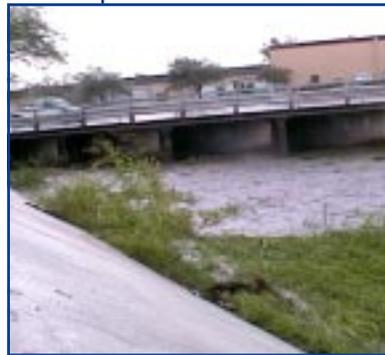




*Pima County, Arizona*  
**FLOOD CONTROL DISTRICT**



5 seconds



90 seconds



**2002/2003 ANNUAL REPORT**

## **COVER PHOTOS**

*Rainbow: From the Pima County Public Works Center towards Catalina Mountains, January 8, 2003.*

*Wash at Silvercroft Bridge flooded within ninety seconds. **All it takes is 90 seconds; it's important not to enter a wash with water flowing.***

*Photos in this report are by Pima County Flood Control District.*

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# Pima County Flood Control District



## Vision

The District will continue to be a leader in providing quality flood protection and floodplain management services within Pima County.

## Mission

Pima County Flood Control District is a regional agency whose mission is to protect the health, safety, and welfare of Pima County residents by providing comprehensive flood protection programs and floodplain management services. These services emphasize fiscal responsibility, protection of natural resources, and a balanced multi-objective approach to managing regional watercourses, floodplains, and stormwater resources.

## Value Statement

The District is committed to the fair treatment of the general public and our employees, an open decision-making process, fostering the opportunity for employee contributions, improved quality of work through working in partnership, and consideration of environmental values along with economic benefits in our programs.



*Ajo Detention Basin photos.*

# ADMINISTRATION 2002/2003

## BOARD OF DIRECTORS (BOARD OF SUPERVISORS)

Ann Day, District 1

Dan Eckstrom, District 2

Sharon Bronson, Chairperson, District 3

Raymond J. Carroll, District 4

Richard Elías, District 5

## FLOOD CONTROL DISTRICT ADVISORY COMMITTEE

Nick Bokaie, Oro Valley

Paul Cella, District 4

Farhad Moghimi, Marana

Mike Zeller, Chair, City of Tucson

Antonio Figueroa, City of Tucson

Vacant, District 3

Linwood Smith, City of Tucson

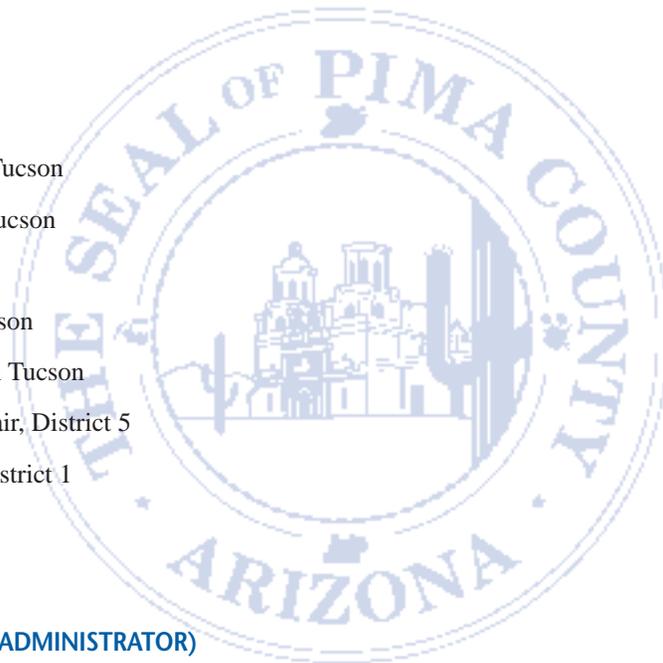
Richard Salaz, City of South Tucson

Phil Pearthree, 2nd Vice Chair, District 5

Doug Shakel, Vice Chair, District 1

Vacant, District 2

Martin Roush, Sahuarita



## GENERAL MANAGER (COUNTY ADMINISTRATOR)

C. H. Huckelberry

## PUBLIC WORKS DIRECTOR

John M. Bernal

## CHIEF ENGINEER (DIRECTOR)

### TRANSPORTATION AND FLOOD CONTROL DISTRICT

Kurt Weinrich

## DEPUTY DIRECTOR, FLOOD CONTROL DISTRICT

Suzanne Shields

# MESSAGE FROM THE CHIEF ENGINEER



On behalf of the Board of Directors of the Pima County Flood Control District, I am pleased to present the District's Annual Report for Fiscal Year 2002/2003.

In the past year, the District has continued in the best tradition of serving the community by providing comprehensive flood protection programs, floodplain management services and riparian habitat preservation programs. A few highlights of the District's activities in FY 2002/2003 include:

- In cooperation with the Natural Resources Conservation Service, construction was completed on 1.5 miles of bank protection along the Santa Cruz River between Grant Road and Ft. Lowell. This \$9 million improvement will protect the I-10/Miracle Mile interchange, Arizona Department of Transportation maintenance yard, University of Arizona Agricultural Research Center, Tucson Electric transmission line, Tucson Water mainlines, residences on the west bank and other critical utility infrastructure.
- The District began to recharge water from the Santa Cruz River at the Marana High Plains Project. This marks the final component of the Northwest Replenishment Project. This multipurpose riparian and aquifer recharge project is managed in cooperation with Cortaro-Marana Irrigation District.
- The restoration element of the Ajo Detention Basin, involving 20 acres of wetlands and a seven-acre lake, was constructed. The project was publicly dedicated as the *Ed Pastor Kino Environmental Restoration Project* on May 29, 2002, in recognition of U.S. Representative Ed Pastor's guidance, support and many contributions that helped make the project's success possible.
- Bank protection and box culvert improvements were completed on Green Valley Drainageway #9, reducing flood risk to adjacent property owners.
- In cooperation with the U.S. Army Corps of Engineers, three riverine and environmental feasibility studies are being conducted on the Santa Cruz and Rillito river systems. These studies will provide master plans for management and restoration of our major river systems.
- During 2001/2002, the Board of Directors established a Water Resources Division in the Flood Control District. Responsibilities of the new division include riparian habitat protection, floodprone land acquisition, water resources management and environmental restoration functions.
- The District contributed water resources and riparian preservation and restoration elements to the Sonoran Desert Conservation Plan and Conservation Land Use System which were adopted by Pima County in FY 2001/2002.
- Each month, staff assisted an average of 483 counter customers, issued an average of 49 Floodplain Use Permits, and investigated an average of 33 drainage complaints. In addition, an average 636 Flood Hazard Information Sheets were completed.

