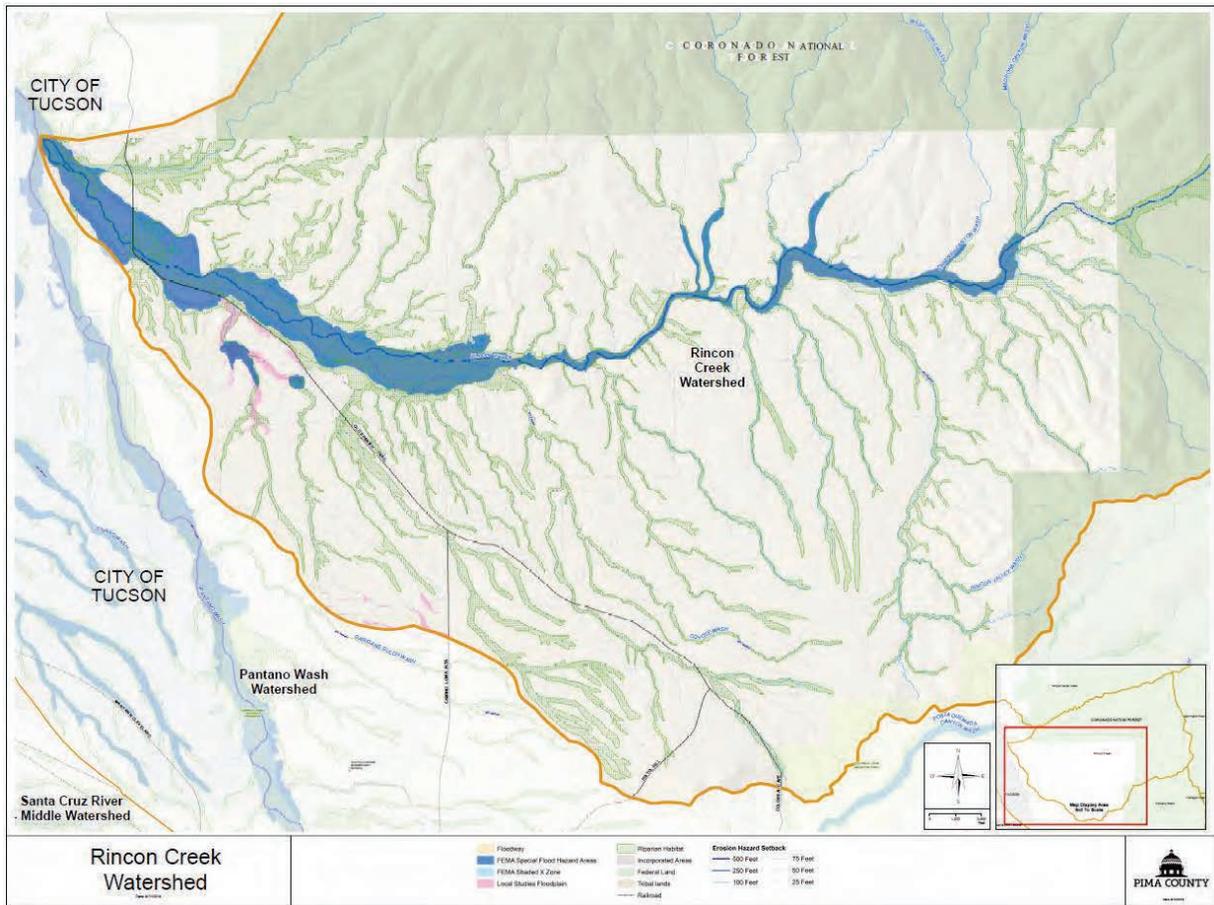


5.4.10 Rincon Creek

This watershed originates high in the Rincon Mountains near Rincon Peak at over 8,000 above mean sea level. It also drains the southern slopes of the Tanque Verde Mountains before passing through Rincon Valley and its confluence with Pantano Wash. It is comprised of 55,876 acres (87.3 square miles).

