



PIMA COUNTY

FLOOD CONTROL

PIMA COUNTY

Comprehensive Program Report July 2011 - June 2016

**Prepared for the Pima County Board of Supervisors
Sitting as the
Flood Control District Board of Directors**

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EXECUTIVE SUMMARY

The Pima County Regional Flood Control District (District) has prepared this Comprehensive Program Report (Report) for the Board of Directors (Board) to provide information as required by Arizona Revised Statutes (ARS) Chapter 48-3616. The District is required to survey existing flood control problems and facilities, and prepare a Report. This Report presents the last five years of activity including capital projects, program and process improvements, as well as significant flood events, and serves to identify future program needs. This Report meets State of Arizona enabling legislation requirements as well as Floodplain Management Planning requirements of the National Flood Insurance Program (NFIP) Community Rating System (CRS). Annual budget approval processes include hearings that meet statutory requirements for Capital Improvements Projects (CIP). Updates to this plan will include completed and approved CIP along with annual programmatic needs identified in annual reports.

This Report describes the purpose and previous plans as defined by State of Arizona Statute. In addition to required description of past and future activities, the Report also describes the sources of flooding including weather patterns, historic floods, the unique flood hazards of the Sonoran Desert, and an overview of development patterns. Next, the Report provides detailed analysis of hazard exposure including people and structures and insurance needs. For the first time, credited CRS activities provide the organization for the description of District programs and activities to address flood hazards, whereas District organization had provided the outline previously. Lastly, the Report summarizes successes and needs including capital improvements and other future action items.

Decades of aggressive capital construction along regional watercourses as well as numerous regional detention basins to mitigate flooding through the urban core have repeatedly demonstrated the effectiveness of District work completed to date. Current capital needs largely consists of ongoing maintenance of existing infrastructure, and the outstanding needs on smaller watersheds in the urban area.

Maintenance of channel capacity in constructed watercourses shall remain a high priority. The District has undertaken significant studies of aggradation with a continued emphasis on updating corresponding floodplain maps. The District and its stakeholders are also renewing efforts to engage the public and their representatives in understanding the risks, management, and mitigation practices associated with floodwater.

1.0 INTRODUCTION

The District is a special taxing authority responsible for regional flood control established under Arizona Revised Statutes (A.R.S.) Title 48, Chapter 21, and is responsible for providing regional flood prevention programs and flood control services for incorporated and unincorporated areas of Pima County.

1.1 Purpose and Scope

This Report describes current District programs, services and plans to provide comprehensive flood and erosion control, protection and restoration of riparian habitat, and promotes increased groundwater recharge within floodplains. Emphasis in this report is on projects undertaken during FY 2011/12 through FY 2015/16. A description of previous Reports is included below.

This Report has been prepared primarily, to fulfill the requirements of A.R.S. 48-3616. Additionally the NFIP CRS also requires the preparation of a program plan and report at least every five years. Therefore, in addition to providing formal documentation of District activities over the noted five-year period, while also identifying future program needs. Additional documents incorporated herein by reference address federal NFIP requirements. These include:

- The Pima County Multi-Hazard Mitigation Plan (HMP) that meets the NFIP requirement for a Floodplain Management Plan.
- The Design Standards for Stormwater Detention and Retention that meets the NFIP requirement for a Watershed Management Plan.
- The Sonoran Desert Conservation Plan that meets the NFIP requirement for a Natural Floodplain Functions Plan.

This report includes the NFIP Repetitive Loss Area Analysis, Flood Insurance Assessment/Coverage Improvement Plan and Program for Public Information (PPI). Lastly, the Pima County Comprehensive Plan adopted by the Board in June of 2015 establishes a goal to create a Watershed Management Plan. Over the next five-year period, the District plans to initiate a formal public Floodplain Management Plan updated process using this Report as the starting point.

1.2 Process and Organization

This Report differs from prior Reports in both the process used to create it and in its organization. Departmental organization provided the framework of prior Reports, and now begins the transition to a Floodplain Management Plan by organizing program efforts by type and goals, regardless of department.

In order to accomplish this, the Report is organized as follows. Chapter 2 identifies regional flood hazards associated with the unique basin and range geomorphology of the Sonoran Desert and sky islands that generally define Pima County watershed characteristics as well as the intersection of floodplains and development. Chapter 3 describes the natural and developed watershed characteristics including habitat, land ownership, land use and demographics on a countywide basis. Chapter 4 identifies flood hazard exposure including general population distribution, critical facilities and insurance coverage. This chapter also expands on prior Reports by including the new CRS requirement for an insurance assessment and cross-referencing the hazard exposure components of the Floodplain Management Plan and Multi-Jurisdictional Hazard Mitigation Plan (HMP). Chapter 5 describes District programs and activities and contains information included in prior Reports. In order to start the transition to discussing floodplain management strategy on a watershed basis, this Report identifies different flood risk reduction approaches including avoidance, capital improvements, regulation and education that will be applied to specific watersheds in the future Floodplain Management Plan report. Chapter 6 summarizes program effectiveness and identifies future needs. Chapter 7 describes recommendations and approval through updated processes.

1.3 Previous Plans

Completed one year after the District formed, the 1979 Comprehensive Status Report discussed the status of ongoing flood control projects and identified future needs. The 1990 Comprehensive Program Report was the first comprehensive documentation of District activities, discussing all aspects of District programs from 1978 through 1990. Additionally in 1990, the District first participated in the CRS. Completion of the first Pima County Floodplain Management Plan Synopsis occurred as part of this process and subsequent reports have summarized activities conducted during the reporting period. In 2007, to implement the requirements of the Stafford and Disaster Mitigation Act of 2000 and better prepare local governments to mitigate and respond to hazards including flooding, the first HMP was completed. The HMP effort resulted in acceptance by Federal Emergency Management Agency (FEMA) as an NFIP compliant Floodplain Management Plan In 2012.

Flooded roads create travel hazards during rainfall.



2.0 REGIONAL FLOOD HAZARDS

2.1 Weather Patterns

Flood producing storms in Pima County typically fall into one of two types: summer monsoon thunderstorms and winter mesoscale storms.

Summer monsoon storms are highly convective systems that produce intense rainfall over relatively small areas. Monsoon storms are more likely to trigger flood events on watercourses with a watershed of <math><1\text{ mi}^2</math> in size, particularly later in the monsoon season when antecedent soil moisture is higher. Monsoon storm flooding is short-lived and may affect an area suddenly in the form of a flash flood.

These floods tend to be of short duration, but high intensity. Furthermore, monsoon rainfall may affect just one watershed. In most years, the annual peak flow will occur on different days at different gauging stations. However, a storm event in the Santa Catalina Mountains on July 31, 2006 produced over 200 debris flows and resulted in significant flooding on watercourses ranging from the upper watersheds in the Catalina foothills all the way to the Santa Cruz River.



Intense downpours create localized impacts.

Winter mesoscale storms, which includes tropical storms, generally originate in the Pacific Ocean and produce bands of precipitation over a period of days. Precipitation characteristics create floods that build slowly and may last for days or weeks. In general, the largest floods on the Santa Cruz River have occurred due to tropical storms that come up from the Sea of Cortez in the fall season. Though characterized by low rainfall intensity, these long duration storms yield the high volumes of water necessary to saturate watersheds and produce significant flow events on the major watercourses.

In October 1983, Tropical Storm Octave produced the flood of record on the Santa Cruz River. Between 6 ½ to 7 ½ inches of rain fell across the area with a five day period, and caused \$106M in



damage in Pima County with more than a dozen people dying. Pima County also experiences frontal systems that can provide more sustained flow durations, though flood peaks tend to remain low. Winter frontal systems may also produce rain on snow flood events in January to March.

Hikers trapped by a flash flood in Sabino Canyon.

2.2 Flash Floods

Flash floods are generally associated with summer monsoon thunderstorms. Several factors make flash floods a challenging hazard to mitigate:

- 1) Real-time precipitation gages may miss storm cells that are small in aerial extent or may not capture the most intense portion of a storm cell. As a result, a storm that is large enough to cause flash flooding may escape detection by the rain fall-monitoring network.
- 2) Extreme rainfall intensities can generate runoff that reaches peak flow in periods measured in minutes, providing little to no ability to provide the public with a warning about any specific event.
- 3) Flash floods often occur on watercourses that do not have stream gages. Placing stream gages on all watercourses is cost prohibitive and technically unfeasible.
- 4) The leading edge of the flood may extend miles below the storm event that created it, flooding an area that may have received no rainfall and may not have even been cloudy, thus catching individuals completely unaware of the threat.

Due to the unpredictability of flash flooding, flood threat recognition and streamflow, early warning is limited to general, area-wide watches and warnings. These warnings require individuals to make wise decisions by staying away from washes and avoiding flooded roadway crossings.



Motorists may underestimate the force of water and require rescue.

2.3 Sheet Flooding and Alluvial Fans

Sheet flow flooding is a phenomenon unique to watersheds with low topographic relief and a severe lack of adequate channel flow conveyance. The lack of defined drainage channels often deceive the public into thinking that there are no flood hazards in the area. Sheet flow flooding may develop quickly, but the duration of sheet flow flooding may extend more than 24 hours where slopes are particularly shallow or watersheds are large. Roadways, walls and other minor improvements may distribute or concentrate flow, creating unpredictable flood conditions. Private roadways not designed for all weather access are common in these areas of Pima County, and as a result in combination with the widespread nature of sheet flow flooding, the ability of residents and emergency services to gain safe or reliable access to and from the affected area is often limited during times of flooding.



While elevated on a stem wall, sheet flooding has isolated this home and damaged vehicles.

Alluvial fans create a special type of floodplain that has characteristics that are similar to sheet flow floodplains. Alluvial fans occur below mountain fronts and consist of an accumulation of sediment carried out of the mountains via riverine flow. At the margin of the mountain front, flow containment is lost and floodwaters spread out across the alluvial fan. Alluvial fans may have better defined channels or flow corridors than other sheet flow floodplains, but they are not large enough to convey large storm events and, due to their location below the break in slope, channels often aggrade and lose capacity. Since alluvial fans often consist of poorly consolidated alluvium, the loss of channel capacity in existing channels leads to the creation of new channels or the reestablishment of old channels. This characteristic of alluvial fans leads to significant uncertainty with respect to the location and severity of flood flows. Unconsolidated soil conditions also put structural improvements at increased risk of erosion related damage. The combination of severe, directed flow at uncertain locations, unconsolidated soils and the likelihood of flash floods in this environment results in potentially extreme and unpredictable flood and erosion hazards.

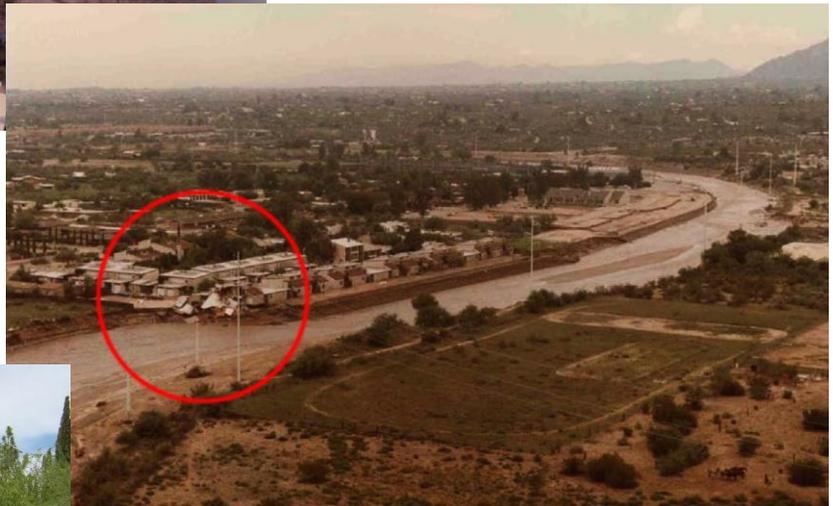
2.4 Erosion Hazards

The vegetation characteristics of Pima County's arid environment, combined with anthropomorphic alterations to the landscape, create conditions that promote the lateral migration of watercourses. Erosion along major watercourses resulted in some of the most dramatic flood damage in recent history. For this reason, Pima County does not allow new construction within erosion hazard areas unless structural protections are in place. Furthermore, the District's CIP has historically focused on providing erosion protection and open space along major watercourses where the threat of lateral migration is the most severe.



migration is the most severe.

Bridge and homes lost to erosion in 1983.

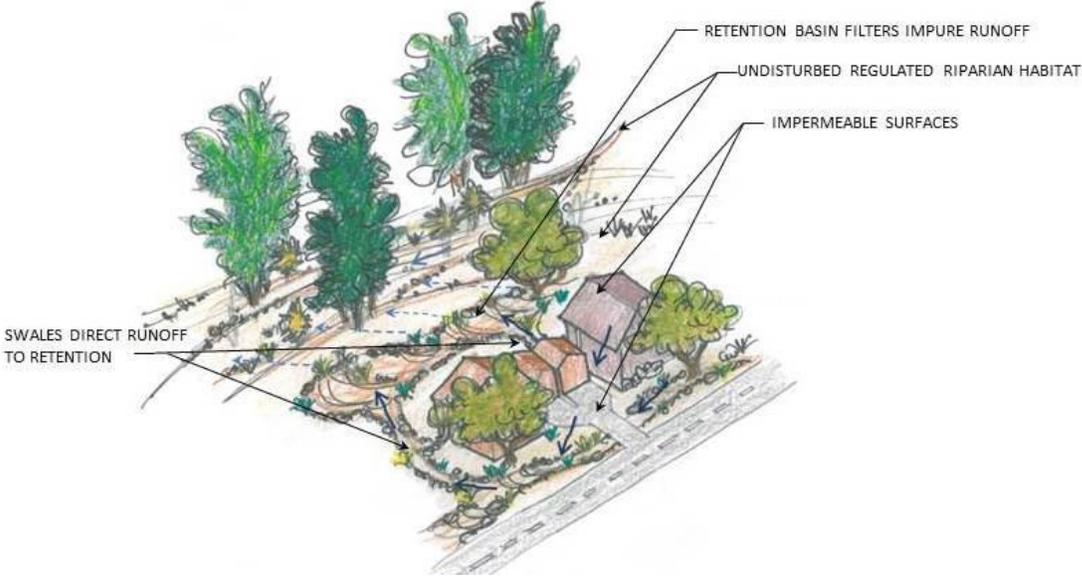


Bank collapse and channel migration continues to threaten homes along desert washes with natural banks.



2.5 Functions of Natural Floodplains

Natural floodplains benefit the community by reducing flood and erosion hazards, improving water quality, increasing groundwater recharge and providing biological corridors for plants and wildlife to thrive, all providing a public health, safety, and economic benefit to the citizens of Pima County. To the greatest extent possible, the District promotes maintaining the natural functions of floodplains over structural measures to control flooding.



The benefits of maintaining natural floodplains goes beyond conveying flows safely and includes filtering, slowing and attenuating flows, contributing to recharge, and help support habitat amenities. Even when floodplains are no longer natural, the District promotes restoring and enhancing these functions using Green Infrastructure (GI) and Low Impact Development (LID) methods, when feasible.



A natural section of the Rillito River.

2.6 Historic and Future Flood Hazards

Flood events of limited aerial extent occur at least every few years in Pima County. These floods may not affect many people, but the effects of these floods within the impacted area may be severe. Floods on the major watercourses occur approximately once every 10 years. Historically, these floods had a significant impact on the community; however, flood and erosion hazard improvements within the urban core have been successful at reducing the hazards to the public from large flood events on the major watercourses and many minor watercourses. Mitigation includes the installation of bank protection to prevent lateral migration and damage to bridges and adjacent development. In addition, improved regulations of development, including elevating structures above the base flood, establishing foundation requirements, protecting structures from erosion hazards and protecting natural floodplains has ensured that new development is more flood resilient than was previously the case.



Channelization has facilitated development along the major river corridors in urban areas.

Significant flood risks still remain in Pima County. Developed areas away from the urban core often lack drainage infrastructure or large-scale planning to account for flooding. These areas will continue to have access issues due to the presence of dip sections and the large number of non-publicly maintained roads. The urban wildland interface will continue to be at risk to extreme storm events

and the effects of future wildfires. Events of greater magnitude than the base flood would likely overwhelm existing infrastructure designed for the base flood.

2.7 Floodplains and Development

In addition to studies updating FEMA designated floodplains, the District has been actively delineating new locally mapped floodplains in a continual effort to improve management of floodplain development to create a more flood resilient community. Figure 1 on the following page shows a map of the locations of studies completed during the latest annual NFIP certification. The District also requires developers to delineate floodplains within project boundaries. Because of these mapping efforts, the aerial extent of local floodplains within Pima County far exceeds the extent of Special Flood Hazard Areas (SFHA). In addition to elevating structures at least one foot above the base flood elevation and protecting structures from the lateral migration of watercourses, the District has made significant advances in protecting structures from erosion hazards due to local scour by establishing minimum requirements for building foundations for structures placed in regulatory floodplains. Protection of natural floodplain functions and the acquisition of floodprone land further reduces development pressure on some of the most hazardous areas, further increasing the flood resilience of Pima County.

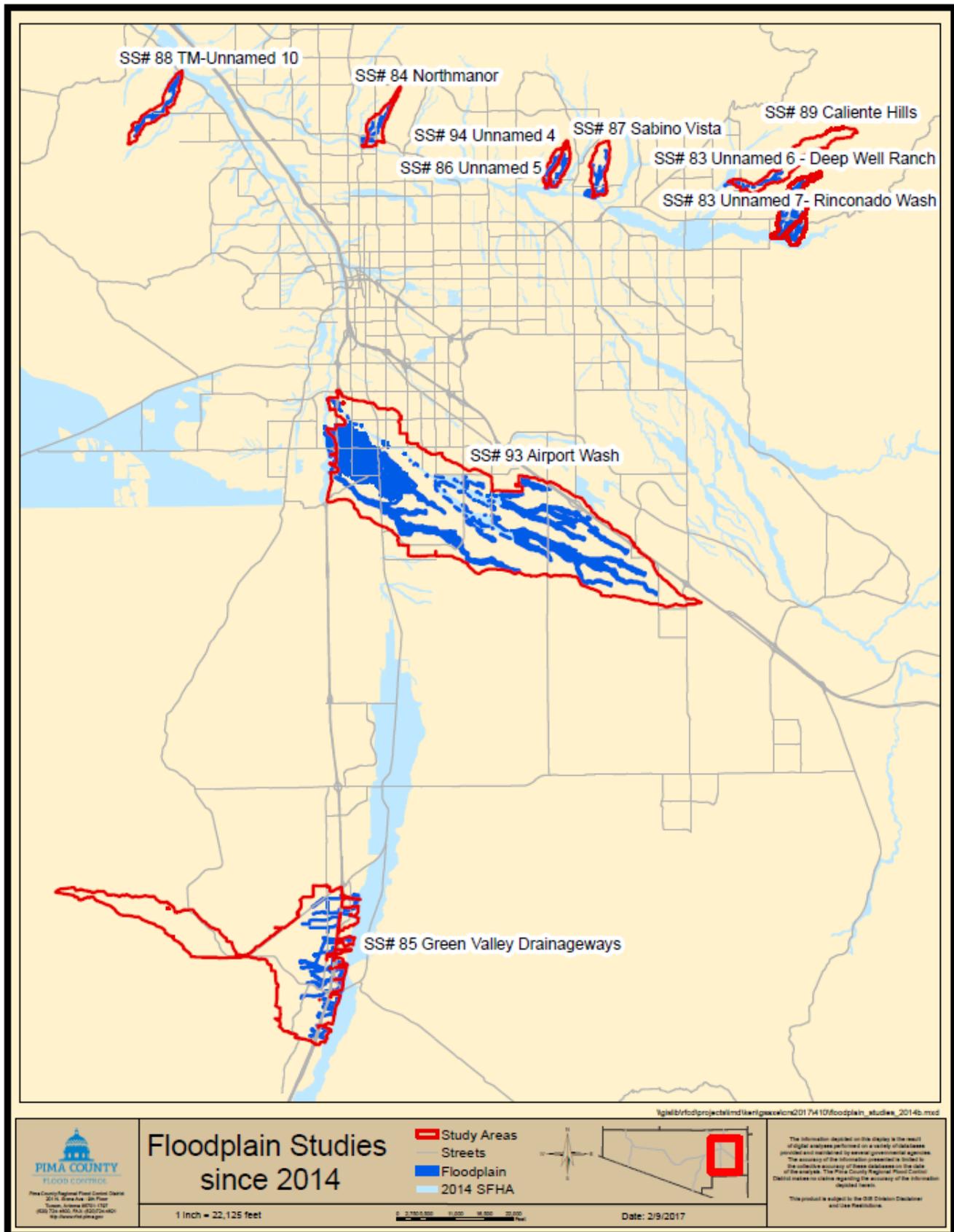


Figure 1 - Annual NFIP Certification Submittal Special Studies Map

3.0 GENERAL WATERSHED CHARACTERISTICS

With 9,184 square miles and almost 8,000 feet of vertical relief, Pima County drainages, landscape and uses of land vary greatly. This section describes the broad scale landscape features associated with watersheds affecting Pima County including the natural and built environment.

3.1 Natural Environment

Very wide alluvial basins and steep linear mountain ranges, referred to as Sky islands, characterize



Avra Valley & the Baboquivari Mountains

Pima County. Though located in southern Arizona in the Sonoran Desert biome, the presence of tall mountains means that the county is home to several types of forest in addition to desert scrub and grasslands. On the Sky Islands above roughly 6,500 feet, there are pine and fir forests that are more typically associated with the high latitudes in Canada. The middle elevations, between 3,500 and 6,500 feet are primarily Madrean evergreen forest, often associated with the Sierra Madre Occidental, consisting of Black Oaks and Alligator Juniper as well as Arizona Ash, Canyon Hackberry, occasional

Cottonwood and Sycamore groves, and semi-arid grasslands. Alluvial fans forming above the valley floor are common at the margins of mountains. Bajada is an area where two or more alluvial fans connect. Bajadas consist largely of Chihuahuan Scrub and Sonoran Desert habitat. Desert plants that thrive in these areas includes Saguaro and a wide variety of cacti; trees such as Mesquite, Palo Verde and Ironwood; along with significant shrub and seasonal undergrowth.

Generally, the lowest elevations of Pima County are broad, relatively flat geologic floodplains associated with the major watercourses including the Santa Cruz River, Rillito River, Pantano, Black, Brawley, Avra Valley, Aguirre Valley, San Simon and Santa Rosa washes are relatively flat. Additionally, the soils are silty sand, and creosote flats, scrub mesquite with larger specimen trees and cactus along the low flow channels and arroyos, characterize the vegetation.



Cienega Creek and the Rincon Mountains

In addition to a unique flora found nowhere else in the United States, the Sonoran Desert is also home to unique and diverse fauna including; Jaguar, Mountain Lion, Bobcat, Javelina, Coati, Ringtail Cat,

Jaguarundi, Coyote, Pronghorn, Gila Monster, Crested Caracara, Pygmy Owl, Bell's Vireo and many intriguing desert insects. Major continental migrations of hummingbirds and butterflies rely on the land bridge and ecological connectivity created by the Sky Islands and high desert grasslands and Madrean Evergreen Forest located between the Rocky Mountains and Sierra Madre Occidental. This wealth of biodiversity contributes greatly to the quality of life in Pima County.



Illustration of species diversity from the Sonoran Desert Conservation Plan.

3.2 Basin and Range Geohydrology

As with plant life, flood risk varies with elevation, soils, slope and aspect. Flows at higher elevations above 6,500 feet attenuated by forest vegetation, floodplain storage and infiltration, reappear in springs at lower elevations, often where the bedrock escarpment meets the alluvial fans and bajadas. Flows are occasionally significant enough to travel from higher elevations all the way onto the valley floor. Vegetation changes created by drought and fire can greatly increase rainfall runoff from upper watersheds. Much of the higher elevations of Pima County are within National Forests where management reflects recreational and extractive industry demands as well as fire control.

Flows originating from above or within bajadas often occur as flash floods in canyons and incised washes exiting the mountain front. These floods include swift water and high debris loads, making them one of the most significant flood risks in Pima County. Sediment and debris deposited when flows reach shallower slopes causes flows to take unpredictable paths, increasing the difficulty of managing flood risk in these areas. These foothills or canyon washes include; the Agua Caliente, Soldier Canyon, Tanque Verde, Cañada Agua, Campbell, Finger Rock, Cañada del Oro, Sweetwater, and Camino de Oeste, to name just a few.

Most development occurs within the valley bottoms where risks are related to widespread flooding from regional watercourses, lateral channel migration and maintaining all-weather access. All-weather access is especially a problem in rural areas, where widespread sheet flow flooding and unimproved roads create conditions that hinder travel. Bank failure, channel migration, and sediment deposition are the main risks and opportunities within the urban core, such as along the Rillito River, Pantano Wash and Santa Cruz River.

potentially combine to reduce the availability of water while also increasing the potential for catastrophic flooding and erosion.

In recognition of the significance of the remaining riparian habitat, Pima County has identified Regulated Riparian Habitat (RRH) and Important Riparian Areas (IRA) as the highest preservation priority within the Sonoran Desert Conservation Plan and Maeveen Behan Conservation Lands System (CLS), and has adopted a set of Regulatory Riparian Classification Maps and Riparian Habitat Mitigation Guidelines. Most of this habitat coincides with SFHA and other locally mapped floodplains. In the absence of a floodplain study, riparian habitat is a good indicator that flood hazards may exist and provides an opportunity to evaluate potential risks during the development review process.

It is widely recognized that maintaining floodplains in their natural condition, including healthy riparian habitat, can be a cost-effective way to reduce flood risk when compared to engineered structural controls intended to remove land from the floodplain in order to facilitate development. FEMA has recognized this by greatly increasing the weighted value of natural floodplain protection within the NFIP CRS described in Chapter 4. However, it can be difficult to maintain natural functions on small sites with few options.

3.5 Natural and Beneficial Functions of Floodplains

The CRS that is the foundation of the District’s work, recognizes the following natural and beneficial functions:

Water Resources

- *Natural Flood and Erosion Control*
 - Provide flood storage and conveyance,
 - Reduce flood velocities,
 - Reduce peak flows, and
 - Reduce sedimentation and erosion.
- *Water Quality Maintenance*
 - Filter nutrients and impurities from runoff,
 - Process organic wastes,
 - Moderate temperature fluctuations, and
 - Reduce sediment load in flood waters.
- *Groundwater Recharge*
 - Promote infiltration and aquifer recharge, and

- Reduce frequency and duration of typical surface flows.

Biological Resources

- *Biological Productivity*
 - Rich alluvial soils promote vegetative growth,
 - Maintain biodiversity, and
 - Maintain integrity of ecosystems.
- Fish and Wildlife Habitats
 - Provide breeding and feeding grounds,
 - Create and enhance waterfowl habitat,
 - Provide connectivity between plant and animal communities, and
 - Protect habitats for rare and endangered species.



As noted above, riparian habitat is particularly significant in the Sonoran Desert basin and range geography. In this environment, runoff generated in the steep rocky mountain ranges recharges the aquifer along major valley bottom watercourses where alluvium is deep, while perched aquifers and other shallow water tables provide the groundwater to the canyon gallery oases that are so important.

3.6 Developed Environment

Population and residential development have steadily grown in Pima County throughout the past several years. The 2013 American Community Survey (ACS) population estimated 996,554 residents, of which over 350,000 reside in unincorporated areas. The Pima Association of Governments (PAG) projects Pima County's population to increase to 1.45 million by 2041.

This population growth led to both rural and suburban development within the region, with much of this development occurring in the urban fringe areas, creating an expanded urban area. Recent development trends have also focused on infill within the urban area primarily along the major watercourse corridors.



3.7 Land Ownership

Native American communities own nearly half of the land throughout Pima County. The Pascua Yaqui reservation is 1.87 square miles and is located southwest of the City of Tucson. Most of the 4,453 square mile Tohono O’odham Nation lies within Pima County. Figure 2 shows land ownership as a percentage of all land in Pima County.

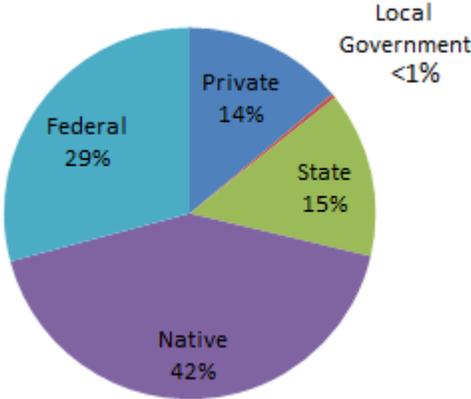


Figure 2 - Pima County Land Ownership (Source: Pima County GIS Library)

Another 29 percent of Pima County is federal land. The largest areas of federally managed land are the Cabeza Prieta National Wildlife Refuge, National Forest Service, and the Organ Pipe National Monument. Both the Cabeza Prieta Refuge and Organ Pipe National Monument are located in the west of the Tohono O’odham Nation and surround the small rural communities of Why and Ajo. The Coronado National Forest is in the eastern portion of Pima County adjacent to the urbanized area, and is more heavily used.

The State of Arizona controls another sizeable portion of Pima County through the Arizona Game & Fish Department, State Parks, and State Trust lands. The Arizona State Land Department issues leases for a variety of uses including grazing, mining and beekeeping. Permits are also available for camping, hunting and off-road vehicles. The Arizona State Land Department periodically sells to private owners for development.

The District owns 12,759 acres, which has been purchased through the Floodprone Land Acquisition Program (FLAP) or has received a donation from conservation-minded owners.

The bulk of privately owned land is concentrated within the low-lying urban areas, as well as in the urban fringe areas. The map below from the Sonoran Desert Conservation Plan (SDCP) shows the land ownership in Pima County.

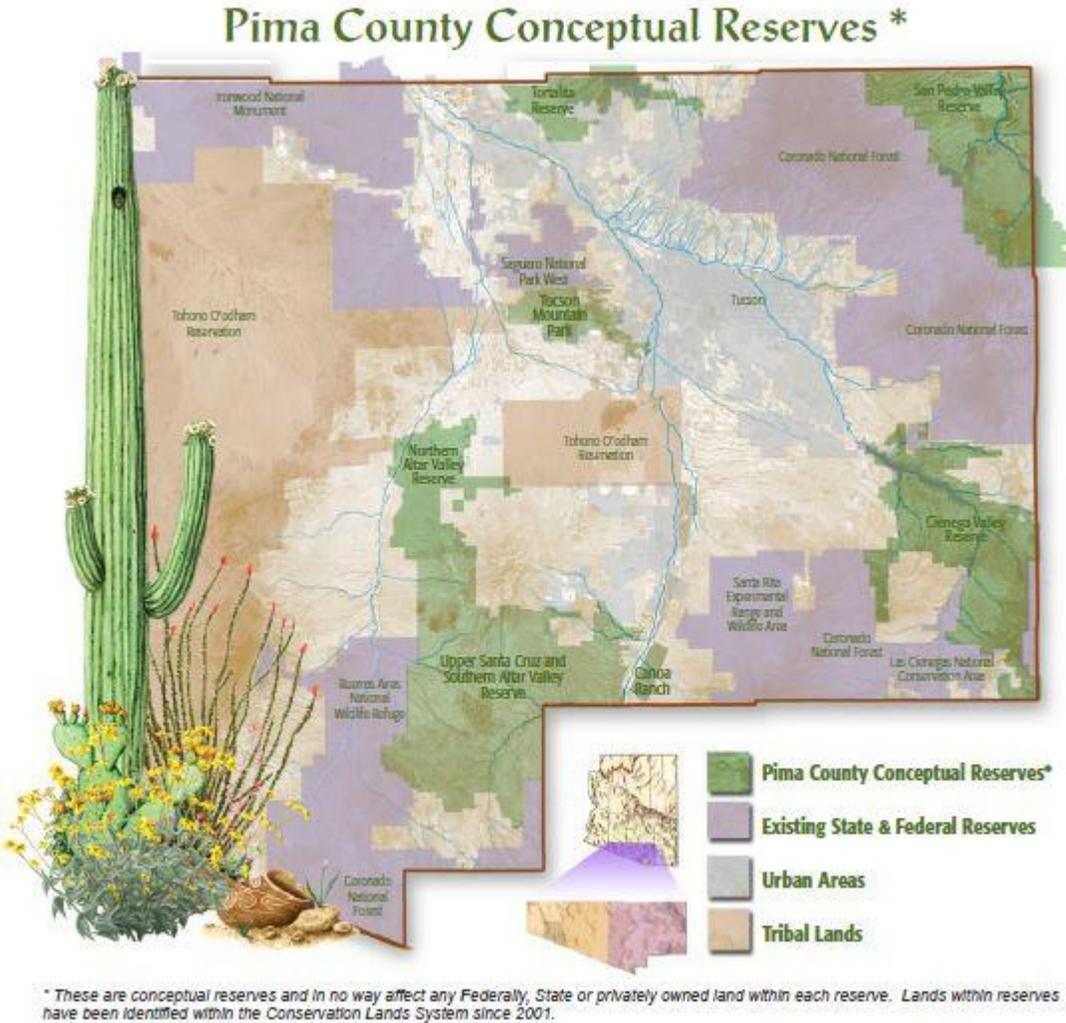


Figure 3 - SDCP Preserves and Riparian Areas

3.8 Population

Prior to the recession that began in late 2007, Arizona was experiencing rapid population growth. Between 1990 and 2010, the state’s population increased by 74%. Although the current rate of increase is not nearly as drastic, the state’s population is still increasing annually by approximately 3.67%. Pima County’s rate of increase is lower than the state’s, but Pima County’s population is increasing steadily. Between 1990 and 2010, Pima County saw a total population increase of 47%. Between 2010 and 2013, the rate of increase dropped to 1.66%.

The Arizona Department of Administration’s Office (ADOA) of Employment & Population Statistics (EPS) projects the state’s population will be just below 7.5 million by the year 2020. The EPS also indicates Pima County’s total population will increase to 1.1 million by the same year. Certain suburbs in Pima County, such as the Town of Marana and the Town of Sahuarita are experiencing the fastest growth rates. In these two areas, growth rates of over 3% by the year 2020 are projected. In contrast,

projections show a negative growth rate over the same period for the City of South Tucson. Projections indicate a 1% growth rate in unincorporated areas of Pima County.

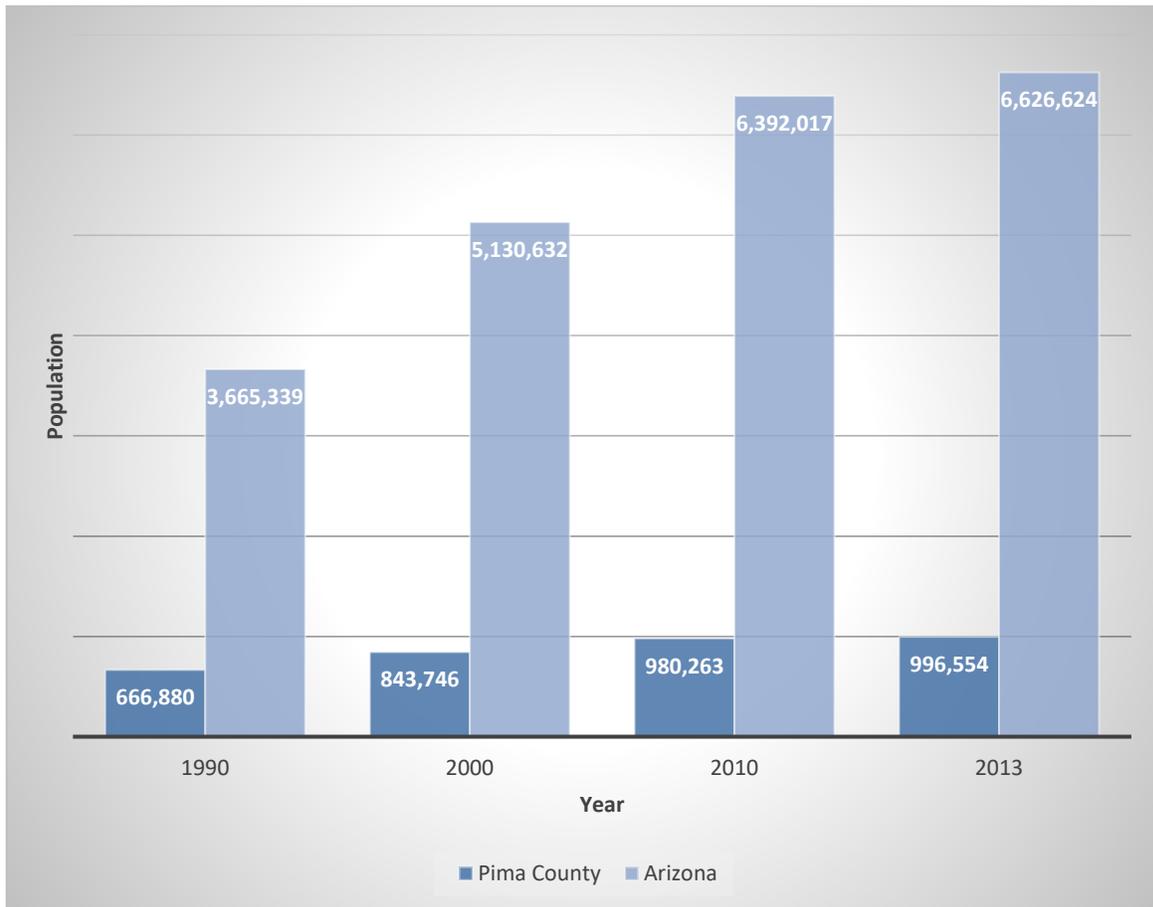


Figure 4 - Pima County and Arizona Population

Population growth often leads to an expansion of urban areas, which leads to the demand for additional flood mitigation projects. Although projected growth rates are subject to economic conditions, for planning purposes, past and current population trends are considered.

Figure 5 below shows current population distribution across the watersheds of Pima County.

