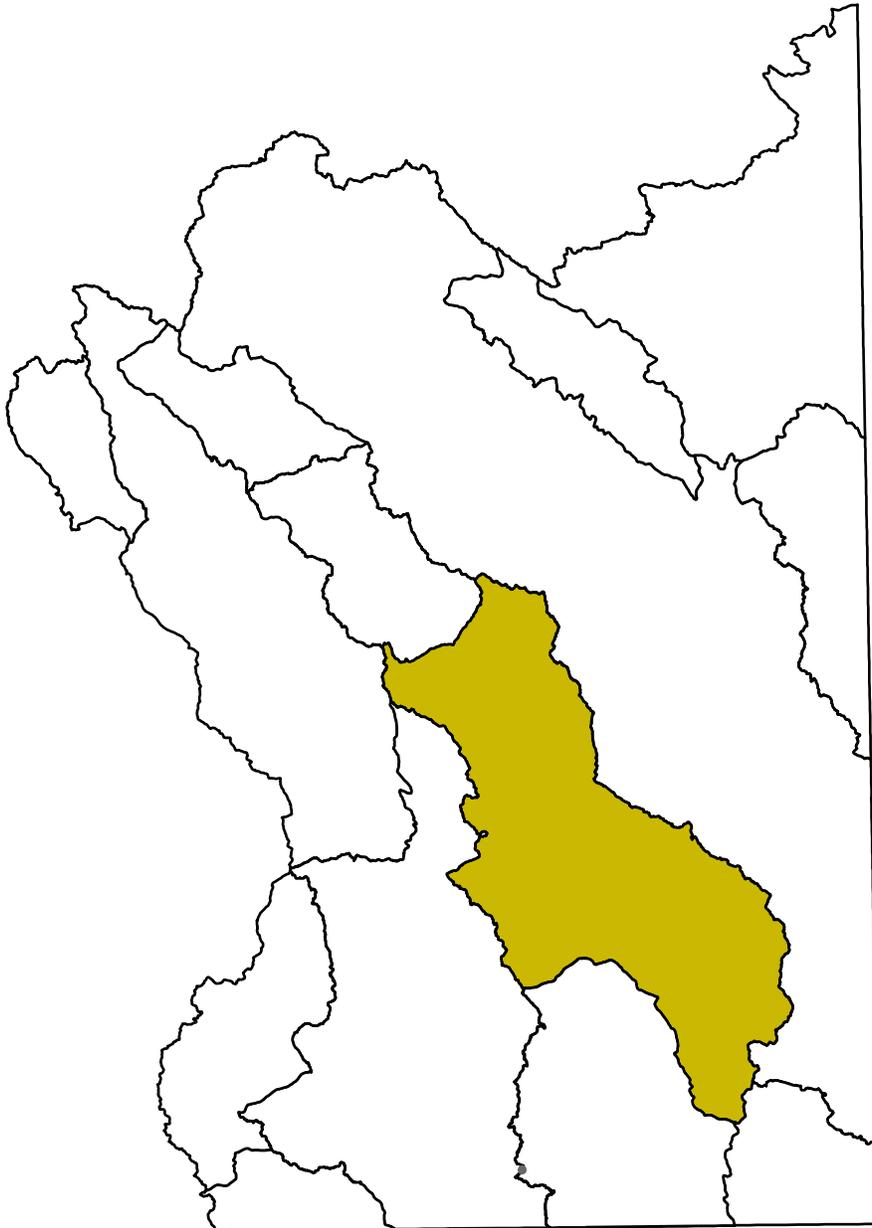


Section 3.14

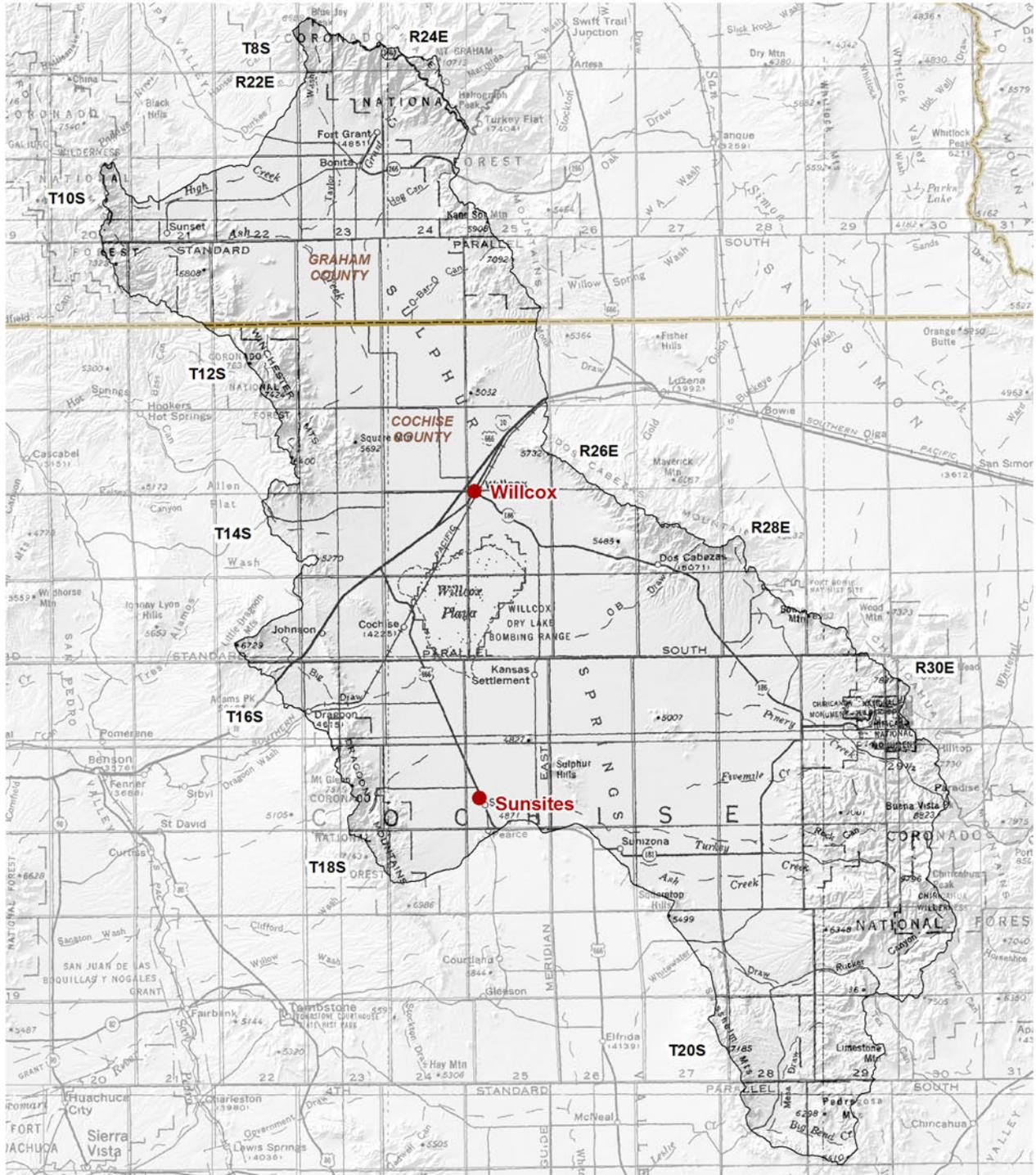
Willcox Basin



3.14.1 Geography of the Willcox Basin

The Willcox Basin is a medium-size, 1,911 square mile basin in the center of the planning area. Geographic features and principal communities are shown on Figure 3.14-1. The basin is characterized by a large valley surrounded by a series of medium-high to high-elevation mountain ranges. Vegetation is primarily semi-desert grassland with smaller areas madrean evergreen woodland and Rocky Mountain and montane conifer forest. (see Figure 3.0-10) Riparian vegetation includes conifer oak and mixed broadleaf on Turkey Creek and conifer oak on Rucker Canyon.