I believe that the District's efforts in FY 2002/2003 made a significant contribution toward minimizing flood and erosion hazards for Pima County residents and their property. I hope you'll take a closer look at this year's annual report for more details on the District's many flood control activities. This and previous Annual Reports are available on the District Website.

A handwritten signature in blue ink, appearing to read 'K. Weinrich'.

Kurt Weinrich, P.E.  
Director, Department of Transportation  
and Flood Control District

# OVERVIEW OF THE DISTRICT

## Establishment of the District

To comply with federal law, the State of Arizona passed the Floodplain Management Act of 1973. This act authorized Arizona counties to adopt rules and regulations concerning management of floodplain areas. The Arizona state legislature subsequently authorized flood control districts to levy taxes on real property to finance district operating expenses. The Pima County Board of Supervisors, which sits as the Pima County Flood Control District Board of Directors (Board), organized the Pima County Flood Control District (District) on June 5, 1978. The District first became operational on July 1, 1978.

Provisions of state legislation also allow incorporated cities and towns within the county to undertake their own floodplain management duties and regulatory functions. In Pima County, the incorporated areas of the City of Tucson, the Town of Oro Valley and the Town of Marana have elected to assume floodplain management duties in their respective jurisdictions. The District is responsible for floodplain management activities for the remainder of unincorporated Pima County (with the exception of national forests, parks, monuments, and Indian Nations) and for the City of South Tucson and the Town of Sahuarita.

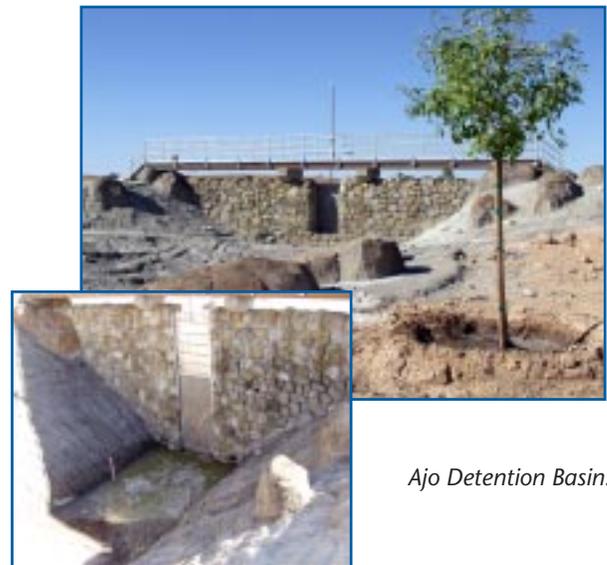
## Goals and Objectives

The goals and objectives of the District represent both flood control and resource protection views and vary from traditional flood control approaches because of a multi-benefit public philosophy. The District recognizes that it is necessary and desirable to maintain a balanced relationship between human communities and the land and resources that sustain them. To that end, the following twelve specific policy goals and objectives have been adopted by the Board as part of the District's Floodplain and Erosion Hazard Management Ordinance:

- To minimize flood and erosion damages
- To meet or exceed state and federal requirements relating to floodplain management—thereby enabling Pima County residents to purchase low-cost flood insurance to receive disaster relief, should the need arise, and to seek residential and commercial real estate loans
- To establish minimum flood protection elevations and damage protection requirements for structures and other types of development, which may be vulnerable to flood and erosion damage
- To regulate encroachment and building development within areas subject to flooding or erosion, and to ensure that the

flood-carrying capacity within the altered and/or relocated portion of any watercourse is maintained

- To encourage the most effective expenditures of public money for flood control projects
- To protect, preserve, and enhance groundwater recharge
- To minimize the need for rescue and relief efforts associated with flooding and erosion, usually undertaken at the expense of the general public
- To minimize damage to public facilities and utilities such as water and gas mains, electric, telephone and sewer lines, and streets located in regulatory floodplain and erosion hazard areas
- To help maintain a stable tax base by providing for the protection of regulatory floodplain and erosion hazard areas
- To inform the public when property is in a regulatory floodplain or erosion hazard area
- To ensure that those who occupy the areas within a regulatory floodplain and erosion hazard area assume responsibility for their actions
- To encourage the preservation of natural washes and enhance the riverine environment



*Ajo Detention Basin.*



## District Organization

The District is organized into three main divisions based on the major functions of each group: 1) the Floodplain Management Division; 2) the Flood Control Engineering Division; and 3) the Water Resources Division. The District receives substantial support from other divisions within the Pima County Department of Transportation and Flood Control District. These include Administrative Support Services, Maintenance Operations, Field Engineering, Real Property, and Technical Services. Further assistance is received from other county departments, including Development Services, Environmental Quality, Graphic Services, and the Pima County Attorney's Office. The