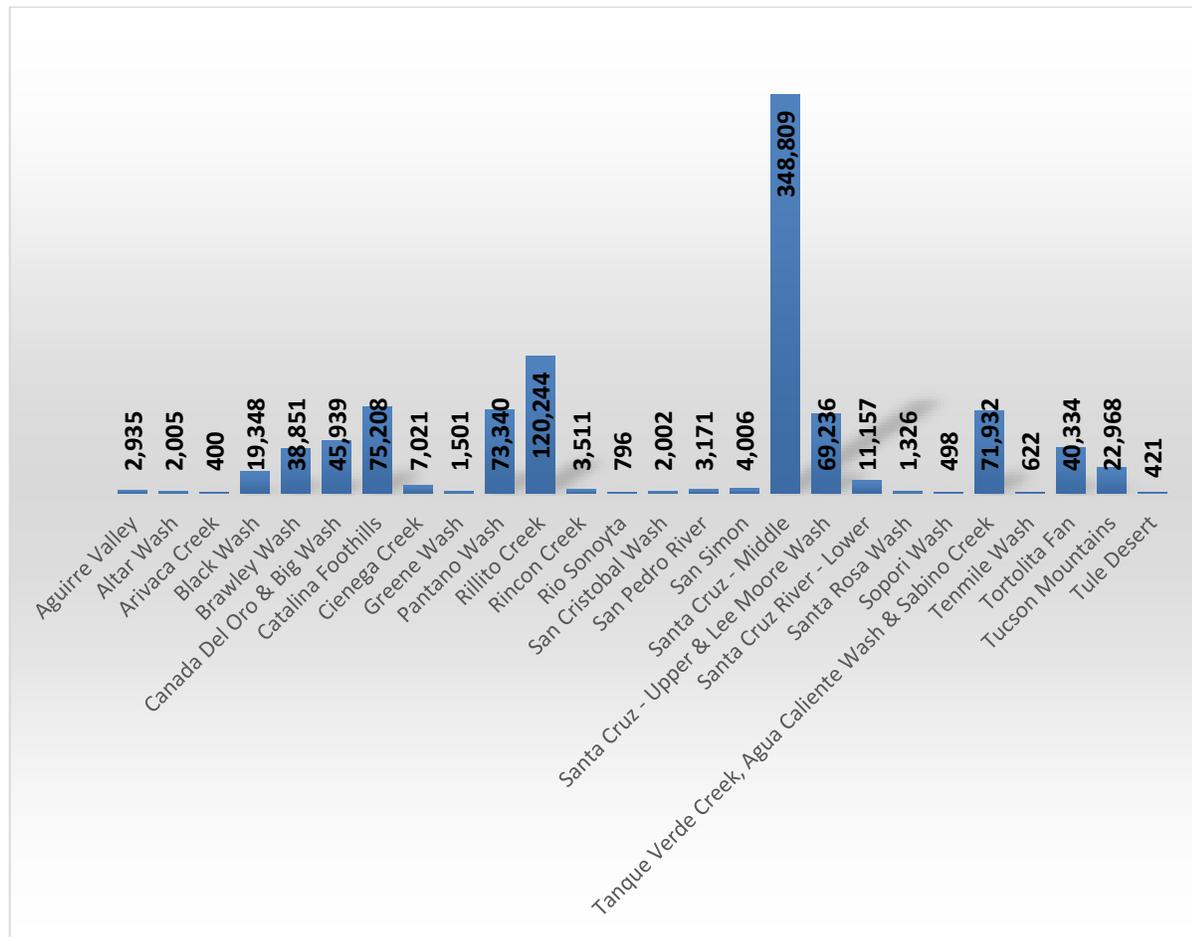


Figure 5 - Countywide Population by Watershed

3.9 Land Use

The Southern Pacific Railroad built the City of Tucson railway station in 1907, which enabled Tucson to become Arizona’s largest commercial and railroad center. Today, Tucson is the home of the University of Arizona and Davis-Monthan Air Force Base.

Historically, there were nearly 400,000 acres of agricultural lands in Pima County, often clustered around major transportation corridors such as I-10, I-19, and River Road, which also largely coincide with major watercourses. Much agricultural land remains, though residential developments are replacing these areas as well. Two notable examples of this are the Continental Ranch and Gladden Farms residential communities located on former agricultural lands within the Town of Marana.

As shown on Figure 6 on the following page, the Pima County Assessor’s Land Use Code classifies 90% of land as vacant countywide. This is because the number includes federal lands including the Tribal Trust Lands, National Forests, Monuments and Parks. Some significant uses not shown include recreation, ranching, gaming, tribal housing and mining. Land classified as “other” includes mining, prisons, military installations and utilities.

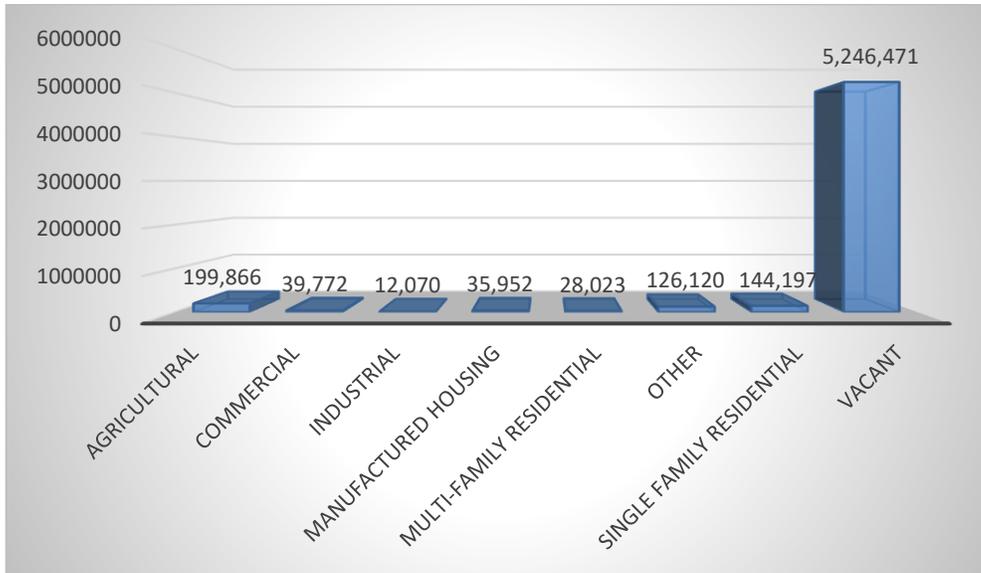


Figure 6 - Countywide Land Use in Acres (source Assessor's Land Use Code)

As shown on Figure 7, of developed lands, 36% is residential, 34% is agriculture, mining and military, a part of the other category identifiable on aerial photography are nearly 20% with only 9% commercial or industrial.

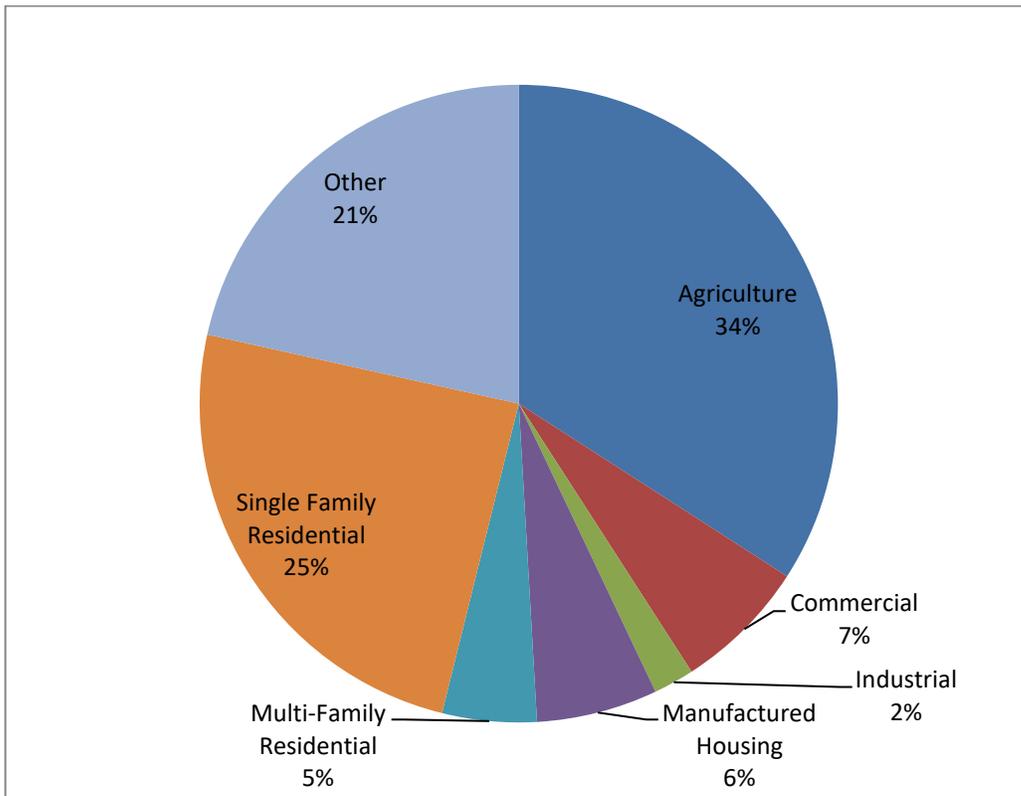


Figure 7 - Countywide Developed Land Use by Percent (source Assessor's Land Use Code)

The map in Figure 8 below shows a large part of eastern Pima County as an example of the available information, and generally indicates the distribution of land use within unincorporated areas.

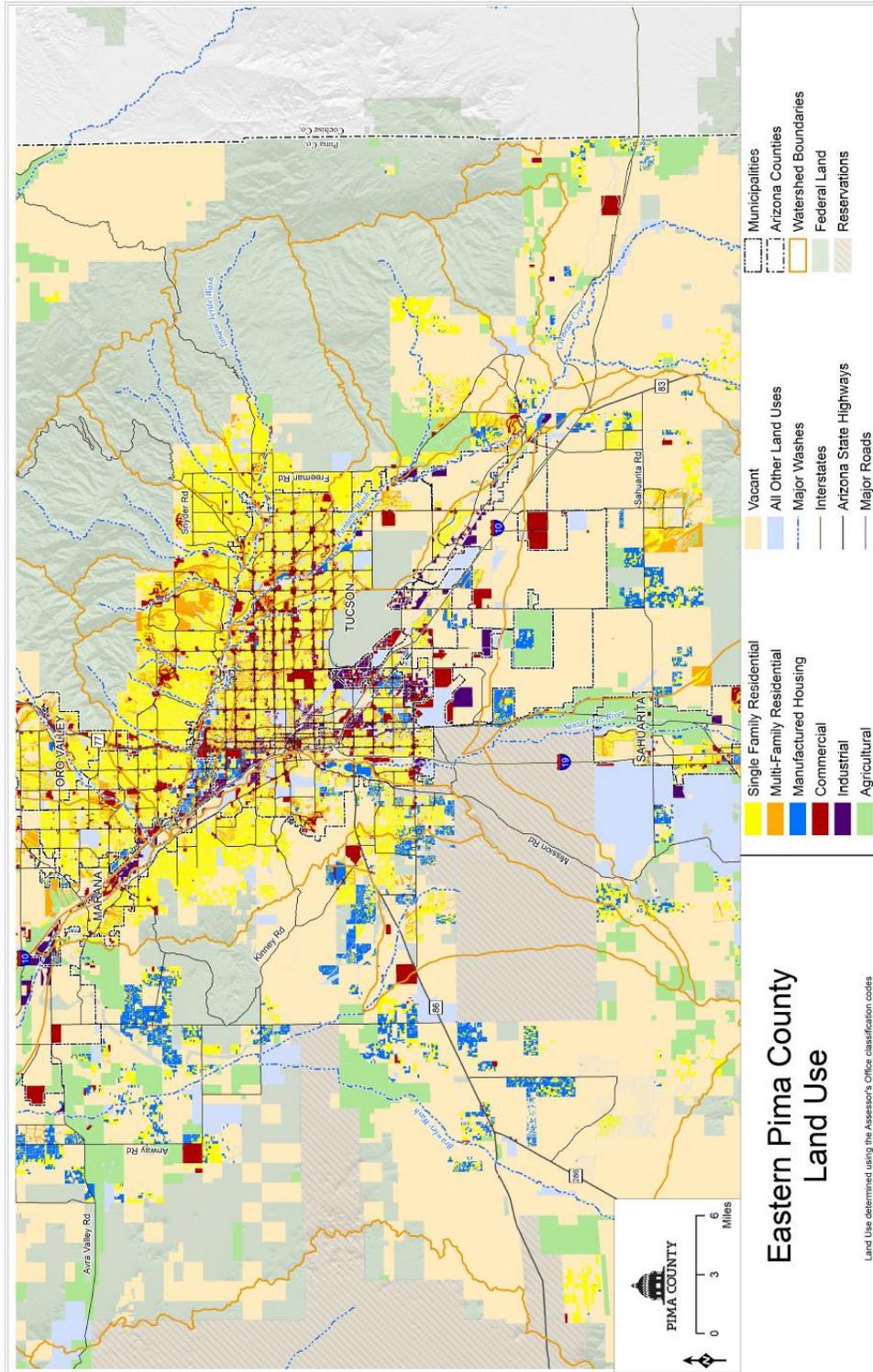


Figure 8 - Sample Watershed Land Use Map (MSCR)

3.10 Trends

While the urban core and greater Tucson’s northwest and foothills areas will continue to see infill and expansion of existing facilities, growth areas identified in the Pima County Comprehensive Plan include the southwest, Flowing Wells area, and the Sonoran and Aerospace Corridors, all of which are seeing projects revitalized as the economic recovery continues. The Sonoran Desert Conservation Plan CLS and Pima County Code enable the District to continue providing flood and erosion protection in urban areas while also preserving natural corridors and upper watershed open spaces. This ensures that floodplain management reduces risk while also protecting future water supplies, and foster a healthy environment for the community. The District expects this trend to continue.

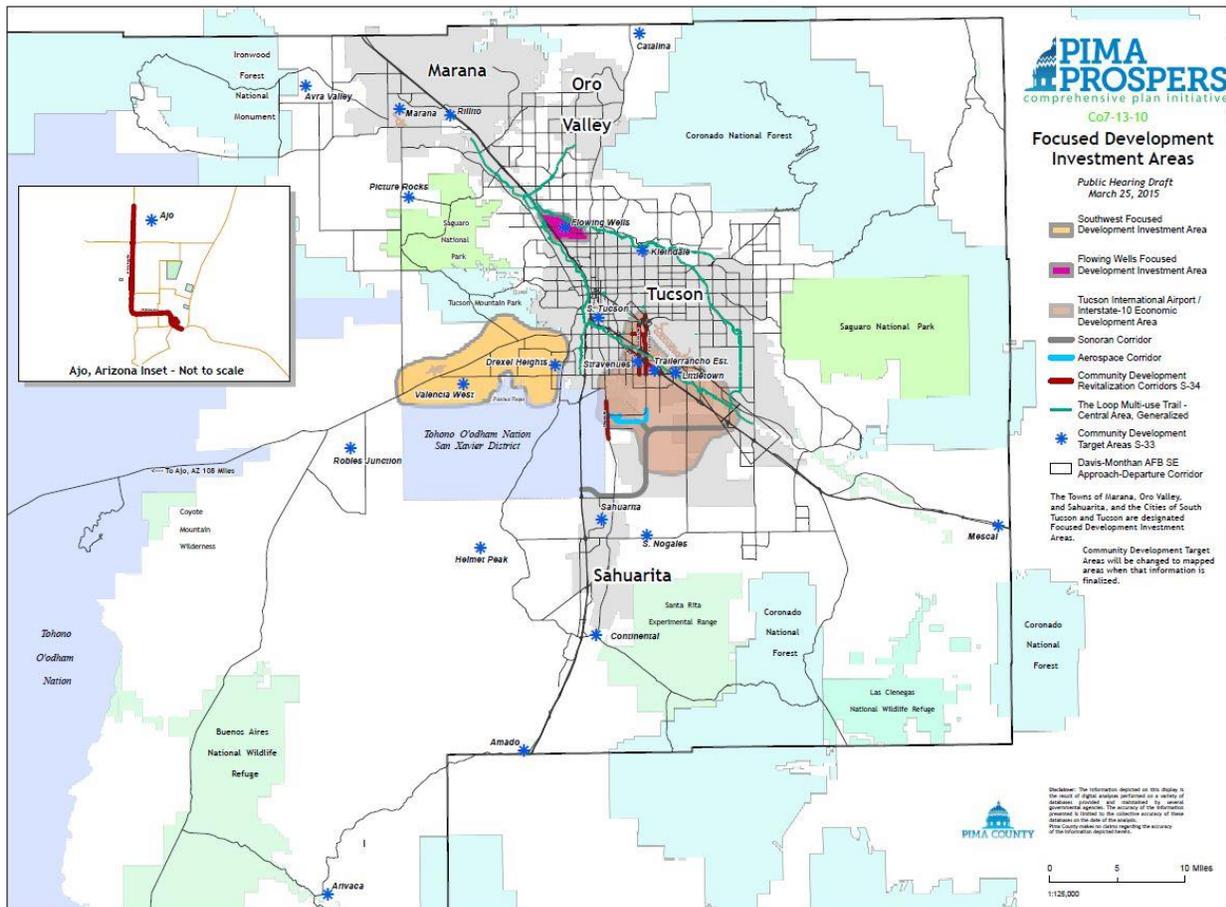


Figure 9 - Pima County Comprehensive Plan Growth Areas Map

4.0 HAZARD EXPOSURE

The primary goal of the District is to protect public safety from flood risk. This chapter describes the general population and community infrastructure distribution within the watersheds flowing into and out of unincorporated Pima County, as well as their relative flood risk exposure.

4.1 Population Distribution

The following is a summary of the information presented in the Flood Insurance Coverage Assessment (FICA) and Repetitive Loss Area Analyses conducted as part of the District’s PPI.

As of July 2016, there were 210,827 acres of FEMA “high risk” SFHA within unincorporated Pima County where the CRS Class 5 community flood insurance premium discount of 25% is available. “Moderate risk” areas include 21,558 acres of Shaded Zone X that receive a 10% discount. The lowest available premiums apply in the remaining 5,624,023 acres of “low risk” areas that FEMA has not identified as being in a regulatory floodplain, but can be characterized as a local floodplain.

Due to the size and flood characteristics of Pima County, FEMA has not mapped many areas that are floodprone. The District has undertaken a widespread and ongoing effort to identify additional areas exposed to flood risk. These locally mapped floodprone areas, referred to as Special Studies Floodplains, total 52,741 acres. Since the completion of the FICA, the District mapped an additional 77,365 acres of floodplains using detailed modeling. These figures exclude 204,410 acres of approximate sheet flooding areas mapped by the District, as well as erosion hazard areas.

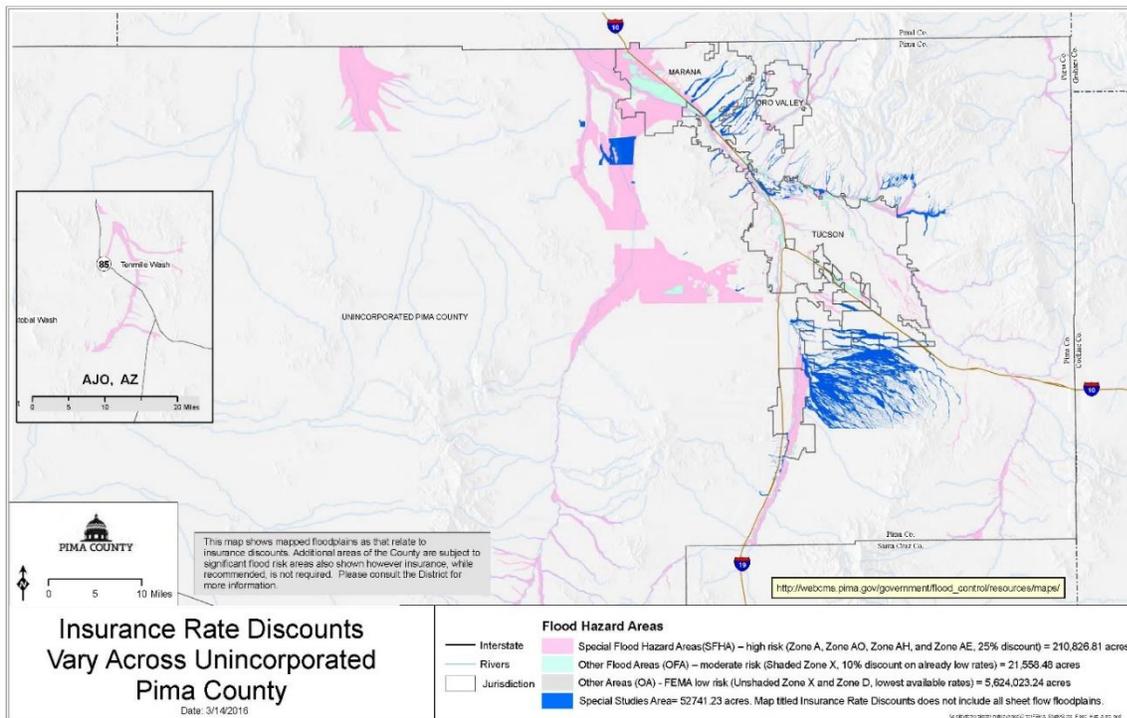


Figure 10 - Map of FEMA and Special Studies Floodplains with Insurance Rate Discounts

Table 1 shows the distribution of parcels with structures within federal and local floodplain areas as well as those parcels outside of mapped floodplains.

Flood Zone Type	Parcels with Structures	Parcels with Structures and Insurance	Percent of Parcels with Structures Insured
<i>FEMA SFHA Zone A – AO1</i>	7,292	1,000	13.71%
<i>FEMA Shaded X</i>	3,636	212	5.83%
<i>Local Special Studies</i>	9,820	458	4.66%
<i>Not in Mapped Floodplains</i>	122,450	586	0.48%
Total	143,198	2,256	1.58%
Occupancy Type			
<i>Residential</i>	169,081	2,169	1.28%
<i>Commercial</i>	18,796	87	0.46%
Total	187,877	2,256	1.20%

Table 1 - Hazard Exposure and Insurance Coverage by Flood Zone and Occupancy Type

One finding of the FICA was that there are no contents-only policies within unincorporated Pima County. This appears to indicate that renters are not getting flood insurance although they make up 36% of 388,660 occupied housing units. Most significantly, less than 14% of structures that are within FEMA floodplains are insured. The number of insured structures is far lower elsewhere.

4.2 Critical Facilities

Pima County utilizes two functional definitions of critical facilities: the definition contained within the Pima County Floodplain Management Ordinance (Ordinance) Section 16.26.055, and that contained in the HMP. These definitions are consistent in including communication, electrical power, gas and oil, transportation, water supply, essential government services and emergency services. They differ in that the Ordinance addresses assisted living facilities, while the HMP excludes them. Financial institutions such as banks are included in the HMP, but not in the Ordinance. This is due to the former’s focus on “infrastructure assets” as defined by the Critical Infrastructure Assurance Office (CIAO) and the eight categories adopted by the State of Arizona for the purpose of the HMP. The HMP asset inventory excludes riparian areas and residential areas although each is included as a cultural asset in the definition. This is due to how the purpose of the asset inventory used in the HMP versus the regulatory nature of the FPMO definition.

For the purposes of the HMP, the Pima County Office of Emergency Management (OEM) planners first inventoried all government facility assets then added HAZUS®-MH data to a Geographic Information System (GIS) database. Each jurisdiction then determined which were critical, and the database continues to be a work in progress. Population exposure to risks identified in the HMP including flooding were estimated using census data.

While the assessment contained in the HMP provides valuable information, this Report uses the Ordinance definition of critical facilities. It is consistent with that used in the CRS and is as follows:

- 1. A structure or facility that produces, uses or stores highly volatile, flammable, explosive, toxic, and/or water reactive materials;
- 2. Hospitals, emergency medical facilities, nursing homes and/or housing facilities likely to have occupants who may not be sufficiently mobile to avoid injury or death during a flood;
- 3. Essential emergency response facilities, such as police stations, fire stations, emergency shelters and/or operation centers that are needed for public safety and/or flood response activities before, during and after a flood; and
- 4. Public and private utility facilities, including, power, water and wastewater treatment, and communications, that are vital to maintaining or restoring normal services to flooded areas before, during and after a flood.



Critical facilities damaged during the 1983 flood

The HMP contains the total value and relative risk associated with flooding as well as Pima County’s mitigation efforts. The HMP is approved and compliant with the NFIP CRS Floodplain Management Plan and Disaster Mitigation Act. Pima County staff used census data within HAZUS software to evaluate the population living within 100-year high-risk floodplain and those within 500-year or medium risk areas including those protected by levees. In 2012, there were 25,067 floodplain residents in unincorporated Pima County and 6,929 within medium risk areas.

4.3 Repetitive Loss Areas

FEMA defines Repetitive Loss Areas (RLAs) as areas in which floods have damaged insured structures more than once within a rolling 10-year period. FEMA provides the District with confidential claims information for all properties filing claims each year. Since disclosure laws protect individual information, the District has generalized this loss claims data to identify RLAs and other High-Density Single Loss Areas (HDLA), which then become the focus of increased outreach and other mitigation efforts.

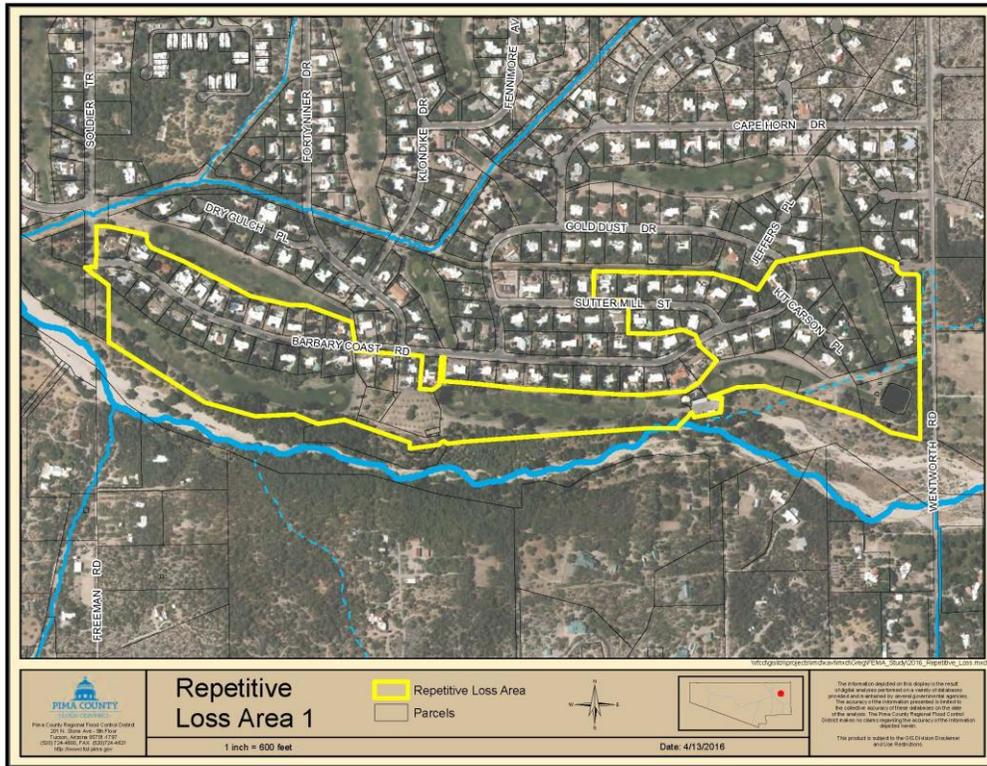


Figure 11 - Map of Repetitive Loss Area at 49ers Country Club Estates

A single subdivision, 49ers Country Club Estates, is the location of three of the four unmitigated Repetitive Loss Properties (RLP), and other homes within the same floodplain make up RLA1. In 1993, the District worked with the United States Army Corps of Engineers (USACE) to design a levee to protect this subdivision; however, the homeowners association rejected it and flooding remains a risk.



The fourth RLP listed as unmitigated is located in RLA2, an area subject to major debris movement following a 2006 forest fire on Mt. Lemmon in the Cañada del Oro and Sutherland Wash tributaries and headwaters. The District acquired this home and demolished it. As such, it is no longer an insurable structure. While large, RLA2 has been the major focus of both CIP and open space acquisitions that included utilizing citizen approved bond funds. These activities have reduced flood risk for both individual residences and critical facilities in this area. Lastly, although Pima County removed the flooded structure, FEMA continues to list the property at 3371 E River Road as an RLP. Pima County falls well under the 10-unit threshold of RLP for participation in the CRS.

4.4 Insurance Coverage

As of April 30, 2015, there were 2,441 policies in force, including \$459,024,500 in building coverage and \$97,006,500 in contents coverage. Since inception of the NFIP in 1978, there have been 287 claims made, with 121 paid totaling \$3,886,593. Claims ranged between \$36 and \$201,814 and averaged \$32,120. Of these, 17% were made in 1983, 5% in 1990, 22% in 1993, 9% in 2003 and 11% each in 2006 and 2010. As such, 75% of claims were during years with significant flood events, and fewer than six claims filed in any other given year. Figure 12 below shows the distribution of claims over time.

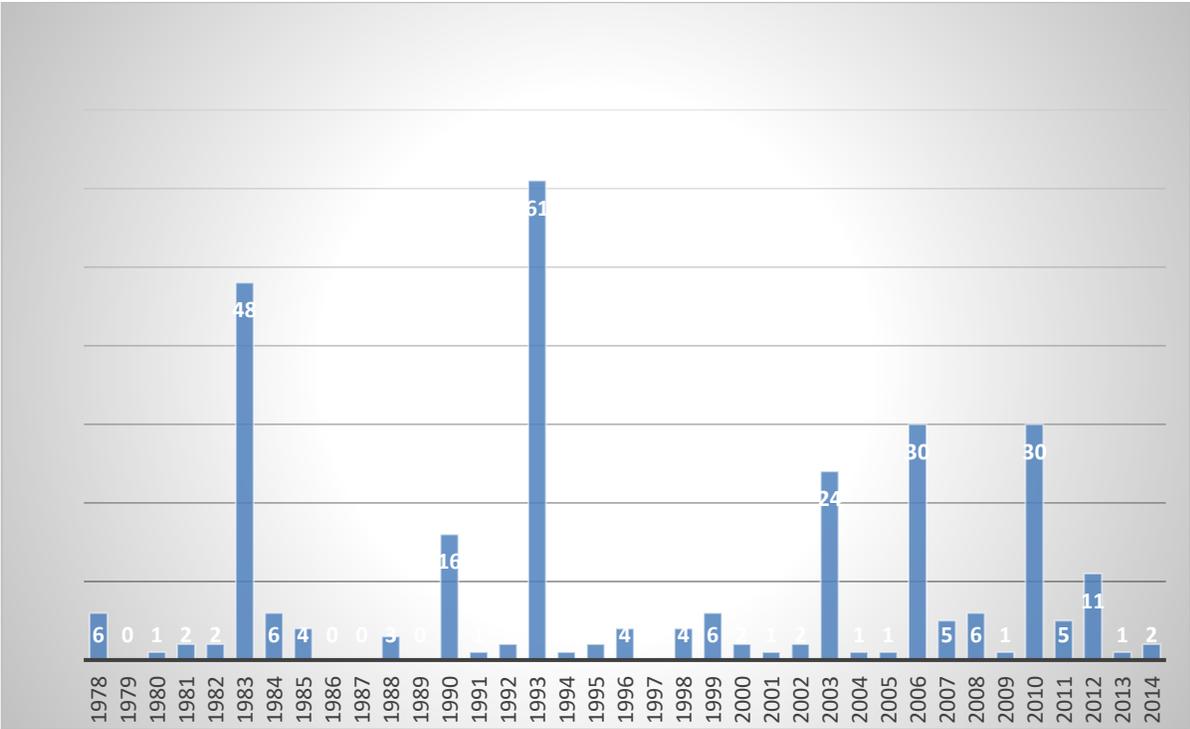


Figure 12 - Distribution of Flood Insurance Claims Paid by Year

Smaller claims were most frequent as shown on Figure 12 above. This may reflect the shallow flooding depths found in most floodplains in Pima County.

5.0 FLOOD CONTROL PROGRAMS AND ACTIVITIES

This chapter provides information on current District activities with an emphasis on the previous five years. The District utilizes a state authorized property tax levy to fund hazard mitigation activities that include the full range of those recognized by the CRS, including Series 300 Public Information, Series 400 Mapping and Regulation, Series 500 Flood Damage Reduction, and Series 600 Warning and Response. Detailed descriptions are included below. The following financial information shows the scale and distribution of these activities.

Table 2 below shows itemized revenues in whole dollars:

<u>Revenues</u>	<u>FY 11/12</u>	<u>FY 12/13</u>	<u>FY 13/14</u>	<u>FY 14/15</u>	<u>FY 15/16</u>
Property Tax	20,256,258	19,111,261	17,787,780	20,545,314	21,462,804
Federal Participation	-			-	-
State Participation	-			-	269,657
General Government	105,388	164,673	3,223,691	245,415	57,381
Interest Income	131,883	126,105	43,584	48,185	47,837
Rents & Royalties	50,975	56,490	53,751	71,395	76,263
Misc.	33,089	39,035	82,215	61,822	56,105
Bond Proceeds	1,484,600			-	-
Total	22,062,193	19,497,564	21,191,021	20,972,131	21,970,047

Table 2 - Revenues



Table 3 below shows expenditures.

<u>Expenditures</u>	<u>FY 11/12</u>	<u>FY 12/13</u>	<u>FY 13/14</u>	<u>FY 14/15</u>	<u>FY 15/16</u>
Capital Improvements	11,121,058	12,097,821	14,225,843	11,413,161	8,188,139
Operating Budget	10,550,092	11,093,517	11,399,089	14,011,582	14,595,991
Pima Association of Governments	30,266	-	-	73,230	-
PimaCore/Debt Services	-	49,536	42,460	50,068	63,591
Total	21,701,416	23,240,874	25,667,392	25,548,041	22,847,721

Table 3 - Expenditures

The overview above demonstrates Pima County’s level of financial commitment. The following sections describe each program organized by CRS Activity.



Figure 13 - Typical Bank Protection Erosion Control

5.1 Public Information Activities (CRS Activity 300)

In order to inform the public about risk exposure and reduction, the District provides floodplain mapping, protection assistance, and education.

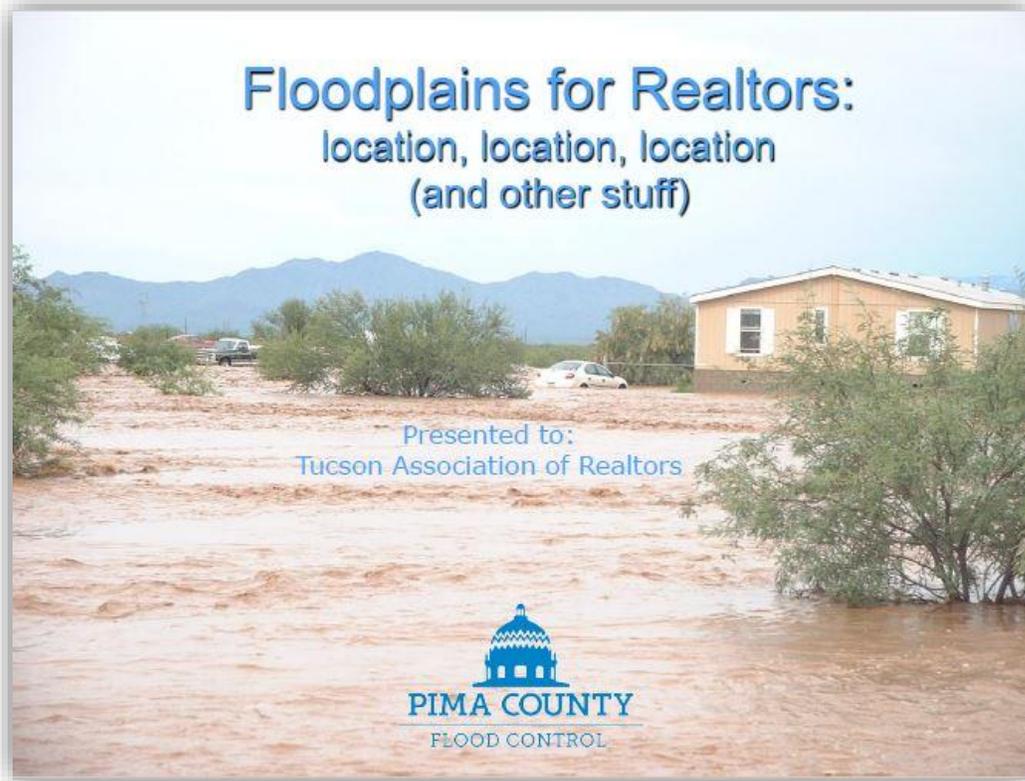


Figure 14 - Sample of Outreach Efforts

5.1.1 Elevation Certificates (CRS Activity 310)

An Elevation Certificate is a form created by FEMA under the NFIP as a compliance and insurance tool within federally mapped floodplains. The certificates verify that structures are safely elevated above the expected 100-year flood level and that they meet other floodplain requirements. Insurance companies utilize the certificates to determine flood insurance premiums for homeowners within flood hazard zones.

The NFIP requires FEMA Elevation Certificates for structures within federally mapped floodplains. The District also requires their use in locally mapped floodplains. The Ordinance requires Elevation Certificates required for compliance purposes to be completed by an Arizona registered land surveyor or Arizona registered civil engineer.