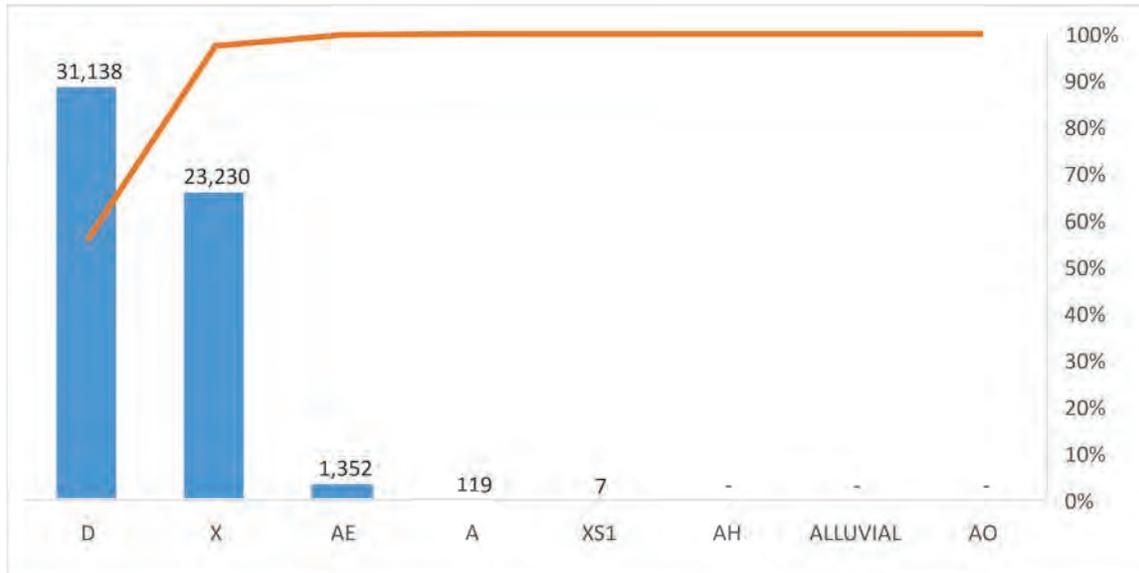
Figure 110 - Rincon Creek Watershed Map



5.4.10.1 Flood Characteristics

In addition to the 1,471 acres of SFHA zones included on the chart above, there are also 635 acres of locally mapped sheet flood area.

Figure 111 - Rincon Creek SFHA in Acres



The Rincon Creek watershed encompasses Chiminea Canyon Wash, Coyote Wash, Madrona Canyon Wash, Rincon Creek, Rincon Valley Wash, and Wasp Spring Wash. The majority of the watershed is undeveloped with over 5700 ft. of overall elevation change, into the Rincon Mountains. There is intermittent low-density development in the Rincon Valley. Other than transportation crossings, the watercourses are predominately natural. The watershed lies within flood control jurisdiction of Pima County, except for a small area just upstream of the confluence with Pantano Wash. Storms that would trigger flooding in the watershed include intense localized summer storms and long duration winter storms.

The watercourse in the watershed with 1% annual peak discharges in excess of 10,000 cfs is Rincon Creek. Watercourses with discharges in excess of 2000 cfs, include the Coyote Wash and the Unnamed Tributary on the northern edge of the watershed. Other named watercourses in the watershed have unknown discharge rates.

The table below provides a summary of the historic USGS gaging station records.

Table 31 - Rincon Creek Watershed USGS Gages

USGS Gaging Station	Rincon Creek near Tucson, AZ 09485000
Period of Record	1953-07-30 to 2015-08-11
Watershed Area (sq. m)	44.8
Flood Peak of Record (cfs)	15,000
Date	7-31-2006
FIS Discharge (cfs)	16,000

The table below summarizes Pima County's Alert Gages. The locations are from the District's ALERT map.

Table 32 - Rincon Creek Watershed ALERT Streamflow Gages

Pima County ALERT Gage	Rincon Creek at X-9 Ranch ID: 4113
Location (Latitude, Longitude)	(32.1298, -110.626)
Period of Record	2001-07-06 to Present
Watershed Area (sq. m)	44.66
Flood Peak of Record (cfs)	15920
Date	02-04-2011

Table 33 - Rincon Creek Watershed ALERT Precipitation Gages

Pima County ALERT Gage	Rincon Creek at X-9 Ranch ID: 4110
Location (Latitude, Longitude)	(32.1299 -110.6257)
Period of Record	1990-06-14 to Present

The table below summarizes regulatory discharge locations. The locations are from the District’s Table of Regulatory Discharges (Revised October 28, 2014).