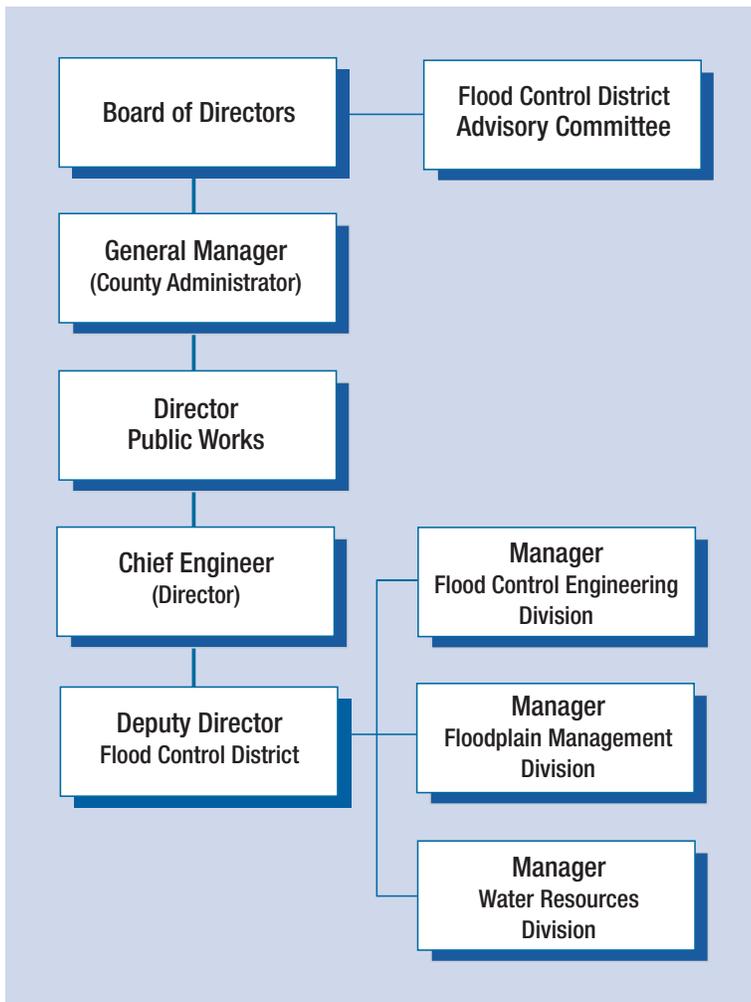
District pays for services rendered by Pima County Department of Transportation and Flood Control District and other departments through interdepartmental fund transfers from the District to Pima County.

Although District employees are part of the Pima County Department of Transportation and Flood Control District, their positions are funded entirely from District revenues. The District funded 56 full-time equivalent staff positions in FY 2002/03.

As noted, the Board governs the Flood Control District. The Board also hears requests for variances and appeals to the Floodplain and Erosion Hazard Management Ordinance (FPMO). In 1988, the Board

formed the Flood Control District Advisory Committee (FCDAC) to advise on flood-related matters and to increase public participation in the decision-making process. The 12-member FCDAC includes five members appointed by the Board (one for each Board member), three representatives from the City of Tucson, and one representative each from the City of South Tucson, the towns of Marana, Oro Valley and Sahuarita. One position, in an ex-officio capacity, is available for appointment by the Tohono O'odham Nation.

## DISTRICT ORGANIZATIONAL CHART



# DISTRICT ACTIVITIES

## SERVICE PROGRAMS

### CUSTOMER SERVICE

Dynamic public outreach activities build upon the wealth of information created and gathered by District staff throughout the years. Flood awareness, flood preparedness, and safety are major themes along with groundwater recharge, watershed protection and riparian habitat conservation.

### PUBLIC INFORMATION AND EDUCATION

In March 2003, the District presented a table display during the eight-day home show at the Tucson Mall. The display integrated flood safety brochures, instructions on manufactured home installation for floodprone areas, and flood history information and photographs.

Free publications, brochures and a 10-panel poster display documenting historical flood events and highlighting flood safety information are featured in the lobby of the District office. In April, the poster display along with a real-life flood video presentation was featured at the 10-day Pima County Fair.

District staff manned the booth to answer questions and used a computer station to help citizens review their property floodplain status on-line. In addition, a functioning rain gauge model was used to demonstrate how data is gathered for the countywide flood warning system.

In the last five years, the District has been part of Earth Day for Kids hosted by Pima County Natural Resources, Parks and Recreation Department. At scenic Agua Caliente Park, classes from the 3rd, 4th and 5th grades chose five different half-hour sessions of ecological education all focusing on "Caring for and Understanding the Earth." On April 22, 2003, children participated in a dynamic hands-on learning experience focusing on water—why it is important in our lives, the scarcity of it in

the desert, and why it should be respected during storms. Being outside and playing in the water makes this kind of learning FUN! This year, the 150 kids that "graduated" from our program were awarded Flood Survivor badges and coloring books.

Tucson Electric Park hosted Family Fun Fest on the Fourth of July 2002, where many people visited the District's flood control information tent. The District conducted entertaining hands-on activities using the "Rolling Rivers" watershed model from the Pima Center for Conservation Education. This 6 x 10 foot model is filled with recycled plastic "sand" through which water is recirculated forming the "sand" to represent a myriad of floodprone situations where the flowing water carves out real results.

In September 2002, at the State of the County luncheon hosted by the Greater Tucson Leadership, staff presented an extensive display spotlighting many of the District activities taking place within the community.

The District and Wastewater Management shared an information booth during the two-day Annual Fiesta Grande Event. People of all ages visited the booth and received information on flood hazards, flood safety, endangered species, and the Sonoran Desert Conservation Plan including a free coloring book highlighting safety.

### Web site

On-line publishing maintains many great features: one is that new facts can be easily added as new information becomes available. This is true of the District's web pages as well with new information added to the web site on a regular basis.



*Fourth of July Family Fun Fest.*



*Earth Day for Kids. Water Resources Division staff answers questions about the importance of water in the desert.*



One newly developed feature is a section providing on-line access to various District reports and publications. These pages were developed to provide centralized access to the many reports and publications generated by District staff, consultants and others. Links include current U.S. Army Corps of Engineers reports, the Floodplain and Erosion Hazard Management Ordinance, the Riparian Habitat Guidelines, and District annual reports. Visit our web site at [www.dot.pima.gov/flood](http://www.dot.pima.gov/flood).



*Staff assisting customers at front counter.*

New, nonregulatory riparian habitat maps, based on Sonoran Desert Conservation Plan studies, are located at [www.dot.pima.gov/gis/maps/mapguide/hmtest.mwf](http://www.dot.pima.gov/gis/maps/mapguide/hmtest.mwf). The revised maps include new information on riparian area distribution, and data regarding plant species, vegetation structures, and density and water availability. We encourage the public to access these new map features.

### **Customer Service Training and Satisfaction Surveys**

The District continually strives to improve their external and internal customer relationships. One method is conducting satisfaction surveys through the Balanced Scorecard Front Counter Customer Service Team. In late January 2002, one such survey was performed with the District scoring an approval rating of 89.5 percent. In order to garner a superior satisfaction rating, the District determined that all front counter employees should attend a customer service-training course. Seven employees (six from Transportation and Flood Control and one from Development Services) volunteered to become certified trainers and develop an in-house customer service-training program. At the end of the fiscal year, 40 employees graduated from a two-day customer service course. This course proved to be very successful and will continue to be offered to any Public Works employee. Subsequent front counter surveys will be conducted once all counter employees have completed the training.