5.1.2 Map Information Service (CRS Activity 320)

As the official repository for FEMA Flood Insurance Rate Maps (FIRMs), the District provides the map information service required for participation in the NFIP. The District provides an additional service of providing maps showing all known flood hazards for individual parcels, obtained by the public online at: <http://pcmaps1.pima.gov/mapps/rfcd/parcelsearch/>. Certified Floodplain Managers

including hydrologists, engineers and planners are available to assist the public on a walk-in or scheduled basis to provide comprehensive flood hazard information and related design guidelines. The public information counter is open from 8:00 a.m. to 4:30 p.m. weekdays. Property owners, buyers, lenders, architects, engineers, builders and their representatives may obtain detailed flood elevation information including Elevation Certificates, local and federal flood maps, guidance and assistance.

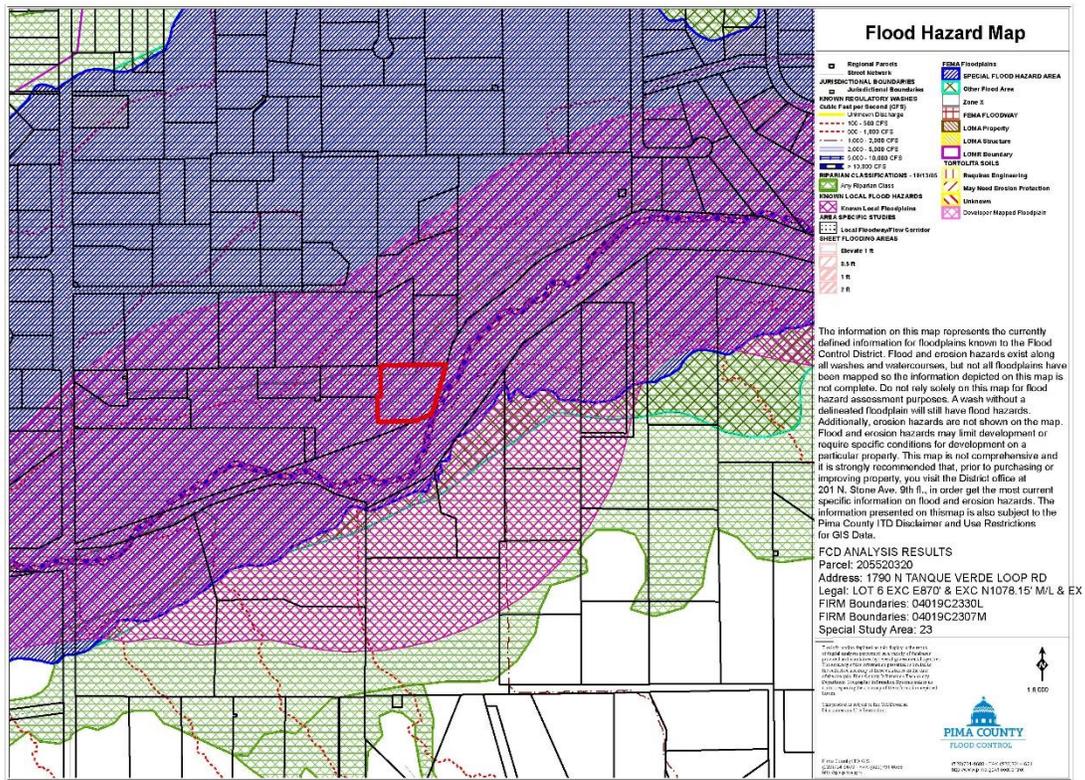


Figure 15 - Sample Flood Hazard Map

5.1.3 Program for Public Information – PPI (CRS Activity 330)

In order to promote risk reduction and the purchase of flood insurance, the District engages in extensive outreach and educational activities. These range from signage to advanced technical workshops, including activities targeted to specific audiences such as property owners and floodplain residents, realtors, drivers, surveyors, engineers and school aged children to name a few.

Prior to 2015, as promoted by the NFIP CRS 2007 Manual, the District conducted three major types of outreach in addition to the Map Information Service. This included direct mailings to floodplain and RLP owners and residents, including annual informational brochures and floodplain status information. This activity fell under the CRS heading of Outreach to Floodplain Residents and included over 12,000 properties annually. Additionally, the District provides a monsoon themed insert in water bills. It reaches over 250,000 customers of Tucson’s major water provider and provides flood safety, road closure and other flood preparedness information. The main message of the insert is do not drive through flooded roadways. Other outreach efforts include posters on buses and other general information placed in public places, as well as radio and TV ads. This activity falls under the CRS



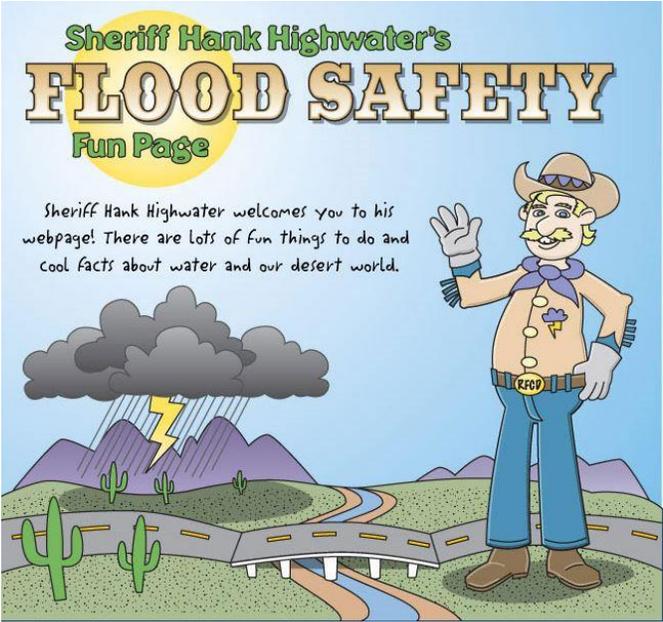
heading of Outreach to the Community. The District reaches additional targeted audiences by cooperating with various stakeholders such as schools, the Sheriff’s Department, OEM, libraries, Tucson Association of Realtors and other professional groups to conduct special events, including Earth Day, various street and school fairs, and professional development seminars.

These programs have been in place since the prior five-year planning period, in which technological, social and environmental changes have occurred. In order to reevaluate the effectiveness of these programs and to comply with the FEMA CRS 2013 Manual, the District created the PPI. A stakeholder committee participated in creating the plan by identifying service gaps. They also recommended specific messages for identified audiences.

5.1.4 Hazard Disclosure (CRS Activity 340)

In Arizona, realtors and sellers are required to disclose when flood insurance is required for a federally backed mortgage prior to closing.

The flood hazard information shown on a property information form completed by real estate agents and provided to buyers through a widely used Multiple Listing Service is not always accurate. As part of the PPI described above and included in Appendix A for reference (excluding appendices), the District has targeted real estate agents for further outreach regarding disclosures and the availability of local hazard information including locally mapped floodplains, erosion hazard areas, and Regulated



Riparian Habitat. As previously noted, the District mails annual notices to all property owners within unincorporated Pima County impacted by known flood hazards.



Figure 16 - Annual Disclosure and Brochure Cover Page

The brochure above contains a map of roads impacted by floods and other useful information for floodprone property owners. The District, with its partners, conducts additional outreach relating to travel hazards that are not specific to individual property.

5.1.5 Flood Protection Information (CRS Activity 350)

The Pima County public library system consists of multiple branches throughout incorporated and unincorporated areas. The card catalogue is web based to make it easier to find a full suite of materials required by FEMA and many locally pertinent publications, including historical accounts of flooding and flood farming practices, land use and environmental change, desert and riverine ecology, modern water harvesting, LID, GI, flood protection practices and much more.

The District also maintains an extensive website with advanced mapping and flood threat recognition information. This includes a link where a visitor may download or print a Flood Hazard Map depicting hazards identified by FEMA, and locally along with Regulated Riparian Habitat. The map includes a section with information on regulations, permitting, dumping, and the availability of insurance and the beneficial functions of floodplains.

The website also includes an interactive map to find historic, real time rainfall and stream flow data for more than 100 gage sites maintained by the District and other agencies. Known as the Automated Local Evaluation in Real Time (ALERT) system, the District recently upgraded its ALERT system software

and improved the public interface for displaying real, or near real time hydrometeorological data for Southeastern Arizona. Precipitation, stream flow and other weather related information produced by gages maintained by the District and other agencies is now just a few clicks away. More information on the ALERT system is in Section 5.4.

5.1.6 Flood Protection Assistance (CRS Activity 360)

When addressing a flood concern, the District has used various combinations of regulatory, CIP, and open space options to protect properties. When the public submits a complaint or permit, District staff provides technical assistance, which includes determining design adequacy and identifying alternatives. The District has also adopted a series of technical policies and procedures designed to assist the public. These provide guidance on items such as minimum foundation requirements for structures built in floodprone areas, locally appropriate scour calculation methodologies for underground utilities, wet floodproofing, fence and wall design and much more. District staff meets with clients at the customer service counter and conducts site visits, as needed. Should the assistance require either maintenance of a public drainage facility, enforcement of a regulation, construction of flood or erosion control improvements, or environmental restoration, the District will engage its infrastructure and resources management staff and partners, as needed. Whether the result is a public or private flood control project, District staff remain involved throughout design and maintenance to ensure functionality.



Figure 17 - Samples of Damaged Homes Where the District Provided Assistance

5.1.7 Flood Insurance Promotion (CRS Activity 370)

The District promotes the purchase of flood insurance as part of annual outreach projects to floodplain residents, at special events, and as part of post flood investigations. The District maps local floodplains and erosion hazard areas and encourages property owners to obtain flood insurance in these areas. The outreach notifies floodplain property owners of the insurance requirement for federally backed mortgages and the availability of low cost policies outside of FEMA SFHAs. During 2016, the PPI committee identified the need to further target residents of locally mapped floodprone areas, particularly renters, regarding the availability of insurance.

5.2 Mapping and Regulations (CRS Activity 400)

This section describes the District’s mapping program, Ordinance and supporting policies and procedures.

5.2.1 Floodplain Mapping (CRS Activity 410)

The District conducts river and basin management plans and other flood and erosion studies to identify present and future flood control needs and to implement related land use planning activities on major watercourses and tributary watersheds. The basin management plans and studies allow the District to move away from reactive spot improvements toward larger-scale, long-range improvements. When the District first joined the CRS, the Floodplain Management Plan Synopsis described updating the plan one watershed at a time via basin management studies. This effort continues and this Watershed Management Plan compiles these studies into one document for the first time.

Below is a list of local studies conducted during the program period. The studies used the latest hydraulic and hydrologic modeling techniques, weather records, and topographic conditions to provide updated floodplains, depths and discharges.

- Race Track Wash Technical Data Notebook for Hydrologic and Hydraulic Mapping
- Canyon del Salto Technical Data Notebook for Hydrologic and Hydraulic Mapping
- Nanini Wash Technical Data Notebook for Hydrologic and Hydraulic Mapping
- Casas Adobe Technical Data Notebook for Hydrologic and Hydraulic Mapping
- Campbell Wash Technical Data Notebook for Hydrologic and Hydraulic Mapping
- Via Entrada Wash Technical Data Notebook for Hydrologic and Hydraulic Mapping
- Pegler Wash Technical Data Notebook for Hydrologic and Hydraulic Mapping
- Unnamed Wash #12 Technical Data Notebook for Hydrologic and Hydraulic Mapping
- Tucson Mountains Unnamed Wash #2 & #3 Technical Data Notebook for Hydrologic and Hydraulic Mapping
- Yuma Mine Wash Technical Data Notebook for Hydrologic and Hydraulic Mapping
- Deep Well ranch and Rinconado Wash Technical Data Notebook for Hydrologic and Hydraulic Mapping
- North Manor Wash (including Hillcrest Wash) Technical Data Notebook for Hydrologic and Hydraulic Mapping
- Green Valley Drainageways Basin Management Study
- Agua Caliente Wash Floodplain Study
- Airport Wash South Basin Management Study
- Black Wash Floodplain Study
- Campbell Wash Floodplain Study
- Finger Rock Wash Floodplain Study
- Santa Cruz River Grant Road Floodplain Study
- Southwest Regional Park Hydrologic and Hydraulic Analysis

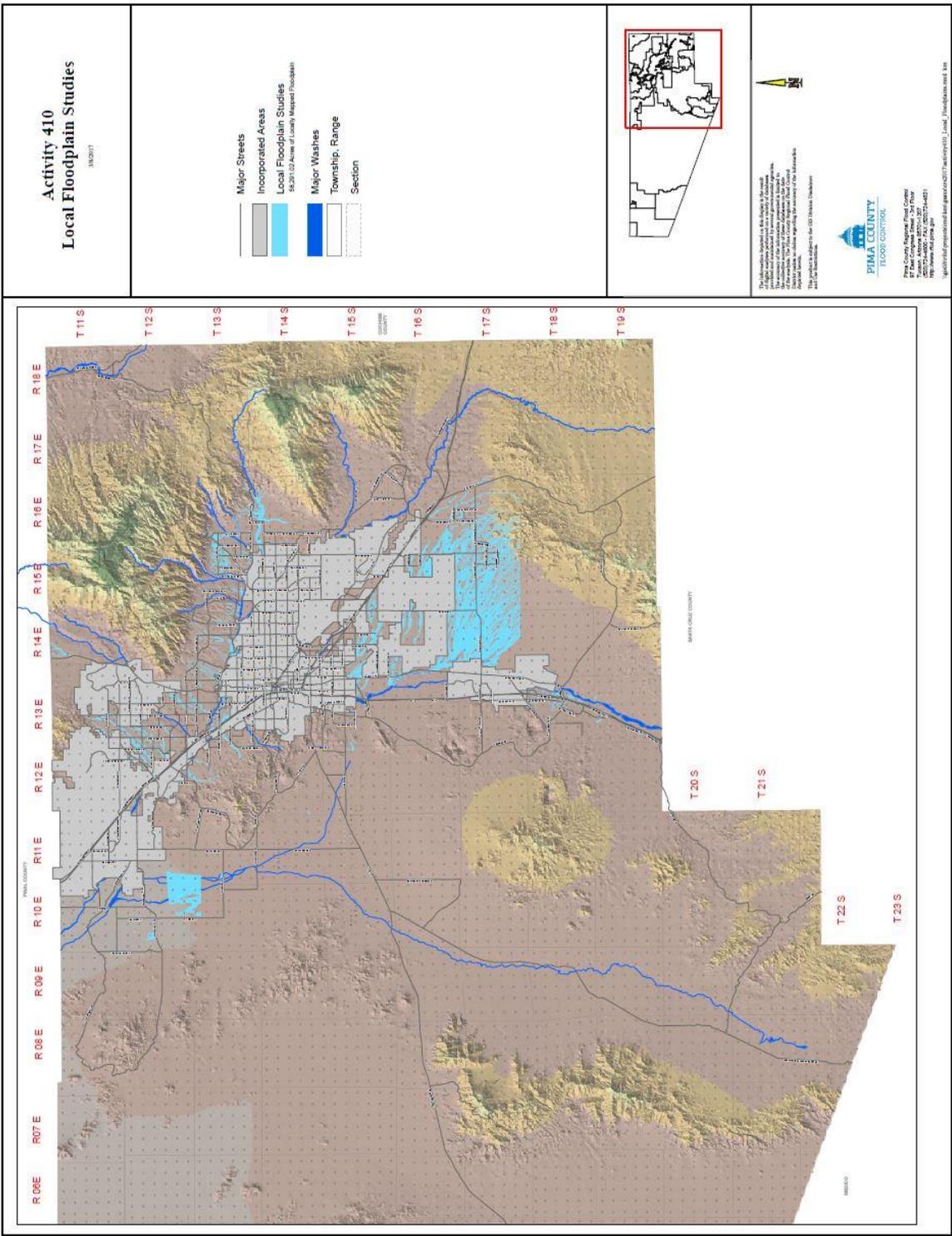
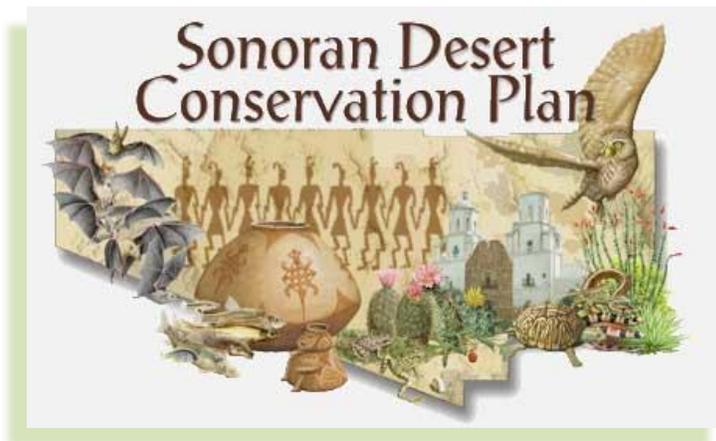


Figure 18 - Map of Local Floodplain Studies

5.2.2 Open Space (CRS Activity 420)

Pima County has been proactive in recognizing the role of open space in flood risk reduction and the other beneficial functions of floodplains, such as groundwater recharge, riparian habitat preservation and a recreational amenity. Open space is protected via regulatory processes and by land acquisition. The SDCP is Pima County's plan for balancing the conservation and protection of our cultural and natural resource heritage with our efforts to maintain an economically vigorous and fiscally responsible community. The Pima County Board of Supervisors (BOS) approved the SDCP in 1999.

Broadly, the SDCP considered the following elements: critical habitats and biological corridors, riparian areas, mountain parks, historical and cultural preservation, and ranch conservation. All five elements, along with fiscal analysis, were critical in forming a viable land management plan for Pima County.



The SDCP identified the types of development that improved the tax base, and the relationship of these with the sewer service area. Excesses of land needed for urban development exist within Pima County as shown by build-out analyses. Furthermore, certain types of development are costly to the tax base and are contrary community values identified through over 600 public meetings. Over 200 technical reports documented these values, using the combined talents of over 150 contributing scientists.

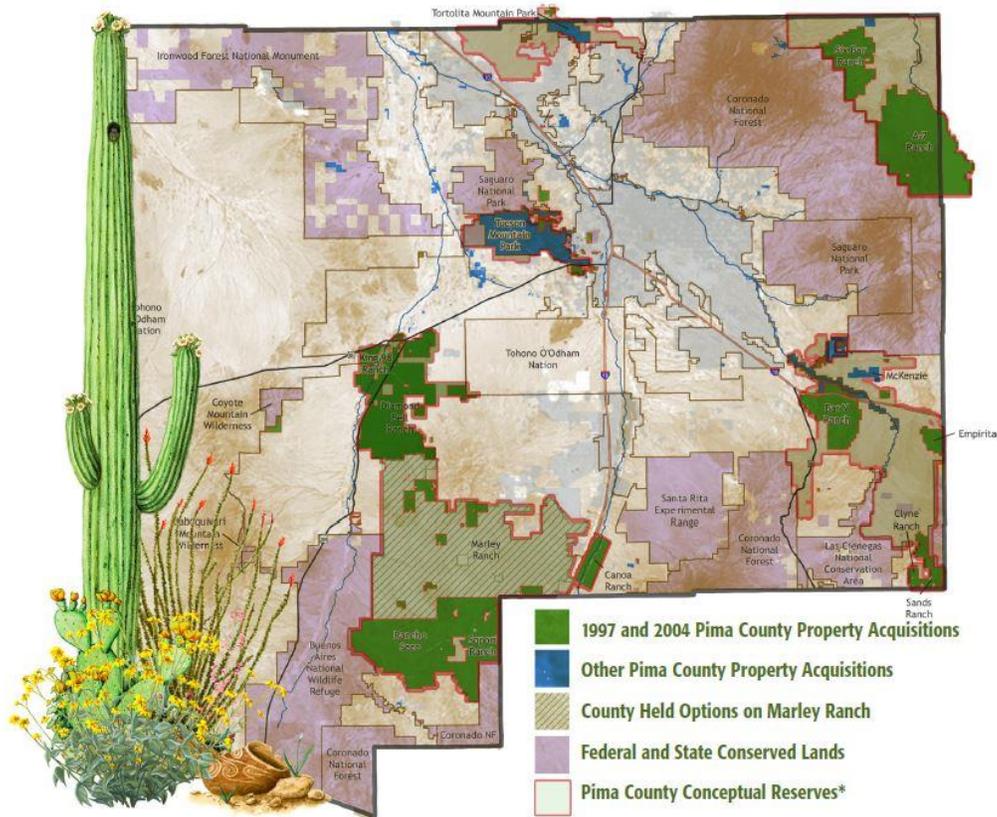
In 2001, the BOS updated the Pima County Comprehensive Land Use Plan, integrating the land-use policies and principles of conservation developed in the SDCP, including the Conservation Lands System (CLS). The CLS identifies lands necessary to achieve the SDCP biological goals, while delineating areas suitable for development. The CLS covers approximately 2 million acres in eastern Pima County. The CLS was renamed the Maeveen Marie Behan Conservation Lands System in 2009 in memory of Dr. Behan's work on the SDCP and development of the CLS.

Since 2001, the SDCP has guided where public money is spent to conserve important natural areas, providing the basis for how cultural and historic resources are protected, and serving to help ensure that our western lifestyle, heritage, and traditions continues. The SDCP set the stage for later efforts such as the City-County Water Study and re-investment in the Pima County's sewage treatment facilities. It also created a new standard for public transparency and involvement. The Multi Species Conservation Plan is the part of the SDCP that deals with the compliance associated with the

Endangered Species Act. Significant property acquisitions have greatly contributed to the success of this plan along with complementary regulatory and voluntary components. Although out of date, Figure 19 depicts how this works as a regional approach.

Figure 19 - Open Space Acquisition Map

Properties acquired under 1997 and 2004 Conservation Bond Programs



* These are conceptual reserves and in no way affect any Federally, State or privately owned land within each reserve. Lands within reserves have been identified within the Conservation Lands System since 2001.

In 2013, FEMA approved the SDCP as our NFIP CRS compliant Natural Floodplain Functions Plan. Components of the plan include Pima County RRH and IRA designated under the SDCP and CLS. These resources guide and inform staff recommendations for entitlements such as rezoning requests to the BOS. The County has adopted avoidance regulations for RRH throughout the Ordinance and Zoning Code as well as through the adoption of mitigation guidelines. Mitigation standards require replacing habitat in like-kind and the standards apply to both public and private projects. The descriptions and illustrations below describe the classifications of regulated habitat.



Hydroriparian habitat is generally associated with perennial watercourses, and may contain plant species such as cottonwood and willow. This is the rarest type of riparian habitat in Pima County and is vital to the many wildlife species that require this habitat for at least some portion of their life cycle.



Mesoriparian habitat is associated with areas of shallow groundwater and/or intermittent stream flow. Mesquite bosques are characteristic of this habitat type.

Xeroriparian habitat is typically associated with ephemeral streams (those that flow only in response to rainfall). The plant species present are similar to those found in upland areas, but plant densities tend to be greater due to the relative abundance of water. There are four classes of Xeroriparian habitat based upon species, density and size, and are shown below:

Xeroriparian Class A



Xeroriparian Class B



Xeroriparian Class C



Xeroriparian Class D



5.2.3 Higher Regulatory Standards (CRS Activity 430)

The Ordinance regulates activities and developments in the regulatory floodplain in unincorporated Pima County. The Ordinance contains the following chapters:

- Chapter 16.04 - General Provisions
- Chapter 16.08 - Definitions
- Chapter 16.12 - Exemptions and Nonconforming Uses
- Chapter 16.16 - Floodplain Maps and Boundaries
- Chapter 16.20 - Use Permits—General Provisions
- Chapter 16.24 - Floodway Requirements
- Chapter 16.26 - Floodway Fringe Area Requirements
- Chapter 16.28 - Erosion Hazard Areas and Building Setbacks
- Chapter 16.30 - Watercourse and Riparian Habitat Protection and Mitigation Requirements
- Chapter 16.34 - Manufactured Homes and Manufactured Home Parks and Subdivisions
- Chapter 16.36 - Subdivisions and Development
- Chapter 16.38 - Maintenance of Private Drainage Improvements
- Chapter 16.42 - Sediment and Erosion Control
- Chapter 16.44 - Vehicular Access
- Chapter 16.48 - Runoff Detention Systems
- Chapter 16.52 - Sand, Gravel and Other Excavation Operations
- Chapter 16.54 - Administration, Compliance
- Chapter 16.56 - Appeals and Variances
- Chapter 16.60 - Amendments
- Chapter 16.64 - Violation—Penalty

Administering the Ordinance accomplishes two goals:

1. Meeting FEMA Flood Insurance Study (FIS) and NFIP requirements, governing activities in federally mapped flood hazard area.
2. Addresses local flood hazard issues by regulating activities in locally designated regulatory flood and erosion hazard areas. Provisions of the Ordinance are more restrictive than the minimum required by the NFIP.

Floodplain Use Permit Program

A Floodplain Use Permit (FPUP) is required prior to development in a regulatory flood or erosion hazard area. As defined by the Ordinance, “Development” is “any manmade change to improved or unimproved real estate, including, but not limited to, buildings or other structures, mining, dredging, filling, grading, paving, fencing, excavating or drilling or storage of equipment or materials.” The Ordinance further states that, “...[no person shall be exempt] from obtaining a floodplain use permit ...for any use which diverts, retards or obstructs the flow of water and creates a danger or hazard to life or property in the affected area.”

The most restricted area is the floodway, an area necessary to allow for the passage of the base flood. In these areas, there are prohibitions on structures and most other developments. Allowable floodway uses include agricultural, recreational, and accessory residential uses, as well as sand and gravel excavations subject to the conditions stated in the Ordinance. Annual renewal of FPUPs for sand and gravel excavation is required.

The Ordinance allows most uses in the floodway fringe (the portion of the regulatory floodplain outside of the floodway) including the placement of buildings, provided they adhere to minimum design and construction standards. The Ordinance prohibits structures designed for human habitation where the product of the flow depth times the square of the flow velocity (dv^2) exceeds the value of 18 for more than 30 minutes, or the depth of the surrounding base flood exceeds three feet. In addition, the lowest floor of habitable structures must be at least one foot above the water surface elevation of the base flood (freeboard). Other regulations govern the design of the foundation, the amount and type of any fill used, measures for protecting the fill, anchoring structures to prevent flotation, elevating service facilities such as electrical and heating equipment, and aligning structures relative to the direction of flow.

Unless approved bank stabilization is constructed, the Ordinance also requires buildings to be set back from watercourses in order to allow for lateral channel migration. The setback marks the edge of the erosion hazard measured from the top edge of the highest channel bank or the edge of the floodplain, whichever is closer to the channel centerline. The setback distance varies with the discharge of the watercourse as dictated by the Ordinance unless an alternative erosion hazard area is established through a site-specific engineering analysis. Revisions adopted during the last decade include requirements for riparian habitats and critical facilities.

Appeals, Variances and Enforcement

In 2014, the Board adopted Ordinance revisions including procedures governing fines for non-compliance, appeal and hearing procedures. The Ordinance specifies activity and development types allowed in flood and erosion hazard areas and provides a mechanism for appealing any interpretation of the Ordinance, and a process for obtaining a variance from the Ordinance. During this reporting period, the hearing process for enforcement was in development and no variances requested nor fines leveled. In 2014, the Board adopted Ordinance 2014-FC1, which proscribes enforcement procedures related to non-compliance including fines, appeals and hearing procedures associated with violations of the Ordinance.

More detailed information for the above-reference sections can be found in the District's Floodplain Ordinance which is available on the District's website.

Other Regulatory Activities

In addition to issuing FPUPs, District staff provides information to the public about permissible activities in flood hazard areas, provides information about the flood hazard status of specific properties, and provides flood protection assistance as needed. Requests for information can be made via letter, fax or on a walk-in basis. The public information counter is open weekdays from 8:00 a.m. to 4:30 p.m.

District staff also investigates drainage complaints filed by the public. The District notifies the property owner and requests corrective action when it is determined that a violation of the Ordinance exists. When not corrected via the Ordinance, staff issues a violation notice, and may refer the case to

the Pima County Attorney’s Office. Staff provides technical support to the attorney working on the case and may testify on behalf of the District.

Table 4 below provides data on floodplain management services provided by the District over the past five years.

	FY 2011/12	FY 2012/13	FY 2013/14	FY 2014/15	FY 2015/16
FPUPs (Received/Issued)	460/373	480/362	476/344	415/340	595/511
Drainage Complaints Received	417	525	402	508	550
Floodplain Status Letters Written	1,689	1,326	977	914	668
Counter Service	3,277	3,274	3,249	2,222	1,969

Table 4 - Floodplain Management Services

5.2.4 Flood Data Maintenance (CRS Activity 440)

In addition to identifying locally regulated floodplains, FEMA FIRMs need periodic revision due to the availability of better data, improved modeling techniques, new development, construction of structural flood control projects, or natural changes in floodplain conditions. Changes to the effective FIRMs include Physical Map Revisions, whereby FEMA republishes the entire FIRM panels and Letters of Map Revision (LOMRs), whereby FEMA modifies a portion of a FIRM panel.

Changes can also be requested on a parcel basis if a parcel or structure is incorrectly included in an SFHA (i.e., if a small topographic high point did not show up), and the structure or parcel is actually elevated above the 100-year water surface elevation. In this case, FEMA issues a Letter of Map Amendment (LOMA), which eliminates the flood insurance requirements, but does not modify the floodplain boundary shown on the FIRM.

The District typically funds the cost of LOMRs associated with public projects. The private sector is responsible for completing the necessary paperwork to obtain LOMRs and LOMAs for private improvement projects. The District performs complementary reviews of LOMR and LOMA applications prior to submittal. See Appendix B for a listing of LOMR and LOMA activity within unincorporated Pima County over the past five fiscal years.

The question of who should file for lands held in Trust by the Department of the Interior for Native American governments has arisen in recent years, but is unresolved.

5.2.5 Stormwater Management (CRS Activity 450)

The District has developed this Report in part to satisfy watershed-planning requirements of the CRS. It incorporates by reference the critical and balanced basin designation contained in Pima County’s Design Standards for Stormwater Detention and Retention. This designation identifies basins in which drainage infrastructure is inadequate and therefore flow reduction is required on a project-by-project

basis. The City of Tucson adopted these standards, promoting a holistic approach to watershed management.

5.3 Flood Damage Reduction (CRS Activity 500)

This section describes the District’s damage reduction activities including Floodplain Management Planning, Acquisition and Relocation, Flood Protection, and Drainage System Maintenance.



Constructed channels require maintenance including sediment removal.

5.3.1 Floodplain Management Planning (CRS Activity 510)

The first Floodplain Management Plan (FMP) approved when Pima County joined the CRS indicated that the District would update the plan as basin studies are completed. The District has since completed numerous basin studies, but did not update the plan. Pima County has received FMP credit

under the CRS for its HMP in recent cycles. The District is also participating in updating the HMP and is incorporating it herein by reference.

5.3.2 Acquisition and Relocation (CRS Activity 520)

Bond monies authorized by Pima County voters and annual allocations from the District’s tax levy are used to fund the FLAP that began in 1984. The FLAP is an effective nonstructural floodplain management tool that provides 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 purchases property through the FLAP solely on a voluntary basis without utilizing its land condemnation authority. The District has acquired floodprone parcels along the Cañada del Oro Wash, in Avra Valley, along the Black and Brawley Washes, and along the Santa Cruz River. Table 5 provides an overview of FLAP acquisition acreage and costs by fiscal year.

Fiscal Year	Land Purchased in Acres	Total Cost
FY 2011/12	22,589.88	\$1,700,296.58
FY 2012/13	606.23	\$1,330,450.00
FY 2013/14	549.81	\$683,996.45
FY 2014/15	246.92	\$271,000.00
FY 2015/16	101.69	\$172,180.00

Table 5 - Floodprone Land Acquisition Program Summary

The District anticipates that funding for this program will continue. Figure 20 below shows the distribution of acquired land in red and floodplains in blue.

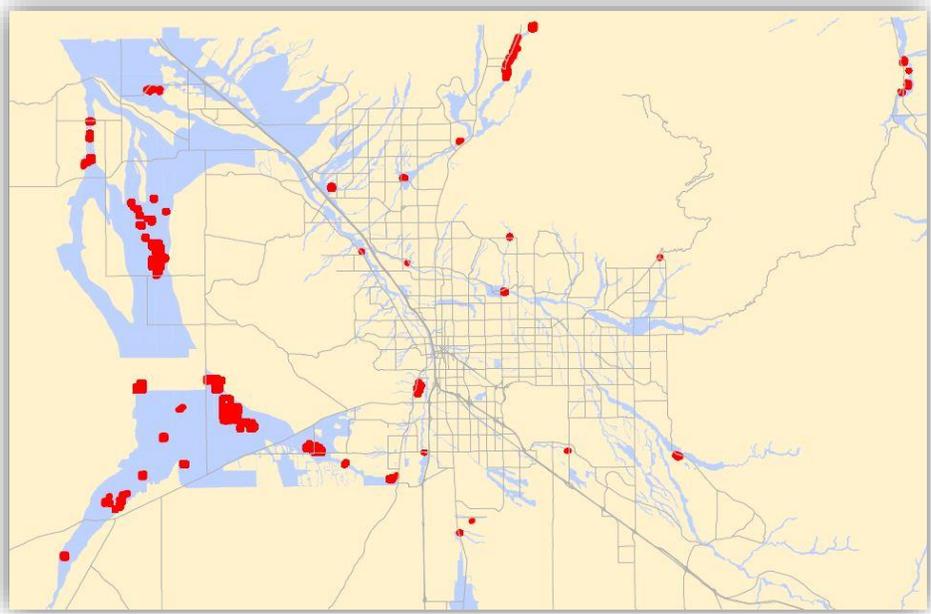


Figure 20 - FLAP Acquisitions

Seen below in context of preserves and regulatory context of the SDCP including RRH and CLS, the true regional benefit becomes apparent.

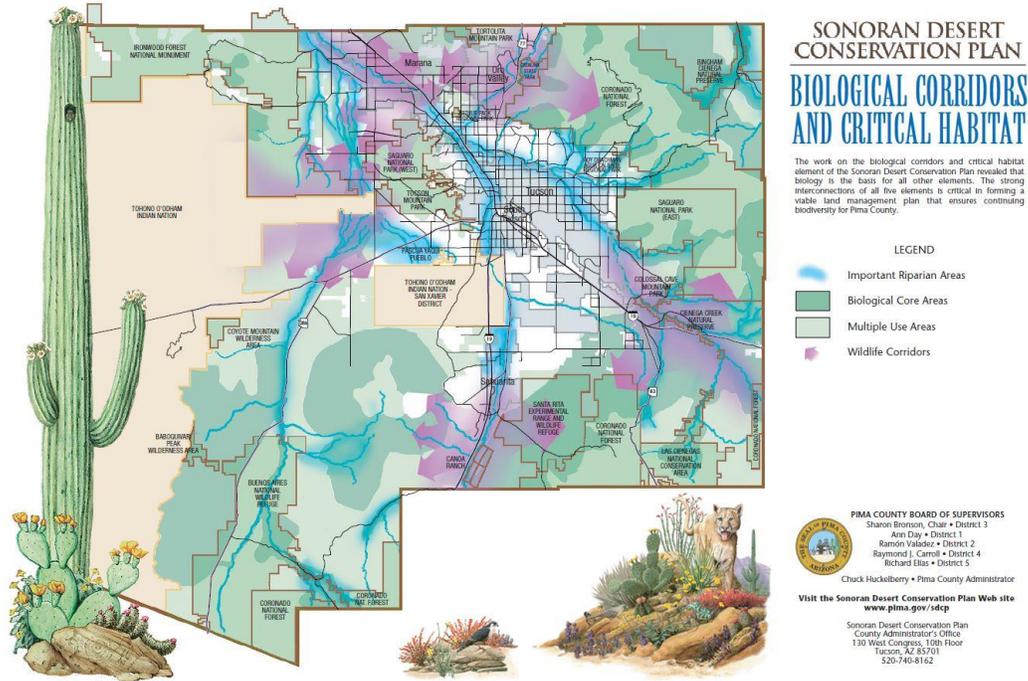


Figure 21 - Maeveen Marie Behan Conservation Lands System

5.3.3 Flood Protection (CRS Activity 530)

The District's Capital Improvement Plan seeks to reduce future flood damage by utilizing bank stabilization, regional detention, engineered channels and floodprone land acquisition to address regional flood and erosion issues throughout incorporated and unincorporated Pima County. Due to the erosive nature of many regional watercourses, the District historically expended the bulk of CIP funds on bank protection. However, both structural and non-structural components of the plan contribute to the overall success.

The District constructs bank stabilization along major watercourses within Pima County where flood and erosion hazards threaten public and private development or infrastructure. Stabilization typically employs soil cement, which is a mixture of cement and local soil materials. Soil cement is a cost-effective flood and erosion control solution that has many of the strength characteristics of a normal concrete mixture, and retains much of the appearance and textural quality of a natural riverbank that occurs in an arid landscape. Bank protection projects often include linear parks that provide a safe and attractive place for recreation. CIP expenditures during this program period reflect the high degree of public support for these projects.



Another structural flood control strategy used by the District is the construction of detention basins which are facilities that allow for the temporary storage and measured release or metering out of floodwaters. Control of flows exiting a detention basin during a storm event significantly decrease downstream flood peaks, and thereby minimize the potential for inundation in downstream areas. In most cases, basins serve multiple purposes including buffering, recreation and habitat.

The District's CIP included projects addressing flood and erosion control along the Santa Cruz River and Rillito Creek. The program also included urban infrastructure improvements to control drainage and repetitive flooding, channel improvements, linear parks, habitat restoration and substantial floodprone land acquisition.

The citizenry is so supportive of flood control property tax funded projects that Pima County voters have approved bonds to provide for additional improvements. Below are descriptions of the projects completed within the last five years. Chapter 9.4 contains a list of CIP planned for the next five years.

Funding

The revenue from the District's tax levy provides the largest share funding for CIP projects. At the start of the reporting period, revenues from the District's property tax levy accounted for 91.8% of CIP funding. By the end, almost 98% of CIP funding came from the tax levy. Other sources of revenue include voter approved General Obligation Bonds and state grants. Federal matching funds of about \$2 million from the United States Army Corps of Engineers (USACE) remained for completion of the Arroyo Chico project; however, the district received no new federal funds.