Table 34 - Rincon Creek Watershed Regulatory Discharges

Rincon Creek	Regulatory Discharge, cfs 1% Return Frequency	Drainage Area, sq. miles	Source of Discharge Information
Upstream of confluence with Pantano Wash	21,000	81.1	FEMA Flood Insurance Study
Upstream of Confluence with Coyote Wash	18,500	60.7	“
At USGS Gaging Station at Sentinel Butte	16,000	44.8	“

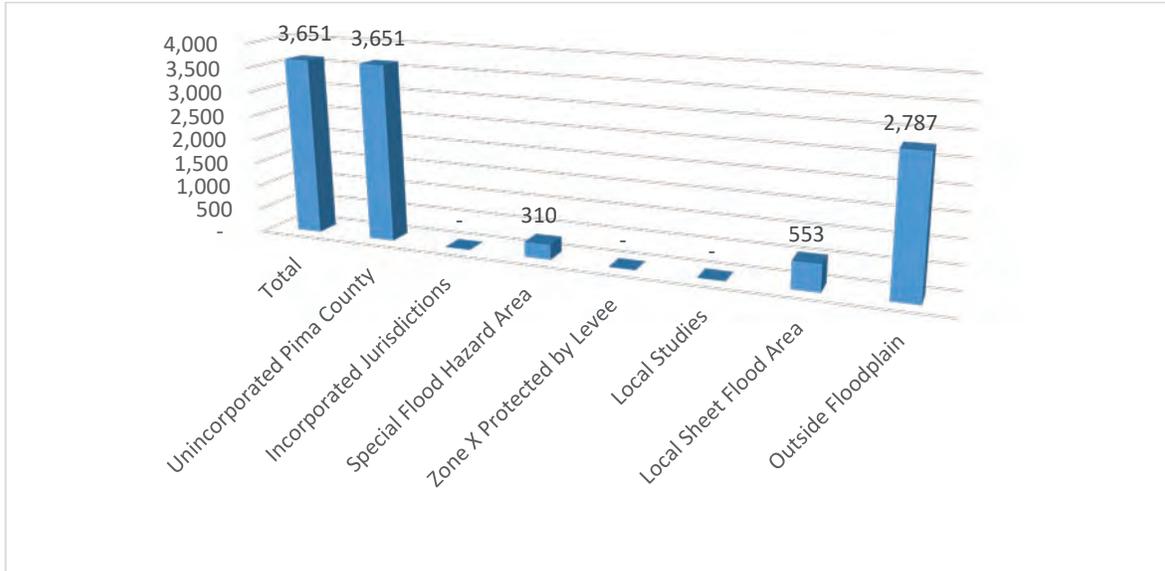
Flood peak timing downstream of the ALERT stream gage located approximately 8 miles upstream of Old Spanish Trail is not known. Flood hazards associated with the watercourses include sediment accumulation and access at the Old Spanish Trail and Camino Loma Alta crossings.

The Flood Insurance Rate Maps designate floodplains for Rincon Creek (AE) and portions of five unnamed tributaries (A). In addition, Rincon Creek has a mapped Floodway. The floodplain mapping utilized 1986 topography on NGVD-29 vertical datum. No additional floodplain mapping is available for the named watercourses in the watershed.

5.4.10.2 Existing Development & Infrastructure Trends

The chart below shows the distribution of residents within known floodplains, and distribution between incorporated and unincorporated areas.

Figure 112 - Rincon Creek Watershed Population Distribution



While Saguaro National Park preserves the mountainous headwaters, the private land is located along the major wash corridor.