### **Employee Training**

In an effort to provide the most up-to-date federal, state and local information and the highest quality services to the public, an individualized employee training plan has been established for District employees. This database program identifies training programs specifically designed to maintain and enhance each employee's expertise and job performance. Both short-term and long-range training goals are reviewed and updated annually. In fiscal year 2002-03, approximately 99 percent of the District's staff was involved in some form of training.

## **INTERNAL BUSINESS PROCESSES**

Providing prompt, high quality service to external and internal customers is the goal of the Floodplain Management Section. In order to achieve this goal, the section's staff meets twice each month to discuss process improvements.

In 2003, work began on reviewing and updating several standard operating procedures to better serve the public. Several improvements were implemented such as placing additional layers of resource material on the geographic information system to advance project reviews and processing times; creating databases for elevation

certificates; improving and adopting updated record keeping processes; using efficient digital cameras saving time and public funds; and improving and adopting the Vehicle Preventive Maintenance Program.

### **Drainage Maintenance Process Improvement**

The Maintenance Operations and Floodplain Management divisions work together to resolve drainage problems affecting public safety. There are many causes for drainage problems that staff works toward understanding, correcting, and ultimately preventing future problems.

Process improvements embrace better communication between staff. Meetings are held to resolve large watershed problems or development projects and to improve drainage design and construction methods for development projects to reduce maintenance needs and costs. These ongoing discussions integrate small projects to remedy the smaller problems with the capital improvement projects. An example of a small project is the Wyoming Wash bank stabilization addressing severe erosion.

### **Orthophotography/Topography Project**

In participation with Pima Association of Governments and the U.S. Geological Survey, the District secured digital topographic mapping and aerial photographs for 340 square miles of the Black Wash, the upper Brawley Wash and the southeast Interstate 10 corridor. These new products will be used to develop more accurate floodplain maps and develop basin master plans.

### **Computer Design Innovation**

The District has developed a computer aided drafting design standard (CADD) for the Department of Transportation and Flood Control District. The Flood Control Engineering Division has utilized this standard on several new projects.

# MANAGEMENT PROGRAMS

## WATER RESOURCES AND RIPARIAN HABITAT MANAGEMENT PROGRAM

This program consists of activities intended to: 1) prevent existing flooding, erosion and riparian habitat loss problems from getting worse and 2) prevent the creation of new flooding, erosion, and habitat loss problems by means other than constructing structural flood control improvements. The District promotes and supports regional riparian restoration with the intent that it will result in some level of recovery of natural functions within riverine systems.

### Sonoran Desert Conservation Plan

The Water Resources Division is assisting in the implementation of the Sonoran Desert Conservation Plan (SDCP). Following is a list of key steps in fiscal year 2002-03:

- Improvements to the stewardship of lands acquired by the District including updating caretaker agreements, maintaining and installing fences, and conducting resource inventories.
- Evaluating the water resource impacts of future developments. This information is provided to decision-makers and land use planners.



Illustration by Austin Fetter  
Pima County Graphic Services Department

Sonoran Desert Kids Web site:  
[www.pima.gov/cmo/sdcp/kids.html](http://www.pima.gov/cmo/sdcp/kids.html)

- Evaluating the biological and water resources of potential new acquisitions.
- Participating in the development of the conservation (open space) bonds.
- Assisting the County Administrator's Office in the formation of a Science Commission which has oversight for the development of monitoring the overall progress of the SDCP.
- Supporting the continuing activities of the Science Technical Advisory Team which is responsible for development of the biological monitoring component of the SDCP.
- Developing studies and plans necessary for the U.S. Army Corps of Engineers' restoration projects.
- Updating the inventory of surface water resources in Pima County and conducting new investigations to understand and protect existing streams and springs.

### Floodprone Land Acquisition Program

The Floodprone Land Acquisition Program (FLAP) began in 1984 and was funded by bond monies authorized by Pima County voters and by an annual allocation from the District's tax levy. FLAP is an effective nonstructural floodplain management tool that yields a number of community benefits. Some of these include removing residences and structures from vulnerable areas, preserving natural floodplain characteristics (and attenuation of downstream flood peaks), providing recreational opportunities, maintaining open space, and protecting groundwater quality and riparian habitat resources. The District administers FLAP solely on a voluntary basis without utilizing its land condemnation authority.

Floodprone parcels have been purchased along the Tanque Verde, Cienega, and Agua Verde creeks, the Cañada del Oro, Pantano, Pegler and Black washes, and along the Rillito and Santa Cruz rivers. During FY 2002/03, the District purchased 37 parcels of land totaling approximately 1,286 acres of land at a cost of \$3,255,633.

### Mitigation Land Bank - Pima Pineapple Cactus

Natural Resources, Parks and Recreation submitted reports for the Pima Pineapple Conservation bank, in addition to repairing and maintaining the boundary fence, signs, and gates. Repairs were made to the boundary fence damaged by cattle and off-road vehicles. The park police patrolled the site monthly and reported maintenance



Illustration by Bill Singleton  
Pima County Graphic Services Department

### Pima Pineapple Cactus

issues and dealt with off-road vehicle problems; Natural Resources, Parks and Recreation Department staff inspected the site every six months.

In February 2002, the plants were evaluated using the coordinates from the Pima Pineapple Cactus Survey performed by SWCA, Inc. in November 2000.



## FLOODPLAIN MANAGEMENT PROGRAM

The main responsibility for District staff in the Floodplain Management Program is to enforce provisions of the Pima County Floodplain and Erosion Hazard Management Ordinance. This ordinance, prepared in accordance with the National Flood Insurance Program (NFIP) includes regulations and requirements designed to minimize flood damage and losses throughout the community. This important goal is accomplished largely through review and issuance of Floodplain Use Permits, detailed site reviews for potential development, and investigation of drainage and flood-related complaints. Flood Hazard Information Sheets provide a succinct listing of a parcel's floodplain status. Customers are assisted by phone, fax or in person at the counter.

