommend solutions to the problems. The IGA was then developed for the purpose of implementing a recommended solution. This included construction of a large detention basin, the reconstruction of the entire length of the existing Dysart Drain channel from Reems Road on the west to the Agua Fria River on the east, and the reconstruction of three existing bridges across the channel. The project will intercept flood flows from north of the base and convey them safely to the Agua Fria River (AFR).

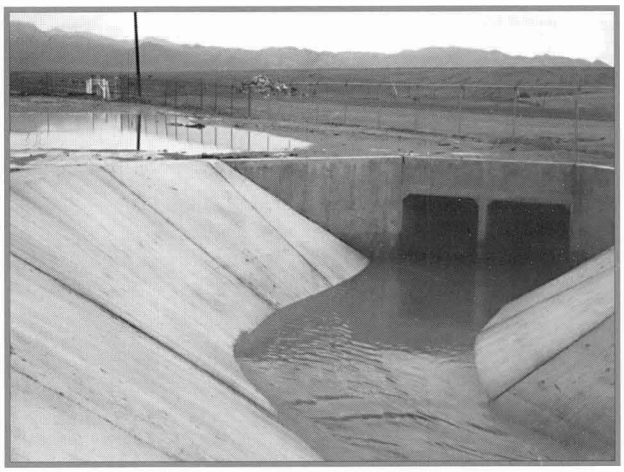
The IGA designated the District to be the lead agency for the design and the construction of all improvements. The LAFB would be responsible for all operation and maintenance after completion of the project with the exception of one small channel component at the northeast corner of the basin. The IGA also required that the District deed all project rights-of-way to the Air Force upon completion of the project.

To date the basin has been constructed and the three bridges have been reconstructed. The channel improvements are underway at this time with completion expected by the end of 1996. The project will provide 100-year protection to the LAFB and areas south and east of LAFB. The project has encountered few problems and has necessitated only minor change orders to date.

Project particulars include -

Detention basin capacity
550 acre-feet
Detention Basin outflow
550 cfs
Total basin and spoil area
156 acres
Depth of basin
10 feet (avg.)
Channel length
20,750 feet (+/-)
Channel lining
Reinforced concrete
Peak channel discharge at the
AFR 3,900 cfs





Contractors –

Basin
Ames Construction

Bridges
Sema Construction

Channel
Pulice Construction

Designer
NBS Lowry

May 1973

State HB-2010 approved empowering cities, towns and counties to adopt floodplain regulations

December 1973

Congress passed the Flood Disaster Protection Act

1975

Buckeye Dam 1, 2 and 3, Old Cross Cut Canal and Guadalupe Dam completed

1976

Sunset and Sunny Cove Dams completed in Wickenburg area

1979

Spook Hill Dam completed

Tenth Street Wash Improvements Project

The Tenth Street Wash Improvements Project was developed to resolve flooding problems along the wash from just north of Cheryl Drive to its outlet into the ACDC channel. The project goal is to remove or significantly reduce the existing FEMA 100-year floodplain. This project involved extensive participation by the local community in the Sunnyslope area of Phoenix. In particular, a Citizen's Advisory Committee (CAC), consisting of citizens from the various neighborhood and city planning groups, was formed to work directly with the District and the City to develop the final project concepts. The project evolved in two phases, development of construction plans for two detention basins, and a study to develop potential concepts for improvements to the wash itself.

10th Street Wash Improvements Project

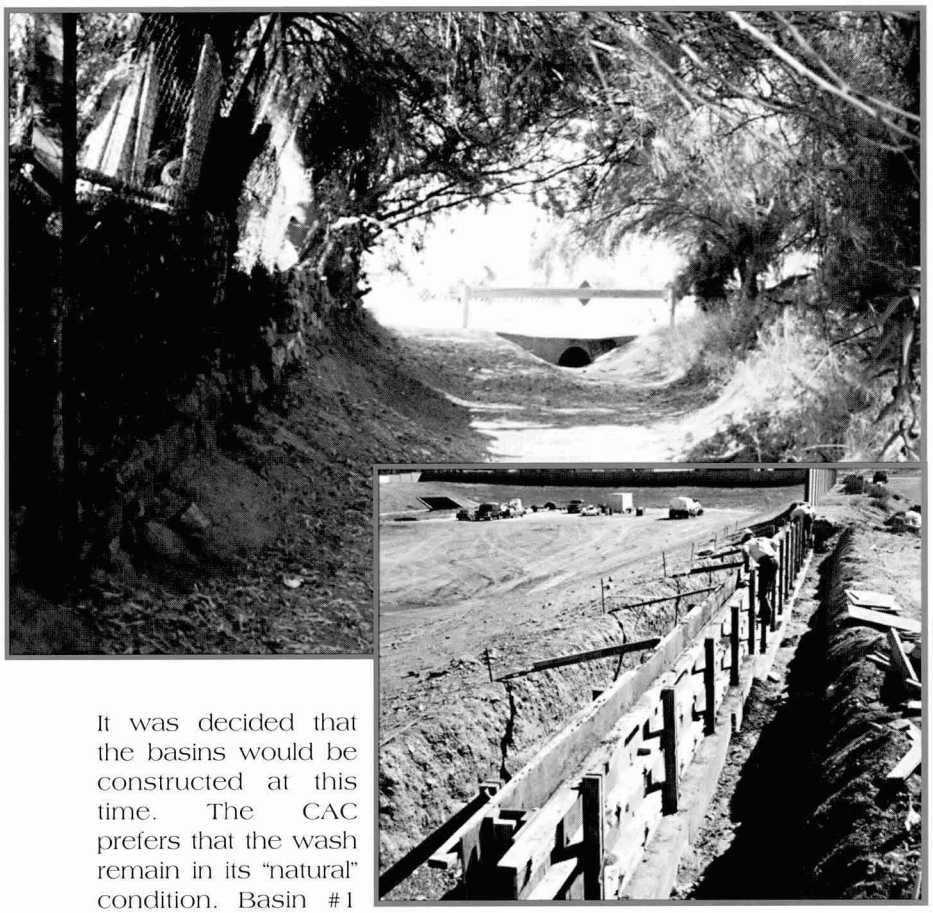
Principal Project Features:

Basin #1
15 acre-feet

Basin #2
75 acre-feet

60″ storm drain pipe

Double 6′ x 4′ box culvert



It was decided that the basins would be constructed at this time. The CAC prefers that the wash remain in its "natural" condition. Basin #1 has been constructed north of Cheryl Drive with inlets from the east and west forks of the wash into the basin. Basin #2 has been designed to accommodate future use as a city park, and is now being constructed between Alice and Townley Avenues. Construction of the basin is expected to be completed in late 1996.

In cooperation with the City Parks Department, Basin #2 will be landscaped as part of the District's project. The Parks Department will then master plan recreational uses for the basin and incorporate the basin into the city park system.

Property Management Program

The Property Management Program manages all aspects of District real property interests, including leases, joint use agreements, license for access, and selling excess property when market conditions are favorable. This program is managed in the Land Management Division with contributions from all Divisions.

The District owns or controls over 50,000 acres of real estate for its projects. The Property Management Program is responsible for leasing, selling, and managing this property in the best interest of the District. Management typically entails issuing easements and pursuing trespass violations on District property. It also includes preparation and completion of Intergovernmental Agreements (IGA) and other land right documents to enable local jurisdictions and private parties to use District property.

The Property Management Branch serves a wide variety of both internal and external customers by making land available for parks, recreation, farming, utility easements, commercial and residential development, golf courses and other multiple land uses. Property Management staff work with municipalities, utility companies, non-profit organizations, and private corporations to promote the concept of multiple-use by various right-of-way documents.

Property Management Branch Activity Summary

Sale at public auction	$2,800,000
Leases	$ 127,000
Easements	$ 24,000
IGAs	$ 31,000

The Property Engineering Branch has heavily supported property management operations during the past fiscal year as follows:

1) Mapping of District projects has continued and is now 80% complete.

2) Property Engineering has conducted 4,031 measurable tasks while providing services or support for District divisions, Attorneys, and Public Inquiry. These tasks include but are not limited to geometric calculation of property, creating legal descriptions and maps of right-of-way acquisition, reviewing title reports, and creating exhibits and display maps for District projects such as Skunk Creek Channel, Casandro Wash Dam, Camelback Ranch Levee, RID Canal Overchute, and New River Mitigation.

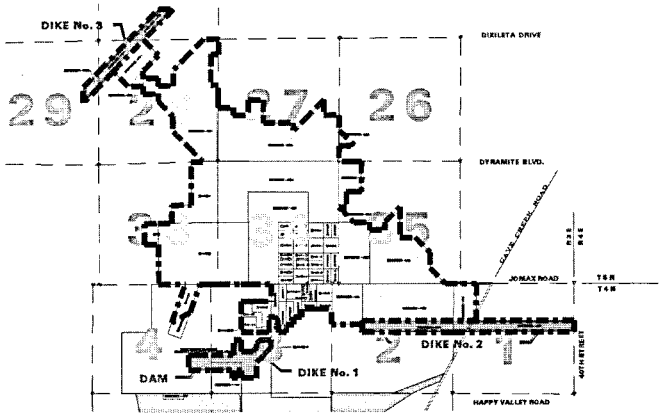
3) Provided management of on-call survey contracts totaling $104,525. Contracts include property surveys on parcels of excess lands to be sold at public auction or acquired for District projects, and an interagency survey service for the Solid Waste Department of the Northwest Regional Landfill.

4) Spearheaded push to obtain computer link with County Recorder resulting in a savings of both time and money. Recent documents can now be searched and obtained immediately at no cost rather than paying for service from title companies and waiting three days for documents.

5) Continued enhancement of information system programming. Property Engineering programs now have capability to place easements granted by District into database which can be viewed graphically in correct relationship to District property.

6) Provided special display maps for project proposals, legal functions, studies, and property development schemes. Projects such as a 2,300 acre recreational IGA with the City of Phoenix, Camelback Ranch development, and Adobe Dam have required special display maps to clarify right-of-way, create recreation areas, and determine locations of excess lands.

An IGA with the City of Phoenix Parks Department for the recreational development of the Cave Buttes Dam Reservoir was completed in June 1996. This IGA was finalized during this fiscal year, adding over 2,300 acres of land to the City Parks system at no initial cost to Phoenix.



Cave Buttes Recreation Development

The Property Management staff has been actively involved in the disposition of excess lands by public auction. A significant amount of revenue, nearly $3 million, was generated as a result of an aggressive and opportunistic property management program. $2.2 million was generated by a public auction sale of property located near 75th Avenue and Bell Road. Several luxury home sites and a Circle K facility were also sold at public auction.

The Pendergast School District, which is located on the west side of Phoenix, was in need of an elementary school site near 107th Avenue and Campbell. The District was able to sell about 20 acres to the school district to help alleviate an overcrowding situation at an adjacent school site. The public auction generated $375,000 for use in future flood control projects.

Floodplain Management Program

The components of Maricopa County's Floodplain Management Program consist of floodplain delineation and mapping of the 100-year floodplains, the Community Rating System (CRS), the National Flood Insurance Program (NFIP), drainage standards and development review.

In the County, the District regulates floodplains in the unincorporated areas and in the communities of Buckeye, Carefree, Cave Creek, Chandler, El Mirage, Fountain Hills, Gila Bend, Guadalupe, Litchfield Park, Queen Creek, Surprise, Tolleson and Youngtown.

National Flood Insurance Program

The NFIP is a federal program administered by the Federal Emergency Management Agency (FEMA), which establishes rules and guidelines for regulating land uses within delineated 100-year floodplains. The federal guidelines are incorporated into local regulations, which were adopted by the County Board of Supervisors in 1974. County citizens are eligible for flood insurance and flood disaster assistance provided that these guidelines are adhered to.

Under the NFIP and CRS programs, more emphasis is being given to two areas; 1) identifying and protecting natural and beneficial functions of floodplains, and 2) pre-flood or pre-damage mitigation projects.

Multiple Objective Management (MOM) of floodplains encourages placing a premium on floodplain uses with an emphasis on protecting or improving an environmentally sensitive area's natural and beneficial uses. The study of vegetative and wildlife habitat to identify such areas and place them in categories for various levels of needed protection is on the horizon for state and local floodplain jurisdictions.

The federal government is moving toward a pro-active stance in mitigation of flood damage and protection. Rather than waiting for a flood to happen before assisting with projects or programs that would prevent a repeat occurrence, the NFIP is taking steps to provide assistance to communities who have specific proposals to remove or reduce a significant flood threat before a disaster occurs. Future District activities will be looking to take advantage of these new initiatives.

Floodplain Delineation

Floodplain delineations of the 100-year floodplain are performed on areas where floodplains have not been defined as well as on boundaries of existing floodplains that have been reduced or eliminated by flood control projects. Among the flood delineation studies performed by the District, the program delineated four miles of floodplains in the vicinity of Luke Air Force Base and six miles in the Rio Verde area, last year.

Community Rating System

The CRS is a federal program which rewards a community's efforts to reduce flood losses by awarding flood insurance premium credits to its residents. The ratings are based on communities' effectiveness in reducing flood losses.

The County maintained the second highest rating in the United States, earning residents of unincorporated areas a 20 percent discount on their flood insurance premiums. Residents of Phoenix and other incorporated communities also received lower insurance rates thanks to District activities performed on a regional or inter-jurisdictional basis.

Program Activity Highlights – Fiscal Year 1995/1996

2	New floodplain delineations approved by FEMA
85	Floodplain use permits reviewed
90	Clearances issued
1	Variance approved
6	Violations investigated
557	Walk-in customers assisted
2467	Phone requests for general information handled
5216	Flood hazard information provided
140	Flood hazard information notices recorded

Floodplain Delineation Studies Started in FY 95/96

- Tolleson Ponding Study
- Eastern Canal
- Cave Creek above Carefree Highway
- Cave Creek below Carefree Highway to Cave Buttes Dam
- Granite Reef Wash
- Skunk Creek North
- Upper East Maricopa Floodway
- Agua Fria Restudy

Flood Delineation Studies Completed in FY 95/96

- Fountain Hills North
- Fountain Hills South
- White Tanks Wash
- Christown Mall
- Rio Verde North
- Rio Verde South

Drainage Administration Program

The District administers the County Drainage Regulations, to reduce existing and potential flooding caused by local stormwater.

The District coordinates with the County Planning Department, the Maricopa County Department of Transportation and the Maricopa County Public Health and Building Safety Departments to ensure that new developments will not increase runoff, divert flows to another property, or cause backwater to pond onto property. Additionally, citizen reports of flooding and possible flood hazards are investigated. This program is managed in the Regulatory Division, with contributions from Engineering, Administration, and Planning and Project Management.

This Program has a substantial community impact. It provides a safer environment for individuals and their property while reducing the potential for litigation when developing. It assists planning efforts by providing well designed development drainage in areas that may be annexed in the future while ensuring compatibility with drainage plans and features in incorporated areas.

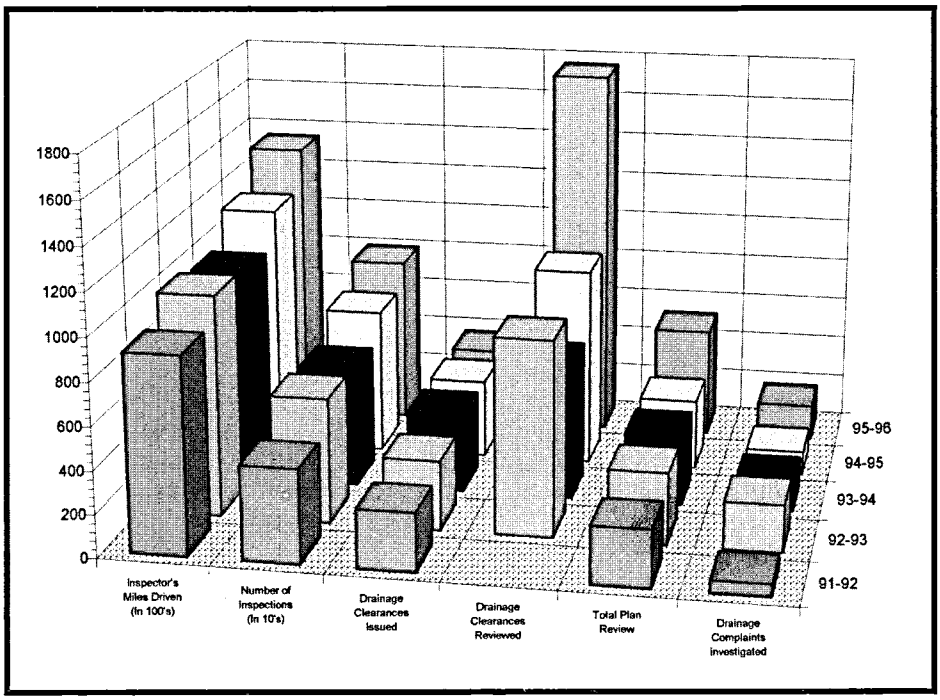
The Drainage Administration Program results in benefits to the District by reducing costs for future flood control facilities, flood damage and maintenance costs to District, and flood and drainage complaint response costs, while enabling the District to coordinate development drainage with area drainage master plans on a regional basis.

Development Review

The District reviews development plans, issues permits, corrects violations, and educates property owners in appropriate floodplain uses as well as regulates the use of floodplains.

The increase in the housing industry has resulted in an increase in the number of drainage plans submitted to the District for review.

Program Activity Highlights for Fiscal Years 91/92 – 95/96



1980

Cave Buttes Dam completed

1981

Saddleback Dam and Diversion Channel completed

1982

Harquahala Dam and Floodway Channel completed

1983

Skunk Creek Channels and Levee completed

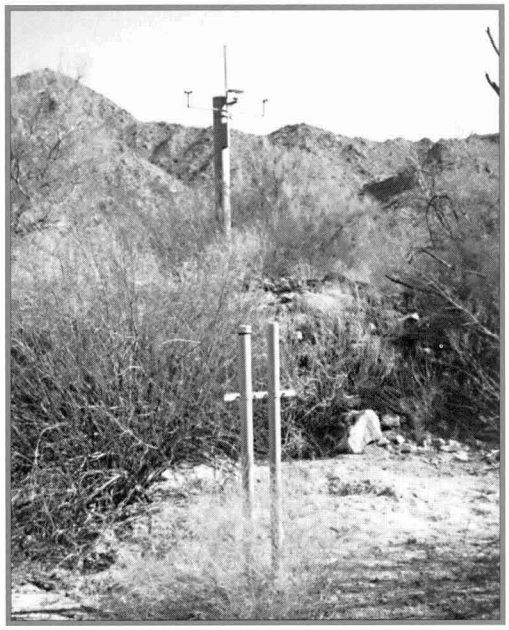
1984

Adobe Dam and Signal Butte Floodway Channel completed

Flood Detection and Data Collection Program

The Flood Detection and Data Collection Program designs, implements and maintains a real-time system to monitor flood control structures and to provide data to the County Emergency Management Department for flood event planning and evacuation. The system information is used by the National Weather Service, U.S. Bureau of Reclamation, U.S. Geological Survey, Pinal and Yavapai Counties, and a number of state, municipal, and Maricopa County agencies. The Program develops warning and evacuation plans and disseminates rainfall and stream gage data for use by various agencies and the public. The Program is managed in the Engineering Division, with contributions from all Divisions.

The District provides current information about rainfall and runoff across the County by operating and maintaining a network of rain gages, stream gages, and weather stations. This information is automatically transmitted via radio waves to the District via the ALERT (Automated Local Evaluation in Real Time) system. The data is used to monitor flood control structures during storm events and to calibrate hydrologic computer models used in studies. The National Weather Service also uses this data when issuing flood forecasts and advisories. Decisions to evacuate flood-prone areas may also occur based on ALERT data.



Weather stations and crest stage gages are used to collect data.

The Flood Control District serves all of the citizens of Maricopa County and some surrounding counties. A study conducted by the District indicates that the expected annual benefits from the comprehensive flood warning system, from reduced flood damages alone, could range from $500,000 to $2,600,000 per year.

A yearly exercise is held County-wide to assure that staff is familiar with the structures and observation sites. The District not only receives credit towards a portion of the Federal Emergency Management Agency's Community Rating System for the exercise, but also for having the system. Credit in the Community Rating System is used to lower flood insurance premiums for residents within the County.

ALERT Sensor Installation Statistics		
	FY 95/96	Total
Rain Gages	13	181
Water-level Sensors	4	80
Weather Stations	1	12
Temperature/Humidity Sensors at existing rain gages	6	6

Involvement in State-wide Projects

The District, in cooperation with Salt River Project, the U.S. Army Corps of Engineers, the Arizona Department of Water Resources and the National Weather Service (NWS) and other agencies, has been developing a statewide flood warning system. A prototype has been developed with the District having access to NWS satellite and forecast products.

Additionally, the District is working with the Arizona Floodplain Management Association (AFMA) to develop Uniform Standards for the Development of Flood Warning Systems. These standards will guide small communities who are considering implementing a flood warning system on issues such as gage permitting and radio licensing, and how to establish documentation such as warning plans and exercises, etc.

The District on Channel 5 KPHO

The District has been supplying KPHO-TV Channel 5 with temperature and rainfall data. The data is aired four times per day during newscasts. The District hopes to improve flood warning throughout the Valley by cooperating with local media to disseminate rain and stream flow information during weather events.

Crest Stage Program

The Hydrology Branch of the Engineering Division desired an additional method to calibrate their hydrologic models in the study of urban runoff. To serve this need, a crest stage gage was installed at the 91st Avenue Drain. This will provide the District with data on the stage of the runoff. A study to determine other gage sites is ongoing in Sun City and Sun City West.

Environmental Program

The goal of the District's Environmental Program is to ensure that all District activities, including the operation, maintenance and construction of flood control structures, comply with federal and state environmental regulatory requirements. In addition, the program includes several strategies to minimize the potential for adverse environmental impacts due to District activities. Several aspects of the program include regional storm water management, legislative and regulatory review, storm water quality control, and environmental site assessments for real property acquisition. This program is managed by the Planning and Project Management Division, with contributions from Engineering, Administration and Construction and Maintenance.

Regional Storm Water Management

The District receives storm water runoff from more than 9,000 square miles of watersheds within central Arizona. The water the District receives in its structures from watersheds throughout the County exhibits varying levels of quality. Consequently, conveyance and discharge of this storm water runoff from District structures has resulted in potential environmental impacts.

To address the potential impacts related to storm water pollutants, the National Pollutant Discharge Elimination System (NPDES) storm water permit regulations under the Clean Water Act require that municipalities with populations over 100,000 implement programs to control pollutants in storm water. A primary objective of the Storm Water Management Program has been to establish a regional storm water monitoring network. To this end, the District has cooperated with the U.S. Geological Survey and the cities of Phoenix, Mesa and Tempe to establish a regional network of sampling stations for characterization of storm water quality. Additionally, the District assists the cities in collecting samples and characterizing storm water quality to comply with the requirements of their NPDES storm water permit regulations. A total of 16 land-based monitoring stations and five in-stream stations are currently in place.

A secondary objective of this program is the development of a strategy to comply with the Environmental Protection Agency's (EPA) storm water quality regulations. A major component of this strategy is a research study to assess potential environmental impacts of storm water quality regulations.

Legislative and Regulatory Review

The District regularly reviews pending legislation that effect NPDES regulations and water quality standards in order to assess potential federal and state regulatory impacts to District structures. The District has completed review and comment of the State water quality standards, including review of proposed techniques for testing toxicity of storm water.

Storm Water Quality Control

The District is evaluating the feasibility of Best Management Practices (BMPs) that provide cost effective methods of controlling the discharge of pollutants within storm water. BMPs are being evaluated for Capital Improvement Projects and existing structures that receive and convey storm water. The District is currently monitoring the performance of a constructed wetland designed to remove oil and grease from storm water runoff at a County vehicle maintenance yard.

Environmental Site Assessments and Cultural Resources

Prior to purchase or sale of any real property, the District conducts an environmental site assessment to establish the presence of any environmental hazards connected with the property. This program is mandated by EPA under the Superfund Amendments and Reauthorization Act (SARA) under which the liability for clean up of environmental hazards is transferred with property ownership. Archeological and historic resources are also evaluated during the planning of projects to determine if any sensitive cultural resources may be disturbed. Surveys are conducted, and if necessary, archeological testing is conducted to determine the extent of resources that may be disturbed. Sensitive resources are mitigated in accordance with the National Historic Preservation Act.

Environmental Services Provided — Fiscal Year 95/96

• Archeological Surveys	7
• Archeological Testing Projects	2
• Phase I Environmental Site Assessments	18
• Phase II Environmental Site Assessments	3
• Asbestos Abatement Projects	4

1985

Holly Acres Levee and Bank Stabilization, New River Dam, Indian Bend Wash completed and Salt-Gila Clearing Project implemented

1987

Signal Butte Dam and Pass Mountain Diversion Channel completed

1989

East Maricopa Floodway Channel completed

DECEMBER 1990

District formally applied for participation in the Community Rating System (CRS) Program

OCTOBER 1992

15% flood insurance premium reduction effective for unincorporated Maricopa County through the CRS Program

OCTOBER 1994

20% flood insurance premium reduction for unincorporated Maricopa County becomes effective through CRS program

Happenings at the New River Mitigation Area

The District owns and maintains a 28-acre parcel of land in Avondale which is home to many species of wildlife.

Ben Ganados, a Public Works Generalist with the Ecology Branch, Construction and Maintenance Division, has taken on as his main duty the care and maintenance of the District's New River Wildlife Mitigation area at Southern and 130th Avenue. He helped plant and cultivate over 3,000 trees in the 28-acre habitat, which was cultivated to replace riparian areas that were destroyed during the channelization of New River. Ben has carefully watered and nurtured the fragile eco-system for the past four years, often giving up his weekend mornings and late evenings to check on the irrigation, or, perhaps, to observe the variety of wildlife that have begun to call the habitat "home." In doing so, Ben has become a familiar figure to the residents of the remote area in Avondale.

It was concern for the well-being of his wildlife charges as well as his neighbors that led Ben to become a somewhat reluctant public figure.

After watching illegal hunters enter the mitigation area to shoot or attempt to trap or kill some of the birds and wildlife who call the area home, Ben decided to take action.

Ben and the concerned neighbors brought the shootings to the attention of FCD Administration to see what could be done to limit vehicular and pedestrian traffic into the sensitive area.

Within a matter of two weeks, an agreement was worked out between the FCD, the Salt River Project (who maintains one of the roadways into the habitat) and area landowners, that has allowed the District to install security gates and close off all public access to the mitigation area.

Maintenance Program

The District maintains over 70 flood control structures and facilities, including 23 dams and over 50 miles of major underground conduits and improved channels to acceptable function and aesthetic standards. This program is managed in the Construction and Maintenance Division, with contributions from all divisions.

Maintenance on structures includes erosion control, vegetation control, maintenance of outflow devices, rodent control, low flow channel maintenance, and the maintenance of upstream ponding areas. The District also maintains rights-of-way such as roads, fencing, gates, landscaping, mitigation areas, rental property and signage.

During flood situations, the maintenance staff provides both emergency response and storm monitoring services. When an emergency exists, staff is dispatched to monitor the functions of the structures and in some cases operate the outflow devices to control the release of water. Maintenance personnel also operate heavy equipment which is used to protect public and private property during emergencies. They also provide manpower and supplies to protect both public and private property when structures are damaged or flows exceed the design capacity of the structures.

The Maintenance Program now has responsibility for the Africanized Bee Program. The bee program is a result of a probe into methods to reduce costs and provide worker and public safety. The bees often establish themselves in valve boxes, stand pipes and outlet structures. By training ten District employees in bee eradication, the response time for a call has been improved and the cost of the call has been reduced by 50%.

Program Workload Indicators			
Indicator	Unit of Measurement	1995-1996 Estimated	1996-1997 Forecast
Landscape & Erosion Control Maintenance	acres	9,588	9,788
Plants Replaced	each	19,888	19,888
Erosion Control Restoration	acres	1,190	1,190
Channel Maintenance	acres	3,996	3,996
Inspections Performed	each	420	420
Access Roads Maintenance	miles	620	620
Property Fencing and Signage	linear feet	1,286,839	1,286,839

Operation Noah's Ark

In December 1995, the Construction and Maintenance Division conducted its first flood emergency exercise. The purpose of this exercise was to familiarize new employees and refresh veteran employees in flood event procedures. Employees were assigned to storm surveillance areas and given a scenario of major storm events that lead to the flood event. These employees were then called upon to respond to a series of simulated incidents that were a result of the flood event. The exercise ran for two work shifts and consisted of both day and night operations. The exercise proved to be an excellent training aid and numerous suggestions for improving procedures were adopted.

Public Involvement

In response to our customers' requests for more public involvement in District projects, the District has revamped its Public Involvement Office, increasing staff and providing additional resources to more effectively include residents in the decision-making process.

Area Drainage Master Studies (ADMSs), floodplain delineations, and Capital Improvement Projects (CIP) provide for a full range of public comment and input before they are taken to the Flood Control Advisory Board (FCAB) for approval.

The ADMS program analyzes watersheds to identify flooding and drainage problems. This is the first step in developing solutions to reduce or eliminate flood hazards, and without broad public involvement from the affected property owners, it becomes much harder to pinpoint existing problems or identify acceptable solutions.

Before scheduling any construction projects, the District has a series of neighborhood informational meetings, planning workshops, site visits and open houses to familiarize local residents with the potential solutions to their flood problems. Projects like the Old Cross Cut Canal have benefited significantly through the public involvement process, and have encountered little, if any, public opposition.

In addition, District policy now requires that an Aesthetics Committee, including neighborhood representatives, be formed for appropriate projects, further empowering the public, and producing the best in flood control structures that enhance the quality of life in the County.

North Maintenance Yard

The Construction and Maintenance Division opened up a satellite office at 9601 North 21st Drive on February 26. Maintenance staff now report directly to the site which is located adjacent to the Arizona Canal Diversion Channel. This has eliminated a great deal of travel time to and from the main operations site.

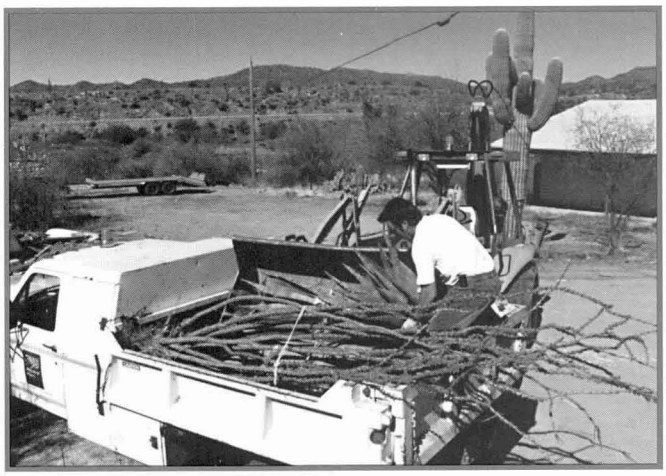
District personnel conducted the renovation, including, building a block wall, reconditioning a chain link fence, painting walls, laying tiles and more. North yard personnel worked diligently to prepare the building.

As a result of this new yard, the Hatcher Yard was closed. There had been many problems with the Hatcher yard including theft and vandalism despite the fact that it was guarded by security forces. The new North Yard uses guard dogs for protection at a reduction in cost of $2100. per month. This form of security has been extremely effective in preventing thefts and vandalism.

Project Scrub

Project Scrub "Stop Crime, Remove Urban Blight" has completed its first year of existence. The program targets juvenile graffiti offenders. The teams of no more than five minors paint over graffiti, and pick up litter at District structures.

In addition to working off the community service hours, each juvenile is required, sometimes with their parents, to attend an educational seminar delivered by police and probation officers. The theme of the session is "to instill values of civic and neighborhood pride along with explaining the full consequences of social and economic impact of the damage caused by graffiti." Juvenile offenders learn what it takes to repair the vandalism they might have had a hand in creating.



Cacti go to college.

Cacti for the University

To facilitate the demolition of homes in the New River Floodplain Mitigation Project, it was necessary to relocate the native vegetation planted close to building foundations. Saguaros, barrel cacti, ocotillos and agaves were salvaged by Arizona State University (ASU). ASU completed the salvage in March and was able to use the plants for an area near the student activity center and a new desert arboretum area located near Sun Devil Stadium.

The project, which is located just North of the Town of New River in Maricopa County, consisted of the purchase of 16 properties that were either within the floodway or inaccessible during periods of high flow.

The project covers over 28 acres and includes a small wetland area and a riparian community dominated by Goodding Willow and several acres of mesquite bosque. The area has been identified as critical habitat for the Cactus Ferruginous Pygmy-Owl which has been proposed for listing as an endangered species. Currently the District is discussing the possible use of these acquired properties as a mitigation bank with the United States Army Corps of Engineers.

Prioritization of Floodplain Delineation Studies

The Hydraulics Branch of the Engineering Division has developed a procedure for prioritizing floodplain delineation studies. The procedure development consisted of identifying attributes of the floodplain that could be used to rank all of the competing floodplains and then quantifying those attributes. A point system has been developed to assign points to the identified attributes, which are then added up to determine a ranking of the floodplain studies.

LEADERSHIP

District Wins NACo Awards

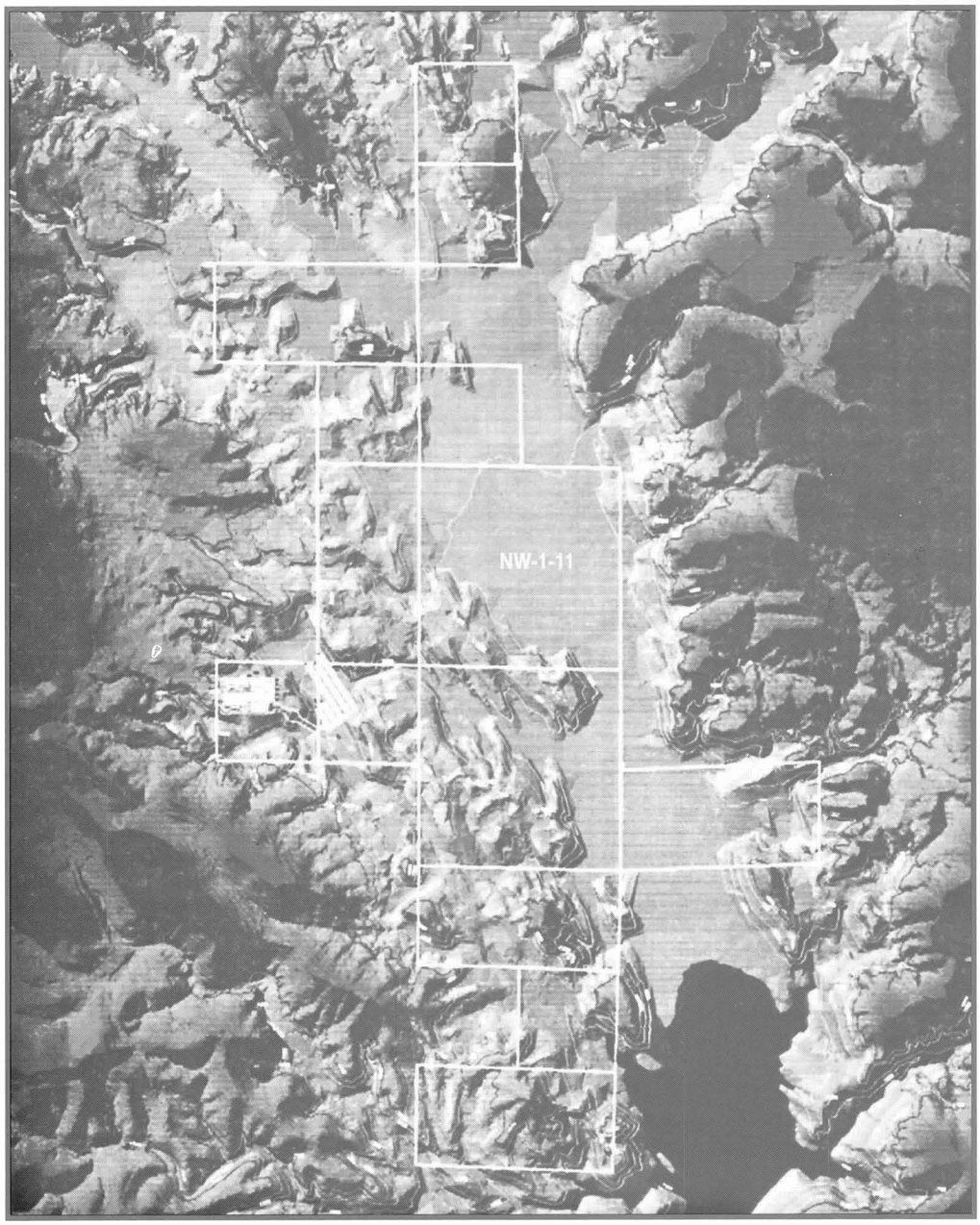
The National Association of Counties (NACo) awarded 1996 NACo Achievement Awards to Marta Dent and Joe Tram for their submittal *Use of 3-D GIS Mapping to Establish Land Value* and Greg Rodzenko for his submittal *Agency/Developer Contract for Flood Hazard Mitigation*.

Use of 3-D GIS Mapping to Establish Land Value

Due to the technology and efforts of the GIS Branch, the County was awarded $3.75 million in an out-of-court settlement involving Lake Pleasant and the U.S. Bureau of Reclamation.

At issue was the value of 1500 acres of County property inundated by the larger Lake Pleasant after construction of New Waddell Dam. The Bureau claimed the land was worth $400,000 and paid the County this amount when forcing the sale through condemnation proceedings. The County placed the property's worth at several million dollars, claiming the land could have been developed into a 300-slip boat marina.

The District's expertise in GIS technology and knowledge of water resources were used to prove the worth of the land. The GIS Technology Branch plotted contours and imported data files to display average lake elevations over a 30-year period, photos were scanned depicting historical water levels and 3-D mapping of a hypothetical marina, as outlined in the appraiser's documentation, was created and dropped on the map. In order to see the data in 3-D, special glasses were used in conjunction with the plotted display map. Additionally, historical photos and information regarding historical water level elevations at Lake Pleasant were compiled to refute doubts of access to the site and studies were conducted to demonstrate the availability of resources needed to raise parking areas above the high water mark.



Agency/Developer Contract for Flood Hazard Mitigation

When a proposal for a large housing development surfaced just as the District was completing a flood hazard study on undeveloped land, new procedures were sought to reduce/eliminate unnecessary fees, documentation processes, and flood insurance costs.

An agreement was negotiated with the developer. The flood hazard information involving the developer's property would not be submitted to FEMA if the District could be assured that flood control measures would be incorporated into the project along the way. This, in effect, eliminates the flood hazard areas as development occurs.

This agreement has eliminated the homebuilder's cost of hiring an engineering consultant to prepare map revision documentation, staff technical review costs at the local level, and the staff technical review at the federal level to un-do the flood hazard for a total savings of $108,800 over the 7-year construction period.

Rewarding Ideas

The Employee Suggestion Program has been renamed and revamped. The concept of the program is to provide a mechanism for rewarding employees who submit ideas that result in cost reduction, increased revenues, improved procedures, and/or eliminated duplication and waste. The program has yielded over $10 million in savings for the County since 1984. The renewed program has undertaken some changes including a reduced cycle time and a raise in the reward from 10% of the first year's savings to 20% of the first year's savings.

Employee Satisfaction Survey

In November, a survey was conducted of all Maricopa County employees to determine levels of employee satisfaction. The survey went into detail, asking employees about their levels of satisfaction with their departments and the County as a whole. Results of the survey indicated that District employees are more satisfied than employees in other County departments.

In order for District management to address the concerns of employees, Causes Forums were held to validate the causes of dissatisfaction that were identified by the survey. District employees were asked to indicate whether the issues were valid or invalid; whether they were high priority, somewhat high priority, or low priority; and whether they were an easy, complex, or simple fix.

The District has already initiated a number of programs to remedy many of the areas of dissatisfaction.

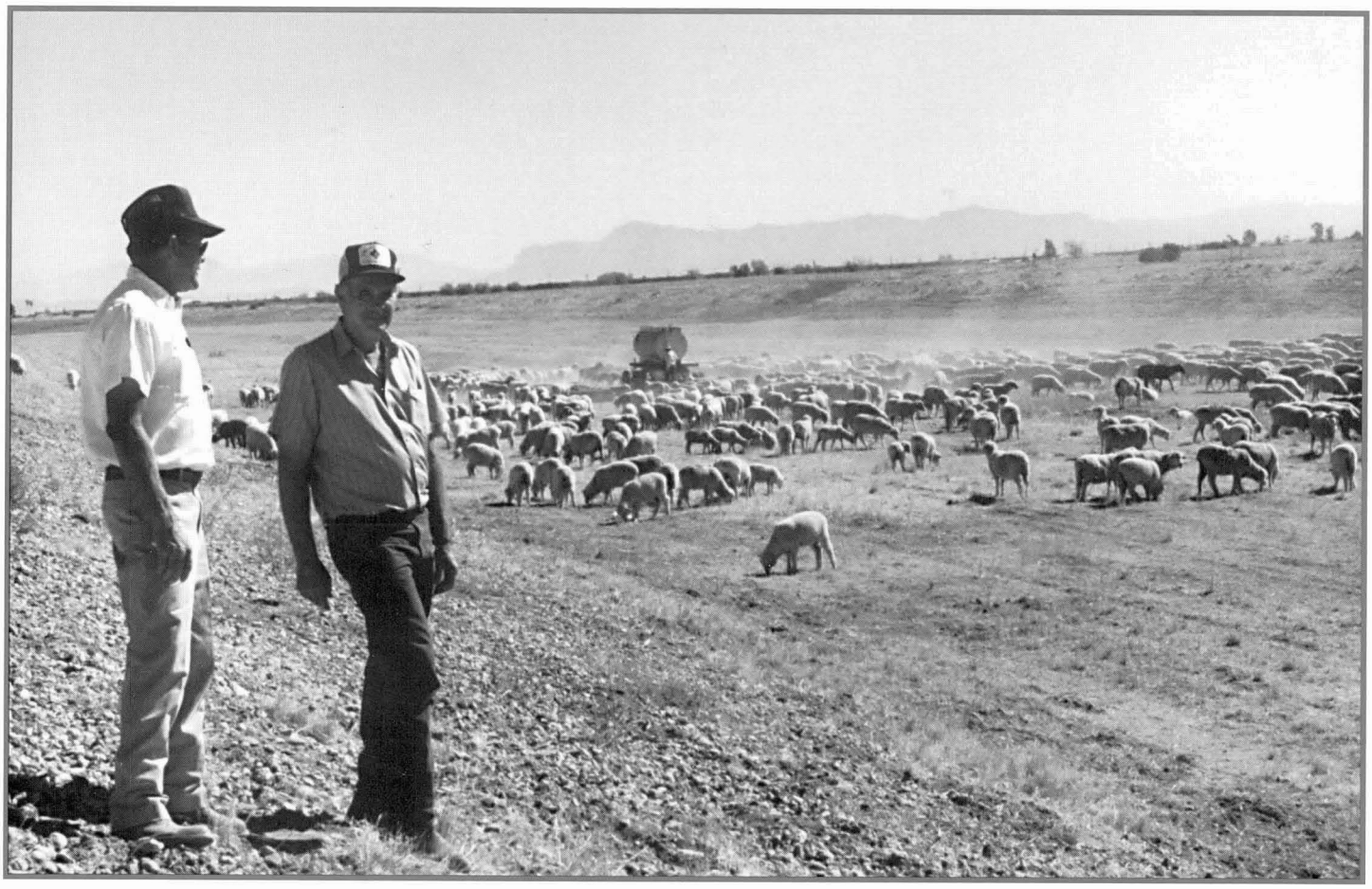
Sheep on the East Maricopa Floodway

Gregg Watts, C&M Equipment Operator, recommended grazing sheep on appropriate flood control structures to save on mowing costs, through the Maricopa County Employee Suggestion Program. As a result of his suggestion, Sheep Springs Sheep Company placed about 500 ewes and lambs onto the East Maricopa Floodway on April 23rd.

The District evaluated the suggestion carefully, and it was realized that with the rampant urbanization taking place in the County, available land is at a premium and the project would provide the benefits of using less fossil fuels, in turn creating less air pollution. Concerns included: overgrazing, nitrate contamination, soil compaction, liability, and grazibility of the channel. There was also uncertainty that the sheep would adequately "mow" the grasses and other weeds growing in the channel. It was determined that a trial evaluation would be the best method to answer these questions.

Representatives from the Engineering and Lands Management Divisions assisted with licensing and liability, and the sheep grazed the channel for six weeks until they were transferred to higher elevations.

The sheep did a great job of "mowing" the channel from Guadalupe Road to Hunt Highway. The grass regrowth and other environmental aspects will be closely monitored during the summer to help determine the feasibility of leasing these types of areas in the future.



Environmentally friendly lawn maintenance.

Reward and Recognition

The District's Strategic Plan Issue, Quality Work Force, contains a goal of reducing the impacts of employee turnover. To meet that tasking, a Reward and Recognition Committee was established. The Committee inventoried the programs in place at the District, and a number of County departments as well as other municipalities within the County. A program has been approved by the Flood Control Advisory Board and the Board of Directors and will be implemented in the next fiscal year.

Leadership Academy

The Leadership Academy, *Frontline Leadership* and *Working to Win*, was designed to help employees develop or enhance the leadership skills they need to fill the demanding role they perform at the District. The Academy provides a unique opportunity for employees to grow both personally and professionally.

Frontline Leadership is a skill building program which provides supervisors and managers with practical tools to meet the expanding demands of their jobs, focusing on the fundamental skills of good supervision and leadership. These skills help supervisors build collaborative, interdependent and supportive teams, initiate new ideas and direction and build good leaders throughout the organization.

Working to Win provides the basic human interaction skills that everyone needs to succeed in business today by providing practical skills for overcoming obstacles on the job. Such skills have a critical impact on an organization's ability to meet and exceed customer expectations.

New Employee Orientation

The Flood Control District's Training Policy Committee developed and implemented New Employee Orientation and Out Processing programs. The New Employee Orientation program's goal is to insure that new employees are informed of the District's purpose and mission, oriented to administrative policies and work environments, and thoroughly prepared with the tools and information necessary to successfully perform new position duties.

The Out Processing Checklist outlines steps to be followed by various District representatives to insure that office materials and equipment are inventoried and redistributed upon an employee's termination.

Cover Art...

The District held a contest for the design of the cover of the annual report. The design featured on the cover was submitted by Shon Wu, Engineering Drafting Specialist, of the Engineering Division. The design featured on the inside front cover of the report was submitted by Chris Banks, Land Management Specialist, of the Land Management Division.

Special thanks to Jim Smith, Steve Bruffy, Doug Williams, Marta Dent and the GIS Branch for the maps contained in this report.

Safety Policy

The District has developed a Safety Policy with the goal of providing a safe environment to work in. Special emphasis is being placed on the categories of personal injury, property damage, occupational health, fire loss, and emergency preparedness. The Policy includes the measurement and evaluation of the safety and property conservation performance of each District employee. The District's safety record is well above-average.

Groundwater Recharge

The District has developed a policy regarding the use of District land for groundwater recharge. The newly approved policy develops a procedure to allow the lease of District property for groundwater recharge while protecting the District's structures and mission. The policy addresses technical issues, liability and indemnification, the lease application process, notification and monitoring, and fee structures.

Benefits of artificial groundwater recharge include the restoration of continually decreasing local groundwater levels and the commensurate slowing of land subsidence, assurance of a future water supply for the community which in turn allows for increased residential development, and the cost savings realized over that of construction and operation of conventional surface water treatment plants.

As of July 1996, the City of Surprise is operating the only groundwater recharge facility on District land. The city began operation of a one acre pilot project in April 1996, within the impoundment area of McMicken Dam. In the first three months of operation, the recharge pond has performed well and the overall project has had good results.

Africanized Bee Management

District staff members, Donna Ellsworth, Ben Ganados, Pete Martinez, Tom Siegfried, Danny Upshaw, Gary Drake, Joe Eppinger, John Ruiz, and Jose Molina participated in training specializing in management and eradication of Africanized bees. Bees and other insects are sometimes found on District property.

ACHIEVEMENTS

EMPLOYEE OF THE QUARTER

Lenora Webb – 7/95
Afshin Ahouraiyan – 9/95
Michael Rosiewicz – 1/96
Kevin LaVallee – 4/96

REWARDING IDEAS

Robert Crawford: Graffiti Removal System
Pete Martinez: Revegetation of Skunk Creek Channel
Bob Panasewicz: Vegetation Removal
Laurence Spanulescu and Shewa Shivaswamy: Beardsley Road Detention Basin
Randy Elson: Automated Resetting Process for Precipitation Gages
Brit Purifoy and Gary Schwartz: Purchase through less expensive vendor

CERTIFICATION AND PROFESSIONAL REGISTRATION

Engineer in Training (E.I.T.)
Amir Motamedi
Joe Tram

Registered Professional Engineer (P.E.)
Pedro Calza
Ning Mao
Hasan Mushtaq
Donald Rerick
Greg Rodzenko

Certified Public Manager (Level IV)
Betty Dickens

Certified Public Account (CPA)
Bethany Loudenslager

Certified Government Financial Manager
Michael Cuneo

Certified General Real Estate Appraiser
Al Dickie

Zenger-Miller Leadership Development Certification
Chris Banks
Gwen Loving

CONTINUING EDUCATION ACHIEVEMENTS

Arizona Governmental Training Service (AGTS)

Supervisors/Manager/Trainers Academy

Paul Britenfeldt
Robert Luera
Glen Morford
Ivan Bryant
Mark Swinderman
Carlos Rivera
Mike Ramirez
Bill Craig
Dick Perreault
Hedy Hall
Steven Tucker
Lenora Webb
Diane Johnson
William Craig

Masters Degree in Organizational Management
Tom LaMarche

Leadership Academy Graduates

Marc Abramowitz
Donna Adams
Gloria Adams
Afshin Ahouraiyan
Roy Arnold
Susan Attiah
Kofi Awumah
Brent Ayers
Charles Baker
Perry Baker
William Baker
Michael Baldenegro
Carolyn Banks
Celeste Bautista
Margaret Bejarano
Laynie Bell
James Bening
Paul Breitenfeldt
Mark Brewer
Charles Brokschmidt
Darry Brown
Shelby Brown
Dave Brozovsky
Steven Bruffy
Ivan Bryant
Timothy Burkeen
Albert Buruato
Pedro Calza
Jerry Carbajal
Glenn Card
Thomas Caroll
Donna Carroll
William Casenhiser
Nancy Cavallo
Salvatore Cerbone
Rick Church
John Coleman
Roberta Combs
Jerry Corder
William Craig
Francis Crosby
Mike Cuneo
Danny Davis
Antonio DeHerrera
Juan DeLaGarza
Terrel Delaney
Marta Dent
Marilyn DeRosa
Maximo DeVera
Frank Dick
Betty Dickens
Richard Dickie
Gary Drake
Arthur DuBois
Kevin DuBose
Donna Ellsworth
Randy Elson
Joseph Eppinger
Eric Feldman
Corazon Fernandez
Chuck Feuquay
Robin Fowler
Fred Fuller
Robert Gallup
Benito Ganados
David Gardner
Robert Glenn
Ana Gorbenko
Ken Green
Ben Gregg
John Greisiger
Anthony Guzak
Monique Hafler
Hedy Hall
Ernest Hamer
Linda Hannan
Kumar Hanumaiah
Richard Harris
Herman Hitzelberger
Kathryn Holappa
Jonathan Hughes
Barbara Hummell
Dave Johnson
Diane Johnson
Thomas Johnson
Magnus Jolayemi
David Jones
William Kenyon
Geave Khatiblou
Thomas Kiefer
Clarice Kimball
Dortha Klaahsen
Charles Klenner
William Knight
Thomas LaMarche
John Lang
Kevin LaVallee
Ted Lehman
Steven Linderman
Paul Lindgren
George Lindop
Gregory Long
Kathy Longoria
Michael Lopez
Bethany Loudenslager
Gwen Loving
Edward Loy
Robert Luera
Ning Mao
Pete Martinez
Cindy Lu Mayo
Douglas McLaughlin
Michael Meng
Ramona Merkevicius
Gary Meyer
Daniel Michael
Bert Miller
Russell Miracle
Jose Molina
Glenn Morford
Amir Motamedi
Timothy Murphy
Hasan Mushtaq
Robert Naud
Robert Naud III
Sylvia Nelson
Lawrence Neumann
Ron Nevitt
Noel Nunley
Frank Nutter
Arnold Ontiveros
Timothy Osolin
John Palmieri
Robert Panasewicz
Earl Pearcy
Dick Perrault
David Pettijohn
Stanley Pirog
William Poppe
Brit Purifoy
Ed Raleigh
Joseph Ramirez
Mike Ramirez
Donald Rerick
Leoborn Richards
Carlos Rivera
Greg Rodzenko
Warren Rosebraugh
Michael Rosiewicz
John Ruiz
John Sanchez
Gary Schwartz
Jim Schwartzmann
Gary Shapiro
Raymond Schaffer
Hosakote Shivaswamy
Ray Shobe
Tom Siegfried
Cynthia Slaughter
Chuck Smith
James Smith
Stan Smith
Jerry Soria
Laurence Spanulescu
Ralph Spencer
James Stewart
Sandra Story
Douglas Stroup
James Sutton
Olin Sutton
Valerie Swick
Mark Swinderman
James Taylor
Sam Taylor
John Townsend
Joe Tram
Steven Tucker
Danny Upshaw
Gabriela Varadi
Raymond Warriner
Stephen Waters
Greg Watts
Lenora Webb
Michael Welch
Douglas Williams
Mike Winkler
Shon Wu
Shanna Yager
Connie Yanez
Ray Ybarra
Joseph Young
Lisa Young
Bing Zhao
Heather Zozaya

FINANCIAL STATEMENT

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
STATEMENT OF REVENUES, EXPENDITURES, AND CHANGES IN FUND BALANCE

Budgeted and Actual for the Fiscal Year Ended June 30, 1996

Preliminary and unaudited. Amounts are rounded to nearest thousand.