Figure 113 - Rincon Creek Watershed Ownership in Acres

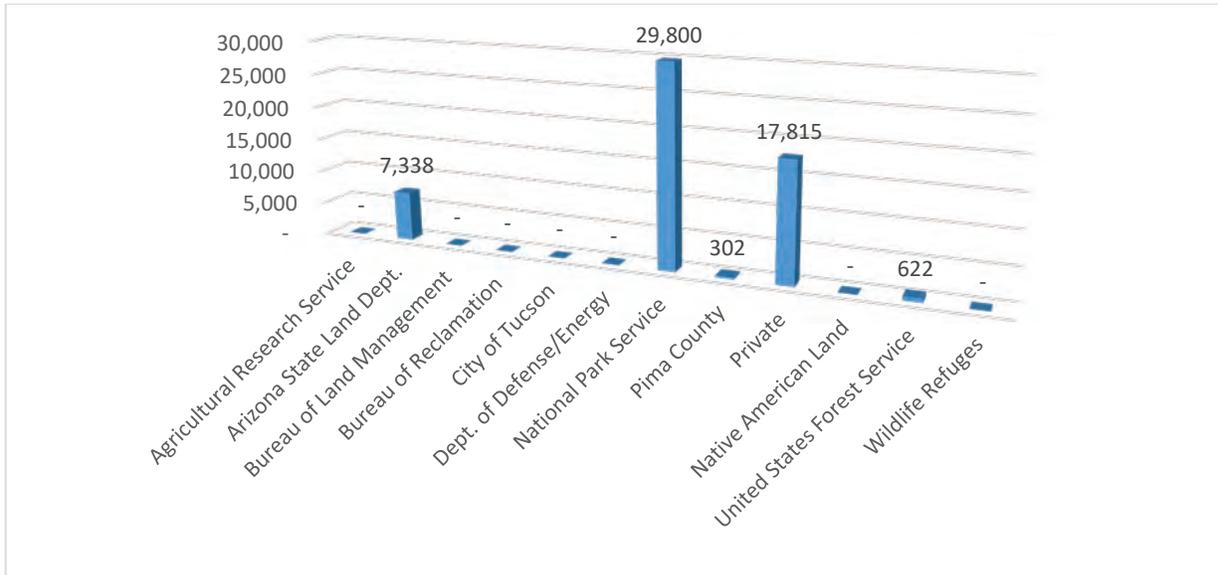
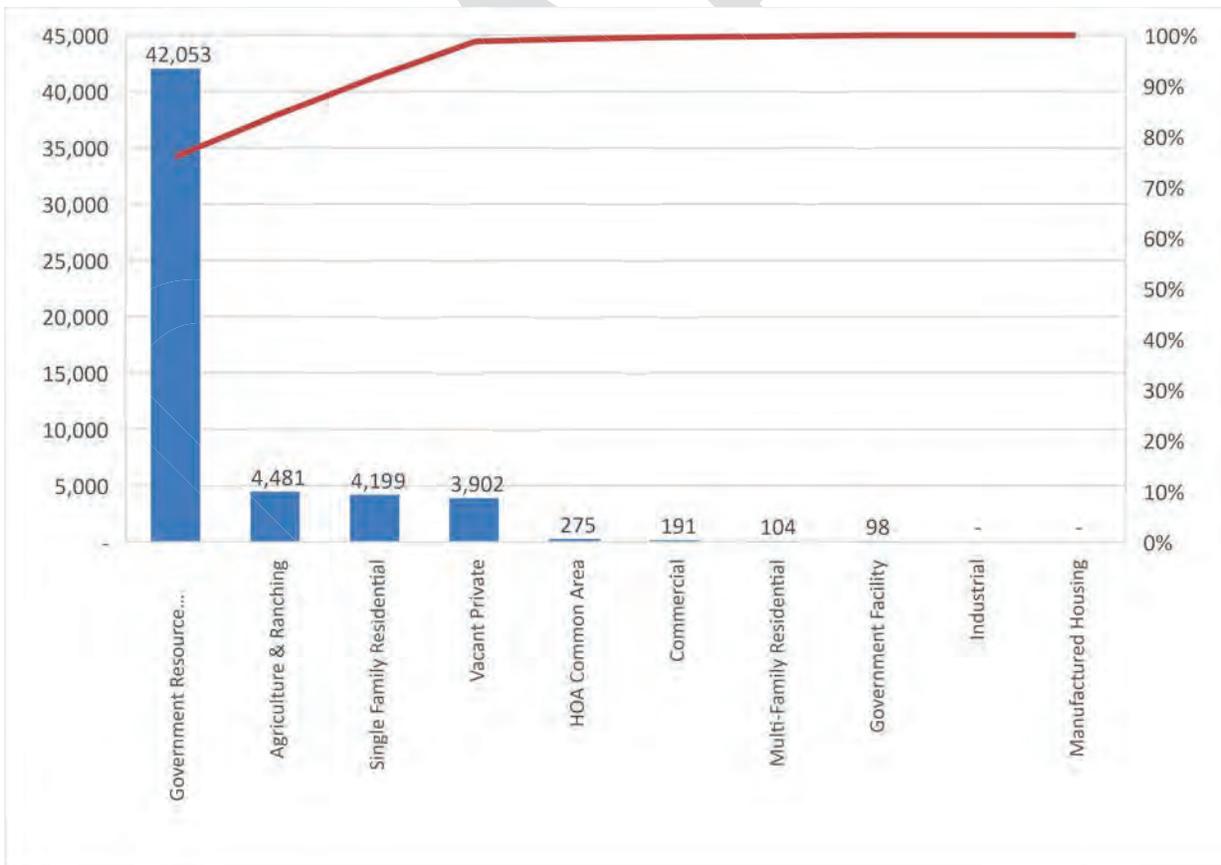


Figure 114 - Rincon Creek Watershed Land Use in Acres



The map below shows the distribution of these uses.