### FISCAL YEAR STATISTICS

A total of 30,000 customers were served in 2002-03 for an average of 2,500 customers per month. The services provided included:

- Issued an average of 49 Floodplain Use Permits per month.
- Investigated an average of 33 drainage complaints per month.
- Processed approximately 636 Flood Hazard Information Sheets per month.
- Assisted an average of 483 customers at the counter per month.
- Reviewed an average of 1,300 permits per month.

## FLOOD WARNING AND EMERGENCY PREPAREDNESS

The Flood Warning Program encompasses the District's Automated Local Evaluation in Real Time Warning System (ALERT), which consists of approximately 81 automatic self-reporting precipitation gauges, 30 stream gauges, 4 weather stations, and 4 radio repeater stations. The system automatically transmits hydrometeorological data via radio telemetry to the District's base station and to the Tucson office of the National Weather Service (NWS). During storm events, District staff evaluated incoming data to monitor changing flood conditions. The NWS also uses the information when issuing flash flood warnings and advisories. In addition to biannual maintenance on all sites, the following highlights occurred during 2002-03:

- Staff worked with a consultant establishing a web site where the public can gain access to flood warning system data. The data may be accessed at: [www.dot.pima.gov/flood/alertsys/index.cfm](http://www.dot.pima.gov/flood/alertsys/index.cfm).
- One precipitation gauge was installed in the Santa Catalina Mountains to provide information on storms affecting portions of the Bullock Fire burn area. Three precipitation gauges and one stream gauge were installed in support of data collection concerning water quality and water supply to the Ed Pastor Kino Environmental Restoration Project.

### Rillito/Swan Wetlands

Working in partnership with the District, the United States Army Corps of Engineers (USCOE) is preparing a feasibility study to determine the costs and benefits of enhancing riparian habitat along a reach of the Rillito River. An environmental assessment has been completed, and staff conducted a public workshop in an effort to obtain input in developing design alternatives.

## FLOOD INSURANCE PROGRAM

The District works in conjunction with the Federal Emergency Management Agency (FEMA) under the Flood Insurance Study Program (FIS) to identify floodprone areas which are used to set insurance rates for flood hazard areas within Pima County. An essential effect resulting from this effort is a set of official maps called Flood Insurance Rates Maps (FIRMs). These maps display flood hazard zones and other relevant hydrological information. Federal, state, and local floodplain management regulations apply to development and other activities that take place within designated flood hazard zones.

FIRMs have been prepared for most of the major watercourses and many of the smaller watercourses within Pima County. These maps are revised periodically when structural improvements are implemented or when floodplain characteristics are altered; a modification to channel geometry is one example. The Floodplain Management Division is the local map repository for these FIRMs.

In fiscal year 2002-03, District staff performed the following activities:

- The Roller Coaster Wash and Citrus Wash systems were remapped by the District. The Pantano Wash at Colossal Cave Road was remapped through the development process.
- The District made further refinements to incorporate digital floodplain data into the County's GIS System.
- Efforts continued on the remapping of the Rillito River and the lower Santa Cruz River.
- Annual Community Rating System (CRS). The District has received a high community rating from the National Flood Insurance Program (NFIP) Community Rating System. This has resulted in a reduction in flood insurance costs to individual homeowners for an overall savings to the taxpayers of \$130,381 in 2003.

# CAPITAL IMPROVEMENT PROGRAMS

## Structural Improvements

Structural capital improvement projects are intended to reduce flooding and erosion by designing and constructing improvements to safely convey floodwater and protect channel banks from erosion.

Structural projects are typically a solution in areas that have already been built-out or protecting important infrastructure.

### **Santa Cruz River Bank Stabilization, Grant Road to Ft. Lowell Road**

The District, the Natural Resources Conservation Service (NRCS), Pima County Wastewater Management Department, the University of Arizona, and Arizona Department of Transportation combined their efforts to accelerate the bank protection and mainline sewer interceptor construction project from Grant Road to Ft. Lowell Road.



*Santa Cruz River Bank Stabilization.*

This area was subject to extensive lateral bank erosion, which threatened the I-10/ Miracle Mile interchange, the ADOT Maintenance Yard, the University of Arizona Agricultural Resource Center, Tucson Electric transmission line, Tucson Water's mainlines, two petroleum pipelines, two Southwest Gas pipelines, and commercial radio towers. The bank protection project provided 1.5 miles of soil cement bank protection along both banks of the Santa

Cruz River and sufficient freeboard above the 100-year water surface to satisfy FEMA regulations.

Construction of this \$9 million project began in November 2001 and was promptly completed by March 2003.

### **Fairview/Limberlost Drainage Improvements**

This is a joint project between the District and the City of Tucson providing a storm drain system that reduces flooding of single-family residences and manufactured homes west of Fairview Avenue and south of Wetmore Road.

Construction began in April 2002 and was completed in December 2002. The total cost of the project was \$1.89 million funded by the 1997 Bonds.

### **Arroyo Chico Detention Basins**

This \$27.5 million flood control project will protect residents and businesses in downtown Tucson by removing 220 residences from the 100-year floodplain. The USACOE has started the final construction plans and specifications to begin construction in August 2004.

### **Continental Vista Erosion Protection**

The District is designing improvements to reduce the flooding and erosion hazards within three major washes traversing Green Valley's Continental Vista subdivision. In addition, a new pedestrian bridge will be provided at the Green Valley Recreation Center. Construction is scheduled to begin in December 2003.

### **Mission View Wash**

Preliminary design continues on this project to mitigate downstream flooding including the construction of a regional detention basin east of Park Avenue and south of 36th Street.

### **Holladay/Forrest Drainage Improvements**

Drainage improvements are needed to eliminate repeated flooding of homes located northwest of the intersection of Mission and Drexel roads. The District has started the design, which includes a storm drain to convey flows to an existing drainageway along Mission Road.

### **Ajo Detention Basin Safety Improvements**

The District has started the design phase to make improvements to the Ed Pastor Environmental Restoration Project in response to safety related concerns noted by Pima County Risk Management.



*Ajo Detention Basin Safety Improvements.*

### **Shannon Road Drainage Improvements**

The Palmdale Mobile Home Subdivision was constructed in 1962. This subdivision has sustained long-standing drainage and ponding issues along Shannon Road creating a myriad of safety hazards and in general is a nuisance to the residents. The District is designing a new concrete drainageway next to Shannon Road, which will alleviate the ponding problems. Construction should begin in September 2003.