In 2004, voters approved significant funds for five urban drainage projects and FLAP funds for open space acquisition. The District completed 46 projects during the reporting period using revenue derived primarily from the property tax.

From the beginning of the reporting period, property tax revenue decreased for two years and then increased for two, ending at \$21,462,804 annually. This is lower than the previous five-year period average.

Figure 21 on the following page shows the locations of projects in the list below, which the District completed during the current reporting period.

1. Arroyo Chico Final Phase – High School Wash Box Culvert Storm Drain;
2. Catalina Estate Drainage Way Improvements;
3. CDO River Park Thornydale to Magee;
4. City of South Tucson Urban Drainage;
5. City of South Tucson Urban Drainage;
6. Dakota Wash Erosion Control;
7. Green Valley Drainageway #6;
8. Green Valley Erosion Control;
9. Julian Wash Kolb Rd Pathway Underpass;
10. Los Reales Wash at SCR Channel Extension;
11. Lower Santa Cruz Levee Bank Repair;
12. Lower SCR Levee at Tangerine Rd;
13. Mission View Wash;
14. Pantano Wash Speedway to Tanque Verde;
15. Pantano Wash Watershed Study;
16. Paseo de Las Iglesias;
17. Pasqua Yaqui Tribe Black Wash Urban Drainage Improvements;
18. Rillito Riverpark Repaving between La Cholla Boulevard and Campbell Avenue;
19. Santa Cruz to Julian Connection;
20. SCR Continental Ranch Remediation;
21. SCR Grant Camino del Cerro River Park Drainage Improvements;
22. SCR Paseo de Las Iglesias Restoration;
23. SCR Watershed Study; and
24. Tucson Mall Linear Park.

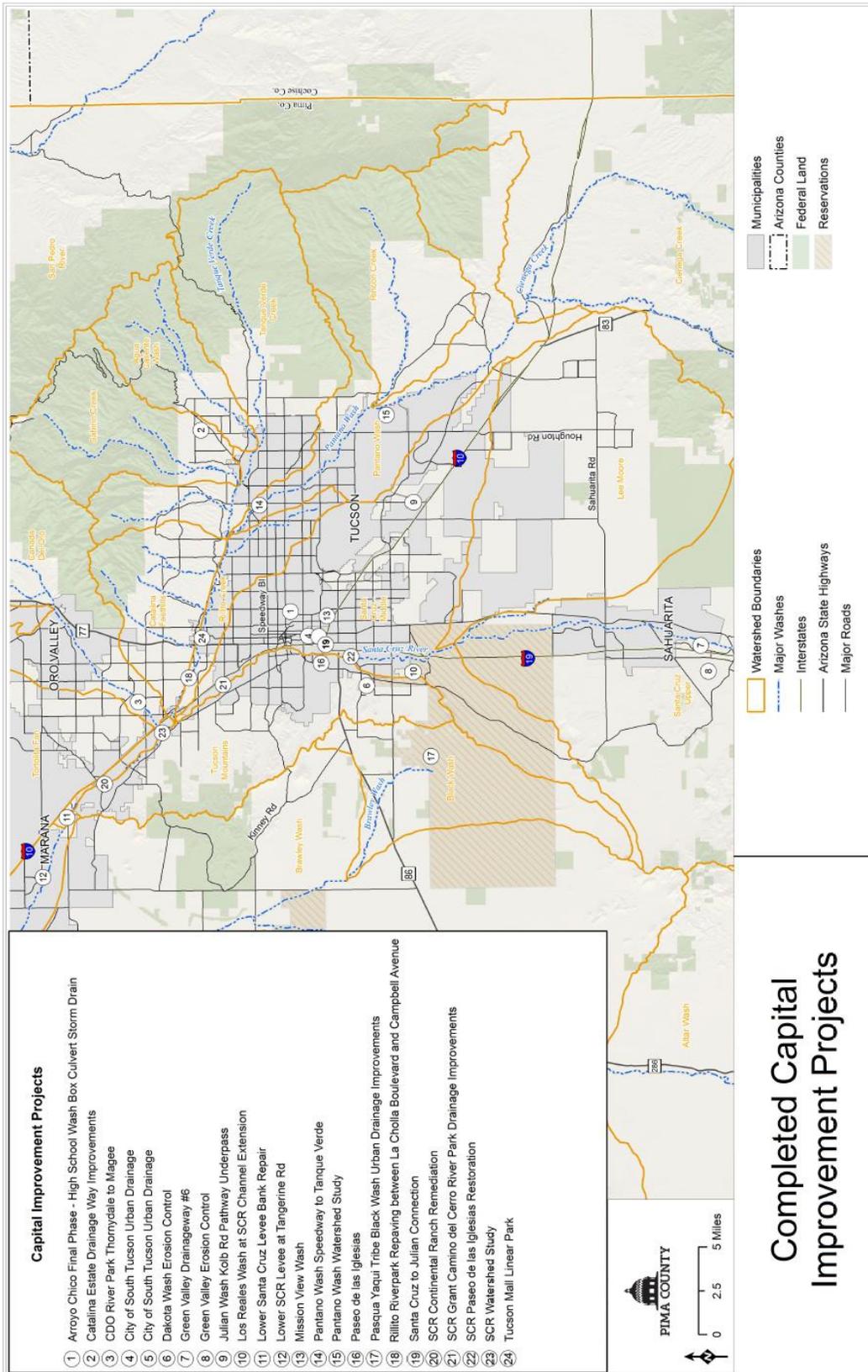


Figure 22 - Completed Capital Improvements Projects

The following table shows project expenses by year.

Number	Name	2012	2013	2014	2015	2016	Total by Project
CFC.4F-PDLI	FC - SCR Paseo de Las Iglesias Restoration USA COE	\$ 1,263,649	\$ 1,279,879	\$ 490,058	\$ (3)	\$ (15,124)	\$ 3,018,459
CFC.4F-TVCS	FC - TV Creek Sabino Canyon to Craycroft USA COE		\$ 172,787	\$ 113,693	\$ 4,487	\$ -	\$ 290,967
CFC.5AIRPO	FC - Airport Wash - Economic Development Zone		\$ 46	\$ 425,560	\$ 306,025	\$ 229,406	\$ 961,037
CFC.5CDOLL	FC - CDO Pathway La Cholla to La Canada		\$ 498,354	\$ 936,504	\$ 162,097	\$ 825,568	\$ 2,422,523
CFC.5CDOPK	FC - CDO River Park Thornydale to Magee	\$ 162,485	\$ 501,398				\$ 663,883
CFC.5CDOTY	FC - CDO Linear Park - Thornydale Rd to I-10		\$ 180,948	\$ 418,974	\$ 917,932	\$ 520,734	\$ 2,038,588
CFC.5CRLFR	FC - SCR Continental Ranch Remediation	\$ 1	\$ 356,513				\$ 356,514
CFC.5FLPRA	FC - Floodprone & Riparian Land Acq	\$ 92,268	\$ 420,403	\$ 301,959	\$ -	\$ (2)	\$ 814,628
CFC.5JUCON	FC - Santa Cruz to Julian Connection		\$ 150,597	\$ 25,000			\$ 175,597
CFC.5JWKR	FC - Julian Wash Kolb Rd Pathway Underpass	\$ 39,565	\$ 560,431				\$ 599,996
CFC.5LOSRLW	FC - Los Reales Wash at SCR Channel Extension		\$ 52,600				\$ 52,600
CFC.5PWSTV	FC - Pantano Wash Speedway to Tanque Verde	\$ 2,785,724	\$ 691,798	\$ 93,484			\$ 3,571,006
CFC.5PWWSS	FC - Pantano Wash Watershed Study	\$ 105,192	\$ 27,081				\$ 132,273
CFC.5RILPV	FC - Rillito Riverpark Repaving La Cholla Blvd- Campbell Ave			\$ 710,324			\$ 710,324
CFC.5SCRBR	FC - Lower Santa Cruz Levee Bank Repair				\$ 335,000		\$ 335,000
CFC.5SCRGF	FC - SCR Grant Cmno del Cerro River Park Drainage Imprvmt	\$ 602,861	\$ 1,223,348	\$ 317,123	\$ -	\$ (2)	\$ 2,143,330
CFC.5SCRILT	FC - Lower SCR Levee at Tangerine Rd	\$ 61,820					\$ 61,820
CFC.5SCWSS	FC - SCR Watershed Study	\$ 133,448	\$ 110,982	\$ 38,292			\$ 282,722
CFC.5SERAJ	FC - SCR Flood Control Erosion Control & Linear Pk Ajo to 29	\$ 17,759	\$ 163,501	\$ 6,406,829	\$ 6,082,759	\$ 1,638,968	\$ 14,259,816
CFC.5TMALL	FC - Tucson Mall Linear Park		\$ 17,461				\$ 17,461
CFC.5UDPYT	FC - Pasqua Yaqui Tribe Black Wash Urban Drainage Imprvmt		\$ 1,363	\$ (484)	\$ 445,411		\$ 446,290
CFC.5UDSTU	FC - City of South Tucson Urban Drainage	\$ 3,267	\$ 6,409,490	\$ 10,277,316	\$ 8,203,708	\$ 3,199,548	\$ 33,358,101
Total by Year		\$ 5,268,039	\$ 6,409,490	\$ 10,277,316	\$ 8,203,708	\$ 3,199,548	\$ 33,358,101

Table 6 - Capital Improvement Project Expenditures

The District typically constructs projects in phases due to their complexity, cost and the mix of funding sources. For example, the Arroyo Chico Flood Control Project was a \$31.6 million project in collaboration with the USACE, to relieve flooding along Arroyo Chico and tributary washes in central and downtown areas within the City of Tucson. The project was two-phase: Phase I included the construction of the Randolph South Detention Basin, which the District completed in 1997 at a construction cost of \$7 million; and Phase II included construction of four detention basins along the Arroyo Chico upstream of Park Avenue and a new storm drain system for High School Wash. The District completed construction during the reporting period in the spring of 2015.

CIP Project Highlights

The following sections describe the projects completed during the reporting period. Large, on-going projects not completed prior to June 30, 2016 are also included. Figure 23 shows the location of each project.

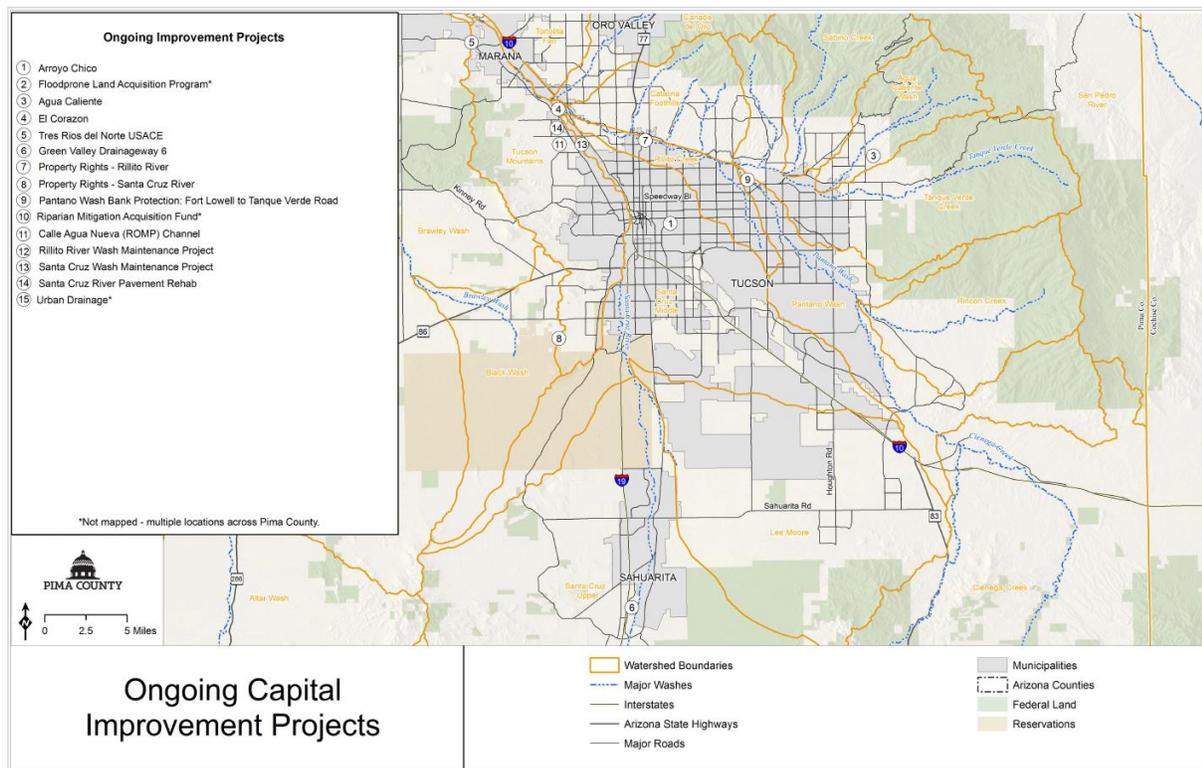


Figure 23 - Ongoing and Planned Capital Improvements Projects

Arroyo Chico Phase II – High School Wash Box Culvert Storm Drain

The District and the City, in cooperation with the USACE, have jointly undertaken a multi-phase flood control, environmental restoration and recreation project called the Tucson Drainage Area/Arroyo Chico Multi-Use Project. The phases of the project are Phase 1, Randolph South Detention Basins, completed in April 1996 by the District and the City of Tucson. Phase 2A, Cherry Field Detention Basin, completed in December 2008 by the USACE. Phase 2B, Park Avenue Detention Basin Complex, completed by the USACE in December 2012. Increment 4 - High School Wash Storm Drain, started construction on June 2, 2014 and was completed in 2015.

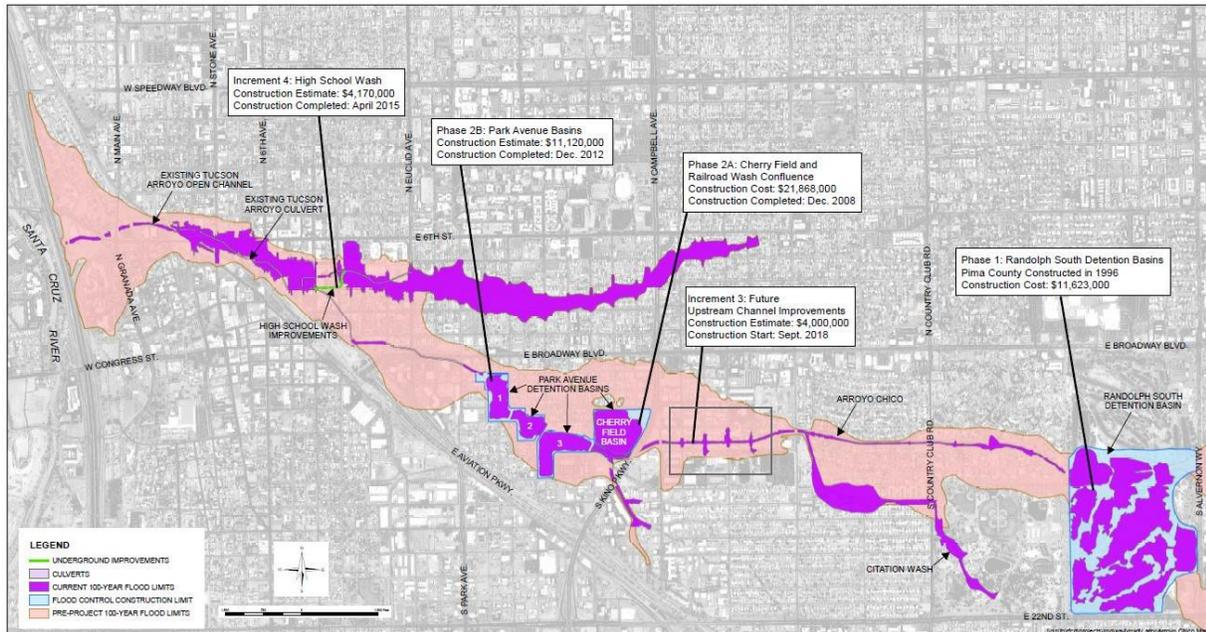


Figure 24 - Arroyo Chico Phasing Plan

The High School Wash large box culvert is part of the contracted Phase 2B improvements. Using federal funds authorized on June 24, 2013, construction began on June 2, 2014 and completed in March 2015. At the request of the City of Tucson, the Board authorized an additional \$1,500,000 for the District to construct drainage improvements in the form of enlarging a section of the main storm drain to handle additional flood flows and the addition of catch basins to remove street runoff, thereby reducing downstream flooding. The total cost of this additional work was \$1,921,165.

The High School Wash box culvert storm drain consists of a 776 linear foot box culvert (12 ft. x 8 ft. and 10 ft. x 8 ft.) that connects with the existing 1930s vintage (10 ft. x 7.5 ft.) concrete box culvert located under Tucson High School. With the recently completed City of Tucson/Regional Transportation Authority (RTA) 8th Street Drainage Improvements that ended at 4th Avenue, the new storm drain efficiently moves storm flow from the inlet at Euclid east of Tucson High School into the new 8th Street storm drain system and ultimately into the Santa Cruz River. The project will significantly reduce flooding around Tucson High School and the 4th Avenue business district. The estimated cost for construction of this increment was \$4.2 million. The District completed this project in spring 2015.

Cañada del Oro River Park – Thornydale to Magee

Cañada del Oro Wash is now bank protected from the Union Pacific Railroad on the south bank and from just west of Thornydale Road on the north bank to the Omni Tucson National Resort. The project provided a river linear park between Thornydale Road and Magee Road plus a paved bike path connection to the Rillito River Park via Thornydale Road. It includes a paved pathway on both sides of the river, landscaping, irrigation, and six pedestrian bridges. There are also underpass ramps at Thornydale and Ina roads, a parking node at Magee Road with ramadas, restroom, a parking easement at Thornydale Road, as well as a reclaimed water irrigation system.



Bank protection under construction

Lower Santa Cruz River Levee at Tangerine Road

The District completed improvements to the Lower Santa Cruz River Levee at Tangerine Road for \$61,820. Constant low flows had degraded the flowline along a section of the Santa Cruz River to within a couple of feet of the existing toe of the bank protection. This project included relocation of the thalweg by replacing material against the existing bank that had been lost during previous large storm events. The design included placing riprap groynes to direct low flows away from the bank and create a thalweg that does not run adjacent to the toe of bank and to help re-establish protective vegetation along the bank. The District awarded the contract on March 5, 2012. Construction started immediately and completed by April 10, 2012. The District completed this project on schedule and for roughly 15% of the estimated cost. This is because the estimate was for extending the toe down depth. Switching to groynes saved money and had the added benefit that a Section 404 permit would not be required.



Groynes placed to shift the low flow channel and allow vegetation to grow

Pantano Wash Phase 2 – Speedway to Tanque Verde Road

Construction of bank protection along Pantano Wash started November 2011 and was completed in February 2013. The project included the construction of 4,300 linear feet of new soil cement bank protection and paved river park pathways, landscaping, irrigation, and new underpasses at Tanque

Verde Road and on the west bank at Speedway Boulevard. The project is located on the Pantano Wash between Speedway Boulevard and Tanque Verde Road.

Paseo de Las Iglesias

Phase 1 of the Paseo de las Iglesias project, located along the Santa Cruz River from Ajo Way to Silverlake Road, was funded by the 2004 Bond Election. Construction began in November 2013 and completed in 2017. The project included extensive removal of buried and exposed debris and clearing of invasive species prior to the beginning of bank protection construction, completed in 2017. Work was also performed to clean and bank protect Julian Wash, expand Mission View Wash and begin construction of gabion terraces and culverts on a minor tributary south of Mission View Wash. Grading was performed on the top of banks to begin construction of the parking areas and restroom as well as staking for pathway and landscape irrigation lines. The artists selected to create public art for the project conducted site visits and began construction of their pieces for the site. Multiple onsite tours were led for groups such as Pima County, the USACE, Arizona Department of Transportation, Tucson Electric Power, University of Arizona, and the Arizona Riparian Council Conference.



Santa Cruz River – Grant to Camino del Cerro

With the bank protection completed primarily before this reporting period, the Board authorized additional work, including the installation of pedestrian bridges pictured here and paved pathway on the east bank.



This is another example of the District’s flood safety projects providing multiple benefits including flood control, recreation, open space, riparian habitat corridors and neighborhood stabilization. Figure 23, on page 57 shows the distribution of these projects.

5.3.4 Drainage System Maintenance (CRS Activity 540)

Maintenance of improvements and open space is a significant component of the District’s budget and activity. FEMA defines a Drainage System as improved or natural drainages that require maintenance in order to prevent property damages. There are 25,562 acres countywide in this drainage system. This includes portions of the system located within incorporated areas that the District maintains, which are largely located along the major river corridors.

Infrastructure Division staff routinely conduct field inspections of the District’s drainage structures for all major watercourses and regional detention/retention basins. As part of this program, District staff compiled a resource base of all construction plans for bank protection, levees, grade control structures and detention/retention basins. In order to monitor potential structural failure inspection staff created a cross-referenced filing system for inspection documentation including digital photographs.

The Chief Engineer approved a series of technical policies during the program period that establish infrastructure inspection and maintenance procedures. Infrastructure Management staff inspects, maintains and repairs watercourses and associated improvements that are owned or operated by Pima County or the District per these procedures. Tasks include repairing constructed improvements, removing sediment buildup, clearing vegetation and other debris, maintaining drainageway access roads, and grading channels to provide positive drainage. Water Resources Division staff

complements these drainageway inspections by monitoring natural areas. Floodplain Management Division staff is also involved when investigating drainage complaints.

When internal resources are not available, contractors may be used. Additionally, through Inter-Governmental Agreements, the District maintains major watercourses, bank stabilization and other improvements within the City of Tucson, and the towns of Oro Valley and Marana. When conducting maintenance work, the District obtains appropriate permits from the USACE and notifies the U.S. Fish and Wildlife Service.

5.4 Flood Warning and Response (CRS Activity 600)

The District has advanced an Automated Local Evaluation in Real Time (ALERT) system that is the linchpin in the District’s Flood Threat Recognition (CRS Activity 611) and Early Warning Dissemination (CRS Activity 611). The District’s Flood Response Field Manual describes response procedures and needs in detail. Staff substantially updated it in November 2016, with interjurisdictional coordination described in the Pima County Hazard Mitigation Plan and Emergency Response and Recovery Plans, and Dam O&M Plans.



As one of the District’s most used services, the ALERT Flood Threat Recognition System has been providing precipitation and stream flow data from a series of gages located throughout Pima County since 1981. The ALERT system is part of a three-way agreement with the National Weather Service

(NWS), the Arizona Department of Water Resources (ADWR) and the District. The ALERT system initially provided advanced warning of potential flood flows on the Upper Cañada del Oro watershed from a breach of the Golder Dam. Federal and state financial assistance combined with funding from the District has allowed us for expansion of the ALERT system.

The system of gages now covers most of the large watersheds in eastern Pima County and currently includes 94 precipitation gages, 36 stream gages, and 5 weather sites. The precipitation gages relay rainfall amounts and intensities, stream gages measure the depth of flow in streams, and weather stations provide precipitation information plus wind speed, temperature, relative humidity and barometric pressure. This network of automated gages transmits data in real time to the District, NWS, and the ADWR office in Phoenix. The NWS uses this data to produce flash flood watches and warnings and ground-truth radar estimates of precipitation. District personnel utilize the information to assist emergency response agencies including the Pima County Department of Transportation’s Maintenance Operations staff and the OEM during storm events. The public and responders may view data generated by these sites at:

<https://alertmap.rfcd.pima.gov/gmap/gmap.html>

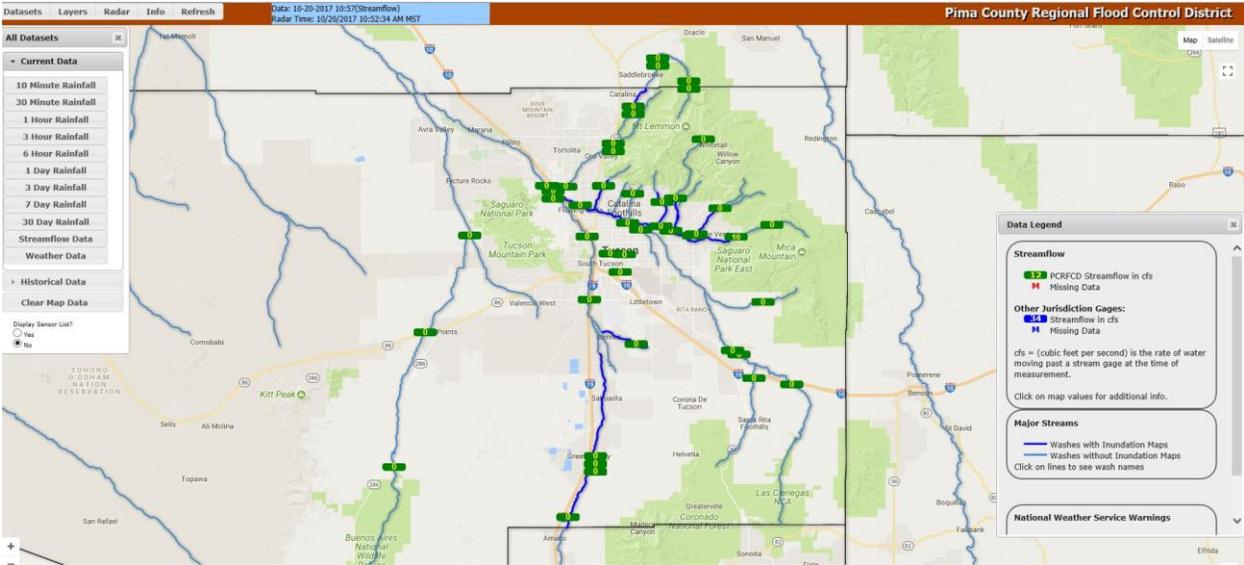


Figure 25 - Screen Capture of ALERT Webpage

The rapid development of floods in many watersheds poses a significant challenge to adequate flood warning, and as such, calibration of travel times has become a priority for the District in recent years. Table 7 on the next page provides a summary of critical discharges and early warning criteria for known locations. The Flood Response Field Manual provides full operational details.

Flood Threshold Known to be Less Than 100 Year Flood			
Watercourse	Flood Level Threshold	100 Year	Critical Areas
Tanque Verde Creek	7,000 cfs (6.6 ft at 2093)	16,000 cfs 13.0 ft at 2093	South Bank – Tanque Verde Loop Rd to Houghton Rd
Tanque Verde Creek	8,000 cfs (7.0 ft at 2093)	16,000 cfs 13.0 ft at 2093	49ers Subdivision (North bank, west of Wentworth)
Tanque Verde Creek	11,000 cfs (4.2 ft at 2093)	16,000 cfs 13.0 ft at 2093	Woodland Rd Area (North bank near Tanque Verde Rd Bridge)
Tanque Verde Creek			
Canada Del Oro Wash	2,000-2,500 cfs (7.1-7.6 ft at 1079/1083)	17,500 cfs (7.25 at 1103*)	West Bank – just south of Meadowcrest alignment
Canada Del Oro Wash	2,000 cfs (7.1 ft at 1079/1083)	17,500 cfs (7.25 at 1103*)	West Bank – just north of Hawser Street alignment
Canada Del Oro Wash	875-1,500 cfs (5.2-6.4 ft at 1079/1083)	17,500 cfs (7.25 at 1103*)	West Bank – just south of Golder Ranch Rd Bridge
Canada Del Oro Wash	1,500-2,000 cfs (6.4-7.1 ft at 1079/1083)	17,500 cfs (7.25 at 1103*)	West Bank – just north of Rollins Rd
Rincon Creek	1,000 cfs (5.5 ft at 4113)	16,000 cfs (12.5 ft at 4113)	Ranchos Pequenos Subdivision

Table 7 - Early Warning Discharges

The improved website is more user friendly, presents ALERT data more reliably and offers much more information to assist local communities, public safety agencies, researchers and the public about current weather conditions. The website provides realtime data from the streamflow and weather-monitoring stations run by the District and partner agencies, including NWS, U.S. Geological Survey, Arizona Game and Fish, and Pinal, Cochise and Santa Cruz Counties. The list of available cooperator sites continues to expand and will be added as they become available.

The map display is built on a Google Maps structure that provides an easy to navigate, up-to-date map that can be viewed in either street or terrain-view, and can display satellite imagery. Additionally, current radar images, both static and animated, can be displayed on the map along with NWS storm warnings that appear on the map as a box outlining the affected area(s). At this time, flow depths and inundation areas including flood prediction are not available on a countywide basis.

During the previous five years, numerous rainfall events resulted in road closures and roadway damage. This required close communication with the Pima County OEM, the Pima County Department of Transportation, and the NWS.



The ALERT system also guides emergency response by identifying where people, infrastructure and critical facilities may be in danger from the rising floodwaters. In addition to triggering warnings and notifying responders, the District responds directly by dispersing staff to flooded locations to inspect infrastructure and respond to complaints or other calls for assistance.

The District Flood Response Field Manual (Administrative Procedure 202) guides staff conducting Flood Response Operations and includes forms for gathering information, handouts relating to flood recovery, cameras and checklists of places and criteria for record keeping. A levee and dam specific plan (CRS Activity 620/630) is contained in the “O & M Report”, recorded at the the Pima County Recorder’s Office under Docket: 13162, Page: 701. A list of levees and dams maintained by the District is also included in the Flood Response Plan for reference by staff conducting flood investigations.

Since residents may not be familiar with which roads are impassible during flooding, the PPI Committee has emphasized the need to increase outreach relating to road closures. The maps attached to the annual floodprone property owner mailing now includes frequently flooded roads for route planning purposes. Figure 26 below shows this information.



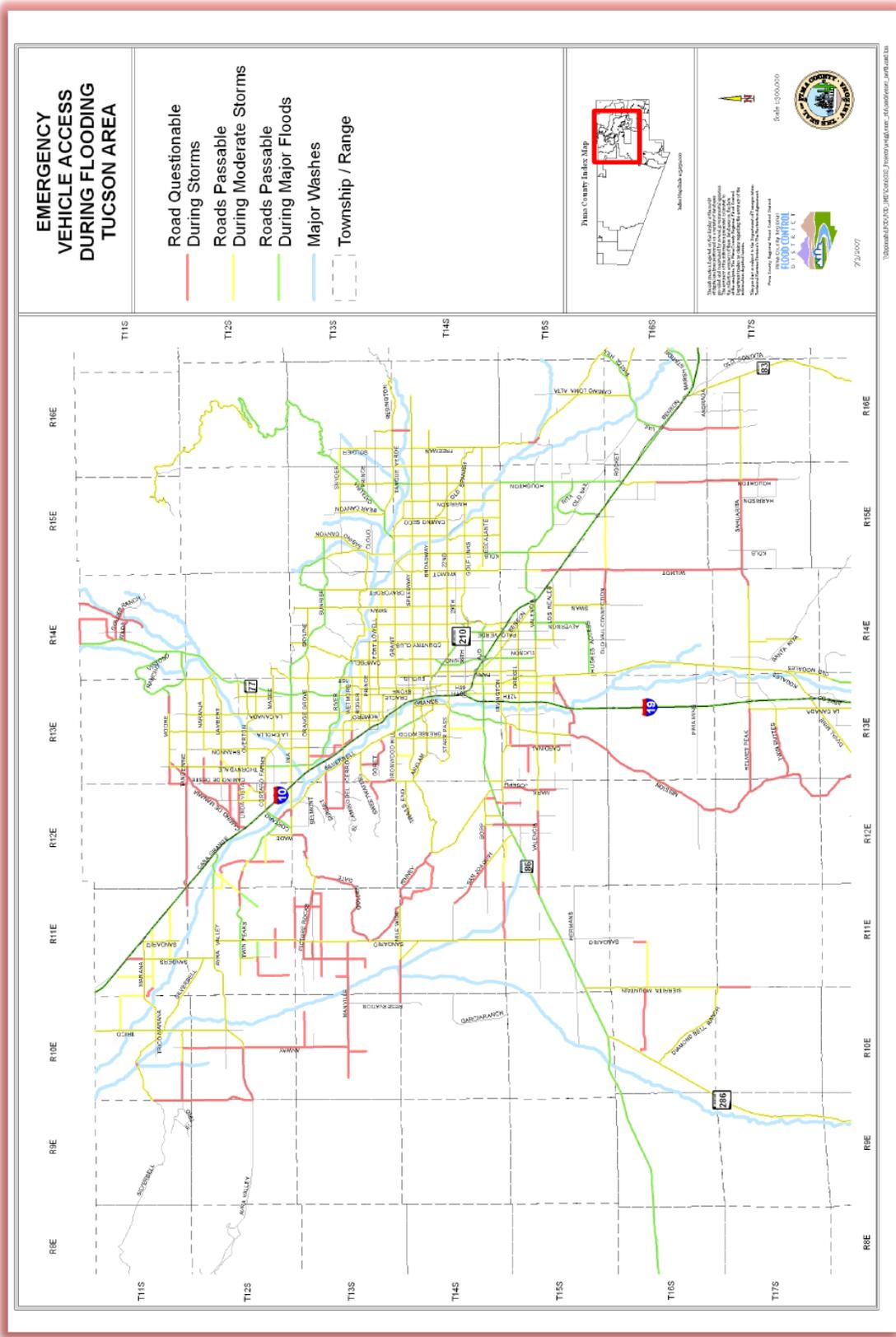


Figure 26 - Map of Frequently Flooded Roads

Pima County maintains a road closure website and hotline, issues press releases and includes maps for frequently flooded roads in direct mailers to the community. The ALERT page allows residents, drivers and responders to determine when they should avoid certain wash crossings.



5.4.1 Rain Gage Volunteer Program

Since 1977, the District has operated a system of volunteer weather watchers, known as rain gage volunteers. The District provides participants in the program with a standardized rain gage and data sheets to record daily rainfall information. Participants may also provide information about the duration and amount of each storm.

Volunteers submit the data to the District every two months, at which time they are compiled and recorded. Since July 2006, the network has averaged approximately 60 volunteers distributed across the entire metropolitan and outlying areas.

5.4.2 Flood Preparedness

The District, in cooperation with the USACE, ADWR, and other state and local agencies continues working to develop the communication aspect of a statewide flood warning system. District staff participates in the Multi-Agency Task Force committee, which provides communication activities between jurisdictions and helps coordinate the development and updating of the HMP and Emergency Response and Recovery Plan.

5.5 Recent Accomplishments

Between July 1, 2011 and June 30, 2016, the District not only enjoyed the successful testing of prior preparation efforts during significant flood events, but also continued to make programmatic improvements including the following highlights:

- 2015 publication of the *Low Impact Development and Green Infrastructure Guidance Manual*;
- 2014 adoption of revised Design Standards for Stormwater Detention and Retention in Pima County;
- 2014 adoption of a new Ordinance with procedures governing fines for non-compliance, appeal and hearing procedures;
- 2013 approval by FEMA of the HMP as a CRS Floodplain Management Plan;
- 2012 approval of the Multi-Jurisdictional Hazard Mitigation Plan; and
- 2011 adoption of the Regulated Riparian Habitat Mitigation Standards and Implementation Guidelines.

Throughout the five-year period covered by this plan, the District continued its program of conducting local flood hazard studies, including:

- Canyon del Salto Wash
- Casas Adobes Wash
- Green Valley Drainageways;

- Nanini Wash
- Pantano Wash Watershed Study
- Peglar Wash
- Race Track Wash;
- Sabino Vista Wash
- Santa Cruz River (SCR) Watershed Study;
- Unnamed Washes #2, 3, 10 & 12
- Via Entrada Wash
- Yuma Mine Wash

Descriptions of completed and ongoing CIPs are included in Section 5.3.3 of this report.



Sunset along the Loop

6.0 SUMMARY AND CONCLUSION

The following sections of this Report summarize the effectiveness of the program described herein and identifies future needs.

6.1 Program Effectiveness

The District's Capital Improvement Plan continues to be successful in completing projects that benefit public safety, natural floodplain functions and recreation. While the frequency and severity of floods and related weather hazards have increased, property exposure and damages have not. Increased compliance enforcement and inspection capability have resulted in better maintenance of both public and private drainage improvements and preservation of natural flow corridors where appropriate.

The combination of significant acquisition programs and active watershed restoration via GI/LID methods and water harvesting, along with robust regulatory frameworks, has made Pima County a regional and national leader under the NFIP. During the program period, District staff facilitated development of a PPI in consultation with stakeholders. Because of these programs, FEMA has recognized the success and as a result, significantly lower flood insurance rates are available in unincorporated Pima County. Continual improvements undertaken with the community, along with Board support, have positioned the District to achieve even greater success and discounts within the next five years.

6.2 Future Needs

Despite these successes and the support of elected officials, environmental change, some climate related, including increased frequency and severity of storms and wildfires have resulted in a greater need for continued monitoring. During the program period, which followed a period of drought and fire, significant flood events produced large shifts in sediment load. In some locations, undercutting affected erosion protection and in others, aggradation resulted in loss of channel capacity. This has the potential to increase flood risk on properties previously not impacted by FEMA floodplains. In order to address this problem on a region wide basis the District negotiated an Intergovernmental Agreement with the City of Tucson whereby the District is responsible for maintenance of major watercourses and the associated river park system. In the future, annual monitoring of sediment load will be required along with corrective measures to ensure designed conveyance capacity exists. Outreach to impacted communities will remain a priority.

The District plans to add gages and develop inundation maps for stream-gaged watercourses in order to improve flood warning. Development of these maps and associated public messaging is a priority. Training for and coordination with first responders should be greatly increased. This includes participating in updating the Pima County HMP, related Emergency Operations Plan(s) and especially exercises or drills.

7.0 RECOMMENDATIONS AND ACTION PLAN

7.1 Cooperation, Coordination and Consultation

Increasing project costs and complexities, including ownership and multi-functional scopes, necessitate the need for continuing to cooperate, coordinate and consult with stakeholders on program activities such as CIP, habitat enhancements and enforcement. The District engages stakeholders as new projects are developed and implemented on an individual basis throughout the budgeting process.