Figure 115 - Rincon Creek Land Use Map

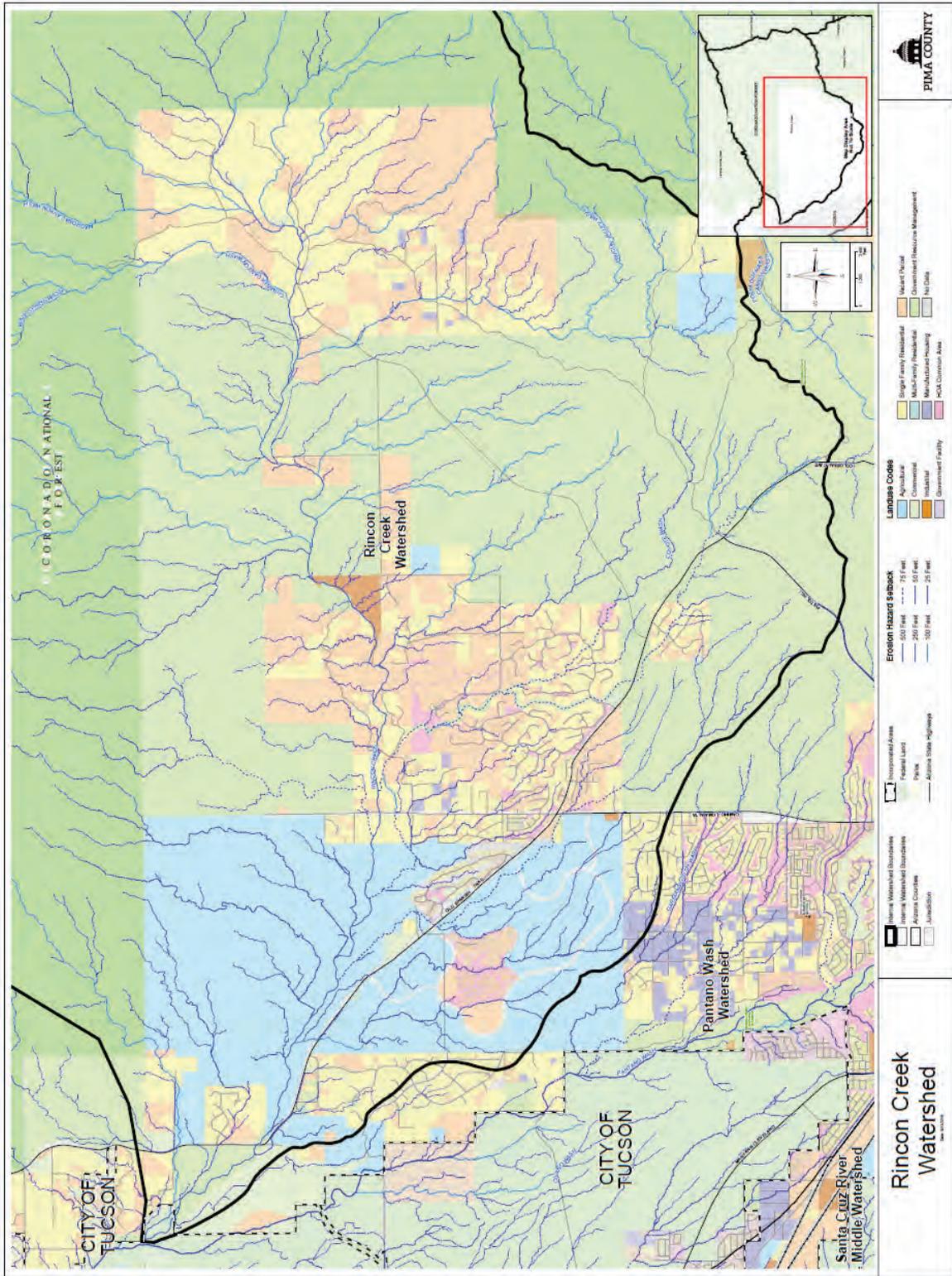