	BUDGET	ACTUAL	VARIANCE FAVORABLE (UNFAVORABLE)
REVENUE			
FLOOD CONTROL TAX	$ 36,476,000	$ 36,118,000	$ (358,000)
LOCAL PARTICIPATION	4,580,000	4,965,000	385,000
RENTAL INCOME	199,000	192,000	(7,000)
INTEREST INCOME	625,000	1,114,000	489,000
OTHER LAND INCOME	2,365,000	2,815,000	450,000
MISCELLANEOUS	400,000	408,000	8,000
TOTAL REVENUES	44,645,000	45,612,000	(967,000)
OPERATING EXPENDITURES			
PERSONNEL SERVICES	7,440,000	7,797,000	(357,000)
SUPPLIES AND SERVICES			
PROFESSIONAL SERVICES	3,840,000	2,261,000	1,579,000
MAINTENANCE SUPPLIES AND SERVICES	2,131,000	1,248,000	883,000
INTERNAL SERVICES	3,401,000	3,140,000	261,000
EDUCATION AND TRAVEL	91,000	108,000	(17,000)
OTHER SUPPLIES AND SERVICES	549,000	296,000	253,000
TOTAL OPERATING EXPENDITURES	17,452,000	14,850,000	2,602,000
CAPITAL OUTLAY			
PERSONNEL SERVICES	1,759,000	839,000	920,000
REAL ESTATE	4,114,000	6,869,000	(2,755,000)
ENGINEERING	2,200,000	1,329,000	871,000
CONSTRUCTION	20,429,000	18,540,000	1,889,000
VEHICLES AND EQUIPMENT	610,000	410,000	200,000
TOTAL CAPITAL OUTLAY	29,112,000	27,987,000	1,125,000
TOTAL EXPENDITURES	45,564,000	42,837,000	3,727,000
EXCESS (DEFICIENCY) OF REVENUES OVER EXPENDITURES	(1,919,000)	2,775,000	(4,694,000)
FUND BALANCE JULY 1, 1995	14,081,000	14,081,000	
FUND BALANCE JUNE 30, 1996	$ 12,162,000	$ 16,856,000	$ (4,694,000)

FINANCIAL STATEMENT

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
CAPITAL IMPROVEMENT PROJECTS – EXPENDITURES

Fiscal Year ending June 30, 1996

Preliminary and unaudited.

PROJECT	ENGINEERING	LAND	RELOCATION & CONSTRUCTION	WAGES	TOTAL
FCD FACILITY	$ 25,000	$	$ 1,662,000	$	$ 1,687,000
STORMWATER MONITORING			8,000	4,000	12,000
BEST MANAGEMENT PRACTICES					0
FLOOD WARNING			48,000	14,000	62,000
CITY OF SCOTTSDALE					0
TOWN OF GUADALUPE	54,000	1,117,000		22,000	1,193,000
OLD CROSS CUT CANAL	128,000	39,000	2,803,000	73,000	3,043,000
SALT/GILA CONTROL WORKS		1,113,000		18,000	1,131,000
SOUTH PHOENIX DRAINAGE	121,000	2,000		6,000	129,000
ACDC		127,000	62,000	10,000	199,000
SALT RIVER CHANNEL		14,000		37,000	51,000
APACHE JUNCTION			58,000		58,000
WICKENBURG ADMP	80,000	67,000	1,917,000	79,000	2,143,000
SKUNK CREEK	28,000	397,000		28,000	453,000
NEW RIVER ADMP		1,934,000		44,000	1,978,000
SKUNK CREEK/NEW RIVER	170,000	127,000	94,000	31,000	422,000
AGUA FRIA		33,000		8,000	41,000
SOUTHEAST MESA ADMP	13,000			4,000	17,000
GLENDALE/PEORIA ADMP	185,000	1,266,000	4,906,000	142,000	6,499,000
EAST FORK CAVE CREEK		2,000		2,000	4,000
WHITE TANKS ADMP	102,000	323,000	4,560,000	117,000	5,102,000
QUEEN CREEK ADMP	37,000	264,000		32,000	333,000
ACDC ADMP	320,000	41,000	2,423,000	150,000	2,934,000
MARYVALE ADMP	66,000	3,000		15,000	84,000
2 Others less than $1,000				2,000	2,000
	$ 1,329,000	$ 6,869,000	$ 18,541,000	$ 838,000	$ 27,577,000

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
AREA DRAINAGE MASTER STUDIES – EXPENDITURES

Fiscal Year Ending June 30, 1996

Preliminary and unaudited.

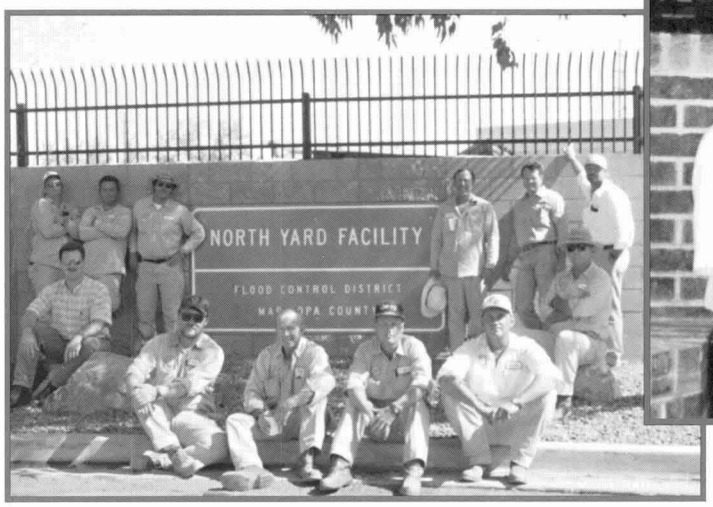
DESCRIPTION	ADMINISTRATION	HYDROLOGY	ENGINEERING	TOTAL
Salt/Gila Master Plan	$ 7,000			$ 7,000
Wickenburg ADMS	3,000		1,000	4,000
New River ADMS	2,000			2,000
East Maricopa ADMS	9,000			9,000
Southeast Mesa ADMS	14,000		8,000	22,000
Glendale/Peoria ADMS	2,000		4,000	6,000
White Tanks/Agua Fria ADMS	10,000	8,000	20,000	38,000
Queen Creek ADMS	9,000			9,000
Gilbert/Chandler ADMS	1,000		10,000	11,000
ACDC ADMS	19,000	3,000	8,000	30,000
Maryvale ADMS	11,000	2,000	281,000	294,000
Gila Drain Floodway	2,000		18,000	20,000
Fountain Hills ADMS	4,000		147,000	151,000
Upper Indian Bend Wash ADMS	4,000		60,000	64,000
7 Others less than $1,000	1,000		1,000	2,000
TOTAL	$98,000	$13,000	$558,000	$669,000

Regulatory Division

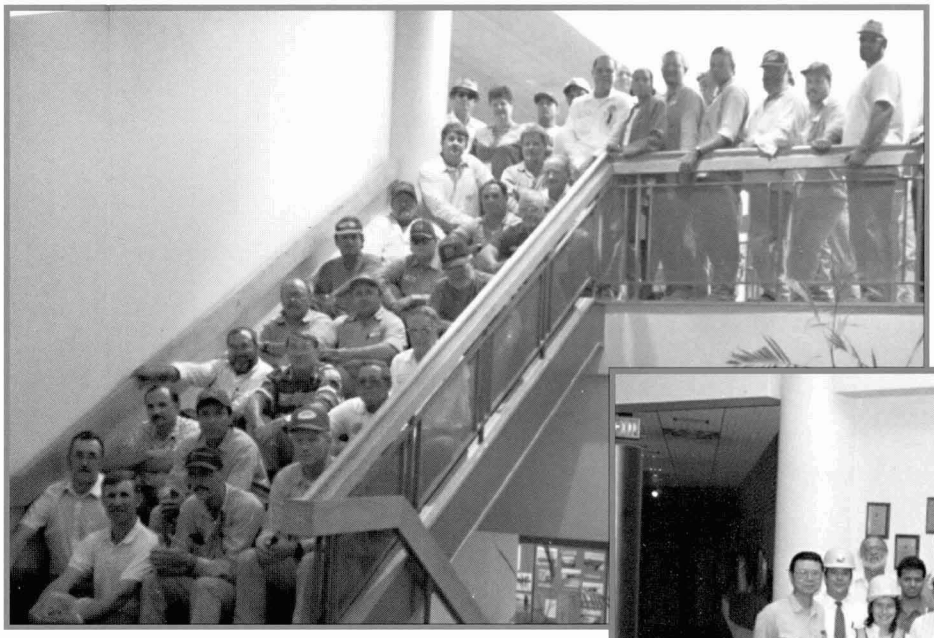
Land Management Division

Planning & Project Manage-ment Division

Construction & Maintenance North Yard



Information Systems



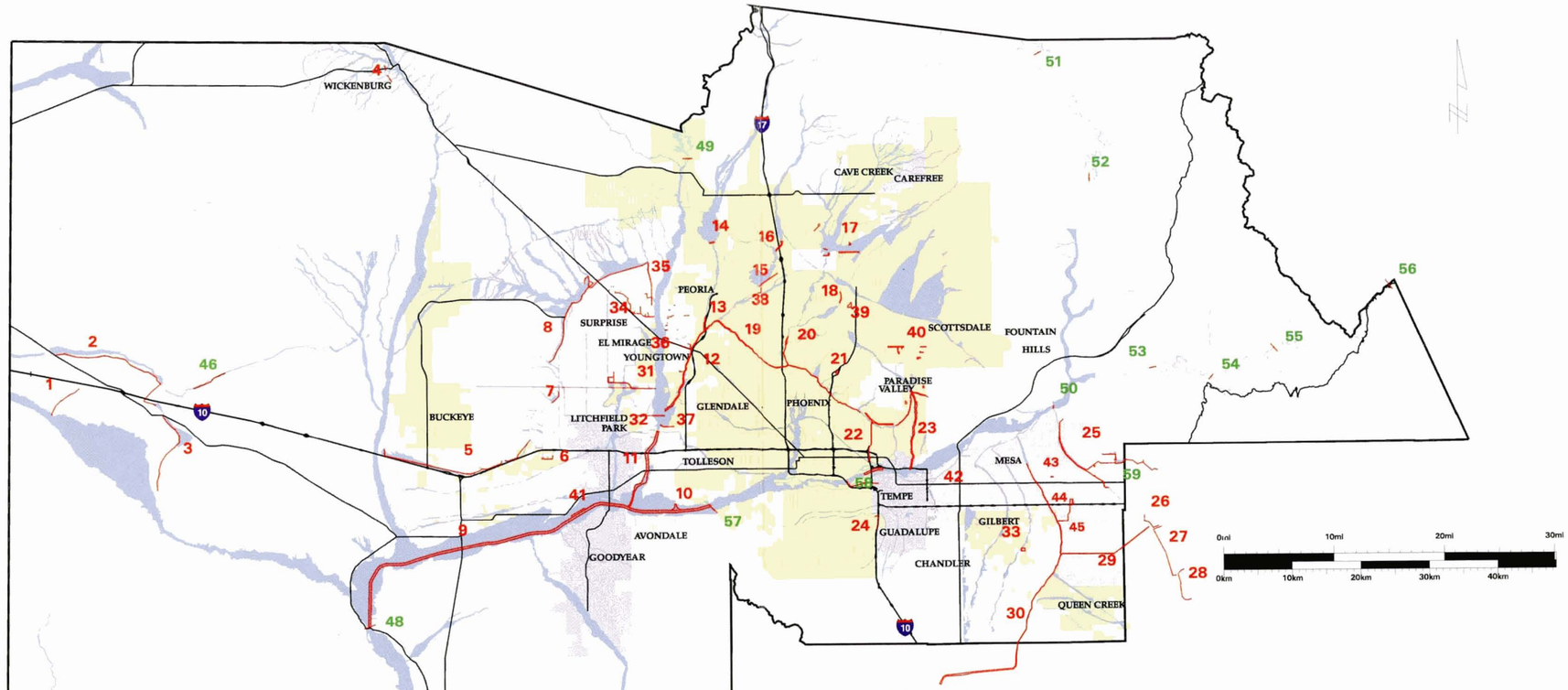
Construction & Maintenance Division

Engineering Division

Construction & Maintenance East Yard

Administration Division

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
PROJECTS AND STRUCTURES



FCD STRUCTURES

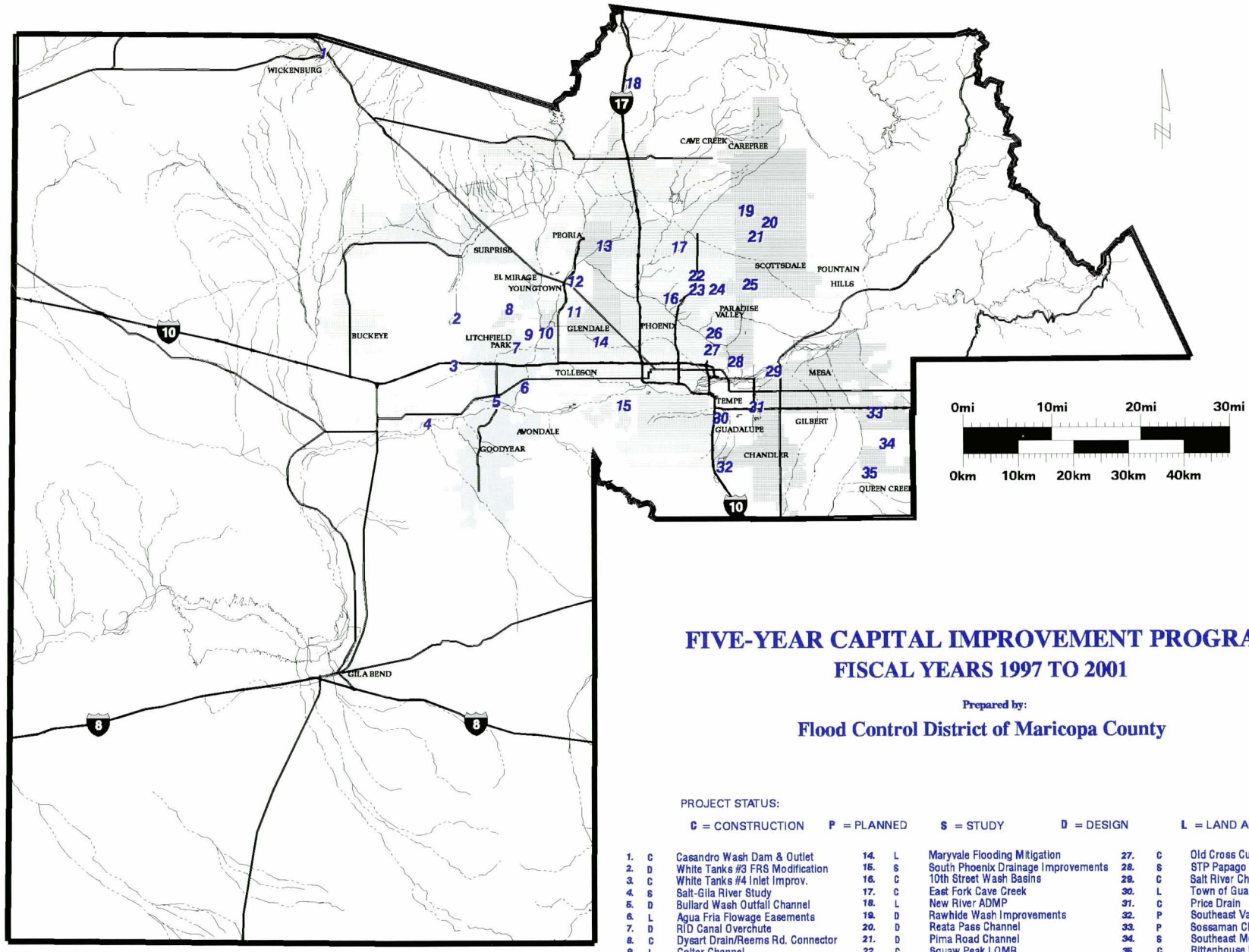
1. Centennial Levee (1985)
2. Harquahala Dam & Floodway (1982)
3. Saddleback Dam & Diversion (1981)
4. Sunset and Sunnycove Dams (1976)
5. Buckeye Dams 1, 2, 3 (1975)
6. White Tanks Dam 4 (1954)
7. White Tanks Dam 3 (1954)
8. McMicken Dam & Outlet Channel (1956)
9. Salt-Gila Clearing (1985)
10. Holly Acres Levee & Bank Stabilization (1984)
11. Agua Fria Channel Projects (1988)
12. New River Channelization (1993)
13. Skunk Creek Channelization (1991)
14. New River Dam (1985)
15. Adobe Dam (1984)
16. Skunk Creek Channel & Levee (1983)
17. Cave Buttes Dam (1980)
    a. Dike #1
    b. Dike #2
    c. Dike #3
18. East Fork Cave Creek (1996)
19. Arizona Canal Diversion Channel (1994)
20. Cave Creek Channelization (1991)
21. Dreamy Draw Dam (1973)
22. Old Cross Cut Canal (1975, 1991)
23. Indian Bend Wash (1985)
    a. Interceptor Channel
    b. Collector & Side Channel
24. Guadalupe F.R.S. (1975)
25. Buckhorn-Mesa Flood Retarding Structures
    a. Spook Hill Floodway (1980)
    b. Spook Hill Dam (1979)
    c. Signal Butte Floodway (1984)
    d. Pass Mountain Diversion (1987)
    e. Signal Butte Dam (1987)
    f. Bulldog Floodway (1988)
    g. Apache Junction Dam & Floodway (1988)
26. Powerline Dam (1967)
27. Vineyard Dam (1968)
28. Rittenhouse Dam (1969)
29. Powerline Floodway (1968)
30. East Maricopa Floodway (1989)
31. Dysart Drain (1996)
32. Colter Channel (1994)
33. Gilbert Crossroads Park Basin (1992)
34. Sun City West Drains (1990)
35. El Mirage Drain (1990)
36. Sun City Drains (1991)
37. Indian School Rd Drain
38. Scatter Wash (1995)
39. Paradise Valley Detention Basin #4 (1991)
40. PVSP Cactus Road Improvements (1991)
41. Perryville Bank (1984)
42. Alma School Drain (1969)
43. University Drive Basin (1993)
44. Sossaman Channel & Basin (1977)
45. Guadalupe Channel (1989)

NON-FCD STRUCTURES

46. Granite Reef Aqueduct Dike
47. Painted Rock Dam
48. Gillespie Dam
49. Waddell Dam
50. Granite Reef Dam
51. Horseshoe Dam
52. Bartlett Dam
53. Stewart Mountain Dam
54. Mormon Flat Dam
55. Horse Mesa Dam
56. Roosevelt Dam
57. Maricopa Drain
58. Rio Salado (City of Tempe)
59. East Mesa Drains

100-year Floodplains

Structures



FIVE-YEAR CAPITAL IMPROVEMENT PROGRAM
FISCAL YEARS 1997 TO 2001

Prepared by:

Flood Control District of Maricopa County

PROJECT STATUS:

C = CONSTRUCTION P = PLANNED S = STUDY D = DESIGN L = LAND ACQUISITION

1.	C	Casandro Wash Dam & Outlet	14.	L	Maryvale Flooding Mitigation	27.	C	Old Cross Cut Canal
2.	D	White Tanks #3 FRS Modification	15.	S	South Phoenix Drainage Improvements	28.	S	STP Papago Watershed Study
3.	C	White Tanks #4 Inlet Improv.	16.	C	10th Street Wash Basins	29.	C	Salt River Channel
4.	S	Salt-Gila River Study	17.	C	East Fork Cave Creek	30.	L	Town of Guadalupe
5.	D	Bullard Wash Outfall Channel	18.	L	New River ADMP	31.	C	Price Drain
6.	L	Agua Fria Flowage Easements	19.	D	Rawhide Wash Improvements	32.	P	Southeast Valley Reg. Drainage
7.	D	RID Canal Overchute	20.	D	Reata Pass Channel	33.	P	Sossaman Channel
8.	C	Dysart Drain/Reems Rd. Connector	21.	D	Pima Road Channel	34.	S	Southeast Mesa ADMP
9.	L	Colter Channel	22.	C	Squaw Peak LOMR	35.	C	Rittenhouse Drainage Improv.
10.	S	Camelback Ranch	23.	S	Tatum Wash Channel			
11.	D	Northern/Orangewood Storm Drain	24.	S	Doubletree Ranch Rd. Drain			
12.	C	Cactus Road Storm Drain	25.	C	84th St/Cholla Basin & Drain			
13.	L	Skunk Creek Improvements	26.	S	Arcadia Area Drainage Project			

THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Year-In-Review

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

MICHAEL S. ELLEGOOD, P.E. CHIEF ENGINEER AND GENERAL MANAGER

During the past year the Flood Control District of Maricopa County lost one of its mainstays. Stan Smith retired as Chief Engineer and General Manager after nineteen years of service to the District and the people of Maricopa County. Stan personified the dedication, spirit and technical excellence of the agency. We will miss Stan as he shaped much of what the District is today.

To face and overcome the challenges of the coming years, we will require the Flood Control District of Maricopa County to demonstrate again that we are competent, accountable, and highly competitive. We have to show that we can do the job faster, better and cheaper than other alternative measures.

We are going to sharpen our business acumen by implementing a comprehensive project control system. Each activity will have a distinct account that will have direct and indirect costs assigned to it. Projects will be closely monitored and costs will be compared constantly against budget projections. Our managers will be expected to continuously oversee their activities so that if costs start to rise, they will be identified quickly and changes implemented to reduce them. All of us, not only management, will search continuously to find newer and more innovative methods to keep costs at a minimum in order to survive in an increasingly competitive environment.

Second, we have to increase our presence in the community. The Flood Control District of Maricopa County must become a household word. To this end we must conduct more community education programs and become more visible at fairs, meetings, and other activities where community and other groups congregate.

Finally, we have to learn to be proactive and anticipate what our constituents will want and require. We have to provide "knock your socks off" customer service. We have to be so good at what we do and how we do it that other government agencies and private companies say they want to emulate us. We will be the leader!

These are our challenges for the twenty-first century. Meeting them will place us firmly in the position of being number one, a leader among government agencies, one that is truly competitive and excels at what it does.

GUADALUPE IMPROVEMENTS PROJECT

Guadalupe-- A five-acre area purchased by the Flood Control District for use as a retention basin has been the focus of community interest in the Town of Guadalupe.

Site inspection of the area revealed that one of the properties was a dumping site for large piles of trash, construction debris and environmentally hazardous materials. Additionally, drug -use was rampant on the property.

The District had the hazardous materials removed and then took on the task of removing the remaining trash. During this process, District personnel observed drug use which they reported to the Sheriff's Office, leading to three drug busts in two hours.

Clean-up of the site was budgeted at $200,000 and estimated to take 21 days. District staff monitored the removal and hauling of the trash and came in **$117,000 under budget** in 13 fewer days than was originally estimated.

Guadalupe residents and business owners were glad to have the eye-sore removed and the criminal activity stopped. Due to a group effort by the employees of the District and the citizens of the Town, Guadalupe has made a major step in its efforts to revitalize their community.

YEAR-IN-REVIEW ON THE WEB

For an expanded version of this Report, please visit us on the World Wide Web at:

http://www.fcd.maricopa.gov

Or from the County home page (http://www.maricopa.gov), choose *Public Works* and then *Flood Control.*

The Internet can be accessed at the following County libraries:

Headquarter Library
17811 North 32nd Street
(602) 506-2957

Aguila
51321 Ray Street
(520) 685-2214

El Mirage
14010 N. El Mirage Road
(602) 583-1030

Fountain Hills
16836 E. Palisades Blvd.
(602) 837-9793

Gila Bend
202 N. Euclid Avenue
(520) 683-2061

Guadalupe
9401 S. Avenida del Yaqui
(602) 831-5967

Laveen
9401 S. 51st Avenue
(602) 237-2904

Litchfield Park
101 W. Indian School Road
(602) 935-4118

Queen Creek
22407 S. Ellsworth
(602) 987-3600

Sun Lakes
9666 E. Riggs Road
(602) 895-5123

Surprise
15844 N. Hollyhock St.
(602) 583-0626

BOARD OF DIRECTORS

The Flood Control District is governed by a Board of Directors which also serves as the elected Board of Supervisors for Maricopa County. The Board of Directors exercises all of the powers and duties in the acquisition and operation of District properties, contracting, and in carrying out regulatory functions as ordinarily exercised by governing bodies.

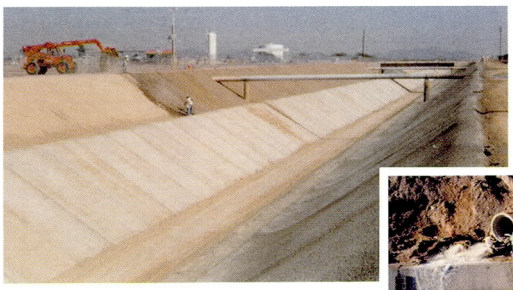
- Don Stapley, District 2, Chairman
- Fulton Brock, District 1
- Betsey Bayless, District 3
- Jan Brewer, District 4
- Mary Rose Garrido Wilcox, District 5

FLOOD CONTROL ADVISORY BOARD

The Flood Control Advisory Board (FCAB) works closely with staff and the Board of Directors to accomplish the District's mission of protecting the county residents and their property from flooding. The FCAB reviews proposed flood control projects and studies and makes recommendations as to their scope, necessity, and priority. These recommendations are forwarded to the Board of Directors for action. Board members also recommend an annual budget to the Board of Directors and serve the District as members of the Floodplain Review Board and the Drainage Review Board.

- Melvin Martin, District 5, Chairman
- Gilbert Rogers, District 1
- Samuel K. Wu, District 3
- Russell G. Stephens, District 4
- John E. Miller, District 2
- Paul Cherrington, Salt River Project
- James Matteson, City of Phoenix

DYSART DRAIN IMPROVEMENTS PROJECT



Luke Air Force Base (LAFB) has experienced significant flooding in the past, and most recently in 1992 and 1993. At the request of LAFB, the District was invited to evaluate the flooding problems and recommend solutions.

To relieve the flooding, the District recommended the construction of a large detention basin, the reconstruction of the entire length of the existing Dysart Drain channel from Reems Road on the west to the Agua Fria River on the east, and the reconstruction of three existing bridges across the channel. The project intercepts flood flows from north of the base and conveys them safely to the Agua Fria River.

The District was responsible for the design, construction, and operation and maintenance of the Dysart Drain Improvements Project. LAFB is responsible for all operation and maintenance of the project with the exception of one small channel component at the northeast corner of the basin. The District gave the deeds to all project rights-of-way to the Air Force upon completion of the project.

GROUNDWATER RECHARGE

The Flood Control District is supportive of innovative techniques for managing storm water and conserving water resources. To this end, the District has developed a policy regarding the use of District land for groundwater recharge.

The policy establishes a procedure to allow the lease of District property for groundwater recharge while protecting the District's mission and structures. The policy addresses technical issues, liability and indemnification, the lease application process, notification and monitoring, and fee structures.

Some of the benefits of groundwater recharge include the restoration of continually decreasing local groundwater levels and the commensurate slowing of land subsidence, assurance of a future water supply for the community which in turn allows for increased residential development, and the cost savings realized over that of construction and operation of conventional surface water treatment plants.

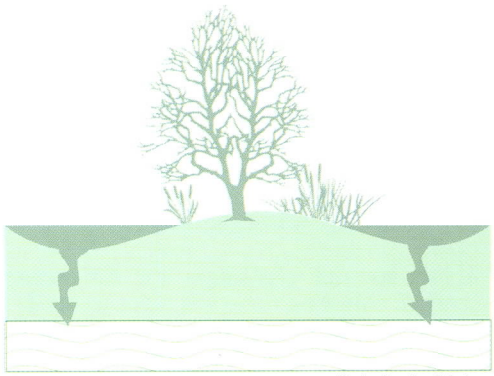


Illustration by P. Baker

CASANDRO WASH DAM AND OUTFALL

Casandro Wash Dam and Outfall, dedicated on August 29, 1996, is the first dam that the District designed and built without federal assistance.

The outlet was designed in-house by the Civil Branch of the Engineering Division and construction of the dam was overseen by the Construction and Maintenance Division of the District. Having District personnel on-site at all times allowed for problems to be clarified with minimal downtime and was instrumental in meeting the schedule and budget for this project.

The structure was constructed to protect residents in the Town of Wickenburg who live adjacent to Casandro Wash, from a 100-year flood event. There are approximately 100 residents along Casandro Wash who have been removed from the floodplain as a result of this project. The District is responsible for the operation and maintenance of the dam.

METEOROLOGICAL SERVICES PROJECT

The District has been involved in an exciting venture with other County agencies and jurisdictions which could possibly save lives and property in the case of a flood emergency.

A contract with a meteorological firm for a period of two years was established. The contract provides customized, detailed forecasts of heavy rainfall and severe weather to agencies within the District's jurisdiction. The project will result in more timely and specific weather forecast information than available through any other source. This results in greater lead-time to respond to flood emergencies.

The County and surrounding contributing areas were divided into nine "forecast zones." The firm provides zone-specific forecast products via fax delivery and phone confirmation to participating agencies within the zones. The project operated during two rainy seasons each year, December 1 though March 30 and June 15 through October 15.

FINANCIAL HIGHLIGHTS

Fiscal Year Ended June 30, 1997

Preliminary and Unaudited

	Dollars
Revenues	
Flood Control Tax	$ 38,712,000
Local Participation	7,091,000
Interest Income	1,640,000
Land Sales and Rental	1,251,000
Miscellaneous	1,711,000
Total Revenue	50,405,000
Expenditures	
Operating	15,205,000
Flood Control Capital Improvements	32,925,000
Vehicles and Equipment	803,000
Total Expenditures	48,933,000
Excess (deficiency) of revenues over expenditures	1,472,000
Transfer from Vehicle Replacement Fund	2,830,000
Fund Balance July 1, 1996	16,479,000
Fund Balance June 30, 1997	$ 20,781,000

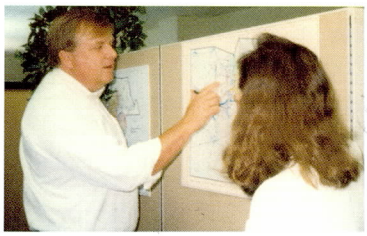
Mission: To reduce flood risks for the people of Maricopa County by providing comprehensive flood and stormwater management services. These services are provided through regulatory activities, master planning, regional coordination, technical assistance, and implementation and maintenance of non-structural and structural projects. Our clients include citizens, municipalities and other government agencies.

Vision: We will be known and supported by our customers and employees as the agency of choice for accomplishing our mission.

Values: The Flood Control District values are: fiscal stability, efficient management, appropriate organization size, technical proficiency, quality orientation, high ethics, visionary thinking, environmental responsibility, and aesthetic awareness.

Year-In-Review editing and layout by Lisa Young

PROGRAMS



PLANNING PROGRAM

Identifies regional drainage and flooding problems and develops alternative solutions to protect life and property.

- Entered into 7 IGA's with other agencies
- Began pre-design work on 5 projects
- Completed 4 Area Drainage Master Studies
- Began 3 Area Drainage Master Studies
- Completed 1 Area Drainage Master Plan

CAPITAL IMPROVEMENT PROGRAM

Implements flood control and stormwater management projects identified through the planning process and recommended for inclusion in the 5-year CIP approved by the Board of Directors.

- Completed Price Drain, Cactus Road Neighborhood (Scottsdale and Cactus), Salt River Channel - Dobson to Country Club, New River Area Drainage Master Plan (Upper New River Mitigation), Agua Fria Flowage Easements, East Fork Cave Creek, Squaw Peak LOMR, 10th Street Wash Basins, Dysart Drainage Improvements Project, Casandro Wash Dam and Outfall in Fiscal Year 96/97.

PROPERTY MANAGEMENT PROGRAM

Manages all aspects of District real property interests

- $1,035,500 in sales at public auction
- $132,400 in leases
- $136,600 in easements
- $37,500 in IGAs
- 6 Properties were sold

FLOODPLAIN MANAGEMENT PROGRAM

Administers the Floodplain Regulation for the unincorporated areas of Maricopa County, plus 13 municipalities. Maintains good standing in the National Flood Insurance Program. Delineates areas subject to the 100-year floodplain.

- 3 floodplain delineation studies were begun
- 12 floodplain delineation studies were completed
- 80 floodplain use permits were reviewed
- 1671 phone requests for general information were handled
- 429 walk-in customers were assisted
- 5376 flood hazard information requests were handled
- 198 flood hazard information notices were recorded

DRAINAGE ADMINISTRATION PROGRAM

Administers the County Drainage Regulation to reduce existing and potential flooding caused by local stormwater drainage.

- 8195 inspections conducted
- 135,463 inspector's miles driven
- 3960 drainage clearances issued
- 1629 drainage clearances reviewed
- 599 total plan review completed
- 962 drainage complaints investigated

ENVIRONMENTAL PROGRAM

Provides guidance and coordination in meeting federal stormwater quality regulations.

- Began Mitigation Banking Program
- Continued environmental outreach efforts
- Continued negotiating land leases for Groundwater Recharge

FLOOD DETECTION AND DATA COLLECTION PROGRAM

Designs, implements and maintains a rainfall and stream gage system to monitor flood control structures and to provide data for use in studies.

- 15 new rain gages were installed for a total of 196
- 6 water-level sensors were installed for a total of 86
- 1 weather station was installed totaling 13
- 2 temperature/humidity sensors were installed at existing rain gages for a total of 8

MAINTENANCE PROGRAM

Maintains over 70 flood control structures and facilities.

- Channel maintenance: 151,137.65 acres
- Access roads maintenance: 527.43 miles
- Property fencing and signage: 1,836,558 linear feet

Flood Control District of Maricopa County
2801 West Durango Street
Phoenix, AZ 85009
Phone: (602) 506-1501
Fax: (602) 506-4601
TT: (602) 506-5897

Flood Control District of Maricopa County

1997 - 1998 Annual Report

003.120

Message from the Chairman

During my tenure as Chairman, Maricopa County has continued to enjoy unprecedented growth and prosperity. This comes as no surprise to those of us who live, work and play here in the beautiful Sonoran Desert. What sometimes does come as a surprise is the fact that it does indeed flood, yes, even here in the desert. This, of course, leads to the need for flood control efforts to protect the safety and welfare of our residents. In Maricopa County we are excited to achieve our flood safety goals through innovative and fiscally responsible measures.

Some examples of our success include: the Old Crosscut Canal Project; the Indian Bend Wash; the Cave Creek/Apache Wash Watercourse Master Plan; the Middle New River Watercourse Master Plan; and, the Bullard Wash/Estrella Parkway Improvements Project.

To me, the bottom line is this, flood control need not consist of spartan concrete lined channels. Rather, flood control should blend in with and even enhance the surrounding environment. We live in one of the most beautiful places on earth and our aim is to preserve and protect it for future generations.

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

Our Board of Directors...

Mary Rose Wilcox, District 5

Jan Brewer, District 4

Andy Kunasek, District 3

Don Stapley, District 2

Fulton Brock, District 1

Michael S. Ellegood, P.E.

Letter from the Chief Engineer and General Manager

Flood Control in the desert. To the casual observer our mission must appear to be relatively easy. In fact, minimizing the impacts of flooding on human safety and reducing the risks of flood loss is, in many ways, an even more daunting task because we are in the desert. There was a time when the inevitable solution to identified flood risks was the construction of yet another concrete lined channel. Today's flood control solutions include restoration and preservation of the natural and beneficial values served by floodplains. You might call it kinder and gentler flood control.

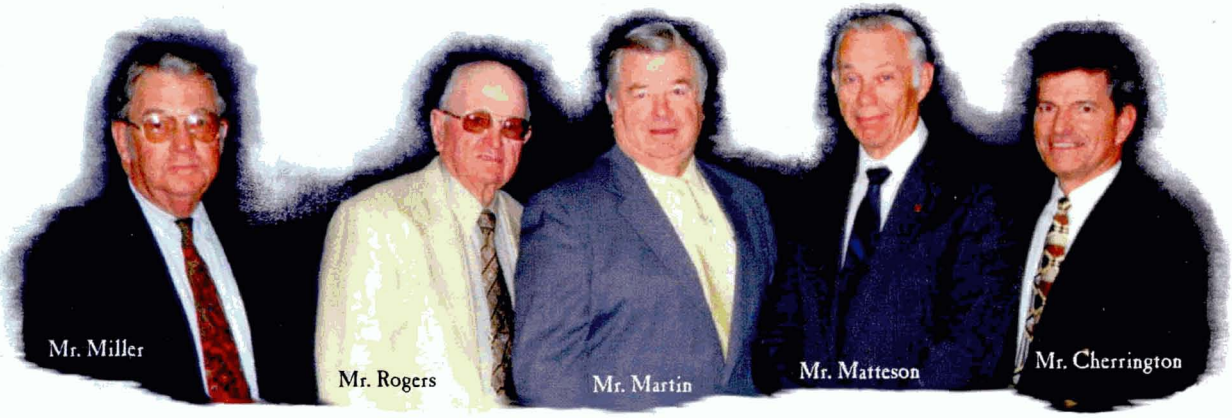
As I write this, rain is falling throughout Maricopa County. While we all know that is anything but an everyday occurrence here, it does happen and, when it does the results can be awesome. Consider the fact that Arizona, a landlocked state, has seen not one but two hurricanes impact us in the last thirty years. The point, of course, is that we can and must prepare - in advance - for flooding in our environment.

We have a number of alternatives to achieve our mission. Regulation of floodplains to prevent encroachment, and eliminate the need for the construction of flood control structures, is an appealing option because it maintains our natural environment. Channelization with an eye toward replacement of natural vegetation and the ability to accommodate recreational opportunities is another excellent solution. On occasion it may also be necessary to construct a more traditional concrete type flood control structure, but even these can be incorporated into their surroundings - perhaps by burying them underground, or making them more steep and narrow to allow for multi-use trails for hikers, bikers, joggers and equestrians.

The Flood Control District of Maricopa County has recognized, and embraces, the need to apply a much softer approach to accomplishing our mission whenever and wherever possible. We look forward to continuing to promote flood safety for the people of Maricopa County.

Our Advisory Board

District 1	Gilbert Rogers
District 2	John E. Miller, Jr., Chairman
District 3	Hemant Patel (Not pictured)
District 4	Russell G. Stevens (Not pictured)
District 5	Melvin Martin
City of Phoenix	James Matteson
Salt River Project	Paul Cherrington



About the Flood Control District

Mission

To reduce flood risks for the people of Maricopa County by providing comprehensive flood and stormwater management services. These activities are provided through regulatory activities, master planning, regional coordination, technical assistance and implementation and maintenance of non-structural and structural projects. Our clients include citizens, municipalities and other government agencies.

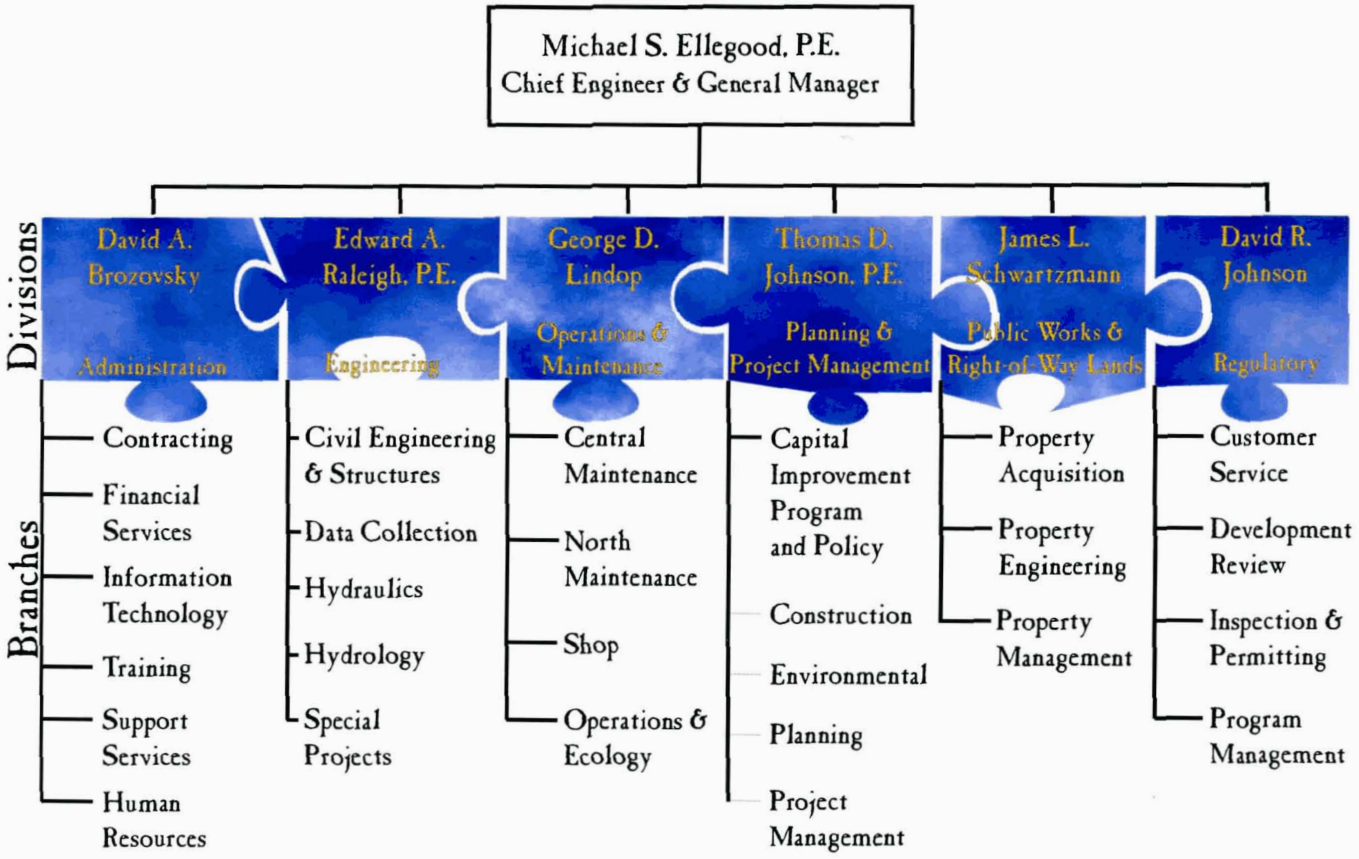
Vision

We will be known and supported by our customers and employees as the agency of choice for accomplishing our mission.

Values

The Flood Control District values are: fiscal stability, efficient management, appropriate organization size, technical proficiency, quality orientation, high ethics, visionary thinking, environmental responsibility, and aesthetic awareness

Organizational Chart



Eight Important Programs

The Flood Control District of Maricopa County administers eight programs as the centerpiece of its services for the people of Maricopa County, Arizona. These programs include:

Capital Improvement

All anticipated spending on capital projects for the next five years is identified in the Flood Control District's Capital Improvement Program (CIP). Accommodation of future growth via the development of new facilities as well as existing infrastructure modifications and replacement are addressed by the CIP. Construction timing and finance coordination for needed capital projects are addressed through the CIP on behalf of the Flood Control District and our client cities. For increased efficiency, two crucial elements make up the CIP; our Prioritization Procedures are an administrative process to identify and prioritize future capital projects and funding of those projects is provided for in the fiscal plan.

Budget and planning activities of the Flood Control District are linked by the CIP. Past policy direction is supported by the establishment of priorities between existing and competing projects while the merits of new proposals are also measured and evaluated.

Drainage Administration

The Regulatory Division for the Flood Control District of Maricopa County is responsible for administration of County Drainage Regulations. The purpose of these regulations is the reduction of existing and potential flooding caused by local stormwater. The Flood Control District coordinates closely with other county agencies to insure that new development does not increase runoff, divert flows or back water onto other properties.

Environmental

As the stormwater management agency for the County, the Flood Control District offers guidance and assistance to municipalities from throughout Maricopa County. The District negotiates Intergovernmental Agreements to assist cities with stormwater quality monitoring in compliance with federal regulations. The Flood Control District working in concert with the Maricopa Association of Governments' Stormwater Task Force drafted a model Stormwater Ordinance that resulted in our agency's present role in this vital environmental issue.

The Environmental Branch oversees a compliance program consisting of stormwater quality monitoring and assistance with illicit discharge investigations for the cities of Glendale, Mesa, Phoenix, Scottsdale and Tempe. The District (with the assistance of the United States Geological Survey) currently maintains and operates a network of 17 monitoring stations. These are but a few of the environmental functions the Flood Control District pursues in order to insure compliance with all applicable Federal, State and County environmental rules and regulations.

Floodplain Management

As we attempt to move toward more non-structural approaches to flood control, floodplain management plays an increasingly important role in the successful accomplishment of our agency mission. Identification of areas susceptible to 100-year flooding [as defined by the Federal Emergency Management Agency (FEMA)], as well as review of permit applications for use of the floodplain, and identification of floodplain violations are just a few of the vital roles this branch of the Flood Control District fulfills. Whenever and wherever possible, this branch seeks flood insurance discounts for the people of Maricopa County by actively participating in FEMA's Community Rating System.

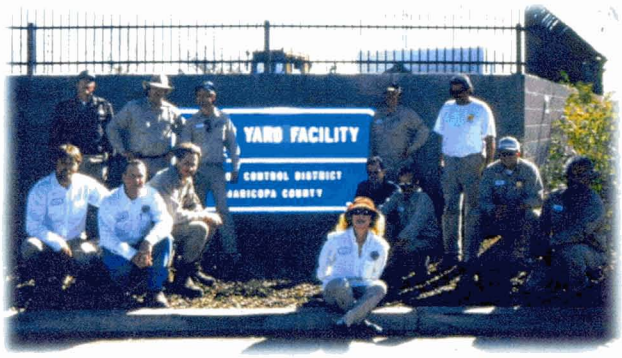
Working Together ...

Floodwarning and Data Collection

One of the valuable tools available to the Flood Control District is the Automated Local Evaluation in Real Time (ALERT) system. In addition to providing data for floodplain studies, watershed computer modeling and flood control structure designs, the ALERT system also provides information to the Maricopa County Departments of Emergency Management and Transportation for flood event planning, evacuations and road closures. The system also provides information that may be useful to the National Weather Service for the issuance of flood watches and warnings.

Maintenance

Countless basins, channels, culverts, levees, storm drains, washes and 22 dams are among the more than 70 flood control structures maintained by the District. Erosion control, fence, gate and sign installation, landscaping, road maintenance and vegetation control are several of the tasks performed by the maintenance branch. Another key responsibility is the monitoring of structures and provision of emergency services during flooding events.



Property Management

The Property Management Division actively participates in planning, design and construction projects on behalf of the Flood Control District by managing real property interests and preparing joint use agreements with our client cities and partnering agencies, among others. Leases, licenses for access and the sale of excess property at the conclusion of construction projects are also functions of the Property Management Division.

Planning

The Planning and Project Management Division of the Flood Control District supports our agency mission of, "...reducing flood risks for the people of Maricopa County." By using planning tools such as: Area Drainage Master Studies and Plans; the Comprehensive Flood Control Program Report; and Watercourse Master Plans, the District identifies regional flooding problems and develops alternative solutions. Key components of this process include environmental assessment and public involvement.

... Accomplishing Our Mission

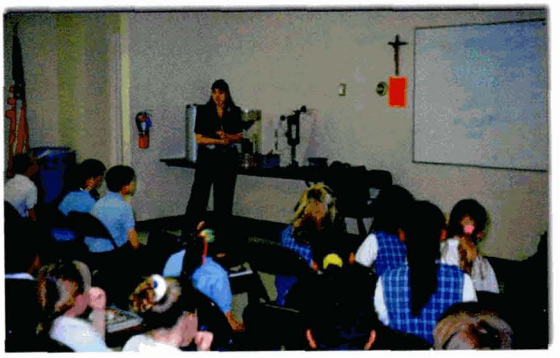
In the Public Eye

Outreach Programs

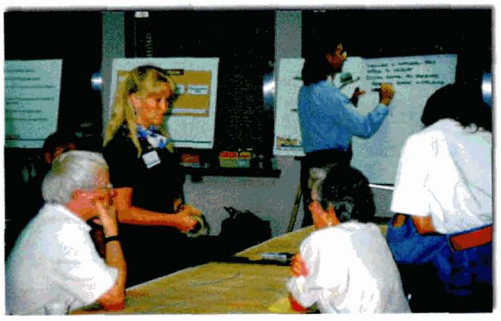
The Flood Control District has begun an Outreach Program in an effort to broaden our contact with the people of Maricopa County. Currently we have widened our public exposure by participating in various Home Shows throughout the year, increasing flood safety awareness through education in Valley schools and including availability of floodplain information at Open House presentations. The new outreach program not only helps us broaden our public audience but enables us to receive a clearer view of how the public views us.

This past year, we have provided floodplain information through the following events:

Valley Home Improvement Shows and Garden Expos	1610 people
Education outreach presentations at Valley Schools	1890 students
April 22, 1998, Valley Forward Earthfest Day	6,000 students
Gateway Community College presentation	64 students
Open House Presentations	157 people



The Educational Outreach program helped to teach flood safety to Valley students.



Open House meetings were successful in reaching the communities and hearing their concerns.

Mike Ellegood participates in one of the Flood Safety presentations to local Boy Scout leaders.

Two of the Flood Control District's eight programs are our most visible to the public. They maintain our good relationship with walk-in requests for information, drainage complaints and performing inspections.

Drainage Administration

8803	Inspections conducted
146,133	Inspector's miles driven
3640	Drainage clearances issued
461	Total plan reviews completed
246	Drainage complaints investigated

Floodplain Management

3	Floodplain delineation studies were begun
7	Floodplain delineation studies were completed
159	Floodplain use permits/clearances were reviewed
1916	Phone requests for general information were handled
522	Walk-in customers were assisted
7522	Flood hazard information requests were handled
228	Flood hazard information notices were recorded

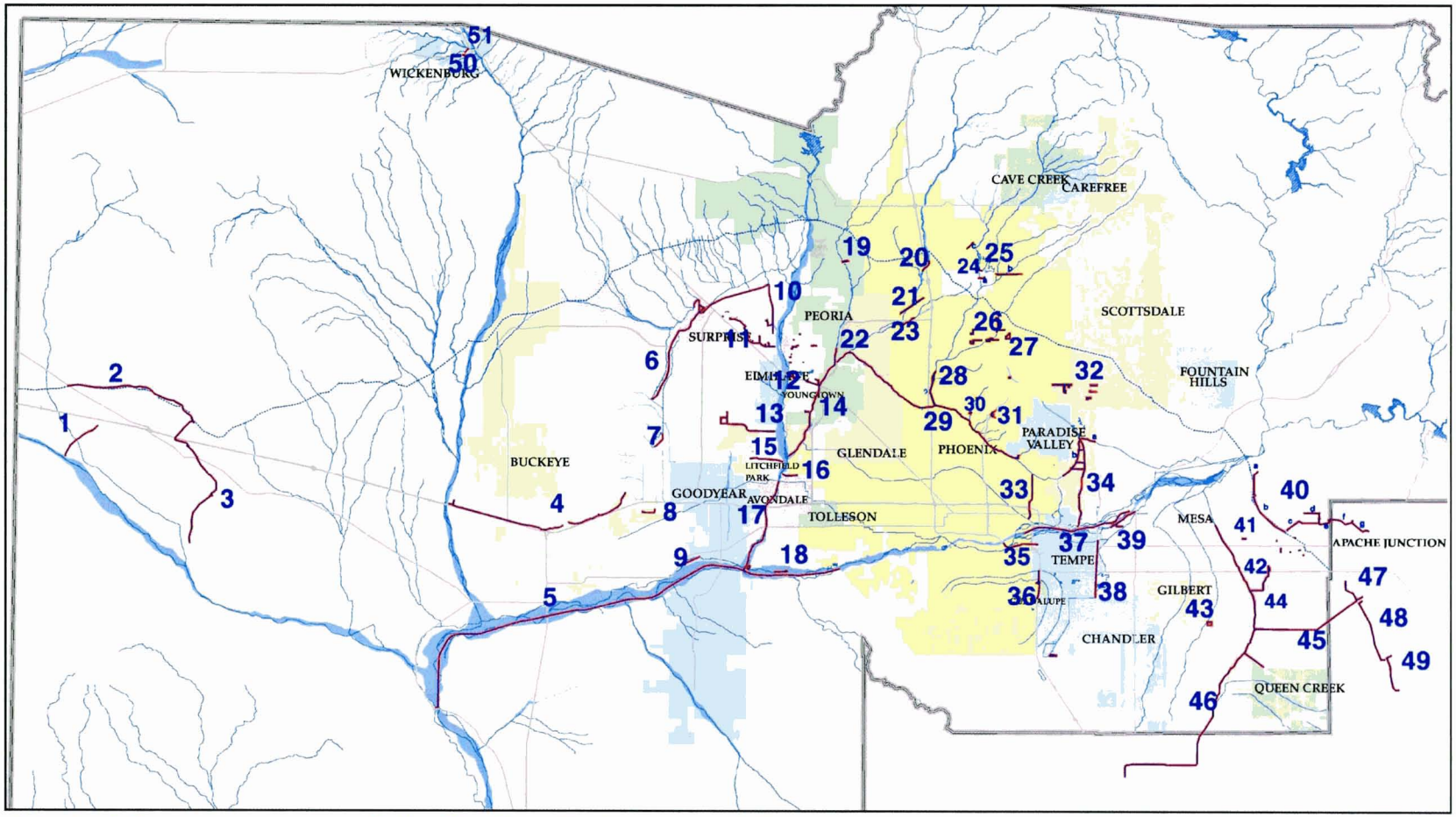
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

Statement of Revenues, Expenditures, and Changes in Fund Balance

		BUDGET	ACTUAL	VARIANCE FAVORABLE (UNFAVORABLE)
REVENUE	FLOOD CONTROL TAX	$43,433,386.00	$42,928,954.43	($504,431.57)
	LOCAL PARTICIPATION	3,683,000.00	3,806,793.43	123,793.43
	RENTAL INCOME	281,335.00	276,479.08	(4,855.92)
	INTEREST INCOME	500,000.00	1,915,627.65	1,415,627.65
	OTHER LAND INCOME	4,248,750.00	9,731,924.55	5,483,174.55
	MISCELLANEOUS	165,032.00	897,593.00	732,561.00
	TOTAL REVENUES	52,311,503.00	59,557,372.14	7,245,869.14
OPERATING EXPENDITURES	PERSONNEL SERVICES	8,035,346.00	7,863,473.09	171,872.91
	SUPPLIES AND SERVICES			
	PROFESSIONAL SERVICES	3,259,348.00	2,818,170.47	441,177.53
	MAINTENANCE SUPPLIES AND SERVICES	1,761,862.00	1,193,495.80	568,366.20
	INTERNAL SERVICES	2,607,663.00	2,359,960.59	247,702.41
	EDUCATION AND TRAVEL	150,945.00	122,583.45	28,361.55
	OTHER SUPPLIES AND SERVICES	848,420.00	500,569.82	347,850.18
	TOTAL OPERATING EXPENDITURES	16,663,584.00	14,858,253.22	1,805,330.78
CAPITAL OUTLAY	PERSONNEL SERVICES	1,776,911.00	1,311,754.63	465,156.37
	REAL ESTATE	3,818,000.00	7,663,932.16	(3,845,932.16)
	ENGINEERING	4,355,000.00	4,045,515.60	309,484.40
	CONSTRUCTION	27,733,000.00	15,640,842.10	12,092,157.90
	VEHICLES AND EQUIPMENT	1,026,410.00	623,299.76	403,110.24
	TOTAL CAPITAL OUTLAY	38,709,321.00	29,285,344.25	9,423,976.75
	TOTAL EXPENDITURES	55,372,905.00	44,143,597.47	11,229,307.53
	EXCESS (DEFICIENCY) OF REVENUES OVER EXPENDITURES	(3,061,402.00)	15,413,774.67	(18,475,176.67)
FUND BALANCE JULY 1, 1997		11,821,654.00	20,795,332.14	
FUND BALANCE JUNE 30, 1998		$8,760,252.00	$36,209,106.81	($18,475,176.67)

Budget and Actual for the Fiscal Year Ended June 30, 1998
Preliminary and Unaudited.