## ENVIRONMENTAL RESTORATION

Environmental restoration capital improvement projects are intended to protect and/or enhance riparian habitat and promote groundwater recharge, utilizing a combination of constructing structural improvements and planting native habitat.

### Paseo de las Iglesias Environmental Restoration Feasibility Study

This study is a cooperative effort by the USCOE and the District with input from the City of Tucson and other local stakeholders to provide ecosystem restoration, flood control improvements, and river park trail development in an area north of the Tohono O’odham San Xavier District to Congress Street. Methods being considered to implement a project include a variety of water harvesting features, irrigation, river bank terracing, and reestablishing native trees, shrubs and emergent wetland communities.

Restoration alternatives are being analyzed for biologic, hydrologic, and economic costs and benefits.



*Paseo de las Iglesias.*

### Tres Rio del Norte

The Tres Rios del Norte project is an environmental restoration study being conducted in cooperation with the USACOE, the Town of Marana, and the City of Tucson. The project area covers 18 miles of the Santa Cruz River from Prince to Sanders Road in northern Pima County. Proposed restoration efforts in this reach focus on capitalizing on available resources such as storm water runoff and effluent discharged from the Ina Road and Roger Road wastewater treatment facilities to enhance riparian habitat. Other features include channel stabilization projects, grade



*Tres Rios del Norte effluent pool.*

control structures to increase infiltration and widen the extent of the shallow groundwater table, a trail system, and ecoducts beneath I-10 and Silverbell Road to provide habitat connectivity between the Tucson Mountains, the Santa Cruz River and the Tortolita Fan area. The project is currently in the end phases of the feasibility stage.

### El Rio Antiguo

El Rio Antiguo is an ecosystem restoration study being conducted in cooperation with the USACOE. Goals of the project include



*El Rio Antiguo.*

habitat restoration, restoration of natural river functions, storm water harvesting, and providing passive recreational opportunities along the Rillito River between Craycroft Road and Campbell Avenue. The Feasibility Study phase began with a public meeting held in November 2001. The Feasibility Study report was completed in December 2003. The project is on schedule for the WRDA 2004 Federal Funding schedule.

### Rillito/Swan Wetlands

In conjunction with the USACOE, the District is preparing a feasibility study to determine the costs and benefits of developing wetlands and enhancing riparian habitat along a reach of the Rillito River. The Environmental Restoration Project is complete and staff is negotiating with the USACOE for the design of the recommended alternative.

### Marana High Plains Project

The water diverted from the Santa Cruz River nourishes the densest riparian patch along the effluent-dominated Santa Cruz River. Additional plantings of native trees and shrubs adjacent to the recharge basins broaden and extend the riparian corridor. This multipurpose project is partially funded by the Arizona Water Protection Fund and is operated in conjunction with the Town of Marana and the Cortaro-Marana Irrigation District. Stormwater harvesting is also used on the site, along with fencing to restrict cattle.

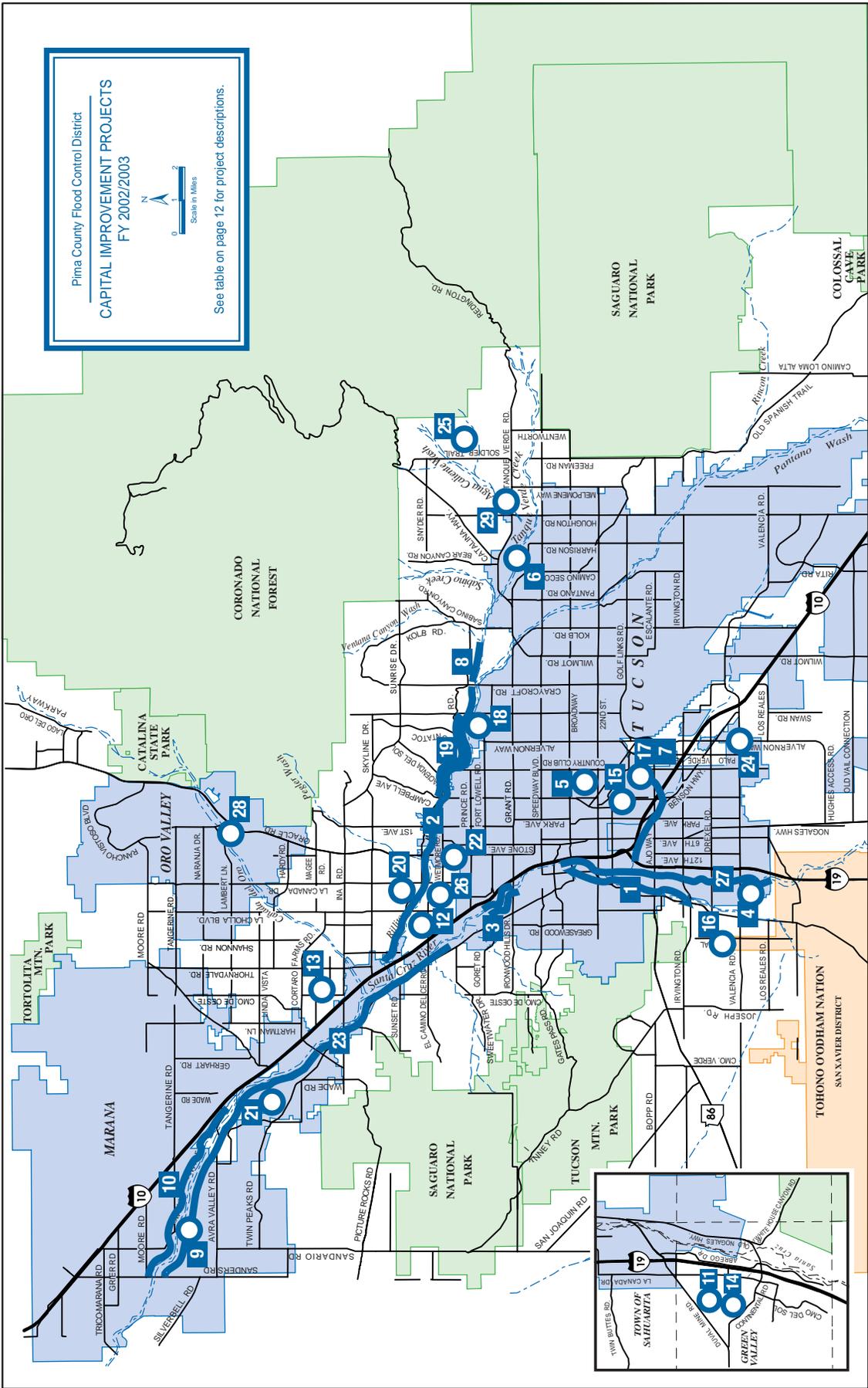
**CAPITAL IMPROVEMENTS PROGRAM**  
**Project Specific Expenditures**  
**Fiscal Year July 1, 2002 – June 30, 2003**