- Principal geographic features include:
 - Ash Creek in the northern portion of the basin
 - Turkey Creek south of Sunizona and Pinery Creek east of Chiricahua National Monument
 - Rucker Canyon in the southern portion of the basin
 - Sulphur Springs Valley running north-south through the center of the basin
 - Willcox Playa southwest of Willcox
 - Winchester Mountains on the northwestern, Dragoon Mountains on the central western, Swisshelm Mountains on the southwestern and the Pinaleño Mountains on the northeast boundaries of the basin
 - Chiricahua Mountains to the southeast of Willcox, with the highest point in the basin, Buena Vista Peak at 8,823 feet
 - The lowest point at 4,100 feet at the Willcox Playa



Base Map: USGS 1:500,000, 1981

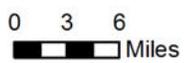


Figure 3.14-1
Willcox Basin
Geographic Features

COUNTY 
City, Town or Place 

3.14.2 Land Ownership in the Willcox Basin

Land ownership, including the percentage of ownership in each category, is shown for the Willcox Basin in Figure 3.14-2. Principal features of land ownership in this basin are the abundance of private land and the diversity of land ownership types, seven total. A description of land ownership data sources and methods is found in Volume 1, Appendix A. More detailed information on National Parks, Monuments, Riparian, Conservation, Wildlife and Wilderness Areas is found in Section 3.0.3. Land ownership categories are discussed below in the order of percentage from largest to smallest in the basin.

Private

- 51.1% of land is private.
- The majority of the private land is through the center of the basin and is contiguous.
- A small portion of private land in the southern tip of the basin remains in private ownership but is managed federally as the Leslie Canyon National Wildlife Refuge.
- Primary land uses are farming, domestic, commercial, mining and industrial.

State Trust

- 24.2% of land in this basin is held in trust for public schools and thirteen other beneficiaries under the State Trust Land System.
- Two large strips of state owned land are located north of Interstate 10 and the remainder of state owned land in the basin is interspersed with private land.
- A small portion of state trust land in the southern tip of the basin remains in state ownership but is managed federally as the Leslie Canyon National Wildlife Refuge.
- Primary land use is grazing.

National Forest

- 19.6% of land is federally owned and managed by the United States Forest Service (USFS).
- Although the National Forest land is not contiguous, all lands are within the Coronado National Forest in two ranger districts, Douglas Ranger District south of Interstate 10 and the Safford Ranger District north of Interstate 10.
- The basin contains most of the Chiricahua Wilderness area in the southeastern area of forest lands and a portion of the Galiuro Wilderness area in the northwestern area of forest lands. (see Figure 3.0-13)
- Primary land uses are recreation, grazing and timber production.

U.S. Military

- 2.3% of land is federally owned and managed by the U.S. Military.
- All military land in the basin is part of the Willcox Range.
- Primary land use is for military activities.

U.S. Bureau of Land Management (BLM)

- 1.8% of land is federally owned and managed by the Bureau of Land Management.
- BLM land is located southeast of Interstate 10 along the eastern basin boundary and in

other small parcels scattered throughout the basin.

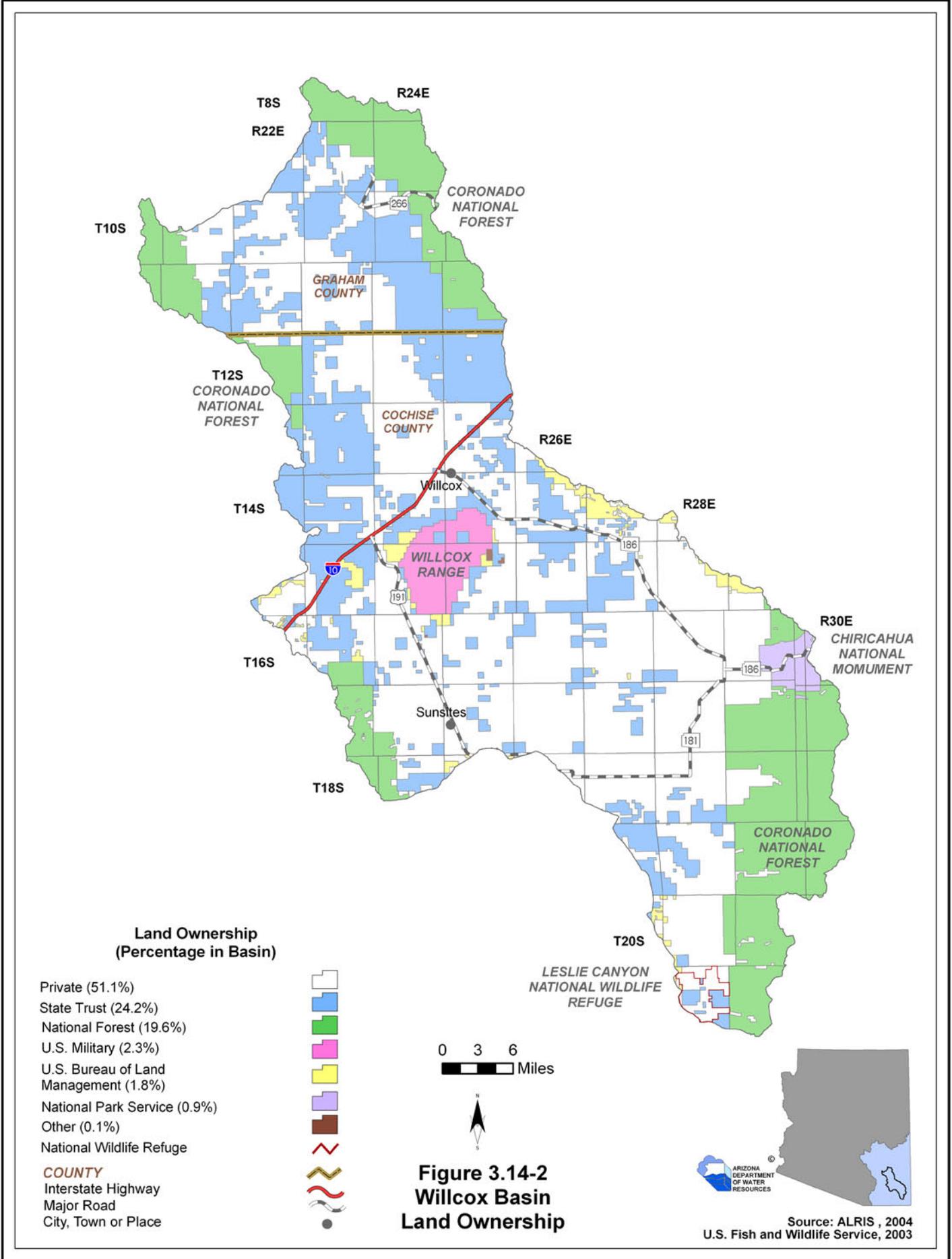
- Primary land use is grazing.