Flood Control District of Maricopa County Structure Map



1. Centennial Levee
2. Harquahala FRS & Floodway
3. Saddleback FRS & Diversion
4. Buckeye FRS 1, 2, 3
5. Salt-Gila Clearing and Channel
6. McMicken Dam & Outlet Channel
7. White Tanks FRS 3
8. White Tanks FRS 4
9. Perryville Bank Stabilization
10. El Mirage Drain
11. Sun City West Drains
12. Sun City Drain
13. Dysart Drain
14. New River Channelization
15. Colter Channel
16. Indian School Rd Drain
17. Agua Fria Channelization
18. Holly Acres Levee & Bank Stabil.
19. New River Dam
20. Skunk Creek Channel & Levee
21. Adobe Dam
22. Skunk Creek Channelization
23. Scatter Wash Channel
24. Cave Creek Dam
25. Cave Buttes Dam
26. Upper East Fork Cave Creek
27. Paradise Valley Detention Basin #4
28. Cave Creek Channelization
29. Arizona Canal Diversion Channel
30. 10th Street Wash Basins
31. Dreamy Draw Dam
32. PVSP Cactus Road Improvements
33. Old Cross Cut Canal
34. Indian Bend Wash
35. 48th Street Drain
36. Guadalupe FRS
37. Salt River Channel
38. Price Drain
39. Alma School Drain
40. Buckhorn-Mesa Flood Retarding Strct
41. University Drive Basin
42. Sossaman Channel & Basin
43. Gilbert Crossroads Park Basin
44. Guadalupe Channel
45. Powerline Floodway
46. East Maricopa Floodway
47. Powerline Dam
48. Vineyard Dam
49. Rittenhouse Dam
50. Sunset and Sunnycove Dams
51. Casandro Wash Dam & Outlet

Flood Control District of Maricopa County
Annual Report
1998 - 1999

Property of
Flood Control District Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

Flood Control District of Maricopa County

1998 - 1999 Annual Report

PUBLISHED BY:

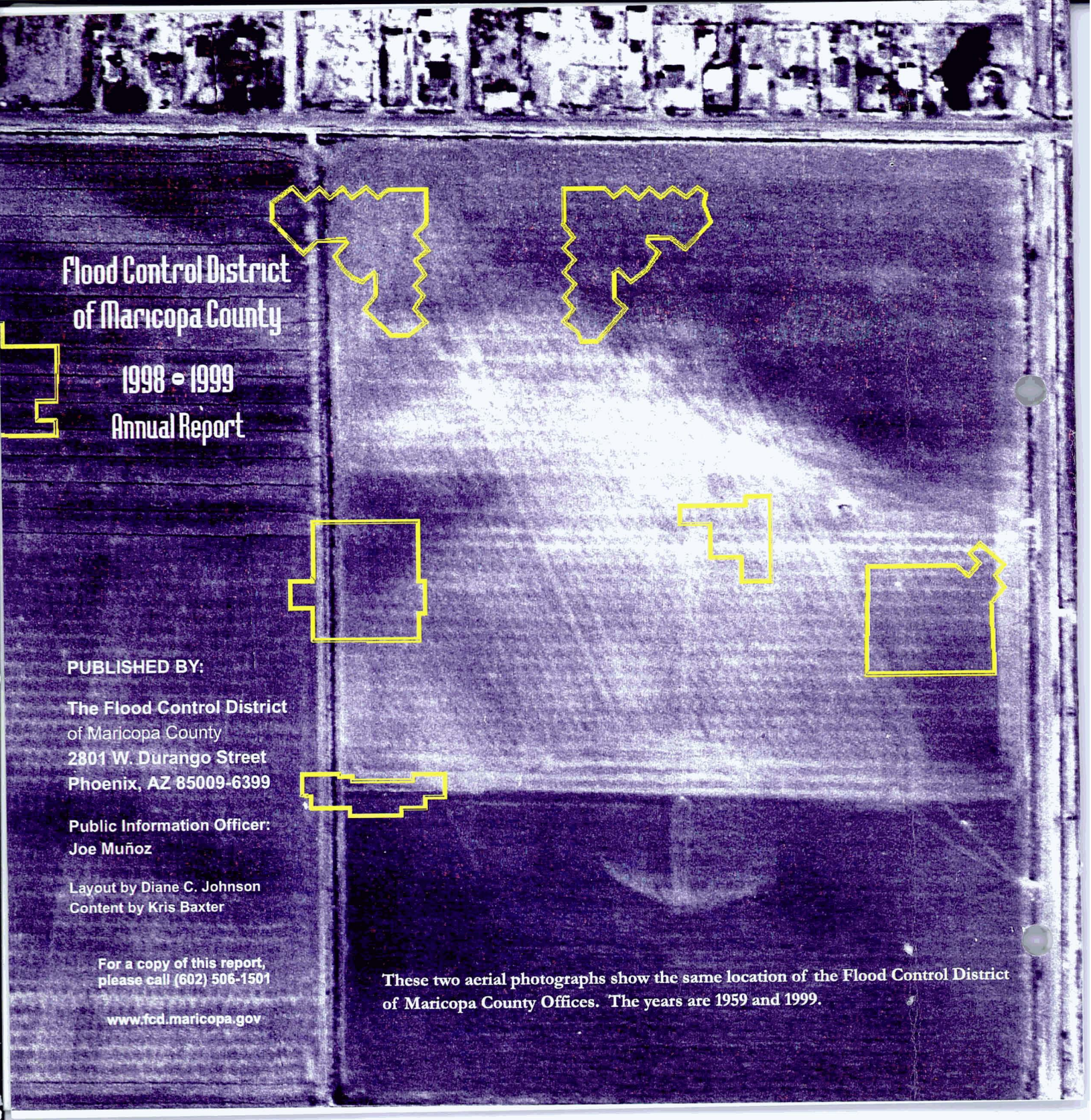
The Flood Control District
of Maricopa County
2801 W. Durango Street
Phoenix, AZ 85009-6399

Public Information Officer:
Joe Muñoz

Layout by Diane C. Johnson
Content by Kris Baxter

For a copy of this report, please call (602) 506-1501

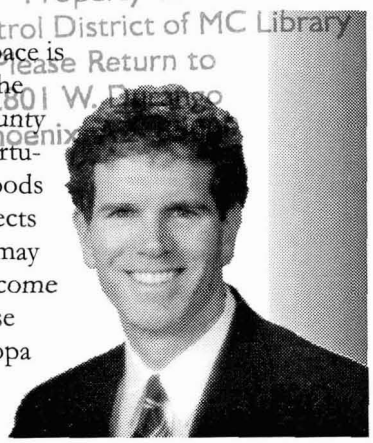
www.fcd.maricopa.gov



These two aerial photographs show the same location of the Flood Control District of Maricopa County Offices. The years are 1959 and 1999.

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix

Chairman's Message



As Maricopa County continues to grow, finding new ways to preserve open space is extremely important. While its primary mission is to protect the public from the affects of stormwater and floods, the Flood Control District of Maricopa County is working with the Board of Supervisors and other leaders to help plan opportunities to preserve land for community enjoyment. In years past, controlling floods meant pouring concrete and fencing off land. Today, it means designing projects for multiple uses to make the best use of land. For example, retention basins may be converted by cities into neighborhood parks. Land along a channel may become a jogging trail. These efforts by the Flood Control District to provide multi-use facilities are excellent examples of the forward thinking encouraged by Maricopa County as we go forward into the new millennium.

Fulton Brock

Board of Directors

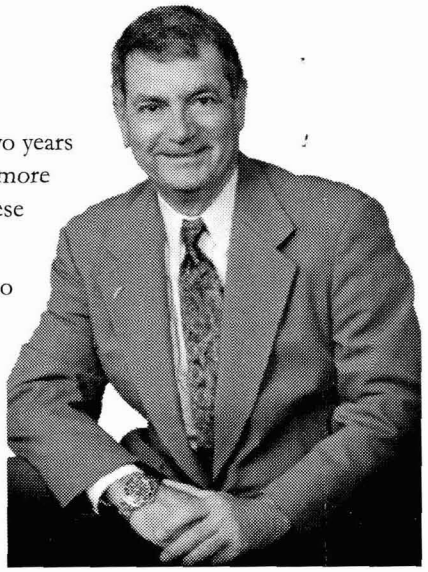
District 1	Fulton Brock
District 2	Don Stapley
District 3	Andrew Kunasek
District 4	Janice Brewer
District 5	Mary Rose Wilcox

Flood Control Advisory Board

District 1	Gilbert Rogers
District 2	John E. Miller, Jr.
District 3	Hemant Patel, Chairman
District 4	Russell G. Stevens
District 5	Melvin Martin
City of Phoenix	Thomas Callow
Salt River Project	Paul Cherrington

Michael S. Ellegood, Chief Engineer and General Manager

Dear Stakeholder,



When I assumed the responsibilities of Chief Engineer and General Manager two years ago I established three key initiatives: make the District more **entrepreneurial**, more **digital** and more **sustainable**. We have made substantial progress in each of these initiatives:

Entrepreneurial: We have instituted rigorous project and cost control systems to give our managers a better set of tools to control the cost of our services. We have increased the percentage of local cost participation and we have pursued revenue generating opportunities on District owned properties. These combined efforts have resulted in a staff reduction of 10 percent and a reduction in the secondary tax rate of 6 cents this past year.

Digital: A major accomplishment this past year was the complete integration of the District's Flood Warning System with the County's Emergency Management System. This electronic integration allows real time weather forecasting and flood prediction to be superimposed onto street maps so that during flood emergencies street closures and potential evacuation areas may be quickly identified. This was accomplished using an electronic Geographic Information System (GIS) format. This coming year we will use the GIS as our primary planning platform and we are adapting our flood delineation methods to utilize it. When completed, this initiative will save the taxpayer approximately $1 million per year because of improved efficiency.

Sustainable: The District owns nearly 25,000 acres of land in Maricopa County, including hundreds of miles of waterway. Most of this property is closed to the public, but in collaboration with Valley cities and parks and recreation agencies we are opening it for public access. We have started planning a 47-mile recreation corridor along the Agua Fria River in the West Valley and a 26-mile corridor along the East Maricopa Floodway in the East Valley. These projects will take years to complete, but generations to come will be able to enjoy these long stretches of open space.

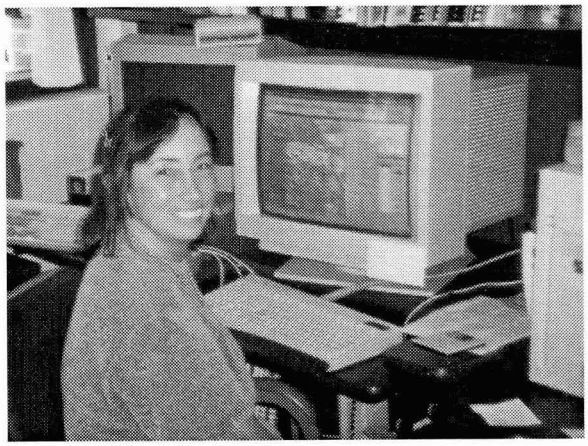
We are also softening our approach to flood control structures, integrating landscape design from the outset into the project. We are partnering with the US Army Corps of Engineers in two habitat restoration projects and we are using our planning activities to retain open space near flood hazard areas. In the future, we will consider acquiring flood prone properties to keep them from development. It is anticipated that this approach will save millions in future infrastructure costs and in potential flood losses while preserving our watercourses in their natural state.

The District wants to be recognized as being the "Quality of Life People" Certainly keeping County residents safe from flood hazard goes a long way towards improving quality of life, but by providing flood protection while preserving open space and by integrating needed recreation corridors in our existing structures we can take quality of life and flood protection to a new level.

Yours truly,

Michael S. Ellegood, PE
Chief Engineer and General Manager

FAST Software



A county-generated computer program can save county taxpayers money and prevent them from unknowingly buying land in a floodplain.

This year, Marta Dent, supervisor of the GIS section, developed an innovative software system called FAST, Floodplain and Address Searching Tool.

By simply typing in an address, a Maricopa County resident now can determine whether he lives in a floodplain and should have flood insurance. Those contemplating purchasing property may discover whether they can build on that property if it is in a floodplain. By pressing a button residents can see a current aerial photo of the area or a photo from 30 years ago.

FAST also contains census & property information to help planners determine how many people live in an area and what the value of their property is.

"This is very useful when we plan where to put flood control structures," Dent said.

Also, floodplain administrators can now perform functions that once took three or four hours in seconds.

The software is also being used by the Emergency Operations Center for Maricopa County. When massive flooding occurs, sheriff's deputies and Maricopa County Department of Transportation personnel may use the software to show in real time where they have set up barricades. Stars, representing sheriff's badges, appear on the computer screen once the deputy closes the intersection. Barricade symbols showing the direction of closure appear when MCDOT crews replace the sheriff deputies.

The same holds true in case of an emergency at Palo Verde Nuclear Power Plant. This aspect of the software was tested successfully in February.

"You could watch the barricades go up remotely," Dent said. "It was really exciting."

The system is now on-line, allowing residents immediate, 24-hour access to this software.

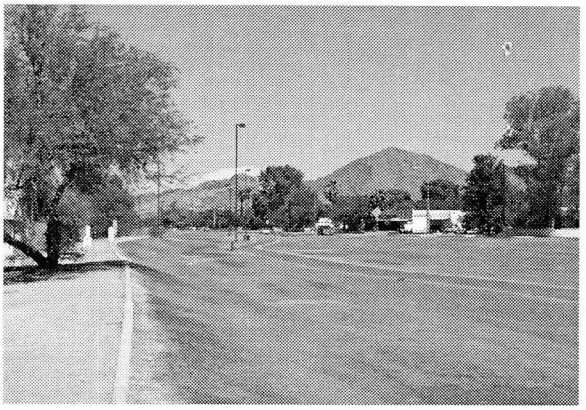
"This is an important part of making the District more digital, which is one of our three goals," said Mike Ellegood, Chief Engineer and General Manager. "This kind of forward thinking makes the District among the most innovative in the country.

PREDICTING FLOODS:

- Hydrologists monitor data from the 227 automated rain gauges throughout the watershed and accumulate information from the 120 volunteer rain gauges.
- Hydrologists use data gleaned from the 15 weather stations throughout the district to monitor wind speed and direction, humidity and barometric pressure. Staff meteorologist Jim Perfrement uses weather radar to determine where it is raining, the direction of storms and the amount of rainfall.
- Staff hydrologists compare the historical data on flooding in an area to current rainfall
- If severe flooding is a possibility, the district notifies the sheriff's office to prepare residents for an emergency.

Sustainable

Old Crosscut Canal



Two neighborhoods once separated by an unsightly canal now socialize atop it, thanks to a $20 million project by the Flood Control District of Maricopa County and the City of Phoenix.

Complaints about the amount of trash being dumped into the Old Crosscut Canal spurred the City of Phoenix and the Flood Control District of Maricopa County to investigate alternative methods to better control the flow of storm and irrigation waters while making the canal more aesthetically pleasing.

The Old Crosscut Canal links the Arizona Canal to the Grand Canal. Beyond carrying irrigation water, it can be used to prevent floods by channeling excess stormwater.

Flood control representatives determined that they could install two underground box culverts to carry irrigation and excess stormwaters. Above ground, they could build a retention channel which the City of Phoenix could turn into a long, winding park where residents could walk, bicycle or jog when it wasn't carrying water.

The Flood Control District finished renovating the Old Crosscut Canal from McDowell Road to Indian School Road in March. By mid-2000 the City of Phoenix expects to complete the landscaping for the project.

"This is part of the new focus of the Flood Control District," said Mike Ellegood, P.E., Chief Engineer and General Manager. "We want to build flood control devices that contribute to the overall quality of neighborhoods and are more cost effective to maintain. We want to work in harmony with the environment and keep the public safe from the hazards of floods and stormwaters."

The canal, once blocked to residents by a tall fence, acted as a dividing line between the two neighborhoods between 48th Street and 47th Drive. Now, neighbors jog, bike and walk their pets atop the canal.

"We say hello to each other. It's a nice way to meet and see people. We don't stay in our backyards as much," said Dennis McDonald, vice-president of the Arcadia Osborn Homeowners Association.

Senior project manager Don Rerick said the Old Crosscut Canal was a good example of how the public involvement process works. "Everybody got what they wanted out of this," he said. "The citizens got a park and the city got a covered channel, which reduced its safety risks and improved the look of the area."

Public Information Outreach

The public information office of the Flood Control District of Maricopa County helps protect the public through education. Visiting schools, trade shows and airing public service announcements teaches people about the dangers of driving through washes, helps them determine whether they live in a floodplain and demonstrates the need for channels, dams and basins in selected areas.

Last year, approximately 25,000 Maricopa County residents received flood safety education. Flood Control District employees taught people about the district and its missions at some of these sites:

- Southwest Elementary School
- Arizona Best Realty
- Mesa Design Show
- Queen Creek High School
- EarthFest '99
- Maricopa County Fair

Value Engineering

A new method of scoping projects has cut in half the amount of time it takes for the Flood Control District of Maricopa County to set the costs of consulting contracts. The same process slashed the average cost of negotiations from $25,000 to $5,000 per project.

The district uses what it calls value engineering to work out the details of consulting contracts. The process questions each step of a function in order to find more time efficient and cost-effective approach.

Value methodology originated in WWII when the shortage of traditionally available goods forced industries to find alternatives to required resources. Workers examined each item they used, determined its function, then matched it with other items that provided the same function.

Today, Geza Kmetty and other value engineers ask similar questions of themselves and consultants: What does this do? How does it do it? Why should we do it this way?

"We take short steps that build upon each other," Kmetty said. "These form the basis of conversation and eventually become a list of tasks. After we do this we become much more knowledgeable about the project ahead of us and the alternatives available to us."

The benefits to the Flood Control District of Maricopa County include:

- ★ The district issued fewer change orders than ever before Overall negotiating costs dropped by 57 percent
- ★ The amount of time to negotiate a contract fell from about 300 days to about 130 days
- ★ Taxpayers saw a higher value per dollar

PLANNING A MULTI-USE CORRIDOR: The Process

- Engineers use state of the art methods to study a range of environmentally friendly flood control solutions to protect the public and make the best use of tax dollars.
- Consultants meet with citizens, public officials, environmental groups and others to determine if the flood control options may be designed to allow the pubic to use the open space surrounding them.
- Because the district can only pay for flood control devices and not other amenities, city officials must determine whether they want to build recreation facilities such as trails or parks in conjunction with flood control devices.
- In concert with city officials, landowners and residents, the Flood Control District chooses a design that provides the most protection, costs the least and brings the most benefit to taxpayers.
- The district examines if any land needs to be purchased or rezoned in order to build the appropriate flood control device.
- The district commissions a study to determine environmental impacts, historical significance of an area. If the benefits outweigh the impact, a flood control structure is built.

★ All involved walked away with a better understanding of each project

★ Team spirit rose

Here's how value engineering works at the Flood Control District of Maricopa County:

Once the district selects a consultant, a value engineer team leader is chosen to oversee the negotiations, which are called project scoping meetings. The term is appropriate because money is rarely discussed in these meetings; rather, the focus rests on finding the best way to accomplish the required work.

All the eligible value engineers at the Flood Control District have earned certification through the Society of American Value Engineers International. This gives them both the knowledge and credibility required to facilitate these important meetings.

The value engineer, together with the district's project manager, sets the number of mandatory meetings he believes will be enough to scope the project. This may be as few as one or as many as five, day long sessions.

"It's okay to separate these meetings several days or weeks apart so people may do the outside research they need before coming back with their revised cost proposals," Kmetty said.

The team leader also determines which technical and administrative staff members must attend the meeting from the Flood Control District. Affected agencies and stakeholders may also attend these meetings.

"There is a true synergy that happens when you involve a variety of voices," Kmetty said. "People come up with new and innovative ways of accomplishing tasks."

The project manager and value engineer then create detailed agendas based on the scope of work and the five phases of value engineering.

The information phase asks participants to discover the main purpose of the project and determine if the end product will deliver that goal. Along the way, team members must analyze each of the functions suggested and determine whether they are required. They are also to discover any constraints in protecting the public from floodwaters.

In the speculation phase, the team weeds out any redundant functions which would have increased the cost of the job; then adds in missing functions which would have resulted in change orders. The scope is revised accordingly and the labor hours

PROTECTING TAXPAYERS: The Process

- Public meetings are held during the planning stage of any major project so taxpayers may express their opinions and ideas.
- A certified value engineer takes each Flood Control District project contract through a review process. This reduces costs, saves time and eliminates most change orders.
- Chief Engineer and General Manager, Michael Ellegood, P.E. reviews each project for efficiency.
- The Flood Control Advisory Board hears a presentation on each project before voting on it. To earn their recommendation, the project must receive a majority of the board's votes.
- A majority of the Board of Directors, which is also the Maricopa County Board of Supervisors, must approve the project before funds may be spent.

required are reassessed.

Once the scope of work becomes more accurate, the team may evaluate the desired level of effort needed for each step. By analyzing the expectations, the Flood Control District can save time and money the agency may have spent on elements not desired.

"This is especially effective when we are evaluating studies because they are so subjective," Kmetty said. "The consultant may think we want a Cadillac when in reality we want a junkyard car, or vice versa."

Then the team brainstorms alternatives to the traditional ways of completing tasks. Team members compare the new ideas with what previously worked - or didn't -- then select the best methods.

The scope of work gets rewritten for the last time. The consultant finalizes the cost estimate. Together, the team writes an implementation plan, agrees on a schedule of work, then documents the meetings.

The time involved is worth it, Kmetty said. Consultants agree with him.

Drainage Administration and Floodplain Management

As we move toward non-structural approaches to flood control, Drainage Administration and Floodplain Management play increasing roles in the successful accomplishment of our agency's mission. Floodplain Management seeks insurance discount for residents by actively participating in FEMA's Community Rating Systems. Drainage Administration coordinates closely with other agencies to insure that new development does not increase runoff, divert flows or back water onto other properties.

Floodplain Management

8	Floodplain delineation studies were begun
7	Floodplain delineation studies were completed
253	Floodplain use permits/clearances were reviewed
2828	Phone requests for general information were handled
717	Walk-in customers were assisted
8640	Flood hazard information requests were handled
201	Flood hazard information notices were recorded

Drainage Administration

10,715	Inspections conducted
167,719	Inspector's miles driven
4980	Drainage clearances issued
845	Total plan reviews completed
428	Drainage complaints investigated

The Flood Control District of Maricopa County
2801 West Durango Street
Phoenix, Arizona 85009-6399
(602) 506-1501
Fax: (602) 506-4601
TT: (602) 506-5897
www.fcd.maricopa.gov

Financial Highlights

Fiscal Year Ended June 30, 1999
Preliminary and Unaudited

Revenues	Dollars	Percent
Flood Control Tax	$44,441,000	73
Local Participation	10,704,000	18
Interest Income	2,336,000	4
Land Sales And Rental	870,000	1
Miscellaneous	2,276,000	4
Total Revenue	60,627,000	100
Expenditures		
Operating	16,794,000	28
Flood Control Capital Improvements	42,893,000	71
Vehicles And Equipment	800,000	1
Total Expenditures	60,487,000	100
Excess (deficiency) Of Revenues Over Expenditures	140,000	
Fund Balance July 1, 1998	36,066,000	
Fund Balance June 30, 1999	**$36,206,000**	

'STILL ONLY A NICKEL'

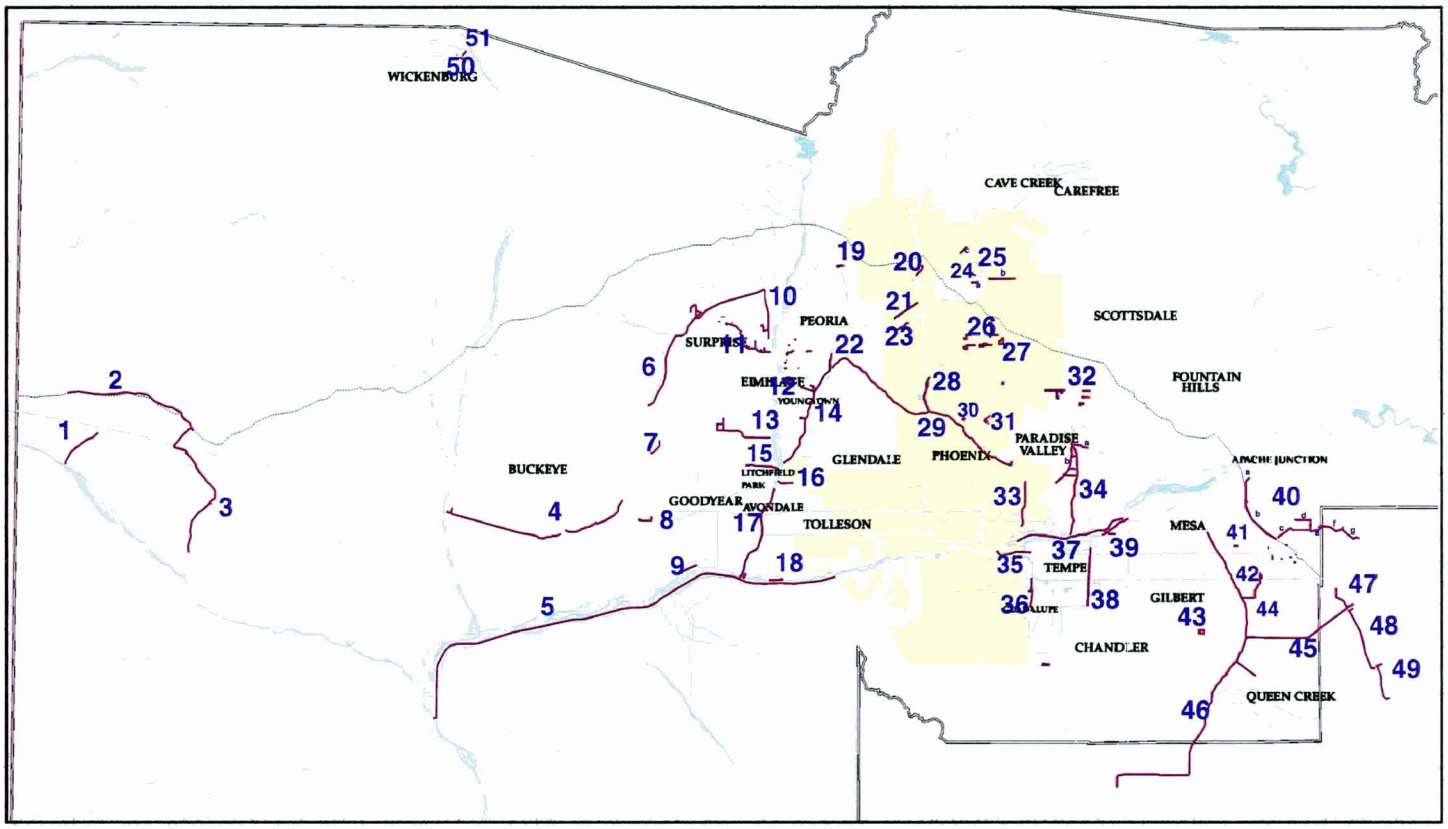
When the District was being established in 1961, proponents touted that the tax was "only a nickel" Although the tax rate has fluctuated over the years, the rate this current fiscal year is $.28. If that 1961 nickel were adjusted for inflation, it would equal $.29 in current dollars! Though the revenues generated are 178 times greater, the impact on the individual property owner is the same.

In 1998, the District developed a comprehensive program to reduce the tax rate by six cents over a five year period. While a significant increase in the assessed valuation of Maricopa County properties in the past two years has greatly facilitated this effort, internal cost reduction efforts and a rigorous cost sharing program with our municipal partners has allowed the goal to be met in three years.

Flood Control District Tax Levy Rate

Fiscal Year Ending	Levy Rate	Tax Revenue
1961	0.05	$253,000
1962	0.05	$288,000
1963	0.02	$126,000
1964	0.02	$135,000
1965	0.02	$145,000
1966	0.02	$153,000
1967	0.02	$158,000
1968	0.02	$164,000
1969	0.05	$446,000
1970	0.05	$454,000
1971	0.05	$480,000
1972	0.04	$425,000
1973	0.05	$645,000
1974	0.20	$3,428,000
1975	0.20	$3,747,000
1976	0.20	$4,154,000
1977	0.20	$4,395,000
1978	0.20	$4,675,000
1979	0.20	$5,026,000
1980	0.20	$5,342,000
1981	0.43	$11,825,000
1982	0.34	$13,720,000
1983	0.50	$21,779,000
1984	0.48	$25,780,000
1985	0.50	$28,697,000
1986	0.50	$33,644,000
1987	0.50	$41,556,000
1988	0.50	$46,059,000
1989	0.50	$51,345,000
1990	0.43	$46,879,000
1991	0.42	$39,715,000
1992	0.44	$35,386,000
1993	0.39	$39,715,000
1994	0.36	$35,386,000
1995	0.36	$35,281,000
1996	0.33	$36,118,000
1997	0.34	$38,712,000
1998	0.34	$42,929,000
1999	0.32	$44,441,000

Flood Control District of Maricopa County Structure Map



1. Centennial Levee
2. Harquahala FRS & Floodway
3. Saddleback FRS & Diversion
4. Buckeye FRS 1, 2, 3
5. Salt-Gila Clearing and Channel
6. McMicken Dam & Outlet Channel
7. White Tanks FRS 3
8. White Tanks FRS 4
9. Perryville Bank Stabilization
10. El Mirage Drain
11. Sun City West Drains
12. Sun City Drain
13. Dysart Drain
14. New River Channelization
15. Colter Channel
16. Indian School Rd Drain
17. Agua Fria Channelization
18. Holly Acres Levee & Bank Stabil.
19. New River Dam
20. Skunk Creek Channel & Levee
21. Adobe Dam
22. Skunk Creek Channelization
23. Scatter Wash Channel
24. Cave Creek Dam
25. Cave Buttes Dam
26. Upper East Fork Cave Creek
27. Paradise Valley Detention Basin #4
28. Cave Creek Channelization
29. Arizona Canal Diversion Channel
30. 10th Street Wash Basins
31. Dreamy Draw Dam
32. PVSP Cactus Road Improvements
33. Old Cross Cut Canal
34. Indian Bend Wash
35. 48th Street Drain
36. Guadalupe FRS
37. Salt River Channel
38. Price Drain
39. Alma School Drain
40. Buckhorn-Mesa Flood Retarding Strct
41. University Drive Basin
42. Sossaman Channel & Basin
43. Gilbert Crossroads Park Basin
44. Guadalupe Channel
45. Powerline Floodway
46. East Maricopa Floodway
47. Powerline Dam
48. Vineyard Dam
49. Rittenhouse Dam
50. Sunset and Sunnycove Dams
51. Casandro Wash Dam & Outlet

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

Flood Control District of Maricopa County

1999-2000 Annual Report

Flood Control District Fortieth Anniversary

003.122

Front Cover: Scatter Wash near 35th Avenue and Loop 101 Freeway

Photo taken by Jeremy Pearlman

Flood Control District
of Maricopa County

1959 - 1999

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

The Flood Control District of Maricopa County was organized on August 3, 1959, pursuant to Arizona Revised Statues. Our formation followed the passage in March, 1959, of legislation which empowered counties to set up special district for the purpose of providing flood control for metropolitan, urban, and agricultural areas in Maricopa County to prevent the flooding of property and the endangering of lives of people.

The Flood Control District is a municipal corporation and political subdivision of the State of Arizona. We are governed by a Board of Directors which is also the Board of supervisors of Maricopa County.

Table of Content

Chairman's Message
Page 2

Message from the Chief Engineer and General Manager
Page 3

Forty Years in the Desert
Page 4

Community Rating System
Page 6

Community Outreach
Page 7

Financial Highlights
Page 8

Flood Control Advisory Board

The Flood Control Advisory Board advises the Board of Directors on flood control, water conservation, floodplain management, drainage, and related matters. It reviews planning, operations and maintenance of flood control facilities, and recommends an annual budget to the Board of Directors.

Advisory Board members are appointed by the Board of Supervisors to a five year term.

From Left:

Paul Cherrington, Ex Officio, Gilbert "Shag" Rogers, District One, Thomas Callow, Ex Officio, Melvin Martin, District Five, Mike Saager, District Two, Shirley Long, District Four, and Hemant Patel, District Three

Board of Directors

Fulton Brock
District One

Don Stapley
District Two

Andrew Kunasek, Chair
District Three

Janice Brewer
District Four

Mary-Rose Wilcox
District Five

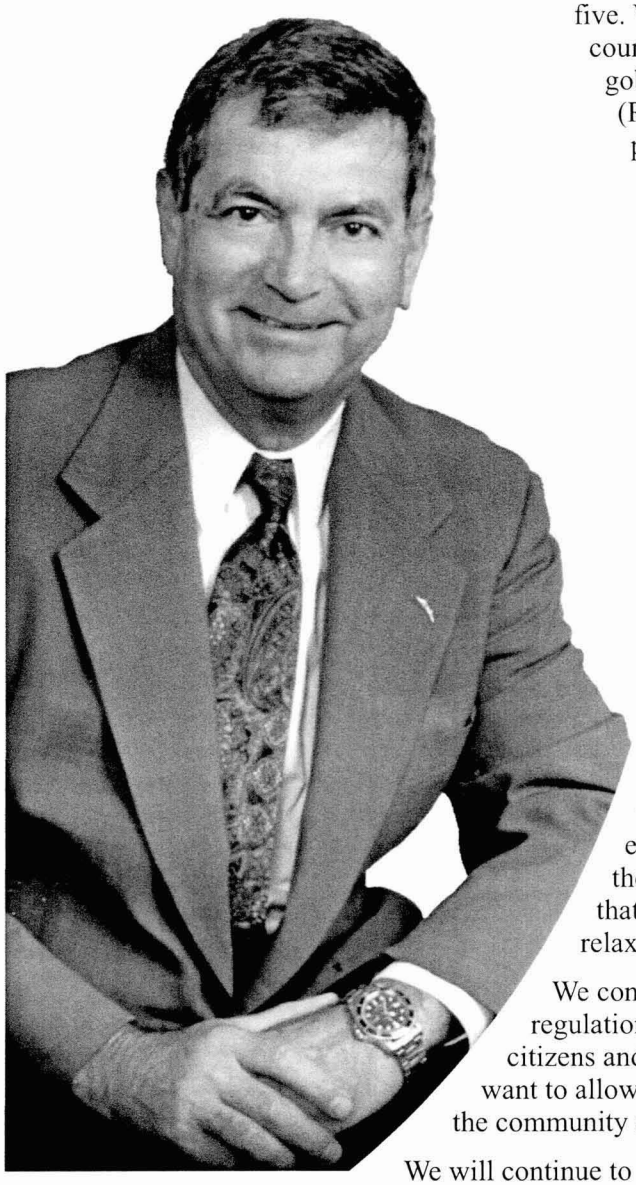
Chairman´s Message

Forty years ago the State of Arizona determined that the best way to keep people safe from the ravages of stormwaters was to begin flood control districts in each county. Since then, the Flood Control District of Maricopa County has constructed many basins, channels and dams with the sole purpose of protecting our communities. These include the world-renown Indian Bend Wash, the Old Crosscut Canal, the Arizona Canal Diversion Channel and many others.

Today we look at flood control as more than a means of keeping people and possessions safe. We look at it as a method of improving our communities. The ugly concrete channels and dams that once were standard are now used as a last resort. We are using Nature's own washes and streams to convey water so that we do not disturb the environment and instead, allow residents to enjoy Arizona's beautiful open space.

It is my intent that we continue these conservation efforts in the future. This forward-thinking approach leaves our future generations with something of great value, **our land.**

Message from the Chief Engineer and General Manager



Michael S. Ellegood, P.E.

Forty years ago, when the Arizona State Legislature determined that counties should accept responsibility for flood control in the state, Arizona was a much different place.

The population of the entire state was barely over 1 million residents. Agriculture and mining were leading industries. Picture, if you will, a downtown Phoenix that still boasted cotton fields, orange groves and alfalfa plants. One-quarter of the current population of this state lived here in 1959. While flood control was imperative to restrain the waters that flooded the valley, it was easier then to route channels and to create basins. There was less infrastructure to get in the way.

Today, agriculture doesn't even make the top ten industries in the state, and mining doesn't hit the top five. We live in the fastest growing county in the country, with land in the Phoenix area getting gobbled up at the rate of an acre an hour (Residents, trying to gain control of the frantic pace, had two initiatives on last November's ballot geared to regulate the growth and preserve open space). While the mission of the Flood Control District is still to prevent stormwaters from harming people and possessions, predicting the path of development and planning for the impacts it will have on flooding in communities has become imperative to our success.

I am proud to say that we are preparing for the influx of people that will soon arrive. Our Watercourse and Area Drainage Master Plans look to the future to determine what communities will need twenty years from now, and indicate the channels, basins and dams required to protect residents. This makes sense. Cities can include these necessary elements in their budgets, parks, recreation plans and zoning ordinances. We can work with the communities in our county to help create the best possible living environment. We want to use our facilities for the greatest good. This means planning them so that residents can safely use them for recreation and relaxation when they are not conveying floodwater.

We continue to enforce and review floodplain regulations to determine whether we are protecting citizens and the environment with appropriate rules. We want to allow the fullest use of properties while still keeping the community safe.

We will continue to augment our technological resources, such as our ALERT center and our GIS department, so that we can protect the public with early warnings, teach them about flood safety on our web page, and help them determine whether they live in a floodplain.

As Maricopa County continues to grow and change, we must too. I look forward to the challenges and opportunities the next year has to offer and hope that we continue to bring about the kind of county that we all want to share.

Forty Years in the Desert

The Flood Control District of Maricopa County manages floodplains for an area that covers more than 9,000 square miles. The total number of Flood Control employees in the first year of operation was three staff members The agency new employs more than 200 people and maintains over 70 flood control structures with 151,137 acres of water channels. The District is also responsible for 16 weather stations, 527 miles of access roads, nearly two million linear feet of fencing and 200 rain gages. Listed below are the significant flood control structures and the year of completion.

1967	Powerline Dam
1968	Powerline Floodway And Vineyard Dam
1969	Rittenhouse Dam
1973	Dreamy Draw Dam
1975	Buckeye Dam 1,2,and 3 Old Crosscut Canal Guadalupe Dam
1976	Sunset Dam Sunnycove Dam
1979	Spook Hill Dam
1980	Cave Buttes Dam
1981	Saddleback Dam And Diversion Channel
1982	Harquahala Dam And Floodway Channel
1983	Skunk Creek Channels And Levee
1984	Adobe Dam Signal Butte Floodway Channel
1985	Holly Acres Levee And Bank Stabilization New River Dam Indian Bend Wash
1987	Signal Butte Dam Pass Mountain Diversion Channel
1989	East Mesa Floodway Channel
1989	East Maricopa Floodway Channel and Guadalupe Channel
1993	The New River Channelization University Drive Basin
1994	The Arizona Canal Diversion Channel Colter Channel
1995	The Scatter Wash Channel (47th to 35th Avenues) Beardsley Road Regional Drainage System, New River Channel Improvements (Thunderbird Road to the Skunk Creek confluence) Salt River Channel
1996	Dysart Drain Improvements Upper East Fork Cave Creek Casandro Wash Dam and Outlet
1997	The Salt River Channel (Dobson Road to Country Club Road) Price Drain Maryvale Stadium Basin Tenth Street Wash Basins
1999	Reconstruction of the Old Cross Cut Canal

Mission

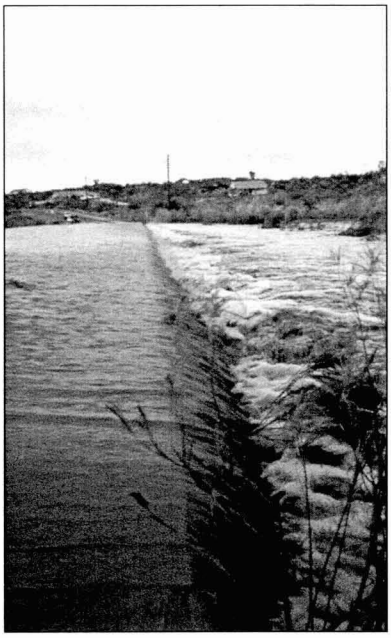
To reduce the risks of flood loss; minimize the impacts of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values served by floodplains.

Vision

To be recognized throughout North America as an agency that is unsurpassed in its dedication to accomplishing its mission, and being responsive to its clients in an efficient, effective, and fiscally responsible manner. We will be known as stewards of the environment and the public trust, and for our concern about the effect of our actions for not only the current, but future generations.

Pledge

To show personal integrity and professionalism in all our actions, and to display continuous improvement, innovative thinking, and technical excellence in all our work.



Principal District staff

Michael S. Ellegood, P.E.
Chief Engineer and General Manager

David A. Brozovsky
Flood Control Administrator

Edward A. Raleigh, P.E.
Engineering Division Manager

Thomas J. LaMarche
Information Technology Division Manager

George D. Lindop
Operations and Maintenance Division Manager

Thomas D. Johnson, P.E.
Planning and Project Management Division Manager

James L. Schwartzmann
Public Works and Right-of-Way Land Division Manager

Dave R. Johnson
Regulatory Division Manager

A Commitment to our Customers

Community Rating System

The Flood Control District's participation in the National Flood Insurance Program began in December 1970. Since then Maricopa County has adopted subdivision regulations, zoning ordinances and a system of building permit review.

Floodplain Management

The Floodplain Management program involves delineation of 100-year floodplains in Maricopa county and the regulation of development within their boundaries. Enforcement involves on-site inspection of new construction and structural repairs to ensure compliance. The District's active floodplain management program is responsible for the current 20% reduction in flood insurance premiums in unincorporated areas of the county.

Floodplain Management Activity

9	Floodplain delineation studies were begun
3	Floodplain delineation studies were completed
249	Floodplain use permits/clearances were reviewed
3673	Phone requests for general information were handled
697	Walk-in customers were assisted
7186	Flood hazard information requests were handled
144	Flood hazard information notices were recorded

Drainage Administration

The Drainage Administration program involves the review and inspection of drainage facilities to ensure that development will not adversely affect neighboring properties. Drainage Administration coordinates closely with other agencies to ensure that new development does not increase runoff, divert flows or back water onto other properties. The district also investigates reports of flooding and possible flood hazards reported by citizens.

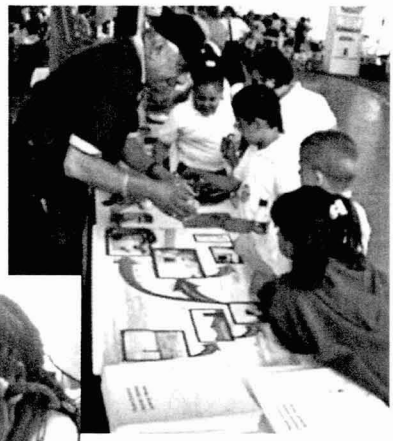
Drainage Administration Activity

9916	Inspections conducted
157,235	Miles driven by inspectors
7560	Drainage clearances issued
616	Total plan reviews completed
273	Drainage complaints investigated

Community Outreach

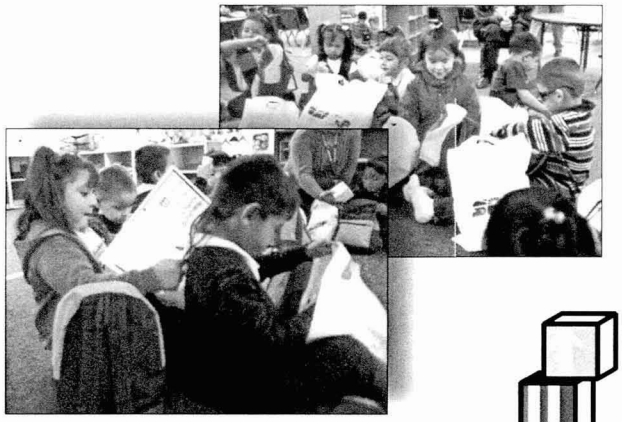
To provide better service to our clients, the Flood Control District participates in various trade shows and home improvement expos in the valley. This vehicle provides an excellent means of reaching our clients. The FCD has designed an educational program which is presented to Maricopa County schools, civic, and professional organizations. As part of this educational program, the Flood Control District participates in Valley Forward's Earthfest Environmental Expo held annually in April.

Earthfest 2000



From 3-dimensional maps to our weather monitoring systems, school children learn about FCD's role in the environment at Earthfest.

Part of our efforts of community outreach include our Garcia School Headstart Holiday Drive. The Flood Control District has adopted the preschool program for the last four years. Each year we have raised funds to provide one hundred preschoolers art and school supplies and a toy. The last two years we have had the fortune of raising enough money to include purchasing each child a school backpack.



Financial Highlights

Fiscal Year Ended June 30, 2000
Preliminary And Unaudited

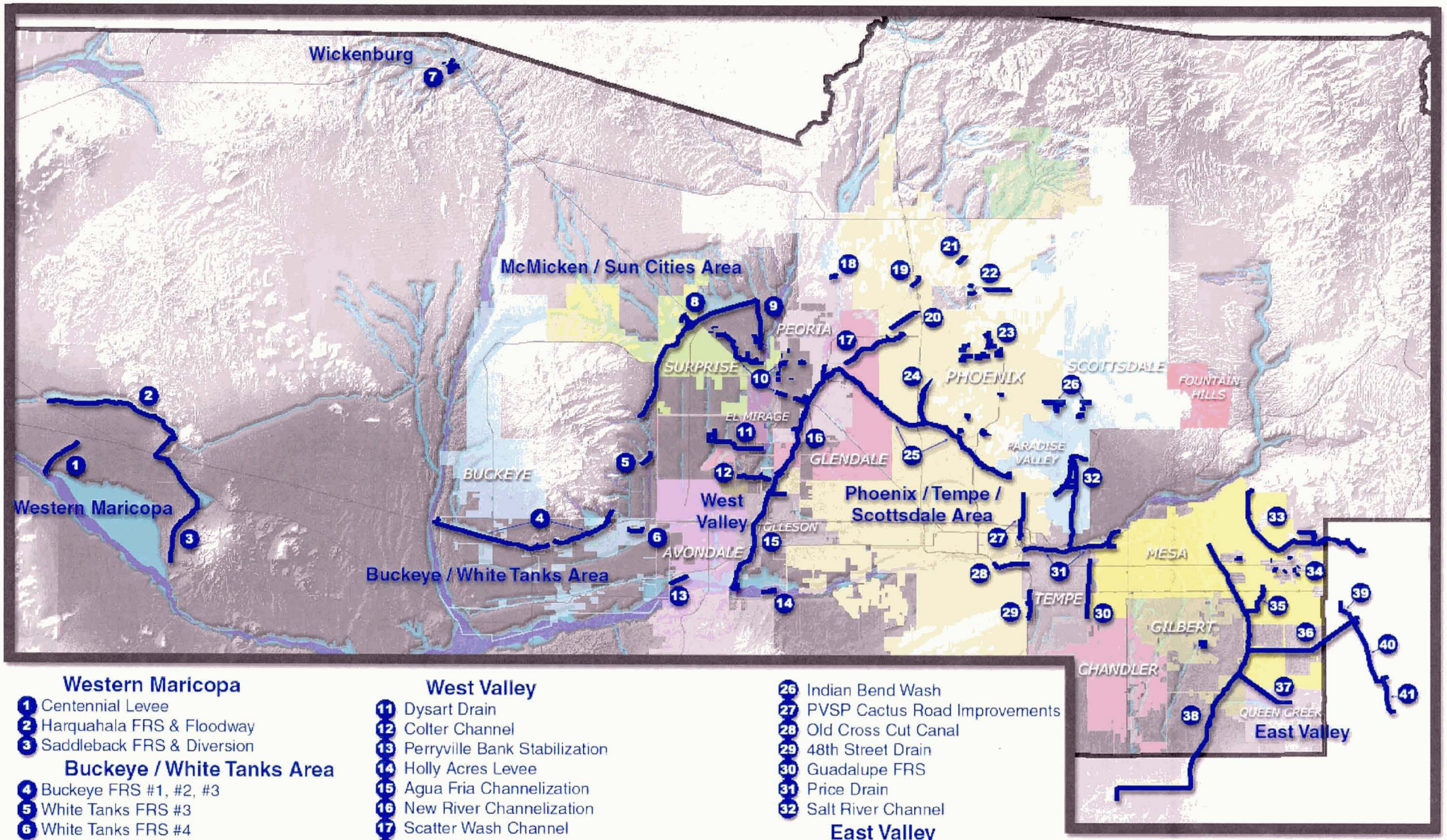
Revenues

Flood Control Tax	$43,992,461	61
Local Participation	16,651,641	23
Licenses & Permits	901,066	1
Interest Income	2,069,311	3
Land Sales And Rental	2,282,487	3
Miscellaneous	6,213,027	9
Total Revenue	72,109,992	100

Expenditure

Operating	20,446,631	25
Flood Control Capital Improvements	61,358,153	74
Vehicles And Equipment	1,067,860	1
Total Expenditures	82,872,644	100

Excess (deficiency) Of Revenues Over Expenditures	(10,762,651)
Fund Balance July 1, 1999	36,055,216
Fund Balance June 30, 2000	$25,292,565



Western Maricopa

1. Centennial Levee
2. Harquahala FRS & Floodway
3. Saddleback FRS & Diversion

Buckeye / White Tanks Area

4. Buckeye FRS #1, #2, #3
5. White Tanks FRS #3
6. White Tanks FRS #4

Wickenburg

7. Sunset & Sunnycove Dams
   Cassandro Wash Dam & Outlet

McMicken / Sun Cities Area

8. McMicken Dam & Outlet Channel
9. El Mirage Drain
10. Sun City & Sun City West Drains

West Valley

11. Dysart Drain
12. Colter Channel
13. Perryville Bank Stabilization
14. Holly Acres Levee
15. Agua Fria Channelization
16. New River Channelization
17. Scatter Wash Channel
18. New River Dam

Phoenix/Tempe/Scottsdale Area

19. Skunk Creek Channel & Levee
20. Adobe Dam
21. Cave Creek Dam
22. Cave Buttes Dam & Levees
23. Upper East Fork Cave Creek
24. Cave Creek Channelization
25. Arizona Canal Diversion Channel (ACDC)
26. Indian Bend Wash
27. PVSP Cactus Road Improvements
28. Old Cross Cut Canal
29. 48th Street Drain
30. Guadalupe FRS
31. Price Drain
32. Salt River Channel

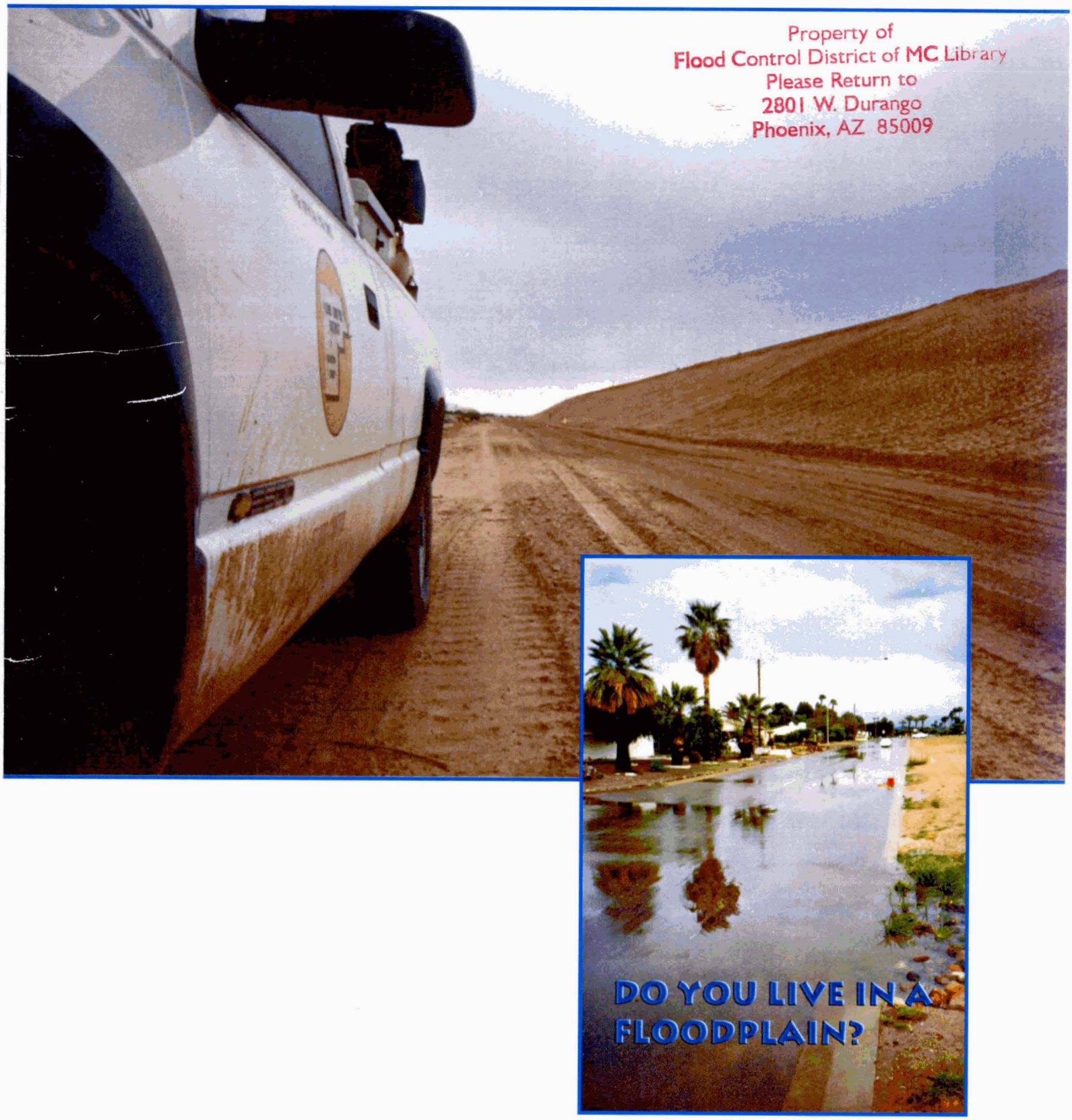
East Valley

33. Buckhorn-Mesa Structures
34. East Mesa Drains
35. Sossaman Channel & Basin
36. Powerline Floodway
37. Rittenhouse Rd Channel
38. East Maricopa Floodway (EMF)
39. Powerline Dam
40. Vineyard Dam
41. Rittenhouse Dam

Flood Control District of Maricopa County
2801 West Durango Street
Phoenix, Arizona 85009-6399
(602) 506-1501
Fax: (602) 506-4601
TT: (602) 506-5897

www.fcd.maricopa.gov

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009



Flood Control District of Maricopa County

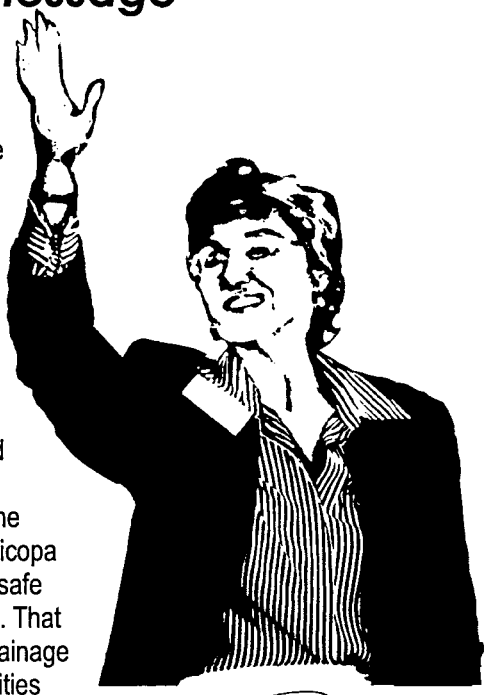
2000-2001 Annual Report

003.123

Flood Control District of Maricopa County

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

Chairman's Message



Floods damage more homes across the country than fires, tornadoes and other natural disasters. Here in Maricopa County, where the sun shines more than 300 days a year, we may not see a need for flood control in our everyday lives, but during our winter storms and monsoon season, it becomes apparent that flood control is a life-saving necessity. The purpose of the Flood Control District of Maricopa County is to keep residents safe from the dangers of flooding. That means anticipating future drainage needs and constructing facilities that will accommodate them, supporting an ALERT system to let people know when the floodwaters are coming, and educating the public on how to stay safe during storms. The District does an excellent job of this.