7.2 Program Improvements

Flood Warning

In part due to public concern over several major flood events and the recognition that transportation infrastructure is at risk, the District has embarked on an expansion of the ALERT network. Furthermore, the District is greatly improving the manner in which we convey flood threat information to the public and other agencies.

Drainage System Maintenance

During the last five years, the District expanded staff to provide improved drainage infrastructure inspection and monitoring capabilities. This has resulted in increased preventative maintenance including removal of aggraded sediments from channels. Studies of aggradation and channel capacity remains a priority for the next five years to better direct this work.

Outreach

Public education and awareness of potential severe storm and flood hazards is a vital component of the floodplain management strategy. Education includes addressing issues on the NFIP for homeowners and businesses. The District plans to continue expanded education of professionals in real estate, building and manufactured housing regarding disclosure and compliance issues; and educating citizens on flood preparedness, including flood insurance, family safety planning and safety tips about entering flooded washes. While existing programs are extensive and have been highly rated, over the last five years the District began developing the formal PPI to improve our outreach by engaging stakeholders in analysis of target audiences and message delivery. Chapter 5 contains information about the PPI. During the next five years, the District shall implement and update this program. Specific new outreach activities include developing courses for realtors and newcomer packages for major employers, along with modernizing the look of older materials and reevaluating the use of printed notices.

Hazard Mitigation Planning

Natural hazard mitigation planning is the process of identifying and implementing programs to reduce or eliminate the loss of life and property damage that may result from natural hazards such as floods. Through the Disaster Mitigation Act of 2000, the federal government has established criteria for state and local governments to develop a community-based hazard

mitigation plan for natural and manmade disasters. Pima County, with assistance from the Arizona Department of Emergency Management, developed the HMP for Pima County and incorporated communities therein. The basic steps for mitigation planning include:

- *Organization of Resources.* The initial focus for state and local communities is gathering resources, including identifying the necessary technical expertise and community agencies in hazard mitigation.
- *Assess Risks.* Identify the characteristics and potential consequences of natural hazards and the potential risks and damages.
- *Develop a Mitigation Plan.* Prioritize structural and nonstructural approaches to avoid or minimize damages by development of a formalized hazard mitigation plan.
- *Implementation of the Plan and Monitoring of Progress.* Implement specific mitigation projects, adopt land use regulations to avoid future hazards, periodic evaluation of the effectiveness of the plan, and project improvements and regulations in reducing or avoiding damages and loss from natural hazards.

Through annual reports and 5-year Reports, the District has been formally reporting and evaluating flood hazard mitigation strategies. These hazard mitigation strategies include floodplain management, riparian habitat protection, and capital improvements.

The U.S. Department of Emergency Services and Homeland Security is the agency responsible for coordination with local, state and federal agencies for hazard mitigation and emergency response, including Early Warning Dissemination. The District provides the local technical expertise for flood and erosion hazards, including providing Flood Threat Recognition and mitigation project implementation.

During 2016, the Pima County OEM began to update this plan, which FEMA has credited as the CRS Floodplain Management Plan for Pima County, as it receives formal approval by the Board of Supervisors and other participating jurisdictions. This report incorporates the HMP by reference and hazard exposure and mitigation activity materials are cross-referenced.

Floodplain Management

The District implements and continues to improve upon numerous nonstructural programs to address flood hazards, such as; regulation of land use in floodplains, developing watershed plans, river and basin management studies to delineate flood hazards and avoid future risks, improving public awareness about flood hazards through outreach, and floodprone land acquisitions.

Floodplain Regulations

The Ordinance provides goals and objectives to guide nonstructural activities, regulate land use and reduce the potential for future flood damages. District staff and the Flood Control District Advisory Committee review the Ordinance and associated standards annually for consistency with land development patterns and the NFIP.

Watershed Planning

The District develops watershed and basin management plans as strategic floodplain management tools to address the unique physical and hydrological characteristics of each watershed and major watercourse. The goal of watershed planning is to control the impact of urbanization within each watershed to minimize the potential for increased flood peaks and erosion that may occur with urbanization. Watershed plans provide guidance for acquisition of floodprone land, protection of natural conditions, urban stormwater controls and detention, riparian habitat protection, and control of soil erosion. Watershed studies include topographic and aerial mapping to allow for improved identification of flood and erosion risks and to prepare improved floodplain mapping. Within an urbanizing watershed, basin management plans address the need for stormwater detention to minimize the potential for increased flood peaks with development.

Click to View



**Mobile
ALERT Map**

Public involvement and hazard awareness is the key to public safety.

7.3 Open Space Preservation and Management

Preserving open space for the safe conveyance of floods has long been a high priority for the District. The District continues to find new ways to maximize the available land acquisition funding to achieve the greatest results. One aspect of this is the protection of riparian habitat, which is an essential part of managing watersheds and watercourses. Vegetation along stream banks and in the overbank serves to slow the flow of floodwaters, encourages the infiltration of floodwaters, indirectly remediates contaminants and stabilizes soil against erosion. The District continues to provide protection of the natural riparian habitat through land use regulations in the Ordinance, acquisition of floodprone land to preserve riparian habitat, and the management of water resources to maintain the environment necessary for healthy riparian vegetation.

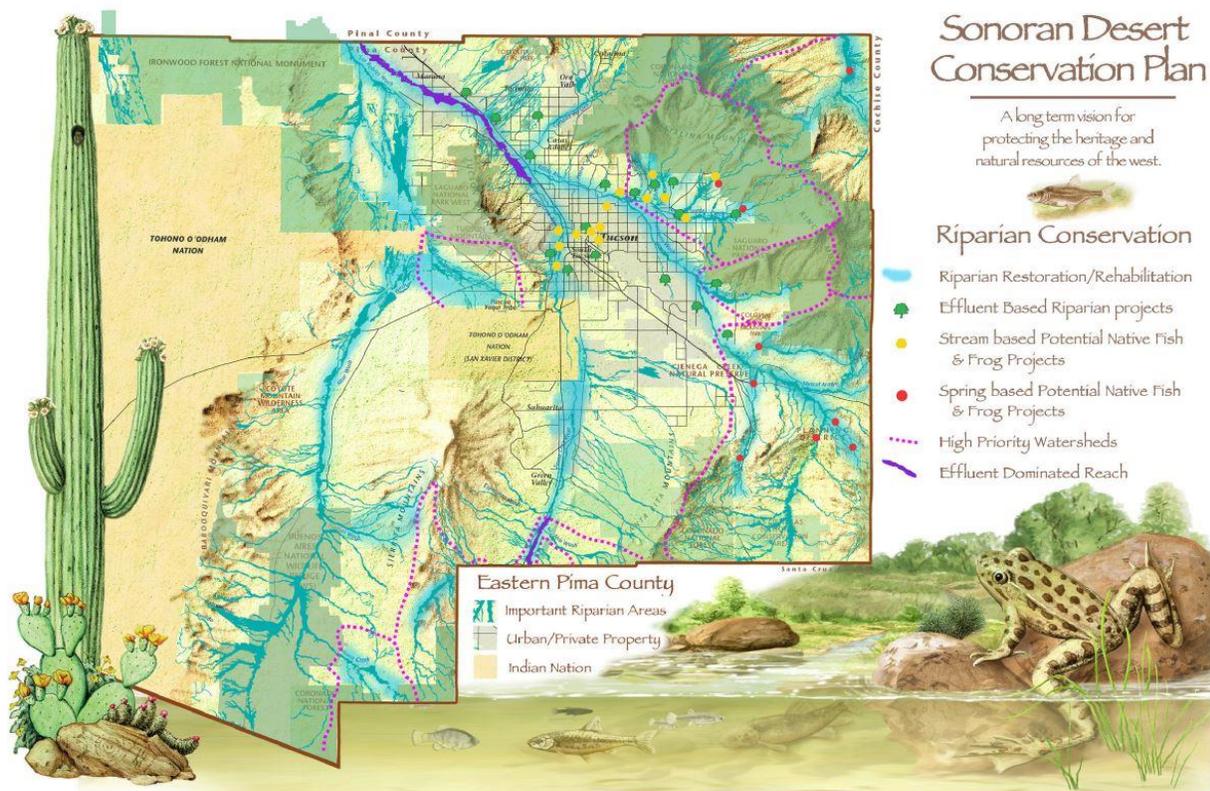


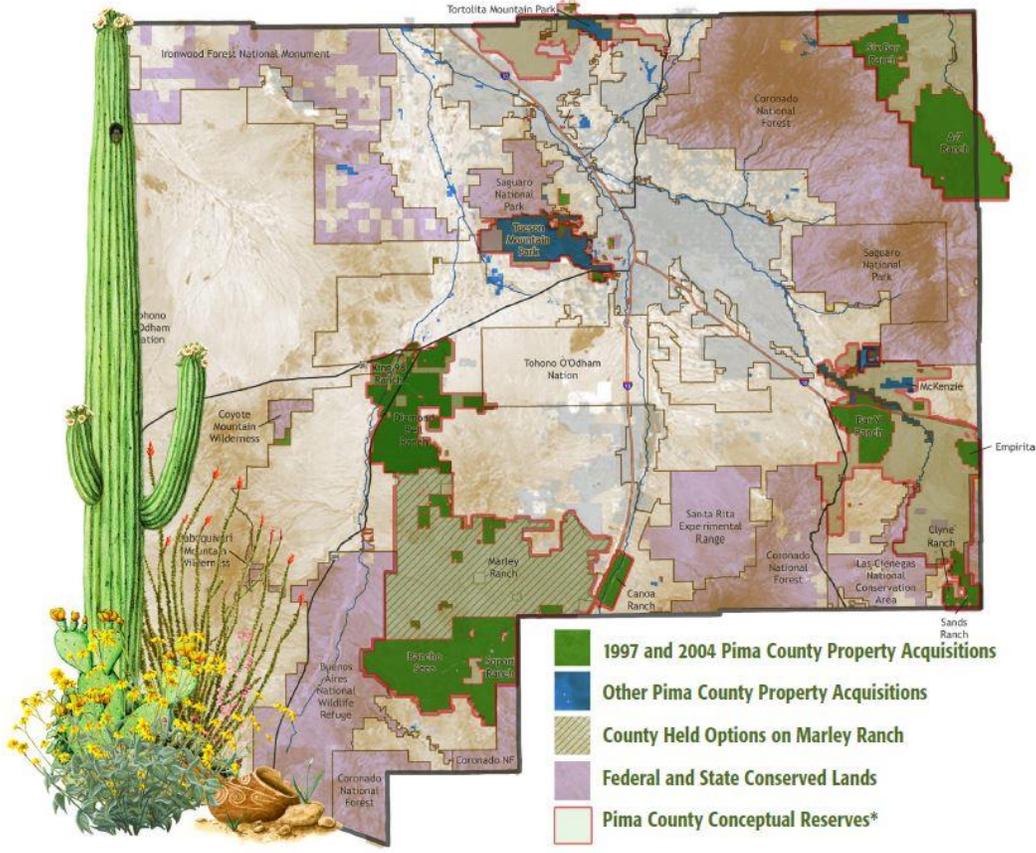
Figure 27 - Sonoran Desert Conservation Plan Riparian Conservation Map

Since the adoption of the SDCP and the CLS, the District has participated in mapping important riparian areas along the major watercourses and other streams for protection. The District has assisted in the development of updated riparian mapping of Pima County’s resources and has revised the Ordinance to align it with the land use plan of the SDCP and the updated and more detailed mapping of riparian habitat in Pima County. In concert with the SDCP, the District will continue technical studies and evaluations of habitat and water resources for the preservation and protection of riparian habitat in Pima County.

As part of the SDCP, the District acquires and manages land to preserve the natural and beneficial functions of floodplains and to reduce exposure to flood risk. Since 1984, the District has been active

in acquiring floodprone land in upper watershed areas such as Cienega Creek and the Santa Cruz River at Canoa Ranch as a means of preserving the natural floodplain functions. This program also provides a cost effective means of removing residents from floodprone areas where structural flood control options are not practical. The program also protects riparian areas. Chapter 5 describes lands acquired and enhanced during the last 5 years. District annual reports include expenditures for these activities. This program is partly responsible for the success in protecting floodplain open spaces, and the District's high score under the CRS. The SDCP map in Figure 28 provides a general depiction of acquisition strategy along with FLAP parcels in blue.

Properties acquired under 1997 and 2004 Conservation Bond Programs



* These are conceptual reserves and in no way affect any Federally, State or privately owned land within each reserve. Lands within reserves have been identified within the Conservation Lands System since 2001.

Figure 28 - Open Space Acquisition

7.4 Capital Improvements Plan

Since its inception, the District has completed capital improvements to reduce the risk of flood damages to private and public improvements in a manner that provides flood mitigation as well as restoration. The District develops both an annual and a five-year Capital Improvement Plan to address the needs within each jurisdiction or geographical area. Chapter 5 describes projects completed during the current five-year reporting period. The District develops the plan based on available funding and recommendations from watershed plans, jurisdictions and community members. The District's Capital Improvement Plan addresses:

- *Previous Flood Damages.* Prioritization of projects that address previous flood damages and areas subject to repetitive flooding and drainage problems.
- *Regional Programs.* Projects and programs that are regional and provide countywide benefits.
- *Downstream Benefits.* Development of master management plans for the major watercourses and watersheds to reduce the hazards from flooding and erosion that also consider downstream impacts and benefits.
- *Evolving Urban Edge.* Construction of a significant amount of bank stabilization and flood control improvements in existing urban and growth areas. Regulations and projects in growth areas and the evolving urban edge help new development to avoid future flood hazards.

Ongoing projects the District will construct during the next 5 years include:

- 4F2205 Arroyo Chico
- 5BFACQ Floodprone Land Acquisition Program
- 5AGCAL Agua Caliente
- 5CORZN El Corazon
- 5FTRDN Tres Rios del Norte USACE
- 5GVDW6 Green Valley Drainageway 6
- 5PRRIL Property Rights - Rillito River
- 5PRSCR Property Rights - Santa Cruz River
- 5PWFLT Pantano Wash Bank Protection: Fort Lowell to Tanque Verde Road
- 5RMPAF Riparian Mitigation Acquisition Fund
- 5ROGRD Calle Agua Nueva (ROMP) Channel
- 5RRWMP Rillito River Wash Maintenance Project
- 5SCRMP Santa Cruz Wash Maintenance Project
- 5SCRPR Santa Cruz River Pavement Rehab
- 5URBAD Urban Drainage

The Board appointed Flood Control District Advisory Committee revisits these priorities annually prior to budgeting and that process is ongoing. The list above contains only funded projects. Other projects excluded include those identified but may not receive funding because the District could not acquire ROW or owners consent.

7.5 Plan Approval and Updates

Over the next five-year period, the District shall initiate a formal public Floodplain Management Plan update process using this plan as the starting point. Flood hazard mitigation, floodplain management, resource protection and flood control capital improvements are the fundamental elements of the District's Comprehensive Program. Staff will evaluate implementation of this Comprehensive Program and each element on an annual basis. Preparation of an annual report, the five-Year Report and the

District's annual CRS re-certification are all a part of this annual evaluation. Annually, the District will review:

- The Comprehensive Program,
- Any floods that occurred during the previous year,
- Land use changes and regional needs,
- Progress made towards implementing each element of the plan, and
- Plan goals and objectives, and implementation requirements.

New projects and programs will be established and implemented to address changing conditions and community needs. The District will update this Report every five years, present it to the Board, and publish it on our website to meet State of Arizona Comprehensive Program Report requirements.

APPENDICES

Appendix A - Approved PPI



2016 Program for Public Information

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Background

The Community Rating System (CRS) is a program of the Federal Emergency Management Agency's (FEMA) National Flood Insurance Program (NFIP). The CRS provides guidelines for delivery and evaluation of programs or projects that meet and exceed the minimum requirements of the NFIP to mitigate flood risks. Using a point system to rate those projects, CRS provides an opportunity for participating communities to reduce flood insurance premiums for their constituents.

The Pima County Regional Flood Control District (District) administers the CRS program within unincorporated Pima County. The District selects programs and projects that provide real benefits with respect to floodplain management and flood risk reduction. Based on our current designation as a Class 5 community, flood insurance policy holders currently enjoy premium discounts up to 25%. To improve the effectiveness of our projects and create a more flood-resilient community, the District is interested in the development of a formal Program for Public Information (PPI). The PPI will evaluate and update the District's existing outreach materials and messages while also engaging our partners and community stakeholders.

The District conducts extensive outreach on an ongoing basis. Outreach projects have been developed and are delivered to landowners and the general public by the District, partner municipalities, government agencies and public interest groups. Most of these projects are well established and have been conducted in the same manner for many years. Throughout this document, specific outreach projects will be identified by number, i.e. Outreach Project 11 or OP11.

Current projects include direct mailers to floodplain property owners, utility bill inserts, publications, technical guidance, participation in special events and public meetings, school programs and interactive websites. Stakeholder involvement includes hosting events such as public festivals and professional workshops, guest articles in newsletters, inclusion of District materials in their publications, distribution of District publications and installation and maintenance of on-site interpretive educational exhibits and signage.

Most outreach projects are oriented toward public safety and permitting activities. However, the District has also developed outreach projects about the ecosystem service functions of natural floodplains, including flood attenuation, groundwater recharge, habitat, property value, and micro-climate. Additional outreach on these topics occurs during floodplain mapping, capital improvement and maintenance projects, floodplain permitting and compliance enforcement

Under the auspices of the PPI, the District will evaluate the effectiveness of our outreach. We expect this to be very beneficial since we haven't evaluated our outreach in a systematic manner in the past.

Step 1 Establishing the PPI Committee

In February, 2015, the District mailed letters (Appendix A) inviting partners and stakeholders to participate in a PPI Committee with the purpose of cataloguing and evaluating current District outreach projects, identifying audiences and messages, assessing gaps and obtaining commitments from stakeholders to participate in delivering those messages. Invitees included representatives from environmental groups, insurance organizations and agents, realty organizations and agents, mortgage lenders, homebuilders, homeowners, homeowners associations and major employers. The PPI Committee was officially formed in May, 2015 and included:

1. Bill Arnold, National Liaison, Tucson Association of Realtors
2. Steve Van De Beuken, Mortgage Lender, Sunstreet Mortgage
3. Wayne Cran, Senior Manager of RMS Environmental, Health, Safety and Sustainability, Raytheon Missile Systems
4. Ian Dowdy, Program Director, Sonoran Institute
5. Laura Hagen Fairbanks, Communications Specialist, Pima County Communications Office
6. Christopher Gurton, Insurance Agent, Country Financial
7. Yvonne Hunter, Assistant Director of Consumer Affairs, Arizona Department of Insurance
8. Patrick Marum, Government Relations Director, Southern Arizona Home Builders Association
9. Penni Parish, Homeowner and public representative
10. Eric Shepp, P.E., Deputy Director, Floodplain Management Division Manager and Floodplain Administrator, Pima County Regional Flood Control District

In addition the District provided staff to assist the Committee in its work, including:

11. Joseph Cuffari, CFM, Special Staff Assistant, Floodplain Management Division
12. Brian Jones, CFM, Chief Hydrologist, Floodplain Management Division
13. Greg Saxe, PhD, MRP, Environmental Planning Manager and Pima County Community Rating System Coordinator, Floodplain Management Division

Four PPI Committee meetings were held on the following dates:

- August 5, 2015 CRS Step 1 - Kick-Off, Purpose and Participation
- October 13, 2015 CRS Steps 2 & 3 - Review of Risk Exposure, Current Efforts and
- December 17, 2015 CRS Steps 2 & 3 - Gap Assessment
- March 2, 2016 CRS Steps 3 & 4 – Messaging

Agendas with associated materials were distributed to educate the Committee members and facilitate discussion. The contents and topics of these agendas were expanded upon at the Committee's direction. Agendas have been included in Appendix B.

It is anticipated that a fifth Committee meeting will result in the approval of the PPI. Upon approval of the PPI by the Committee, the District will present the PPI to the Flood Control District Advisory Committee (FCDAC). FCDAC members include appointees from each of Pima County's supervisorial districts as well as representatives from each local municipality. The FCDAC advises the Pima County Board of Supervisors, sitting as the Board of Directors for the Flood Control District, on substantive and technical matters related to the District. The PPI will then be submitted to the Pima County Board of Supervisors for adoption.

Step 2 Community Public Information Needs Assessment

Determination of Target Areas and Audiences:

In addition to examples of all of the current outreach materials, the Committee was given an overview of current credited outreach projects and their intended audiences and target areas. The Committee was also provided an insurance assessment, demographics information, and the flood hazard distribution and exposure information contained in our Hazard Mitigation and Floodplain Management Plan. The PPI Committee agreed that the public is more likely to pay attention to and act upon messages they received from both the District and stakeholders. Such tandem messaging is considered more beneficial than messages that are delivered solely by the District.

In an effort to identify existing gaps, stakeholders’ current efforts were identified. These efforts are summarized in Table 1.

Table 1 - Summary of Existing Outreach by Stakeholders

Organization	Project	Subject Matter	Frequency
FEMA	www.fema.gov	Flood information, brochures	Continuous
National Flood Insurance Program	www.floodsmart.gov	Flood Information, Flood Insurance information	Continuous
AZ Department of Emergency Management	Print outreach, broadcasts, emergency response, mapping services, general information	News, weather, safety and hazard response/oversight, general information	Continuous
Pima County Administration, Office of Emergency Management, Communications Office and Department of Transportation	Print and web media, broadcasts, emergency response, mapping services, general information	News, weather, and road conditions	Continuous
Local Jurisdictions and Chambers of Commerce (i.e. Hispanic, Tucson, Oro Valley, Marana, etc.)	Print outreach, broadcasts, general information	News, weather, mapping services and general information	Continuous
Environmental Organizations (Pima Association of	Print outreach, broadcasts, general information	News, weather, information, bike and pedestrian routes,	Continuous

Governments, Audubon Society, Tucson Clean & Beautiful, Beat Back Buffelgrass)		safety, general information, birding, storm water harvesting	
Pima Community College, University of Arizona, Northern Arizona University, Arizona State University, University of Phoenix	Lecture, print brochures, educational opportunities	Education and community outreach related to the desert environment	Continuous
Homeowners Associations	Newsletters	News, weather and information	Continuous
Newspapers (AZ Daily Star, NW Explorer, Daily Territorial, Bear Essential News)	Print newspapers and websites	News, weather and information	Continuous
Radio Stations	Broadcast radio	News, weather and information	Continuous
TV Stations (KVOA, KGUN, Tucson News Now, News 4 Tucson, KOLD)	Local Broadcasts	News, weather and information	Continuous
Utility companies (Tucson Water, Tucson Electric, Southwest Gas, Various phone/internet)	Billing statements and flyers	Various topics important to Pima County	Monthly
Events (Be Safe Saturday, Earth Day, Monsoon Safety, Emergency Preparedness Month, Cyclovia, Various events/presentations)	Print outreach, broadcasts, emergency response, general preparedness materials	News, weather and information	Continuous
Tucson Association of Realtors, Southern Arizona Home Builders Association	Real Estate Documents	Real estate disclosure statements, news, permitting, construction, and insurance information	Continuous
Monsoon Awareness Organization	Pre-monsoon staff meetings and outreach	News, weather and information	Bi-Annual

The District makes a full suite of brochures, manuals and maps available to these stakeholders. These include information encouraging the public to contact the District for details regarding actions they can take to understand and reduce the risks they are exposed to, including the purchase of flood insurance.

In addition to these existing efforts by stakeholders, and existing outreach projects shown in Appendix E, the Committee suggested improvements and new projects. One example that both realtors and major employer representatives agreed to help formulate and deliver during plan implementation is the creation of a new-comers packet. It would explicitly include messages encouraging readers to; contact the District prior to buying or renting property, contact insurance agents regarding insurance, and plan safe travel routes. These improvements will be discussed under Section 7, Plan Implementation. New project are also identified in Appendix E the PPI Spreadsheet. The Committee also identified the target areas and audiences for inclusion in the PPI. Those target areas and additional topics related to those targets are described below.

Target Areas

Riverine Floodplain:

There are two primary types of riverine flooding within Pima County. The region is defined by mountainous areas that can quickly generate riverine floods within the mountain front that extend onto the valley floor. These floods can be triggered by both high intensity (short duration thunderstorms) or by low intensity (long duration mesoscale storms). The larger, regional riverine systems are largely controlled by engineered capital improvements that are effective at limiting damage caused by local thunderstorms. These larger riverine systems are typically most affected by mesoscale storms, which have a greater chance of generating the 1% chance flood that could overwhelm the constructed infrastructure in some areas. These areas include Zone A and AE Special Flood Hazard Areas, community mapped floodplains and developer mapped floodplains.

Sheet Flooding Areas:

Pima County has large areas characterized by broad, relatively flat terrain with minimal channel capacity. The small channels that are present in these areas don't have the capacity to convey the 1% chance flow that would result in considerable out-of-channel flows, called sheet flow flooding. Sheet flow flooding is generally shallow, but can affect large areas and cause significant problems. These areas also include Zone A, AH, and AO Special Hazard Areas as well as Zone Shaded-X Other Flood Areas floodplains.

A specific type of sheet flow floodplain, called alluvial fan floodplain, is characterized by channel deposition and evulsion near the mouth of mountain canyons where they transition to the shallower slopes of the alluvial fan. There are increased hazards in alluvial floodplains because of the presence of highly erodible soils, large sediment loads from steeper mountain canyons and the extreme unpredictability of the primary flow path once flow becomes unconfined.

Appendix G includes a map that shows areas which are subject to different types of flooding conditions. The map also includes a count of the number of buildings that are affected by these floodplains.

Target Audiences

Pima County Residents:

The District provides flood protection information and property protection assistance. Since the District is supported financially by a property tax levy, the District does not charge fees for services like floodplain permitting and assisting property owners wishing to develop their property and protect new or existing improvements. Providing our services free of charge means that there is no disincentive for the public to request flood hazard information. District staff includes hydrologists, engineers, biologists and planners, all of whom are knowledgeable about sound floodplain management practices. Numerous technical guidance and standards have been developed by the District and are available on our website.

Most residents are likely to drive on streets that have potential for flooding. To this end, residents should be made aware of the unique characteristics and hazards of desert floods, which can impact roads that are outside of mapped floodplains. Existing outreach projects to this audience include “Turn around, don’t drown” type messages in water bill inserts (OP42), signage (OP3), public service announcements (OP4) and awareness campaigns including Monsoon Safety Week (OP25). New projects identified by the committee include new-employee orientation materials (OP49) and a creditable class for Realtors (OP50). 90% of this audience will be reached through a multi-media approach.

The water bill insert goes to over 220,000 customers. The 2015 census population is just over one million. Using an average household size of 2.5 people, the District is close to reaching all households with the water bill mailers.

The District Website is comprehensive and interactive. In addition to providing descriptions of each our services and CRS activities two interactive features stand out. First while an interactive Geographic Information System is available to the public at:

<http://gis.pima.gov/maps/mapguide/mgmap.cfm?path=dotmap65.mwf&scriptpath=/maps/RFC/D/floodplain/floodplainmap.inc&theme=PCRFC&LAT=31.966419&LON=-111.883502&WIDTH=193.604495&UNITS=mi&>

A function called the Flood Hazard Map has recently been added which allows a user to enter a street address or parcel number and obtain a map with legend showing all regulatory floodplains and riparian habitat. This map may be printed or downloaded as a pdf. This Flood Hazard Map is found here:

<http://pcmaps1.pima.gov/mapps/rfcd/parcelsearch/>

Secondly, the District’s webpage include an interactive ALERT page whereon users may monitor stream flow and weather in real time as well as query historic records. It has also recently been upgraded and coverage expanded. It is here:

<http://webcms.pima.gov/cms/one.aspx?portalId=169&pageId=60223>

As with each of our services this page describes the data available, what it is used for, and directs users to information specific to their location. A mobile “App” is also available for download at this link along with other information related to all ten outreach topics identified above. Each topical page contains general information, FAQ’s, links to publications including brochures and other agencies including local Emergency Management, FEMA, Transportation Department and municipalities.

Flood Prone Property Owners and Residents:

Property owners and residents in flood prone areas must live with and plan for specific flooding hazards associated with their parcels and travel routes. A targeted outreach plan will help to address particular topics identified by the committee, including: safe routes, sheet flooding, erosion, building and insurance needs and how these factors differ across the county. The Committee also recognized that Improvement Districts are underutilized in Pima County. An Improvement District can be created at a subdivision or neighborhood scale in order to fund the construction of improvements to reduce the risk and/or severity of flooding. The creation of outreach materials would provide general information about the function and purpose of Improvement Districts might encourage their use to address or mitigate flood-related issues. This potential target audience was identified by the committee’s development community representative. At this time, the District has not formulated a specific message or project; however one possibility is the addition of such information to the District’s *Homeowners Association Booklet* (OP17).

While numerous outreach projects reach this audience, the annual flood prone property mailer (OP47) is sent to 100 percent of properties identified as containing a mapped regulatory floodplain; Improvements to this mailer have already been initiated to provide more detailed travel and hazard information The combination of the flood prone property mailer to property owners (OP47) (which includes vacant properties), water bill inserts (OP42), and the use of radio and television ads (OP5, OP6, OP9) means the District is reaching more than 90% of this target audience.

Repetitive Loss Area Residents:

Due to the District’s Flood Prone Land Acquisition Program (FLAP), only a few repetitive loss areas remain throughout unincorporated Pima County. There are currently seven properties listed as unmitigated in the data provided by FEMA on April 30, 2015. The five areas in which these seven properties exist are described below. Maps of repetitive loss areas (Appendix D) are only shown for the first two locations because the remaining properties have been mitigated or are isolated issues. The Committee agreed that we should continue outreach to these areas as required.

1. Three of the seven properties are in the portion of 49ers Country Club Subdivision within the floodplain of Tanque Verde Creek. Other homes in the subdivision are subject

to similar risk. A levee to mitigate this risk was designed and funded; however it was rejected by the Homeowners Association. This area remains at risk.

2. A fourth property, along Sabino Creek, was flooded in 1990 and 1993. These are years when significant floods occurred. The repetitive loss area consists of this structure and a few other parcels at similar risk of flooding. Due to both the value and quality of these residences, the use of FLAP is an unreasonable solution from a cost/benefit perspective. Outreach regarding flood risk, flood damage prevention and emergency response are the most viable approaches at this location.
3. A fifth property on River Road was purchased and demolished as part of a road widening and drainage project. This property is still listed as unmitigated, perhaps because there are other buildings present. An opportunity to list this property as mitigated may exist if it can be shown that these other buildings were not subject to any claims or are not impacted by flooding due to drainage changes associated with the road project.
4. A sixth residence, located in the lower slopes of the Tucson Mountains, is not impacted by regulatory floodplains, but rather from adverse slope and poor road drainage. It is not known what measures the homeowner may have taken to mitigate this risk other than the purchase of insurance.
5. The seventh residence is not within a regulatory flood hazard area, but is located within a mass graded subdivision adjacent to a channel inlet. This channel was not being maintained as designed. The District assisted the Homeowners Association in removing vegetation and sediment and making channel modifications to correct this flooding. This information has yet to be submitted to update the Repetitive Loss Property list.

The District reaches 100 percent of this target audience described above via direct mail (OP35).

Residents of Areas without All Weather Access:

Large portions of unincorporated Pima County contain development that utilizes unimproved private roads to access individual properties. Most of these private roads, and even many public roads, were not designed to create all weather access and therefore become impassable during times of flooding. Although generally not an issue of damage prevention, this public safety issue is a common topic of concern. The use of public funds on private roads is prohibited and modification of public roads to meet all-weather access standards in these areas is cost prohibitive. The only viable solution is outreach to provide the public information on finding alternative safe routes or preparedness tips when no alternative routes exist. In addition, the provision of information about responsible and effective design, construction and maintenance of private roadways could be helpful for individuals who are dependent on private roadways. The committee recommendation to add information regarding all-weather access in our direct mailer to flood prone property owners (OP47) was implemented this year. The committee also recommended including this topic as part of the suite of information provided to realtors and to major employers for inclusion in the new employee orientation packets.

Current outreach projects include “Do Not Cross Flooded Roads” Signage (OP3), the water bill stuffer (OP42), flood prone property mailers (OP47) and legal access covenant disclosures obtained during the permitting process. These projects currently reach over 90% of the

impacted population. Each of these focuses on all-weather access as documented during our audits and annual recertification packages. Our intent is to improve the information the community is receiving and increase public participation in heeding safety messages.

Residents and Property Owners in Riparian Areas:

The value of maintaining floodplains in their natural condition is well known. These benefits include flood attenuation, increased recharge, stable sediment transport, habitat for wildlife, and property-value-enhancing open space. The District implements specific regulations to encourage preservation of riparian areas associated with floodplains. In 2005, the Pima County Board of Supervisors adopted the latest edition of riparian habitat avoidance and mitigation standards which apply within mapped riparian areas. Property owners may not be aware of the existence of these areas nor their value and appropriate ways to maintain them. To this end, the District plans to improve outreach to owners of properties that contain riparian habitat including: individuals, realtors, Homeowners Associations, and the development community. The information provided to these groups would include the environmental value of riparian habitats and regulations governing their protection.

Riparian habitat brochures and information (OP37) reached 100% of this audience as an initial mailing when the maps were adopted. Information on riparian areas is included in the annual flood prone property mailer, which is sent to more than 90% of the properties that contain mapped riparian areas.

New County Residents Including Prospective Buyers and Renters:

Committee members from major private sector employers indicated a need to include flood information for new residents of Pima County. It is important that such residents have information about safe and reliable access to work, schools and other destinations during flood events. New residents considering purchasing a home would benefit from information about how to determine if a property is flood prone. It is important to get such information to new residents early so they can make informed decisions about where they want to live. It is also important to let new residents, especially renters, know about the availability and affordability of flood insurance coverage for contents. Projects on these topics (OP49, OP50, and OP52) have been added to the currently-approved PPI spreadsheet presented herein as Appendix E.

Delivery of these messages by major employer stakeholders will rely on developing relationships with these employers. To reach a larger audience, the new resident flood information packet created for employers will also be made available to realtors and residential property management companies. While Realtors currently are encouraged to hand out brochures on flood risk, contacts for finding more information including the District, FEMA FloodSmart.gov and flood insurance, including increased cost of compliance policies, the Committee agreed that a new-comers packet in concert with the recommended realtor education course would greatly increase participation. The local and national realtor association representative on the Committee committed to participating in this effort and district staff agreed to coordinate with the Tucson Association of Realtors on development of both the packet including brochures, curriculum and promotion of their use. These brochures would

advise prospective buyers and renters to contact the District to see if the property is in a floodplain or has a history of flooding, and to contact an agent regarding insurance costs.

There is no way to identify the number of new residents in Pima County for any given period, so it is not possible to measure if 90% of this group has been reached. Nonetheless, this type of effort is viewed as a worthwhile expansion of our outreach. The participation of a major employer such as Davis-Monthan Air Force Base, the University of Arizona or Raytheon Missile Systems would represent a significant expansion of our outreach. Expanding the information provided by realtors will also be highly beneficial as information contained upon disclosures may be limited.

Development Community, Non-Governmental Organizations (NGOs), Landowners and Designers:

The District takes advantage of numerous opportunities to provide outreach to the development community, NGOs, landowners and designers. The District hosts a brown bag lecture series (OP11) monthly and participates in workshops (OP41) multiple times per year. Such meetings cover a broad range of topics and appeal to a variety of target audiences. A specific example of an NGO meeting would be one that educates stakeholders about how Low Impact Development and Green Infrastructure benefit them.

The NFIP and local jurisdictions want to see more widespread use of Low Impact Development and Green Infrastructure practices. The more stakeholders understand the benefits of these practices, the more likely they are to implement them. Last year, the District worked with stakeholders to develop the *Low Impact Development and Green Infrastructure (LID/GI) Guidelines*. Work continues on adoption of these techniques into common practice for private development and public projects. The committee agreed that outreach to professional organizations via newsletters and presentations were important new projects that could address drainage issues within existing neighborhoods and promote improved drainage design in new developments. While this project could have been added as a unique outreach project, it is already a part of OP11, OP23 and OP41 on the currently approved PPI spreadsheet presented herein as Appendix E.

While the District makes these opportunities available to 100% of the target audience, it cannot guarantee participation.

Realtors, Insurance Agents and Lenders:

Current outreach to the real estate community includes print and digital articles on flood risks and workshops on specific issues as needed. The Committee also identified the need to provide qualifying classes so these professionals can obtain Continuing Education Credits (CECs) from national realty and insurance organizations. This outreach project (OP50) has been added to the currently-approved PPI spreadsheet.

As noted above current outreach by realtors includes providing prospective buyers and renters with information on flood risk, flood history, the availability of insurance and where to find out more including the District and FloodSmart.gov.

While the District and realtors make these opportunities available to 100% of the target audience, it cannot guarantee participation.

Schools, Children, and Educators:

Schools, children and educators can be encouraged to participate in flood hazard awareness activities. Such activities involve both children and their families and effectively convey messages regarding safety, preparedness, personal responsibility and stewardship. This effort utilizes special activities and standardized curriculum elements. Our current PPI includes the District’s Sherriff Hank Highwater campaign to reach younger audiences and FEMA materials made available to local schools by the Pima County Office of Emergency Management. To reinvigorate efforts, the Committee recommended adding school curriculum as a new project (OP51) that would complement current projects (OP10, OP15, OP39 and OP41).



While the District makes these opportunities available to 100% of the target audience, it cannot guarantee participation.

Government Partners:

Government agencies within Pima County, such as incorporated cities and towns, Metropolitan Planning Organizations and Pima County Departments (i.e. Office of Emergency Management and the Department of Transportation), all conduct their own flood-related activities. The Committee advised that increased coordination with these government partners would be beneficial for all parties. The District is guided by an Advisory Committee consisting of members from all local municipalities, the public and the professional community. Furthermore, each NFIP-participating community has a CRS Coordinator who attends our Statewide CRS User’s Group. Both of these organizations could assist in coordinating outreach. This PPI identifies the need to coordinate outreach projects with government partners. Although no specific project has been identified or added to the PPI spreadsheet, it is expected that the ongoing Inter-jurisdictional Hazard Mitigation Plan update will improve coordination. Additional current cooperative projects include the Retention Detention Manual which has been credited as our WMP, Monsoon Safety Water Bill Insert (OP42) and the LID/GI Guidelines (OP23).