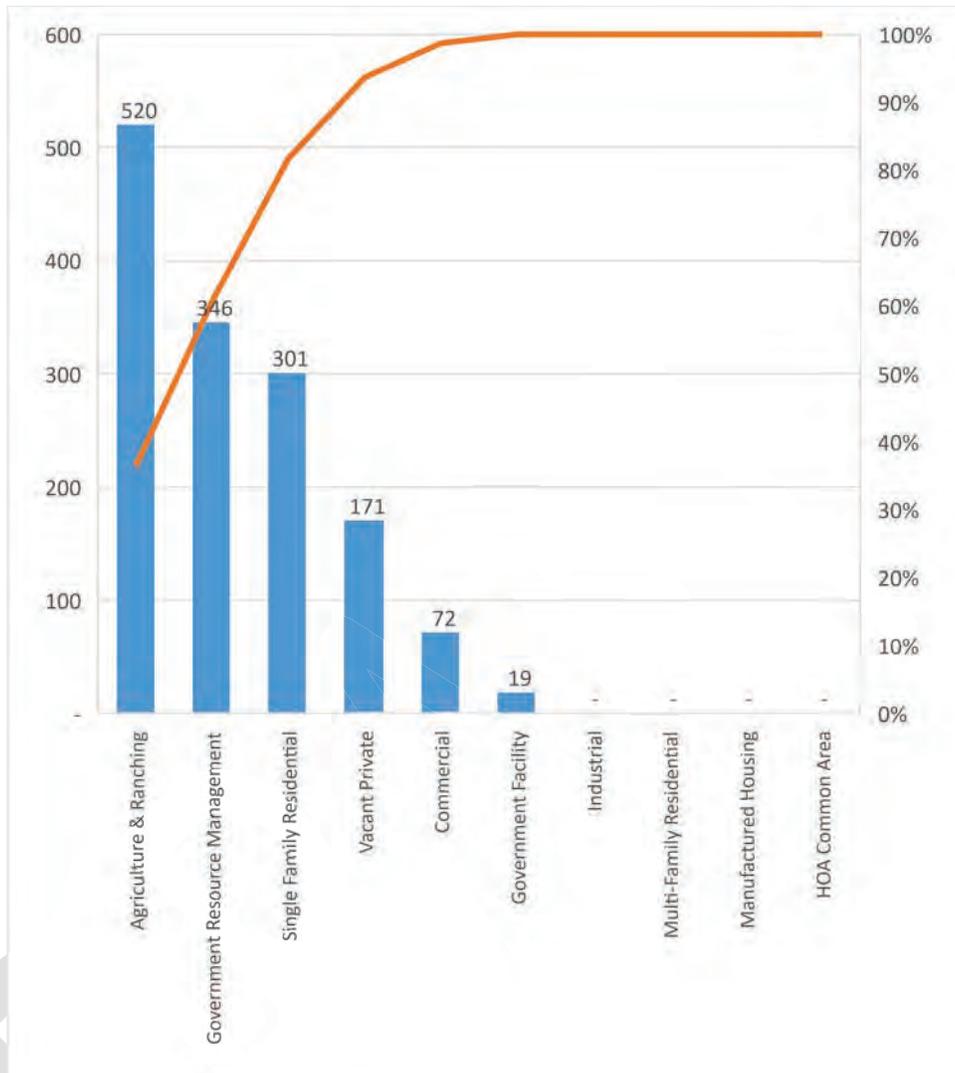