Janice Brewer, Chair
District Four

Perhaps one of the most exciting projects to come from the Flood Control District is the Agua Fria Watercourse Master Plan, otherwise known as part of the West Valley Recreation Corridor. This plan will document the flood safety needs of the Agua Fria River, and make recommendations for 42-miles of maintenance road recreational trails, basin parks and wildlife habitat locations. Residents are excited about this project and want to help bring it to reality.

To me, that is the pinnacle of good government - projects that not only accomplish their primary purpose, but also rally public support and allow for multiple uses. We will continue to do this kind of work in the future.

Table of Content

Chairman's Message
Page 1

Flood Control District Board of Supervisors and Flood Control Advisory Board
Page 2

Message from the Chief Engineer and General Manager
Page 3

Community Rating System
Page 4

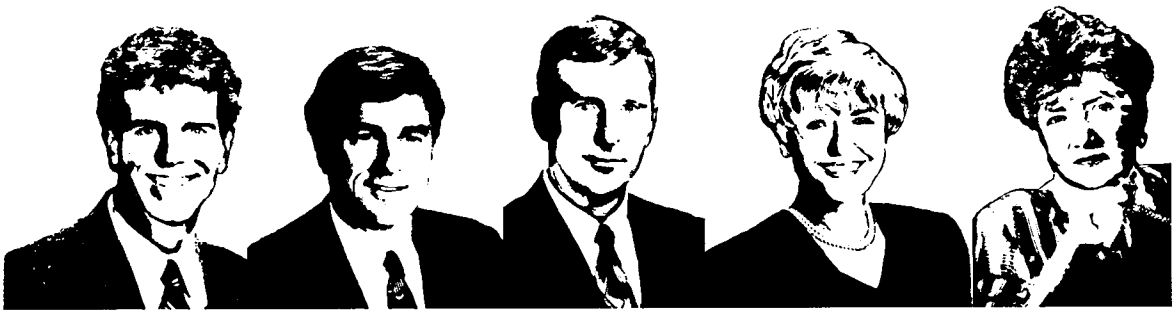
Principal Staff
Page 5

Planning Studies Operating Budget
Page 6

Community Outreach
Page 7

Financial Highlights
Page 8

Board of Directors



Fulton Brock
District One

Don Stapley
District Two

Andrew Kunasek
District Three

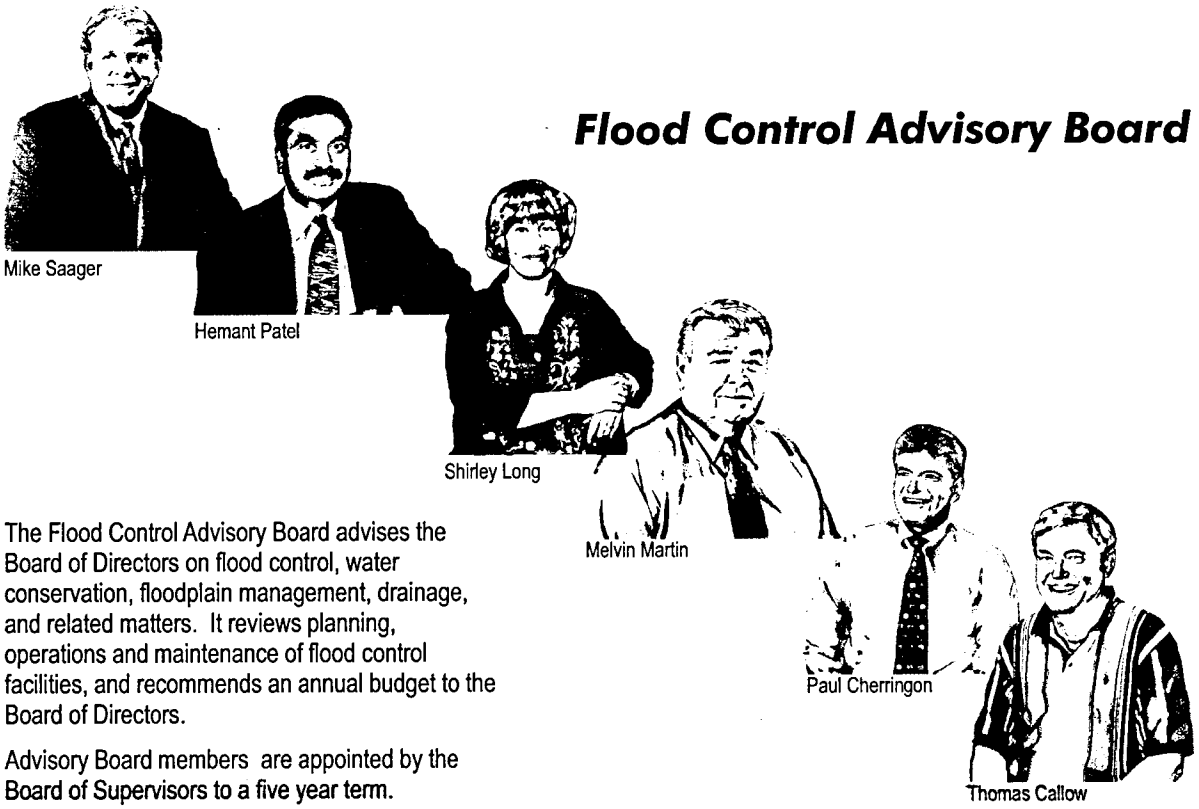
Janice Brewer
District Four

Mary-Rose Wilcox
District Five

The Flood Control District of Maricopa County was organized on August 3, 1959, pursuant to Arizona Revised Statues. Our formation followed the passage in March, 1959, of legislation which empowered counties to set up special district for the purpose of providing flood control for metropolitan, urban, and agricultural areas in Maricopa County to prevent the flooding of property and the endangering of lives of people.

The Flood Control District is a municipal corporation and political subdivision of the State of Arizona. We are governed by a Board of Directors which is also the Board of supervisors of Maricopa County.

Flood Control Advisory Board



Mike Saager

Hemant Patel

Shirley Long

Melvin Martin

Paul Cherringon

Thomas Callow

The Flood Control Advisory Board advises the Board of Directors on flood control, water conservation, floodplain management, drainage, and related matters. It reviews planning, operations and maintenance of flood control facilities, and recommends an annual budget to the Board of Directors.

Advisory Board members are appointed by the Board of Supervisors to a five year term.

Message from the Chief Engineer and General Manager

The Year 2000 was extremely productive for the Flood Control District of Maricopa County. I can take great pride in the work that our employees contributed on a daily basis. We are not only undergoing extraordinary planning efforts to keep people out of harm's way, we are also helping them once they do get into trouble.

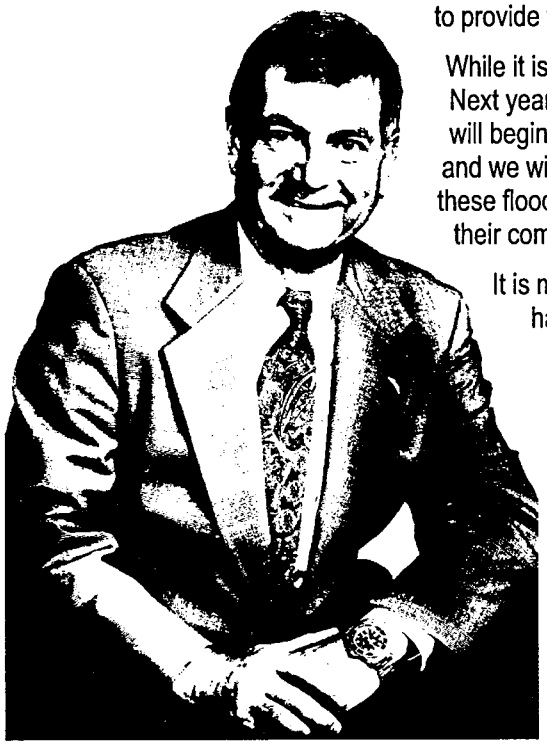
In October, the community of Aguila suffered devastating floods, showcasing to Arizona exactly how harmful our storms can be. The Federal Emergency Management Agency granted the District nearly $1 million to purchase the homes of those hit hardest in this event. About a dozen homeowners will get fresh starts in safer areas. The homes they left behind will be demolished and the land will be returned to open space.

Our Regulatory Division started seven floodplain delineation studies, reviewed 261 floodplain use permits and processed about 11,000 other requests for information.

Our Dam Safety Program is implementing improvements to better inspect and monitor the District's 22 flood control dams. Our Structures Assessment Program is moving forward with identifying potential dam safety issues associated with some of our older structures and is working toward obtaining federal money to help us implement large scale projects to rehabilitate or replace the dams while maintaining the flood protection they provide.

The Planning Branch saw the completion of the East Maricopa Floodway study that not only showed East Valley communities the kinds of projects that need to be done to provide flood control, but also pointed out recreational opportunities.

About a dozen Area Drainage Master Plans and Watercourse Master Plans are in the works right now, including the Agua Fria Watercourse Master Plan, the Skunk Creek Watercourse Master Plan and the Glendale/Peoria Area Drainage Master Plan. Each of these will point out areas that need flood protection and suggest ways to provide that.



While it is good to look back, it is important to visualize the future. Next year we intend to start another six planning projects. We also will begin building the second leg of the Rio Salado low flow channel and we will finish the Southeast Regional Basin in Phoenix. Both of these flood solutions will result in significant recreational facilities for their communities while providing solid protection to residents.

It is my hope that we can continue on with the good work we have done in the past.

Michael S. Ellegood, P.E.

Community Rating System

The Flood Control District's participation in the National Flood Insurance Program began in December 1970. The National Flood Insurance Program's (NFIP) Community Rating System (CRS) was implemented in 1990 as a program for recognizing and encouraging community floodplain management activities that exceed the minimum NFIP standards.

The Flood Control District is one of over 900 communities receiving flood insurance premium discounts based on their implementation of local mitigation, outreach, and educational activities. While premium discounts are one of the benefits of participation in CRS, This Program is focused on three main goals; (1) reduce flood losses; (2) facilitate accurate insurance rating; and (3) promote the awareness of flood insurance.

Floodplain Management

The Floodplain Management program involves delineation of 100-year floodplains in Maricopa county and the regulation of development within their boundaries. Enforcement involves on-site inspection of new construction and structural repairs to ensure compliance. The District's active floodplain management program is responsible for the current 20% reduction in flood insurance premiums in unincorporated areas of the county.

Floodplain Management Activity

7	Floodplain delineation studies were begun
4	Floodplain delineation studies were completed
261	Floodplain use permits/clearances were reviewed
3652	Phone requests for general information were handled
691	Walk-in customers were assisted
6492	Flood hazard information requests were handled
128	Flood hazard information notices were recorded

Drainage Administration

The Drainage Administration program involves the review and inspection of drainage facilities to ensure that development will not adversely affect neighboring properties. Drainage Administration coordinates closely with other agencies to ensure that new development does not increase runoff, divert flows or back water onto other properties. The district also investigates reports of flooding and possible flood hazards reported by citizens.

Drainage Administration Activity

13,832	Inspections conducted
161,131	Miles driven by inspectors
7,957	Drainage clearances issued
618	Total plan reviews completed
233	Drainage complaints investigated

Principal District staff

Michael S. Ellegood, P.E.
Chief Engineer and General Manager

David A. Brozovsky
Flood Control Administrator

Edward A. Raleigh, P.E.
Engineering Division Manager

Thomas J. LaMarche
Information Technology Division Manager

George D. Lindop
Operations and Maintenance Division Manager

Thomas D. Johnson, P.E.
Planning and Project Management Division Manager

James L. Schwartzmann
Public Works and Right-of-Way Land Division Manager

Dave R. Johnson
Regulatory Division Manager

David R. Johnson

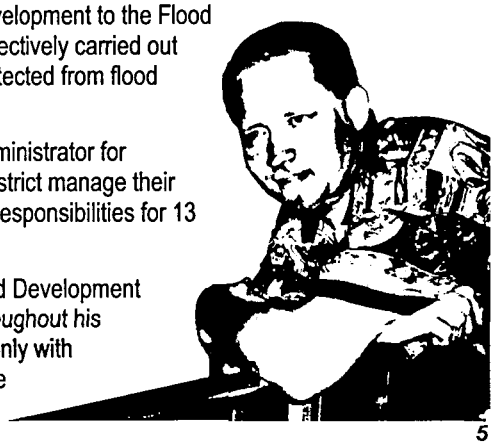
Regulatory Division Manager

Dave Johnson, the Flood Control District's Regulatory Division Manager retired this year, after diligently serving the citizens of Maricopa County for 27 years.

Dave joined the District staff in August 1974 as a junior Hydrologist. Five years (1979) later he was promoted to manage the Regulatory Division. Dave was responsible for Drainage Administration and Floodplain Management that encompassed a wide variety of mandated functions including Regulation Enforcement, Floodplain Use Inspection and Permitting, Development Review, and Floodplain Determinations.

There are numerous significant accomplishments that can be attributed to Dave's effective management of the Regulatory Division.

In February 1980, the Board of Supervisors/Directors transferred the floodplain management responsibility from the Maricopa County Department of Planning and Development to the Flood Control District. Since this time, Dave and his staff has tirelessly and effectively carried out this responsibility ensuring that the citizens of Maricopa County were protected from flood hazards.



In June 1984, shortly after the District assumed the role of Floodplain Administrator for Maricopa County, several other municipalities have requested that the District manage their floodplain efforts. To date, the District assumes floodplain management responsibilities for 13 municipalities in Maricopa County.

Dave worked closely with other County Department such as Planning and Development and the County Attorney's Office on drainage and floodplain issues. Throughout his career he developed and maintained effective working relationships not only with District and County staff, but also the development community, real estate community, as well as the public.

Planning Studies - Operating Budget FY 2000-01

	2000/01 Sq. Mi.	Lin. Mi. A M	Year End Actual Spent FY 2000/01
ADMP and WCMP Studies			
Agua Fria River WCMP		35	$1,794,960
Middle New River - 404 Permit			$40,000
Skunk Creek WCMP		24.6	$502,418
Upper Cave Creek WCMP		13.4	$282,266
Gila Bend ADMS/ADMP	164		$241,175
Scottsdale Road	10		$106,978
Existing Structures Aesthetics Evaluation Project			$138,179
Project management Plans - ADMS			$124,311
TOTAL PLANNING - OPERATING BUDGET?			**$3,230,287**
Planning Studies - CIP Budget			
Spook Hill Mapping			$61 222
Spook Hill ADMS/ADMP Update	19		$548,240
Glendale/Peoria ADMS/ADMP Mapping			$43,237
Glendale/Peoria ADMS/ADMP Update	78		$776,975
Queen Creek/Sanokai		27	$99,110
EMF Capacity Mitigation and Multi-use			$66,384
WhiteTanks ADMP Update & MC Loop 303 Master Plan	226		$341,772
Laveen ADMP	16		$436,156
Higley ADMP	75		$199,629
Durango ADMS/ADMP	68		$404,958
North Peoria ADMS/ADMP	80.3		$590,246
Advanced Planning On-Call 1			$205,244
Candidate Assessment Reports (CARs)			$61,529
TOTAL			**$3,834,701**
TOTAL Planning - CIP and OPERATING	**831.3**	**127**	**$7,064,989**

Mission

The mission of the Flood Control District of Maricopa County is to provide flood hazard identification, regulation, remediation, and education to the people in Maricopa County so that they can reduce their risks of injury, death, and property damage due to flooding while enjoying the natural and beneficial values served by floodplains.

Vision

The vision of the Flood Control District of Maricopa County is that the people of Maricopa County and future generations will have the maximum amount of protection from the effects of flooding through fiscally responsible flood control actions and multiple-use facilities that complement or enhance the beauty of our desert environment.

Pledge

The Flood Control District of Maricopa County pledges to be responsive to its clients in an efficient, effective, and fiscally responsible manner. We will show personal integrity and professionalism in all our actions, and display continuous improvement, innovative thinking, and technical expertise. We will be stewards of the environment and the publics' trust, and we will be concerned about the effects of our actions on not only the current, but also future generations.

Community Outreach

Educating/communicating With The Residents Of Maricopa County

Our Public Information Office (PIO) is committed to educating the public about the dangers of flash flooding, providing information about the progress of studies, projects, and flood control structures in Maricopa County. The PIO is expanding the education program to include educating residents of Maricopa County about storm water quality.

The Flood Control District is continually focused on educating children about the dangers of playing in washes, channels, basins and other flood control facilities. The District's Educational Program for Maricopa County Schools has reached over 46 thousand students. Our Educational Program is presently part of the curriculum in 4 school districts and 32 schools in Maricopa County. Additionally, for the past four years, the District has participated in ValleyForward's Earthfest where more than 10 thousand students attend this all day event. The District also produces Flood Safety warnings of flash flooding on radio traffic reports and public service announcements.

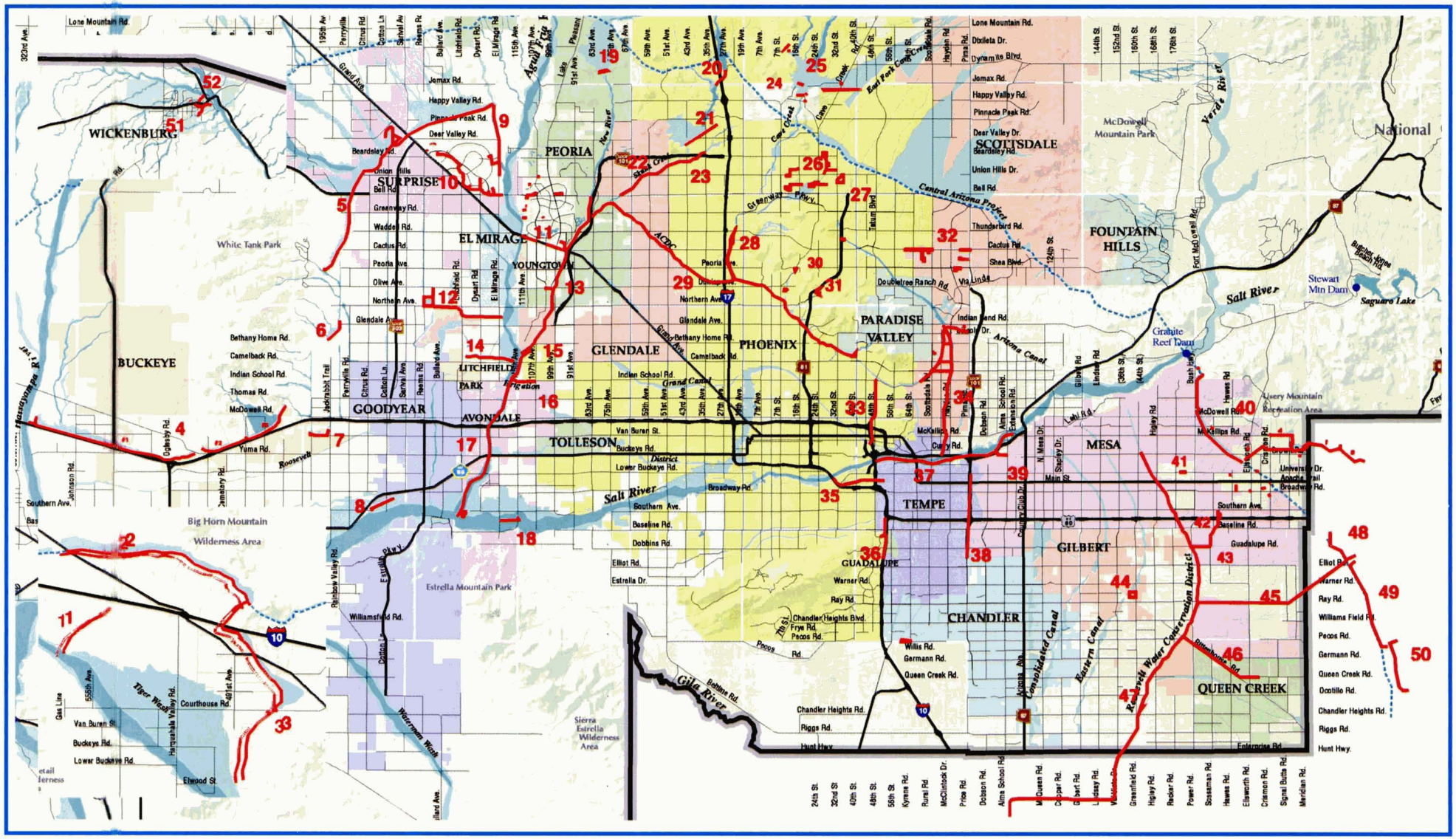
The District's Public Information Office has been responsible for producing over $1,620,998.40 in advertising value which has a publicity value of $3,499,364.30. The circulation impressions received through media coverage was 23,467,109.

The Flood Control District's web site is highly regarded by other professional organizations, as well as highly respected by other Flood Control Agencies in the United States, and other national and international agencies. The web site is averaging about 2000 "hits" per day with 59.2% being visitors from the United States, and 40.8% being international visitors. The web site is inter-active and continues to build on the new technology that becomes available. In the future the District's web site will be adding video updates.

Financial Highlights

Budget and Actual for the Fiscal Year Ended June 30, 2001
Preliminary And Unaudited

	Budget	Actual	Variance Favorable (unfavorable)
Revenue			
Flood Control Tax	$45,009,461.00	$43,874,335.14	($1,135,125.86)
Local Participation	22,567,000.00	16,997,843.26	(5,569,156.74)
Licenses & Permits	1,131,963.00	1,182,821.00	50,858.00
Rental Income	193,219.00	229,903.52	36,684.52
Interest Income	2,000,000.00	1,394,129.67	(605,870.33)
Other Land Income	2,586,750.00	1,181,604.00	(1,405,146.00)
Miscellaneous		795,690.30	795,690.30
Total Revenues	73,488,393.00	65,656,326.89	(7,832,066.11)
Operating Expenditures			
Personnel Services	8,980,963.00	9,622,832.65	(641,869.65)
Supplies And Services			
Professional Services	5,994,200.00	6,886,601.66	(892,401.66)
Maintenance Supplies And Services	1,168,930.00	913,057.26	255,872.74
Internal Services	2,450,292.00	2,458,782.05	(8,490.05)
Education And Travel	177,171.00	168,923.79	8,247.21
Other Supplies And Services	1,080,839.00	1,082,055.10	(1,216.10)
Total Operating Expenditures	19,852,395.00	21,132,252.51	(1,279,857.51)
Capital Outlay			
Personnel Services	2,449,802.00	1,697,495.86	752,306.14
Real Estate	1,559,000.00	9,617,339.43	(8,058,339.43)
Engineering	7,784,000.00	6,576,615.35	1,207,384.65
Construction	56,137,000.00	38,941,567.02	17,195,432.98
Vehicles And Equipment	1,284,689.00	1,679,613.59	(394,924.59)
Total Capital Outlay	69,214,491.00	58,512,631.25	10,701,859.75
Total Expenditures	89,066,886.00	79,644,883.76	9,422,002.24
Excess (deficiency) Of Revenues Over Expenditures	(15,578,493.00)	(13,988,556.87)	(1,589,936.13)
Fund Balance July 1, 2000	28,166,869.00	25,372,184.60	2,794,684.40
Fund Balance June 30 2001	$12,588,376.00	$11,383,627.73	$1,204,748.27



1. Centennial Levee (1985)
2. Harquahala FRS & Floodway (1982)
3. Saddleback FRS & Diversion (1981)
4. Buckeye FRS 1, 2, 3 (1975)
5. McMicken Dam & Outlet Channel (1956)
6. White Tanks FRS 3 (1954)
7. White Tanks FRS 4 (1954)
8. Perryville Bank Stabilization (1984)
9. El Mirage Drain (1990)
10. Sun City West Drains (1990)
11. Sun City Drain (1991)
12. Dysart Drain (1996)
13. New River Channelization (1993)
14. Colter Channel
15. Camelback Ranch Levee (1999)
16. Indian School Rd Drain
17. Agua Fria Channelization (1988)
18. Holly Acres Levee & Bank Stabilization (1984)
19. New River Dam (1985)
20. Skunk Creek Channel & Levee
21. Adobe Dam (1984)
22. Skunk Creek Channelization (1991)
23. Scatter Wash Channel (1995)
24. Cave Creek Dam
25. Cave Buttes Dam (1980)
    a. Dike #1
    b. Dike #2
    c. Dike #3
26. Upper East Fork Cave Creek (1996)
27. Paradise Valley Detention Basin #4
28. Cave Creek Channelization (1991)
29. Arizona Canal Diversion Channel (1994)
30. 10th Street Wash Basins (1997)
31. Dreamy Draw Dam (1973)
32. PVSP Cactus Road Improvements (1991)
33. Old Cross Cut Canal (1975, 1991)
34. Indian Bend Wash (1985)
    a. Interceptor Channel
    b. Collector & Side Channel
35. 48th Street Drain
36. Guadalupe FRS (1975)
37. Salt River Channel
38. Price Drain (1997)
39. Alma School Drain (1969)
40. Buckhorn-Mesa Flood Retarding Structures
    a. Spook Hill Floodway (1980)
    b. Spook Hill FRS (1979)
    c. Signal Butte Floodway (1984)
    d. Pass Mountain Diversion (1987)
    e. Signal Butte FRS (1987)
    f. Bulldog Floodway (1988)
    g. Apache Junction Dam & Floodway (1988)
41. University Drive Basin (1993)
42. Sossaman Channel & Basin (1977)
43. Gilbert Crossroads Park Basin (1992)
44. Guadalupe Channel (1989)
45. Powerline Floodway (1968)
46. Rittenhouse Road Channel (1998)
47. East Maricopa Floodway (1989)
48. Powerline Dam (1967)
49. Vineyard Dam (1968)
50. Rittenhouse Dam (1969)
51. Sunset and Sunnycove Dams (1976)
52. Casandro Wash Dam & Outlet (1996)

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

Flood Control District of Maricopa County

Annual Report

2001 - 2002 Fiscal Year

003.124

Flood Control District of Maricopa County

2801 West Durango Street
Phoenix, Arizona 85009
(602) 506-1501
Fax: (602) 506-4601
TT: (602) 506-5897

www.fcd.maricopa.gov

Table of Contents

Chairman's Message	2
Board of Directors	2
About the District	3
Message from the Chief Engineer and General Manager	3
Flood Control Advisory Board	4
Financial Highlights	4
Staff Breakdown	5
District Finances	5
The District's Role	5
District Organization	6
District Regulation	7
Accomplishments	8
Statement of Revenues and Expenditures	10
Financial Commentary	11
District Programs	12
Program Highlights	12
Planning	14
Project Management	15
Non Structural Approaches	17
Capital Improvement Program Expenditures	18
Five Year Capital Improvement Map	19

Mission and Vision

The mission of the Flood Control District of Maricopa County is to provide regional flood hazard identification, regulation, remediation, and education to Maricopa County residents so that they can reduce their risks of injury, death, and property damage from flooding, while still enjoying the natural and beneficial values served by floodplains.

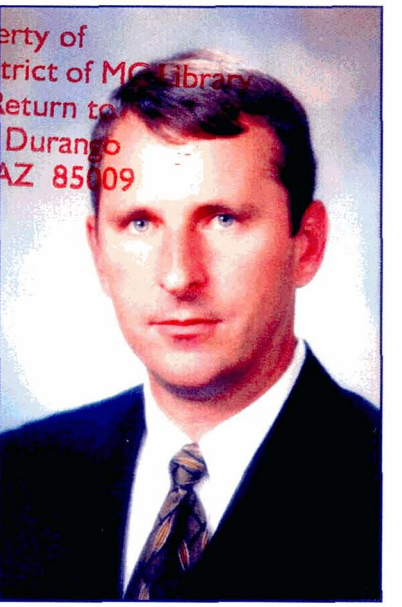
The District's vision is for the residents of Maricopa County and future generations to have the maximum level of protection from the effects of flooding through fiscally responsible flood control actions and multi-use facilities that complement and enhance the beauty of our desert environment.

We pledge to be responsive to our clients in an efficient, effective, and fiscally responsible manner. We will show personal integrity and professionalism in all our actions, and display continuous improvement, innovative thinking, and technical expertise. We will be stewards of the environment and the public's trust, and we will be concerned about the effects of our actions on not only the current, but also future generations.

Front Cover:
The Flood Control District celebrated its 10th anniversary in the Durango Complex this year. The building, which was designed and constructed especially for the District and which allowed for centralized operations for the first time, opened for business in October 1991.

Chairman's Message

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009



As an Arizona native, I value this County and the many resources it provides. The work of the Flood Control District has helped to preserve many of these resources while also helping to rejuvenate and revitalize some lost assets as well.

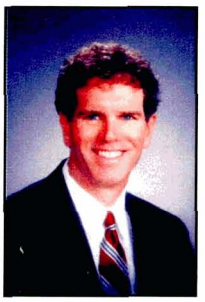
Across the nation, rivers are a precious, lush treasure. As our riverbeds in Arizona continue to dry up, they have become less and less inviting. However, through the work of the District, rivers throughout the County are being restored and lush riparian habitats are being created and preserved for the enjoyment of future generations.

Through responsible land planning and creative development Maricopa County residents will be able to enjoy the many wonders of the native desert environment. The District has established goals above and beyond the basics of flood control. Staff members have been both forward thinking and fiscally responsible in their efforts to protect county residents and resources and are truly interested in providing residents with multi-use facilities.

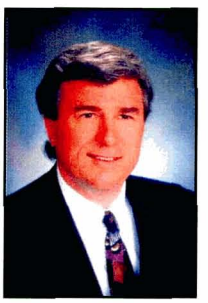
Over the years, the District has worked hard to enhance the environment and to create legacy projects that will be embraced and enjoyed by our great-grand children.

Board of Directors

The Flood Control District is governed by a five-member Board of Directors who also serve as the Board of Supervisors for Maricopa County. The Board of Directors exercise all the powers and duties in the acquisition and operation of District properties, contracting, and in carrying out regulatory functions as ordinarily exercised by governing bodies.



Fulton Brock
District 1



Don Stapley
District 2

Andrew Kunasek
District 3

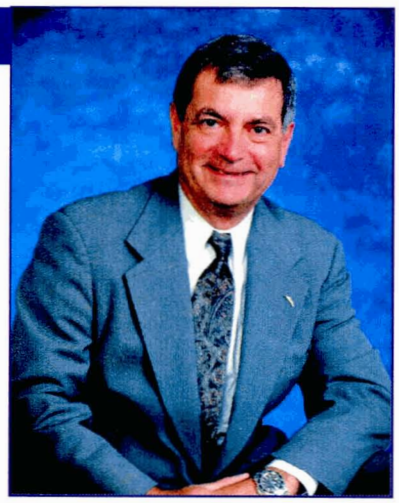
Max Wilson
District 4

Mary-Rose Wilcox
District 5

About the District

- In 1959 the Arizona State Legislature realized that something needed to be done to control flooding in Maricopa County.
- By establishing the District, the legislature created an entity charged with keeping county residents safe from flood hazards and established an independent funding source for the projects needing funding.
- Before the District's inception, severe flooding occurred throughout much of the County during winter rains and monsoon season.
- Today, through effective engineering, dam and channel construction, regulation, and public education, massive flooding is less common.
- The District is a municipal corporation and political subdivision of the State of Arizona, which is governed by a Board of Directors that double as the County Board of Supervisors, with advice of a Citizens' Flood Control Advisory Board.

Message from the Chief Engineer and General Manager



In a year that focused primarily on fire control and preserving water in Arizona, the staff at the Flood Control District joked about a name change to the Drought Relief District.

This year saw very little rainfall in Maricopa County, the District continued its mission - planning for when the rains come and preventing disasters from occurring.

And the rains did come - not a lot - but enough to affect hundreds of residents and businesses in metro Phoenix.

Although, residents experienced only a small storm, it was enough to get a glimpse of what could occur when a large storm hits and why we need to be prepared.

For a number of years, the District has focused on the design and installation of flood control structures - successfully installing a protective ring of dams around Phoenix and its neighboring cities. But as growth and development in the County soars, the District has looked at alternative measures to keep residents safe and conserve tax-payers' money. Today, the District is focused on planning ahead of development and making sure that the County grows into a safe and habitable place to live.

This year, the District has finished 6 Area Drainage Master Plans, and 1 Watercourse Master Plan. These plans provide residents and developers with a guide for safe growth and development - away from flood and erosion hazard zones and drainage paths.

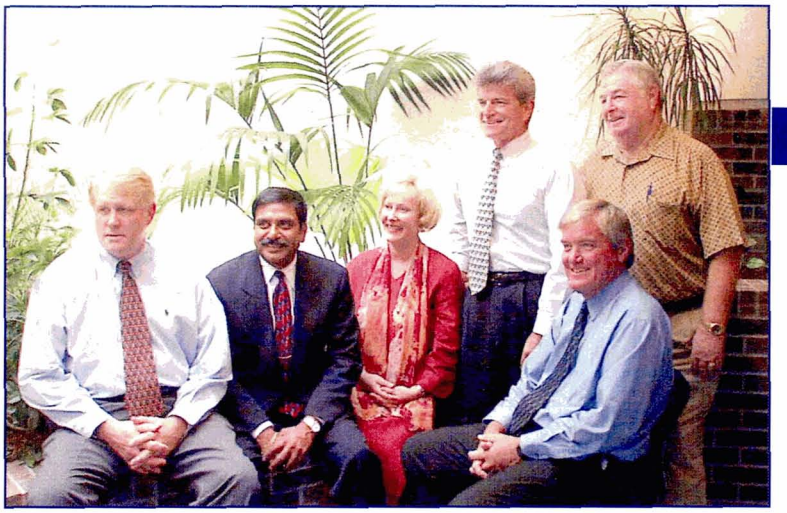
The District is also in the process of conducting 3 dam safety programs for its 22 area dams, which offer significant flood protection for County residents. Many of the dams were originally built to protect small watersheds and agricultural farmlands from flooding, and are now protecting increasingly urbanized areas. The District is focusing on assessing and rehabilitating them to meet current standards and to continue to offer necessary protection.

Our planning department has also identified a series of unique approaches to flood control that save lives and money. Particularly, the floodprone property acquisition program which purchases homes from residents in high hazard flood areas.

The District also continues to provide residents with attractive, multi-use flood control facilities - turning basins into parks and recreational amenities, and channels into trails.

The District and its staff continue to work towards a safer community for Maricopa County residents and increased protection in preparation for the next big storm.

Michael Ellegood, P.E.



Flood Control Advisory Board

Scott Ward
District 1

Kent Cooper
District 2 (not pictured)

Hemant Patel
Chairman, District 3

Shirley Long
District 4

Melvin Martin
District 5

Paul Cherrington
Salt River Project

Tom Callow
City of Phoenix

The Flood Control Advisory Board (FCAB) acts in an advisory role to the Board of Directors on flood control, floodplain management, drainage, and related matters.

The FCAB reviews planning, operations, and maintenance of flood control facilities, reviews program priorities and new policies, and recommends an annual budget to the Board of Directors that includes a five year Capital Improvement Program (CIP).

The Advisory Board consists of seven members, five are appointed by the Board of Supervisors for five-year terms. In addition to those five members, the Salt River Project and the City of Phoenix appoint representatives who are ex-officio members of the Advisory Board. The FCAB members also serve as members of the District Floodplain and Drainage Review Boards.

Financial Highlights

Fiscal Year Ending June 30,2002
Preliminary and Unaudited

	Dollars	Percent
REVENUE		
Flood Control Tax	$44,775,297	60.8%
Local Participation	$17,183,884	23.3%
Licenses & Permits	$1,760,323	2.4%
Interest Income	$643,554	0.9%
Land Sales And Rental	$9,195,157	12.5%
Miscellaneous	$123,710	0.2%
TOTAL REVENUE	$73,681,925	100.0%
EXPENDITURES		
Operating	$19,860,282	30.0%
Vehicles And Equipment	$380,293	0.6%
Flood Control Capital Improvements	$45,933,266	69.4%
TOTAL EXPENDITURES	$66,173,841	100.0%
NET CHANGE IN FUND BALANCE DUE TO OPERATIONS	$7,508,084	
Fund Balance July 1, 2001	$11,308,471	
Net Change From FY 2002 Operations	$7,508,084	
Fund Balance June 30,2002	$18,816,555	

District Finances

Tax Levy Rate remains at $0.23

The District is funded through a secondary County property tax: At the current levy rate, a typical property owner with an assessed valuation of $100,000 pays an annual flood control tax of $23.20 per year.

45 percent of the District's revenue comes from the flood control tax and this revenue generally covers the expense of the Capital Improvement Program projects.

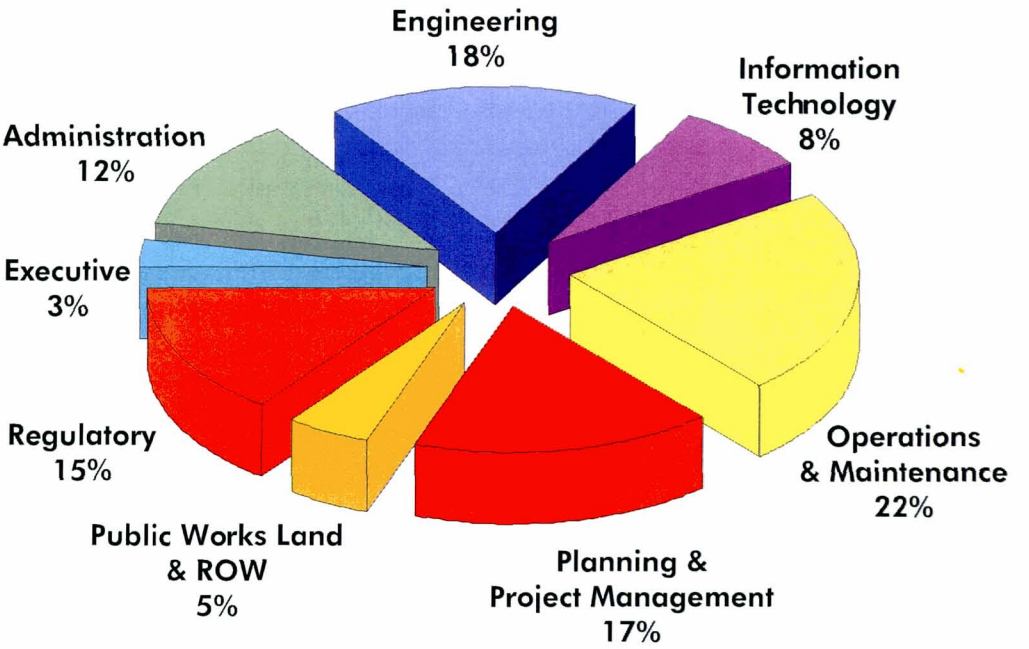
Revenue from other sources include: the sale or lease of rights-of-way, fees that developers and individuals are required to pay to obtain building permits within Maricopa County, and cost-sharing with other entities.

Staff Breakdown

At the end of January, 2001, the District had 223 full-time employees and 10 temporary employees.

These employees are assigned to one of seven divisions: Administration, Engineering, Information Technology, Operations and Maintenance, Planning and Project Management, Public Works Land and Right-of-way, and Regulatory. There is also an Executive section that does not fall into a division.

The staff breakdowns as follows:



The District's Role

The District provides the following:

- Identification of flood hazards and problems
- Regulation of floodplains and development
- Regulation of drainage and development
- County Watercourse and Drainage Planning
- Education for Flood Prevention & Safety
- Construction of Flood Control Structures and Facilities
- Flood Warning and Early Detection
- Maintenance and Operation of completed structures

District Organization

Chief Engineer and General Manager
Michael S. Ellegood, P.E.

- **Public Information Office**
  Joe Muñoz

- **Administration**
  David A. Brozovsky
  - Contracting/Permitting
  - Financial Services
  - Facilities/Support Services
  - Organizational Development and Training
  - Human Resources

- **Engineering Division**
  Edward A. Raleigh, P.E.
  - Civil/Structural
  - Hydrology/Hydraulics
  - Flood Warning
  - Mapping and Surveying
  - Engineering Applications
  - Special Projects
  - Flood Delineation
  - Water Quality

- **Information Technology Division**
  Thomas J. LaMarche
  - Applications Development
  - Geographic Information Systems
  - LAN Administration

- **Operations and Maintenance Division**
  Charles F. Klenner
  - Central/East/North Maintenance Yards
  - Ecology
  - Operations and Maintenance Resource Shop
  - Work Control Center

- **Planning and Project Management Division**
  Richard G. Perreault, Acting
  - Capital Improvement Program/Policy
  - Construction Management
  - Planning
  - Project Management
  - Structures Assessment

- **Public Works Land and Right-of-Way Division**
  James A. Schwartzmann, SRWA
  - Acquisition
  - Property Management
  - Real Property Titles and Right-of-Way Plans

- **Regulatory Division**
  Joseph J. Tram, P.E.
  - Development Review
  - Enforcement
  - Floodplain (Administration)
  - Floodplain (Technical)
  - Inspections
  - Permitting

What areas does the District regulate?

The District is responsible for providing regional flood protection in all of Maricopa County and local flood protection in unincorporated Maricopa County.

Future Planning: The District is responsible for Watercourse Master Plans and Area Drainage Master Plans for Maricopa County.

Identification of Hazards: The District is responsible for Floodplain Delineation Studies in unincorporated Maricopa County, and in the towns and cities for which the District is responsible for floodplain management.

Construction of Flood Control Structures: The District is responsible in unincorporated Maricopa County, and cost shares with cities and other agencies on flood control structures that provide regional protection.

Floodplain Management: The District is responsible in unincorporated Maricopa County, as well as: Buckeye, Carefree, Cave Creek, Chandler, El Mirage, Gila Bend, Guadalupe, Litchfield Park, Mesa, Queen Creek, Surprise, Tolleson, and Youngtown

Drainage Administration: The District is responsible only in unincorporated Maricopa County and the Town of Cave Creek.

The Flood Control District and its staff continue to blaze new trails with innovations and technologies, proactive approaches, cost-cutting methods, and job savvy. In fact, the District is now in the top one percent of floodplain management agencies in the United States.

Steve Waters, Bing Zhao, and Ed Raleigh display their 2002 NACo Award with pride.

District wins National Award for Real-time Flood Forecasting Tool

Over the past year, residents of Upper Skunk Creek living in a flood hazard area, have been sleeping safer knowing that the District now has a web-based Real-time Flood Forecasting system in place to increase the warning time in the event of flooding in that area.

This new computer program enables staff to make quicker and more accurate predictions about water flow amount and arrival times in the Skunk Creek watershed. This in turn provides staff with the information needed to make better decisions about evacuation notification.

Not only are area residents now protected, the District staff were also recognized this year with a national award for their efforts. The National Association of Counties (NACo) recognized the District for this program with an achievement award for its hard work to promote responsible, responsive, and effective county government.

District rated in top one percent of flood agencies

For over forty years, the District has provided flood control services in order to ensure public safety and to protect property in the event of flooding.

For these reasons, the District has been rated in the top 1 percent of floodplain management agencies in the United States. The federal accreditation process of floodplain management - the National Flood Insurance Program's Community Rating System (NFIP CRS) - now rates the District as a Class 5 agency. (A class 1 is the highest rating achievable.) Currently over 900 communities participate in this program and only 1 percent are rated as a Class 5 or better.

The District joined the program in 1991 at a Class 9 rating. Due to the work of the District, residents living in special flood hazard areas of unincorporated Maricopa County now receive a 25 percent discount on their flood insurance premiums.

District Special Projects Manager Tom Loomis presents at the ASFPM Conference

Flood Control Experts Gather in Phoenix for the National Conference

The 26th annual Association of State Floodplain Managers (ASFPM) conference, the premiere flood management training event, was held June 2002 in Phoenix and sponsored by the Flood Control District. Arizona was chosen because of the special challenges the state faces when it comes to flood hazard management. The unique character of Arizona's desert, distinctive watersheds, and the infrequent flooding in the state means that local floodplain managers need to be even more prepared and educated when a storm event happens. In addition, the treacherous Arizona monsoons create serious flash flooding problems for desert residents. At the conference, District Chief Engineer and General Manager Mike Ellegood served as one of the keynote speakers, and seven District staff members were chosen to make presentations.

District General Manager honored with Lifetime Achievement Award

This year Arizona Society of Professional Engineers honored District Chief Engineer and General Manager Mike Ellegood with the prestigious Engineering Lifetime Achievement Award.

Ellegood was honored during National Engineer's Week because he best exemplified integrity, professionalism, and humanitarianism.

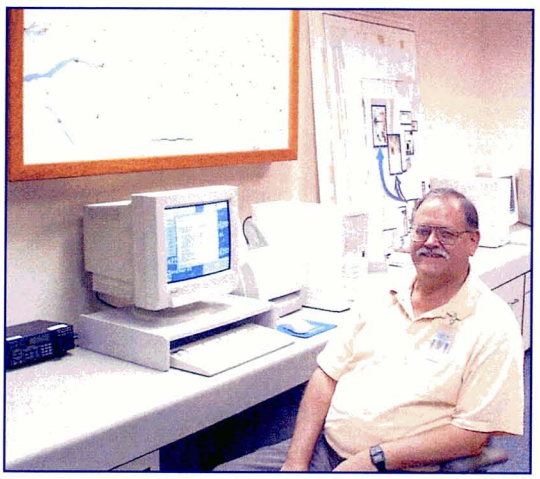
Ellegood's career spans almost 40 years, taking him across the Country to serve in a variety of positions and leaving behind a legacy of important flood control and transportation projects.

District staff honored for saving lives in Oct. 2000 floods

In October 2000, the small town of Wenden, Arizona sustained a devastating flash flood, which produced a river of water one-half mile wide and 12 feet deep. Although the town was ravaged, injuries were prevented by a timely alert from the District.

This year, District meteorologist Jim Perfrement received a commendation from the National Weather Service (NWS) for his early flood warning. Four hours prior to the storm, Perfrement contacted the NWS to alert them of a significant amount of rain falling upstream. He predicted that this rainfall would run off into Centennial Wash and rise enough to flood the Town of Wenden.

Perfrement, a former National Weather Service meteorologist, provided the NWS with real-time stream gauge information and alerted NWS staff to the urgency of the life threatening event.



Jim Perfrement in the District ALERT room

Statement Of Revenues and Expenditures

Budget And Actual For The Fiscal Year Ending June 30, 2002
Preliminary And Unaudited

	Budget	Actual	Variance Favorable -Unfavorable
Revenue			
Flood Control Tax	$45,500,000.00	$44,775,297.22	-$724,702.78
Local Participation	$20,800,000.00	$17,183,883.75	-$3,616,116.25
Licenses & Permits	$1,500,027.00	$1,760,323.02	$260,296.02
Land Sales And Rental Revenue	$10,032,397.00	$9,195,157.33	-$837,239.67
Interest Revenue	$878,500.00	$643,553.78	-$234,946.22
Miscellaneous	$748,000.00	$123,709.57	-$624,290.43
Total Revenue	$79,458,924.00	$73,681,924.67	-$5,776,999.33
Operating Expenses			
Personnel Services	$8,948,875.00	$9,955,503.37	$1,006,628.37
Reserve For Compensation Adjustment	$676,978.00		-$676,978.00
Supplies And Services			
Professional Services	$6,197,449.00	$5,492,603.66	-$704,845.34
Maintenance Supplies And Services	$1,257,332.00	$619,386.57	-$637,945.43
Internal Services	$2,670,695.00	$2,515,707.87	-$154,987.13
Education And Travel	$147,060.00	$107,929.16	-$39,130.84
Other Supplies And Services	$1,354,031.00	$1,169,151.82	-$184,879.18
Capital Acquisitions	$883,000.00	$380,292.81	-$502,707.19
Total Operating Expenditures	$22,135,420.00	$20,240,575.26	-$1,894,844.74
Capital Improvement Program			
Personnel Services	$2,626,000.00	$1,878,326.00	-$747,675.72
Real Estate	$8,198,000.00	$14,813,049.00	$6,615,043.96
Engineering	$10,777,000.00	$8,496,097.00	-$2,331,242.86
Construction	$36,345,292.00	$20,745,794.00	-$15,549,151.49
Total Capital Improvement Expenditures	$57,946,292.00	$45,933,266.00	-$12,013,026.11
Total Expenditures	$80,081,712.00	$66,173,841.26	-$13,907,870.85
Excess (Deficiency) Of Revenues Over Expenditures	-$622,788.00	$7,508,083.41	$8,130,871.52
Fund Balance July 1, 2001	$12,794,939.00	$11,308,470.99	
Fund Balance June 30, 2002	$12,172,151.00	$18,816,554.40	$6,644,403.51

Financial Commentary

Management's Discussion and Analysis

L to R: Dick Perreault, Joe Tram, Joe Muñoz, Charlie Klenner, Ed Raleigh, Jim Schwartzmann, Joe Young, Tom LaMarche, Dave Brozovsky. Seated: Mike Ellegood
Not Pictured: Susan Johnson

The general slowdown in the economy experienced during Fiscal Year 2002 has had a profound effect upon the District's total operation, particularly in the area of the Capital Improvement Program, which has traditionally been highly dependent upon cost-sharing partnerships with local municipalities to fund structural flood control solutions. The depressed state of the economy has imposed stress on all municipal budgets and has required that city governments be much more judicious in selecting projects for which funds can be made available. The resulting reluctance of municipal governments to participate in flood control projects was the primary reason the District experienced a 7.2 percent ($5.8 million) shortfall in budgeted revenue during the Fiscal Year.