National Park Service (NPS)

- 0.9% of land is federally owned and managed by the National Park Service.
- All park land is within the Chiricahua National Monument.
- Primary land use is recreation.

Other (Game and Fish, County and Bureau of Reclamation Lands)

- 0.1% of land is state owned and managed by Arizona Game and Fish Department.
- All Game and Fish land in this basin is within the Willcox Playa Wildlife Area.
- Primary land uses are wildlife protection and recreation.



3.14.3 Climate of the Willcox Basin

Climate data from NOAA/NWS Coop Network and AZMET stations are compiled in Table 3.14-1 and the locations are shown on Figure 3.14-3. Figure 3.14-3 also shows precipitation contour data from the Spatial Climate Analysis Service (SCAS) at Oregon State University. The Willcox Basin does not contain Evaporation Pan and SNOTEL/Snowcourse stations. More detailed information on climate is found in Section 3.0.4. A description of the climate data sources and methods is found in Volume 1, Appendix A.

NOAA/NWS Coop Network

- Refer to Table 3.14-1A
- There are six NOAA/NWS Coop network climate stations in the basin. The average monthly maximum temperature occurs in July at all stations and ranges between 74.8°F at Chiricahua N.M. to 79.5°F at Willcox. The average monthly minimum temperature occurs in December or January and ranges between 42.6°F at Cochise Stronghold to 44.9°F at Fort Grant.
- Highest average seasonal rainfall occurs in the summer (July - September). For the period of record used, the highest annual rainfall is 20.95 inches at Chiricahua N.M. and the lowest is 10.78 inches at Cochise 4 SSE.

AZMET

- Refer to Table 3.14-1C
- There is two AZMET station in the basin, Average annual evaporation ranges from 71.19 inches to 74.11 inches.

SCAS Precipitation Data

- See Figure 3.14-3
- Additional precipitation data shows rainfall as high as 48 inches in the Chiricahua Mountains at Chiricahua Peak, elevation 9,760 feet. This is the highest average annual precipitation in the planning area. Precipitation is as low as 10 inches in the vicinity of the Pearce Sunsites station.
- This basin contains the largest range of average annual rainfall in the planning area with 38 inches separating areas of lowest and the highest precipitation.

Table 3.14-1 Climate Data for the Willcox Basin

A. NOAA/NWS Co-op Network:

Station Name	Elevation (in feet)	Period of Record Used for Averages	Average Temperature Range (in F)		Average Total Precipitation (in inches)				
			Max/Month	Min/Month	Winter	Spring	Summer	Fall	Annual
Chiricahua N.M.	5,300	1971-2000	74.8/Jul	44.0/Jan	4.24	1.85	9.86	5.00	20.95
Cochise 4 SSE	4,180	1899-1954	78.5/Jul	42.7/Jan	2.05	0.75	5.98	2.00	10.78
Cochise Stronghold	4,920	1925-1948	77.3/Jul	42.6/Jan	4.27	1.60	9.26	3.71	18.85
Fort Grant	4,830	1900-2004 ¹	78.9/Jul	44.9/Jan	2.31	1.39	7.33	5.68	16.70
Pearce Sunsites	4,350	1971-2000	78.6/Jul	44.6/Jan	2.19	0.95	7.53	2.54	13.21
Willcox	4,180	1971-2000	79.5/Jul	43.8/Dec	2.74	1.00	6.22	3.39	13.35

Source: WRCC, 2005

Notes:

¹Average temperature for period of record shown; average precipitation from 1971-2000

B. Evaporation Pan:

Station Name	Elevation (in feet)	Period of Record Used for Averages	Avg. Annual Evap (in inches)
None			

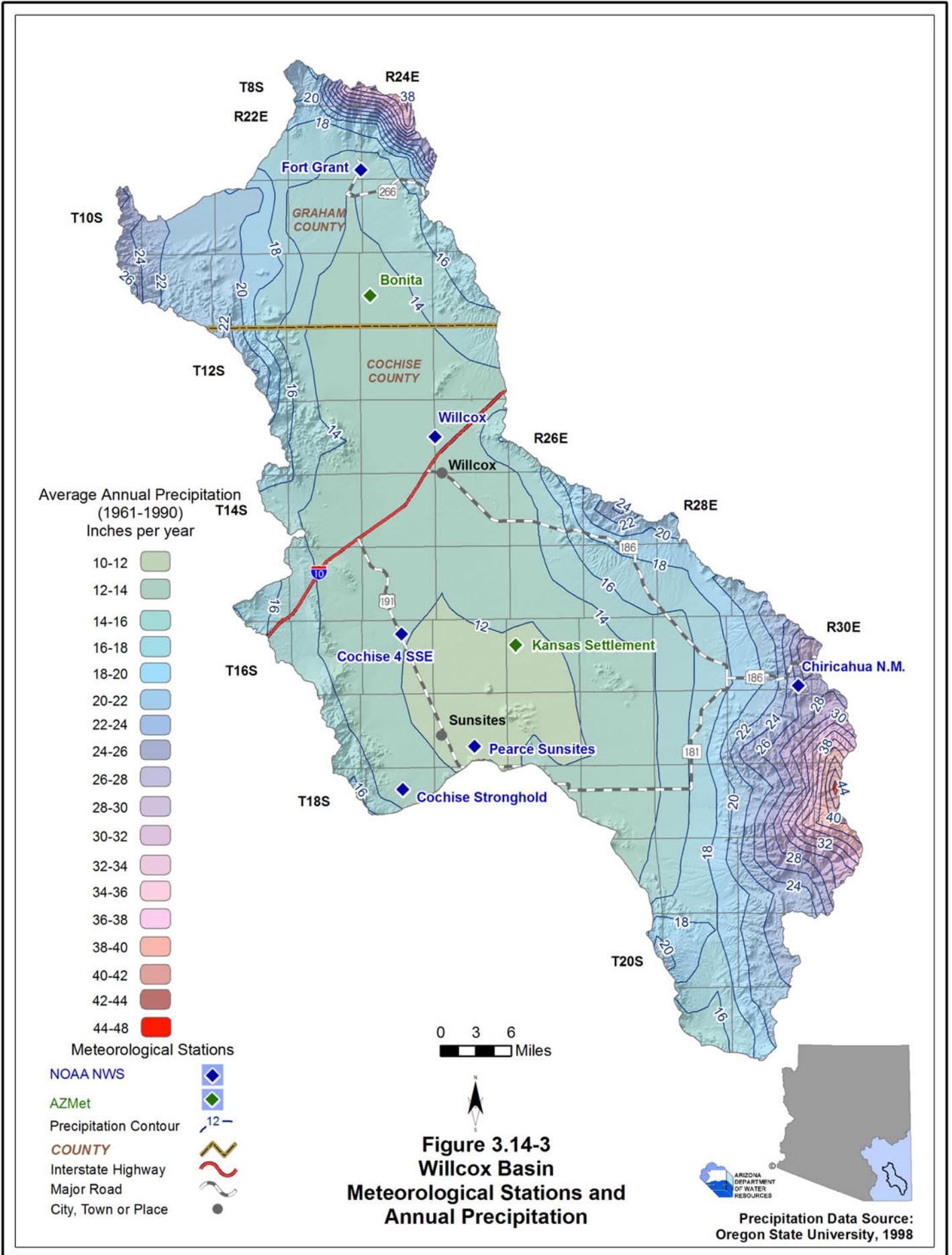
C. AZMET:

Station Name	Elevation (feet)	Period of Record	Average Annual Reference Evapotranspiration, in inches (Number of years to calculate averages)
Bonita	4,419	1999 - current	73.59 (9)
Kansas Settlement	4,200	2006 - current	71.19 (1)

Source: Arizona Meteorological Network, 2007

D. SNOTEL/Snowcourse:

Station Name	Elevation (in feet)	Period of Record	Average Snowpack, at Beginning of the Month, as Inches Snow Water Content (Number of measurements to calculate average)					
			Jan.	Feb.	March	April	May	June
None								



3.14.4 Surface Water Conditions in the Willcox Basin

Streamflow data, including average seasonal flow, average annual flow and other information is shown in Table 3.14-2. Flood ALERT equipment in the basin is shown on Table 3.14-3. Reservoir and stockpond data, including maximum storage or maximum surface area of large reservoirs and type of use of the stored water, are shown in Table 3.14-4. The location of streamflow gages identified by USGS number, flood ALERT equipment, USGS runoff contours and large reservoirs are shown on Figure 3.14-4. Descriptions of stream, reservoir and stockpond data sources and methods are found in Volume 1, Appendix A.

Streamflow Data

- Refer to Table 3.14-2.
- Data from three stations on three watercourses are shown on the table and on Figure 3.14-4. Two stations have been discontinued and one is a real-time station.
- The average seasonal flow for all the stations is highest in the Summer (July-September) and lowest in the Spring (April-June).
- Maximum annual flow in this basin was 10,787 acre-feet in 1921 on West Turkey Creek and minimum annual flow was 22 acre-feet in 1976 on Leslie Creek.

Flood ALERT Equipment

- Refer to Table 3.14-3.
- There is one station in the basin as of October 2005.

Reservoirs and Stockponds

- Refer to Table 3.14-4.
- Surface water is stored or could be stored in two large and nine small reservoirs in this basin.
- There are an estimated 762 stockponds in this basin.

Runoff Contour

- Refer to Figure 3.14-4.
- Average annual runoff increases from 0.2 inches, or 10.6 acre-feet per square mile, in the vicinity of Willcox to five inches, or 266.5 acre-feet per square mile, toward the Chiricahua Mountains in the southeast.

Table 3.14-2 Streamflow Data for the Willcox Basin

Station Number	USGS Station Name	Drainage Area (in mi ²)	Gage Elevation (in feet)	Period of Record	Average Seasonal Flow (% of annual flow)				Annual Flow (in acre-feet/year)				Years of Annual Flow Record
					Winter	Spring	Summer	Fall	Minimum	Median	Mean	Maximum	
9536500	West Turkey Creek near Light	19	NA	8/1919-9/1925 (discontinued)	13	11	53	24	521 (1922)	4,474	5,460	10,787 (1921)	5
9537000	Whitewater Draw near Rucker	39	NA	8/1919-9/1925 (discontinued)	16	10	39	35	956 (1922)	5,010	4,421	6,342 (1923)	5
9537200	Leslie Creek near McNeal	79	4,620	10/1969-current (real time)	16	7	55	21	22 (1976)	746	1,066	3,201 (1984)	25

Source: USGS (NWIS), 2005 & 2008

Notes:

Statistics based on Calendar Year
 Annual Flow statistics based on monthly values
 Summation of Average Annual Flows may not equal 100 due to rounding
 Period of record may not equal Year of Record used for annual Flow/Year statistics due to only using years with a 12 month record
 In Period of Record, current equals November 2008
 Seasonal and annual flow data used for the statistics was retrieved in 2005
 NA = Not available

Table 3.14-3 Flood ALERT Equipment in the Willcox Basin

Station ID	Station Name	Station Type	Install Date	Responsibility
3070	Willcox ADOT Weather Station	Weather Station	10/1/2001	ADWR

Source: ADWR 2005c

Notes:

ADOT = Arizona Department of Transportation
 ADWR = Arizona Department of Water Resources

Table 3.14-4 Reservoirs and Stockponds in the Willcox Basin

A. Large Reservoirs (500 acre-feet capacity and greater)

MAP KEY	RESERVOIR/LAKE NAME (Name of dam, if different)	OWNER/OPERATOR	MAXIMUM STORAGE (AF)	USE	JURISDICTION
None identified by ADWR at this time					

B. Other Large Reservoirs (50 acre surface area or greater)¹

MAP KEY	RESERVOIR/LAKE NAME (Name of dam, if different)	OWNER/OPERATOR	MAXIMUM SURFACE AREA (acres)	USE ²	JURISDICTION
1	Willcox Playa ³	US Military	29,500	O	Federal
2	Unnamed ⁴	Private	309	P	Landowner

Source: Compilation of databases from ADWR & others

C. Small Reservoirs (greater than 15 acre-feet and less than 500 acre-feet capacity)

Total number: 2

Total maximum storage: 185 acre-feet

D. Other Small Reservoirs (between 5 and 50 acres surface area)¹

Total number: 7

Total surface area: 182 acres

E. Stockponds (up to 15 acre-feet capacity)

Total number: 762 (from water right filings)

Notes:

¹Capacity data not available to ADWR

²O=other; P=fire protection, stock or farm pond

³Dry Lake

⁴Intermittent Lake



USGS Annual Runoff Contour for 1951-1980 (in inches)



Stream Channel (width of line reflects stream order)



Large Reservoir



USGS Gage & Station ID



Flood ALERT Equip. & Station ID



COUNTY



Interstate Highway



Major Road



City, Town or Place

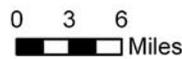


Figure 3.14-4
Willcox Basin
Surface Water Conditions



Stream Data Source: ALRIS, 2005

3.14.5 Perennial/Intermittent Streams and Major Springs in the Willcox Basin

Minor springs with discharge rates and date of measurement, and the total number of springs in the basin are shown in Table 3.14-5. There are no major springs identified in this basin. The locations of perennial and intermittent streams are shown on Figure 3.14-5. Descriptions of data sources and methods for intermittent and perennial reaches and springs are found in Volume 1, Appendix A.

- There are five perennial stream reaches in this basin, Turkey Creek, Rucker Canyon, Grant Creek, Big Creek and Leslie Creek. Most perennial streams are in the Chiricahua Mountains along the southeastern boundary or the Pinaleño Mountains on the northeastern boundary.
- A number of intermittent stream reaches are located in these two mountain ranges as well.
- Springs with measured discharge of 1 to 10 gpm are not mapped but coordinates are given in Table 3.14-5. There are eight minor springs identified in this basin.
- Listed discharge rates may not be indicative of current conditions. All of the minor spring measurements were taken prior to 1985.
- The total number of springs identified by the USGS varies from 87 to 92, depending on the database reference.