While the District makes these opportunities available to 100% of the target audience, it cannot guarantee participation.

Other Factors to Consider

Social and Economic:

The Committee and support staff felt strongly that social and economic factors should be assessed in order to identify new relevant Target Areas and adjust how outreach is presented to target audiences. These factors include identifying areas with high populations of renters, Spanish speakers, commuters and residents with limited mobility.

- According to www.census.gov, the population of Pima County in July 2015 was estimated at 1,004,516 persons. The American Community Survey (ACS) provides further information regarding Pima County residents:
- The current median income is \$46,233. The national median income is \$53,483.
- The median value of owner-occupied units is \$161,700. This is \$4,000 less than the national median.
- Median gross rent is \$813. This is more than \$100 less than the national median rental rate.
- Renters make up 36% of the 388,660 occupied housing units.
- Those under the age of 65 with a disability make up 9.6% of the population. This is 1.1% higher than the national rate.
- Residents who are 65 or older make up 17.7% of the population. This is 3.2% higher than the national rate.
- 24% of residents are Spanish speakers. Of those, almost 30% (77,317 residents) speak English “less than very well.”

Committee members identified and targeted major employers to receive commuter safety and new employee outreach materials related to floods and flooding hazards. After these materials are developed in cooperation with the participating stakeholders, they will be made available to other employers.

New and existing outreach projects will be analyzed to ensure these target areas and audiences are receiving outreach that is appropriate to their needs.

Flood Insurance Coverage Assessment

This section is intended to summarize the findings of the Flood Insurance Coverage Assessment (FIA) and Coverage Improvement Plan (CP) conducted per Activity 370 of the CRS Manual. The FIA, CP and the social and economic factors identified above will help prioritize outreach efforts to a large and diverse community.

The map in Appendix C shows the floodplains within Pima County and how they relate to CRS NFIP discounts. Within unincorporated Pima County, there are 210,827 acres of FEMA Special

Flood Hazard Area (SFHA), where the CRS Class 5 community flood insurance premium discount of 25% is available. "Moderate risk" areas include 21,558 acres of Shaded Zone X which receive a 10% discount. The lowest available premiums apply in the remaining 5,624,023 acres of "low risk" areas which have not been mapped by FEMA as being in a regulatory floodplain.

Due to the size and flood characteristics of Pima County, many flood prone areas have not been mapped by FEMA. The District has undertaken a widespread and ongoing effort to identify additional areas exposed to flood risk. These locally mapped flood prone areas are called Special Studies Floodplains and total 52,741 acres. Local floodplains are shown in blue on the map in Appendix C. Table 2 below and the map in Appendix C exclude approximate sheet flood mapping developed by the District. This tool is used to steer people to the District when Floodplain Use Permits might be necessary. Flood insurance in locally mapped floodplains is not required but is highly recommended. The District applies federal, state and local floodplain regulations within local floodplains. Mailings (OP47) are sent to properties impacted by FEMA SFHA or local Special Studies Floodplains.

The most recent insurance data available from the District's Insurance Services Organization (ISO) representative is dated April 30, 2015. This was in conformance with the FIA requirement that data be less than one year old at the time of the Committee meetings. The FIA will be updated with the latest insurance data as it becomes available. This data includes two spreadsheets - Active Policies and Historical Claims - which form the basis of the following analysis.

According to this information, there are a total of 2,441 policies currently in force, including \$459,024,500 in building coverage and \$97,006,500 in contents coverage. The distribution of paid claims over time is shown In Figure 1. It is interesting to note that although flood events are becoming more frequent, those individual events result in fewer claims and those claims are less expensive. It is suspected that capital improvements, expanded maintenance and permitting activities through the District are reducing the total number of paid claims associated with each flood event even while flood frequency may be increasing. This cause and effect is not well understood by the public and the role of CIP and maintenance is a worthwhile outreach effort to increase community support of flood control efforts. Current outreach efforts regarding this correlation are limited to our annual report, project groundbreaking ceremonies, news releases, website features and our advisory committee. More could be done to reach the general public. While none of these are listed in our current PPI spreadsheet, they will be documented on future versions.

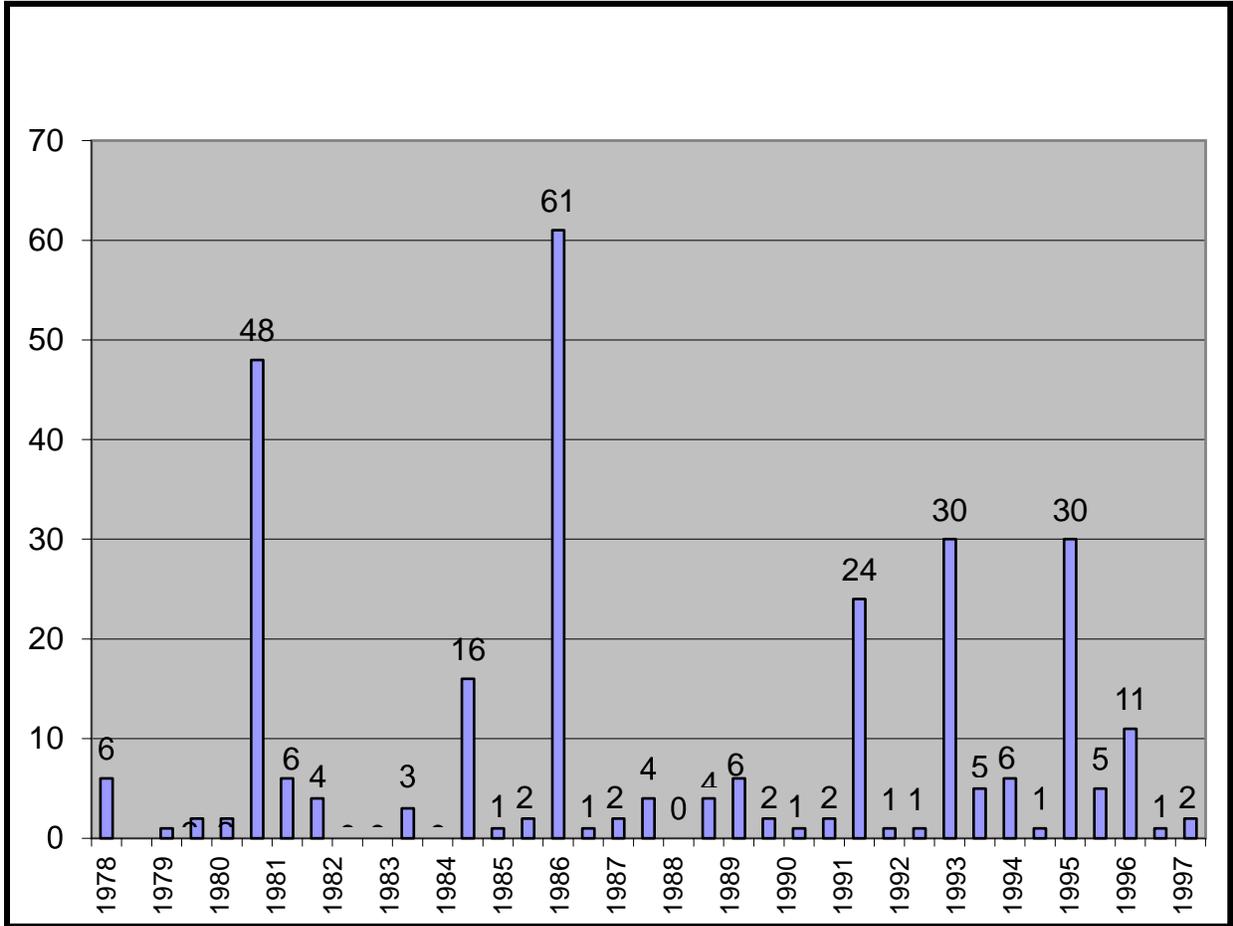


Figure 1 - Distribution of Flood Insurance Claims Paid by Year

Since the inception of the National Flood Insurance Program in 1978 there have been a total of \$3,364,661 dollars paid on 172 individual claims in unincorporated Pima County. An additional 119 claims were filed that resulted in no payment. It is not known how many of these were denied or how many claims were below the deductible. Payments ranged from below \$50 to over \$200,000 with an average of \$13,624 paid per claim. The distribution of claims is heavily weighted toward lesser amounts as shown in Figure 2. This may reflect the generally-shallow flooding depths found in most floodplains in Pima County.

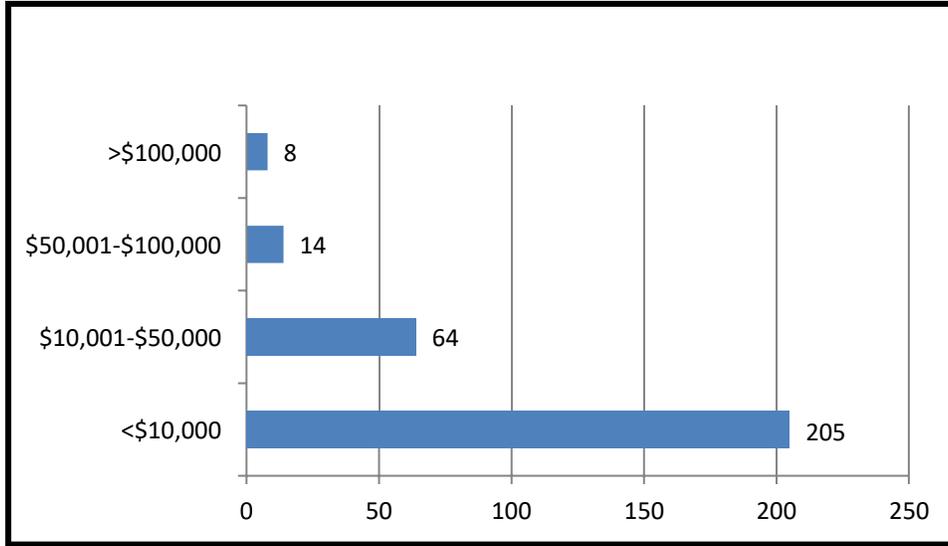


Figure 2 – Distribution of Claims by Dollar Amount Paid

The data provided by ISO was input into the District’s Geographic Information System (GIS) based upon address. (Addresses were missing for 28 policies. These are being researched to provide corrections to our ISO representative.) Property values were then compared to insurance coverage by floodplain type, as well as occupancy data from the County Assessor’s Land Use Code (LUC) associated with each parcel. The information is summarized in Tables 2 through 4.

Table 2 - Insurance Coverage by Flood Zone Type and Occupancy Type

Flood Zone Type	Parcels with Structures	Parcels with Structures and Insurance	Percent of Parcels with Structures Insured
<i>FEMA SFHA Zone A – AO1</i>	7,292	1,000	13.71%
<i>FEMA Shaded X</i>	3,636	212	5.83%
<i>Local Special Studies</i>	9,820	458	4.66%
<i>Not in Mapped Floodplains**</i>	122,450	586	0.48%
Total	143,198	2,256	1.58%
Occupancy Type			
<i>Residential</i>	169,081	2,169	1.28%
<i>Commercial</i>	18,796	87	0.46%
Total	187,877	2,256	1.20%

Table 3 - Flood Risk Exposure and Insurance Coverage by Value for Only Those Properties with Flood Insurance Policies

Flood Zone Type	Assessor's Full Cash Value	Exposed Value*	Coverage in Force	Exposed Value Covered
FEMA SFHA Zone A - AO1	\$ 217,214,827	\$ 28,237,928	\$ 220,615,900	781%
FEMA Shaded X	\$ 118,057,666	\$ 15,347,497	\$ 50,268,300	328%
Local Special Studies	\$ 149,105,053	\$ 19,383,657	\$ 102,957,200	531%
Not in Mapped Floodplain**	\$ 237,438,758	\$ 30,867,039	\$ 116,081,100	376%
Total	\$ 721,816,304	\$ 93,836,120	\$ 456,654,000	487%

* Exposed Value is defined as Assessor's Full Cash value times .65 to estimate building value, times .2 to estimate potential damage costs.

** While these properties are outside mapped risk areas, the same damage ratio is applied to reflect what may occur should those properties be flooded.

Table 4 - Flood Risk Exposure and Insurance Coverage for All Properties containing Structures with or without Flood Insurance Policies

Flood Zone Type	Assessor's Full Cash Value	Exposed Value*	Coverage in Force	Exposed Value Covered
FEMA SFHA Zone A - AO1	\$ 1,867,156,782	\$ 242,730,382	\$ 220,615,900	91%
FEMA Shaded X	\$ 699,906,063	\$ 90,987,788	\$ 50,268,300	55%
Local Special Studies	\$ 2,252,201,813	\$ 292,786,236	\$ 102,957,200	35%
Not in Mapped Floodplain**	\$ 3,479,539,495	\$ 452,340,134	\$ 116,081,100	26%
Total	\$ 8,298,804,153	\$ 1,078,844,540	\$ 456,654,000	42%

* Exposed Value is defined as Assessor's Full Cash value times .65 to estimate building value, times .2 to estimate potential damage costs.

** While these properties are outside mapped risk areas same damage, the ratio is applied to reflect what may occur should those properties be flooded.

Flood Insurance Coverage Assessment Conclusions and Recommendations:

The following conclusions and recommendations were made by the Committee based on the data summary provided above.

There is a ratio between the number of policies in force and the number of properties at risk. While a large percent of the exposed building value is covered, this is misleading as a much lower percent of total structures are covered. As such, buildings that are insured appear to be

generally over insured, while many buildings are not insured at all. There is a need to increase the number of buildings that are covered while at the same time ensuring that existing policy holders obtain coverage equal to their risk.

Another significant coverage gap is that there are 1,145 buildings insured without additional contents coverage. Perhaps more significantly there are no buildings listed with only contents coverage, so it appears that not a single renter has obtained contents coverage. Due to privacy requirements, we are looking for legal means to target this group.

In addition to the detailed data received from the ISO, the Arizona Department of Water Resources (ADWR) provided the following summarized data which indicates the distribution of coverage within floodplains and by occupancy. This data reveals the prevalence of residential coverage outside the SFHA.

Table 5 - Insurance Coverage by Zone

Insurance by Flood Zone	Policies in Force	Premium	Insurance in Force	Number of Paid Losses
AO1-30 & AE	519	\$ 651,835.00	\$ 113,961,300.00	51
A	407	\$ 399,731.00	\$ 71,667,900.00	27
AO	507	\$ 278,019.00	\$ 88,064,200.00	13
AH	11	\$ 10,428.00	\$ 2,242,200.00	0
D	2	\$ 3,228.00	\$ 455,000.00	0
B, C & X - Standard	205	\$ 141,918.00	\$ 58,768,800.00	17
B, C & X - Preferred	790	\$ 279,646.00	\$ 227,531,000.00	27
Total	2,441	\$ 1,764,805.00	\$ 562,690,400.00	135

Table 6 - Insurance Coverage by Occupancy Type

Insurance by Occupancy Type	Policies in Force	Premium	Insurance in Force	Number of Paid Losses
Single Family	2,264	\$ 1,529,692.00	\$ 526,929,100.00	144
2-4 Family	20	\$ 54,041.00	\$ 3,531,900.00	2
All Other Residential	25	\$ 16,839.00	\$ 4,116,700.00	1
Non Residential	132	\$ 164,233.00	\$ 28,112,700.00	25
Total	2,441	\$ 1,764,805.00	\$ 562,690,400.00	172

The FIA data summarized above helped the Committee identify gaps in coverage and therefore identify gaps in outreach. The Committee made the following recommendations:

1. Increase the percentage of structures within the floodplain that are covered for property damage via revised materials and projects.
2. Increase contents coverage via targeted outreach to renters and owners.

Our Coverage Improvement Plan (CP) is to direct messaging at the targeted audiences presented in the next section.

Step 3 Recommended Messages

Historically, District outreach information focused on the six priority topics. Audiences included residents of flood prone areas, the community at large and the professional community. The PPI process provided an opportunity to establish additional appropriate topics and target audiences.

Although the District's existing outreach materials address many of these topics, they will be revisited with an expectation that some outreach will be revised and new outreach will be created. This is also covered in areas for improvement described under Step 7.

Topics and Messages:

Upon review of the Target Areas and Audiences identified in Step 2, insurance coverage analysis, and census data, the Committee agreed upon 4 additional outreach topics:

- **Topic 7 - Seasonal Flooding** - This topic includes summer monsoon storms and sustained winter rains, both of which are historical causes of flooding within Pima County. Due to severity, rapid development and other characteristics, flash flooding caused by monsoon storms is a major concern. The perception of the desert as a dry place makes it all the more important to educate residents about the unique risks associated with rapid onset flooding when intense rain occurs. Flash floods may travel downstream to areas far outside the storm area often leading to little or no warning signs that a flood is approaching. It is important that people learn about and understand the characteristics of these risks. Sustained winter rains typically cause our most widespread flooding.
- **Topic 8 - Low Impact Development and Green Infrastructure (LID/GI)** - This topic includes protecting existing flood prone areas and constructing water storage and recharge enhancements that provide public safety, drainage and water supply benefits. The beneficial use of storm water runoff and enhancement of recharge improves the regional water budget and makes the region more resilient to drought. It also benefits riparian habitats which provide flood attenuation and recharge while simultaneously reducing flood risk. These are but two justifications to maintain flood prone areas and riparian habitats in their natural state. The County has coordinated with other local jurisdictions to develop guidelines and regulations regarding LID/GI practices. Because the techniques and benefits of LID/GI are not widely known within the development and landowner communities, the District will depend on its own expertise, the expertise of other knowledgeable professionals and the expertise of NGO stakeholders to disseminate important information about the benefits of adopting LID/GI practices.
- **Topic 9 - Local Hazards** - This topic includes some of the unique flood hazards in Pima County: alluvial fan flooding, sheet flow flooding, and channel migration. Flood hazards in many areas are difficult to predict and quantify due to channel aggradation, down-

cutting and lateral migration. This is especially true on alluvial fans. In alluvial fan areas, large amounts of sediment and debris are carried down steep mountain canyons and are deposited at the mouth of the canyon, causing flows to become unpredictable. Throughout the County, the presence of unconsolidated alluvial soils and relatively sparse vegetation creates a high potential for lateral migration of watercourses. Much of the recorded flood damage in Pima County has been associated with the lateral erosion of watercourses undermining structures, buildings and public infrastructure.

- Topic 10 – All Weather Access** - This topic covers the lack of safe access to certain areas during times of flooding. Some roads within Pima County have been designed to convey flows, while many others convey flow due to poor design. In addition, many roads utilize dip crossings to pass flows over the road as opposed to under the road. This has resulted in issues of unsafe or non-existent access to and/or within certain areas during times of flooding. Many complaints to the District and the County’s Department of Transportation originate from such areas. These areas also require frequent maintenance. Awareness of these hazards and active emergency planning are critical for public preparedness in the event of lost access during a flood. The public should be prepared to use alternate routes to travel home, to work or to medical care. They should also be prepared to avoid such areas to prevent the need for being rescued during flood events. Almost all flood-related fatalities within Pima County have been associated with people trapped in cars while crossing flooded roads.

Privately-maintained roads pose unique access problems. They are often constructed without any consideration of drainage or flooding. As a result, they often capture flow or become destroyed due to lack of adequate design. There was wide agreement on the Committee that planning flood-safe routes and improving private roadway construction are very important topics for outreach.

Outcomes:

The associated messages and desired measurable outcomes of the six CRS priority topics and four additional topics identified by the PPI Committee are shown in Table 7.

Table 7 - Topics, Messages, and Outcomes

Topic	Messages	Outcome
1: Know Your Flood Hazard	"A portion of your property is in a floodplain and the structure may be. View a Flood Hazard Map at: http://pcmaps1.pima.gov/mapps/rfcd/parcelsearch/ and then call the District to find out more." "Purchase Flood Insurance" "Prepare Before the Floods Come" "Protect Yourself From Flooding"	Increased Flood Hazard Map website hits, flood hazard information requests, customer service counter visits and approved permits

	"Monitor streamflow depth and rainfall for your local area at http://alertmap.rfcd.pima.gov/gmap/gmap.html "	
2: Insure Your Property	"Building and contents insurance is available at discounted rates, contact your agent to find out how low they are." "Renters may contact an insurance professional to learn how inexpensive contents insurance is." "Owners of properties outside federal floodplains qualify for discounted insurance rates, contact your agent to find out how low they are." "Please protect your home and your contents/belongings with a flood insurance policy today"	Increased number of flood insurance policies, especially contents and inquires
3: Protect People from the Hazard	"Don't drive through flooded washes" "Turn Around Don't Drown" "Never Cross a Flooded Road" "Plan Ahead" "Make a flood preparedness plan."	Decreased swift water rescues and law enforcement citations for ignoring barricades
4: Protect Your Property from the Hazard	"Contact the District for technical assistance in the best ways to protect your property"	Increase in requests from property owners to develop a plan to mitigate flood hazards
5: Build Responsibly	"Obtain a Floodplain Use Permit"	Decrease in unpermitted development and code violations
6: Protect Natural Floodplain Functions	"Do not dump in washes" "Preserve riparian habitat"	Decrease in illegal dumping complaints and unpermitted disturbance of riparian habitat
7: Seasonal Flooding	"Understand flash floods by monitoring streamflow depth and rainfall for your local area at http://alertmap.rfcd.pima.gov/gmap/gmap.html "	Increase in hits on ALERT website
8: Low Impact Development and Green Infrastructure	"Use the techniques found in the Low Impact Development and Green Infrastructure Manual at http://webcms.pima.gov/cms/one.aspx?portalId=169&pageId=65263 the following link for managing floods"	Increase in the use of LID/GI techniques

9: Local Hazards: Erosion, Floodplains, and Sheet Flooding)	"Contact the District to learn about all the risks to your property"	Increase in counter visits, flood hazard information requests, and approved permits
10: Safe Routes	"Plan for floods by knowing the safe routes to places of shelter shown here http://webcms.pima.gov/cms/one.aspx?portalId=169&pageId=34193 "	Decreased swift water rescues, increase in safety plans by having people create them during site visits and outreach to schools and employers

Flood Response Preparations:

The District has a Flood Response Plan and an associated flood response procedure and field manual. District flood investigators are given emergency response supplies that include a variety of outreach and technical assistance materials that are distributed to the public as appropriate. Outreach on topics 1, 2, 4, 6, 7 and 10 is provided to owners in areas impacted by a flood event: Know Your Flood hazard, Insure Your Property, Protect Your Property and Build Responsibly, Understand Flash Floods and Don't Drive through Flooded Roads.

In addition to materials that are distributed during and after a flood event, there are also outreach materials for flood preparation in advance of an event, including:

- Water bill insert (OP42)
- Floodplain property brochure (OP47)
- 1983 flood brochure (OP40)
- Public event booths (OP10)
- Monsoon Safety Awareness Week (OP25)
- Monsoon safety brochure (OP26)
- Sheet flood and map change outreach letter (OP13)
- Repetitive loss property letters (OP35)
- Sherriff Hank Highwater coloring book/campaign (OP15)

The entire list of outreach projects can be found in the PPI Spreadsheet in Appendix E. This spreadsheet contains a master list and additional lists with outreach organized by target demographic audiences and geographic areas.

Step 4 Recommended Outreach Projects

In addition to reviewing existing outreach projects to ensure that the topics and messages are adequately presented, the Committee identified a number of future outreach projects to be included in the PPI. These projects will be implemented within the next year. Current and recommended outreach projects are found on the PPI spreadsheet (Appendix E). Appendix E includes additional tables specific to each target audience or target area.

Gaps in coverage identified in the Flood Insurance Coverage Assessment (FIA) include renters and locally mapped Special Studies floodplains. The District will revise its outreach methods and materials to provide information on flood insurance availability to a larger audience of flood prone area renters and owners. Additional insurance information is already included in the water bill inserts (OP42). Outreach to these audiences will be expanded through a booklet that covers all 10 topics and new employee brochures (OP48, OP49, and OP52).

It was decided that the projects termed “outreach projects” will be deliverable and implemented at least once per year. Flood response projects will be prepared but will not be distributed until needed after the occurrence of a flood event.

The Committee recommended new projects are outlined in Table 8:

Table 8 - New Outreach Projects

New Outreach Project	Topics and Messages Covered	Message Delivery by Stakeholders	Outcome
Development of continuing education courses for licensed realtors and insurance agents	1, 2, 4, 9 & 10	TAR, AZ Department of Real Estate, Pima County	Help licensed realtors and insurance agents obtain continuing education credits
Development of curricula for school aged children	2, 6, 7, 8, 9 and 10	Pima County, School Districts	Increase in participation in presentations and event booths
Development of brochure(s) covering all 10 PPI topics	1-10	Pima County Communications Office	Provide a general information document to the public

The brochure(s) covering all 10 PPI topics will be tailored for each target audience, as appropriate including those for distribution to newcomers by major employers and, to prospective buyers and renters by realtors	1-10	Pima County Communications Office, Identified Stakeholders TBD	Provide a document tailored to specific target audiences
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Outreach by Elected Officials:

The Committee did not recommend additional outreach by elected officials, it is however a required activity for Flood Insurance Promotion credit. District staff, including communications office representative felt this to be important. The District intends to involve elected officials in promoting outreach projects through public declarations. One of those declarations will be the promotion of the purchase of flood insurance and a draft is attached as Appendix H. After approval of the PPI via the draft resolution attached as Appendix I, during the first year of implementation, District staff will be creating or modifying brochures to cover all ten topics and messages specifically for each target audience. We intend to feature the declaration signed by the board on these projects if they are agreeable.

The Resolution, in addition to approving the PPI, also expresses formal support for our outreach messages.

Step 5 Other Public Information Initiatives

In addition to the efforts of the District and stakeholders, it is important to review other public information efforts and identify opportunities for coordination and consolidation.

Realtor Disclosures:

In Arizona, real estate agents are required to disclose the presence of Special Flood Hazard Areas to buyers. Recognizing one of our primary functions under the NFIP, the District provides detailed FIRM information to realtors. Various organizations of real estate professionals coordinate with the District to assist realtors via targeted and general outreach projects numerous times annually. These are intended to raise awareness of flood-related issues and provide information and materials needed to meet the disclosure requirement. Brochures, the website and general and targeted outreach projects all address this need. Additional new projects have also been identified in this plan (OP48, OP49, OP50 and OP52). Using these materials, realtors can meet their disclosure requirement and provide their clients with FEMA and District contact information, brochures and relevant website links.

Web Resources:

In addition to the District Webpage which covers all ten topics, all CRS activities and much more as described above other Departments also maintain websites that provide information describing actions the public can take to avoid or mitigate flood risk, and to recover from floods.

Pima County has a Road Closure hotline and website that includes closures due to flooding: (webcms.pima.gov/cms/one.aspx?portalId=169&pageId=34193).

The Pima County Office of Emergency Management website contains information about emergency preparedness, disaster recovery and flood insurance: (webcms.pima.gov/government/office_of_emergency_management_homeland_security/).

Disaster Recovery Assistance:

The American Red Cross provides information to help the public prepare for disasters, provides shelter and other resources during floods. It also provides information to help individuals recover from flood damage.

On-Site Open Space Educational Exhibits and Signage:

The County has a system of open spaces identified for preservation in the Sonora Desert Conservation Plan. Much of the focus of this plan has been on what are locally referred to as Important Riparian Areas which are a subset of our regulated riparian habitats. These have been acquired through bond and FLAP purchases, easements obtained during the entitlement process, donations and as part of Capitola Improvement Projects. Notable is the system of river park greenways known as “The Loop” which circles the metropolitan area mostly along major river corridors. The bank protection installed by the District to prevent channel migration has provided for this continuous bike path that is complemented with passive and active recreation areas including riparian restoration and groundwater recharge projects.



Most County open space lands are managed jointly by the District and the Natural Resources Parks and Recreation Department. River parks and recharge facilities throughout the county feature water harvesting, riparian habitat restoration, groundwater recharge and other beneficial functions of floodplains. In most cases, these are developed to provide public access and educational opportunities regarding beneficial floodplain functions. On-site materials include interpretive centers containing exhibits, conservation workshop

spaces, trails with interpretive signage and demonstration projects. These are complemented by a suite of outreach materials, including general riparian habitat information (OP36 and OP38) and site specific brochures. In the case of Cienega Creek Preserve these brochures includes maps and species lists. Related groundwater level monitoring data is made available on our website and is an example of the range of materials produced by the District, from coloring books for kids and the Living River of Words poetry and art contest to highly verifiable scientific data for use by modelers. In the case of Agua Caliente Park, a ranching and water use history is available.



The Mountain Lion of the Rocky Mountains
Bobby Pelt, age 9
Pima School #6, Coon
Grand Prize-Art-Category 2

Illegal dumping outreach efforts associated with the Clean Water Act include code enforcement signage. The Pima Association of Governments, Pima County (Sherriff’s Office and Department of Transportation) and others are involved in the placement of such signage. The District supplements this type of anti-dumping outreach with stormwater pollution prevention information (OP32).

Related CRS Activities:

Outreach projects conducted by others were considered throughout the Committee review process. It was decided that in addition to ensuring completion of those outreach projects identified on the PPI spreadsheet, the District should also pursue the following improvements:

- **Activity 320 (Map Information Services)** - The information provided with the Flood Hazard Map (available on the District's website) will be modified to include the four additional CRS topics consented to by the Committee.
- **Activity 340 (Hazard Disclosure)** - Real estate disclosure practices have been identified and discussed by the Committee. While the MLS sheet used by the Tucson Association of Realtors requires disclosure of FEMA SFHAs, the District will work with realtors to educate them on investigation and disclosure of local flood hazards prior to execution of purchase and sale agreements.
- **Activity 350 (Flood Protection Information)** - The District's current outreach webpage will be modified to reflect the four additional CRS topics consented to by the committee.
- **Activity 360 (Flood Protection Assistance)** - The District's current flood response projects will be implemented during flood response efforts during and after flooding events.
- **Activity 370 (Flood Insurance Promotion)** - The Committee was presented with flood insurance data to help identify gaps in coverage. A more detailed explanation of this activity can be found in Step 2. Existing materials will be modified and new materials will be developed to address these gaps.
- **Activity 510 (Floodplain Management Planning)** - The Flood Insurance Coverage assessment and PPI will be incorporated into the Floodplain and Watershed Management Plan(s).
- **Activity 540 (Drainage System Maintenance)** - The Committee helped to create a document related to dumping regulations for homeowner associations and private areas. The District will partner with the Pima County Department of Environmental Quality to help advertise future illegal dumping messages. In addition, the District has a Drainage Complaint system in place that provides the public with an opportunity to not only notify the District of potential floodplain violations, but also to seek out advice on how to protect properties from flood hazards. Those needing financial assistance are directed to a number of governmental and non-governmental organizations as appropriate, including the American Red Cross and local housing and economic development agencies. While the District directly funds maintenance and construction of capital improvement projects, the District does not provide direct financial assistance for private property owners.
- **Activity 610 (Flood Warning and Response)** - The District has recently made substantial revisions to the public face of the ALERT Flood Threat Recognition System and needs to provide outreach about the revisions. The District is also working to update the Hazard Mitigation Plan (HMP).

Step 6 PPI Document Preparation

This document was prepared by District staff to support and memorialize the efforts of the Committee and District. A draft PPI was submitted to the Insurance Services Organization for a courtesy technical review and has been revised accordingly. This final product, to be presented to the PPI Committee for approval and the Board of Supervisors for adoption, incorporates the recommendations.

Step 7 Plan Implementation

Following adoption of the PPI by the Board of Supervisors, we plan to schedule a PPI Committee meeting to celebrate completion and discuss implementation of the plan. Invitations will also be sent to organizations that have been identified as participating in stakeholder delivery. That plan is outlined in Table 7 above. District staff will continue to coordinate the development and delivery of outreach projects as identified in the PPI. Stakeholders will continue to be involved in the development and delivery of projects as noted herein.

In addition to ongoing work by District staff and stakeholders, the PPI Committee shall meet at least annually to review progress and make recommendations regarding updating target audiences, areas and additional topics. District staff shall provide annual progress reports to the PPI Committee. This report, in the form of an updated PPI, shall include emerging issues, updated insurance, available demographic data and any available outcome measures.

District staff will then incorporate the PPI Committee recommendations along with corresponding documentation. The updated PPI will then be presented to the Board of Supervisors for adoption.