This situation has presented a year long challenge to District Management, in that more time, effort, and study has been required to secure partner participation in projects that are considered urgent and beneficial. In addition, the District has also experienced significant capital project delays and, in extreme cases, project cancellations. This is reflected in the Capital Improvement Program expenditure shortfall from budget ($12.0 million). In the case of project delays, District Management has reprogrammed the 5-year CIP budget to fund some of the delayed projects in future years.

Despite the depressed economy, the District utilized 79.3 percent of all available Capital Program budgeted funds. Sixteen structural and non-structural flood control projects were completed during the year including the Phoenix Rio Salado Project and the Laveen Area Drainage Master Plan, both of which are considered major accomplishments by District Management.

While the difficulties created as a result of the slow economy are most pronounced in the Capital Program, they have also affected the District's Operating Budget. In November 2001, the District participated in a Board of Directors requested voluntary budget reduction program that impacted the operating funds budget. The District voluntarily reduced budgeted funds by $ 506,800 which came primarily from capital equipment acquisitions and planned outside contractual services.

In addition, personnel compensation increases for which funds had been allocated were foregone in an effort to incur operating expenses only for those items considered essential to fulfilling the District's mandated responsibilities and commitments. The operating philosophy that emerged from this atmosphere succeeded in restraining expenditures to a point under the revised operating budget total. The end result was a net savings of $ 1,388,045 or 6.4 percent).

As a result, the District's ending fund balance is $ 18,816,554.51, which is an increase of $ 7,508,083.52 from the Fiscal Year beginning balance of $ 11,308,470.99. The increase in the fund balance will allow management far greater flexibility in setting the District's operating priorities and for potential expansion of the District's participation in related County programs. Further, this enhanced flexibility will allow the District to adjust the Capital Improvement Program budget to fund projects that were delayed during FY 2002, and to take advantage of future project opportunities that may arise as municipal governments recover from the present sluggish economic situation.

In summary, FY 2002 presented the District with major management challenges, the cause of which were, in most cases beyond the influence of the District to prevent. The District reacted to the challenges by focusing even greater scrutiny on all expenditures with the intent of setting funding priorities to accomplish statute mandated tasks first and then evaluating all other expenditures to achieve the most beneficial results. The increase in the ending fund balance positions the District to take advantage of future opportunities as they arise through management initiative.

District Programs

It takes several hundred employees, partnerships with multiple government agencies, and a commitment to flood control to accomplish our mission of protecting the people of Maricopa County from injury, loss of life, and damages caused by flooding.

Planning and Project Management

The District evaluates area watersheds and watercourses to determine the additional floodproofing and drainage measures needed to meet the current and planned development in that area. The District works with partner agencies to institute non-structural and structural alternatives.

Capital Improvement Program

The District ranks and phases funding for approved structural flood control projects through design, land acquisition, relocations, and construction.

Property Management

The District is responsible for the acquisition and management of land for flood control projects. In addition to the sale, lease, and rental of interim property, homes, and leftover land.

Floodplain Management

The District administers the Maricopa County Floodplain Regulations and does so through the study and delineation of County floodplains and the regulation of development within floodplain boundaries.

Drainage Administration

The District administers the County Drainage Regulations and coordinates with other agencies to ensure that new development does not increase runoff, divert flows, or back water onto other properties.

Program Highlights

Do you live in a floodplain?

If you wanted to find out if your house was built in a floodplain, or if the land you were trying to purchase was in the middle of a floodway, what would you normally have to do? You would probably spend hours on the phone tracking down the right agency, the person in charge, and those particular floodplain maps.

The District has made it possible for members of the public to click a button and find out directly if their homes are in a floodplain. Just put in your address and up pops a map featuring your house and its relation to the nearest floodplain.

The District also took the show on the road many times over this year at local home shows and expos.

District Maps out its Future

This year, the District released its 2002 Comprehensive Plan, which is a blueprint for flood control in Maricopa County over the next 20 years. The plan helps with future decision-making at the District and helps staff to prioritize the areas in the County for future studies and flood control projects. The plan also prioritizes areas for funding and helps the staff anticipate future revenue needs. Finally, this document is a great source for the community to learn more about the District and the direction that is planned for your area.

District works towards Stormwater Quality permitting deadline

Todd Williams presents at a conference on Stormwater management issues.

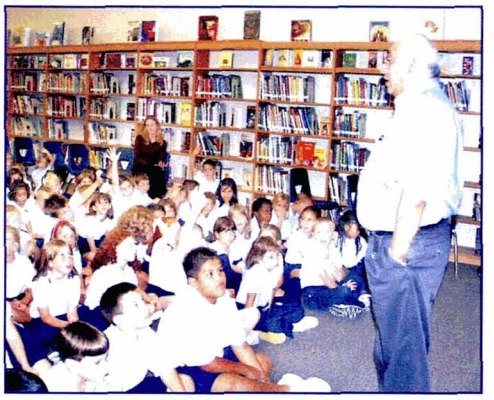
With the March 2003 stormwater runoff NPDES permitting deadline looming, the District has spent much of the year working with local municipalities and various county and state agencies to help Maricopa County comply with new federal stormwater pollution standards.

The new standards require all municipalities to obtain a permit to discharge stormwater, to monitor its quality, and to create a stormwater pollution prevention plan. Public education and information is a large portion of the effort.

Public Awareness, Education, and Outreach

Throughout the year, the District participated in a variety of area trade shows and expositions, with the intent of reaching new residents and educating them about flood safety.

District staff also developed a variety of educational brochures, school and community presentations, websites, and displays to help further educate and raise awareness of flood hazards and flood control projects within the County.



The District educates fifth graders on flooding and flood safety.

www.fcd.maricopa.gov

District Launches New Website

This June, the District launched its new and improved website. Used by the general public, elected officials, and other agencies, the District website offers in-depth and timely information on District projects and services, as well as on-line forms and applications.

The new site is user friendly, regularly updated, and the number one source for information on flooding and flood control in Maricopa County.

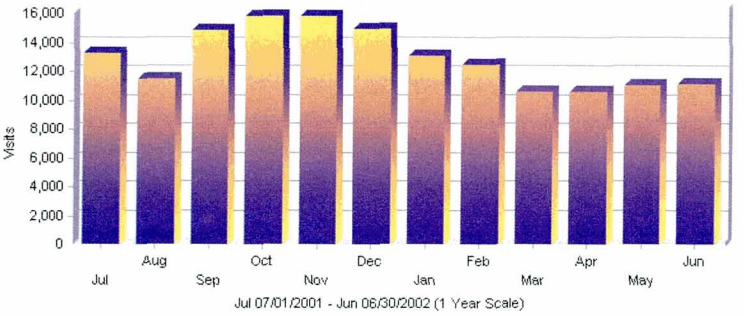
General Statistics FY 01-02

Successful Hits (Entire Site)
4,602,366

Page Views
716,421

Visits
155,394

Unique Visitors
24,630



Flood Detection and Data Collection

The District monitors rainfall, streamflow, and weather information and reports this to other agencies for flood event response planning, evacuations, road closures, and flood watches and warnings. The District also uses the information in floodplain studies, watershed computer modeling, and flood control structure designs.

Operations & Maintenance

The District maintains over 70 flood control structures and facilities, provides erosion and vegetation control, maintenance of roads, landscaping, fencing, and signage, and monitors structures during flood events.

Dam Safety

The District currently owns and maintains 22 flood control dams in Maricopa County. The District ensures that these dams and other structures remain safe and continue to protect the public in the way they were intended.

Stormwater Quality

The District provides guidance to minimize adverse environmental impacts due to District activities and provides support to local stormwater pollution reduction programs. The District also ensures that flood control structures comply with environmental regulations.

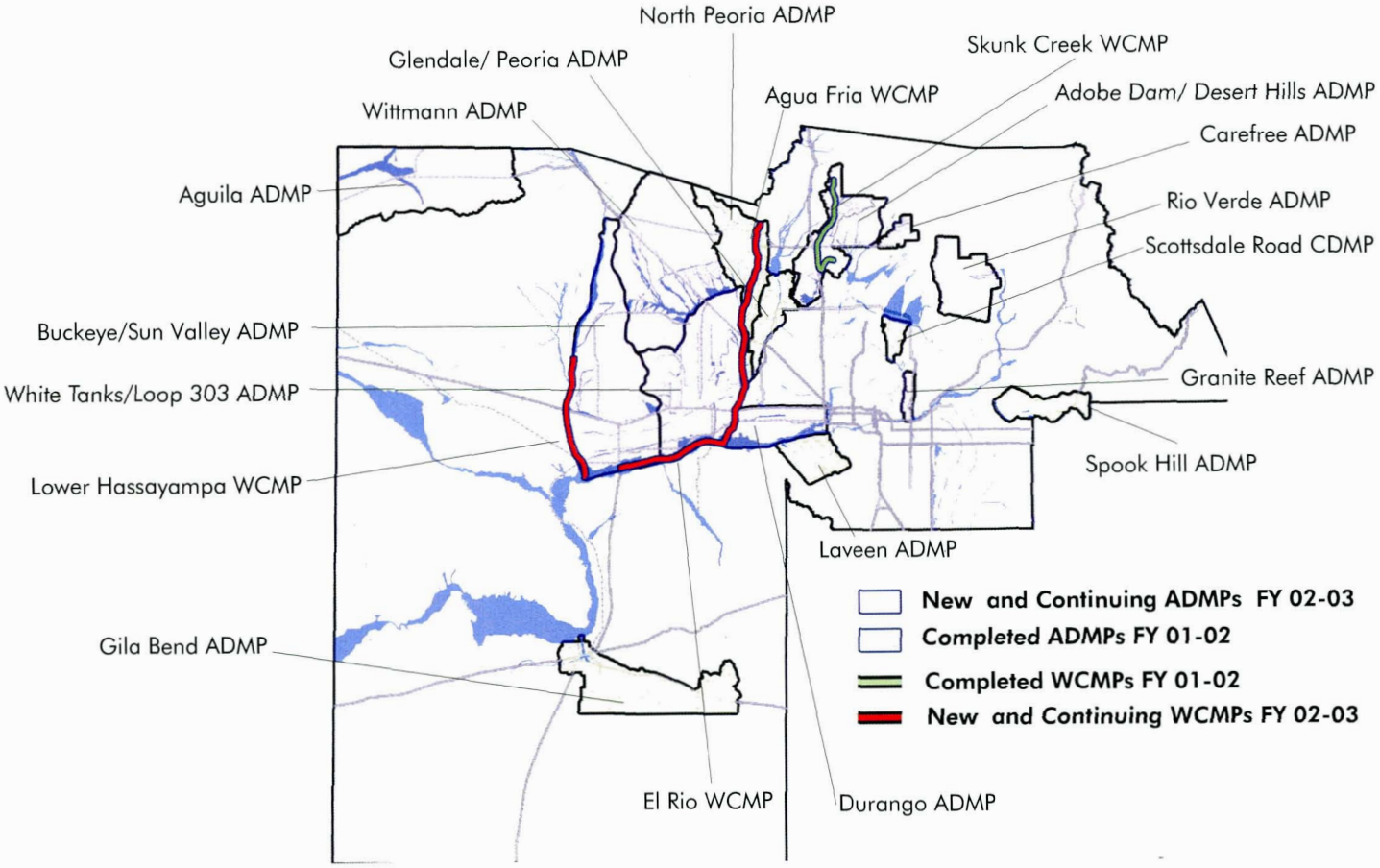
Public Outreach

This program helps protect the public through education and information - teaching people about flash floods, the dangers of driving through washes, helping them determine if they live in a floodplain, and demonstrating the need for flood control in certain areas.

Planning

District takes a new approach: Prevention

The District's goal is to complete Area Drainage Master Plans for all of the developable portions of Maricopa County by 2010, subject to the availability of funds. Currently, 26 of the 37 watersheds within the District's boundary have been studied and corresponding plans have been made for flood control measures.

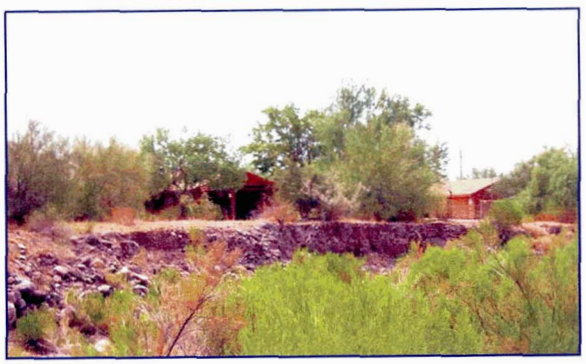


Skunk Creek Floodprone Property Acquisition

When planning how to keep the residents of Upper Skunk Creek safe from flooding, planners focused on a new approach to floodplain management.

Thirteen homes in the area were found to be located in the floodway and/or a severe erosion hazard zone. The owners of these homes have a high risk of injury and/or property damage from flooding and have less than a one-hour response time to evacuate in a flood emergency.

Due to this hazardous situation, the District instituted a voluntary acquisition program and made offers to acquire these homes. The estimated cost for acquisition of all 13 homes is $2.8 million, which is a significant savings to taxpayers over the structural alternative, which would cost over $12 million.



Residents receive fair market value for their property and are eligible for up to $22,500 in additional relocation assistance. Currently, nine homeowners have accepted the District's offer.

Project Management

Whether basins, channels, dams, or drains, the District continues to build flood control structures in communities throughout Maricopa County and to protect residents.

Guadalupe Drainage Improvement Project

Project Manager Don Rerick (R), Supervisor Mary Rose Wilcox, and Mayor Cota of Guadalupe, Arizona getting ready for the groundbreaking Ceremony.

"It is always a wonderful feeling to be able to see a project move from a concept to construction," said Supervisor Mary Rose Wilcox (District 5). "We have worked long and hard to make this project a reality and to be able to protect the people of Guadalupe from flooding."

This flood control project involves the construction of a series of basins and storm drains. Three of the basins will become parks for the Town of Guadalupe, which currently has no recreational areas.

Southeast Phoenix Regional Basin

Construction workers on the Southeast Phoenix Regional Basin place concrete on the basin spillway. This basin project was completed in August 2001.

District Contracting

Type of Contract	Number Awarded	Contract Amount
Construction	5	$20,212,710.55
Design Services	1	$ 1,061,379.62
Engineering Services	40	$ 8,180,000.00
Planning	5	$ 4,301,270.88
Study	1	$ 192,224.00
Grand Totals:	52	$33,947,585.05

Major Projects Completed

FY 2001/2002

Baseline Road Storm Drain
Carefree Town Center Drainage
Golden Eagle Park Dam
Greenway Parkway Channel
Northern/Orangewood Storm Drain
Oak Street Storm Drain
Osborn Road Storm Drain
Phoenix Rio Salado
San Tan Collector Channel
Southeast Valley Regional Drainage System

Projects in Design or Construction

FY 2001/2002

24th Avenue/Camelback Basin
43rd Avenue/Southern Basin
Bethany Home Outfall Channel
Bullard Wash Channel and Basins
Central Chandler Drainage System
Doubletree Ranch Road System
Durango Regional Outfall Project
EMF Rittenhouse and Chandler Heights Basins
Elliot Basin and Channel
Ellsworth Channel
Elliot Channel (Ellsworth to EMF)
Elliot Channel (East of Crimson)
Guadalupe Drainage Improvement
Hawes Road Channel
Laveen Area Conveyance Channel
Queen Creek Channel
Skunk Creek Low Flow Channel
Sossaman Channel (US 60 to Baseline)
Southern Avenue Channel

Over this past year, the District has been moving forward on several newer initiatives, that are shifting from planning and study into implementation.

These initiatives include:

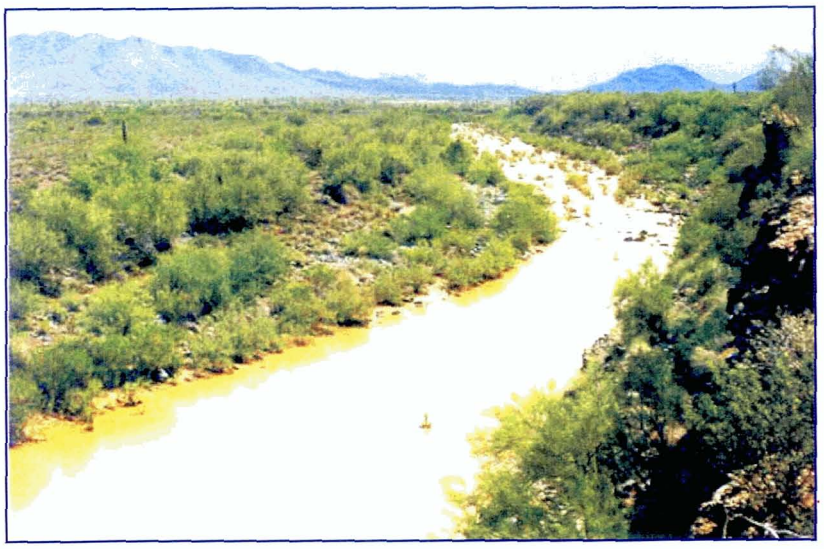
* Landscape Aesthetics, Multi-Use, and Recreational Opportunities

* Erosion Hazard Mapping and Analysis

* Floodprone Property Acquisition and Floodproofing

* Flood Control Structure Rehabilitation

* Watercourse Master Plans and Riparian Conservation



District builds more value into its flood control facilities

The planning and design of flood control facilities as places for people is a key issue and challenge facing floodplain managers in Maricopa County.

Local citizens and community leaders are now looking to the District to design flood control facilities that preserve natural desert open space, enhance the local community image, and provide opportunities for desert greenbelts and new parklands. With visionary leadership and "out of the box" thinking, the highly talented, multi-disciplinary staff at the District is increasingly embracing new concepts of landscape design and responding to these challenges.

Development Guidelines - A New Approach

It is much more cost-effective to put flood control management solutions in place prior to the development of the area than to build expensive structures after people move in. In this regard, the District initiated an Area Drainage Master Plan in the North Peoria area, with the intent of planning ahead of development and growth and in keeping with the natural desert environment.

The study team finalized the plan this year and developed the first set of area-specific development guidelines in cooperation with local developers. These guidelines direct future developers and home owners how to approach flood control and minimize potential impacts to the watershed.

By providing solutions prior to development, the team limited the need for large structural projects, such as channels, dams, and regional detention basins in the area, and preserved the unique desert area for generations to come.

This new approach could have a possible cost savings to taxpayers of $20 million - the possible cost for area structural solutions.

Non-structural Approaches

As we move towards non-structural approaches to flood control, Drainage Administration and Floodplain Management play increasingly greater roles in accomplishing the District's mission.

Floodplain Management

Fiscal Year	99/00	00/01	01/02
Delineations Begun	9	7	5
Delineations Completed	3	4	15
Floodplain Use Permits	249	261	368
Phone requests	3673	3652	3422
Walk-in Customers	697	691	882
Flood hazard info requests	7186	6492	5019
Flood hazard info notices	144	128	104

Doug McLaughlin (R) assists with a resident's inquiry.

These programs increase the District's visibility to the public. This relationship is maintained through walk-in and telephone requests for information, permit applications, website visits, drainage inspections, and public meetings in the community.

Drainage Administration

Fiscal Year	99/00	00/01	01/02
Inspections conducted	9916	13,832	13,235
Miles driven by inspectors	157,235	161,131	171,339
Permits reviewed	7560	7957	11245
Total plan reviews completed	616	618	924
Drainage complaints	273	233	249

Flood Detection & Data Collection

Fiscal Year	99/00	00/01	01/02
New ALERT gauges	9	16	20
Flood Response Plans	1	1	2
ALERT Web page hits	12,597	29,184	27,449
Gauge Repair Visits	723	734	938
Warning Messages & Alerts	204	401	448

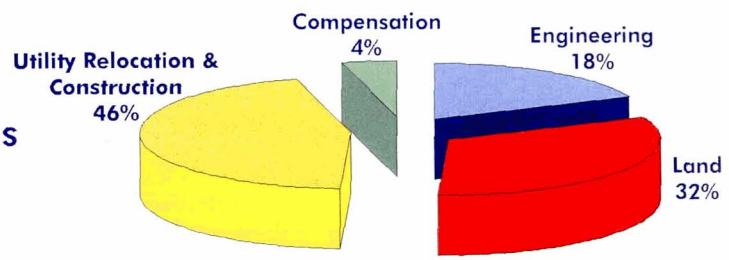
Capital Improvement

Program Expenditures

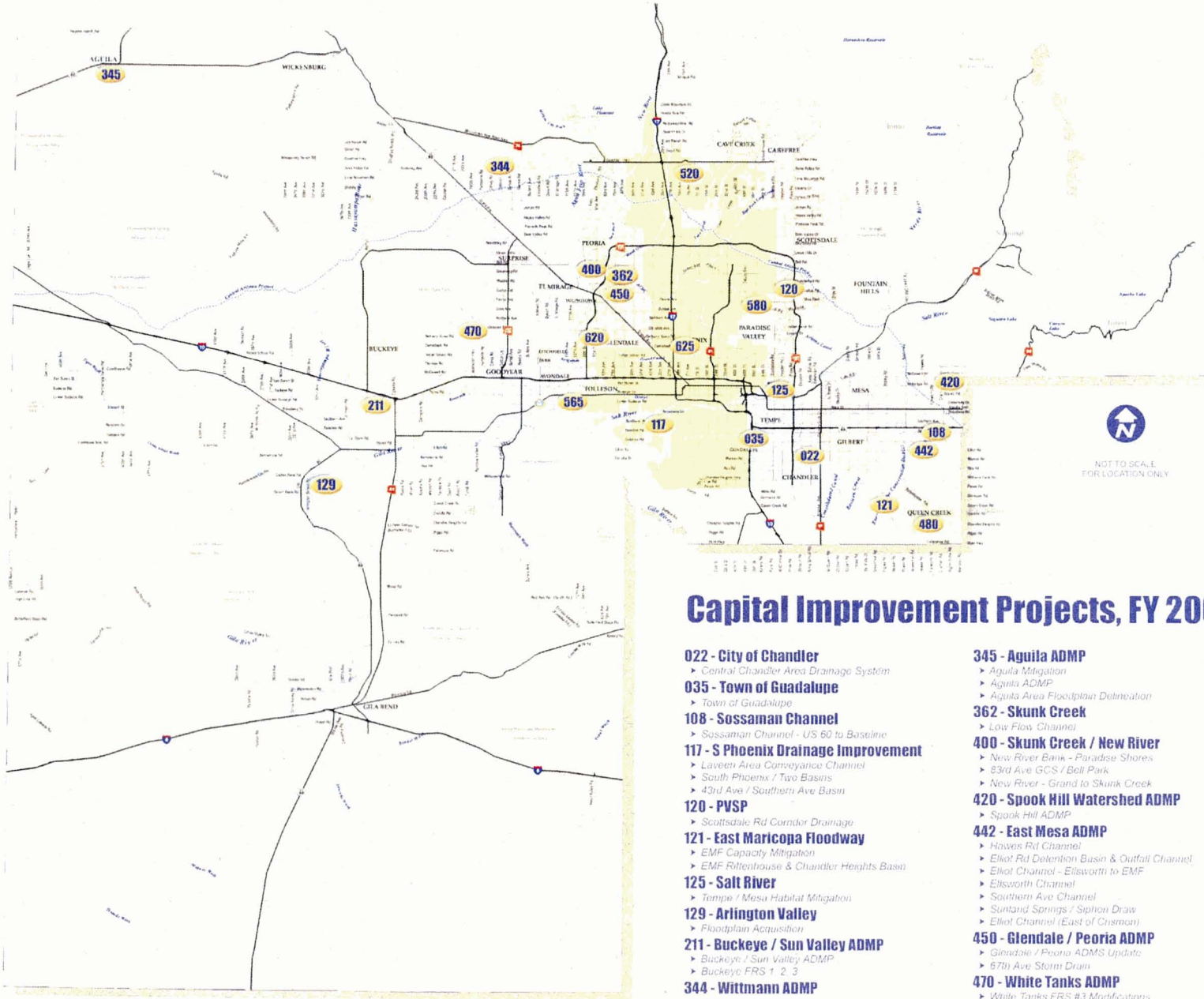
Preliminary and Unaudited
For Fiscal Year Ending June 2002

Project	Engineering	Land	Utility Relocation & Construction	Compensation	Project Total
FCD Facility	$420,678			$20,939	$441,617
Chandler Central Area			$2,006,084	$6,363	$2,012,447
City Of Scottsdale	$24,854	$822	$692,658	$29,585	$747,919
Town Of Guadalupe	$281,577	$41,272	$1,306,382	$105,005	$1,734,236
Town Of Carefree			$275,000	$2,264	$277,264
Dam Safety Program	$1,000,139			$185,849	$1,185,988
Alma School Drain				$984	$984
Sossaman Channel	$8,342	$5,848	$32,134	$22,966	$69,290
South Phoenix Drainage	$433,854	$1,127,315	$1,840,006	$348,979	$3,750,154
PVSP				$252	$252
East Maricopa Floodway	$939,359	$5,596,988		$77,614	$6,613,961
Phoenix Rio Salado	$73,095		$8,529,126	$123,376	$8,725,597
Salt River				$2,152	$2,152
Buckeye / Sun Valley	$483,162	$843		$25,122	$509,127
SunnyCove Outfall		$98,850		$1,222	$100,072
Wittmann ADMP	$572,384			$23,598	$595,982
Aguila ADMP	$415,252	$292,643		$50,611	$758,506
Skunk Creek	$30,976			$14,602	$45,578
Skunk Creek / New River	$55,217	$450	$269,144	$33,015	$357,826
Spookhill ADMP	$453,054			$36,795	$489,849
East Mesa ADMP	$201,149	$637,486	$3,447,566	$203,406	$4,489,607
Glendale / Peoria ADMP	$170,181	$4,000	$419,448	$29,880	$623,509
North Peoria ADMP	$284,444			$28,758	$313,202
East Fork Cave Creek			$971,357	$1,228	$972,585
White Tanks ADMP	$1,001,691	$926,598	$371,589	$181,753	$2,481,631
Queen Creek ADMP	$34,731	$6,809		$19,435	$60,975
Gilbert / Chandler ADMP	$1,828	$46	$333,168	$25,884	$360,926
Higley ADMP	$15,189	$4,698,187		$11,366	$4,724,742
Adobe Dam ADMP	$310,572	$471,173		$44,419	$826,164
Durango ADMP	$138,790	$2,924		$67,099	$208,813
ACDC ADMP	$21,156	$30,567		$37,936	$89,659
Scatter Wash		$146,160		$1,989	$148,149
Maryvale ADMP	$1,104,187	$724,068		$109,125	$1,937,380
Foothills ADMP	$10,876		$252,132	$4,750	$267,758
Fountain Hills ADMP	$9,360			$5	$9,365
Total CIP Expenditures	$8,496,097	$14,813,049	$20,745,794	$1,878,326	$45,933,266

CIP Expenditure Breakdowns



FIVE-YEAR CAPITAL IMPROVEMENT PROGRAM



Capital Improvement Projects, FY 2002/03 - 2006/07

022 - City of Chandler
- *Central Chandler Area Drainage System*

035 - Town of Guadalupe
- *Town of Guadalupe*

108 - Sossaman Channel
- *Sossaman Channel - US 60 to Baseline*

117 - S Phoenix Drainage Improvement
- *Laveen Area Conveyance Channel*
- *South Phoenix / Two Basins*
- *43rd Ave / Southern Ave Basin*

120 - PVSP
- *Scottsdale Rd Corridor Drainage*

121 - East Maricopa Floodway
- *EMF Capacity Mitigation*
- *EMF Riftenhouse & Chandler Heights Basin*

125 - Salt River
- *Tempe / Mesa Habitat Mitigation*

129 - Arlington Valley
- *Floodplain Acquisition*

211 - Buckeye / Sun Valley ADMP
- *Buckeye / Sun Valley ADMP*
- *Buckeye FRS 1, 2, 3*

344 - Wittmann ADMP
- *Wittmann ADMP Update*

345 - Aguila ADMP
- *Aguila Mitigation*
- *Aguila ADMP*
- *Aguila Area Floodplain Delineation*

362 - Skunk Creek
- *Low Flow Channel*

400 - Skunk Creek / New River
- *New River Bank - Paradise Shores*
- *83rd Ave GCS / Bell Park*
- *New River - Grand to Skunk Creek*

420 - Spook Hill Watershed ADMP
- *Spook Hill ADMP*

442 - East Mesa ADMP
- *Hawes Rd Channel*
- *Eliot Rd Detention Basin & Outfall Channel*
- *Eliot Channel - Ellsworth to EMF*
- *Ellsworth Channel*
- *Southern Ave Channel*
- *Sunland Springs / Siphon Draw*
- *Eliot Channel (East of Crismon)*

450 - Glendale / Peoria ADMP
- *Glendale / Peoria ADMS Update*
- *67th Ave Storm Drain*

470 - White Tanks ADMP
- *White Tanks FRS #3 Modifications*
- *Loop 303 Corridor / White Tanks ADMP Update*
- *Reems Rd Channel*
- *Bullard Wash Phase II*
- *West Cactus Rd Basin / Channel*

480 - Queen Creek ADMP
- *Queen Creek Channelization*
- *Sonokai Wash Channelization*

491 - Higley ADMP
- *Higley ADMP*

520 - Adobe Dam ADMP
- *Adobe Dam / Desert Hills ADMP*
- *Floodprone Property Acquisition*

565 - Durango ADMP
- *Durango ADMP*
- *Durango Regional Outfall Channel*
- *Durango Regional Conveyance Channel*

580 - ACDC ADMP
- *Doubletree Ranch Rd System*

620 - Maryvale ADMP
- *Bethany Home Outfall Channel*

625 - Metro ADMP
- *24th Ave / Camelback Basin*

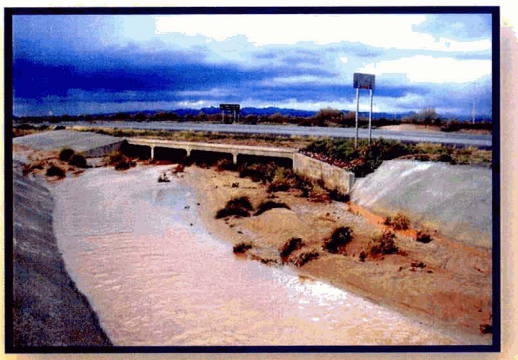
About Maricopa County

Maricopa County is located in south central Arizona, within the Sonoran Desert. The County is 9,226 square miles, of which 16 percent is incorporated and 84 percent is unincorporated. 30 percent of the land is held by private land owners.

Maricopa County is the 4th most populous in the U.S. and the 14th largest county.

The County population grows by 1,500 new residents every week. Currently the population stands at 3.2 million.

The five major river systems flowing through the County drain an area of approximately 57,000 square miles, which includes areas of New Mexico and Mexico.



Flood Control District
of Maricopa County

2002-2003 Annual Report

003.125

Table of Contents

Chairman's Message	2
Flood Control Board of Directors	3
Flood Control Advisory Board	3
General Manager's Message	4
District Programs	5
Mission and Vision	5
Fiscal Year Highlights	6
Division Highlights	7
Financial Commentary	8
Statement of Revenues and Expenditures	10
Capital Improvement Expenditures	11
Other District Highlights	12

About the District

Before the District's inception in 1959, severe flooding occurred throughout much of the County during winter rains and the monsoon season. By establishing the District, the Arizona State Legislature created an entity charged with keeping county residents safe from flood hazards and established an independent funding source for essential projects. Today, through effective engineering, dam and channel construction, regulation, and public education, massive flooding is less common.

The District is a municipal corporation and political subdivision of the State of Arizona. The Maricopa County Board of Supervisors doubles as the District's Board of Directors and receives counsel from the Flood Control Advisory Board comprised of county citizens.

Under the state's enabling legislation, the District is designated as a special taxing district and is given the authority to levy a secondary property tax on parcels within Maricopa County. The District's flood control levy for Fiscal Year 2002-2003 was $0.2119 per $100 of assessed valuation. At this levy rate, a typical property owner with an assessed valuation of $100,000 paid an annual flood control tax of $21.19.

In fiscal year 2002-2003, the District's annual budget, inclusive of both operating and capital programs, was $ 70.4 million with 63 percent of the District's revenue coming from the flood control tax.

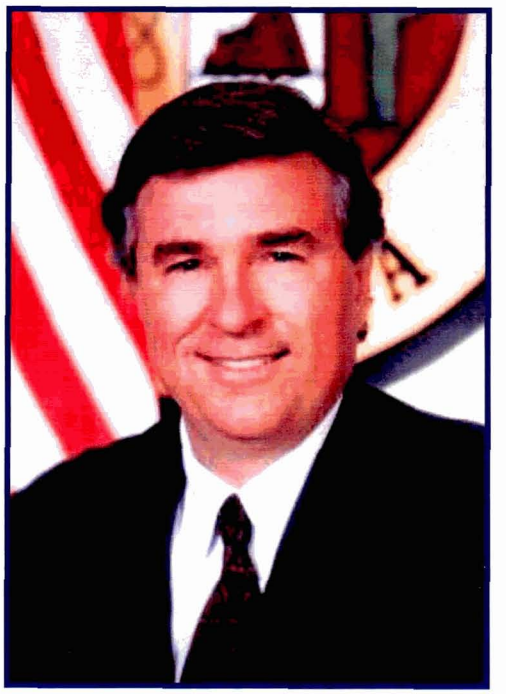
Revenue from other sources include the sale or lease of rights-of-way, fees that developers and individuals are required to pay to obtain building permits within Maricopa County and cost-sharing arrangements with the state, county, cities and other agencies.

Currently, the District has 275 automatic rain gages, 118 automatic stream gages, and 19 automatic weather stations throughout Maricopa and neighboring counties. This gage is located in the Indian Bend Wash Park.

One definition of the word pioneer is one who opens new areas of thought, research or development. That is the perfect definition of the Flood Control District of Maricopa County and its accomplished staff.

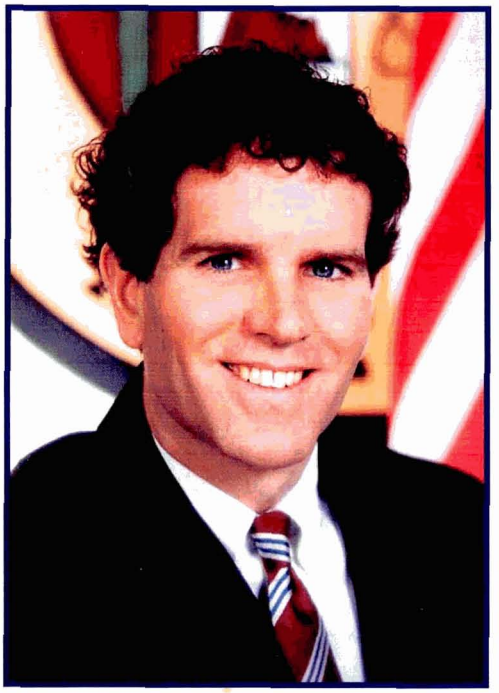
During the time I served as chairman, I have witnessed the District step up to the plate with new ideas - ideas to protect residents from the ravages of desert flooding, ideas to offer those same residents year-round recreational opportunities in facilities built to protect them, ideas to enhance the environment and ideas to create projects that will benefit generations to come.

The future looks particularly bright as the District forges ahead with more new ideas to use the latest technology in mapping, to restore riparian habitat and to get ahead of development. I am confident that these pioneering ideas will benefit county residents for years to come and that the District will continue to symbolize the word pioneer.



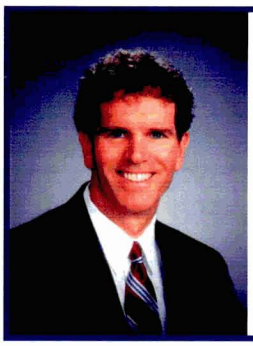
Don Stapley, District 2
Flood Control District of Maricopa County
2002 Board of Directors Chairman

Chairman's Message

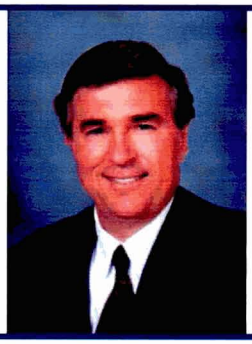


Fulton Brock, District 1
Flood Control District of Maricopa County
2003 Board of Directors Chairman

The spirit of hard work and helping neighbors has been the lifeblood of the West as it has grown from infancy to adulthood. This is what makes Maricopa County one of the most desirable places to live in the country, which is demonstrated by the large numbers of newcomers that join our community every month from other locales. This spirit is embraced at the Flood Control District, which has never wavered from its primary mission while striving for goals above and beyond the basics of flood control. In the past, the District focused on building flood control structures. But as growth and development flourish in the county, the District keeps the pioneer spirit alive by looking for alternative ways to keep residents safe and save taxpayers' money. This spirit will continue to serve the District well as the record-setting drought continues in the Southwest. In fact, Winter 2002 was the driest winter season on record. Eventually the weather patterns will shift and rain will return to the county. And when the rains do come, county residents can be assured that the District is prepared.



Fulton Brock
District 1



Don Stapley
District 2

Andrew Kunasek
District 3

Max Wilson
District 4

Mary Rose Wilcox
District 5

Supervisors serve as directors, oversee District operations

The Flood Control District is governed by a five-member Board of Directors, who also serve as the Board of Supervisors for Maricopa County. The Board of Directors exercises all the powers and duties in the acquisition and operation of District properties, contracting, and carrying out regulatory functions as ordinarily exercised by governing bodies. Board members elect a new chairman each year. The chairman conducts the meetings of the Board of Directors, which generally follow the meetings of the Board of Supervisors.

Governing Boards

Flood Control Advisory Board reviews programs, policies

The Flood Control District Advisory Board (FCAB) acts in an advisory role to the Board of Directors on flood control, floodplain management, drainage and related matters. The FCAB reviews planning, operations and maintenance of flood control facilities, reviews program priorities and new policies, and recommends an annual budget to the Board of Directors that includes a five-year capital improvement program.

The Advisory Board consists of seven members, five appointed by the Board of Supervisors for five-year terms. In addition to those five members, the Salt River Project and City of Phoenix appoint representatives who are ex officio members of the board. The FCAB members also serve as members of the District Floodplain and Drainage Review Boards.

Front Row: District 2, Kent Cooper; District 3, Hemant Patel; District 4, Shirley Long

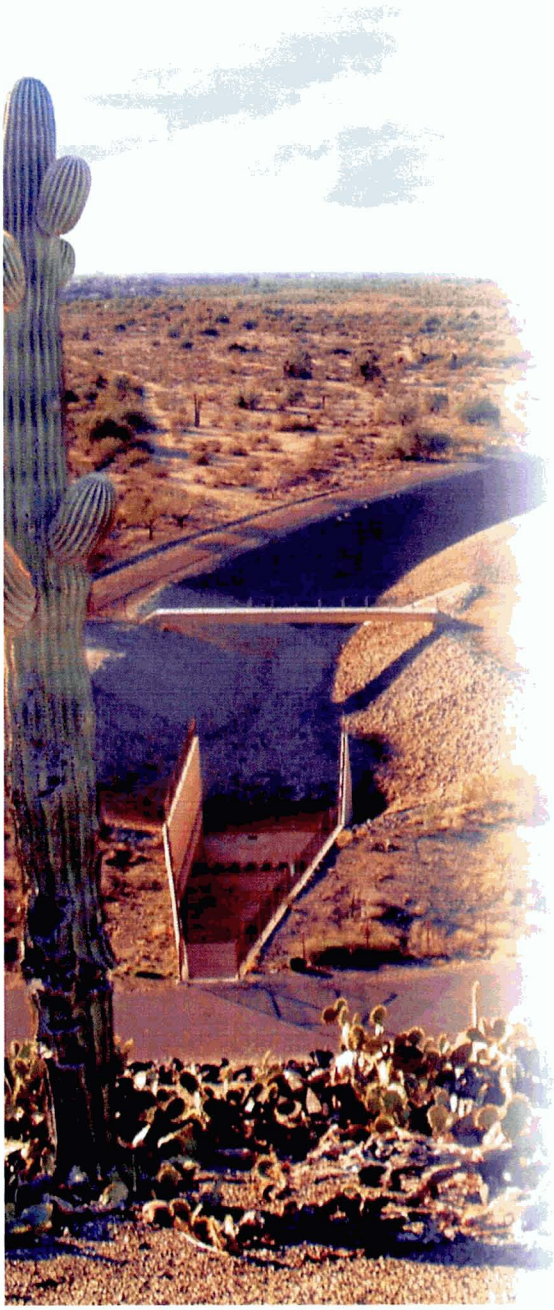
Back Row: City of Phoenix, Tom Callow; District 5, Melvin Martin

Not Pictured: District 1, Scott Ward; Salt River Project, Paul Cherrington

General Manager's Message

Much has been written over time about the early days of the Wild West and the gunslingers, the pioneers and the immigrants who dared to risk everything for the chance of a lifetime. Although water brought life and more "civilized" society to the arid region, the pioneering spirit of the West remains. It was evident 44 years ago when the Arizona State Legislature decided that something had to be done to control flooding in Maricopa County and formed the Flood Control District.

It was evident during the 1950s through the 1970s as the District designed and constructed the ring of flood control structures that surround the metropolitan Phoenix area. In most recent years it has been evident as the District turned its attention to providing county residents not only protection from ravaging floodwaters, but also the ability to enjoy many of the structures that protect them, turning basins into parks and channels into trails. And it was evident this year as the District laid essential groundwork for a potential partnership with the Federal Emergency Management Agency (FEMA). This relationship will allow the District to deliver the very latest techology to all county residents. The District welcomes the opportunity to work collaboratively with FEMA and appreciates its recognition of our expertise. In the future there will be more to say about this exciting collaboration.



In fact the District continues to pioneer innovations and technologies, proactive approaches and cost-containment methods. This strategic approach results in direct benefits for county residents by:

- Identifying flood and erosion hazards ahead of development;
- Providing fiscally responsible solutions for flood hazards saving taxpayer dollars;
- Enhancing the quality of life through diminishing the impacts of flooding; and
- Increasing opportunities for multi-use facilities.

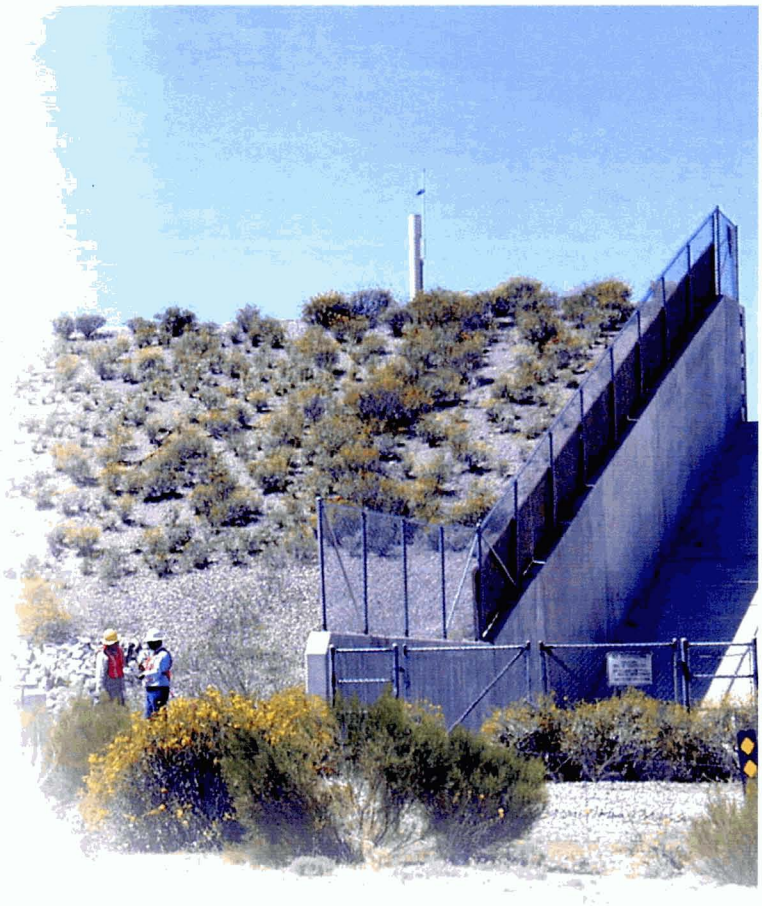
Michael Ellegood, P.E.
Chief Engineer and General Manager

Mission and Vision

The mission of the Flood Control District of Maricopa County is to provide regional flood hazard identification, regulation, remediation, and education to Maricopa County residents so that they can reduce their risks of injury, death, and property damage from flooding, while still enjoying the natural and beneficial values served by floodplains.

The District's vision is for the residents of Maricopa County and future generations to have the maximum level of protection from the effects of flooding through fiscally responsible flood control actions and multi-use facilities that complement and enhance the beauty of our desert environment.

We pledge to be responsive to our clients in an efficient, effective, and fiscally responsible manner. We will show personal integrity and professionalism in all our actions, and display continuous improvement, innovative thinking, and technical expertise. We will be stewards of the environment and the public's trust, and we will be concerned about the effects of our actions on not only the current, but also future generations.



District Programs

The Flood Hazard Education program supplies information to the public so that they can be more knowledgeable about the risks of floods and flood hazards, and the Flood Control District projects, studies, and activities that will affect them.

The Flood Hazard Identification program provides the identification of, and alternative solutions to flood hazards, and flood warning data to public and private organizations so that they can incorporate knowledge of flood hazards in their plans within presently developed and future urban growth areas.

The Flood Hazard Regulation program offers guidance, direction, and enforcement to the public so that they can avoid causing adverse impacts to floodplains, and use their property safely and in compliance with applicable state and federal laws.

The Flood Hazard Remediation program protects members of the public from flood hazards through structural mitigation and buy-out so that they can live with an acceptable risk of loss of life or property due to flooding.

2002-2003 Flood Control District Highlights

A public and private partnership between four agencies and ten private property owners and developers shaped one of the District's major accomplishments during the year. Conceived a little over three years ago and the largest major design project completed in-house, the Laveen Area Conveyance Corridor (LACC) will bring the rapidly developing Laveen area relief from over 1,400 acres of potential flood hazard. A prime example of the District's strategy to plan ahead of development, this project was accelerated to meet the needs of the growing community.

Construction on the project will begin in Fiscal Year 2003-2004 and will be completed in approximately 17 months. The estimated cost of the initial construction phase of the project is $7.1 million. Normally it would have taken more than five years to reach this point in the project. The LACC will serve as a flood control facility to safely collect and drain stormwater from 100-year and lesser storm events. The project consists of 5.8 miles of conveyance channel for stormwater and irrigation tail water as well as a 17-acre detention basin at 43rd and Southern Avenues. Once construction is complete, the project will be turned over to the City of Phoenix for operation and maintenance.

In addition, the District continued its emphasis on creating more community friendly facilities through cost-sharing arrangements with cities and developers and completed the first phase of assessing the safety of its 22 dams, which provide necessary flood protection.

In 2002-2003, the District's annual budget, inclusive of both operating and capital programs, was $ 70.4 million with 63 percent of the District's revenue coming from the flood control tax.

During the year, the District won several awards including an achievement award from the National Association of Counties for its use of advanced modeling technologies to evaluate potential flooding hazards along Doubletree Ranch Road in Paradise Valley. The District also won an award for the North Peoria Area Drainage Plan and the International Right of Way Association named the Lands and Right-of-Way Division Employer of the Year.

Division Highlights

Administration

- Initiated a records retention plan and digital record system

Engineering Division

- Initiated stormwater management on behalf of Maricopa County

Information Technology

- Initiated procedures for a potential agreement with the Federal Emergency Management Agency (FEMA)

Lands and Right-of-way

- Expedited the acquisition and relocation of 72 houses and their occupants, as part of the Bethany Home Outfall Channel, located in the Maryvale area of Phoenix
- Completed the sale (by auction) of Camelback Ranch South, located at 107th Avenue and Camelback Road, for $12.8 million, approximately 50 percent higher than the appraised value

Operations and Maintenance

- Completed 70 percent of work orders, a 9 percent increase over the previous year
- Initiated aggressive mosquito management plan to deal with the West Nile virus

District refines web site

At the beginning of the 2002-2003 fiscal year, the District successfully launched an improved web site that offers in-depth and timely information on projects and services as well as online forms and applications. The site is used by county residents, elected officials and other agencies as a major source of information on flooding and flood control in Maricopa County.

	Fiscal Year	
	2001-2002	2002-2003
Successful Hits (Entire Site)	4,602,366	9,239,126
Page Views	716,421	502,530*
Visits	155,394	211,828
Unique Visitors	24,630	34,696

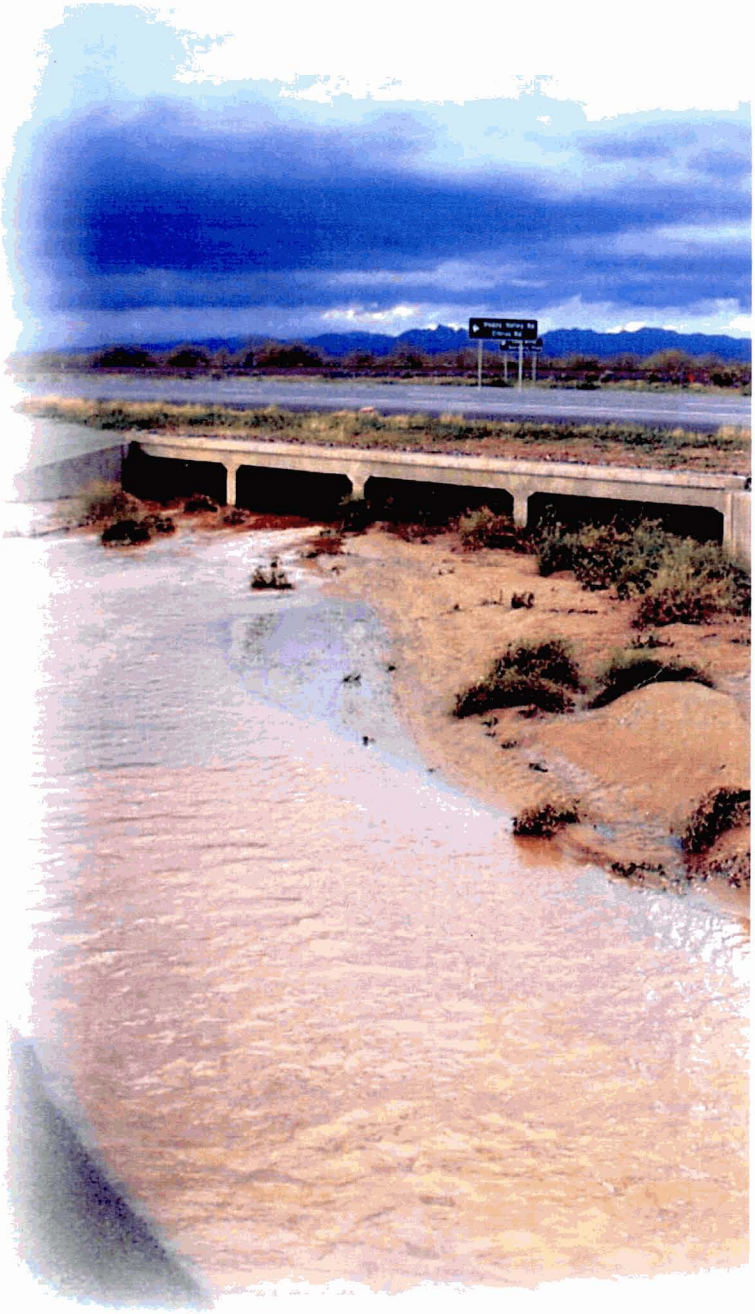
* The number of page views has declined, however it is due to improved navigation bringing visitors to their desired content more efficiently.

Planning and Project Management

- 13 planning studies under way to develop drainage master plans for more than 1,200 square miles of the county; two studies were completed
- 11 design projects under way; five projects were completed
- Six construction projects under way; three were completed with a total construction cost of $14 million and cost growth of $0.7 million, which represents only 5 percent of construction cost.
- Work on the Capital Improvement Program (CIP) projects resulted in utilizing 84 percent of all available CIP budgeted funds

Regulatory

- Recognized role of the regulatory division and reorganized it to be more effective and functional
- Aligned sand and gravel management with floodplain operations
- Completed eight floodplain delineation studies for 441 miles of watercourses within the county providing the basis to regulate growth in flood hazard areas



Floodplain Management

	Fiscal Year 2002-2003
Delineations Begun	7
Delineations Completed	7
Floodplain Use Permits	501
Phone Requests	3,235
Walk-in Customers	979
Flood Hazard Info Requests	5,305
Flood Hazard Info Notices	65

Drainage Administration

	Fiscal Year 2002-2003
Inspections Conducted	14,292
Miles driven by inspectors	175,129
Permits reviewed	9,545
Total plan reviews completed	1,128
Drainage complaints	303

Flood Detection & Data Collection

	Fiscal Year 2002-2003
New ALERT Gauges	12
ALERT Web page hits	19,952
Gauge Repair Visits	990
Warning Messages & Alerts	434

Financial Commentary

Management Discussion and Analysis

The continuing sluggishness experienced in the national and local economies had a deleterious effect upon the District's operations particularly in the Capital Improvement Program (CIP). The success of the District's Capital Improvement Program relies to a great extent upon the formulation of cost-sharing agreements with other entities (municipalities, state agencies, developers, etc.). During the year, potential partners continued to demonstrate a reluctance to commit funds to projects when sources of revenue were uncertain due to the slowed economy. Despite this, the District's management team has continued to be innovative and farsighted in positioning programs to take advantage of the economic recovery when it occurs.