Table 3.14-5 Springs in the Willcox Basin

A. Major Springs (10 gpm or greater):

Map Key	Name	Location		Discharge (in gpm)	Date Discharge Measured
		Latitude	Longitude		
None identified by ADWR at this time					

B. Minor Springs (1 to 10 gpm):

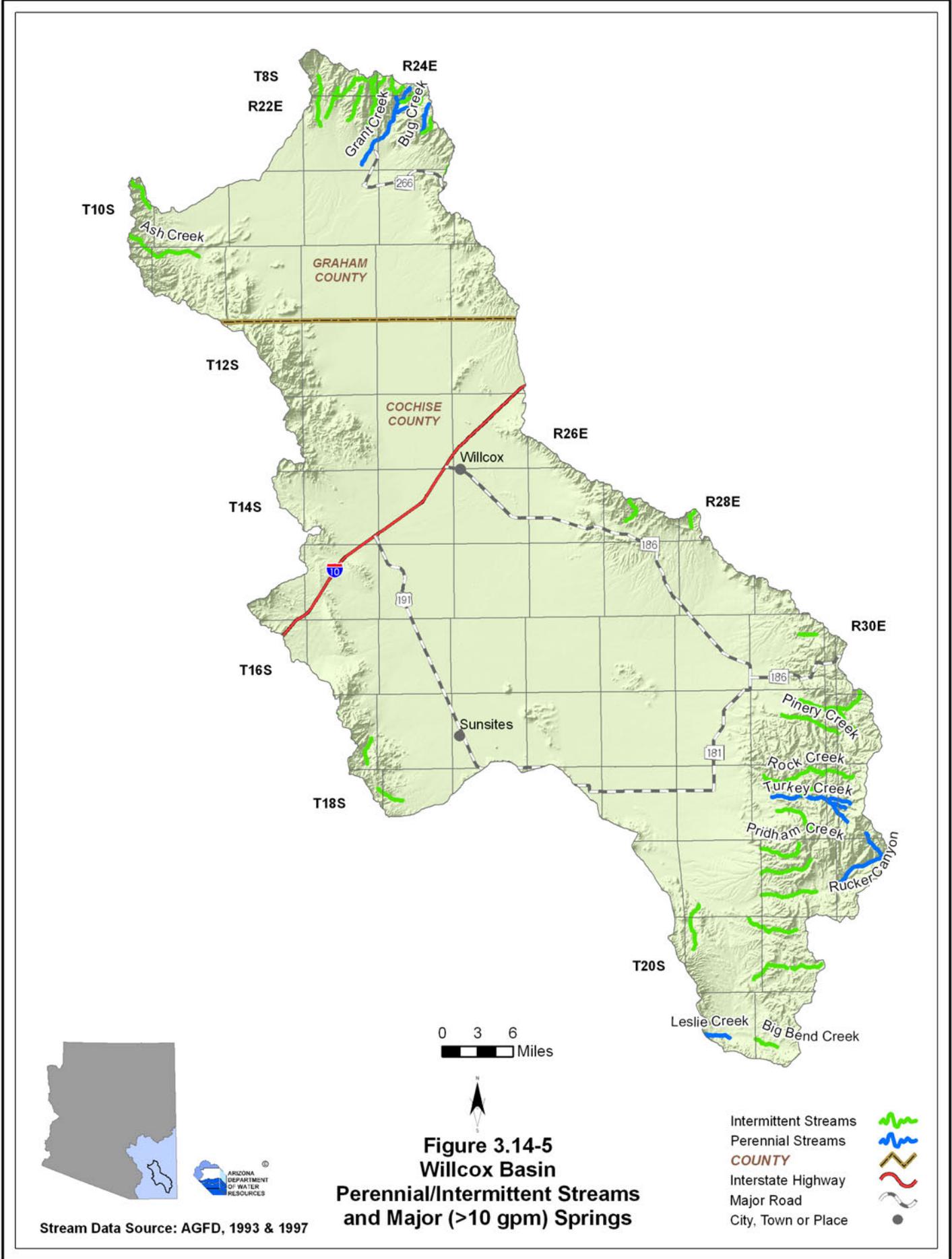
Name	Location		Discharge (in gpm) ¹	Date Discharge Measured
	Latitude	Longitude		
Walnut	321228	1093617	3	07/1984
Unnamed	321152	1093413	3	11/1981
Rosemary's ²	321228	1093621	2	08/1984
Howard Canyon (left fork) ^{2,3}	321144	1093349	2 ⁴	08/1984
Howard Canyon ^{2,3}	321144	1093357	1	08/1984
Unnamed ²	321145	1095543	1	02/1946
Unnamed ²	320451	1095543	1	Not available
Unnamed ²	321259	1093716	1	09/1981

Source: Compilation of databases from ADWR & others

C. Total number of springs, regardless of discharge, identified by USGS (see ALRIS, 2005a and USGS, 2006a): 87 to 92

Notes:

- ¹Most recent measurement identified by ADWR
- ²Spring not displayed on current USGS topo map
- ³Location approximated by ADWR
- ⁴Most recent measurement < 1 gpm



3.14.6 Groundwater Conditions of the Willcox Basin

Major aquifers, well yields, estimated natural recharge, estimated water in storage, number of index wells and date of last water-level sweep are shown in Table 3.14-6. Figure 3.14-6 shows aquifer flow direction and water-level change between 1990-1991 and 2003-2004. Figure 3.14-7 contains hydrographs for selected wells shown on Figure 3.14-6. Figure 3.14-8 shows well yields in five yield categories. A description of aquifer data sources and methods as well as well data sources and methods, including water-level changes and well yields are found in Volume 1, Appendix A.

Major Aquifers

- Refer to Table 3.14-6 and Figure 3.14-6.
- The major aquifers in the basin are recent stream alluvium from stream and lake-bed deposits and basin fill.
- The Willcox Basin is a “closed basin” with no inter-basin groundwater inflow or outflow.
- Groundwater flow conditions have been altered significantly in several locations due to groundwater pumping as shown by flow directions on Figure 3.14-6. Historically flows were from the perimeter of the Sulphur Springs Valley toward the Willcox Playa.

Well Yields

- Refer to Table 3.14-6 and Figure 3.14-8.
- As shown on Figure 3.14-8 well yields in this basin range from less than 100 gallons per minute (gpm) to more than 2,000 gpm.
- One source of well yield information, based on 1,007 reported wells, indicates that the median well yield in this basin is 750 gpm.

Natural Recharge

- Refer to Table 3.14-6.
- Natural recharge estimates range from 15,000 acre-feet per year to 47,000 acre-feet per year.

Water in Storage

- Refer to Table 3.14-6.
- Storage estimates for this basin range from 42 million acre-feet to 59 million acre-feet to a depth of 1,200 feet.