Appendix B - Approved LOMRs

Date	Number	Panel Number(s)	Affected Wash and/or Floodplain	PC	TU	MA	OV	SA
03/31/2011	11-09-1772P	1605K	Unnamed Wash 1 - from approx. 370' upstream to approx. 740' upstream of the confluence with the Santa Cruz River			X		
03/24/2011	11-09-1773P	1616K	Sweetwater Wash - right overbank from approx. 300' upstream of the confluence with the Santa Cruz River to approx. 1450' upstream		X			
01/27/2011	10-09-3332P	1644K, 1645K	Flecha Caida Wash - from approx. 1830' downstream of Swan Rd. to just downstream of Paseo del Bac; -AND- Unnamed Tributary to Flecha Caida Wash - from the confluence to approx. 2950' upstream of Flecha Caida Wash	X				
01/24/2011	10-09-3256P	1616K, 1618K	Roger Wash - from approx. 1620' downstream of Silverbell Rd. to approx. 3370' upstream of El Moraga Rd.	X	X			
01/24/2011	10-09-3002P	1605K	Unnamed Wash 1 - from approx. 570' downstream of Silverbell Rd. to approx. 1460' upstream of Waycross Rd. (Pima County & Marana)	X		X		
12/23/2010	10-09-3045P	1618K, 1619K	Camino de Oeste Wash - from approx. 2200' downstream of Silverbell Rd. to just upstream of Goret Rd. (Pima County & City of Tucson)	X	X			
11/22/2010	10-09-2797P	1616K	Del Cerro Wash - from approx. 360' downstream of Silverbell Rd. to approx. 1580' upstream of Placita Rico (Pima County & City of Tucson)	X	X			
11/02/2010	10-09-2793P	1616K, 1618K	Sweetwater Wash - from the confluence with Santa Cruz River to approx. 2600' upstream of Camino Nuestro (Pima County & City of Tucson)	X	X			
10/06/2010	10-09-3454P	1040K	Canada del Oro - from approx. 1340' to approx. 2120' upstream of La Canada Dr.				X	
09/30/2010	10-09-3453P	1610K	Canada del Oro - from just upstream of Magee Rd. to approx. 350' upstream	X				
09/30/2010	10-09-3451P	1039K, 1040K	Canada del Oro - from approx. 3990' to approx. 3690' downstream of N. 1st Ave.				X	
09/13/2010	09-09-2406P	1655K, 1663K, 1665K	Ventana Canyon Wash - from the confluence of Tanque Verde Wash to approx. 8450' upstream of Ventana Canyon Dr.	X				
09/09/2010	10-09-2498P	1518K, 1619K	Trails End Wash - from approx. 1220' downstream of Silverbell Rd. to approx. 6120' upstream (Pima County & City of Tucson)	X	X			
09/08/2010	10-09-2567P	1619K	West Speedway Wash - from approx. 2800' downstream of Silverbell Rd. to approx. 1300' upstream of Shannon Rd.		X			
09/07/2010	10-09-3129X	1605K	Santa Cruz River - from approx. 2190' to approx. 1720' downstream of Ina Rd - corrections to BFEs for LOMR issued 09-09-0233P			X		
09/03/2010	09-09-0233P	1605K	Santa Cruz River - from approx. 200' downstream of Cortaro Rd. to approx. 4500' upstream of Ina Rd.	X		X		
07/13/2010	10-09-1751P	2233K, 2234K	Naylor Wash - from approx. 80' upstream of Alvernon Way to just upstream of Columbus Blvd		X			

05/24/2010	10-09-1281P	1020K, 1040K	Canada del Oro Wash - from just downstream of N. La Canada Dr. to approx. 4075' downstream (Pima County & Oro Valley)	X			X	
05/17/2010	10-09-1312P	1039K	Unnamed Wash - from approx. 50' downstream of Camino Torero to approx. 300' upstream of El Conquistador Way				X	
04/19/2010	08-09-1800P	1040K, 1045K	Big Wash - from approx. 0.08 mi upstream of confluence with CDO Wash to just downstream of Tangerine Rd. Bridge				X	
04/15/2010	09-09-0492P	2239K	Airport Wash - from approx. 50' downstream of Fontana Ave. to approx. 90' downstream of Valencia Rd.		X			
02/24/2010	09-09-1217P	3415K, 3905K	Santa Cruz River (above Pima Mine Rd.) - from approx. 9300' downstream of Continental Rd. to approx. 3200' downstream -AND- Unnamed Tributary - from the mouth to approx. 5700' upstream of mouth					X
01/26/2010	09-09-0980P	1025K	Wild Burro Wash - from approx. 500' upstream of Dove Mountain Blvd to approx. 5100' upstream			X		
01/19/2010	08-09-1811P	0445K, 0465K, 1020K, 1035K, 1039K, 1040K, 1045K, 1610K	Canada del Oro Wash - from approx. 0.15 miles upstream to approx. 19.03 miles upstream of the mouth (Pima County, Oro Valley & Marana)	X		X	X	
01/14/2010	09-09-2404P	2270K	Rincon Vista Middle School - unnamed tributary to west split of Civano Wash - from approx. 500 ft upstream of the confluence with the west split of Civano Wash to approx. 2100 feet upstream		X			
11/20/2009	09-09-0020P	1610K, 1617K	Pegler Wash - from W. Orange Grove Rd to approx. 3300' downstream of W. Orange Grove Rd. (Pima County & City of Tucson)	X	X			
03/19/2009	09-09-0301X	1015K, 1020K, 1025K	Canada Agua West Alluvial Fan - approx. 2300' upstream of Tortolita Rd. to approx. 200' downstream of Moore Rd. (Pima County & Marana)	X		X		
03/02/2009	08-09-1520P	2270K	Unnamed Tributary to West Split of Civano Wash - from the confluence with the West Split of Civano Wash to approx. 2100' upstream		X			
02/24/2009	09-09-0300X	1015K, 1020K, 1605K	Canada Agua East Alluvial Fan - from approx. 250' upstream of Frontage Rd. to approx. 200' upstream of Camino Del Norte (Pima County & Marana)	X		X		
02/12/2009	09-09-0691X	1610K	Nanini Wash - from just downstream of W. Lavery Dr. to just downstream of Orange Grove Rd.	X				
02/11/2009	09-09-0539X	2200K, 2225K	Black Wash Tributary and Unnamed Tributaries to Black Wash - approx. 1000' downstream to approx. 300' upstream of Iberia Ave	X				
02/09/2009	08-09-1560P	1637K, 1645K	Camino Real Wash - from the confluence with Rillito Creek to approx. 3500' upstream of River Rd. (Pima County & City of Tucson)	X	X			
01/30/2009	09-09-0529X	1637K	Campbell Wash - approx. 700' upstream of River Rd to approx. 2150' upstream	X				

01/23/2009	08-09-1317P	2875K	Esmond Station Wash - from approx. 2000 ft upstream of Rita Rd to approx. 2800 ft upstream (Empire Heights)		X			
12/19/2008	08-09-1616P	1610K	Pegler Wash - from Orange Grove Rd. to just upstream of LaCholla Blvd. (Friendship Villas)	X				
10/23/2008	08-09-0473P	1630K, 1636K, 1637K	Friendly Village Wash - from just upstream of Stone Loop Rd. to approx. 9700' upstream -AND- Tributary to Friendly Village Wash - from the confluence with Friendly Village Wash to approx. 4200' upstream (Pima County and City of Tucson)	X	X			
09/29/2008	08-09-1756X	1630K, 1636K	Pima Wash - from the mouth of Pima Wash to a point approx. 4900' upstream of Christie Dr. (Pima County & City of Tucson)	X	X			
08/25/2008	08-09-0540P	SUPERSEDED BY 09-09-0691X (02/12/09)	Nanini Wash - from just downstream of W. Lavery Dr. to just downstream of Orange Grove Rd.	X				
08/11/2008	08-09-0968P	SUPERSEDED BY 09-09-0529X (01/30/09)	Campbell Wash - approx. 700' upstream of River Rd to approx. 2150' upstream	X				
07/21/2008	08-09-0454P	SUPERSEDED BY 08-09-1756X (09/29/08)	Pima Wash - from the mouth of Pima Wash to a point approx. 4900' upstream of Christie Dr. (Pima County & City of Tucson)	X	X			
05/23/2008	08-09-0001P	1644K	Columbus Wash -Grant Rd. to Blacklidge Dr.		X			
05/04/2008	07-09-1087P	2253K	Alamo Wash - from approx. 270' downstream of Wilmot Rd. to approx. 50' upstream of Calle Betelgeux		X			
03/26/2008	08-09-0341P	2200K	Unnamed Tributary to Black Wash - approx. 700' upstream to approx. 2000' upstream of Valencia Rd. (Caddis Haley Estates Subdivision)	X				
03/25/2008	08-09-0709X	2245K, 2850K	Unnamed Tributary to Rodeo Wash - approx. 2000' upstream of Valencia Rd to approx. 6400' upstream (Rancho Valencia Phase 3)	X				
03/25/2008	08-09-0442P	2265K, 2855K	Julian Wash - from just downstream of Kolb Rd. to just upstream of Wilmot Rd. (La Estancia de Tucson)		X			
01/28/2008	07-09-1858P	2200K	Black Wash Tributary - from Valencia Rd. to approx. 2500' downstream of Valencia Rd. (Sonoran Ranch Estates II subdivision)	X				
01/15/2008	07-09-1857P	2262K	Atterbury Wash - just upstream to approx 1100' upstream of Stella Rd (Lakeside Ridge subdivision)		X			
12/13/2007	07-09-1759P	SUPERSEDED BY 09-09-0300X (02/24/09)	Canada Agua East Fan - approx 250' upstream of Frontage Rd to approx 200' upstream of Camino Del Norte (Pima County & Marana)	X		X		
10/30/2007	07-09-1051P	SUPERSEDED BY 08-09-0709X (03/25/08)	Unnamed Tributary to Rodeo Wash - approx. 2000' downstream to approx. 6400' upstream of Valencia Rd	X				

10/29/2007	08-09-0051P	SUPERSEDED BY 09-09- 0539X (02/11/09)	Black Wash Tributary and Unnamed Tributaries to Black Wash - approx. 1000' downstream to approx. 300' upstream of Iberia Ave	X				
09/27/2007	07-09-0990P	1610K, 1617K	Nanini Wash - confluence to approx. 6700' upstream of Rillito Creek	X				
08/22/2007	07-09-1305P	2243K, 2239K	Rodeo Wash - approx. 375' downstream of Country Club Dr to approx. 300' upstream of Campbell Ave.		X			
08/03/2007	07-09-1088P	1020K	La Cholla Wash - approx. 3150' downstream to just upstream of Lambert Lane -AND- Wash B - confluence with the La Cholla Wash to just upstream of Lambert Ln -AND- Wash D - confluence with the La Cholla Wash to approx. 650' upstream of Owl Head Pl.				X	
07/05/2007	06-09-BA80P	1015K, 1025K	Ruelas Canyon Alluvial Fan - approx. 14,000' downstream to just downstream of Dove Mountain Blvd			X		
06/29/2007	07-09-1167P	1035K	Big Wash - approx. 5000' upstream to approx. 7200' upstream of Rancho Vistoso Blvd. (Pima County & Oro Valley)	X			X	
06/04/2007	07-09-0707P	2233K, 2234K	Arroyo Chico - just downstream of Alvernon Way to just downstream of Swan Rd.		X			
04/30/2007	06-09-BH08P	2225K	Unnamed Tributaries to Black Wash - just upstream to approx. 1500' upstream of S. Kinney Rd. (Desert Meadows)	X				
04/26/2007	06-09-BB43P	0960K	Santa Cruz River - approx. 5500' downstream to approx. 2050' upstream of Trico-Marana Rd	X				
03/21/2007	07-09-0603P	1020K	Unnamed Wash - approx. 1600' downstream to approx. 100' upstream of Tangerine Rd. (Sunset Canyon Estates)				X	
02/28/2007	07-09-0551P	1643K	Alvernon Wash - approx. 1200' downstream of Blacklidge Dr. to approx. 350' upstream of Flower St.		X			
02/26/2007	07-09-0762X	0980K	Santa Cruz River - 1600' upstream to approx. 10,600' upstream of Trico-Marana Rd.			X		
01/26/2007	06-09-BA36P	2262K	Kinneson Wash - approx. 1000' downstream to approx. 1300' upstream of Escalante Rd (Villa Escalante)		X			
12/13/2006	07-09-0432X	2830K	El Vado Wash - Missiondale Rd. to S. 12th Ave. (2)	X				
12/01/2006	06-09-B818P	1610K	Unnamed Tributary to Massingale Wash - just upstream of Thornydale Rd to just downstream of Cortaro Farms Rd (Cortaro Crossing)	X				
11/22/2006	06-09-BG63P	2830K	El Vado Wash - just upstream of Corona Rd to approx. 200' upstream of 6th Ave.	X				
11/16/2006	06-09-BC54P	1015K	Prospect Canyon Alluvial Fan - just downstream to approx. 1350' downstream of Dove Mountain Blvd.			X		
10/26/2006	06-09-BD84P	0960K, 0970K	Santa Cruz River - 1600' upstream to approx. 10,600' upstream of Trico-Marana Rd. (Pima County & Marana)	X		X		
07/06/2006	05-09-A090P	1663K	Pantano Wash - approx. 1000' upstream to approx. 3700' upstream of Craycroft Rd. - AND- Tanque Verde Wash - approx. 1700' upstream to approx. 5900' upstream of Craycroft Rd. (Pima County & Tucson)	X	X			

06/26/2006	06-09-B665P	2200K	Unnamed Tributaries to Black Wash - just upstream to approx. 2500' upstream of Valencia Rd. (Sonoran Ranch Estates)	X				
05/25/2006	05-09-A160P	1643K, 1644K	Rillito Creek - approx. 250' upstream to approx. 3200' upstream of Dodge Blvd. - AND- Alvernon Wash - its confluence w/Rillito Creek to just upstream of Lowell Rd. (Pima County & Tucson)	X	X			
05/23/2006	06-09-B741P	2225K, 2825K	Unnamed Tributaries to Black Wash - just upstream to approx. 3400' upstream of Victor Dr. (Star Valley)	X				
01/31/2006	05-09-A426P	2880K, 2890K	Pantano Wash near Colossal Cave Road Bridge Redelineation	X				
01/27/2006	05-09-0185P	2254K, 2262K, 2270K, 2855K, 2875K, 2880K	Atterbury Wash Tributaries at various confluence locations - approx. 26,000' downstream of Valencia Rd. to the confluences w/Pantano Wash - AND- Unnamed Julian Wash Tributaries - just upstream to approx. 3500' upstream of Houghton Rd. (Pima County & Tucson)	X	X			
01/17/2006	06-09-B019X	2225K	Unnamed Tributary to Black Wash - approx. 4000' downstream of Sunset Blvd. to approx. 500' upstream of Camino Verde Blvd. (Camino Verde Estates II)	X				
01/11/2006	06-09-B020X	2245K	Unnamed Wash - approx. 5500' downstream to approx. 100' upstream of Valencia Rd.	X				
12/21/2005	06-09-B069X	2200K	Unnamed Tributary to Black Wash - approx. 1200' upstream to approx. 5000' upstream of Tucson Ajo Highway (Eagle Point Estates) - small NW corner only	X				
11/28/2005	05-09-0847P	2200K	Unnamed Tributary to Black Wash - approx. 1200' upstream to approx. 5000' upstream of Tucson Ajo Highway (Eagle Point Estates)	X				
10/25/2005	05-09-0118P	SUPERSEDED BY 09-09-0301X (03/19/2009)	Canada Agua West Alluvial Fan - approx. 2300' upstream of Tortolita Rd. to approx. 200' downstream of Moore Rd. (Pima County & Marana)	X		X		
09/29/2005	05-09-2100324P	SUPERSEDED BY 06-09-B019X (01/17/2006)	Unnamed Tributary to Black Wash - approx. 4000' downstream of Sunset Blvd. to approx. 500' upstream of Camino Verde Blvd.	X				
09/26/2005	05-09-2100326P	SUPERSEDED BY 06-09-B020X (01/11/2006)	Unnamed Wash - approx. 5500' downstream to approx. 100' upstream of Valencia Rd.	X				
08/04/2005	03-09-1149P	1015K, 1020K, 1605K	Canada Agua East Fan - approx 5300' downstream of Blue Bonnet Rd to approx 300' upstream of Camino Del Norte (Pima County & Marana)	X		X		
07/28/2005	04-09-0547P	1644K, 2232K	Columbus Wash/Midway Wash - just downstream of Grant Rd. to just downstream of 5th St. - AND- Columbus Wash Overflow - its convergence w/Columbus Wash to just downstream of Seneca St.		X			
07/15/2005	04-09-0958P	1030K, 1040K	Big Wash - just upstream to approx. 8900' upstream of Tangerine Rd				X	

Appendix C - Approved LOMAs

Type of LOMC	Date	Panel No.	Structure / Property	Address	PC	TU	MA	OV	SA	ST
LOMA	05/21/2003	2257K	Structure	10000 E. El Poso Tr.		X				
LOMA	10/14/2010	2257K	Structure	10048 E. El Poso Tr.		X				
LOMR-F	07/06/2010	1039K	Structure	10050 N. Plaza de Corrida				X		
LOMR-F	07/06/2010	1039K	Structure	10056 N. Plaza de Corrida				X		
LOMR-F	07/06/2010	1039K	Structure	10062 N. Plaza de Corrida				X		
LOMR-F	07/06/2010	1039K	Structure	10068 N. Plaza de Corrida				X		
LOMR-F	07/06/2010	1039K	Structure	10074 N. Plaza de Corrida				X		
LOMA	12/06/2005	2227K	Structure	1010 E. Broadway Blvd.		X				
LOMA-OAS	03/23/2010	1040K	Structure	10130 N. Inverrary Pl.				X		
LOMA-OAS	03/23/2010	1040K	Structure	10131 N. Inverrary Pl.				X		
LOMA	02/09/2010	1040K	Structure	10327 N. Fair Desert Dr.				X		
LOMA-OAS	03/23/2010	1040K	Structure	10384 N. Fair Mountain Dr.				X		
LOMA-OAS	03/23/2010	1040K	Structure	10392 N. Fair Mountain Dr.				X		
LOMA	10/19/2010	1040K	Structure	1040 W. Saddlehorn Dr.				X		
LOMA	10/19/2010	1040K	Structure	1050 W. Saddlehorn Dr.				X		
LOMR-FW	04/11/2003	1670K	Structure	10661 E. Sundance Cir.	X					
LOMA-OAS	03/23/2010	1039K	Structure	10762 N. Peninsula Ct.				X		
LOMA	02/28/2000	1670K	Structure	11150 E. Sundance Dr.	X					
LOMA - OAS	07/15/1999	1015K	Property	11150 N. Coyote Ln.	X					
LOMA	07/14/2004	2280K	Structure	11367 E. Edison St.	X					
LOMA-OAS	03/23/2010	1040K	Structure	1141 W. Wild Dune Ln.				X		
LOMA-OAS	03/23/2010	1040K	Structure	1151 W. Wild Dune Ln.				X		
LOMR-F	05/10/2006	0980K	Property	11524 W. Bannerstone St.			X			
LOMR-F	06/22/2006	0980K	Property	11527 W. Bannerstone St.			X			
LOMR-F	06/22/2006	0980K	Property	11528 W. Stone Hearth St.			X			
LOMR-F	05/10/2006	0980K	Property	11532 W. Bannerstone St.			X			
LOMR-F	06/22/2006	0980K	Property	11535 W. Bannerstone St.			X			
LOMR-F	06/22/2006	0980K	Property	11536 W. Stone Hearth St.			X			
LOMR-F	06/22/2006	0980K	Property	11537 W. Stone Hearth St.			X			
LOMR-F	05/10/2006	0980K	Property	11540 W. Bannerstone St.			X			
LOMR-F	06/22/2006	0980K	Property	11543 W. Bannerstone St.			X			
LOMR-F	06/22/2006	0980K	Property	11544 W. Stone Hearth St.			X			
LOMR-F	06/22/2006	0980K	Property	11545 W. Stone Hearth St.			X			
LOMR-F	05/10/2006	0980K	Property	11548 W. Bannerstone St.			X			
LOMR-F	06/22/2006	0980K	Property	11551 W. Bannerstone St.			X			
LOMR-F	06/22/2006	0980K	Property	11552 W. Stone Hearth St.			X			
LOMR-F	06/22/2006	0980K	Property	11553 W. Stone Hearth St.			X			
LOMR-F	05/10/2006	0980K	Property	11556 W. Bannerstone St.			X			
LOMR-F	06/22/2006	0980K	Property	11559 W. Bannerstone St.			X			
LOMR-F	06/22/2006	0980K	Property	11560 W. Stone Hearth St.			X			
LOMR-F	06/22/2006	0980K	Property	11561 W. Stone Hearth St.			X			
LOMR-F	05/10/2006	0980K	Property	11564 W. Bannerstone St.			X			
LOMR-F	06/22/2006	0980K	Property	11567 W. Bannerstone St.			X			
LOMR-F	06/22/2006	0980K	Property	11568 W. Stone Hearth St.			X			
LOMR-F	06/22/2006	0980K	Property	11569 W. Stone Hearth St.			X			

LOMR-F	05/10/2006	0980K	Property	11572 W. Bannerstone St.			X			
LOMR-F	06/22/2006	0980K	Property	11575 W. Bannerstone St.			X			
LOMR-F	06/22/2006	0980K	Property	11576 W. Stone Hearth St.			X			
LOMR-F	05/10/2006	0980K	Property	11580 W. Bannerstone St.			X			
LOMR-F	06/22/2006	0980K	Property	11581 W. Stone Hearth St.			X			
LOMR-F	06/22/2006	0980K	Property	11583 W. Bannerstone St.			X			
LOMR-F	06/22/2006	0980K	Property	11584 W. Stone Hearth St.			X			
LOMR-F	06/22/2006	0980K	Property	11589 W. Stone Hearth St.			X			
LOMR-F	06/22/2006	0980K	Property	11592 W. Stone Hearth St.			X			
LOMR-F	05/10/2006	0980K	Property	11594 W. Bannerstone St.			X			
LOMR-F	06/22/2006	0980K	Property	11597 W. Bannerstone St.			X			
LOMR-F	06/22/2006	0980K	Property	11597 W. Stone Hearth St.			X			
LOMR-F	05/10/2006	0980K	Property	11602 W. Bannerstone St.			X			
LOMR-F	06/22/2006	0980K	Property	11605 W. Stone Hearth St.			X			
LOMR-F	06/22/2006	0980K	Property	11611 W. Bannerstone St.			X			
LOMR-F	06/22/2006	0980K	Property	11613 W. Stone Hearth St.			X			
LOMR-F	06/22/2006	0980K	Property	11617 W. Bannerstone St.			X			
LOMR-F	06/22/2006	0980K	Property	11621 W. Stone Hearth St.			X			
LOMR-F	06/22/2006	0980K	Property	11623 W. Bannerstone St.			X			
LOMR-F	06/22/2006	0980K	Property	11627 W. Bannerstone St.			X			
LOMR-F	06/22/2006	0980K	Property	11629 W. Stone Hearth St.			X			
LOMA - OAS	07/02/2001	1690K	Structure	11631 E. Calle de Samuel	X					
LOMR-F	06/22/2006	0980K	Property	11637 W. Stone Hearth St.			X			
LOMR-F	06/22/2006	0980K	Property	11643 W. Stone Hearth St.			X			
LOMR-F	06/22/2006	0980K	Property	11649 W. Stone Hearth St.			X			
LOMR-F	06/22/2006	0980K	Property	11650 W. Stone Hearth St.			X			
LOMR-F	06/22/2006	0980K	Property	11655 W. Stone Hearth St.			X			
LOMR-F	06/22/2006	0980K	Property	11656 W. Stone Hearth St.			X			
LOMR-F	06/22/2006	0980K	Property	11661 W. Stone Hearth St.			X			
LOMR-F	06/22/2006	0980K	Property	11662 W. Stone Hearth St.			X			
LOMR-F	06/22/2006	0980K	Property	11667 W. Stone Hearth St.			X			
LOMR-F	06/22/2006	0980K	Property	11668 W. Stone Hearth St.			X			
LOMR-F	06/22/2006	0980K	Property	11673 W. Stone Hearth St.			X			
LOMR-F	06/22/2006	0980K	Property	11674 W. Stone Hearth St.			X			
LOMR-F	06/22/2006	0980K	Property	11680 W. Stone Hearth St.			X			
LOMR-F	06/22/2006	0980K	Property	11691 W. Stone Hearth St.			X			
LOMR-F	06/22/2006	0980K	Property	11692 W. Stone Hearth St.			X			
LOMR-F	06/22/2006	0980K	Property	11697 W. Stone Hearth St.			X			
LOMR-F	05/10/2006	0980K	Property	11698 W. Stone Hearth St.			X			
LOMR-F	06/22/2006	0980K	Property	11701 W. Stone Hearth St.			X			
LOMR-F	05/10/2006	0980K	Property	11702 W. Stone Hearth St.			X			
LOMR-F	06/22/2006	0980K	Property	11703 W. Stone Hearth St.			X			
LOMR-F	05/10/2006	0980K	Property	11704 W. Stone Hearth St.			X			
LOMR-F	05/10/2006	0980K	Property	11706 W. Stone Hearth St.			X			
LOMA	03/01/2004	1690K	Structure	11710 E. Thunderbird Tr. (Guest Bldg)	X					
LOMA	03/01/2004	1690K	Structure	11710 E. Thunderbird Tr. (Main Bldg)	X					
LOMA	12/16/2003	2280K	Structure	11852 E. Wagon Tr. Rd.	X					
LOMA	08/23/2000	2280K	Structure	11858 E. Wagon Tr. Rd.	X					
LOMA	10/12/2010	1039K	Structure	120 W. Oro Valley Dr.					X	
LOMA	10/12/2010	1040K	Structure	120 W. Oro Valley Dr.					X	
LOMA	10/01/2003	2227K	Structure	122 N. 1st Ave.		X				

LOMA	12/19/2001	2280K	Structure	12200 E. Barbary Coast Rd.	X					
LOMR-FW	12/12/2000	2280K	Structure	12216 E. Barbary Coast Rd.	X					
LOMR-FW	09/01/2000	2280K	Structure	12260 E. Barbary Coast Rd.	X					
LOMR-FW	06/26/2008	2280K	Structure	12320 E. Barbary Coast Rd.	X					
LOMA	04/08/2004	2210K	Property	1276 N. Wildcat Diers Rd.		X				
LOMA	02/11/2004	2210K	Property	1286 N. Wildcat Diers Rd.		X				
LOMA	10/04/2005	2227K	Structure	1308 E. 8th St.		X				
LOMA	08/06/2003	2227K	Structure	131 N. Hoff Ave.		X				
LOMA	06/26/2000	2251K	Structure	1320 N. Sahuara Ave.		X				
LOMA	08/06/2003	2227K	Structure	133 N. Hoff Ave.		X				
LOMA	10/12/2010	1039K	Structure	133 W. Oro Valley Dr.				X		
LOMA	09/01/2005	1025K	Structure	13450 N. Piper Dr.				X		
LOMA	08/06/2003	2227K	Structure	135 N. Hoff Ave.		X				
LOMA	02/11/2004	2210K	Property	1350 N. Camino Mateo		X				
LOMA	09/07/2005	1025K	Structure	13500 N. Piper Dr.				X		
LOMA - OAS	12/26/2002	1025K	Area	13605 N. Como Dr.	X					
LOMC	02/09/1999	1025K	Structure	13745 N. Como Dr.	X					
LOMA - OAS	05/15/2002	1025K	Structure	13825 N. Como Dr.	X					
LOMR-F	06/22/2006	0980K	Property	14367 N. Bannerstone Ct.			X			
LOMR-F	05/10/2006	0980K	Property	14368 N. Bannerstone Ct.			X			
LOMR-F	05/10/2006	0980K	Property	14372 N. Bannerstone Ct.			X			
LOMR-F	06/22/2006	0980K	Property	14373 N. Bannerstone Ct.			X			
LOMR-F	05/10/2006	0980K	Property	14376 N. Bannerstone Ct.			X			
LOMR-F	06/22/2006	0980K	Property	14377 N. Bannerstone Ct.			X			
LOMR-F	06/22/2006	0980K	Property	14381 N. Bannerstone Ct.			X			
LOMR-F	05/10/2006	0980K	Property	14384 N. Bannerstone Ct.			X			
LOMR-F	06/22/2006	0980K	Property	14387 N. Bannerstone Ct.			X			
LOMR-F	06/22/2006	0980K	Property	14391 N. Bannerstone Ct.			X			
LOMR-F	05/10/2006	0980K	Property	14397 N. Bannerstone Ct.			X			
LOMA	08/17/2010	1025K	Area	14417 N. Sunset Gallery Dr.			X			
LOMA - OAS	02/02/2010	1035K	Structure	14635 N. Desert Sage Ln.	X					
LOMA	07/22/2008	0955K	Structure	14700 N. Aguirre Rd.	X					
LOMA - OAS	02/02/2010	1035K	Structure	14705 N. Desert Sage Ln.	X					
LOMA - OAS	01/19/2010	1035K	Structure	15158 N. Ironwood Tree Rd.	X					
LOMA	07/23/2004	1639K	Structure	1518 E. Hedrick Dr. (both structures)		X				
LOMR-F	12/07/2006	1636K	Property	1598 W. Gentle Brook Tr.	X					
LOMA	10/21/2010	1039K	Structure	160 W. Oro Valley Dr.				X		
LOMA	10/21/2010	1040K	Structure	160 W. Oro Valley Dr.				X		
LOMA	09/24/2009	2251K	Property	1610 N. Sahuara Ave.		X				
LOMR-F	12/07/2006	1617K	Property	1624 W. Gentle Brook Tr.	X					
LOMR-F	12/07/2006	1636K	Property	1624 W. Gentle Brook Tr.	X					
LOMR-F	12/07/2006	1617K	Property	1626 W. Gentle Brook Tr.	X					
LOMR-F	12/07/2006	1636K	Property	1626 W. Gentle Brook Tr.	X					
LOMR-F	12/07/2006	1617K	Property	1628 W. Gentle Brook Tr.	X					
LOMR-F	12/07/2006	1617K	Property	1630 W. Gentle Brook Tr.	X					
LOMA - OAS	01/28/2010	1610K	Structure	1631 W. Calle Concordia	X					
LOMR-F	12/07/2006	1617K	Property	1644 W. Gentle Brook Tr.	X					
LOMA	02/02/2005	2232K	Structure	1650 N. Santa Rosa Ave.		X				
LOMR-F	12/07/2006	1617K	Property	1650 W. Gentle Brook Tr.	X					
LOMA	05/24/1999	1020K	Structure	1675 W. Wimbledon Wy.				X		

LOMA	05/24/1999	1020K	Structure	1677 W. Wimbledon Wy.				X		
LOMA	05/24/1999	1020K	Structure	1681 W. Wimbledon Wy.				X		
LOMA	09/14/2000	1639K	Structure	1695 E. Fort Lowell Rd. (SE Bldg)		X				
LOMR-F	02/07/2001	1639K	Structure	1700 E. Fort Lowell Rd. - Bldg. 1		X				
LOMR-F	02/07/2001	1639K	Structure	1700 E. Fort Lowell Rd. - Bldg. 1		X				
LOMR-F	02/07/2001	1639K	Structure	1700 E. Fort Lowell Rd. - Bldg. 1		X				
LOMR-F	02/07/2001	1639K	Structure	1700 E. Fort Lowell Rd. - Bldg. 1		X				
LOMR-F	02/07/2001	1639K	Structure	1700 E. Fort Lowell Rd. - Bldg. 1		X				
LOMR-F	02/07/2001	1639K	Structure	1700 E. Fort Lowell Rd. - Bldg. 1		X				
LOMR-F	02/07/2001	1639K	Structure	1700 E. Fort Lowell Rd. - Bldg. 2		X				
LOMR-F	02/07/2001	1639K	Structure	1700 E. Fort Lowell Rd. - Bldg. 2		X				
LOMR-F	02/07/2001	1639K	Structure	1700 E. Fort Lowell Rd. - Bldg. 2		X				
LOMR-F	02/07/2001	1639K	Structure	1700 E. Fort Lowell Rd. - Bldg. 2		X				
LOMR-F	02/07/2001	1639K	Structure	1700 E. Fort Lowell Rd. - Bldg. 2		X				
LOMR-F	02/07/2001	1639K	Structure	1700 E. Fort Lowell Rd. - Bldg. 2		X				
LOMR-F	02/07/2001	1639K	Structure	1700 E. Fort Lowell Rd. - Bldg. 2		X				
LOMR-F	02/07/2001	1639K	Structure	1700 E. Fort Lowell Rd. - Bldgs. 1&2		X				
LOMA	08/13/1999	1639K	Structure	1706 E. Hedrick Dr.		X				
LOMA	09/10/2001	2210K	Structure	1710 W. Linden St.		X				
LOMA	08/31/2010	4400K	Structure	17100 E. Yucca Ash Farm Rd.	X					
LOMR-F	12/07/2006	1617K	Property	1713 W. Gentle Brook Tr.	X					
LOMR-F	12/06/2007	1020K	Structure	1719 W. Wimbledon Wy.				X		
LOMR-F	12/07/2006	1617K	Property	1721 W. Gentle Brook Tr.	X					
LOMR-F	12/07/2006	1617K	Property	1722 W. Gleaming Moon Ln.	X					
LOMA	05/24/1999	1020K	Structure	1723 W. Wimbledon Wy.				X		
LOMA	10/19/1999	2253K	Structure	1725 S. Avenida Sirio		X				
LOMA	02/22/2000	2253K	Structure	1733 S. Avenida Sirio		X				
LOMA - OAS	06/11/2003	2232K	Property	1740 N. Frances Blvd.		X				
LOMA - OAS	07/26/2000	2232K	Property	1791 N. Frances Blvd.		X				
LOMA	07/22/2008	1610K	Structure	1801 W. Rudasill Rd.	X					
LOMA	01/18/2002	2253K	Structure	1809 S. Avenida Sirio		X				
LOMA	02/19/2002	2253K	Structure	1817 S. Avenida Sirio		X				
LOMA	07/12/2006	1610K	Structure	1820 W. Placita del Lobo	X					
LOMA	07/14/2006	1610K	Structure	1830 W. Placita del Lobo	X					
LOMA	07/14/2006	1610K	Structure	1831 W. Placita del Lobo	X					
LOMA	07/14/2006	1610K	Structure	1840 W. Placita del Lobo	X					
LOMR-F	12/06/2007	1020K	Structure	1857 W. Wimbledon Wy.				X		
LOMR-F	12/06/2007	1020K	Structure	1868 W. Wimbledon Wy.				X		
LOMR-F	12/06/2007	1020K	Structure	1869 W. Wimbledon Wy.				X		
LOMA	10/03/2001	2256K	Structure	190 N. Golden West St.		X				
LOMR-F	10/26/2010	2280K	Structure	1917 N. Wentworth Rd.	X					
LOMR-F	12/03/2001	2226K	Property	195 N. Bonita Ave.		X				
LOMA	09/07/2005	1025K	Property	1950 W. DeHavilland Wy.				X		
LOMA	02/25/2010	1619K	Structure	1950 W. Water St.		X				
LOMR-F	12/03/2001	2226K	Property	201 N. Bonita Ave.		X				
LOMA	06/25/2003	2256K	Property	2070 N. Wild Hyacinth Dr.		X				
LOMR-F	04/11/2003	2254K	Property	2121 S. Pantano Rd.		X				
LOMR-F	12/02/2004	2227K	Structure	222 N. 1st Ave.		X				
LOMA - OAS	11/19/2009	1637K	Property	2232 E. Camino Rio	X					
LOMA - OAS	11/19/2009	1637K	Property	2247 E. Camino Rio	X					

LOMA - OAS	06/12/2008	2253K	Property	227 S. Busch Pl.		X				
LOMR-F	08/17/2006	2257K	Property	2280 N. Roanna Ct.	X					
LOMR-F	08/17/2006	2280K	Property	2280 N. Roanna Ct.	X					
LOMR-F	08/17/2006	2257K	Property	2285 N. Roanna Ct.	X					
LOMA	02/11/2004	2210K	Property	2287 W. Drachman St.		X				
LOMR-F	08/17/2006	2280K	Property	2290 N. Roanna Ct.	X					
LOMR-F	08/17/2006	2257K	Property	2295 N. Roanna Ct.	X					
LOMA	04/24/2007	1643K	Structure	2323 E. Mitchell St.		X				
LOMA	02/11/2004	2210K	Property	2340 W. Ireton Pl.		X				
LOMA	06/12/2002	1670K	Structure	2449 N. Lightning A Dr.		X				
LOMA	09/01/2005	2227K	Structure	250 N. Santa Rita Ave.		X				
LOMA	04/16/2009	1643K	Structure	2519 E. Richards Pl.		X				
LOMA	08/15/2002	2810K	Structure	2601 W. Partridge St.	X					
LOMA - OAS	11/09/2009	1644K	Property	2638 N. Orchard Ave.		X				
LOMR-F	06/13/2006	1644K	Structure	2675 N. Wyatt Dr. (4 structures)		X				
LOMA	02/20/2002	2256K	Structure	27 S. Shadow Creek Pl.		X				
LOMA	12/08/2009	1610K	Structure	2712 W. Placita del Huerto	X					
LOMA	01/08/2009	2233K	Structure	2814 E. 17th St.		X				
LOMA	04/29/1999	1645K	Structure	2820 E. Cerrado Los Palitos	X					
LOMA	04/29/1999	1645K	Structure	2820 E. Cerrado Los Palitos	X					
LOMA	04/25/2001	2233K	Structure	2838 E. 17th St.		X				
LOMR-F	03/31/2000	2220K	Structure	2851 W. Valencia Rd.	X					
LOMA	05/29/2002	2228K	Structure	2856 S. Cottonwood Ln.		X				
LOMA	06/05/2000	1610K	Structure	2900 W. Lena Wy.	X					
LOMA - OAS	04/25/2001	2233K	Property	2931 E. Eastland St.		X				
LOMA	04/25/2001	2233K	Structure	2938 E. 17th St.		X				
LOMA - OAS	07/11/2001	1670K	Property	2991 N. Melpomene Wy.	X					
LOMR-F	11/10/2004	1643K	Structure	3024 E. Fort Lowell Rd.		X				
LOMA	07/12/2002	1639K	Structure	3028 N. Olsen Ave.		X				
LOMA - OAS	05/06/2004	2228K	Property	308 W. 31st St.	X					
LOMA	02/09/1999	1639K	Structure	3121 N. Campbell Ave.		X				
LOMA	07/14/2003	1643K	Structure	3161 N. Country Club Rd.		X				
LOMA	03/31/2004	1639K	Structure	3202 N. Cherry Ave.		X				
LOMA	03/31/2004	1639K	Structure	3204 N. Cherry Ave.		X				
LOMA	03/31/2004	1639K	Structure	3206 N. Cherry Ave.		X				
LOMA	03/31/2004	1639K	Structure	3208 N. Cherry Ave.		X				
LOMA - OAS	03/31/2004	1639K	Structure	3210 N. Cherry Ave.		X				
LOMA - OAS	03/31/2004	1639K	Structure	3212 N. Cherry Ave.		X				
LOMA - OAS	03/31/2004	1639K	Structure	3214 N. Cherry Ave.		X				
LOMA - OAS	03/31/2004	1639K	Structure	3216 N. Cherry Ave.		X				
LOMA - OAS	03/31/2004	1639K	Structure	3218 N. Cherry Ave.		X				
LOMA	02/26/2009	2227K	Structure	322 / 324 / 326 N. Martin Ave.		X				
LOMA - OAS	03/31/2004	1639K	Structure	3220 N. Cherry Ave.		X				
LOMA - OAS	03/31/2004	1639K	Structure	3222 N. Cherry Ave.		X				
LOMA - OAS	03/31/2004	1639K	Structure	3224 N. Cherry Ave.		X				

LOMA	09/14/2010	1663K	Structure	3242 N. Riverbend Pl.	X					
LOMA - OAS	04/28/2004	2810K	Property	3301 W. Avenida de San Candido	X					
LOMA - OAS	04/28/2004	2810K	Property	3311 W. Avenida de San Candido	X					
LOMA	09/23/2010	1663K	Structure	3312 N. Riverbend Circle East	X					
LOMA	04/17/2002	1643K	Structure	3314 N. Christmas Ave.		X				
LOMA - OAS	04/28/2004	2810K	Property	3321 W. Avenida de San Candido	X					
LOMA - OAS	04/28/2004	2810K	Property	3331 W. Avenida de San Candido	X					
LOMA	09/14/2010	1663K	Structure	3340 N. Riverbend Pl.	X					
LOMR-F	02/18/2011	2220K	Structure	3345 W. Valencia Rd.	X					
LOMA	04/26/2010	2227K	Structure	335 N. Park Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	3431 W. Avenida de San Candido	X					
LOMA - OAS	04/28/2004	2810K	Property	3441 W. Avenida de San Candido	X					
LOMA - OAS	04/28/2004	2810K	Property	3451 W. Avenida de San Candido	X					
LOMA - OAS	04/28/2004	2810K	Property	3461 W. Avenida de San Candido	X					
LOMA - OAS	04/28/2004	2810K	Property	3471 W. Avenida de San Candido	X					
LOMA - OAS	04/28/2004	2810K	Property	3481 W. Avenida de San Candido	X					
LOMA - OAS	04/28/2004	2810K	Property	3491 W. Avenida de San Candido	X					
LOMA - OAS	04/28/2004	2810K	Property	3501 W. Avenida de San Candido	X					
LOMA - OAS	04/28/2004	2810K	Property	3515 W. Avenida de San Candido	X					
LOMA	09/10/2001	1643K	Structure	3625 N. Sunterra Ct.		X				
LOMA - OAS	04/28/2004	2810K	Property	3665 W. Ostler St.	X					
LOMA - OAS	04/28/2004	2810K	Property	3670 W. Ostler St.	X					
LOMA - OAS	04/28/2004	2810K	Property	3675 W. Ostler St.	X					
LOMA - OAS	04/28/2004	2810K	Property	3680 W. Ostler St.	X					
LOMA - OAS	04/28/2004	2810K	Property	3685 W. Ostler St.	X					
LOMA - OAS	04/28/2004	2810K	Property	3685 W. Tybolt Dr.	X					
LOMA - OAS	04/28/2004	2810K	Property	3690 W. Ostler St.	X					
LOMA - OAS	04/28/2004	2810K	Property	3695 W. Tybolt Dr.	X					
LOMA - OAS	04/28/2004	2810K	Property	3705 W. Tybolt Dr.	X					
LOMA - OAS	04/28/2004	2810K	Property	3715 W. Tybolt Dr.	X					
LOMA - OAS	04/28/2004	2810K	Property	3725 W. Tybolt Dr.	X					
LOMA - OAS	04/28/2004	2810K	Property	3735 W. Tybolt Dr.	X					
LOMA - OAS	04/28/2004	2810K	Property	3755 W. Tybolt Dr.	X					
LOMA - OAS	04/28/2004	2810K	Property	3765 W. Tybolt Dr.	X					
LOMA - OAS	04/28/2004	2810K	Property	3775 W. Tybolt Dr.	X					
LOMA - OAS	04/28/2004	2810K	Property	3785 W. Tybolt Dr.	X					