Project	Planning	Design	ROW Acquisition	Construction Cost	Other	Project Total
1 El Rio Medio	171,917	65,598	0	1,451	433	243,399
2 Rillito Creek Bank Stabilization (River Park)	37,075	0	1,901	0	1,122	40,098
3 Santa Cruz River Bank Stabilization, Grant Road to Ft. Lowell Road	5,689	22,541	59,634	716,650	3,367	807,881
4 Santa Cruz River, Valencia to Irvington	524	0	0	0	0	524
5 Arroyo Chico Detention Basin	0	105,673	7,361	10,601	2,388	126,023
6 Tanque Verde Creek at Castle Rock	0	0	0	0	0	0
7 Ajo Detention Basin Expansion	0	278	715	0	43	30,283
8 Tanque Verde Creek, Craycroft to Sabino Canyon Road	3,271	22,230	3,338	0	1,444	81,531
9 Northwest Replenishment Project (High Plains)	39,135	3,078	0	30,403	8,915	9,859
10 Lower Santa Cruz Flood Control Levee	362	0	0	2	9,495	9,860
11 Green Valley Drainageway #9	0	2,690	0	4,550	1,048	8,288
12 Shannon Road, Palmdale Subdivision	0	85,758	0	86	4,567	90,411
13 Massingale Detention Basin	0	25,079	0	0	0	25,079
14 Continental Vistas Erosion Protection	10,961	80,748	61,519	397	3,369	156,994
15 Mission View Wash	0	59,824	0	0	0	59,824
16 Holladay/Forrest Drainage	2,270	25,038	18,637	0	400	46,345
17 Ajo Detention Basin-Wetlands	958	48,494	2,462	22,345	314	74,573
18 Rillito Creek/Swan Wetlands	9,505	1,199	0	168	606	11,478
19 Rillito Creek Environmental Restoration (El Rio Antiguo)	146,698	220,065	36,630	9,328	0	412,721
20 Rillito Creek Linear Park at Casas Adobes Wash	1,697	0	0	0	0	1,697
21 Cortaro Mesquite Bosque	32,788	8,358	0	0	5,665	46,811
22 Fairview Limberlost Drainage Improvements	0	898	5,791	1,077,801	316	1,084,897
23 Tres Rio del Norte	70,951	205,548	17,943	1,279	0	295,721
24 City of Tucson Drainage Improvements Earp Wash	1,667	79,333	6,774	148	0	87,922
25 Agua Caliente Park Restoration	54,923	3,963	0	0	7,984	66,870
26 McClelland River Park	0	0	0	14,427	0	14,427
27 Paseo de las Iglesias	131,201	263,343	8,756	3,417	1,557	408,274
28 Town of Oro Valley Drainage	1,353	2,987	0	297,500	0	301,840
29 Agua Caliente Wash at Tanque Verde Road	28,056	8,530	2,608	0	10,490	49,684
Floodprone Land Acquisition	28,621	0	2,434,530	60,850	38,386	2,562,387
<b>TOTAL</b>	<b>779,631</b>	<b>1,345,253</b>	<b>2,668,599</b>	<b>2,251,403</b>	<b>101,909</b>	<b>7,146,795</b>

Pima County Flood Control District  
**CAPITAL IMPROVEMENT PROJECTS**  
 FY 2002/2003

Scale in Miles  
 0 1 2

See table on page 12 for project descriptions.



# DISTRICT FINANCES

## Revenues

Although the District receives assistance from state and federal agencies to construct major capital facilities, most of the District's funding is generated from the property tax levy, along with general obligation bond sales authorized by the electorate.

Information on the District levy rate is shown in the table at right.

## United States Army Corps of Engineers (USACOE)

In addition to direct cash received from the federal government, the District received monies for in-kind service from the USACOE. Some projects under our cost share financial agreement are as follows:

El Rio Medio	\$170,000
Arroyo Chico	450,000
Paseo de las Iglesias	750,000
El Rio Antiguo	500,000
Tres Rios del Norte	900,000
<b>TOTAL</b>	<b>\$2,770,000</b>

## Expenditures

The table on page 12 provides information on capital project expenditures for FY 2002/03. Project numbers shown in the table correspond to the projects shown on the map on pages 13. The remainder of District expenditures goes toward debt services and operating expenses, which include funds allocated for maintenance of flood control structures, floodplain management, planning, and administration activities. A detailed breakdown of the District's finances is provided on page 15.

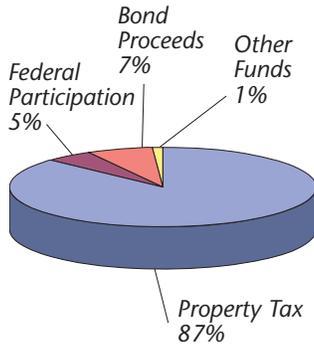
Flood Control District Tax Levy Rate 1981 to 2003		
Fiscal Year Ending	Levy Rate*	Tax Revenue**
1981	0.5143	\$4,637,000
1982	0.4683	\$5,342,000
1983	0.5072	\$6,882,000
1984	0.4739	\$7,652,000
1985	0.5269	\$9,243,000
1986	0.5102	\$9,969,000
1987	0.5346	\$11,713,000
1988	0.7630	\$17,272,000
1989	0.5592	\$13,730,000
1990	0.5985	\$14,663,000
1991	0.5985	\$14,058,000
1992	0.5871	\$13,689,000
1993	0.5871	\$13,767,000
1994	0.5398	\$12,678,000
1995	0.4623	\$11,379,000
1996	0.3596	\$9,368,000
1997	0.3596	\$9,467,000
1998	0.3296	\$10,392,000
1999	0.3246	\$10,411,000
2000	0.3046	\$10,327,151
2001	0.3046	\$10,414,427
2002	0.3546	\$13,713,102
2003	0.3546	\$14,467,389