Revenue

The District's revenue of $75,982,972 exceeded the budgeted amount of $71,029,400 by $4,953,572 or approximately 7 percent. Favorable revenue collections were primarily the direct result of the sale of the District's Camelback Ranch property, which exceeded appraisal estimates by approximately $5 million. All other categories of revenue, with the exception of rental income, approximated budget levels at the beginning of the year.

Operating Expenditures

Overall the District realized a savings of $884,401 from its originally approved operating budget. This savings of 4 percent was the result of management's effort to critically analyze all District activities as to efficiency and asset utilization and to adjust priorities as necessary during the year to assure that funding was available to those efforts that return the most productive services to the citizens of Maricopa County.

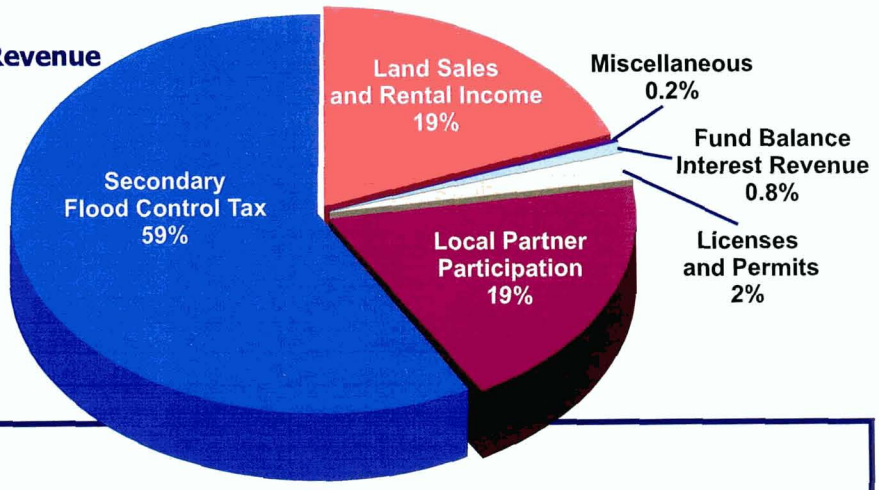
Personnel Services (payroll)

Operating payroll expenditures for the fiscal year were within 0.2 percent of the total anticipated in the original operating budget. This on-budget performance was the result of managing the District's personnel position vacancies and new hires in a manner consistent with providing adequate personnel coverage for critical programs and setting program priorities.

Operating Supplies and Services

During the fiscal year, the District continued its practice of evaluating on a value-received basis, each acquisition of supplies and

Actual Revenue



Revenue

Category	Budget	Actual	Difference	% Collected
Secondary Flood Control Tax	$45,000,000	$44,302,534	-$697,466	98.5
Local Partner Participation	$15,073,000	$14,482,555	-$590,445	96.1
Licenses and Permits	$1,800,700	$1,759,324	-$41,376	97.7
Fund Balance Interest Revenue	$850,000	$608,132	-$241,868	71.5
Misc.	$75,000	$178,831	$103,831	238.4
Subtotal	**$62798,700**	**$61,331,376**	**$1,467,324**	**97.7**
Land Sales and Rental Income	$8,230,700	$14,651,597	6,420,897	
Total Full Year Revenue	**$71,029,400**	**$75,982,973**	**$4,953,573**	

outside service prior to committing budgeted funds. As a result of this approach, the District's expenditures for supplies and contracted services registered a $648,173 favorable variance to budget (5.7 percent). The scrutiny of each expenditure was particularly successful in the areas of structure maintenance supplies (soil, cement, fertilizer, mortar, etc.) and outside engineering contract expenditures (consulting, planning, etc.). It also should be noted that the favorable variance to the operating budget was accomplished at the same time that the District was fulfilling its statutorily mandated and functional obligations.

As demonstrated, the District's expenditures in fulfillment of its mandated and functional responsibilities account for 90 percent of all expenditures made during the fiscal year. Administration expenditures account for slightly more than 8 percent of the total expenditures to fund operations during the fiscal year.

Non-CIP Capital Expenditures

In the District's continuing effort to expend taxpayer funds only for those items considered to be necessary to support flood control operations, management delayed the acquisition of several pieces of maintenance and engineering equipment. The resultant savings totaled $215,923.

Capital Improvement Program

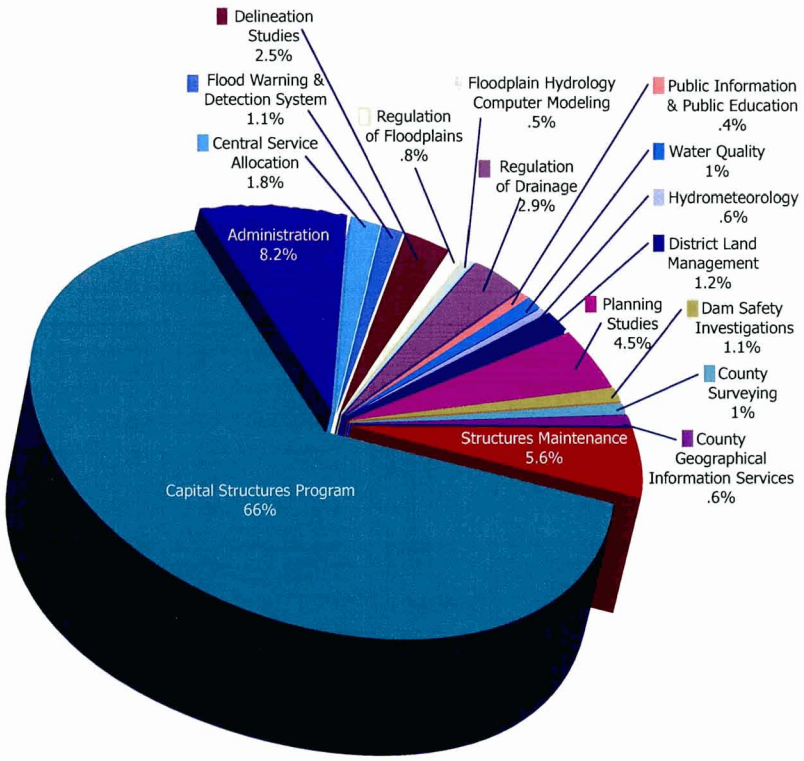
Despite the sluggish economy, the District expended approximately 84 percent of its originally budgeted Capital Improvement Program funds. Throughout the year, management continuously re-evaluated the program with an eye to changing priorities, project delays and new capital project opportunities. Several major CIP projects were delayed as a result of partner reluctance to commit funds to multi-year efforts until the economy demonstrates signs of recovery. Despite these difficulties, significant and material gains were made toward completing ongoing projects; many of which will come to fruition during fiscal year 2003-2004.

Ending Flood Control District Balance

The District's fiscal year ending fund balance, which is on account with the County Treasurer, totaled $33,067,662. The amount exceeds the anticipated total of $16,405,701 by $16,661,961. The increase is a result of the better than budgeted revenue collections realized during the year and the less than budgeted expenditure totals. The increase will allow management to expand and intensify the flood mitigation activities planned for future years and greatly increases management decision-making flexibility.

Mandated and Functional Responsibility

	Actual Expenditures
Flood Warning & Detection System	$693,981
Delineation Studies	$1,545,990
Regulation of Floodplains	$511,309
Floodplain Hydrology Computer Modeling	$308,823
Regulation of Drainage	$1,792,245
Public Information & Public Education	$277,302
Water Quality	$592,395
Hydrometeorology	$382,687
District Land Management	$737,635
Planning Studies	$2,795,058
Dam Safety Investigations	$683,031
County Surveying	$633,975
County Geographical Information Services	$364,596
Structures Maintenance	$3,478,579
Capital Structures Program	$40,773,261
Subtotal (Mandated & Functional)	$55,570,867
Administration (net of Central Service Allocation)	$5,046,140
Central Service Allocation	$1,122,858
Total	**$61,739,865**



Statement of Revenues, Expenditures, and Change in Fund Balance

Budget and Actual for the Fiscal Year Ended June 30, 2003
Preliminary & Unaudited

	Budget	Actual	Variance
Revenue			
Flood Control Tax	$45,000,000.00	$44,302,534.22	$697,465.78
Local Participation	$15,073,000.00	$14,482,554.89	-$590,445.11
Licenses & Permits	$1,800,700.00	$1,759,323.59	-$41,376.41
Land Sales And Rental Revenue	$8,230,700.00	$14,651,596.68	$6,420,896.68
Interest Revenue	$850,000.00	$608,132.03	-$241,867.97
Miscellaneous	$75,000.00	$178,831.46	$103,831.46
Total Revenue	**$71,029,400.00**	**$75,982,972.87**	**$4,953,572.87**
Operating Expenses			
Personnel Services	$9,812,635.00	$9,792,330.36	-$20,304.64
Supplies And Services			
Professional Services	$6,073,364.00	$5,918,267.43	-$155,096.57
Maintenance Supplies And Services	$1,485,300.00	$965,568.56	-$519,731.44
Internal Services	$2,696,696.00	$2,738,439.39	$41,743.39
Education And Travel	$160,705.00	$117,570.13	-$43,134.87
Other Supplies And Services	$939,510.00	$967,555.72	$28,045.72
Capital Acquisitions	$682,796.00	$466,872.44	-$215,923.56
Total Operating Expenditures	**$21,851,006.00**	**$20,966,604.03**	**-$884,401.97**
Capital Improvement Program (CIP)			
Personnel Services	$2,600,000.00	$2,233,525.00	-$366,475.00
Real Estate	$6,556,000.00	$15,647,454.00	$9,091,454.00
Engineering	$9,900,000.00	$7,297,726.00	-$2,602,274.00
Construction	$28,576,000.00	$15,594,556.00	-$12,981,444.00
Project Reserve	$968,000.00	$0.00	-$968,000.00
Total CIP Expenditures	**$48,600,000.00**	**$40,773,261.00**	**-$7,826,739.00**
Total Expenditures	**$70,451,006.00**	**$61,739,865.03**	**-$8,711,140.97**
Fund Balance	Budget	Actual	-unfavorable
Fund Balance July 1,2002	$15,827,307.00	$18,824,555.00	-$2,997,248.00
Add Revenue	$71,029,400.00	$75,982,972.87	-$4,953,572.87
Total Funds Available	$86,856,707.00	$94,807,527.87	-$7,950,820.87
Less Expenditures	-$70,451,006.00	-$61,739,865.03	-$8,711,140.97
	$16,405,701.00	**$33,067,662.84**	**-$16,661,961.84**

Capital Improvement Program Expenditures

For Fiscal Year Ending June 2003
Preliminary & Unaudited

Project Title/Description	Engineering	Land	Relocation & Construction	Compensation	Total
District Operations (Ortho Photography)	$259,548			$15,654	**$275,202**
Central Chandler Area Drainage System			$537,009	$2,658	**$539,667**
City Of Scottsdale				$2,111	**$2,111**
Town Of Guadalupe	$45,153	$1,874	$2,497,923	$108,409	**$2,653,359**
Dam Safety	$1,439,729			$165,037	**$1,604,766**
Candidate Assessment Reports	$54,628			$2,728	**$57,356**
Sossaman Channel	$3,643	$100	$55,748	$18,694	**$78,185**
South Phoenix Drainage Improvements	$265,990	$376,395		$286,702	**$929,087**
Paradise Valley, Scottsdale, Phoenix				$8,690	**$8,690**
East Maricopa Floodway	$882,834	$2,030,264		$91,694	**$3,004,792**
Tempe/Mesa Habitat Mitigation				$4,497	**$4,497**
Salt/Gila River				$24,453	**$24,453**
Arlington Valley Floodplain Acquisition	$16,298			$3,566	**$19,864**
McMicken Dam	$7,054			$30,302	**$37,356**
Buckeye/Sun Valley Area Drainage Master Plan	$518,238			$67,400	**$585,638**
Wittmann Area Drainage Master Plan Update	$1,062,281			$96,299	**$1,158,580**
Aguila Area Drainage Master Plan	$379,864		$6,402	$28,604	**$414,870**
Cave Buttes Dam				$1,923	**$1,923**
Skunk Creek	$12,897	$6,608		$56,457	**$75,962**
New River Dam				$426	**$426**
Skunk Creek/New River	$147,986	$2,021	$150,487	$75,186	**$375,680**
Spook Hill Area Drainage Master Plan	$49,257	$918,931		$25,109	**$993,297**
East Mesa Area Drainage Master Plan	$157,647	$40,656	$4,028,322	$293,142	**$4,519,767**
Glendale/Peoria Area Drainage Master Plan				$11,257	**$11,257**
East Fork Cave Creek Area Drainage Master Plan			$15,686	$20	**$15,706**
White Tanks Area Drainage Master Plan	$747,400	$515,243	$1,217	$132,010	**$1,395,870**
Queen Creek Area Drainage Master Plan		$97,810		$59,824	**$157,634**
Gilbert/Chandler Area Drainage Master Plan				$317	**$317**
Higley Area Drainage Master Plan		$270,947		$3,984	**$274,931**
Adobe Dam Area Drainage Master Plan	$996,128	$1,626,172	$42,131	$139,718	**$2,804,149**
Durango Area Drainage Master Plan	$12,216			$44,449	**$56,665**
ACDC Area Drainage Master Plan	$74,100	$56,275	$3,388,066	$157,889	**$3,676,330**
Maryvale Area Drainage Master Plan	$164,835	$9,704,158	$4,871,565	$262,385	**$15,002,943**
Metro Area Drainage Master Plan				$11,870	**$11,870**
Upper Indian Bend Wash Area Drainage Master Plan				$61	**$61**
Total CIP Expenditures	**$7,297,726**	**$15,647,454**	**$15,594,556**	**$2,233,525**	**$40,773,261**

About Maricopa County

Nearly 60 percent of Arizona's population resides in Maricopa County, which includes the cities of Phoenix, Tempe, Mesa, Chandler, Scottsdale, Glendale, Peoria, and Gilbert. Five of the 10 fastest growing cities in the state are located in Maricopa County. The county was consistently one of the fastest growing counties in the country during the last decade.

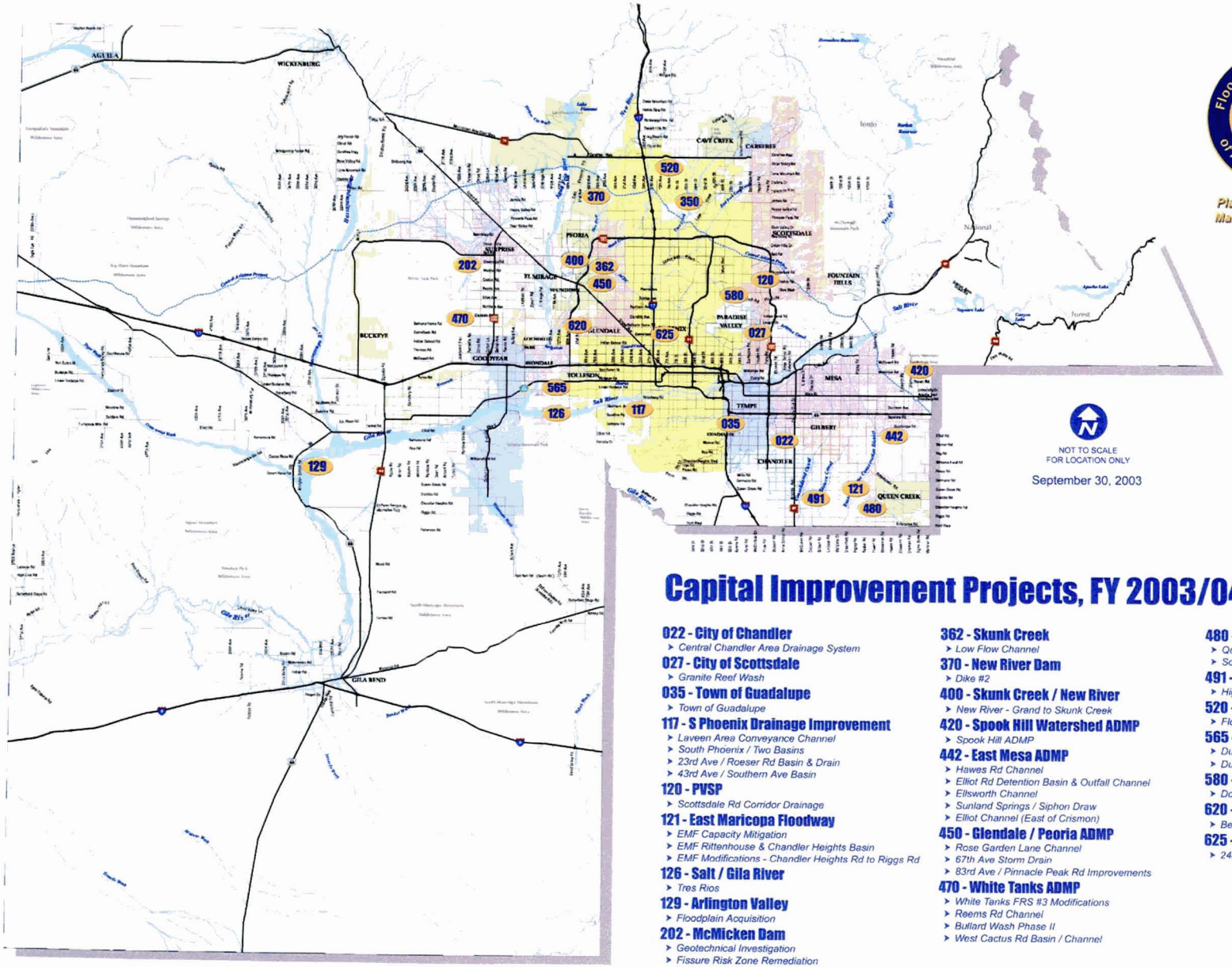
This metropolitan area is home to the state capitol as well as high-tech, manufacturing, service and agricultural industries, 15 institutions of higher learning, various cultural and professional sports attractions and Phoenix Sky Harbor International Airport, the fifth busiest airport in the world.

Maricopa County measures 9,226 square miles, 98 square miles of which is water. With a population of 3.2 million, it is the fourth most populous county and the 14th largest county in the United States.

Five major river systems flow through the county draining an area of approximately 57,000 square miles, which includes portions of New Mexico and Mexico.

FLOOD CONTROL DISTRICT of MARICOPA COUNTY

FIVE-YEAR CAPITAL IMPROVEMENT PROGRAM



Flood Control District of Maricopa County

Planning and Project Management Division

NOT TO SCALE
FOR LOCATION ONLY

September 30, 2003

Capital Improvement Projects, FY 2003/04 - 2007/08

022 - City of Chandler
- Central Chandler Area Drainage System

027 - City of Scottsdale
- Granite Reef Wash

035 - Town of Guadalupe
- Town of Guadalupe

117 - S Phoenix Drainage Improvement
- Laveen Area Conveyance Channel
- South Phoenix / Two Basins
- 23rd Ave / Roeser Rd Basin & Drain
- 43rd Ave / Southern Ave Basin

120 - PVSP
- Scottsdale Rd Corridor Drainage

121 - East Maricopa Floodway
- EMF Capacity Mitigation
- EMF Rittenhouse & Chandler Heights Basin
- EMF Modifications - Chandler Heights Rd to Riggs Rd

126 - Salt / Gila River
- Tres Rios

129 - Arlington Valley
- Floodplain Acquisition

202 - McMicken Dam
- Geotechnical Investigation
- Fissure Risk Zone Remediation

350 - Cave Buttes Dam
- Riprap Repair

362 - Skunk Creek
- Low Flow Channel

370 - New River Dam
- Dike #2

400 - Skunk Creek / New River
- New River - Grand to Skunk Creek

420 - Spook Hill Watershed ADMP
- Spook Hill ADMP

442 - East Mesa ADMP
- Hawes Rd Channel
- Elliot Rd Detention Basin & Outfall Channel
- Ellsworth Channel
- Sunland Springs / Siphon Draw
- Elliot Channel (East of Crismon)

450 - Glendale / Peoria ADMP
- Rose Garden Lane Channel
- 67th Ave Storm Drain
- 83rd Ave / Pinnacle Peak Rd Improvements

470 - White Tanks ADMP
- White Tanks FRS #3 Modifications
- Reems Rd Channel
- Bullard Wash Phase II
- West Cactus Rd Basin / Channel

480 - Queen Creek ADMP
- Queen Creek Channelization
- Sonoqui Wash Channelization

491 - Higley ADMP
- Higley ADMP

520 - Adobe Dam ADMP
- Floodprone Property Acquisition

565 - Durango ADMP
- Durango ADMP
- Durango Regional Conveyance Channel

580 - ACDC ADMP
- Doubletree Ranch Rd System

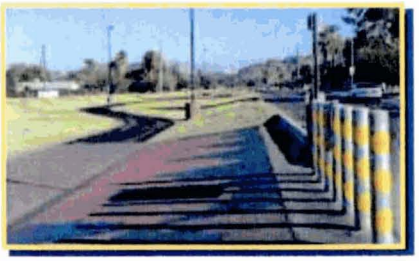
620 - Maryvale ADMP
- Bethany Home Outfall Channel

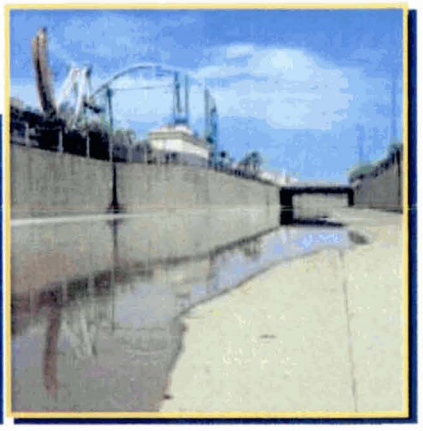
625 - Metro ADMP
- 24th Ave / Camelback Basin

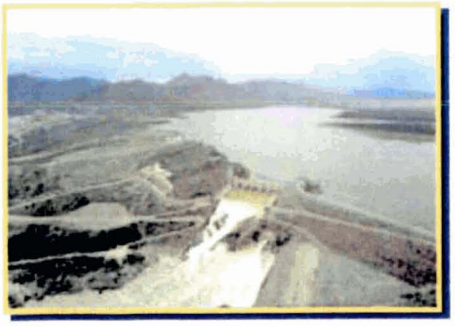
Flood Control District
of Maricopa County
2801 West Durango Street
Phoenix, Arizona 85009
(602) 506-1501

Flood Control District of Maricopa County

2003-2004 ANNUAL REPORT







003.126

About the District

Before the Flood Control District's inception in 1959, severe flooding occurred throughout much of the County, primarily during the winter rains and summer monsoon. By establishing the District, the Arizona State Legislature created an organization charged with keeping County residents safe from flood hazards and established an independent funding source for essential projects. Today, through effective engineering, dam and channel construction, regulation, and public education, massive flooding is less of a hazard. The District, as created, is a municipal corporation and political subdivision of the State of Arizona. The Maricopa County Board of Supervisors also serves as the District's Board of Directors, who in turn receive counsel from the Flood Control Advisory Board, comprised of county citizens. Under the state's enabling legislation, the District is designated as a special taxing district, and as such, is given the authority to levy a secondary property tax on parcels within Maricopa County. Additional revenue are derived from other sources including the sale or lease of rights-of-way, fees that developers and individuals are required to pay to obtain building permits within Maricopa County and cost-sharing arrangements with the State of Arizona, County, cities and other agencies.

Table of Contents

About the District
1

Chairman's Message
2

Flood Control Advisory Board
2

Flood Control Board of Directors
3

Chief Engineer and General Manager's Message
4

Mission and Vision
5

District Programs
5

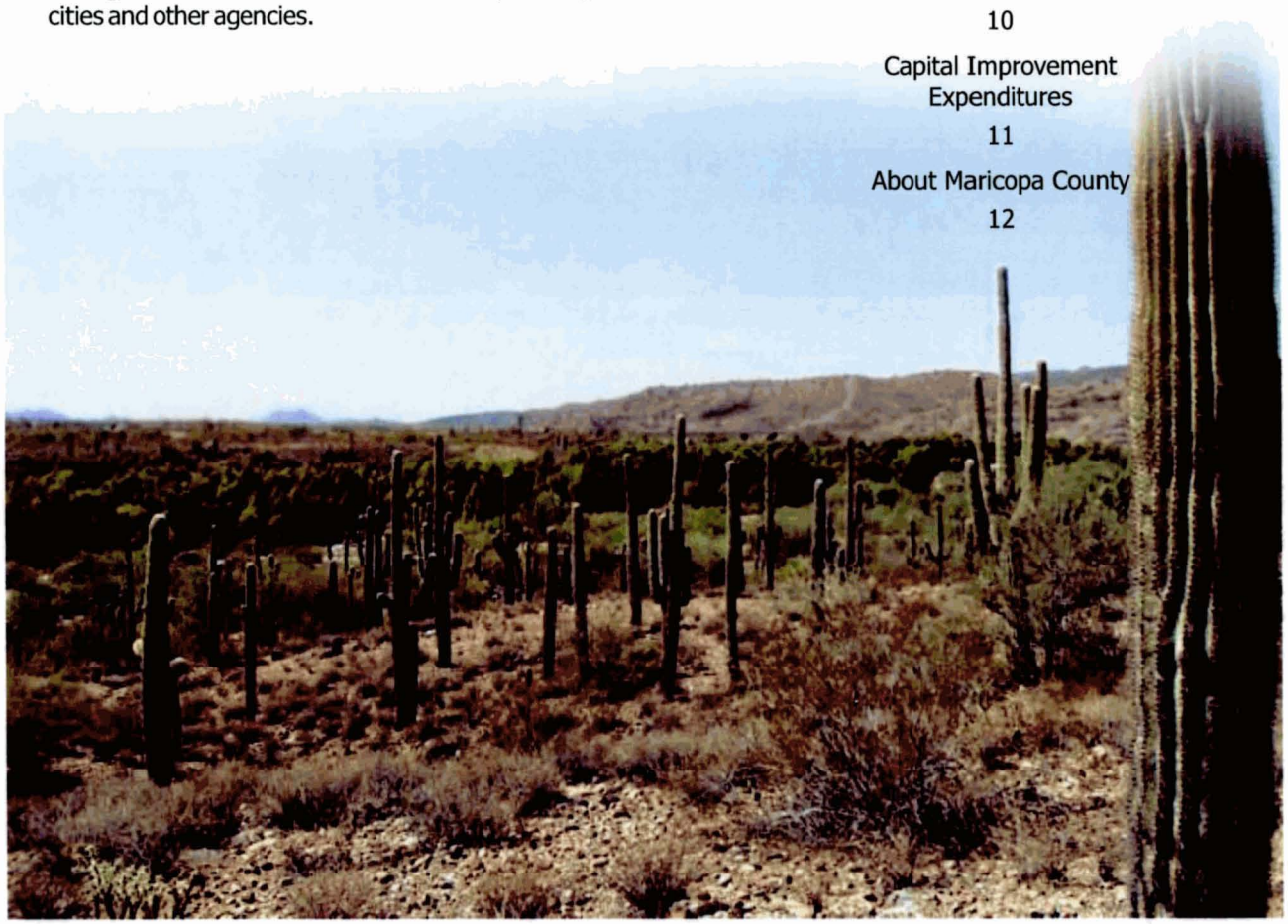
Division Highlights
6 and 7

Financial Commentary
8 and 9

Statement of Revenues and Expenditures
10

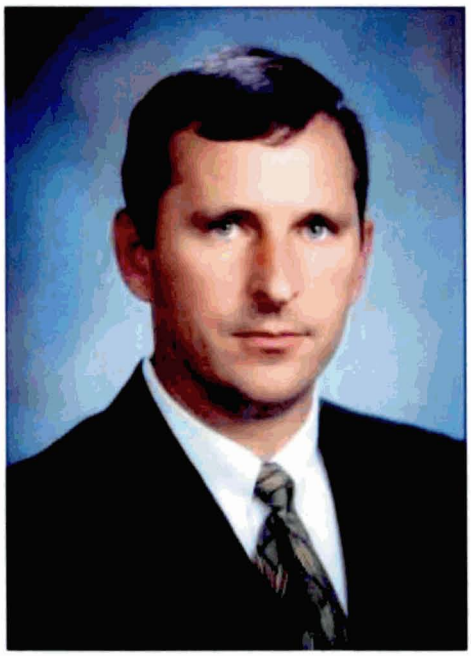
Capital Improvement Expenditures
11

About Maricopa County
12



Governing Boards

Chairman's Message



Andrew Kunasek
District 3
Flood Control District
of Maricopa County
2004 Board of Directors Chairman

The work of the Flood Control District continues to preserve many of our natural resources while helping to rejuvenate and revitalize some lost assets. The District has recognized that rivers are a unique and valued aspect of our communities and to the industries dependent on water. As riverbeds in Arizona have become endangered, they have become less and less inviting.

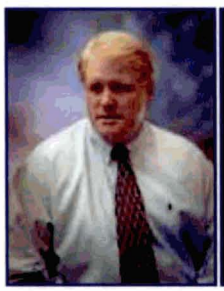
Through the diligent work of the District, rivers throughout Maricopa County are being restored to maintain their flood carrying capabilities and public amenities are being created and preserved for the enjoyment of future generations.

Through responsible land planning and creative development Maricopa County residents will be able to enjoy the many wonders of the native desert environment.

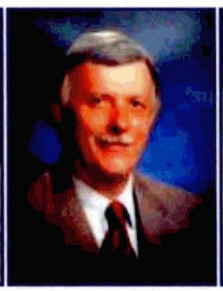
The District has established goals above and beyond the basics of flood control while maintaining its original mission. Staff members have been progressive yet fiscally responsible in their efforts to protect and educate county residents and resources while establishing multi-use facilities.

The County's future is bright as the District works hard to enhance the environment. Through its environment friendly projects the District will create multi-use areas that will be embraced and enjoyed by our great-grand children.

Flood Control Advisory Board



Scott Ward
District 1

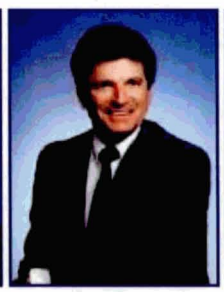


Kent Cooper
District 2

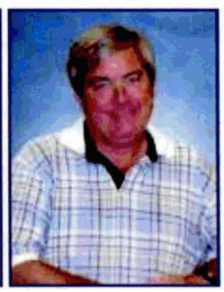
Hermant Patel
District 3

Shirley Long
District 4

Melvin Martin
District 5



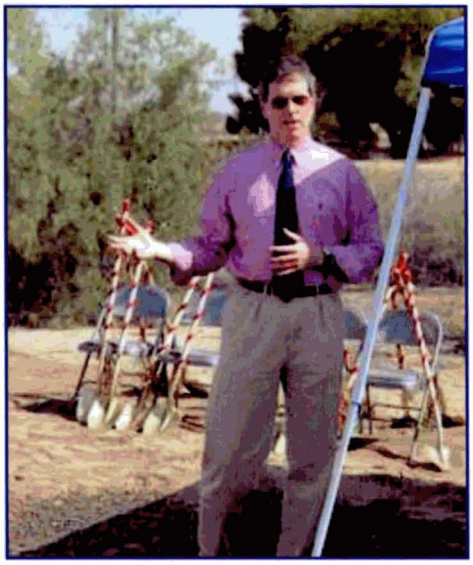
Paul Cherrington
Salt River Project



Tom Callow
City of Phoenix

The Flood Control District Advisory Board (FCAB) acts in an advisory role to the Board of Directors on flood control, floodplain management, drainage and related matters. The FCAB reviews planning, operations and maintenance of flood control facilities, reviews program priorities and new policies, and recommends an annual budget to the Board of Directors that includes a five-year Capital improvement program (CIP).

The FCAB consists of seven members. Five are appointed by the Board of Supervisors for five-year terms. In addition to those five members, the Salt Rover Project and City of Phoenix appoint representatives who are ex officio members of the board. The FCAB members also serve as members of the District Floodplain and Drainage Review Boards.



Fulton Brock
District 1

Don Stapley
District 2

Andrew Kunasek
District 3

Flood Control District
Board of Directors

The Flood Control District is governed by a five-member Board of Directors, who also serve as the Board of Supervisors for Maricopa County. The Board of Directors exercises all the powers and duties in the acquisition and operation of District properties, contracting, and carrying out regulatory functions as ordinarily exercised by governing bodies. Board members elect a new chairman each year. The chairman conducts the meetings of the Board of Directors, which generally follow the meetings of the Board of Supervisors.

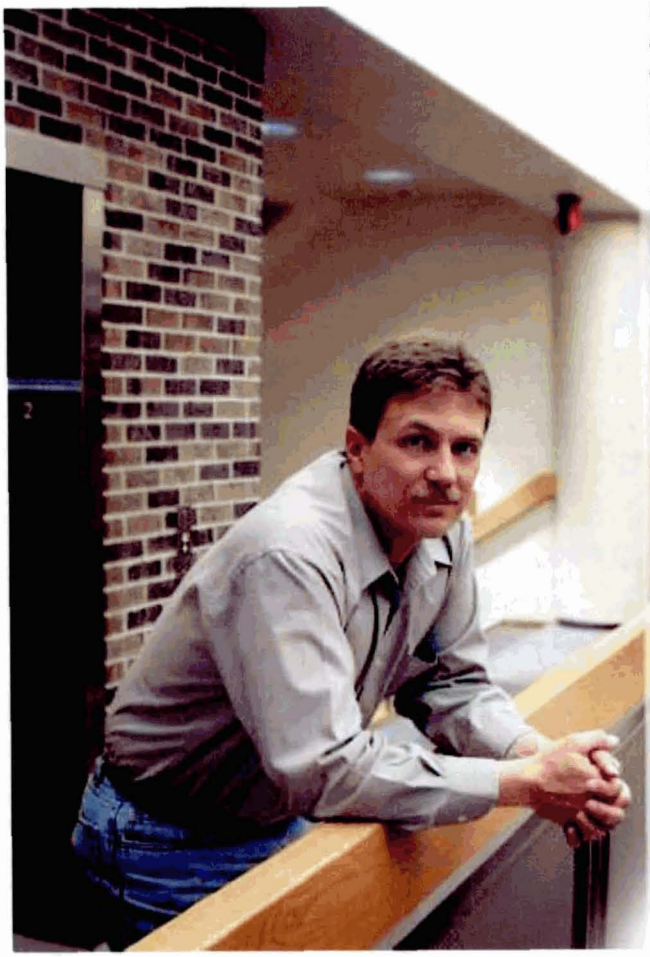
Max Wilson
District 4

Mary Rose Wilcox
District 5

General Manager's Message

The Flood Control District of Maricopa County (District) was formed 45 years ago to specifically address flooding issues throughout the County. Even though we live in a desert, floods occur due to the unique character of the desert and two distinct rainy seasons that occur in the summer and winter. In fact, some portion of Maricopa County generally experiences flooding at least once a year.

The District has made a lot of progress over the years, yet work remains as the County continues to be one of the fastest growing in the United States. Unprecedented growth has resulted in development beyond the flood control structures built during the 1960s and 1970s. As the District strives to stay ahead of development, it faces new issues and opportunities.



Historically, the District has focused on building dams, basins and channels. As we move forward, and our population continues to grow, we will use dynamic flood education programs to inform the public of this hazard potential; identify specific hazard areas so residents will make better decisions about where to build; and control development that directly impacts rivers and washes through our mandated drainage administration and flood plain management regulation program. As we build flood control structures throughout the County and within our client cities, we have been challenged to move away from the traditional hardened, concrete lined structures, to softer more aesthetic channels and basins that provide quality open space and multi-use opportunities coincident with flood protection. Our challenge is to make the most of all of these programs while minimizing our costs.

In the finest tradition of the Flood Control District, we will continue to respond to the threat of significant rainfall, runoff and potential flooding by expanding our efforts to provide the public protection; loss of life and loss of property, from major storm events

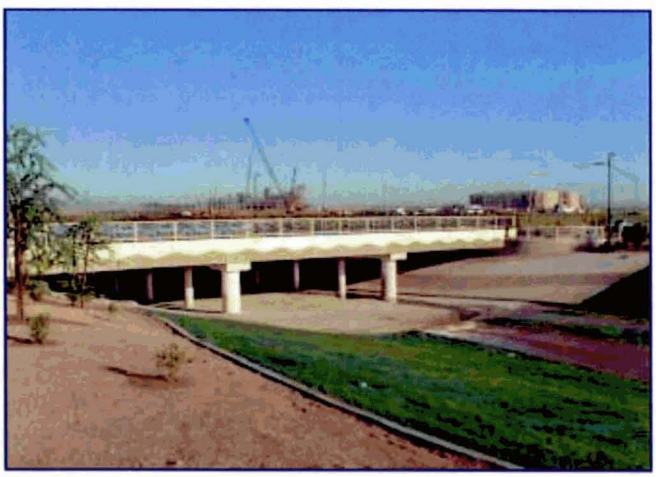
Tim Phillips, PE
Acting Chief Engineer and General Manager

Mission and Vision

The mission of the Flood Control District of Maricopa County is to provide regional flood hazard identification, regulation, remediation, and education to Maricopa County residents so that they can reduce the risk of injury, death, and property damage from flooding, while still enjoying the natural and beneficial values served by floodplains.

The District's vision is for the residents of Maricopa County and future generations to have the maximum level of protection from the effects of flooding through fiscally responsible flood control actions and multi-use facilities that complement and enhance the beauty of our desert environment.

We pledge to be responsive to our clients in an efficient, effective, and fiscally responsible manner. We will show personal integrity and professionalism in all our actions, and display continuous improvement, innovative thinking, and technical expertise. We will be stewards of the environment and the public's trust, and we will be concerned about the effects of our actions on not only the current, but also future generations.



District Programs

The Flood Hazard Education program supplies usable information to the public enabling them to be more knowledgeable about the risks of floods and flood hazards, and the Flood Control District projects, studies, and activities that will affect them.

The Flood Hazard Identification program provides for the identification of, and alternative solutions for flood hazards, and flood warning data to public and private organizations allowing them to incorporate this information of flood hazards into their plans within presently developed and future urban growth areas.

The Flood Hazard Regulation program offers guidance, direction, and enforcement to the public so that they can avoid causing adverse impacts to floodplains, and use their property safely and in compliance with applicable state and federal laws.

The Flood Hazard Remediation program protects members of the public from flood hazards through structural mitigation and buyout so that they can live with an lower risk of loss of life or property due to flooding.

2003-2004 Flood Control District Highlights

The District continues to place emphasis on creating more community friendly facilities through cost-sharing arrangements with cities and developers, and recently completed the first phase of assessing the safety of its 22 dams, which provide critical flood protection.

Digital Flood Insurance Rate Maps Project

The federal government has been struggling for years to keep flood maps up to date for over 19,000 communities in the US. Currently more than two-thirds of the maps are at least ten years old. To alleviate this problem, Federal Emergency Management Agency (FEMA) created a partnership program that would use local resources in the production of the maps.

The District decided to be a Cooperating Technical Partner (CTP) to FEMA for the production of Maricopa Digital Flood Insurance Rate Maps (DFIRM). The decision was made in July of 2003 and the GIS started the generation of new DFIRM maps with the help of all other divisions.

The project entailed the digitization and production of over 300 flood insurance maps, the printing of the maps according to FEMA specifications and the delivery of the digital data according to FEMA's database standards. After six months the maps were completed and ready to be distributed to the rest of the communities in Maricopa County for review.

Since then, FEMA has updated the standards and changed the specifications for the maps. The District is currently in the process of updating the maps to reflect the new data required by FEMA.

By having the DFIRM, the District will be providing benefits to a broad array of stakeholders such as community planners, local officials, builders and developers, insurance agents, companies, lending institutions and mainly home and business owners that will have the information available at their fingertips via the internet.

Division Highlights

Engineering Division

In-house engineering staff, for two jobs that were put out to bid, completed plans and Specifications for construction:

ACDC Skunk Creek Low Flow Channel, Bids opened July 2003

Hawes Road Channel Improvements, Bids opened October 2003

Information Technology

Data Distribution

The District acquires large quantities of information every year for ADMS and floodplain delineation studies. Data includes aerial photography, topographic mapping and other information that is received and stored by the GIS branch.

This data is very valuable to the engineering/consulting community, the real estate community, college students and regular citizens of Maricopa County.

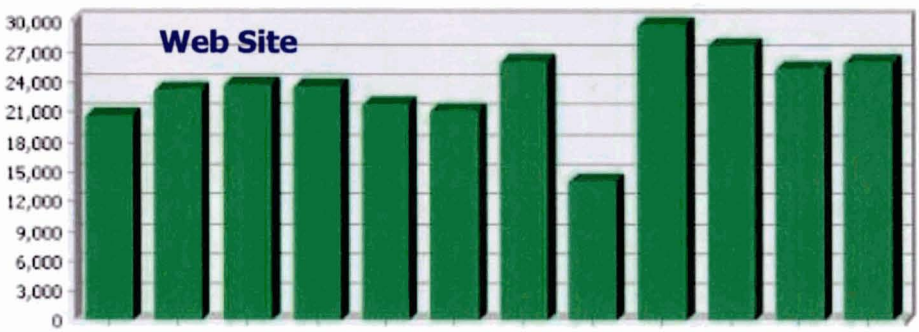
The GIS branch generated approximately $240K dollars in revenue during FY 2004 by selling and providing this information. We have received many letters from individual citizens, the consulting community and academia, thanking the District for the excellent job we are doing providing this information in a very timely manner and with savings to all people involved.

Lands and Right-of-way

Through the District's Property Management Branch, a comprehensive enforcement agreement was worked out with the City of Phoenix Parks Department, Phoenix Police Department, the District, and County Environmental Services, toward getting control of illegal trespass use of the Cave Buttes Dam impoundment area. Much of this trespass activity was creating dust and air quality problems that had placed the District on notice regarding non-compliance with EPA standards for dust particulates.

Through this collaborative effort, control of the property has been restored. Vegetation is once again growing. Law enforcement action has deterred off-road vehicle and other non-authorized uses which had previously denuded surface areas and caused monetary damage to many of the structures at this project. The success of this pilot law enforcement partnering has surpassed expectations, and will serve as the model for future efforts at other projects.

The District's Acquisition staff successfully completed the purchase of 72 residences in Phoenix, for the Bethany Home Outfall Channel project. Of the 72 homes purchased, only one home had to be acquired via condemnation, and that was only because of a complicated title question, not due to any contention on behalf of the owner. The District also successfully completed the acquisition of several basin sites in the East Valley which are now being planned for construction in upcoming years, and are being negotiated with local jurisdictions for multiple use opportunities.



Operations and Maintenance

Completed 70 percent of work orders issued, a 9 percent increase over the previous year.

Planning and Project Management

One major project was completed:

Carefree Drainage Master Plan June 2004

Three ADMS/ADMP projects continue:

Rio Verde, started May 2002
Wittmann, started April 2003
Buckeye/Sun Valley, started June 2003

Continuing WCMPs

Lower Hassayampa, started May 2004
El Rio, started August 2002

CIP projects currently in Construction:

Doubletree Ranch Road, Phase I & II, started March 2004
Bethany Home Outfall Channel, started January 2003
Laveen Area Conveyance Channel, started August 2004
43rd Avenue/Southern Avenue Basin, started November 2003

Regulatory

Completed four floodplain delineation studies for 450 miles of watercourses within the county providing the basis to regulate growth in flood hazard areas

Floodplain Management

Delineations Begun:

New River West Tributaries FDS, January 2004
Lower Hassayampa River Watercourse Master Plan, May 2004
Lower Centennial Watershed Tributaries Zone A FDS, June 2004

Delineations Completed and sent to FEMA:

North Scottsdale FDS, September 2003
Bullard Wash FDS Upstream of Indian School Road, September 2003
Camelback Road Wash FDS, December 2003
Jackrabbit Wash Watershed FDS Phase 2, February 2004
Durango ADMP FDS, April 2004
CLOMR for Bullard Wash Channel Improvements, May 2004
Carefree ADMP FDS, June 2004

Web Site General Statistics

Hits Entire Site (Successful)	12,382,810
Average per Day	33,832
Home Page	163,482
Page Views	
Page Views	850,670
Average per Day	2,324
Average per Unique Visitor	16
Document Views	850,653
Visits	
Visits	282,420
Average per Day	771
Visits Referred by Search Engines	360
Visits from Spiders	17,685
Visitors	
Visitors Unique Visitors	51,260
Visitors Who Visited Once	37,695
Visitors Who Visited More Than Once	13,565

Flood Detection & Data Collection

New ALERT Gauges	4
Gauge Repair Visits	944
Alert Page Visits	19,222
Warning Messages & Alerts	456

Drainage Administration

Inspections Conducted	14,993
Miles driven by inspectors	135,517
Permits reviewed	8562
Total plan reviews completed	815
Drainage complaints	343
Floodplain use Permits Approved	177
Floodplain Clearances Approved	275

Floodplain Management

Delineations Begun	3
Delineations Completed	7
Floodplain Use Permits	177
Phone Requests	2451
Walk-in Customers	774
Flood Hazard Info Requests	6,137
Flood Hazard Info Notices	30

Financial Commentary

Management Discussion and Analysis

Improvement in the national and local economy experienced during the District's 2004 Fiscal Year had a direct and favorable impact upon the District's financial operations. The Operating and Capital Improvement Program financial results of operations showed a significant improvement over that achieved in Fiscal Year 2003.

Continuing growth in the housing and business development construction sectors of the economy allowed for increased District revenue without the need for an increase in the Flood Control Secondary Property Tax Rate. The increased revenue was utilized, in part; to continue to fund the District's statutorily mandated responsibilities of education, regulation, floodwater mitigation and existing infrastructure maintenance. Evidence of the District's continuing commitment to its mandated responsibilities can be seen in increased FY 2004 funding for the Planning, Floodplain Delineation, Regulation, Maintenance and Dam Safety Programs. (Please see chart)

The improving local economy allowed the District's Capital Project Cost Share Partners (municipalities, state agencies, developers, etc.) to commit funding to several infrastructure design and construction efforts that had been on hold pending greater assurance of future tax revenues. Prior District management of Capital Project planning and prioritization placed the District in position to participate in these efforts as local funding became available.

Fiscal Year 2003/2004
Year End Expenditure Comparative

Preliminary & Unaudited

Title/Description	Actual FY 2003	Actual FY 2004
Flood Warning	$693,981	$832,029
Delineations	$1,545,990	$1,367,979
Regulation of Floodplains	$511,309	$846,703
Floodplain Hydrology Computer Modeling	$308,823	$95,878
Regulation of Drainage	$1,792,245	$1,761,223
Water Quality	$592,395	$424,795
Hydrometeorolgy	$382,687	$507,396
District Land Management	$737,635	$456,682
Planning Studies	$2,795,058	$5,862,108
Dam Safety Investigations	$683,031	$768,680
Structures Maintenance	$3,478,579	$4,317,406
Capital Improvement Program	$40,773,261	$47,719,674
Other Direct Service Expenses	$1,275,873	$2,716,390
	$55,570,867	$67,676,943
Administration	$5,046,140	$5,091,889
Control Service Alloc	$1,122,858	$1,136,127
Total Expenditures	**$61,739,865**	**$73,904,959**

Revenue

The District recorded Fiscal Year total revenues of $70,729,165 was 93.1% of the total budgeted amount of $75,992,743. The variance to budget was primarily the result of a District management decision not to sell certain excess land parcels during FY 2004, but to retain the land assets in anticipation of improved real estate conditions in future fiscal years. This decision was made with consideration to the District's forecasted Fund Balance position and FY 2005 funding requirements.

All other categories of revenue collection closely approximated FY 2004 budgeted expectations and showed a significant improvement over the results achieved in FY 2003. This was particularly true for Intergovernmental Cost Share revenue (an increase of $1,922,696) and License and Permitting revenues (an increase of ($241,014).

Operating Expenditures

FY 2004 total Operating Expenditures of $26,185,285 represent 95.3% of the total year budgeted expenditures of $27,484,663. The 95.3% funds utilization rate favorably compares to the 96% rate achieved during FY 2003 and continues the District's financial history of aggressively funding its statutorily mandated responsibilities. During FY 2004 expenditures for the Flood Warning System, Planning Studies, Hydrometeorology Studies, Infrastructure Maintenance and the Dam Safety Program were materially increased, while spending for administrative overhead was held essentially flat compared to FY 2003.

Capital Improvement Program

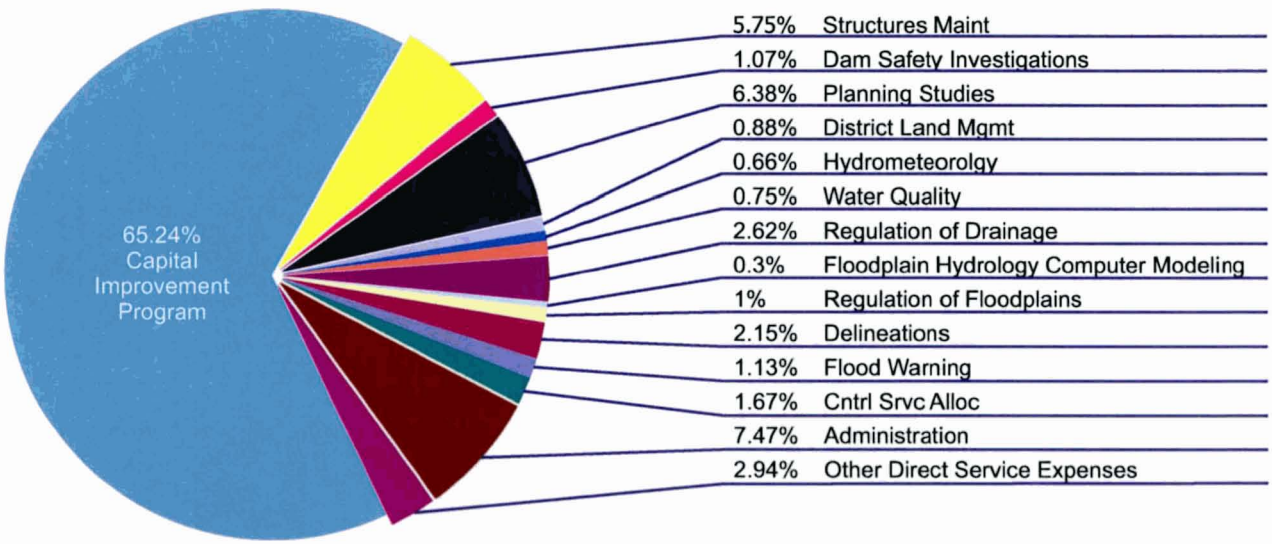
During Fiscal Year 2004, the District utilized approximately 91% of the Capital Funds available for the design, construction and land acquisition required for capital infrastructure projects. This performance compares very favorably to the 84% utilization rate achieved during FY 2003. Several major flood mitigating projects that had been delayed as the result of the sluggish economy were significantly advanced during the year and are anticipated to carry into FY 2005.

Flood Control District Treasury Fund Balance

The District's FY 2004 ending Treasury Fund Balance of $30,052,736 represents a decrease of $3,110,854 from the beginning fund balance of $33,163,590. The decrease is the result of management's determination to continue an aggressive Capital Program under favorable conditions while simultaneously advancing the District's mandated responsibilities. The ending fund balance of $30,052,854 places the District in a highly favorable financial position to continue this policy.