Figure 116 - Rincon Creek Floodplain Land Use

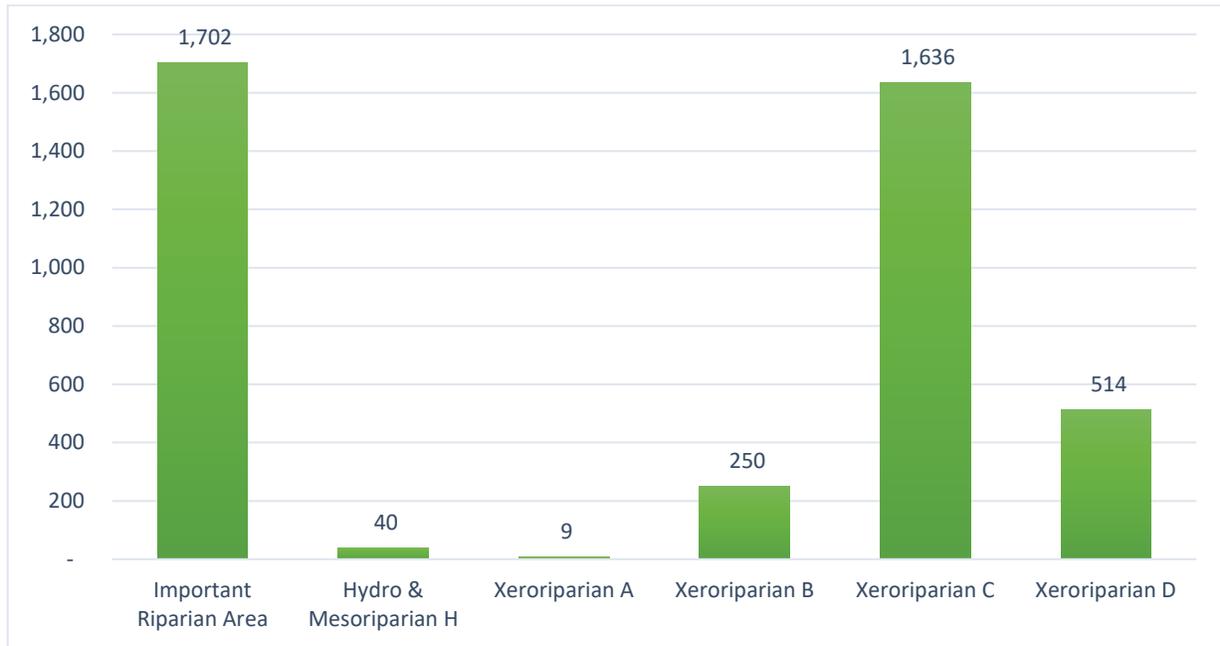


Downstream floodplain land use is still largely agricultural. Clusters of residential development exist around minor upstream tributaries that FEMA, the District nor landowners have mapped.

5.4.10.3 Riparian Habitat and Natural Areas

As shown on the figure below, there are 3,978 acres of Pima County Regulated Riparian Habitat in this watershed. There are also 34,924 preserved acres in this watershed, including 325 in regulatory floodplain.

Figure 117 - Rincon Creek Watershed Riparian Habitat in Acres



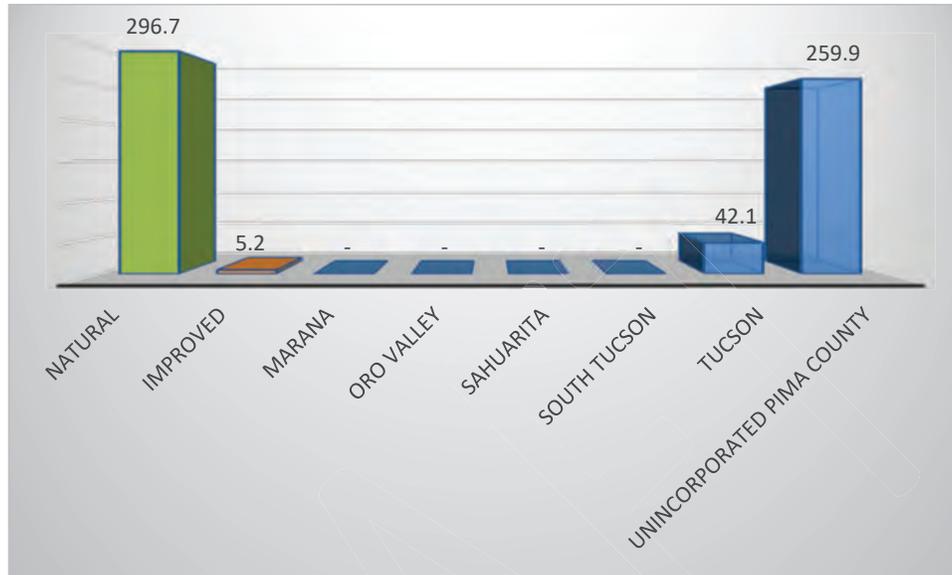
The presence of water and connectivity between the Rincon Mountains and Tucson basin make the Rincon a popular wildlife corridor as evidenced by the tracks pictured below taken by District open space inspectors.



5.4.10.4 Historic Floodplain Management Approach

The figure below shows the split between natural and improved drainageways, and how many acres the District is responsible for in each jurisdiction.

Figure 118 - Rincon Creek Drainageway Acreage



The stream gauge on this channel is located at the X-9 Ranch (4113). Very large flows may affect residential structures in the X-9 Ranch area or downstream near Old Spanish Trail at Ranchos Pequenos. Stream flow may affect the crossing at Camino Loma Alta although it is not at-grade, as well as the at-grade crossings at Old Spanish Trail and Harrison Road at Pantano Wash. Little travel time information is currently available, but assuming an average channel velocity of 10 fps, travel time from 4113 to Camino Loma Alta is approximately 45 minutes, Old Spanish Trail is approximately 70 minutes, and to Harrison Road is approximately 2 hours. Travel times change through the rainy season as the channel becomes wetted. Although the Camino Loma Alta crossing is not at-grade, culverts may be plugged causing flow to overtop the road. Streamflow of 500 cfs at Rincon Creek (4113) may affect the Camino Loma Alta and Old Spanish Trail crossings and therefore ALERT staff contacts the COT. Streamflow of 1,000 cfs at 4113 may affect at-grade crossing at Harrison Road at Pantano Wash; again, at this flow ALERT staff contacts the COT Streets Maintenance Division. Streamflow of 5,000 cfs at 4113 may affect homes at Ranchos Pequenos in this case senior staff decides whether the information to contact OEM.