LOMR-F	01/18/2011	1616K	Structure	3822 N. Wild Life Dr.	X					
LOMA	11/09/2010	2226K	Structure	385 N. Main St.		X				
LOMA	11/03/2004	1643K	Structure	3868 N. Paseo de las Canchas		X				
LOMA	01/05/2005	1643K	Structure	3912 N. Paseo de las Canchas		X				
LOMA	01/08/2003	1670K	Structure	3915 N. Bear Canyon Rd.	X					
LOMA - OAS	06/09/2005	1663K	Structure	3920 N. Tanuri Dr.	X					
LOMA - OAS	08/28/2007	2810K	Property	4000 W. Tetakusim Rd.	X					
LOMA-OAS	02/25/2011	1665K	Property	4009 N. Flaming Sky Pl.	X					
LOMA-OAS	02/25/2011	1665K	Property	4017 N. Flaming Sky Pl.	X					
LOMA-OAS	02/25/2011	1665K	Property	4025 N. Flaming Sky Pl.	X					
LOMA-OAS	02/25/2011	1665K	Property	4033 N. Flaming Sky Pl.	X					
LOMA	10/29/2003	1645K	Structure	4041 E. Bujia Primera	X					
LOMA-OAS	02/25/2011	1665K	Property	4041 N. Flaming Sky Pl.	X					
LOMA-OAS	02/25/2011	1665K	Property	4049 N. Flaming Sky Pl.	X					
LOMA	03/21/2001	1645K	Structure	4050 E. Camino de la Bajada	X					
LOMA	10/27/2009	2210K	Property	406 N. Shantel Dr.		X				
LOMA-OAS	02/25/2011	1665K	Property	4077 N. Calle Bartinez	X					
LOMA-OAS	02/25/2011	1665K	Property	4089 N. Calle Bartinez	X					
LOMA-OAS	02/25/2010	1643K	Structure	4091 N. San Simeon Rd.						
LOMA-OAS	02/25/2010	1644K	Structure	4091 N. San Simeon Rd.	X					
LOMA-OAS	02/25/2011	1665K	Property	4095 N. Calle Bartinez	X					
LOMA-OAS	02/25/2011	1665K	Property	4101 N. Calle Bartinez	X					
LOMA-OAS	02/25/2011	1665K	Property	4107 N. Calle Bartinez	X					
LOMA-OAS	02/25/2011	1665K	Property	4113 N. Calle Bartinez	X					
LOMA - OAS	03/22/2011	1645K	Structure	4115 N. Avenida del Cazador	X					
LOMA-OAS	02/25/2011	1665K	Property	4119 N. Calle Bartinez	X					
LOMA - OAS	02/04/2010	1035K	Structure	4121 E. Wilds Rd.	X					
LOMA	09/07/1999	1645K	Structure	4121 N. San Simeon Rd.	X					
LOMA-OAS	02/25/2011	1665K	Property	4125 N. Calle Bartinez	X					
LOMA-OAS	02/25/2011	1665K	Property	4131 N. Calle Bartinez	X					
LOMA-OAS	02/25/2011	1665K	Property	4137 N. Calle Bartinez	X					
LOMA-OAS	02/25/2011	1665K	Property	4143 N. Calle Bartinez	X					
LOMA-OAS	02/25/2011	1665K	Property	4149 N. Calle Bartinez	X					
LOMA-OAS	02/25/2011	1665K	Property	4155 N. Calle Bartinez	X					
LOMA	07/02/2008	1665K	Structure	4161 N. Calle Vista Ciudad	X					
LOMA	11/17/2004	2226K	Structure	419 N. Main Ave.		X				
LOMR-FW	05/28/2009	1630K	Structure	420 E. Deone Ln.	X					
LOMR-F	02/06/2002	2226K	Structure	420 N. Bonita Ave.		X				

LOMA	11/17/2004	2226K	Structure	423 N. Main Ave.		X				
LOMA	01/27/2003	1635K	Structure	4231 E. Havasu Rd.	X					
LOMA - OAS	03/12/2002	2810K	Property	4231 W. Elvado Rd.	X					
LOMA	11/17/2004	2226K	Structure	425 N. Main Ave.		X				
LOMA-OAS	02/25/2011	1665K	Property	4261 N. Red Sun Pl.	X					
LOMA-OAS	02/25/2011	1665K	Property	4271 N. Red Sun Pl.	X					
LOMA-OAS	02/25/2011	1665K	Property	4281 N. Red Sun Pl.	X					
LOMA-OAS	02/25/2011	1665K	Property	4291 N. Red Sun Pl.	X					
LOMA	01/13/2000	1635K	Structure	4310 E. Placita Panuco	X					
LOMR-F	07/01/2004	2245K	Property	4311 E. Mesquite Desert Tr.		X				
LOMR-F	07/01/2004	2245K	Property	4312 E. Mesquite Desert Tr.		X				
LOMR-F	07/01/2004	2245K	Property	4317 E. Mesquite Desert Tr.		X				
LOMR-F	07/01/2004	2245K	Property	4318 E. Mesquite Desert Tr.		X				
LOMR-F	07/01/2004	2245K	Property	4323 E. Mesquite Desert Tr.		X				
LOMR-F	07/01/2004	2245K	Property	4324 E. Mesquite Desert Tr.		X				
LOMR-F	07/01/2004	2245K	Property	4329 E. Mesquite Desert Tr.		X				
LOMA - OAS	11/19/2009	1637K	Property	4329 N. Camino Real	X					
LOMR-F	07/01/2004	2245K	Property	4330 E. Mesquite Desert Tr.		X				
LOMR-F	07/01/2004	2245K	Property	4335 E. Mesquite Desert Tr.		X				
LOMR-F	07/01/2004	2245K	Property	4336 E. Mesquite Desert Tr.		X				
LOMR-F	07/01/2004	2245K	Property	4341 E. Mesquite Desert Tr.		X				
LOMA	10/08/2009	1635K	Structure	4342 E. Coronado Dr.	X					
LOMR-F	07/01/2004	2245K	Property	4347 E. Mesquite Desert Tr.		X				
LOMA-OAS	03/13/2008	1637K	Property	4349 N. 4th Ave.		X				
LOMA-OAS	03/13/2008	1637K	Property	4351 N. 4th Ave.		X				
LOMR-F	07/01/2004	2245K	Property	4353 E. Mesquite Desert Tr.		X				
LOMR-F	07/01/2004	2245K	Property	4359 E. Mesquite Desert Tr.		X				
LOMR-F	07/01/2004	2245K	Property	4365 E. Mesquite Desert Tr.		X				
LOMR-F	07/01/2004	2245K	Property	4371 E. Mesquite Desert Tr.		X				
LOMR-F	07/01/2004	2245K	Property	4377 E. Mesquite Desert Tr.		X				
LOMR-F	07/01/2004	2245K	Property	4383 E. Mesquite Desert Tr.		X				
LOMR-F	07/01/2004	2245K	Property	4389 E. Mesquite Desert Tr.		X				
LOMR-F	07/01/2004	2245K	Property	4395 E. Mesquite Desert Tr.		X				
LOMR-F	01/09/2003	2226K	Structure	440 N. Bonita Ave.		X				
LOMR-F	07/01/2004	2245K	Property	4401 E. Mesquite Desert Tr.		X				
LOMR-F	07/01/2004	2245K	Property	4407 E. Mesquite Desert Tr.		X				
LOMA	09/18/2002	1645K	Structure	4410 N. Pontatoc Rd.	X					
LOMR-F	07/01/2004	2245K	Property	4413 E. Mesquite Desert Tr.		X				
LOMR-F	07/01/2004	2245K	Property	4419 E. Mesquite Desert Tr.		X				
LOMR-F	02/25/2010	1615K	Structure	4433 N. Lightning Ridge Tr.	X					
LOMA-OAS	03/23/2010	1039K	Structure	460 E. River Walk Dr.				X		
LOMA	03/29/2011	1616K	Structure	4604 N. Lost Horizon Dr.	X					
LOMR-FW	07/21/2006	1670K	Structure	4625 N. Palisade Dr.	X					
LOMR-F	01/18/2011	1616K	Structure	4650 N. Placita Rico	X					
LOMA - OAS	09/14/2010	1665K	Structure	4738 N. Placita Ventana del Rio	X					
LOMA-OAS	09/14/2010	1665K	Structure	4746 N. Placita Ventana del Rio	X					

LOMA-OAS	09/23/2010	1665K	Structure	4754 N. Placita Ventana del Rio	X						
LOMA	01/23/2004	2225K	Property	4759 W. Nebraska St.	X						
LOMA - OAS	04/20/2010	1637K	Property	4767 N. Via Entrada	X						
LOMA	08/17/2001	1637K	Structure	4850 N. Campbell Ave.	X						
LOMA	02/05/2003	2232K	Structure	4865 E. Hawthorne St.		X					
LOMA - OAS	10/16/2008	1605K	Structure	4894 W. Sunset Rd.	X						
LOMA	10/22/2009	1605K	Property	4900 W. Didion Dr.	X						
LOMA	10/22/2009	1605K	Property	4906 W. Didion Dr.	X						
LOMA	10/22/2009	1605K	Property	4912 W. Didion Dr.	X						
LOMA	10/22/2009	1605K	Property	4918 W. Didion Dr.	X						
LOMA	10/22/2009	1605K	Property	4924 W. Didion Dr.	X						
LOMA	10/22/2009	1605K	Property	4930 W. Didion Dr.	X						
LOMA	10/22/2009	1605K	Property	4936 W. Didion Dr.	X						
LOMA	10/22/2009	1605K	Property	4944 W. Didion Dr.	X						
LOMA	10/22/2009	1605K	Property	4950 W. Didion Dr.	X						
LOMA	10/22/2009	1605K	Property	4956 W. Didion Dr.	X						
LOMA	10/22/2009	1605K	Property	4962 W. Didion Dr.	X						
LOMA	10/22/2009	1605K	Property	4968 W. Didion Dr.	X						
LOMA	10/22/2009	1605K	Property	4974 W. Didion Dr.	X						
LOMA	10/22/2009	1605K	Property	4982 W. Didion Dr.	X						
LOMA	10/22/2009	1605K	Property	4988 W. Didion Dr.	X						
LOMA	10/22/2009	1605K	Property	4994 W. Didion Dr.	X						
LOMA	06/17/2008	1637K	Structure	5000 N. Campbell Ave.	X						
LOMA	10/22/2009	1605K	Property	5000 W. Didion Dr.	X						
LOMA	10/22/2009	1605K	Property	5006 W. Didion Dr.	X						
LOMR-F	10/20/2004	3905K	Property	501 W. Royal Troon Pl.	X						
LOMA	10/22/2009	1605K	Property	5012 W. Didion Dr.	X						
LOMA	10/22/2009	1605K	Property	5018 W. Didion Dr.	X						
LOMA	10/22/2009	1605K	Property	5024 W. Didion Dr.	X						
LOMA	10/22/2009	1605K	Property	5030 W. Didion Dr.	X						
LOMA	10/22/2009	1605K	Property	5050 W. Didion Dr.	X						
LOMA	10/22/2009	1605K	Property	5056 W. Didion Dr.	X						
LOMR-F	10/20/2004	3905K	Property	507 W. Royal Troon Pl.	X						
LOMR-F	02/28/2006	2225K	Structure	5073 W. Tillery St.	X						
LOMA - OAS	09/02/1999	1615K	Structure	5075 N. Gerhart Rd.	X						
LOMA	08/05/2003	2225K	Structure	5111 S. Joseph Ave.	X						
LOMR-F	12/07/2006	1617K	Property	5119 N. Clifed River Dr.	X						
LOMR-F	12/07/2006	1617K	Property	5127 N. Clifed River Dr.	X						
LOMR-F	12/07/2006	1617K	Property	5135 N. Clifed River Dr.	X						
LOMA - OAS	07/02/2001	2234K	Property	5142 E. 23rd St.		X					
LOMR-F	12/07/2006	1617K	Property	5143 N. Clifed River Dr.	X						
LOMR-F	12/07/2006	1617K	Property	5151 N. Clifed River Dr.	X						
LOMA	12/28/2004	1644K	Property	5159 E. Woodspring Dr.		X					
LOMR-F	12/07/2006	1617K	Property	5159 N. Clifed River Dr.	X						
LOMA	11/01/2005	1645K	Structure	5164 N. Pontatoc Rd.	X						
LOMR-F	12/07/2006	1617K	Property	5167 N. Clifed River Dr.	X						
LOMA	07/28/2009	1645K	Structure	5200 N. Pontatoc Rd.	X						
LOMA	09/03/2009	1644K	Property	5213 E. Woodspring Dr.		X					
LOMA	09/03/2009	1644K	Property	5213 E. Woodspring Dr.		X					
LOMR-F	01/23/2002	2252K	Property	523 N. Brook Park Dr.		X					

LOMA	09/14/2010	1665K	Structure	5297 N. Sunset Shadows Pl.	X					
LOMA	11/13/2000	2232K	Structure	5341 E. 10th St.		X				
LOMA - OAS	01/20/2000	2227K	Structure	539 E. Linden St.		X				
LOMR-F	03/02/2005	2226K	Structure	545 W. Shibell St.		X				
LOMR-F	03/02/2005	2226K	Structure	547 W. Shibell St.		X				
LOMA	09/14/2010	1665K	Structure	5500 N. Barrasca Ave.	X					
LOMA-OAS	03/23/2010	1040K	Structure	551 W. Summer Rain Dr.				X		
LOMA	09/14/2010	1665K	Structure	5524 N. Mica Mountain Dr.	X					
LOMR-FW	09/14/2010	1665K	Structure	5556 N. Mica Mountain Dr.	X					
LOMA-OAS	03/23/2010	1040K	Structure	561 W. Summer Rain Dr.				X		
LOMA	03/09/2010	2225K	Area	5615 S. Joseph Ave.	X					
LOMR-F	05/09/2001	1605K	Structure	5633 W. Cortaro Farms Rd.			X			
LOMA	11/13/2002	2251K	Structure	5656 E. Grant Rd.		X				
LOMA-OAS	03/23/2010	1040K	Structure	571 W. Summer Rain Dr.				X		
LOMA-OAS	03/23/2010	1040K	Structure	581 W. Summer Rain Dr.				X		
LOMA	01/12/2005	1635K	Structure	5870 N. Piedra Seca	X					
LOMA	11/07/2006	1663K	Structure	6044 E. Country Club Vista Dr.	X					
LOMA	01/25/2011	1605K	Property	6058 W. Millay St.			X			
LOMA	01/25/2011	1605K	Property	6060 W. Millay St.			X			
LOMA	01/25/2011	1605K	Property	6062 W. Millay St.			X			
LOMA	01/25/2011	1605K	Property	6064 W. Millay St.			X			
LOMA	01/25/2011	1605K	Property	6066 W. Millay St.			X			
LOMA	01/25/2011	1605K	Property	6068 W. Millay St.			X			
LOMA	01/25/2011	1605K	Property	6070 W. Millay St.			X			
LOMA	01/25/2011	1605K	Property	6071 W. Millay St.			X			
LOMA	01/25/2011	1605K	Property	6072 W. Millay St.			X			
LOMA	01/25/2011	1605K	Property	6073 W. Millay St.			X			
LOMA	01/25/2011	1605K	Property	6074 W. Millay St.			X			
LOMA	01/25/2011	1605K	Property	6075 W. Millay St.			X			
LOMA	01/25/2011	1605K	Property	6076 W. Millay St.			X			
LOMA	01/25/2011	1605K	Property	6078 W. Millay St.			X			
LOMA	01/25/2011	1605K	Property	6079 W. Millay St.			X			
LOMA	01/25/2011	1605K	Property	6080 W. Millay St.			X			
LOMA	01/25/2011	1605K	Property	6082 W. Millay St.			X			
LOMA	01/25/2011	1605K	Property	6084 W. Millay St.			X			
LOMA	01/25/2011	1605K	Property	6086 W. Millay St.			X			
LOMA	01/25/2011	1605K	Property	6090 W. Millay St.			X			
LOMA	01/25/2011	1605K	Property	6092 W. Millay St.			X			
LOMA	01/25/2011	1605K	Property	6094 W. Millay St.			X			
LOMA	07/18/2003	1635K	Property	6129 N. Via Jaspeada	X					
LOMA	07/18/2003	1635K	Property	6137 N. Via Jaspeada	X					
LOMA	07/18/2003	1635K	Property	6161 N. Via Jaspeada	X					
LOMA	07/18/2003	1635K	Property	6169 N. Via Jaspeada	X					
LOMA	07/18/2003	1635K	Property	6177 N. Via Jaspeada	X					
LOMA	09/21/2010	1655K	Structure	6264 N. Whaleback Pl.	X					
LOMA-OAS	03/23/2010	1039K	Structure	628 E. River Walk Dr.				X		
LOMR-FW	09/14/2010	1655K	Structure	6320 N. Whaleback Pl.	X					
LOMR-FW	09/14/2010	1655K	Structure	6350 N. Whaleback Pl.	X					
LOMA	09/14/2010	1655K	Structure	6381 N. Whaleback Pl.	X					

LOMA - OAS	04/28/2004	2810K	Property	7590 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7592 S. Coleville St.	X					
LOMA - OAS	04/28/2004	2810K	Property	7598 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7601 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7601 S. Coleville St.	X					
LOMA - OAS	04/28/2004	2810K	Property	7602 S. Bosworth Field Wy.	X					
LOMA - OAS	04/28/2004	2810K	Property	7602 S. Coleville St.	X					
LOMA - OAS	04/28/2004	2810K	Property	7606 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7609 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7610 S. Bosworth Field Wy.	X					
LOMA - OAS	04/28/2004	2810K	Property	7610 S. Cordelia Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7611 S. Bosworth Field Wy.	X					
LOMA - OAS	04/28/2004	2810K	Property	7611 S. Coleville St.	X					
LOMA - OAS	04/28/2004	2810K	Property	7614 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7618 S. Bosworth Field Wy.	X					
LOMA - OAS	04/28/2004	2810K	Property	7620 S. Cobham Dr.	X					
LOMA - OAS	04/28/2004	2810K	Property	7620 S. Cordelia Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7620 S. Malcolm Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7621 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7621 S. Coleville St.	X					
LOMA - OAS	04/28/2004	2810K	Property	7622 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7623 S. Bosworth Field Wy.	X					
LOMA - OAS	04/28/2004	2810K	Property	7625 S. Cordelia Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7625 S. Malcolm Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7626 S. Bosworth Field Wy.	X					
LOMA - OAS	04/28/2004	2810K	Property	7626 S. Coleville St.	X					
LOMA - OAS	03/23/2010	1040K	Structure	763 W. Annandale Wy.				X		
LOMA - OAS	04/28/2004	2810K	Property	7630 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7630 S. Cordelia Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7631 S. Bosworth Field Wy.	X					
LOMA - OAS	04/28/2004	2810K	Property	7631 S. Coleville St.	X					
LOMA - OAS	04/28/2004	2810K	Property	7633 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7634 S. Bosworth Field Wy.	X					

LOMA - OAS	04/28/2004	2810K	Property	7636 S. Coleville St.	X					
LOMA - OAS	04/28/2004	2810K	Property	7638 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7641 S. Coleville St.	X					
LOMA - OAS	04/28/2004	2810K	Property	7642 S. Bosworth Field Wy.	X					
LOMA - OAS	04/28/2004	2810K	Property	7642 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7645 S. Cressida Wy.	X					
LOMA - OAS	04/28/2004	2810K	Property	7646 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7646 S. Coleville St.	X					
LOMA - OAS	04/28/2004	2810K	Property	7647 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7649 S. Derby Ct.	X					
LOMA - OAS	04/28/2004	2810K	Property	7650 S. Bosworth Field Wy.	X					
LOMA - OAS	04/28/2004	2810K	Property	7650 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7650 S. Derby Ct.	X					
LOMA - OAS	04/28/2004	2810K	Property	7650 S. Dorset Ct.	X					
LOMA - OAS	04/28/2004	2810K	Property	7651 S. Coleville St.	X					
LOMA - OAS	04/28/2004	2810K	Property	7653 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7654 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7655 S. Cressida Wy.	X					
LOMA - OAS	04/28/2004	2810K	Property	7656 S. Coleville St.	X					
LOMA - OAS	04/28/2004	2810K	Property	7656 S. Dorset Ct.	X					
LOMA - OAS	04/28/2004	2810K	Property	7658 S. Bosworth Field Wy.	X					
LOMA - OAS	04/28/2004	2810K	Property	7658 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7659 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7659 S. Derby Ct.	X					
LOMA - OAS	04/28/2004	2810K	Property	7660 S. Derby Ct.	X					
LOMA - OAS	04/28/2004	2810K	Property	7661 S. Bosworth Field Wy.	X					
LOMA - OAS	04/28/2004	2810K	Property	7661 S. Coleville St.	X					
LOMA - OAS	04/28/2004	2810K	Property	7662 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7662 S. Dorset Ct.	X					
LOMA - OAS	04/28/2004	2810K	Property	7664 S. Coleville St.	X					
LOMA - OAS	04/28/2004	2810K	Property	7665 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7665 S. Cressida Wy.	X					
LOMA - OAS	04/28/2004	2810K	Property	7666 S. Bosworth Field Wy.	X					

LOMA - OAS	04/28/2004	2810K	Property	7666 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7668 S. Dorset Ct.	X					
LOMA - OAS	04/28/2004	2810K	Property	7669 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7669 S. Derby Ct.	X					
LOMA - OAS	04/28/2004	2810K	Property	7670 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7670 S. Derby Ct.	X					
LOMA - OAS	04/28/2004	2810K	Property	7671 S. Coleville St.	X					
LOMA - OAS	04/28/2004	2810K	Property	7672 S. Coleville St.	X					
LOMA - OAS	04/28/2004	2810K	Property	7673 S. Bosworth Field Wy.	X					
LOMA - OAS	04/28/2004	2810K	Property	7673 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7674 S. Bosworth Field Wy.	X					
LOMA - OAS	04/28/2004	2810K	Property	7674 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7674 S. Dorset Ct.	X					
LOMA - OAS	04/28/2004	2810K	Property	7675 S. Cressida Wy.	X					
LOMA - OAS	04/28/2004	2810K	Property	7677 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7677 S. Dorset Ct.	X					
LOMA - OAS	04/28/2004	2810K	Property	7678 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7679 S. Derby Ct.	X					
LOMA - OAS	04/28/2004	2810K	Property	7680 S. Derby Ct.	X					
LOMA - OAS	04/28/2004	2810K	Property	7680 S. Dorset Ct.	X					
LOMA - OAS	04/28/2004	2810K	Property	7681 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7681 S. Coleville St.	X					
LOMA - OAS	04/28/2004	2810K	Property	7682 S. Bosworth Field Wy.	X					
LOMA - OAS	04/28/2004	2810K	Property	7682 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7683 S. Dorset Ct.	X					
LOMA - OAS	04/28/2004	2810K	Property	7685 S. Bosworth Field Wy.	X					
LOMA - OAS	04/28/2004	2810K	Property	7685 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7686 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7686 S. Dorset Ct.	X					
LOMA - OAS	04/28/2004	2810K	Property	7689 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7689 S. Dorset Ct.	X					
LOMA - OAS	03/23/2010	1040K	Structure	769 W. Annandale Wy.					X	
LOMA - OAS	04/28/2004	2810K	Property	7690 S. Bosworth Field Wy.	X					

LOMA - OAS	04/28/2004	2810K	Property	7690 S. Carlisle Ave.	X					
LOMA - OAS	04/28/2004	2810K	Property	7691 S. Coleville St.	X					
LOMA - OAS	04/28/2004	2810K	Property	7692 S. Dorset Ct.	X					
LOMA - OAS	04/28/2004	2810K	Property	7693 S. Bosworth Field Wy.	X					
LOMA - OAS	04/28/2004	2810K	Property	7693 S. Dorset Ct.	X					
LOMA - OAS	04/28/2004	2810K	Property	7694 S. Bosworth Field Wy.	X					
LOMA - OAS	04/28/2004	2810K	Property	7698 S. Coleville St.	X					
LOMA - OAS	04/28/2004	2810K	Property	7698 S. Dorset Ct.	X					
LOMA - OAS	04/28/2004	2810K	Property	7699 S. Coleville St.	X					
LOMA - OAS	04/28/2004	2810K	Property	7699 S. Dorset Ct.	X					
LOMR-F	03/02/2005	2226K	Structure	771 N. Anita Ave.		X				
LOMA-OAS	03/23/2010	1040K	Structure	775 W. Annandale Wy.					X	
LOMR-F	12/20/2004	2226K	Structure	781 N. Anita Ave.		X				
LOMA-OAS	03/23/2010	1040K	Structure	781 W. Annandale Wy.					X	
LOMR-F	07/06/2010	1039K	Structure	787 E. Camino Corrida					X	
LOMA-OAS	03/23/2010	1040K	Structure	787 W. Annandale Wy.					X	
LOMR-F	07/06/2010	1039K	Structure	789 E. Camino Corrida					X	
LOMR-F	07/06/2010	1039K	Structure	791 E. Camino Corrida					X	
LOMR-F	07/06/2010	1039K	Structure	793 E. Camino Corrida					X	
LOMA-OAS	03/23/2010	1040K	Structure	793 W. Annandale Wy.					X	
LOMR-F	07/06/2010	1039K	Structure	794 E. Camino Corrida					X	
LOMR-F	07/06/2010	1039K	Structure	795 E. Camino Corrida					X	
LOMR-F	07/06/2010	1039K	Structure	796 E. Camino Corrida					X	
LOMR-F	07/06/2010	1039K	Structure	797 E. Camino Corrida					X	
LOMR-F	07/06/2010	1039K	Structure	798 E. Camino Corrida					X	
LOMA-OAS	03/23/2010	1040K	Structure	803 W. Annandale Wy.					X	
LOMA	12/30/2003	2254K	Structure	8043 E. Estes Ln.		X				
LOMA	01/25/2002	2227K	Structure	808 E. 8th St.		X				
LOMR-F	04/01/2011	2228K	Property	809 W. Congress St.		X				
LOMR-F	04/01/2011	2226K	Property	809 W. Congress St.		X				
LOMA	01/25/2002	2227K	Structure	812 E. 8th St.		X				
LOMA-OAS	03/23/2010	1040K	Structure	831 W. Annandale Wy.					X	
LOMA	02/08/2000	2254K	Structure	8310 E. 24th St.		X				
LOMA	01/25/2007	2258K	Structure	833 S. Desert Steppes Dr.		X				
LOMA - OAS	02/03/2009	2200K	Structure	8469 W. Benidorm Loop	X					
LOMA-OAS	03/23/2010	1040K	Structure	849 W. Annandale Wy.					X	
LOMA-OAS	03/23/2010	1040K	Structure	855 W. Annandale Wy.					X	
LOMR-F	04/01/2011	2226K	Property	855 W. Congress St.		X				
LOMA-OAS	03/23/2010	1040K	Structure	861 W. Annandale Wy.					X	
LOMA-OAS	03/23/2010	1040K	Structure	867 W. Annandale Wy.					X	

LOMA-OAS	03/23/2010	1040K	Structure	877 W. Annandale Wy.				X		
LOMA-OAS	03/23/2010	1040K	Structure	883 W. Annandale Wy.				X		
LOMA-OAS	03/23/2010	1040K	Structure	889 W. Annandale Wy.				X		
LOMA-OAS	03/23/2010	1040K	Structure	895 W. Annandale Wy.				X		
LOMA	06/19/2007	1670K	Structure	8951 E. Bears Path Rd.		X				
LOMA-OAS	03/23/2010	1040K	Structure	901 W. Annandale Wy.				X		
LOMA	10/22/2009	1605K	Property	9018 N. Lattimore Ln.	X					
LOMA	11/21/2006	2232K	Structure	903 N. Desert Ave. Unit A		X				
LOMA	11/21/2006	2232K	Structure	903 N. Desert Ave. Unit B		X				
LOMA	11/21/2006	2232K	Structure	903 N. Desert Ave. Unit C		X				
LOMA	11/21/2006	2232K	Structure	903 N. Desert Ave. Unit D		X				
LOMA	11/21/2006	2232K	Structure	904 N. Desert Ave. Unit A		X				
LOMA	11/21/2006	2232K	Structure	904 N. Desert Ave. Unit B		X				
LOMA	11/21/2006	2232K	Structure	904 N. Desert Ave. Unit C		X				
LOMA	11/21/2006	2232K	Structure	904 N. Desert Ave. Unit D		X				
LOMA	11/21/2006	2232K	Structure	905 N. Venice Ave. Unit A		X				
LOMA	11/21/2006	2232K	Structure	905 N. Venice Ave. Unit B		X				
LOMA	11/21/2006	2232K	Structure	905 N. Venice Ave. Unit C		X				
LOMA	11/21/2006	2232K	Structure	905 N. Venice Ave. Unit D		X				
LOMA-OAS	03/23/2010	1040K	Structure	907 W. Annandale Wy.				X		
LOMA	11/21/2006	2232K	Structure	913 N. Desert Ave. Unit A		X				
LOMA	11/21/2006	2232K	Structure	913 N. Desert Ave. Unit B		X				
LOMA	11/21/2006	2232K	Structure	913 N. Desert Ave. Unit C		X				
LOMA	11/21/2006	2232K	Structure	913 N. Desert Ave. Unit D		X				
LOMA-OAS	03/23/2010	1040K	Structure	913 W. Annandale Wy.				X		
LOMA	11/21/2006	2232K	Structure	914 N. Desert Ave. Unit A		X				
LOMA	11/21/2006	2232K	Structure	914 N. Desert Ave. Unit B		X				
LOMA	11/21/2006	2232K	Structure	914 N. Desert Ave. Unit C		X				
LOMA	11/21/2006	2232K	Structure	914 N. Desert Ave. Unit D		X				
LOMA	11/21/2006	2232K	Structure	915 N. Venice Ave. Unit A		X				
LOMA	11/21/2006	2232K	Structure	915 N. Venice Ave. Unit B		X				
LOMA	11/21/2006	2232K	Structure	915 N. Venice Ave. Unit C		X				
LOMA	11/21/2006	2232K	Structure	915 N. Venice Ave. Unit D		X				
LOMA	04/27/2001	2253K	Structure	917 S. Brighton Ave.		X				
LOMA-OAS	03/23/2010	1040K	Structure	919 W. Annandale Wy.				X		
LOMA - OAS	01/28/2010	1610K	Structure	9190 N. Rancho Feliz Dr.	X					
LOMA	11/21/2006	2232K	Structure	923 N. Desert Ave. Unit A		X				
LOMA	11/21/2006	2232K	Structure	923 N. Desert Ave. Unit B		X				
LOMA	11/21/2006	2232K	Structure	923 N. Desert Ave. Unit C		X				
LOMA	11/21/2006	2232K	Structure	923 N. Desert Ave. Unit D		X				
LOMA	11/21/2006	2232K	Structure	924 N. Desert Ave. Unit A		X				
LOMA	11/21/2006	2232K	Structure	924 N. Desert Ave. Unit B		X				
LOMA	11/21/2006	2232K	Structure	924 N. Desert Ave. Unit C		X				
LOMA	11/21/2006	2232K	Structure	924 N. Desert Ave. Unit D		X				
LOMA	11/21/2006	2232K	Structure	925 N. Venice Ave. Unit A		X				
LOMA	11/21/2006	2232K	Structure	925 N. Venice Ave. Unit B		X				
LOMA	11/21/2006	2232K	Structure	925 N. Venice Ave. Unit C		X				
LOMA	11/21/2006	2232K	Structure	925 N. Venice Ave. Unit D		X				

LOMA-OAS	03/23/2010	1040K	Structure	925 W. Annandale Wy.				X		
LOMA	04/12/1999	2227K	Structure	930 E. 7th St.			X			
LOMA	04/12/1999	2227K	Structure	932 E. 7th St.			X			
LOMA	11/21/2006	2232K	Structure	933 N. Desert Ave. Unit A			X			
LOMA	11/21/2006	2232K	Structure	933 N. Desert Ave. Unit B			X			
LOMA	11/21/2006	2232K	Structure	933 N. Desert Ave. Unit C			X			
LOMA	11/21/2006	2232K	Structure	933 N. Desert Ave. Unit D			X			
LOMA	11/21/2006	2232K	Structure	934 N. Desert Ave. Unit A			X			
LOMA	11/21/2006	2232K	Structure	934 N. Desert Ave. Unit B			X			
LOMA	11/21/2006	2232K	Structure	934 N. Desert Ave. Unit C			X			
LOMA	11/21/2006	2232K	Structure	934 N. Desert Ave. Unit D			X			
LOMA	11/20/2000	1020K	Structure	9348 N. Eagle Dancer Dr.	X					
LOMA	11/21/2006	2232K	Structure	935 N. Venice Ave. Unit A			X			
LOMA	11/21/2006	2232K	Structure	935 N. Venice Ave. Unit B			X			
LOMA	11/21/2006	2232K	Structure	935 N. Venice Ave. Unit C			X			
LOMA	11/21/2006	2232K	Structure	935 N. Venice Ave. Unit D			X			
LOMA-OAS	03/23/2010	1040K	Structure	935 W. Annandale Wy.				X		
LOMA	11/21/2006	2232K	Structure	944 N. Desert Ave. Unit A			X			
LOMA	11/21/2006	2232K	Structure	944 N. Desert Ave. Unit B			X			
LOMA	11/21/2006	2232K	Structure	944 N. Desert Ave. Unit C			X			
LOMA	11/21/2006	2232K	Structure	944 N. Desert Ave. Unit D			X			
LOMA	11/21/2006	2232K	Structure	945 N. Venice Ave. Unit A			X			
LOMA	11/21/2006	2232K	Structure	945 N. Venice Ave. Unit B			X			
LOMA	11/21/2006	2232K	Structure	945 N. Venice Ave. Unit C			X			
LOMA	11/21/2006	2232K	Structure	945 N. Venice Ave. Unit D			X			
LOMA	11/21/2006	2232K	Structure	953 N. Desert Ave. Unit A			X			
LOMA	11/21/2006	2232K	Structure	953 N. Desert Ave. Unit B			X			
LOMA	11/21/2006	2232K	Structure	953 N. Desert Ave. Unit C			X			
LOMA	11/21/2006	2232K	Structure	953 N. Desert Ave. Unit D			X			
LOMA	11/21/2006	2232K	Structure	954 N. Desert Ave. Unit A			X			
LOMA	11/21/2006	2232K	Structure	954 N. Desert Ave. Unit B			X			
LOMA	11/21/2006	2232K	Structure	954 N. Desert Ave. Unit C			X			
LOMA	11/21/2006	2232K	Structure	954 N. Desert Ave. Unit D			X			
LOMA	11/21/2006	2232K	Structure	955 N. Venice Ave. Unit A			X			
LOMA	11/21/2006	2232K	Structure	955 N. Venice Ave. Unit B			X			
LOMA	11/21/2006	2232K	Structure	955 N. Venice Ave. Unit C			X			
LOMA	11/21/2006	2232K	Structure	955 N. Venice Ave. Unit D			X			
LOMA	11/21/2006	2232K	Structure	963 N. Desert Ave. Unit A			X			
LOMA	11/21/2006	2232K	Structure	964 N. Desert Ave. Unit A			X			
LOMA	11/21/2006	2232K	Structure	964 N. Desert Ave. Unit B			X			
LOMA	11/21/2006	2232K	Structure	964 N. Desert Ave. Unit C			X			
LOMA	11/21/2006	2232K	Structure	964 N. Desert Ave. Unit D			X			
LOMA	11/21/2006	2232K	Structure	965 N. Venice Ave. Unit A			X			
LOMA	11/21/2006	2232K	Structure	965 N. Venice Ave. Unit B			X			
LOMA	11/21/2006	2232K	Structure	965 N. Venice Ave. Unit C			X			
LOMA	11/21/2006	2232K	Structure	965 N. Venice Ave. Unit D			X			
LOMR-F	09/22/2004	2227K	Structure	Bldg. 4 Unit 4101 Book 58 Page 68			X			
LOMR-F	09/22/2004	2227K	Structure	Bldg. 4 Unit 4102 Book 58 Page 68			X			
LOMR-F	09/22/2004	2227K	Structure	Bldg. 4 Unit 4103 Book 58 Page 68			X			
LOMR-F	09/22/2004	2227K	Structure	Bldg. 4 Unit 4104 Book 58 Page 68			X			
LOMR-F	09/22/2004	2227K	Structure	Bldg. 4 Unit 4201 Book 58 Page 68			X			
LOMR-F	09/22/2004	2227K	Structure	Bldg. 4 Unit 4202 Book 58 Page 68			X			

LOMR-F	09/22/2004	2227K	Structure	Bldg. 4 Unit 4203 Book 58 Page 68		X				
LOMR-F	09/22/2004	2227K	Structure	Bldg. 4 Unit 4204 Book 58 Page 68		X				
LOMR-F	09/22/2004	2227K	Structure	Bldg. 5 Unit 5101 Book 58 Page 68		X				
LOMR-F	09/22/2004	2227K	Structure	Bldg. 5 Unit 5102 Book 58 Page 68		X				
LOMR-F	09/22/2004	2227K	Structure	Bldg. 5 Unit 5103 Book 58 Page 68		X				
LOMR-F	09/22/2004	2227K	Structure	Bldg. 5 Unit 5104 Book 58 Page 68		X				
LOMR-F	09/22/2004	2227K	Structure	Bldg. 5 Unit 5105 Book 58 Page 68		X				
LOMR-F	09/22/2004	2227K	Structure	Bldg. 5 Unit 5106 Book 58 Page 68		X				
LOMR-F	09/22/2004	2227K	Structure	Bldg. 6 Unit 6101 Book 58 Page 68		X				
LOMR-F	09/22/2004	2227K	Structure	Bldg. 6 Unit 6102 Book 58 Page 68		X				
LOMR-F	09/22/2004	2227K	Structure	Bldg. 6 Unit 6103 Book 58 Page 68		X				
LOMR-F	09/22/2004	2227K	Structure	Bldg. 6 Unit 6104 Book 58 Page 68		X				
LOMR-F	09/22/2004	2227K	Structure	Bldg. 6 Unit 6105 Book 58 Page 68		X				
LOMR-F	04/01/2011	2226K	Property	no situs address (Mission District Blk 3)		X				