Fiscal Year 2004 Treasury Fund Balance Analysis
Preliminary & Unaudited

FY 2004 Beginning Fund Balance	$33,163,590
Add FY 2004 Revenue Collections	$70,729,165
Total Funds Available for Operations	**$103,892,755**
Less FY 2004 Expenditures	
Operating Expenditures	-$26,185,285
Capital Improvement Program	-$47,719,674
Total FY 2004 Expenditures	**-$73,904,959**
Fiscal Year Closing Adjustments	$64,940
Ending Treasury Fund Balance	**$30,052,736**



Fiscal Year 2004 Statement of Revenues and Expenditures

Preliminary and Unaudited

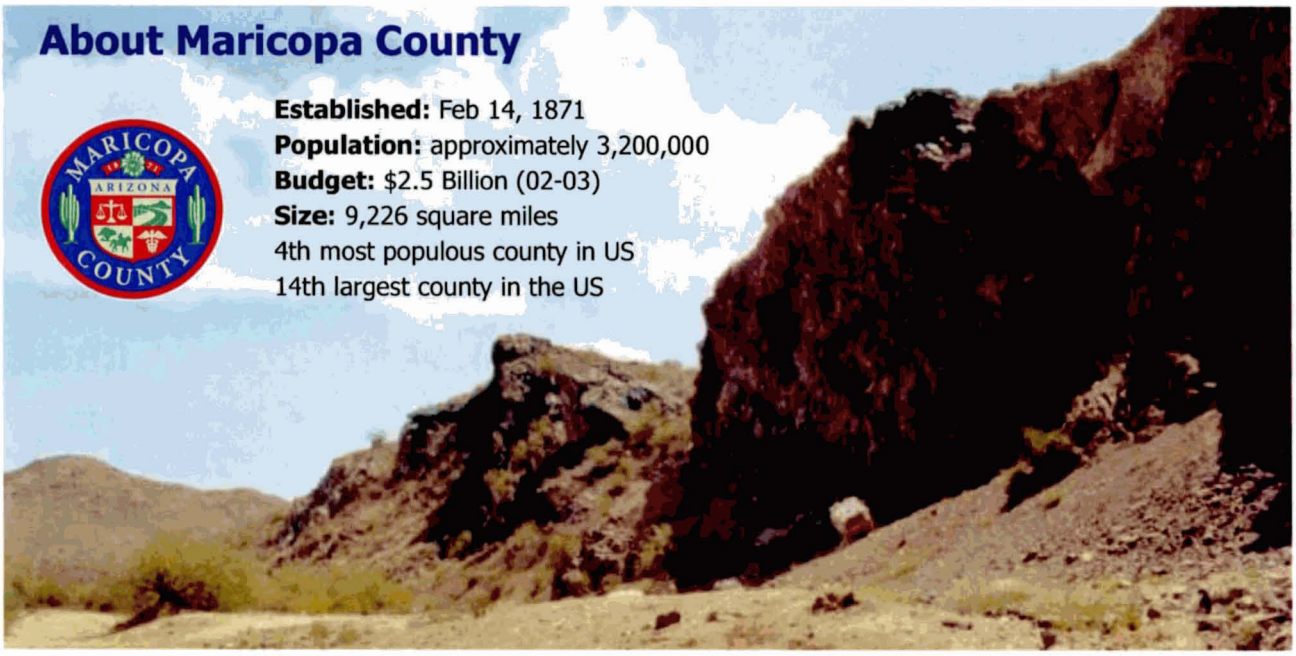
	FY 2004 Budget As Revised**	FY 2004 Actual	Variance	Variance %
REVENUE				
Secondary Property Taxes	$51,153,993	$50,550,367	-$603,626	
Payments in Lieu of Taxes	$137,612	$152,557	$14,945	
Licenses & Permits	$1,800,700	$2,000,338	$199,638	
Intergovernmental Revenue	$16,554,000	$16,405,251	-$148,749	
Fund Balance Interest Earnings	$391,606	$326,565	-$65,041	
Miscellaneous Revenue	$5,954,832	$1,294,087	-$4,660,745	
TOTAL REVENUE	**$75,992,743**	**$70,729,165**	**-$5,263,578**	**-6.9%**
OPERATING EXPENSE				
Salaries and Wages	$8,283,976	$8,643,777	-$359,801	
Temporary Labor	$324,533	$226,658	$97,875	
Overtime Pay	$39,050	$80,958	-$41,908	
Employee Benefits	$2,409,250	$2,287,384	$121,866	
Other Personnel Expenses	$0	$32,580	-$32,580	
Total Payroll	**$11,056,809**	**$11,271,357**	**-$214,548**	**-1.9%**
Personnel Transfers - In	$0	$71,058	-$71,058	
Personnel Transfers - Out	-$229,529	-$480,147	$250,618	
Total Personnel Transfers	**-$229,529**	**-$409,089**	**$179,560**	**N/A**
General Supplies	$833,605	$968,606	-$135,001	
Equipment Fuel	$144,985	$153,479	-$8,494	
Non-Capital Equipment Acquisitions	$45,054	$106,451	-$61,397	
Total Supplies Expense	**$1,023,644**	**$1,228,536**	**-$204,892**	**-20.0%**
Legal Expense	$346,000	$456,980	-$110,980	
Professional Services	$10,513,909	$9,306,807	$1,207,102	
Other Services	$870,116	$782,109	$88,007	
Inter-County Service Charges	$1,696,584	$1,687,465	$9,119	
County Central Cost Allocation	$1,206,127	$1,136,127	$70,000	
Total Outside Service Expense	**$14,632,736**	**$13,369,488**	**$1,263,248**	**8.6%**
Capital Equipment Acquisitions	$65,353	$6,126	$59,227	
Capital Vehicle Acquisitions	$802,450	$594,544	$207,906	
Capital Lease Payments	$133,200	$124,323	$8,877	
Total Capital Acquisition Expense	**$1,001,003**	**$724,993**	**$276,010**	**27.6%**
TOTAL OPERATING EXPENSE	**$27,484,663**	**$26,185,285**	**$1,299,378**	**4.7%**
CAPITAL IMPROVEMENT PROGRAM				
Force Account Labor	$2,296,000	$1,759,692	$536,308	
Engineering (Outside Services)	$5,380,000	$6,445,364	-$1,065,364	
Land Acquisition Expense	$20,863,000	$16,905,146	$3,957,854	
Construction	$23,804,000	$22,609,472	$1,194,528	
Project Reserve	$301,000	$0	$301,000	
TOTAL CAPITAL PROGRAM EXPENSE	**$52,644,000**	**$47,719,674**	**$4,924,326**	**9.4%**
TOTAL FY 2004 EXPENDITURES	**$80,128,663**	**$73,904,959**	**$6,223,704**	**7.8%**

** Budget was amended through the Agenda Item Process during the course of Fiscal Year 2004

Capital Improvement Program Expenditures

Project	Force Acct Labor	Outside Services	Land Cost	Relocation & Construction	Total
Central Chandler Area	$80,873			$904,597	$985,470
City Of Scottsdale	$1,813				$1,813
Town Of Guadalupe	$10,869		$2,904	$29,764	$43,537
Dam Safety Program	$56,271	$579,047			$635,318
Alma School Drain	$1,053			$94,000	$95,053
South Phoenix Drainage	$412,265	$314,499	$493,631	$7,555,551	$8,775,946
Paradise Valley, Scottsdale, Phoenix	$82,508	$77,293			$159,801
East Maricopa Floodway	$58,279	$109,755	$5,335,256	$66,500	$5,569,789
Salt/Gila River	$13,814				$13,814
Arlington Valley	$11,252	$124,115	$985,510		$1,120,877
McMicken Dam	$53,715	$690,053	$3,552		$747,320
Buckeye/Sun Valley ADMP		$3,880			$3,880
Cave Buttes Dam		$6,962			$6,962
Skunk Creek Channelization	$60,381	$4,090	$501	$1,112,457	$1,177,428
New River Dam	$4,438	$2,500	$8,183		$15,121
Skunk Creek/New River	$46,827	$412,951	$4,600		$464,378
Spookhill Watershed ADMP	$16,135	$26,774	$2,137,993		$2,180,902
Southeast Mesa ADMP	$160,767	$151,706	$620,960	$2,591,130	$3,524,563
Glendale/Peoria ADMP	$44,224	$101,367	$1,500		$147,091
White Tanks ADMP	$159,168	$1,141,759	$2,767,255		$4,068,182
Queen Creek ADMP	$46,224	$503,606	$305	$976,450	$1,526,585
Higley ADMP	$6,624		$949		$7,573
Adobe Dam ADMP	$1,456	$133,002			$134,458
Durango ADMS	$31,558	$304,472	$2,024,287		$2,360,317
ACDC ADMP	$153,025	$70,671	$75	$4,921,227	$5,144,998
Maryvale ADMP	$218,584	$1,588,386	$2,517,685	$4,357,797	$8,682,451
Metro ADMP	$27,568	$98,477			$126,044
	$1,759,692	**$6,445,364**	**$16,905,146**	**$22,609,472**	**$47,719,674**

About Maricopa County



Established: Feb 14, 1871
Population: approximately 3,200,000
Budget: $2.5 Billion (02-03)
Size: 9,226 square miles
4th most populous county in US
14th largest county in the US

Maricopa County, named after the Maricopa Tribe, was created from portions of Pima and Yavapai counties in 1871. It was the fifth county formed in Arizona, and eventually portions were used to create Gila and Pinal counties. In the late 19th century, citizens living far south of Prescott, the territorial capital and site of the Territorial Legislature, petitioned for a more local seat of government. Residents of the Salt River Valley and the Gila River area wanted a new county in their respective locations. After weighing both proposals, the Legislature agreed with the Salt River Valley group and created Maricopa County.

Nearly 60 percent of Arizona's population resides in Maricopa County, which includes the cities of Phoenix, Tempe, Mesa, Chandler, Scottsdale, Glendale, Peoria, and Gilbert. The County has been consistently one of the fastest growing counties in the country during the last decade.

This metropolitan area is home to the state capitol as well as high-tech, manufacturing, service and agricultural industries, 15 institutions of higher learning, various cultural and professional sports attractions; major league professional basketball (Phoenix Suns and Phoenix Mercury), football (Arizona Cardinals), hockey (Phoenix Coyotes) and baseball's 2001 World Champion Arizona Diamondbacks.

Today Maricopa County measures 9,224 square miles, 21 square miles of which is water. Five major river systems flow through the county draining an area of approximately 57,000 square miles, which includes portions of New Mexico and Mexico. Thirty-one percent of this area is owned individually or by corporation, and 41 percent is owned by the U.S. Bureau of Land Management. The U.S. Forest Service and the State of Arizona each control 11 percent of the County; an additional one percent is owned publicly. Almost four percent is Indian reservation land. Parts of western Maricopa County has 11 designated Enterprise Zones as well as central and southern areas in the City of Phoenix.

Monthly Average Temperatures

Maricopa County enjoys an average annual daily temperature of 72 degrees with 300 days of sunshine per year.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Avg temp (F)	53	57	62	69	78	88	93	91	85	74	61	54
Avg max temp (F)	66	71	76	85	94	104	106	104	98	88	75	66
Avg min temp (F)	41	45	49	55	64	73	81	79	73	61	49	42

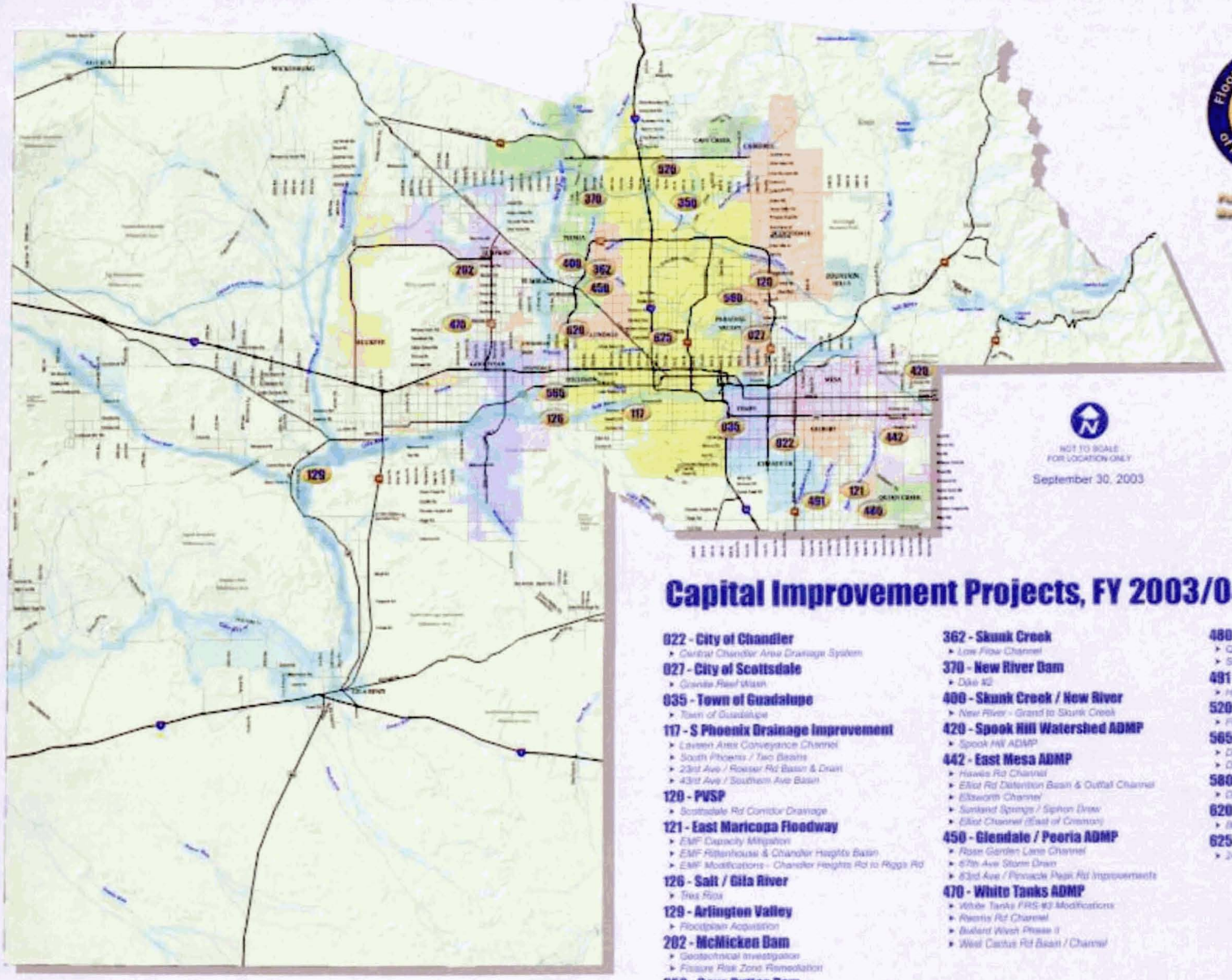
Monthly Average Rainfall

Maricopa County has an average rainfall of only 7.6 inches per year

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
inches	0.8	0.7	0.9	0.2	0.1	0.1	0.8	1.0	0.7	0.6	0.6	0.9

FLOOD CONTROL DISTRICT of MARICOPA COUNTY

FIVE-YEAR CAPITAL IMPROVEMENT PROGRAM



Flood Control District of Maricopa County

Planning and Project Management Division

NOT TO SCALE
FOR LOCATION ONLY

September 30, 2003

Capital Improvement Projects, FY 2003/04 - 2007/08

022 - City of Chandler
- Central Chandler Area Drainage System

027 - City of Scottsdale
- Granite Reef Wash

035 - Town of Guadalupe
- Town of Guadalupe

117 - S Phoenix Drainage Improvement
- Laveen Area Conveyance Channel
- South Phoenix / Two Basins
- 23rd Ave / Roeser Rd Basin & Drain
- 43rd Ave / Southern Ave Basin

120 - PVSP
- Scottsdale Rd Corridor Drainage

121 - East Maricopa Floodway
- EMF Capacity Mitigation
- EMF Rittenhouse & Chandler Heights Basin
- EMF Modifications - Chandler Heights Rd to Riggs Rd

126 - Salt / Gila River
- Tres Rios

129 - Arlington Valley
- Floodplain Acquisition

202 - McMicken Dam
- Geotechnical Investigation
- Fissure Risk Zone Remediation

350 - Cave Buttes Dam
- Riprap Repair

362 - Skunk Creek
- Low Flow Channel

370 - New River Dam
- Dike #2

408 - Skunk Creek / New River
- New River - Grand to Skunk Creek

420 - Spook Hill Watershed ADMP
- Spook Hill ADMP

442 - East Mesa ADMP
- Hawes Rd Channel
- Elliot Rd Detention Basin & Outfall Channel
- Ellsworth Channel
- Sunland Springs / Siphon Draw
- Elliot Channel (East of Crismon)

450 - Glendale / Peoria ADMP
- Rose Garden Lane Channel
- 67th Ave Storm Drain
- 83rd Ave / Pinnacle Peak Rd Improvements

470 - White Tanks ADMP
- White Tanks FRS #3 Modifications
- Reems Rd Channel
- Buckeye Wash Phase II
- West Cactus Rd Basin / Channel

480 - Queen Creek ADMP
- Queen Creek Channelization
- Sonoqui Wash Channelization

491 - Higley ADMP
- Higley ADMP

520 - Adobe Dam ADMP
- Floodprone Property Acquisition

565 - Durango ADMP
- Durango ADMP
- Durango Regional Conveyance Channel

580 - ACDC ADMP
- Doubletree Ranch Rd System

620 - Maryvale ADMP
- Bethany Home Outfall Channel

625 - Metro ADMP
- 24th Ave / Camelback Basin

Flood Control District
of Maricopa County
2801 West Durango Street
Phoenix, Arizona 85009
(602) 506-1501
www.fcd.maricopa.gov

Flood Control District of Maricopa County

2004-2005 ANNUAL REPORT

003.127

About the District

Before the Flood Control District's inception in 1959, severe flooding occurred throughout much of the County, primarily during the winter rains and summer monsoon. By establishing the District, the Arizona State Legislature created an organization charged with keeping County residents safe from flood hazards and established an independent funding source for essential projects. Today, through effective engineering, dam and channel construction, regulation, and public education, massive flooding is less of a hazard. The District, as created, is a municipal corporation and political subdivision of the State of Arizona. The Maricopa County Board of Supervisors also serves as the District's Board of Directors, who in turn receive counsel from the Flood Control Advisory Board, comprised of county citizens. Under the state's enabling legislation, the District is designated as a special taxing district, and as such, is given the authority to levy a secondary property tax on parcels within Maricopa County. Additional revenue are derived from other sources including the sale or lease of rights-of-way, fees that developers and individuals are required to pay to obtain building permits within Maricopa County and cost-sharing arrangements with the State of Arizona, County, cities and other agencies.

Table of Contents

About the District	1
Mission and Vision	1
District Programs	1
Chairman's Message	2
Flood Control Advisory Board	2
Flood Control Board of Directors	3
Chief Engineer and General Manager's Message	4
District Organizational Chart	5
East Maricopa Floodway Basins	6
Laveen Area Conveyance Channel	7
District Highlights	8
McMicken Dam Fissure Risk Zone Remediation	10
Bethany Home OutFall Channel	11
Floodprone Properties Acquisition Program	12
Education Program	12
Financial Commentary	13
Capital Improvement Program Expenditures	16

Mission and Vision

The mission of the Flood Control District of Maricopa County is to provide regional flood hazard identification, regulation, remediation, and education to Maricopa County residents so that they can reduce the risk of injury, death, and property damage from flooding, while still enjoying the natural and beneficial values served by floodplains.

The District's vision is for the residents of Maricopa County and future generations to have the maximum level of protection from the effects of flooding through fiscally responsible flood control actions and multi-use facilities that complement and enhance the beauty of our desert environment.

We pledge to be responsive to our clients in an efficient, effective, and fiscally responsible manner. We will show personal integrity and professionalism in all our actions, and display continuous improvement, innovative thinking, and technical expertise. We will be stewards of the environment and the public's trust, and we will be concerned about the effects of our actions on not only the current, but also future generations.

District Programs

The Flood Hazard Education program supplies usable information to the public enabling them to be more knowledgeable about the risks of floods and flood hazards, and the Flood Control District projects, studies, and activities that will affect them.

The Flood Hazard Identification program provides for the identification of, and alternative solutions for flood hazards, and flood warning data to public and private organizations allowing them to incorporate this information of flood hazards into their plans within presently developed and future urban growth areas.

The Flood Hazard Regulation program offers guidance, direction, and enforcement to the public so that they can avoid causing adverse impacts to floodplains, and use their property safely and in compliance with applicable state and federal laws.

The Flood Hazard Remediation program protects members of the public from flood hazards through structural mitigation and buyout so that they can live with a lower risk of loss of life or property due to flooding.

Governing Boards

Chairman's Message

Max Wilson
District 4
Flood Control District
of Maricopa County
2005 Board of Directors Chairman

I am continually impressed at the scope of work completed by the Flood Control District of Maricopa County. Since 1959, the District has diligently protected residents from the dangers of flooding with programs that provide flood hazard identification, regulation, remediation and education. As a result of District programs, the people of Maricopa County are at a lower risk for flood-related injury, death and property damage.

The District was hard at work this year after an unusually wet winter was followed by a significant monsoon season. These diverse weather conditions demonstrate that monitoring and responding to desert weather is a constant battle. Fortunately, existing flood control structures were in place to protect residents from significant flood-related injuries or property damage.

The future looks especially promising for the District as it moves forward on numerous projects that will both protect residents and allow them to appreciate the natural values of floodplains. I am certain that the District's revolutionary approach to flood control will continue to guide residents of Maricopa County safely into the future.

Flood Control Advisory Board

The Flood Control Advisory Board (FCAB) acts in an advisory role to the Board of Directors on flood control, floodplain management, drainage, and related matters. The FCAB reviews planning, operations, and maintenance of flood control facilities, and recommends an annual budget, which includes a five-year Capital Improvement Program (CIP) to the Board of Directors.

The FCAB reviews program priorities and new policies, and provides recommendations to the Board of Directors. In reaching its decisions, the FCAB closely coordinates with District staff and takes into consideration input from both municipalities and citizens. The FCAB members also serve the District as members of the Floodplain Review Board and the Drainage Review Board.

The Advisory Board consists of seven members, five of which are appointed by the Board of Supervisors for five-year terms. In addition to those five members, the Salt River Project and the city of Phoenix appoint representatives who are ex-officio members of the FCAB, with all rights and privileges granted to other members.

Scott Ward
District 1

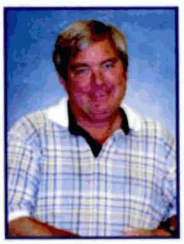
Kent Cooper
District 2

Hermant Patel
District 3

Shirley Long
District 4

Melvin Martin
District 5

Paul Cherrington
Salt River Project



Tom Callow
City of Phoenix

Flood Control District Board of Directors

The Flood Control District is governed by a five-member Board of Directors, who also serve as the Board of Supervisors for Maricopa County. The Board of Directors exercises all the powers and duties in the acquisition and operation of District properties, contracting, and carrying out regulatory functions as ordinarily exercised by governing bodies. Board members elect a new chairman each year. The chairman conducts the meetings of the Board of Directors, which generally follow the meetings of the Board of Supervisors.

Fulton Brock
District 1

Don Stapley
District 2

Andrew Kunasek
District 3

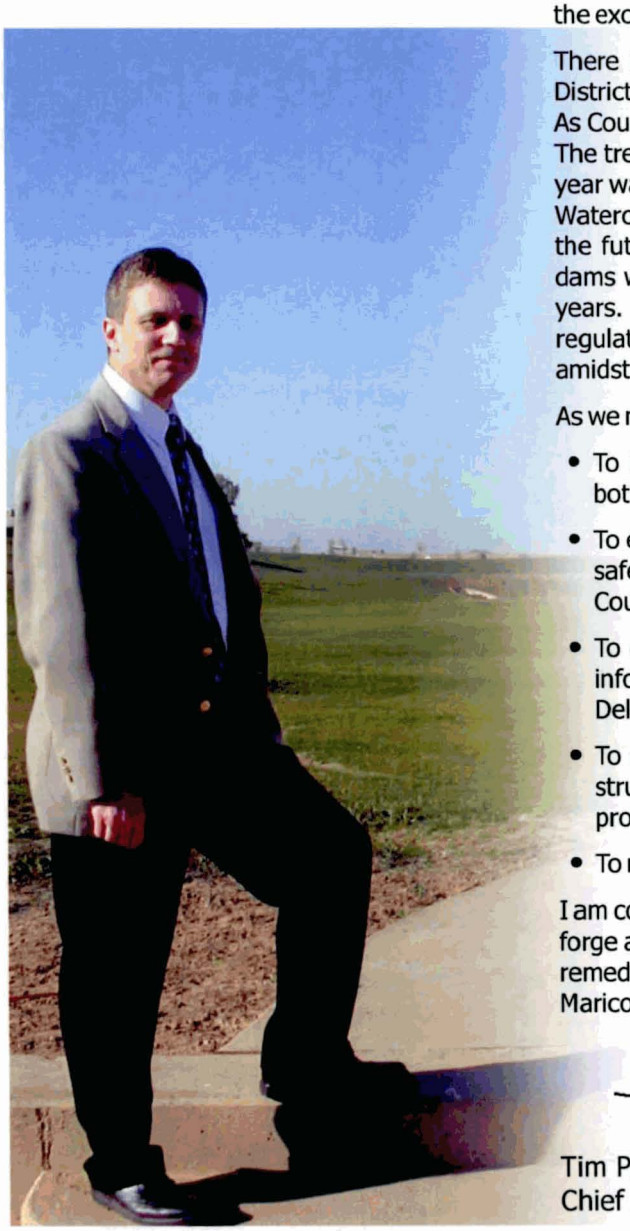
Max Wilson
District 4

Mary Rose Wilcox
District 5

Chief Engineer and General Manager's Message

I maintain a great sense of pride as I reflect on all that the District has accomplished this year. We faced a number of challenges, ranging from unusually heavy rainfall to internal restructuring, but our dedicated staff handled each one with a rare blend of professional dedication and expertise. Learning to work past different obstacles strengthens the District, and further exemplifies our passion for protecting the public from flood related injury, death or property loss.

The District often hears skepticism concerning the presence of flood control in the desert. However, this year's rainy winter combined with a strong summer monsoon to confirm that even the most arid deserts can experience severe flooding. It was challenging to deal with these unexpected storms, but we are proud of how effectively our flood control structures handled the excess water, and limited its effects on County residents.



There is a constant need for the services provided by the District as the population of Maricopa County continues to rise. As County communities boom, so do issues related to flooding. The tremendous growth made by Maricopa County in the past year was met with equivalent progress here at the District. Our Watercourse and Area Drainage Master Plans help us plan for the future and establish what types of channels, basins and dams will be necessary to protect communities in the coming years. We continue to study and implement floodplain regulations to properly protect citizens and our environment amidst developing communities.

As we move into the next year, my goals for the District are:

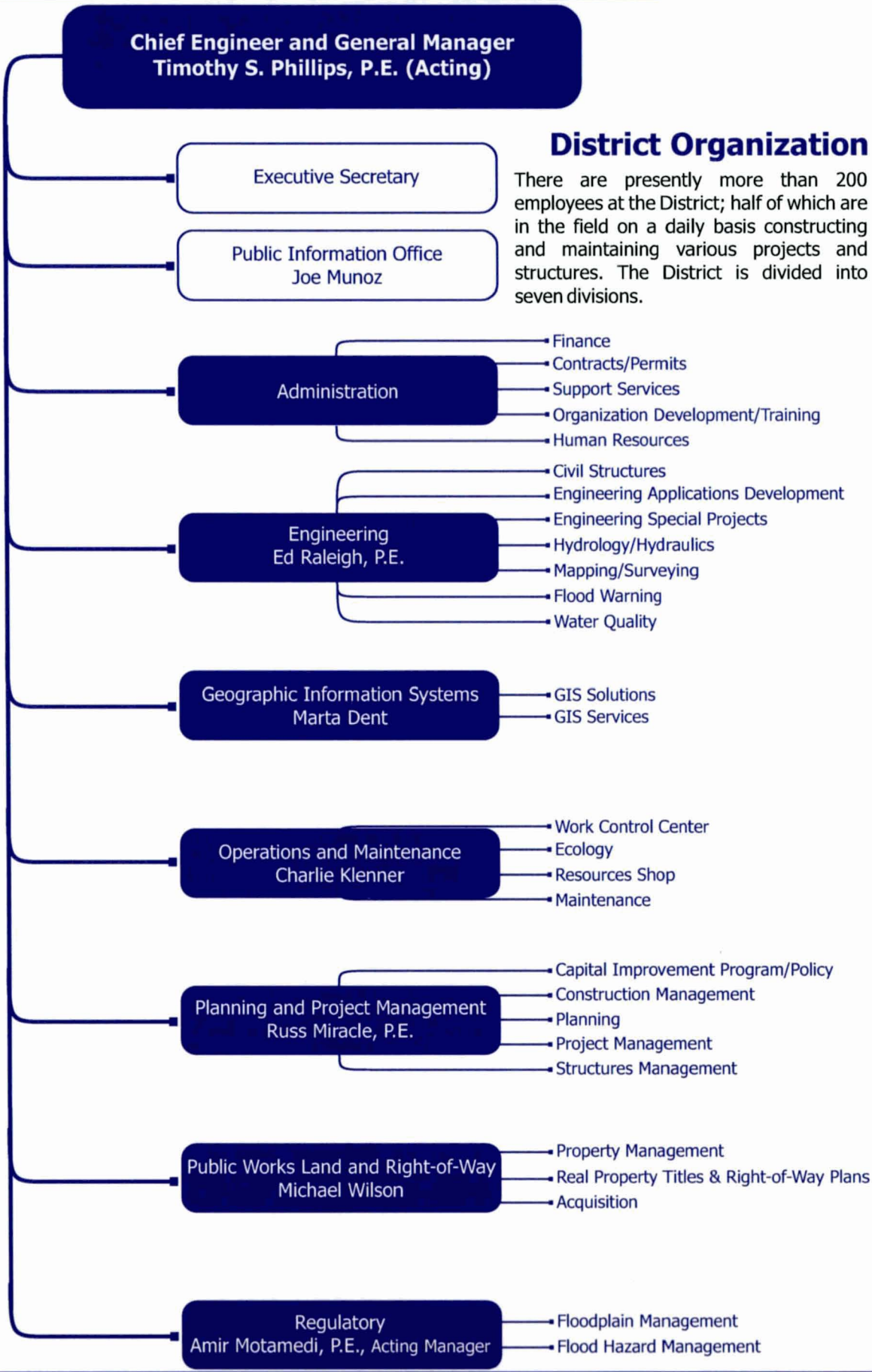
- To increase the quality of service and satisfaction for both our external stakeholders as well as our staff.
- To expand our public outreach efforts to keep our public safety message relevant in the minds of Maricopa County residents and visitors.
- To continue to succeed at providing core flood hazard information through our Master Plan and Floodplain Delineation efforts.
- To construct new structures and maintain our existing structures to provide the greatest degree of public protection.
- To maximize the public utility of our facilities.

I am confident that the District will see continued success as we forge ahead with programs that educate, identify, regulate and remediate flood hazards that will protect the residents of Maricopa County.

Tim Phillips, P.E.
Chief Engineer and General Manager

District Organization

There are presently more than 200 employees at the District; half of which are in the field on a daily basis constructing and maintaining various projects and structures. The District is divided into seven divisions.



East Maricopa Floodway (EMF) Basins

The East Maricopa Floodway (EMF) Mitigation Basins Project is the result of studies completed on the EMF channel in relation to the District's Queen Creek/Sonoqui Wash Hydraulic Master Plan. The EMF was designed and constructed by the Soil Conservation Service (now known as the Natural Resources Conservation Service (NRCS)) to be the East Valley's chief regional storm water outfall. The floodway was originally designed to accommodate storm water runoff from existing rural conditions; however, as land use has transitioned from farmland to development, the facility is now undersized for the current and future 100-year storm events. The floodway accepts drainage from an approximately 260-square-mile watershed, including major watercourses such as the Queen Creek Wash and Sonoqui Wash, as well as the District's Rittenhouse Channel.

The project consists of two large off-line detention basins known as the Rittenhouse Basin (RBasin) and the Chandler Heights Basin (CHBasin). Included with the CHBasin will be improvements to the Queen Creek Wash from downstream of Higley Road to the EMF. The RBasin encompasses approximately 147 acres, has a 100-year storage volume of 530 acre-feet, and accepts floodwaters directly from the EMF. The CHBasin, including the Queen Creek Wash improvements, encompasses approximately 233 acres, has a 100-year storage volume of 1,325 acre-feet, and accepts floodwaters directly from the Queen Creek and Sonoqui Washes.

This is the largest project undertaken by the District solely at its cost and without funding project partners. Due to the physical size of the project and its costs, construction will be completed in separate phases for construction and irrigation, and landscaping. At the end of fiscal year 2004/2005, the first phase of the CHBasin project was complete, preparations were underway for start of construction of the second phase in the fall of 2005 and the first phase of the RBasin project was underway, with completion expected in the spring of 2006.

The size and location of the basins offers a great opportunity for creating multi-use recreational facilities in addition to providing flood protection. The District has been working with the town of Gilbert where the basins are located to develop Intergovernmental Agreements (IGA) that would permit the town to obtain easements over and develop the basins into multi-use park facilities. Completion of the two basins, coupled with the town's efforts to develop the basins into multi-use facilities, will provide the East Valley with substantial flood control benefits while also providing the area with superior multi-use regional park facilities.

Laveen Area Conveyance Channel

The Laveen Area Conveyance Channel (LACC) is part of the Laveen Area Drainage Master Plan. This project runs from 43rd Avenue to the Salt River for a length of 5.8 miles, and is a joint venture between the District, the city of Phoenix, Maricopa County Department of Transportation (MCDOT) and the Salt River Project (SRP). The LACC includes a conveyance channel and concrete culvert street crossings capable of conveying the 100-year flood. It also includes a flood detention basin at 43rd Avenue and Southern Avenue.

The peak discharge at the outfall of the channel is estimated to be 2,800 cfs. The channel contains a concrete low-flow channel to convey irrigation tail water and nuisance flows. Both the channel and basin are grass-lined and will become part of the city of Phoenix park system when complete. The LACC Project was constructed between 2003 and 2005, and was substantially complete in late 2004. The landscape contractor will finish establishing the turf in the spring of 2006, at which point the LACC Project will be turned over to the city of Phoenix.

2004-2005 Flood Control District Highlights

Administration

- Oversaw the physical renovation of District facilities
- Implemented PeopleSoft, a computer application purchased by the County that allows employees to complete Human Resources paperwork individually, including tax withholding and personal and financial information
- Created a more comprehensive audit trail for physical assets by updating to General Accounting Standards Board Rule # 34

Engineering

- Installed two ALERT stations bringing the total to 297 in Maricopa County; these stations contain 288 rain sensors, 139 water-level sensors, and 181 weather sensors
- Completed the Adobe Dam/Desert Hills Flood Response Plan
- Produced and distributed a revised draft of the Drainage Design Manual for Erosion Control; numerous local agencies are now referencing this manual
- Completed several in-house Civil Plan Productions and contributed to additional studies and projects with in-house staff

Geographic Information Systems

- Moved forward with Digital Flood Insurance Rate Maps (DFIRM), a program that uses maps with much greater detail to show whether or not a property is within the boundaries of a floodplain
- DFIRM is available for use on the District's Web site and is helpful in determining when flood insurance is necessary

Lands

- Physically merged offices with the Right-of-Way Division of the Maricopa County Department of Transportation (MCDOT) to collaboratively work on Flood Control District and MCDOT real estate and right-of-way issues

Serving our Community

Drainage Administration

Inspections Conducted	14,993
Miles Driven by Inspectors	135,517
Permits Reviewed	8,562
Total Plan Reviews Completed	815
Drainage Complaints	343
Floodplain Use Permits Approved	177
Floodplain Clearances Approved	275

Floodplain Management

Delineations Begun	3
Delineations Completed	7
Floodplain Use Permits	177
Phone Requests	2,451
Walk-in Customers	774
Flood Hazard Info Requests	6,137
Flood Hazard Info Notices	30

Flood Detection & Data Collection

The District monitors rainfall, streamflow, and weather information and reports this to other agencies for flood event response planning, evacuations, road closures, and flood watches and warnings. The District also uses the information in floodplain studies, watershed computer modeling, and flood control structure designs.

New ALERT Gages	4
Gage Repair Visits	944
ALERT Page Visits	19,222
Warning Messages & Alerts	456

Public Information Office

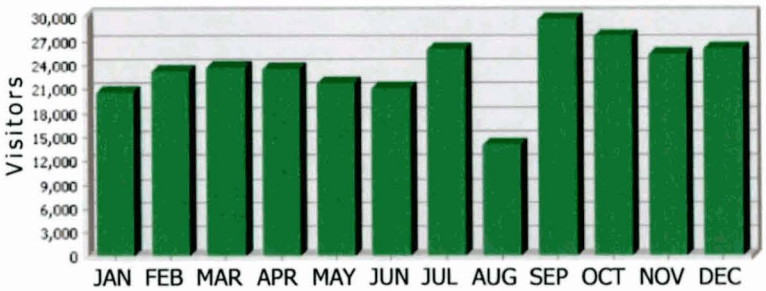
The mission of the Public Information Office is to serve as the communications management function of the District and, with the support of all employees, to build and maintain effective communications with target populations, including the media, employees, citizens, private sector and customers.

The Public Information Office currently has a staff of four: two Public Information Officers, a Public Information Manager, and a Graphic Designer. Plans to add several staff members in the next year are underway. This department has five central areas of responsibility: Public Education, Public Involvement, Public Information, Internal Communications and Government Relations.

Web Site General Statistics

Hits Entire Site (Successful)	12,382,810
Average per Day	33,832
Home Page	163,482
Page Views	
Page Views	850,670
Average per Day	2,324
Average per Unique Visitor	16
Document Views	850,653
Visits	
Visits	282,420
Average per Day	771
Visits Referred by Search Engines	360
Visits from Spiders	17,685
Visitors	
Unique Visitors	51,260
Visitors Who Visited Once	37,695
Visitors Who Visited More Than Once	13,565

Web Site Visitors



- These two divisions merged together organizationally in 1997, but did not physically merge at the District until July 2004. This merger has improved overall communication and efficiency, and has benefited management-employee relations within the division
- Resurrected the Floodprone Properties Acquisition Program (FPAP), a voluntary buy-out program, which is a mechanism to remove and relocate residents who own residences located with a delineated floodplain

Regulatory

- Initiated an efficient working relationship with Maricopa County Planning and Development following the transfer of Drainage Administration
- The two agencies have been working together effectively to coordinate the review of floodplain concerns and procedural issues, resulting in the greatest benefit for public safety.
- Started four floodplain studies and completed eight studies which included 411 delineated miles
- Completed 7,613 determinations (flood hazard information requests)
- Addressed 1,273 walk-in information requests and 3,089 phone calls
- Issued 673 Floodplain Permits

Planning and Project Management

- Began construction on the McMicken FRZR, the first Dam Rehabilitation Project in a series of 14 planned upgrades to dams
- Completed four construction projects and began construction on seven others
- Fulfilled seven design-related contracts
- Achieved a MCDOT award of the Ellsworth Road Channel Project construction contract
- Awarded design-related contracts for:
  - McDowell Road Drainage Systems Project
  - 10th Street Wash Project
  - Wickenburg Downtown Flood Mitigation Project

McMicken Dam Fissure Risk Zone Remediation (FRZR)

The U.S. Army Corps of Engineers (Corps) constructed McMicken Dam, originally called the Trilby Wash Detention Basin, in 1954 to alleviate considerable flooding in the West Valley and to protect Luke Air Force Base from flooding. During rehabilitation efforts by the District in the mid-1980s significant ground subsidence, transverse cracks and ground fissures were discovered. Additional studies in 2000 and 2003 further characterized the fissures and conditions for fissure development adjacent to the south end of McMicken Dam.

The District analyzed 23 alternative designs before selecting a preferred alternative to isolate the identified fissure risk zone from McMicken Dam. The final design of the project, completed by AMEC Earth and Environmental, Inc., included the removal of a section of the dam located within a fissure risk zone, construction of a basin and diversion features and the construction of a new soil cement dam segment outside of the identified fissure risk zone. In addition to designing a soil cement dam segment that would not fail due to a fissure should one occur outside the identified fissure risk zone, a fissure detection monitoring system is also to be installed. Construction costs are estimated at $3.6 million.

A unique aspect of this project is that the Maricopa Regional Trail Corridor is located within the project area. The District consulted with a landscape architect in order to incorporate a compatible grading design for the project. A permit authorizing construction was obtained from the Arizona Department of Water Resources (ADWR). Construction began in March 2005 and is scheduled to be completed in February 2006.

Bethany Home Outfall Channel (BHOC)

This project is a joint effort between the District and the cities of Glendale and Phoenix. The channel and linear basin is a part of the Maryvale Area Drainage Master Study and extends along the northern bank of the Grand Canal from 64th Avenue to the Agua Fria Freeway Outfall Channel near 97th Avenue. The channel is being designed to allow public use as a park and trail corridor. Also included in this project are two 10-year capacity storm drain designs to be located along Bethany Home Road and Camelback Road running from the channel to 59th Avenue.

The project will have a 100-year capacity removing approximately 745 structures from the floodplain. The channel will receive storm water from portions of Glendale, Peoria, Phoenix and unincorporated Maricopa County.

Construction of Reach A (83rd Avenue to 97th Avenue) is complete. Construction of Reach B (67th Avenue to 73rd Avenue) is scheduled for completion in early 2006. Construction of Reach C (73rd Avenue to 83rd Avenue) will run from early 2006 to early 2007. The remaining segments, Reach D (64th Avenue to 67th Avenue) and the Camelback Road Storm Drain, will be completed by 2009. The city of Glendale is constructing the Bethany Home Road Storm Drain in conjunction with street improvements to Bethany Home Road over the next several years.

Floodprone Properties Acquisition Program (FPAP)

To reduce the occurrence of repetitive loss to property and to protect the public, the District works with property owners on projects to remove them from harm's way. Regional structural projects are not always feasible; therefore, the District has developed a proactive Floodprone Properties Acquisition Program (Program) to provide limited funding for voluntary, nonstructural mitigation measures.

The Board of Directors of the Flood Control District of Maricopa County adopted the Program in 2003. Currently, District staff is in the process of moving forward with the Program as a potential alternative for homes where structural solutions are not feasible to provide mitigation from flooding. The Program is voluntary and is open only to homeowners whose residence is located within a delineated floodway or floodplain.

The Floodprone Properties Acquisition Program is a voluntary program. A property must meet one or more of the following descriptions to be evaluated for the program:

1. Property with an inhabited residential structure located in a delineated 100-year floodway or floodplain if no floodway designation exists, and built prior to such designation.
2. Property with an inhabited residential structure located in a delineated 100-year floodplain that has experienced documented flood damage.

Note: Any property that will benefit from a proposed future CIP drainage or flood control project is not eligible for this program.

Education Program

The District signed a contract with KPNX-TV (Channel 12) during FY 04-05 to implement a comprehensive education and safety campaign in Maricopa County. As part of the campaign, the District will receive 120 exposures each quarter on KPNX-TV, the Valley's most watched news station. Additionally, the District will receive exclusive sponsorship rights of the KPNX News Special Monsoon 2005, which aired on Monday, June 27th from 6:30 - 7:00 p.m. The campaign also includes significant exposure on azcentral.com, the official Web site of KPNX and *The Arizona Republic*. Finally, the campaign includes sponsorship of *The Arizona Republic's* Newspapers In Education which features engaging classroom programs, student activities, and partnerships with local teachers.

It is the goal of this campaign to increase exposure and awareness of the dangers associated with flooding; to position the District as an expert resource for flood and safety information; and to reduce the numbers of injuries, deaths and impacts to property associated with flood situations.

The intent of the contract is to reach more than 1.5 million residents of Maricopa County with information about the dangers of flash flooding in the desert and crossing flooded washes; the potential risks to life and property associated with flooding hazards; and the work of the District. This will happen through a coordinated marketing and advertising campaign utilizing television, print, and online mediums.

Financial Commentary

Financial Management Discussion and Analysis

Viewed in its entirety, the District's financial performance over the course of Fiscal Year 2005 is most notable for the continuing high utilization of available funds to support legally mandated responsibilities and construct flood mitigation structures in partnership with federal, state, county and municipal governments.

High continued growth in the County population and the new housing and business construction industry continue to be significant factors in the prioritization of District funding. Consideration as to the direction new growth will take significantly affects decisions as to which programs will receive priority funding, and which programs will be expanded, refined, restrained or curtailed.

Funding decisions are also greatly influenced by consideration of which programs will be most effective in protecting the public from the ravages of floodwaters. As the population grows and expands into formerly unpopulated sections of the County the effectiveness of hard flood mitigation structures versus a greater emphasis on education, regulatory, planning and delineation programs becomes critical to the utilization of the District's limited funds.

Revenue

Over the course of Fiscal Year 2005, the District collected a total of $73,635,831.00 which represents 94.7% of the full year revised budget amount of $77,720,588.00. The shortfall of 5.3% to budget was the result of delays in the Design/Construction schedule of some active Capital Improvement Program Projects. While the cause for schedule delays can originate from a variety of sources, they often prevent the District from reaching a schedule milestone within the confines of the Fiscal Year at which a partner reimbursement is triggered. In practical terms these occurrences do not cause the District to forego the revenue, but rather to recognize it in a succeeding Fiscal Year.

Partially offsetting the shortfall in partner reimbursements were greater than anticipated revenue earnings in the District's licensing and permitting activities, fund balance interest earnings and payments in lieu of tax collections.

Overall the Fiscal Year 2005 collection rate of 94.7% compares favorably to that achieved in Fiscal Year 2004 (93.1%).

Fiscal Year 2005 Revenue Collection Status

Full Year Actual
Preliminary & Unaudited

	Full Year Revised Budget	Collections Full Year	Collections Remaining	% Remaining
Property Taxes	$56,334,141	$55,544,623	$789,518	1.4%
Licenses & Permits	$1,152,354	$2,315,702	-$1,163,348	-101.0%
Partnership Reimbursements	$17,642,000	$12,718,726	$4,923,274	27.9%
Payments In Lieu	$137,612	$196,239	-$58,627	-42.6%
Interest Earnings	$350,000	$908,932	-$558,932	-159.7%
Miscellaneous Revenue	$2,104,481	$1,951,609	$152,872	7.3%
	$77,720,588	**$73,635,831**	**$4,084,757**	5.3%

Full Year Budget revised to account for Title 11 operations transfer to P&D Object Code 610 Reduced by $949,950

Operating Expenditures

During Fiscal Year 2005 the District recorded Operating Expenditures of $28,616,098, which represents a 93.2% utilization of the available budgeted funds of $30,717,595.

District operations experienced a variety of changes and pressures over the course of the year. Among the changes experienced were the transfer of the Regulatory Title 11 Drainage responsibility to the County Planning and Development Department, the creation of a Public Works oversight function that included the District's operations, the transfer of supervisory responsibility for the STORM and Water Pollutant permitting function to the County Environmental Department, and the completion of the DFIRM mapping grant with FEMA. Each of these changes required the District to treat the prioritization of operations funding as a work in progress and re-evaluate its spending budget.

As a result of the ongoing re-evaluation and prioritization effort, the District significantly increased the funding and productivity of its core mandatory functions.

- The Planning Program Funding Increased $407,154 (7.7%)
- The Structure Assessment (Dam Safety) Program Funding Increased $1,225,730 (302.3%)
- The Floodplain Delineation Program Funding Increased $168,426 (14.6%)
- The Flood Warning and Detection System Funding Increased $82,222 (9.9%)
- Expenditures for Infrastructure Maintenance Increased $1,204,011 (27.9%)

The program funding increases listed above will be continued and in most cases expanded upon during Fiscal Year 2006 as the District continues to concentrate its efforts on the mandated programs of Flood Hazard education, identification, regulation and remediation.

Fiscal Year 2005
Operating Budget-Financial Comparative
Preliminary & Unaudited

	Full Year Budget	Full Year Actual	Funds Remaining
PAYROLL			
Gross Salaries & Wages	$7,789,377	$7,968,618	-$179,241
Temporary Labor	$433,360	$300,609	$132,751
Overtime	$22,130	$117,598	-$95,468
Reg. Employee Benefits	$1,958,191	$2,195,392	-$237,201
Personnel Other (Benefits)	$315,233	$41,382	$273,851
Total Payroll	$10,518,291	$10,623,599	-$105,308
TRANSFERS			
Transfers Out - Other	-$230,000	-$418,761	$188,761
Transfers In	$317,996	$392,975	-$74,979
Total Net Transfers	$87,996	-$25,786	$113,782
SUPPLIES			
General	$1,461,019	$1,528,378	-$67,359
Fuel	$131,529	$185,573	-$54,044
Non-Capital Acqs	$46,813	$60,531	-$13,718
Total Supplies	$1,639,361	$1,774,482	-$135,121
OUTSIDE SERVICES			
Legal	$286,787	$398,154	-$111,367
Professional Services	$12,519,614	$10,479,036	$2,040,578
Rent Expense	$357,276	$400,859	-$43,583
Repair & Maintenance	$645,125	$559,097	$86,028
Taxes & Assessments	$400	$655	-$255
Internal Service Charges	$1,843,234	$1,641,564	$201,670
Travel & Education	$139,644	$157,157	-$17,513
Postage & Freight	$36,500	$23,531	$12,969
Utilities	$247,560	$276,161	-$28,601
Central Service Charges	$1,144,170	$1,144,170	$0
	$17,220,310	$15,080,384	$2,139,926
NON-LABOR TRANSFERS			
Transfers - Out	$0	-$50	$50
Transfers - In	$0	$40,418	-$40,418
	$0	$40,368	-$40,368
CAPITAL ACQUISITIONS			
Land	$0		$0
Buildings & Improvements	$0	$5,809	-$5,809
Equipment	$352,357	$133,378	$218,979
Vehicles	$712,280	$798,346	-$86,066
Construction	$0	$0	$0
	$1,064,637	$937,533	$127,104
DEBT SERVICE			
Capital Lease Payments	$187,000	$185,518	$1,482
	$187,000	$185,518	$1,482
FULL DISTRICT	$30,717,595	$28,616,098	$2,101,497

Capital Improvement Program Expenditures

Total Capital Improvement Program (CIP) expenditures recorded during Fiscal Year 2005 amounted to $42,692,825 or 82.0% of the beginning total fiscal year budget of $52,076,503. While the District did experience some delay in its anticipated Infrastructure Design and Construction schedule, much progress toward the completion of major flood mitigating structures was accomplished. In addition, the District initiated the Flood Prone Properties Acquisition Program (program) during the year. The new program is designed to offer homeowners, whose residence resides in a floodway or floodplain, the opportunity to sell their property to the District and relocate to a location out of harm's way. The first year of the program (Fiscal Year 2005) indicates that there are a significant number of homeowners interested in the Program and funds have been budgeted in future years to provide to homeowners an alternative to living within a potential flood area.

While recognizing that there was a funding shortfall in comparison to budget during Fiscal Year 2005, it should also be recognized that the shortfall was the result of schedule delays and not the abandonment of planned infrastructure projects. Full funding provision has been provided in future years' budgets to continue projects started or continued during Fiscal Year 2005.

Fiscal Year 2005 Capital Improvement Program

YTD Financial Comparative
Preliminary & Unaudited

	Full Year Original Budget	Full Year Actual	Funds Remaining
Force Account Payroll	$2,300,000	$1,546,216	$753,784
Engineering	$6,115,000	$5,647,864	$467,136
Land Acquisition	$10,169,000	$10,294,756	-$125,756
Construction	$32,274,503	$25,203,989	$7,070,514
Project Reserve	$1,218,000	$0	$1,218,000
	$52,076,503	$42,692,825	$9,383,678

Ending Fiscal Year Fund Balance

The District experienced an increase in the ending fund balance from a beginning year balance of $30,052,736 to an ending balance of $32,379,644. As a result of this increase and the anticipated Fiscal Year 2006 revenue collections, the District is in an excellent position to fully fund all of its budgeted mandated and capital needs. The increase in fund balance also allows the District increased flexibility in reacting to land purchases at favorable prices, capital equipment replacements, software and data processing needs, and a variety of other opportunities that arise during the span of a fiscal year.