Water Level

- Refer to Figure 3.14-6. Water levels are shown for wells measured in 2003-2004.
- The Department annually measures 47 index wells in this basin. Hydrographs for 12 index wells and two other wells are shown in Figure 3.1-7. Index well hydrographs are: A-E, G-K, M and N.
- The deepest recorded water level in 2003-2004 was 431 feet in the vicinity of Highway 191 near the southern basin boundary and the shallowest recorded water level in 2003-2004 was 36 feet in the vicinity of Willcox.

Table 3.14-6 Groundwater Data for the Willcox Basin

Basin Area, in square miles:	1,911	
Major Aquifer(s):	Name and/or Geologic Units	
	Recent Stream Alluvium	
	Basin Fill	
Well Yields, in gal/min:	Range 108 - 2,199 Median 621.5 (64 wells measured)	Measured by ADWR and/or USGS
	Range 2 - 3,500 Median 750 (1,007 wells reported)	Reported on registration forms for large (> 10-inch) diameter wells
	Range 50 - 2,000	ADWR (1990 and 1994b)
	Range 0 - 2,500	Anning and Duet (1994)
Estimated Natural Recharge, in acre-feet/year:	47,000	Anderson and Freethey (1995)
	46,000	Freethey and Anderson (1986)
	15,000	ADWR (1994b)
Estimated Water Currently in Storage, in acre-feet:	42,000,000 - 45,300,000 (to 1,200 ft)	ADWR (1990 and 1994b)
	44,000,000 ¹ (to 1,200 ft)	Freethey and Anderson (1986)
	59,000,000 (to 1,200 ft)	Arizona Water Commission (1975)
Current Number of Index Wells:	47	
Date of Last Water-level Sweep:	1999 (885 wells measured)	