The County approved several residential subdivision prior or near to the year 2000. At that time, the District reviewed plats for FEMA requirements only. Other extra-department staff reviewed drainage planning for subdivisions were reviewed by other staff, and reviews did not thoroughly assess requirements for District threshold floodplains (1% chance peak discharge of 100 cfs or greater) and no adverse impacts to adjacent properties. As a result, the drainage planning for several subdivisions in this watershed did not include developer-funded drainage improvements. In some cases, every building permit along a regulatory wash required an individual Floodplain Use Permit. In 2007, the District assumed responsibility for all subdivision and commercial drainage reviews, requiring developers to map all regulatory floodplains, erosion hazard setbacks and mapped riparian limits. The Rocking K subdivision plat bounded by Camino Loma Alta and Old Spanish Trail identifies open

space floodplain areas and necessary drainage infrastructure so that individual floodplain use permits will not be a part of future development. Permitting in older subdivisions will continue to require individual permit review.

5.4.10.5 Needs – Capital Improvement

For each watershed; monitoring, frequently flooded structures and properties subject to damage, exposed infrastructure, and safety concerns have been described in full detail in the District’s Flood Response Field Manual (April 2019). Each of the areas so identified have addresses and geodetic coordinates associated with them and District personnel have them mapped in the Geographic Information System used. For planning purposes, specific items of concern follow; the complete report is in Appendix D.

Data Gathering Needs

- Little is known about the timing of Rincon Creek flooding downstream of the stream gage. If in the area pre-crest, watch for the flood crest at Camino Loma Alta. (T15S R16E Sec. 14) <RIN-DAT-001>
- Little is known about the timing of Rincon Creek flooding downstream of the stream gage. If in the area pre-crest, watch for the flood crest at Old Spanish Trail. (T15S R16E Sec. 08) <RIN-DAT-002>

Frequently Flooded Structures and Properties Subject to Damage

- 6810 S. Avenida de la Potranca (205-81-0230) (Ranchos Pequenos, Rincon Creek) (T15S R16E Sec. 17) <GIS Point ID: RIN-FSP-001>
- 12441 E. Camino del Garanon (205-81-0280) (Ranchos Pequenos, Rincon Creek) (T15S R16E Sec. 17) <GIS Point ID: RIN-FSP-002>
- 12620 E. Old Spanish Trail (205-81-032F) (Ranchos Pequenos, Rincon Creek) (T15S R16E Sec. 17) <GIS Point ID: RIN-FSP-003>
- A levee on 205-64-010D SE of Ranchos Pequenos that became a sediment dam on a tributary to Rincon Creek has been breached, supplying sediment downstream that is causing problems on Old Spanish Trail. There is a diversion of flow into this watershed upstream at a stock tank. The tributary has been cleaned out, and DOT is supposed to maintain it. (T15S R16E Sec. 16) <GIS Point ID: RIN-FSP-004>

Infrastructure

- A major breach of the mine west of Old Spanish Trail (205-67-006C) could capture flows from Rincon Creek and cause severe damage to the road. (T15S R16E Sec. 08) <GIS Point ID: RIN-INF-001>

Safety Concerns

- Hazardous conditions exist where Rincon Creek crosses Old Spanish Trail. (T15S R16E Sec. 08) <GIS Point ID: RIN-SAF-001>
- Hazardous conditions exist where Rincon Creek crosses Camino Loma Alta. The channel has aggraded above the level of the culverts, causing water to flow over the road. DOT maintains the right-of-way, but sediment keeps causing problems. The area north of Rincon Creek on Camino Loma Alta is inaccessible during flow events. (T15S R16E Sec. 14) <GIS Point ID: RIN-SAF-002>

5.4.10.6 Floodplain Management

Future needs identified by District staff include:

- Head-cutting tied to Pantano
- Residents infrastructure demands for access along Old Spanish Trail also Jeremy Wash tributary
- Continue to require identification of floodplains, erosion hazard setbacks and mapped riparian limits at the time of subdivision platting.