\* Per \$100 assessed valuation

\*\* Unaudited

# FINANCIAL HIGHLIGHTS FOR FISCAL YEAR 2002/2003

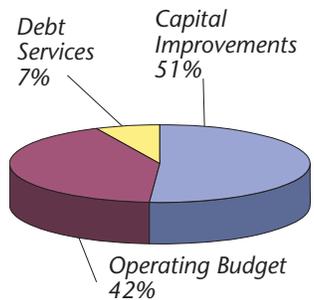
## Revenues



Property Tax, Flood Control District	87%
Federal Participation	5%
Bond Proceeds	7%
Other Funds	1%
<b>Total Revenue</b>	<b>100%</b>

The primary source of revenue is the District's secondary property tax levy of \$0.3546 per \$100 of real property asset valuation. In 2002-03, the District received approximately \$14.5 million in tax levy revenue. Other local sources of revenue include revenues for capital improvement from the sale of general obligation (GO) bonds (\$1.2 million) and reimbursements for other funds (\$0.4 million). Federal aid and Arizona state grants are an additional potential source of revenue, with the District receiving \$0.8 million in state and federal aid in FY 2002-03. Total revenue from all sources in FY 2002-03 was \$16.6 million.

## Expenditures



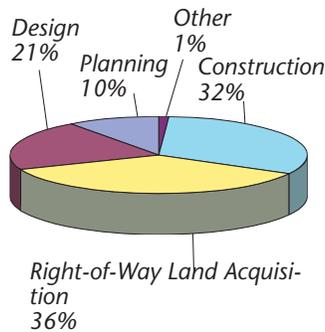
Capital Improvements	51%
Operating Budget	42%
Debt Service	7%
<b>Total Expenditures</b>	<b>100%</b>

For FY 2002-03, the total expenditures for the District was approximately \$13.9 million. The Capital Improvement Program expenditures of \$7.1 million in direct capital expenses. The annual operating budget for the District was approximately \$5.8 million. The other significant expenditure was \$1.0 million in debt service for flood control bonds.

*Fiscal Year 2002/03 unaudited amounts. Annual audits conducted by State Auditor General.*

## BREAKDOWN OF EXPENDITURES

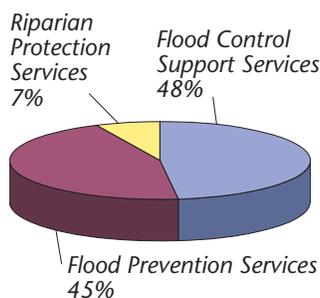
### Capital Improvements



Planning	10%
Design	21%
ROW Acquisition & Improvements	36%
Construction	32%
Other	1%
<b>Total Capital Improvements</b>	<b>100%</b>

The expenditures for capital improvements include engineering service costs for planning and design; construction costs; right-of-way acquisition costs; and other costs such as costs to prepare new FEMA Flood Insurance Maps once a capital project is completed.

### Operating Budget



Flood Control Support Services	48%
Flood Prevention Services	45%
Riparian Protection Services	7%
<b>Total Operating Expenses</b>	<b>100%</b>

The District's operating budget includes administrative, personnel, supply and service costs associated with the District's services for Flood Control Support, Flood Prevention and Riparian Protection. Flood Control Support Services include programs such as customer service, permits, public education, and financial management. Flood Prevention Services include maintenance, flood warning, emergency preparedness, and enforcement activities. Riparian Protection Services include the environmental restoration, water resources and riparian habitat management programs.

# COORDINATION WITH OTHER AGENCIES

## PIMA COUNTY DEPARTMENT OF TRANSPORTATION

The District contracts with Pima County for services from divisions within the Department of Transportation:

- Field Engineering Division
- Maintenance Operations Division
- Real Property Division
- Technical Services Division
- Administrative Services Division

## OTHER PIMA COUNTY DEPARTMENTS

The District cooperates with other Pima County Departments on various projects and exchanges information as needed:

- County Attorney's Office
- Development Services Department
- Department of Environmental Quality
- Health Department
- Natural Resources, Parks and Recreation Department
- Real Property
- Tucson-Pima County Office of Emergency Management
- Wastewater Management Department (WWM)

## LOCAL GOVERNMENTS

The District has entered into intergovernmental agreements (IGAs) to provide specific flood control or floodplain management services to, or to jointly fund flood control activities with, the following:

- City of Tucson
- City of South Tucson
- Town of Oro Valley
- Town of Marana
- Town of Sahuarita

## PIMA ASSOCIATION OF GOVERNMENTS (PAG)

PAG facilitates coordination among local government agencies, including the District, on environmental matters affecting the community.

## STATE AGENCIES

The District coordinates activities with the following state agencies:

- Arizona Department of Water Resources (ADWR)
- Arizona Department of Environmental Quality (ADEQ)
- Arizona Game and Fish Department (AGFD)
- Arizona State Land Department

## FEDERAL GOVERNMENT

Several federal agencies participate in local flood control projects, as listed below:

- U. S. Army Corps of Engineers (USACOE)
- Federal Emergency Management Agency (FEMA)
- Federal Highway Administration (FHWA)
- U. S. Bureau of Reclamation (USBR)
- U. S. Natural Resources Conservation Service (NRCS)
- National Weather Service (NWS)
- U. S. Geological Survey (USGS)
- U. S. Fish and Wildlife Service (USFWS)

## NONGOVERNMENT ORGANIZATIONS

Other nongovernmental agencies that the District works with include:

- The Nature Conservancy (TNC)
- Cortaro-Marana Irrigation District (CMID)
- Central Arizona Water Conservation District (CAWCD)
- Metropolitan Domestic Water Improvement District (MDWID)
- University of Arizona (UA)



*Santa Cruz River, Grant Road to Ft. Lowell Road, under construction.*



*Santa Cruz Levee near Avra Valley Road completed.*



*Continental Vista project bridge placement.*





Prepared by  
Pima County Flood Control District



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