¹Predevelopment Estimate

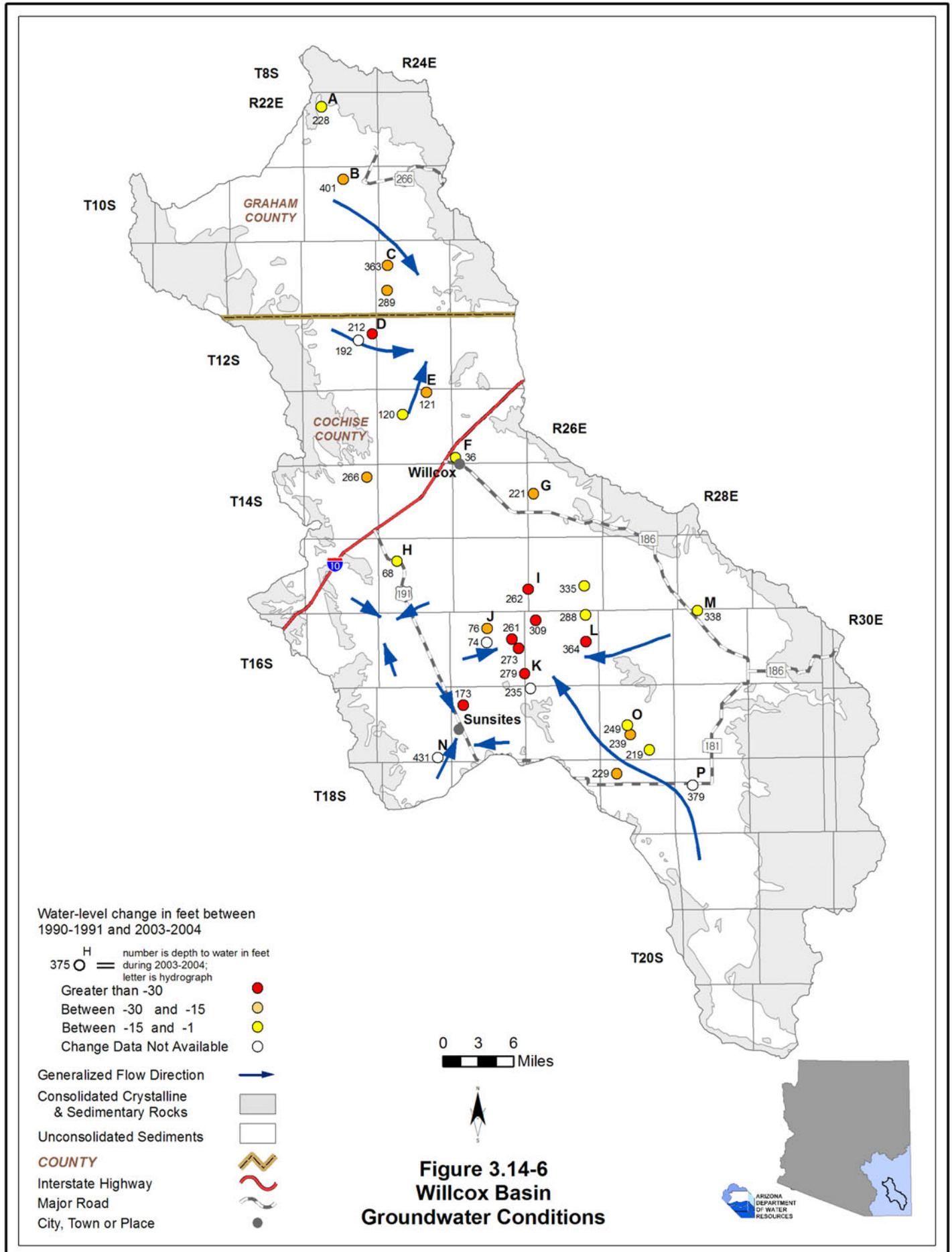


Figure 3.14-7
Willcox Basin
Hydrographs Showing Depth to Water in Selected Wells

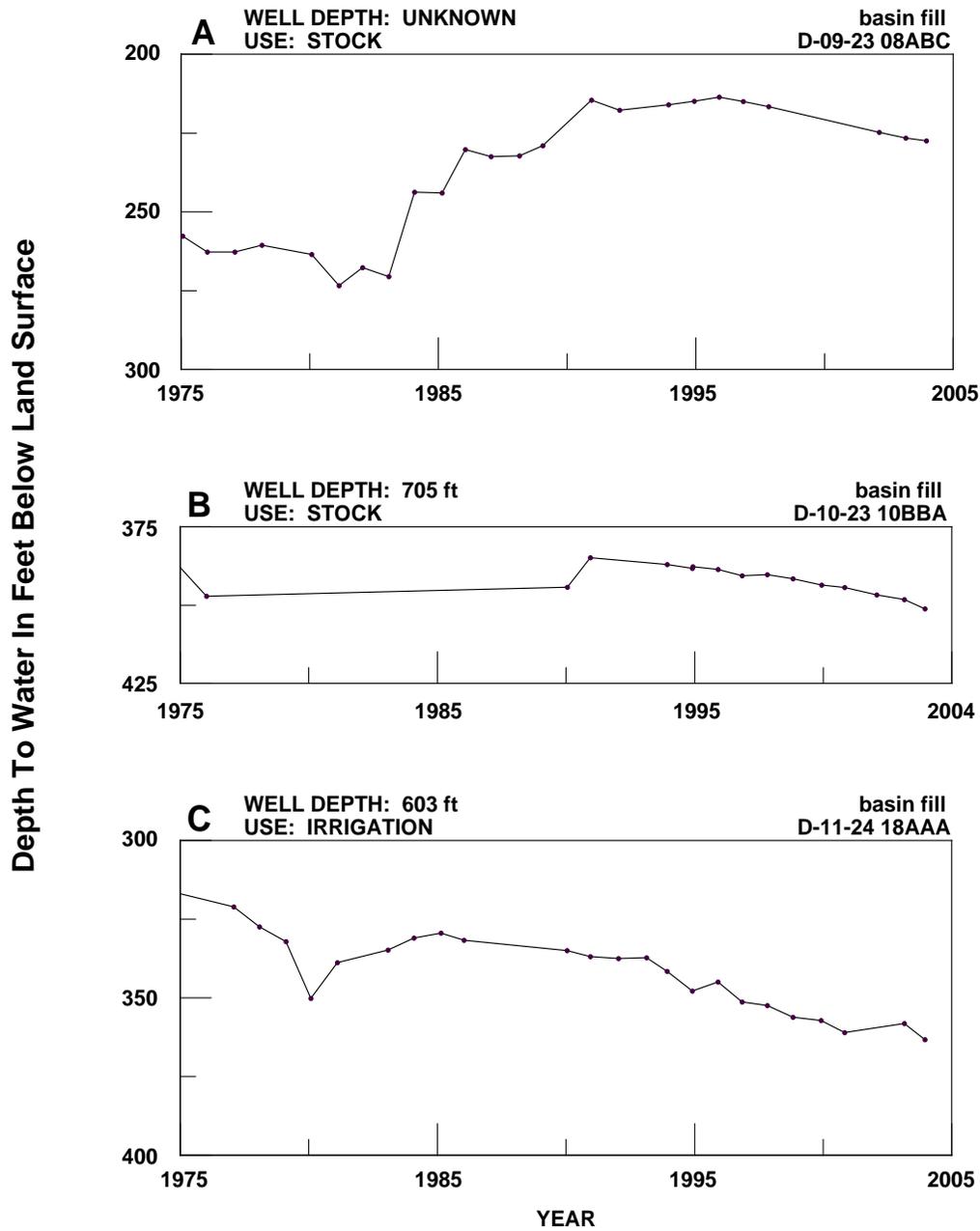


Figure 3.14-7 (Cont)
Willcox Basin
Hydrographs Showing Depth to Water in Selected Wells

Depth To Water In Feet Below Land Surface

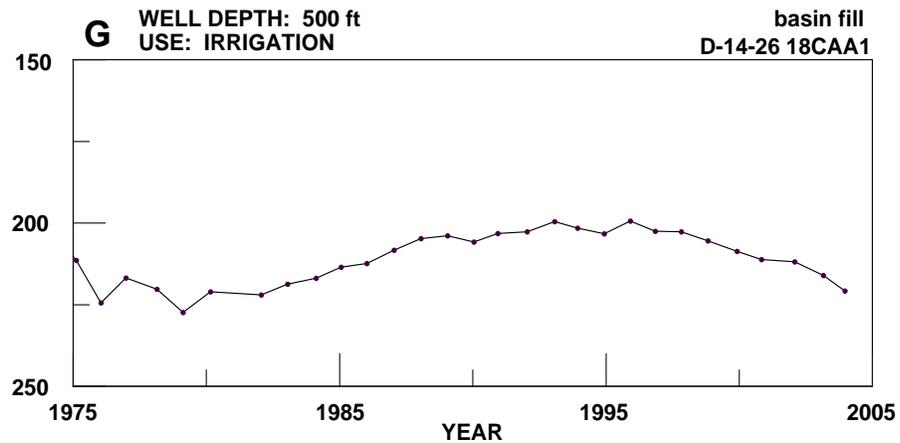
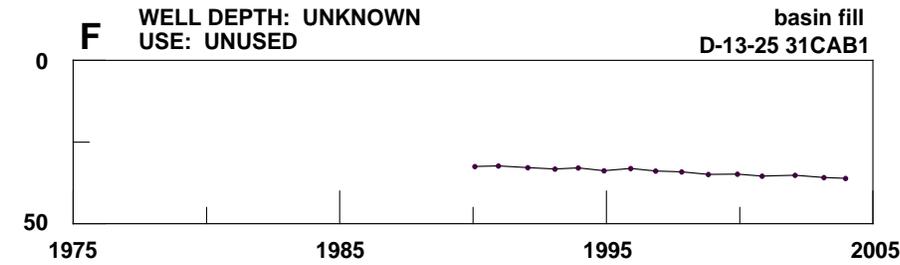
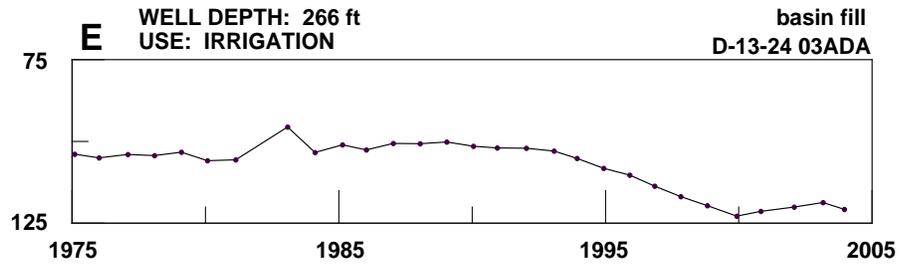
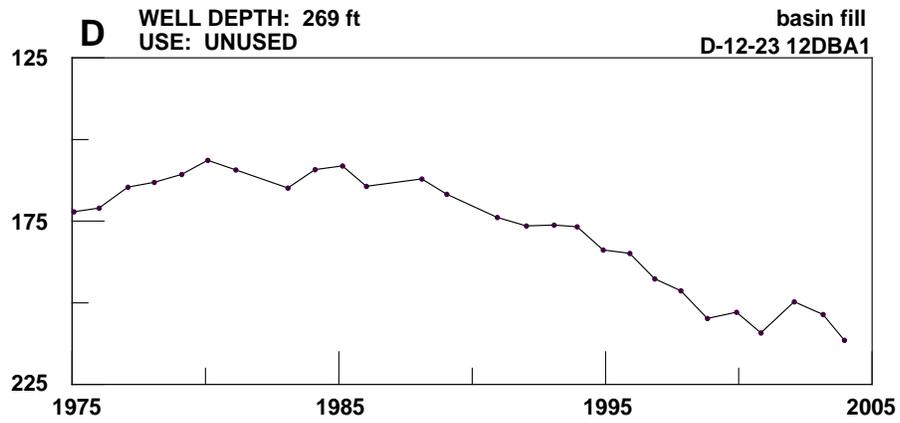


Figure 3.14-7 (Cont)
Willcox Basin
Hydrographs Showing Depth to Water in Selected Wells