Fiscal Year 2005 Beginning/Ending Fund Balance Reserves - Analysis

Preliminary & Unaudited

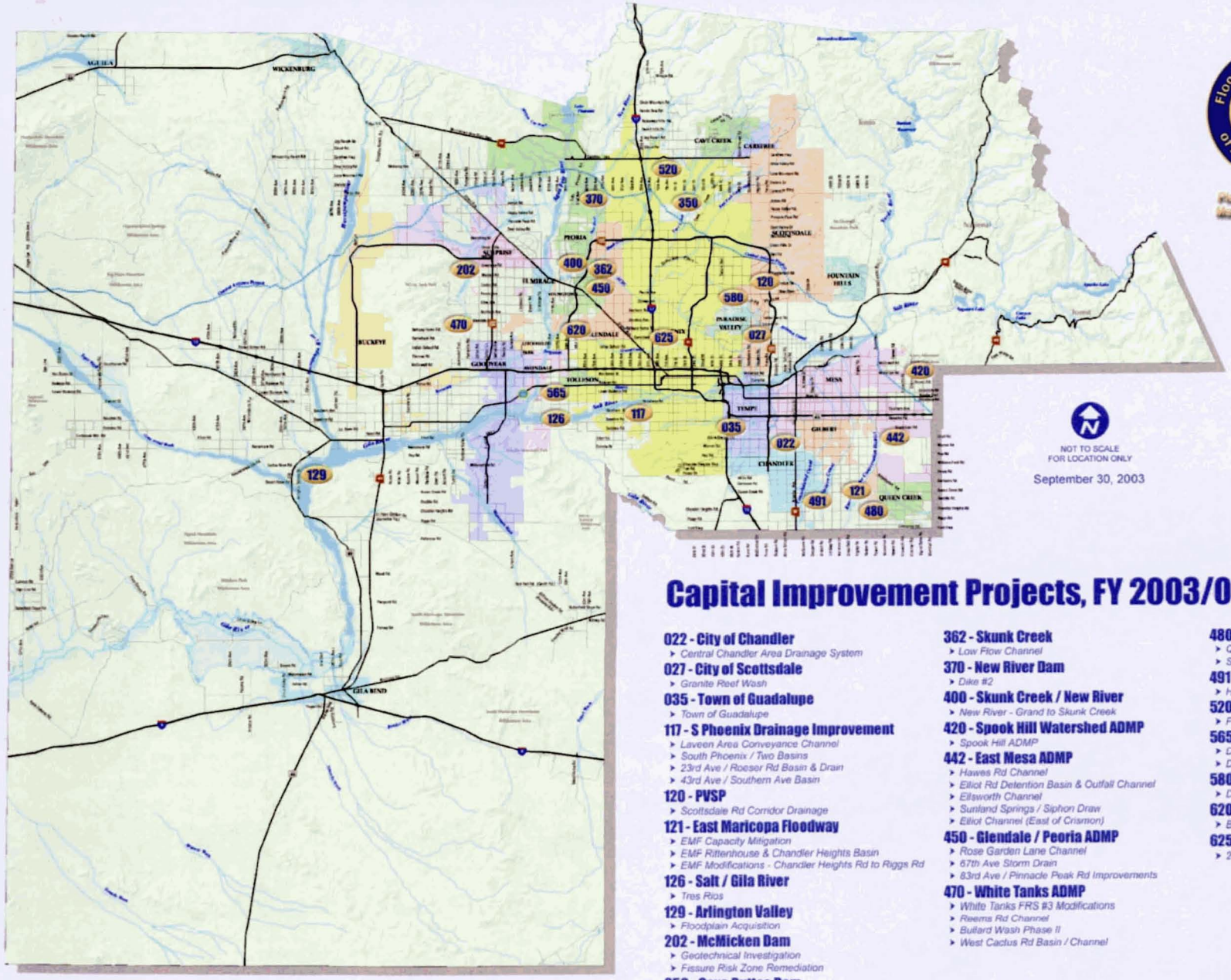
	Operating Fund	CIP Fund	Total Fund Reserve
Beginning Fund Balance	$25,150,517	$4,902,219	$30,052,736
Total Revenue Collected	$73,635,831		$73,635,831
Operating Transfers to CIP Fund	-$53,327,784		-$53,327,784
Funds Transferred to CIP	$53,327,784		$53,327,784
Total Funds Available	$45,458,564	$58,230,003	$103,688,567
Less:			
Operating Expenditures	-$28,616,098		-$28,616,098
CIP Expenditures		-$42,692,825	-$42,692,825
Ending Fund Balance	**$16,842,466**	**$15,537,178**	**$32,379,644**

Capital Improvement Program Expenditures

Project Title	Force Acct Labor	Engineering Design	Land Cost	Utility Relocation	Construction	Totals
City of Chandler	$23,740				$649,516	$673,256
Dam Safety	-$9,069					-$9,069
South Phoenix Drainage Improvements	$218,939	$25,431	$33,860	$344,573	$5,512,542	$6,135,345
Paradise Valley, Scottsdale, Phoenix	$102,453	$44,005	$609,869	$75,329	$1,717,993	$2,549,649
East Maricopa Floodway	$157,293	$14,908	$34,122	$232	$4,572,679	$4,779,234
Salt/Gila	$22,730				$1,000,927	$1,023,657
Arlington Valley	$15,058	$0	$188,937	$0	$0	$203,995
McMicken Dam	$67,587	$351,497	$57,490		$2,146,144	$2,622,718
Spook Hill Flood Retarding Structure	$4,772		$7,149		$26,636	$38,557
Wickenburg Area Drainage Master Plan	$24,099	$73,919	$131,403	$0	$0	$229,421
Wittmann Area Drainage Master Plan	$2,736		$233,796			$236,532
Hassayampa River	$1,828	$0	$16,968	$0	$0	$18,796
Skunk Creek Channelization	$1,545				$99,620	$101,165
Upper New River Area Drainage Master Plan	$5,728	$0	$395,677	$0	$0	$401,405
Skunk Creek/ New River	$50,138	$541,898	$213,609		$1,662,446	$2,468,091
Spook Hill Area Drainage Master Plan	$38,724	$82,200	$39,108	$0	$0	$160,032
East Mesa Area Drainage Master Plan	$118,156	$334,526	$6,115	$62,336	$915,679	$1,436,812
Glendale/Peoria Area Drainage Master Plan	$88,709	$489,430	$45,974	$0	$19,713	$643,826
White Tanks Area Drainage Master Plan	$236,819	$1,773,663	$642,660	$0	$0	$2,653,142
Queen Creek Area Drainage Master Plan	$73,911	$786,714	$1,929,309	$0	$0	$2,789,934
Higley Area Drainage Master Plan	$8,393	$3,018	$38			$11,449
Adobe Dam Area Drainage Master Plan	$20,712	$0	$2,797,408	$0	$0	$2,818,120
Durango Area Drainage Master Plan	$53,623	$4,600	$2,306,910		$2,381,547	$4,746,680
Arizona Canal Diversion Channel Area Drainage Master Plan	$62,339	$70,485	$2,544	$0	$0	$135,368
Scatter Wash Channel	$1,956		$1,259			$3,215
Maryvale Area Drainage Master Plan	$145,563	$1,051,570	$599,801	$449,035	$3,567,042	$5,813,011
Metro Area Drainage Master Plan	$7,611					$7,611
Gila Bend	$1,546,216	$5,647,864	$10,294,756	$931,505	$24,272,484	$42,692,825

FLOOD CONTROL DISTRICT of MARICOPA COUNTY

FIVE-YEAR CAPITAL IMPROVEMENT PROGRAM



NOT TO SCALE
FOR LOCATION ONLY

September 30, 2003

Capital Improvement Projects, FY 2003/04 - 2007/08

022 - City of Chandler
- Central Chandler Area Drainage System

027 - City of Scottsdale
- Granite Reef Wash

035 - Town of Guadalupe
- Town of Guadalupe

117 - S Phoenix Drainage Improvement
- Laveen Area Conveyance Channel
- South Phoenix / Two Basins
- 23rd Ave / Roeser Rd Basin & Drain
- 43rd Ave / Southern Ave Basin

120 - PVSP
- Scottsdale Rd Corridor Drainage

121 - East Maricopa Floodway
- EMF Capacity Mitigation
- EMF Rittenhouse & Chandler Heights Basin
- EMF Modifications - Chandler Heights Rd to Riggs Rd

126 - Salt / Gila River
- Tres Rios

129 - Arlington Valley
- Floodplain Acquisition

202 - McMicken Dam
- Geotechnical Investigation
- Fissure Risk Zone Remediation

350 - Cave Buttes Dam
- Riprap Repair

362 - Skunk Creek
- Low Flow Channel

370 - New River Dam
- Dike #2

400 - Skunk Creek / New River
- New River - Grand to Skunk Creek

420 - Spook Hill Watershed ADMP
- Spook Hill ADMP

442 - East Mesa ADMP
- Hawes Rd Channel
- Elliot Rd Detention Basin & Outfall Channel
- Ellsworth Channel
- Sunland Springs / Siphon Draw
- Elliot Channel (East of Crismon)

450 - Glendale / Peoria ADMP
- Rose Garden Lane Channel
- 67th Ave Storm Drain
- 83rd Ave / Pinnacle Peak Rd Improvements

470 - White Tanks ADMP
- White Tanks FRS #3 Modifications
- Reems Rd Channel
- Bullard Wash Phase II
- West Cactus Rd Basin / Channel

480 - Queen Creek ADMP
- Queen Creek Channelization
- Sonoqui Wash Channelization

491 - Higley ADMP
- Higley ADMP

520 - Adobe Dam ADMP
- Floodprone Property Acquisition

565 - Durango ADMP
- Durango ADMP
- Durango Regional Conveyance Channel

580 - ACDC ADMP
- Doubletree Ranch Rd System

620 - Maryvale ADMP
- Bethany Home Outfall Channel

625 - Metro ADMP
- 24th Ave / Camelback Basin

About Maricopa County

Established: February 14, 1871
Population: approximately 3,200,000
4th most populous county in U.S.
14th largest county in the U.S.

Maricopa County, named after the Maricopa Tribe, was created from portions of Pima and Yavapai counties in 1871. It was the fifth county formed in Arizona, and eventually portions were used to create Gila and Pinal counties. In the late 19th century, citizens living far south of Prescott, the territorial capital and site of the Territorial Legislature, petitioned for a more local seat of government. Residents of the Salt River Valley and the Gila River area wanted a new county in their respective locations. After weighing both proposals, the Legislature agreed with the Salt River Valley group and created Maricopa County. Today Maricopa County measures 9,226 square miles, 21 square miles of which is water. Five major river systems flow through the county draining an area of approximately 57,000 square miles, which includes portions of New Mexico and Mexico.

Nearly 60 percent of Arizona's population resides in Maricopa County, which includes the cities of Phoenix, Tempe, Mesa, Chandler, Scottsdale, Glendale, Peoria, and Gilbert. The County has been consistently one of the fastest growing counties in the country during the last decade.

Flood Control District
of Maricopa County
2801 West Durango Street
Phoenix, Arizona 85009
(602) 506-1501
www.fcd.maricopa.gov

Flood Control District of Maricopa County

Consolidated Annual Reports

Beginning with 1975 to 20__ (ongoing)

003.128

Library Catalog Search Results

Main Library Search Results for '003.1' (29 records)

1
Call Number: 003.101S
Title: Annual Report : Maricopa County Flood Control District 1975-1976
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1976
Original Archived: No

2
Call Number: 003.102S
Title: Annual Report : Maricopa County Flood Control District 1976-1977
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1977
Original Archived: No

3
Call Number: 003.115S
Title: Annual Report : Maricopa County Flood Control District 1978-1979
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1979
Original Archived: No

4
Call Number: 003.116S
Title: Annual Report : Maricopa County Flood Control District 1979-1980
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1980
Original Archived: No

5
Call Number: 003.117S
Title: Annual Report : Maricopa County Flood Control District 1980-1981
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1981
Original Archived: No

6
Call Number: 003.103S
Title: Annual Report : Maricopa County Flood Control District 1981-1982
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1982
Original Archived: No

7
Call Number: 003.104S
Title: Annual Report : Maricopa County Flood Control District 1984-1985
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1985
Original Archived: No

8
Call Number: 003.105S
Title: Annual Report : Maricopa County Flood Control District 1985-1986
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1986
Original Archived: No

9
Call Number: 003.106S
Title: Annual Report : Maricopa County Flood Control District 1986-1987
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1987
Original Archived: No

10
Call Number: 003.107S
Title: Annual Report : Maricopa County Flood Control District 1987-1988
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1988
Original Archived: No

11
Call Number: 003.108S
Title: Annual Report : Maricopa County Flood Control District 1988-1989
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1989
Original Archived: No

12
Call Number: 003.109S
Title: Annual Report : Maricopa County Flood Control District 1989-1990
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1990
Original Archived: No

13
Call Number: 003.110S
Title: Annual Report : Maricopa County Flood Control District 1990-1991
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1991
Original Archived: No

14
Call Number: 003.111S
Title: Annual Report : Maricopa County Flood Control District 1991-1992
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1992
Original Archived: No

15
Call Number: 003.112S
Title: Annual Report : Maricopa County Flood Control District 1992-1993

Author: Maricopa County Flood Control District-FCD
ID:
Date: 1993
Original Archived: No

16
Call Number: 003.113S
Title: Annual Report : Maricopa County Flood Control District 1993-1994
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1994
Original Archived: No

17
Call Number: 003.114S
Title: Annual Report : Maricopa County Flood Control District 1994-1995
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1995
Original Archived: No

18
Call Number: 003.119
Title: Annual Report : Maricopa County Flood Control District 1995-1996
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1996
Original Archived: No

19
Call Number: 003.118
Title: The Flood Control District of Maricopa County Year-in Review 1996-1997
Author: Maricopa County Flood Control District-FCD
ID:
Date: 1997
Original Archived: No

20
Call Number: 003.120S
Title: Flood Control District of Maricopa County Annual Report 1997-1998
Author: Flood Control District of Maricopa County-FCD
ID:
Date: 1998
Original Archived: No

21
Call Number: 003.121S
Title: Flood Control District of Maricopa County Annual Report 1998-1999
Author: Flood Control District of Maricopa County-FCD
ID:
Date: 1999
Original Archived: No

22
Call Number: 003.122S
Title: Flood Control District of Maricopa County Annual Report 1999-2000
Author: Flood Control District of Maricopa County-FCD
ID:
Date: 2000

Original Archived: No

23

Call Number: 003.123S
Title: Flood Control District of Maricopa County 2000-2001 Annual Report
Author: Flood Control District of Maricopa County-FCD
ID:
Date: 2001
Original Archived: No

24

Call Number: 003.124
Title: Flood Control District of Maricopa County Annual Report 2001-2002 Fiscal Year
Author: Flood Control District of Maricopa County-FCD
ID:
Date: 2002
Original Archived: No

25

Call Number: 003.125
Title: Flood Control District of Maricopa County 2002-2003 Annual Report
Author: Flood Control District of Maricopa County-FCD
ID:
Date: 2003
Original Archived: No

26

Call Number: 003.126
Title: Flood Control District of Maricopa County 2003-2004 Annual Report
Author: Flood Control District of Maricopa County-FCD
ID:
Date: 2004
Original Archived: No

27

Call Number: 003.127
Title: Flood Control District of Maricopa County 2004-2005 Annual Report
Author: Flood Control District of Maricopa County-FCD
ID:
Date: 2005
Original Archived: No

28

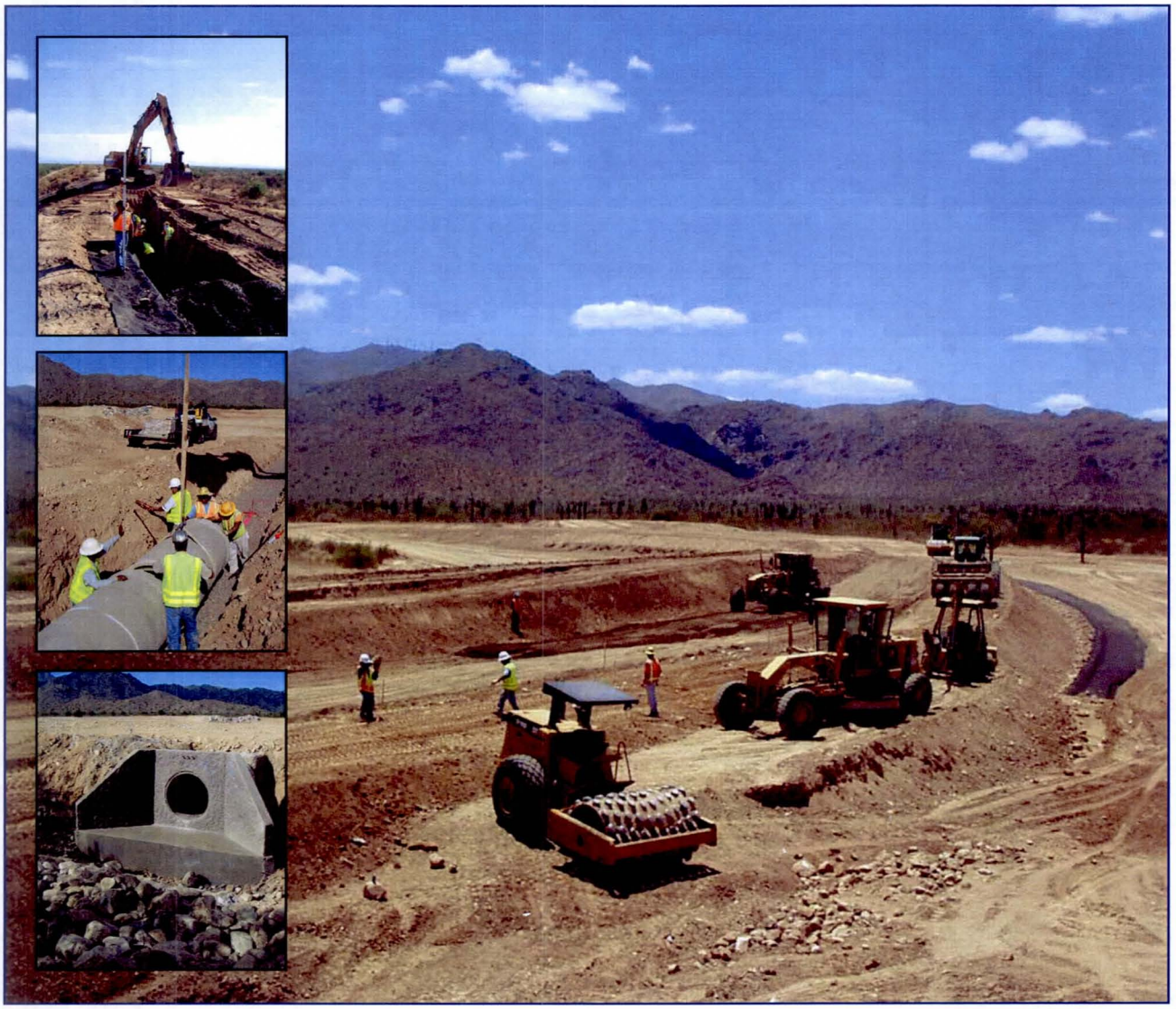
Call Number: 003.128
Title: Flood Control District of Maricopa County Consolidated Annual Reports Beginning with 1975 to 20__ (ongoing)
Author: Flood Control District of Maricopa County-FCD
ID:
Date: 2008
Original Archived: No

Annual Report
Fiscal Year 2005-2006

Project Highlight:

McMicken Dam Fissure Risk Zone Remediation Project

In 2002, a District dam safety inspection revealed signs of earth fissures, or deep cracks in the soil, near the southern end of McMicken Dam, a 10-mile-long, 30-foot-tall structure located in Surprise protecting homes, commercial property, agriculture and Luke Air Force Base. Earth fissures are detrimental to the integrity of a dam structure. The District and its contractor realigned the southernmost 1.5 miles of the dam to place the embankment away from the zone of known fissures. A new dam segment was constructed with an erosion-resistant soil cement core designed to withstand damage from potential future fissure activity in the area. In addition, a new flood control basin was constructed at the southernmost end of the project to provide flood protection in the area where a segment of the old dam was removed.



2801 West Durango Street
Phoenix, Arizona 85009
602-506-1501
www.fcd.maricopa.gov

Board of Directors

Per Arizona Revised Statute 48-3602, the Flood Control District is governed by a five-member Board of Directors that also serves as the Board of Supervisors for Maricopa County. The Board of Directors exercises all the powers and duties as ordinarily exercised by governing bodies in the acquisition and operation of property, contracting, and regulatory functions. Board members elect a new chairman each year:

- Don Stapley, Chairman, District 2
- Fulton Brock, District 1
- Andrew Kunasek, District 3
- Max Wilson, District 4
- Mary Rose Wilcox, District 5

Flood Control Advisory Board

The Flood Control Advisory Board (FCAB) advises the Board of Directors on flood control, floodplain management, drainage and related matters. The FCAB reviews the District's planning studies, projects and operations/maintenance activities, and recommends to the Board of Directors an annual budget, including the five-year Capital Improvement Program (CIP).

The FCAB consists of seven members. Five of the seven members are appointed by the Board of Directors for five-year terms. The final two members are ex officio representatives from Salt River Project and the City of Phoenix. FCAB members also serve the District as members of the Floodplain Review Board and Board of Hearing Review.

- Scott Ward, Chairman, District 1
- DeWayne Justice, Vice Chairman, District 4
- Melvin Martin, Secretary, District 5
- Kent Cooper, District 2
- Hemant Patel, District 3
- Ray Acuña, Ex Officio, City of Phoenix
- Paul Cherrington, Ex Officio, Salt River Project

Engineering

The Engineering Division manages projects and programs in structure design, hydrology and hydraulics (quantity, depth and flow of stormwater), engineering applications development, river mechanics, flood warning systems, mapping/surveying, sand and gravel mining regulation, and water quality.

- Performed in-house engineering design work for 2-D flow modeling to assist in development regulation and public information regarding Rio Verde
- Flood Warning Branch issued 85 weather alerts, 18 weather watches and 10 weather warnings via e-mail, and 36 weather warnings via telephone
- Sixteen new ALERT stations were installed, increasing the total number of operating stations to 310 as of June 30, 2006
- Initiated the Automated Roadway Warning Sign pilot project at two unbridged wash crossings
- Performed emergency hydrology modeling for wildfire burn areas near Cave Creek and New River
- Managed and funded a study for hydraulic roughness coefficients in Maricopa County which was published by the U.S. Geological Survey
- Created a Dam Safety Library
- Engineering Library used by 765 non-staff customers

Planning and Project Management

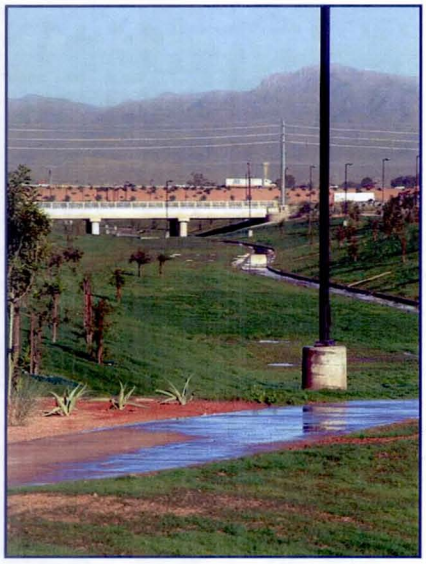
The District's Capital Improvement Program—its primary mechanism for mitigating existing regional flood hazards—accounted for 62% of its total Fiscal Year 2006 expenditures. Total expenditures consisted of $4.5 million in design costs, $11.5 million in rights-of-way acquisitions, $39.8 million in construction costs and $2.0 million in internal labor charges.

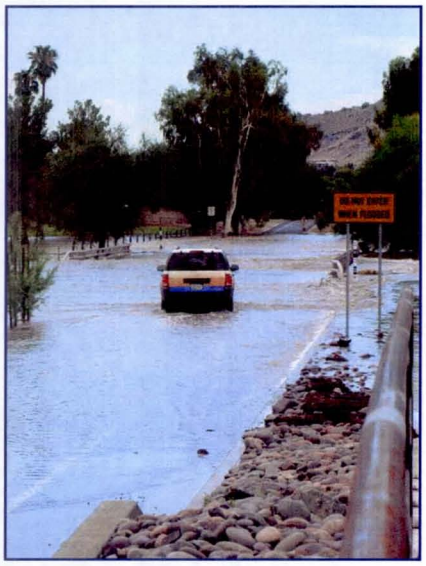
Construction projects completed or substantially completed included:

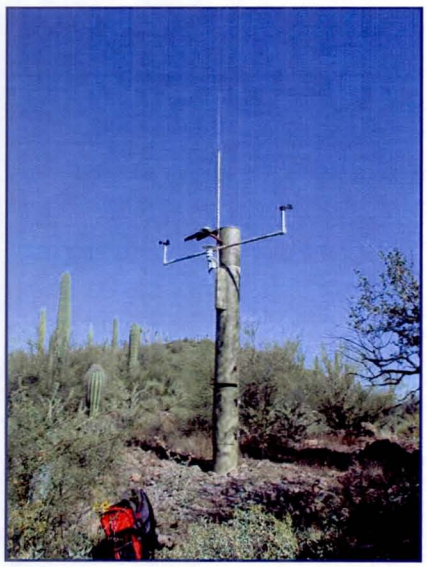
- Channelization of Queen Creek Wash to contain 100-year flood flows from Hawes Road at Ocotillo Road to Power Road at the Queen Creek Road alignment, eliminating floodplain breakouts along the north bank of the wash;
- The 71st Avenue Storm Drain and Mescal Basin project, providing 10-year and 100-year levels of protection, respectively, between Shea Road and Cactus Road;
- The first phase of excavation of the Rittenhouse Basin, designed to increase the capacity of the East Maricopa Floodway;
- Remediation of a fissure risk zone at McMicken Dam;
- Channelization of the New River, between Grand Avenue and Skunk Creek; and
- The Elliot Road Basin and Channel project, collecting and conveying storm water from the Siphon Draw Wash west of Signal Butte Road, along Elliot Road, to an outlet into the Loop 202 drainage system.

The District and its project partners achieved significant design completion on:

- Sonoqui Wash Channelization, from Higley Road to Chandler Heights Road, intended to provide a 100-year level of protection for surrounding Queen Creek and Gilbert residents; and
- 26th Avenue and Verde Lane Basin, providing a 100-year storm retention volume for flows intercepted along Interstate 17 frontage roads.







The District initiated floodplain delineations for the following watersheds: Wittmann (Phase 2), Lower Painted Rock Watershed (Zone A), and Sentinel Watershed (Zone A). Floodplain delineations were completed for: Lower Centennial Watershed (Zone A); New River West Tributaries; Lower Hassayampa River Tributaries; Cave Creek (Central Arizona Project Canal to Loop 101); Moon Valley Wash; and New River at New River Road Bridge.

Dam rehabilitation planning efforts were conducted on White Tanks Flood Retarding Structure No.4 and Buckeye Flood Retarding Structure No.1, and earth fissure investigations were initiated on Powerline Flood Retarding Structure. Additionally, regular inspections were completed on the District's 22 dams, emergency action plans were updated, and dam surveys were performed.

Operations and Maintenance

Regular maintenance activities by the Operations and Maintenance Division (O&M) for District structures were performed during the year. Regular maintenance included mitigating the effects of erosion and sedimentation; vegetation and vector control; maintenance of channels, floodways and outflow devices; and storm damage repair. Structure features were maintained to design standards. Floodways were kept free and clear of silt, debris and obstructive vegetation. Protective linings of banks and dikes for the long-term functional life of the structures were also maintained. The inspection team conducted annual inspections of each structure. Quarterly dam operational inspections were also conducted to guarantee the proper operation of outlets and spillways.

O&M staff also maintained excess property obtained from severances and/or buy-out programs and responded to 34 citizen complaints regarding trash removal, insects, odors, dust, gates, and other nuisances.

During this fiscal year the O&M Division developed a comprehensive weed abatement, rodent and vector treatment program. An integrated approach was developed to control these threats to our flood control structures and the public.

Regulatory

By enforcing the federal, state and local rules regarding development in areas where flooding may occur, the Division can prevent adverse effects to the environment, and safeguard the lives and property of county residents. Regulatory functions include floodplain management, floodplain use permits, code/regulation enforcement, and floodplain map information.

- County and community permits processed: 905 applications; $108,426 in fees collected
- Inspections and enforcement: 1,220 inspections for county permits completed; 56 violation cases opened
- Started manning the One Stop Shop full-time and contracted with Maricopa County Planning and Development to process drainage permits
- Web application added to the District's Web site for Rio Verde for citizens to look up floodplain information

2006 Financial Highlights

Preliminary and Unaudited

Revenue Collection Status

	Full Year Revised Budget	Collections Full Year	Collections Remaining	Percent Remaining
Property Taxes	$62,733,411	$61,173,495	$1,559,916	2.5%
Licenses & Permits	3,168,079	3,641,058	(472,979)	-14.9%
Partnership Reimbursements	19,656,000	19,111,476	544,524	2.8%
Payments in Lieu	221,514	221,513	1	0.0%
Interest Earnings	860,317	1,021,017	(160,700)	-18.7%
Miscellaneous Revenue	2,555,293	2,625,075	(69,782)	-2.7%
	$89,194,614	**$87,793,634**	**$1,400,980**	

Operating Budget – Financial Comparative

	Full Year Budget	Full Year Actual	Funds Remaining
Payroll	$14,777,174	$11,682,376	$3,094,798
Transfers	(1,855,653)	827,308	(2,682,961)
Supplies	1,629,522	1,463,551	165,971
Outside Services	18,118,573	16,765,825	1,352,748
Non-Labor Transfers	(30,515)	36,163	(66,678)
Capital Acquisitions	1,774,426	1,081,783	692,643
Debt Service	199,500	175,757	23,743
	$34,613,027	**$32,032,763**	**$2,580,264**

Capital Improvement Program

	Full Year Budget	Full Year Actual	Funds Remaining
Force Account Payroll	$2,442,000	$2,031,832	$410,168
Supplies	0	56,333	(56,333)
Engineering	3,653,000	4,642,172	(989,172)
Land Acquisition	12,158,666	11,474,385	684,281
Capital Equipment	13,000	0	13,000
Construction	45,975,334	39,801,571	6,173,763
	$64,242,000	**$58,006,294**	**$6,235,706**

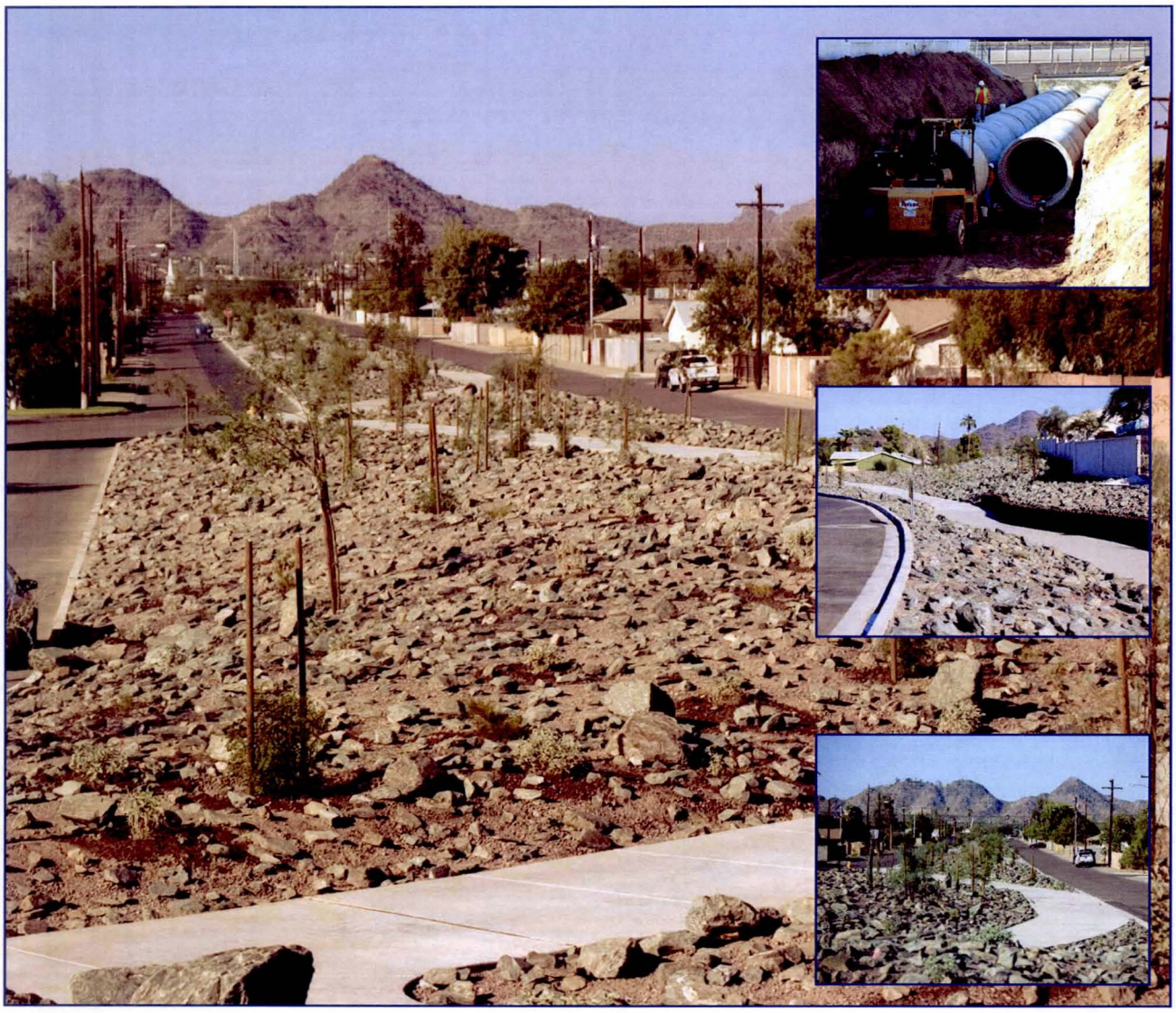
Beginning/Ending Fund Balance Reserves

	Operating Fund	CIP Fund	Total Fund Reserve
Beginning Fund Balance	$16,671,496	$15,537,185	$32,208,681
Total Revenue Collected	87,793,634	0	87,793,634
Operating Transfers to CIP Fund	(61,792,583)	0	(61,792,583)
Funds Transferred to CIP	0	61,792,583	61,792,583
Total Funds Available	**$42,672,547**	**$77,329,768**	**$120,002,315**
Less:			
Operating Expenditures	$31,852,004	$0	$0
CIP Expenditures	0	58,006,294	0
Ending Fund Balance	**$10,820,543**	**$19,323,474**	**$30,144,017**

Annual Report
Fiscal Year 2006-2007

Project Highlight:
10th Street Wash Improvements

The District and the City of Phoenix transformed a hazardous, earthen wash channel into a multi-use flood control facility along 10th Street between Alice Avenue and the Arizona Canal Diversion Channel (ACDC) in Phoenix. A system of underground pipes and box culverts replaced the channel to convey the stormwater of a 100-year rainstorm (one percent annual chance) downstream into the ACDC. A landscaped, shared-use path was placed overtop the drain system. The flood control benefit of the project removes 84 homes and commercial properties from a floodplain while enhancing the quality of life for area residents. The new tree-lined pathway creates an aesthetically pleasing environment to reduce crime and blight.



2801 West Durango Street
Phoenix, Arizona 85009
602-506-1501
www.fcd.maricopa.gov

Board of Directors

Per Arizona Revised Statute 48-3602, the Flood Control District is governed by a five-member Board of Directors that also serves as the Board of Supervisors for Maricopa County. The Board of Directors exercises all the powers and duties as ordinarily exercised by governing bodies in the acquisition and operation of property, contracting, and regulatory functions. Board members elect a new chairman each year:

- Fulton Brock, Chairman, District 1
- Don Stapley, District 2
- Andrew Kunasek, District 3
- Max Wilson, District 4
- Mary Rose Wilcox, District 5

Flood Control Advisory Board

The Flood Control Advisory Board (FCAB) advises the Board of Directors on flood control, floodplain management, drainage and related matters. The FCAB reviews the District's planning studies, projects and operations/maintenance activities, and recommends to the Board of Directors an annual budget, including the five-year Capital Improvement Program (CIP).

The FCAB consists of seven members. Five of the seven members are appointed by the Board of Directors for five-year terms. The final two members are ex officio representatives from Salt River Project and the City of Phoenix. FCAB members also serve the District as members of the Floodplain Review Board and Board of Hearing Review.

- DeWayne Justice, Chairman, District 4
- Melvin Martin, Vice Chairman, District 5
- Hemant Patel, Secretary, District 3
- Scott Ward, District 1
- Kent Cooper, District 2
- Ray Acuña, Ex Officio, City of Phoenix
- Paul Cherrington, Ex Officio, Salt River Project

Engineering

The Engineering Division manages projects and programs in structure design, hydrology and hydraulics (quantity, depth and flow of stormwater), engineering applications development, river mechanics, flood warning systems, mapping/surveying, sand and gravel mining regulation, and water quality.

- Completed the "Drainage Policies and Standards Manual for Maricopa County," adopted by the Maricopa County Board of Supervisors on April 24, 2007
- Worked on a pilot program for Rapid Floodplain Delineation using RFD program tool
- Performed 135 reviews related to erosion and sedimentation issues
- Held training for HEC-6T, WMS and DDMSW
- Flood Warning Branch:
  - Participated in the annual flood exercise on May 15, 2007
  - Published the annual ALERT Report in three volumes (Precipitation, Surface Water and Weather)
  - Installed four new ALERT stations, including two weather stations
  - Made 1,399 visits to ALERT stations for maintenance, repairs and calibrations
  - Completed a flood response plan for Cave Creek
- Engineering Library used by 764 non-staff customers

Planning and Project Management

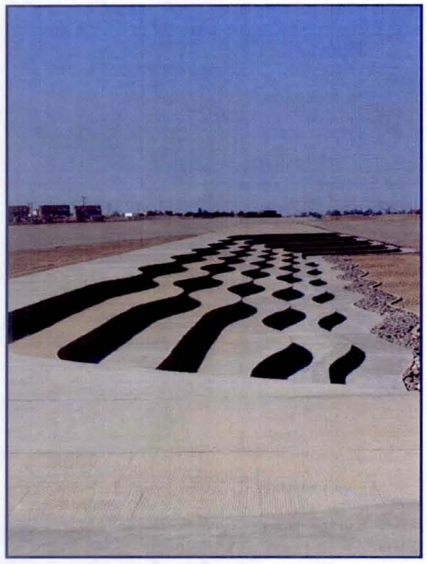
The District's Capital Improvement Program—its primary mechanism for mitigating existing regional flood hazards—accounted for 62% of its total Fiscal Year 2007 expenditures. Total expenditures consisted of $2.4 million in design costs, $8.3 million in rights-of-way acquisitions, $40.9 million in construction costs and $2.0 million in internal labor charges.

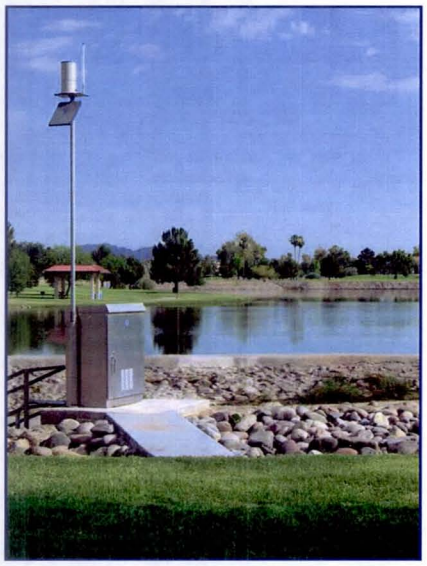
Construction projects completed or substantially completed included:

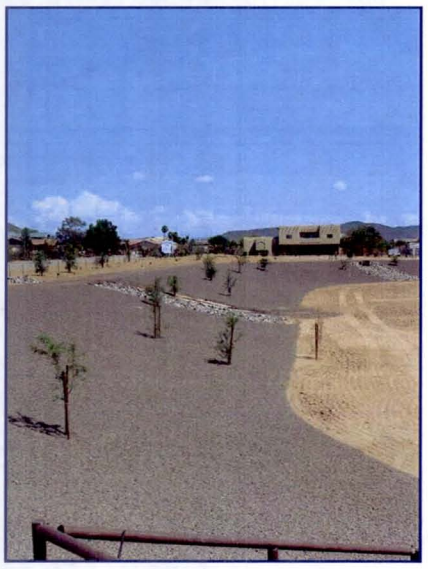
- The Laveen Area Conveyance Channel, a regional six-mile-long flood control channel and basin;
- Repair and structural improvements to the Skunk Creek Low Flow Channel project;
- The Ellsworth Channel project, conveying 100-year flows to the East Maricopa Floodway;
- The first (northern) phase of construction of the North Inlet Channel to White Tanks Flood Retarding Structure No.3;
- Improvements to the 10th Street Wash, from Alice Avenue to the Arizona Canal Diversion Channel, providing a 100-year level of protection;
- The Bethany Home Outfall Channel project (Reaches B and C), a conveyance channel and basin system in the Maryvale and Glendale areas providing a 100-year level of flood protection; and
- The 26th Avenue and Verde Lane Basin project, a detention basin and storm drains providing a 10-year level of protection.

The District and its project partners achieved significant design completion on:

- The Wickenburg Downtown Flooding Hazard Mitigation Project, a series of channel and levee improvements to Sol's Wash and a tributary, Hospital Wash;
- The Durango Regional Conveyance Channel and Basin (Phase I) project;







- The McDowell Road Basin and Storm Drain project in the vicinity of McDowell Road and Hawes Road;
- The 83rd Avenue and Pinnacle Peak Drainage Improvement project; and
- The White Tanks Flood Retarding Structure No.3 North Inlet Channel (South Phase) project, designing the second reach of an inlet to the associated dam.

Floodplain delineations were completed for: Tempe Canal; Moon Valley Wash; Camp Creek Tributaries; Wittmann (Phase 2); Cline Creek Tributaries; Lower Painted Rock Watershed (Zone A Study, Phases 1 and 2); and Sentinel Watershed (Zone A).

Dam rehabilitation planning efforts were conducted on White Tanks Flood Retarding Structure No.4, McMicken Dam and Buckeye Flood Retarding Structure No.1, and earth fissure investigations were ongoing on Powerline Flood Retarding Structure.

Operations and Maintenance

Regular inspections and scheduled maintenance of the District flood control facilities were completed during the year. The Operations and Maintenance Division (O&M) also supported the Structures Management Branch in providing urgent maintenance at the McMicken Dam emergency spillway approach. Vegetation in the dam reservoir was restricting the discharge capacity of the emergency spillway. O&M removed 80 acres of woody vegetation from the spillway approach. Employees made suggestions to dispose of the vegetation using an air-curtain burner that reduced pollutants in the air, and saved time and money hauling the material to a landfill. The area was vegetated with native grass and shrubs to prevent blown dust and soil erosion.

O&M provides both emergency response and storm monitoring services during a flood emergency or storm event. When an emergency exists, crews are dispatched to monitor the functions of the structures and operate outflow devices to control the release of storm water. This fiscal year O&M took part in a multi-jurisdictional flood exercise. The exercise helps agencies to test the flow of information to and from field crews.

Regulatory

By enforcing the federal, state and local rules regarding development in areas where flooding may occur, the Division can prevent adverse effects to the environment, and safeguard the lives and property of county residents. Regulatory functions include floodplain management, floodplain use permits, code/regulation enforcement, and floodplain map information.

- County and community permits processed: 802 applications; $120,179 in fees collected
- Inspections and enforcement: 1,699 inspections for county permits completed; 78 violation cases opened
- December 20, 2006: Revisions to the Floodplain Regulations of Maricopa County and new Fee Schedule
- Cooperated with the state National Flood Insurance Program (NFIP) Coordinator for Community Assistance Visits

2007 Financial Highlights

Preliminary and Unaudited

Revenue Collection Status

	Full Year Revised Budget	Collections Full Year	Collections Remaining	Percent Remaining
Property Taxes	$65,099,622	$64,957,692	$141,930	$0.2%
Licenses & Permits	1,571,000	2,341,904	(770,904)	-49.1%
Partnership Reimbursements	13,622,000	13,012,336	609,664	4.5%
Payments in Lieu	185,213	199,735	(14,522)	-7.8%
Interest Earnings	882,750	1,528,665	(645,915)	-73.2%
Miscellaneous Revenue	5,375,000	5,534,660	(159,660)	-3.0%
	$86,735,585	**$87,574,991**	**$(839,406)**	

Operating Budget – Financial Comparative

	Full Year Budget	Full Year Actual	Funds Remaining
Payroll	$15,793,682	$12,918,696	$2,874,986
Transfers	(1,181,002)	887,367	(2,068,369)
Supplies	1,594,303	1,457,798	136,505
Outside Services	16,220,072	14,920,392	1,299,680
Non-Labor Transfers	(24,380)	3,920	(28,300)
Capital Acquisitions	1,611,365	1,443,981	167,384
Debt Service	182,765	180,203	2,562
	$34,196,805	**$31,812,355**	**$2,384,450**

Capital Improvement Program

	Full Year Budget	Full Year Actual	Funds Remaining
Force Account Payroll	$2,090,000	$1,990,433	$99,567
Land Acquisition	9,191,000	8,643,303	547,697
Construction	48,719,000	43,014,126	5,704,874
	$60,000,000	**$53,647,862**	**$6,352,138**

Beginning/Ending Fund Balance Reserves

	Operating Fund	CIP Fund	Total Fund Reserve
Beginning Fund Balance	$10,820,543	$19,293,817	$30,114,360
Total Revenue Collected	87,574,991	0	87,574,991
Operating Transfers to CIP Fund	(55,128,752)	0	(55,128,752)
Funds Transferred to CIP		55,128,752	55,128,752
Total Funds Available	**$43,266,782**	**$74,422,569**	**$117,689,351**
Less:			
Operating Expenditures	$31,678,648	$0	$0
CIP Expenditures	0	53,647,862	0
Ending Fund Balance	**$11,588,134**	**$20,774,707**	**$32,362,841**

Annual Report
Fiscal Year 2007-2008

Project Highlight:

Spook Hill Flood Retarding Structure Rehabilitation

Spook Hill FRS is a four-mile-long, earthen dam located in Mesa along the west side of a new segment of the Loop 202 Red Mountain Freeway. The District determined that overall rehabilitation of the dam was required following field investigations which found cracking within the embankment. Due to the parallel alignment of Spook Hill FRS with the new freeway segment, the Arizona Department of Transportation and the District entered into an agreement to include the rehabilitation of the dam, at the District's cost, as a part of the freeway construction contract. Updates to the dam include the construction of a new principal outlet drain, and a sand material zone in the center of the dam to prevent dam failure due to structure cracks. Both upgrades meet current dam safety standards. Once the rehabilitation is completed, Spook Hill FRS will have an estimated 100-year life span.

2801 West Durango Street
Phoenix, Arizona 85009
602-506-1501
www.fcd.maricopa.gov

Board of Directors

Per Arizona Revised Statute 48-3602, the Flood Control District is governed by a five-member Board of Directors that also serves as the Board of Supervisors for Maricopa County. The Board of Directors exercises all the powers and duties as ordinarily exercised by governing bodies in the acquisition and operation of property, contracting, and regulatory functions. Board members elect a new chairman each year:

- Andrew Kunasek, Chairman, District 3
- Fulton Brock, District 1
- Don Stapley, District 2
- Max Wilson, District 4
- Mary Rose Wilcox, District 5

Flood Control Advisory Board

The Flood Control Advisory Board (FCAB) advises to the Board of Directors on flood control, floodplain management, drainage and related matters. The FCAB reviews the District's planning studies, projects and operations/maintenance activities, and recommends to the Board of Directors an annual budget, including the five-year Capital Improvement Program (CIP).

The FCAB consists of seven members. Five of the seven members are appointed by the Board of Directors for five-year terms. The final two members are ex officio representatives from Salt River Project and the City of Phoenix. FCAB members also serve the District as members of the Floodplain Review Board and Board of Hearing Review.

- Melvin Martin, Chairman, District 5
- Hemant Patel, Vice Chairman, District 3
- Kent Cooper, Secretary, District 2
- Scott Ward, District 1
- DeWayne Justice, District 4
- Ray Acuña, Ex Officio, City of Phoenix
- Paul Cherrington, Ex Officio, Salt River Project

Engineering

The Engineering Division manages projects and programs in structure design, hydrology and hydraulics (quantity, depth and flow of stormwater), engineering applications development, river mechanics, flood warning systems, mapping/surveying, sand and gravel mining regulation, and water quality.

- Developed a stormwater pollution prevention plan for the White Tanks FRS remediation project
- Worked on a pilot program for Rapid Floodplain Delineation
- Upgraded the District software "Drainage Design Management System for Windows (DDMSW)" with the new version of NOAA Atlas 14 (rainfall data)
- FEMA approved the Rio Verde floodplain delineation that was done by in-house staff using 2-D software
- Worked with the U.S. Army Corps of Engineers to accomplish a HEC-RAS Customization for Side Weir Modeling
- Flood Warning Branch:
  - Compiled Storm Reports for July 26 and July 29, 2007; Nov. 30 and Dec. 1, 2007; and Jan. 27, 2008
  - Installed eight new ALERT stations, including Loop 202/Spook Hill Flood Retarding Structure (FRS)
- Completed flood response plan update for Wickenburg
- Engineering Library used by 790 non-staff customers

Planning and Project Management

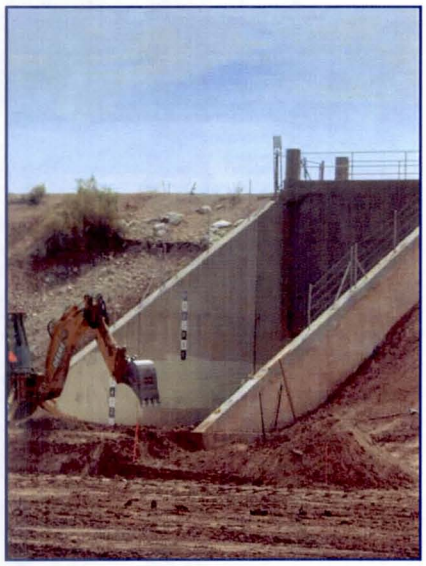
The District's Capital Improvement Program—its primary mechanism for mitigating existing regional flood hazards—accounted for 60% of its total Fiscal Year 2008 expenditures. Total expenditures consisted of $2.9 million in design costs, $8.7 million in right-of-way acquisitions, $42.6 million in construction costs and $1.9 million in internal labor charges.

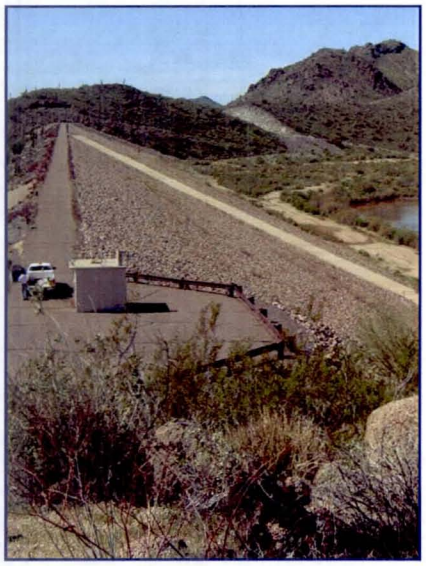
Construction projects completed or substantially completed included:

- Rehabilitation of the Spook Hill Flood Retarding Structure, accomplished in conjunction with the Arizona Department of Transportation's SR-202L Red Mountain Freeway construction;
- Sonoqui Wash Channelization, from Higley Road to Chandler Heights Road, providing a 100-year level of protection;
- The final (southern) phase of construction of the North Inlet Channel to White Tanks Flood Retarding Structure No.3;
- The first phase of the rehabilitation of White Tanks Flood Retarding Structure No.3, intended to extend the life of the dam and upgrade its design to meet current safety standards;
- Scottsdale Rd. Channel Improvements, from Thunderbird Road to Sweetwater Avenue, providing a 10-year level of protection; and
- 24th Avenue & Camelback Road Detention Basin and Storm Drain, mitigating flooding associated with the watershed extending from the Arizona Canal Diversion Channel to the Grand Canal, between Interstate 17 and 19th Avenue.

The District and its project partners achieved significant design completion on:

- Reach D of the Bethany Home Outfall, a half-mile segment of the conveyance channel along the Grand Canal, between Indian School Road and 67th Avenue;





- Reems Road Channel and Basin, completed using in-house resources, which will serve as the outfall for upstream channel construction by the City of Surprise; and
- The Hermosa Vista/Hawes Road Storm Drain and Basin project.

Floodplain delineations were completed for: Lower Painted Rock Watershed (Zone A, Phase 3); White Tank Alluvial Fans; Upper New River Area Drainage Master Plan; Chandler/Gilbert (Phase 1); and Cave Creek Drainage Master Plan.

Dam rehabilitation planning efforts were conducted on White Tanks Flood Retarding Structure No.4, McMicken Dam and Buckeye Flood Retarding Structure No.1, and earth fissure investigations were ongoing on Powerline Flood Retarding Structure.

Operations and Maintenance

The District operates and maintains 78 flood control structures. Many of these facilities were constructed in rural areas. Development has encroached on the facilities and maintenance practices have changed to accommodate the public. The Operations and Maintenance Division (O&M) has increased maintenance activities on bike trails throughout our structures. Vector issues in flood channels have become a larger concern when homes abut District flood conveyance channels. Controlling nuance water has been proven to be the best practice in the control of vectors.

This year O&M spent additional resources on the Powerline, Vineyard Road and Rittenhouse flood retarding structures plating maintenance roads and crest leveling. Material was also placed on the crest of the three structures to level the crest of the dams. This project included leveling of 14 miles of crest and plating 25 miles of maintenance roads to reduce fugitive dust.

Floodplain Management and Services
(formerly Regulatory)

The Floodplain Management and Services Division is responsible for the Regulation program. Regulatory functions include floodplain management, floodplain use permits, code/regulation enforcement, and floodplain map information. The 50-year vision of the Floodplain Management and Services Division is to educate and influence citizens to balance the wise use of the floodplain and its resources through non-structural flood control measures, while preserving the natural and beneficial values served by floodplains.

- Division name change from Regulatory to Floodplain Management and Services
- County and community permits processed: 511 applications; $122,390 in fees collected
- Inspections and enforcement: 1,251 inspections for county permits completed; 217 violation cases opened
- More than 1,000 letters/memos were sent out responding to permit reviews, Maricopa County Planning and Development cases, and enforcement activities
- October 2007—Customer Service Survey initiated
- October 2007—Audit completed to prepare a verification report for the Federal Emergency Management Agency (FEMA)
- February 2008—District partnered with the Arizona Department of Water Resources (ADWR) and FEMA on a Substantial Improvement/Substantial Damage workshop

2008 Financial Highlights

Preliminary and Unaudited

Revenue Collection Status

	Full Year Revised Budget	Collections Full Year	Collections Remaining	Percent Remaining
Property Taxes	$69,683,115	$68,973,117	$709,998	1.0%
Licenses & Permits	1,883,000	2,759,309	(876,309)	-46.5%
Partnership Reimbursements	17,042,874	15,984,727	1,058,147	6.2%
Payments in Lieu	149,582	82,552	67,030	44.8%
Intergov. Charges for Services	0	12,000	(12,000)	0.0%
Interest Earnings	750,000	2,348,767	(1,598,767)	-213.2%
Miscellaneous Revenue	2,015,426	5,606,160	(3,590,734)	-178.2%
	$91,523,997	**$95,766,632**	**$(4,242,635)**	

Operating Budget – Financial Comparative

	Full Year Budget	Full Year Actual	Funds Remaining
Payroll	$14,770,259	$11,866,756	$2,903,503
Transfers	(418,409)	2,845,032	(3,263,441)
Supplies	2,354,107	1,875,109	478,998
Supply Transfers	304,157	127,453	176,704
Outside Services	17,853,784	15,146,777	2,707,007
Service Transfers	370,936	197,485	173,451
Capital Acquisitions	665,050	724,547	(59,497)
Debt Service	57,299	212,465	(155,166)
Capital Transfers	198,000	0	198,000
	$36,155,183	**$32,995,623**	**$3,159,560**

Capital Improvement Program

	Full Year Budget	Full Year Actual	Funds Remaining
Force Account Payroll	$2,174,000	$1,877,245	$296,755
Land Acquisition	12,472,000	8,718,051	3,753,949
Construction	46,147,000	44,586,290	1,560,710
	$60,793,000	**$55,181,586**	**$5,611,414**

Beginning/Ending Fund Balance Reserves

	Operating Fund	CIP Fund	Total Fund Reserve
Beginning Fund Balance	$11,588,134	$20,774,706	$32,362,840
Total Revenue Collected	95,766,632	0	95,766,632
Operating Transfers to CIP Fund	(58,357,554)	0	(58,357,554)
Funds Transferred to CIP	0	58,357,554	58,357,554
Total Funds Available	**$48,997,212**	**$79,132,260**	**$128,129,472**
Less:			
Operating Expenditures	$32,844,590	$0	$0
CIP Expenditures	0	55,181,586	0
Ending Fund Balance	**$16,152,622**	**$23,950,674**	**$40,103,296**