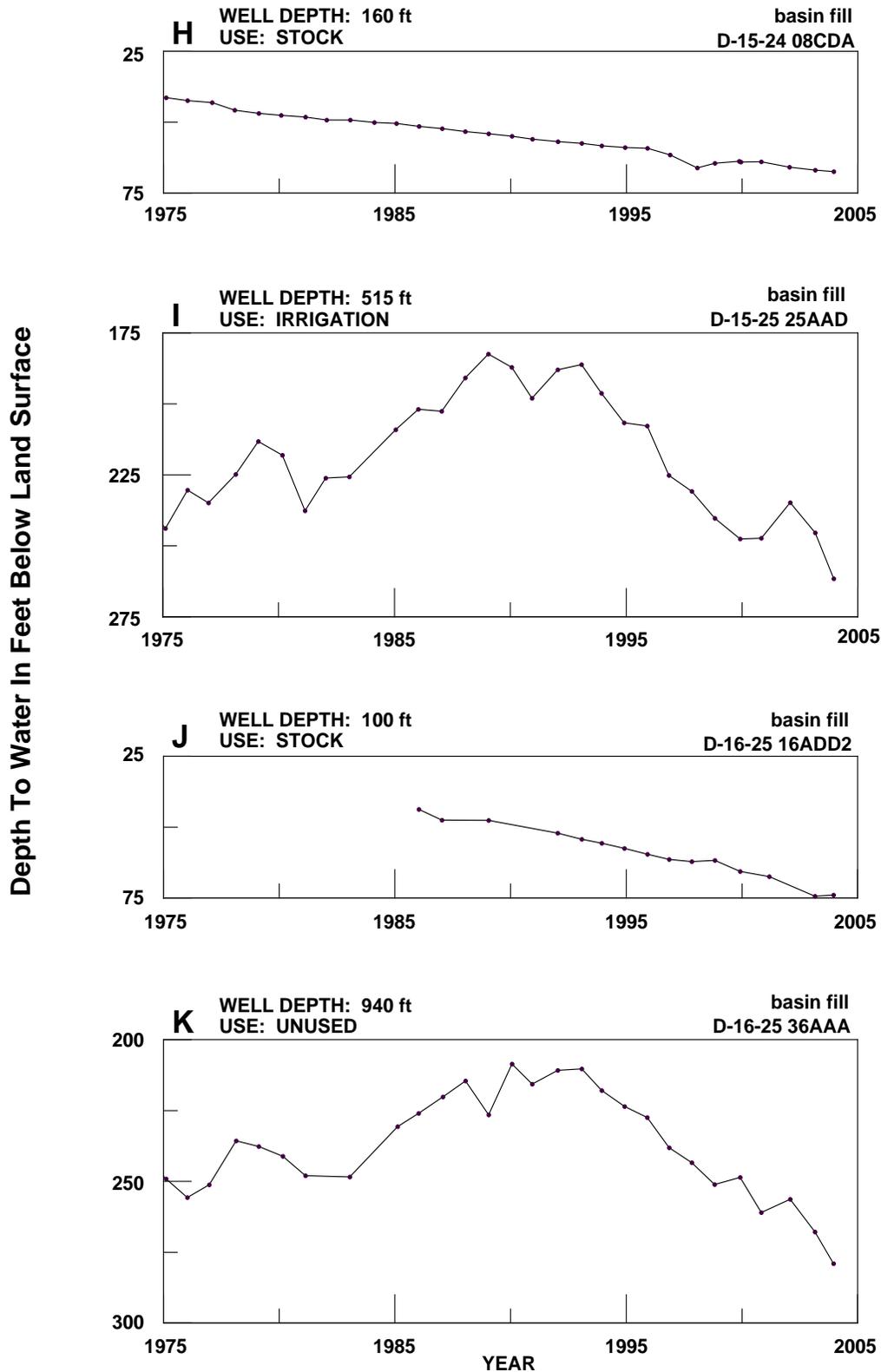


Figure 3.14-7 (Cont)
Willcox Basin
Hydrographs Showing Depth to Water in Selected Wells

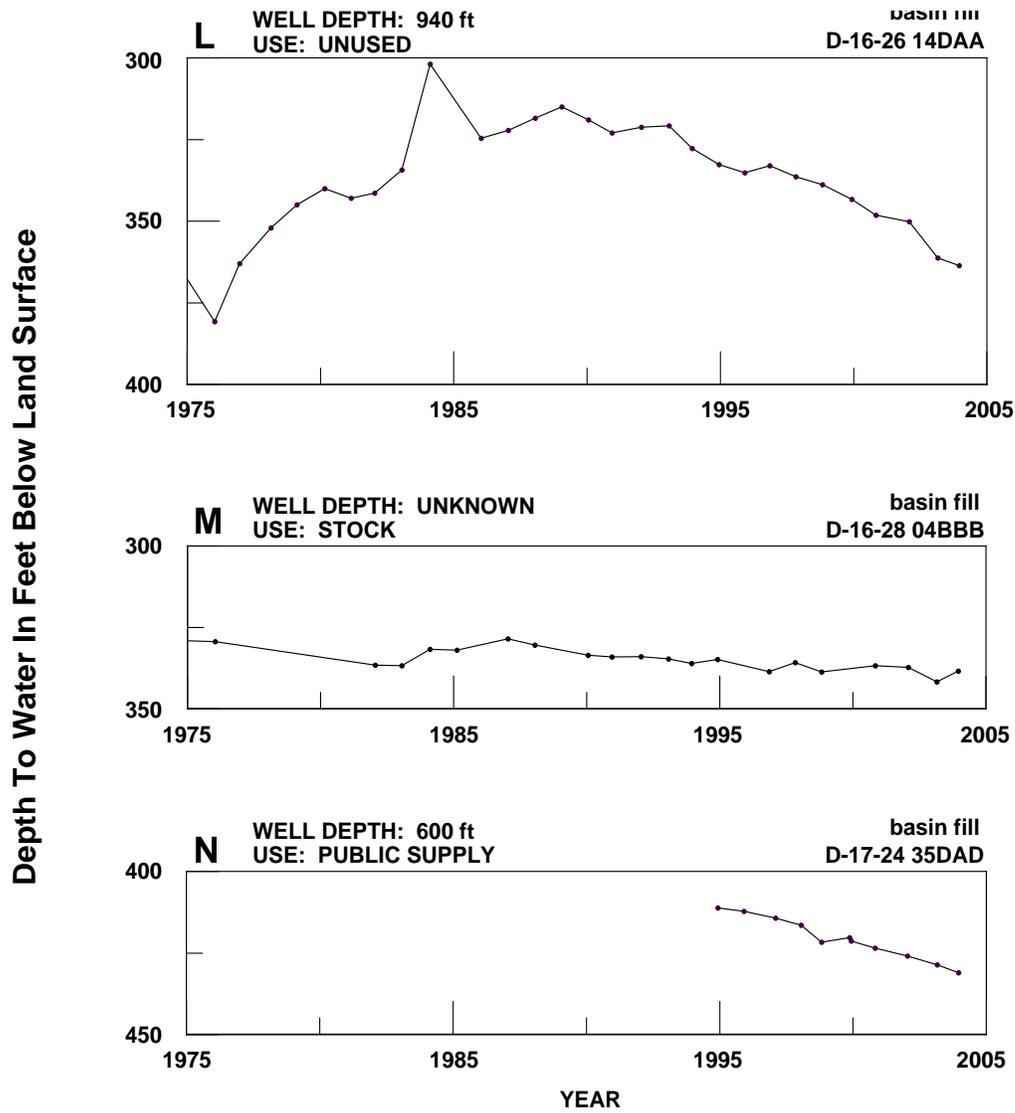
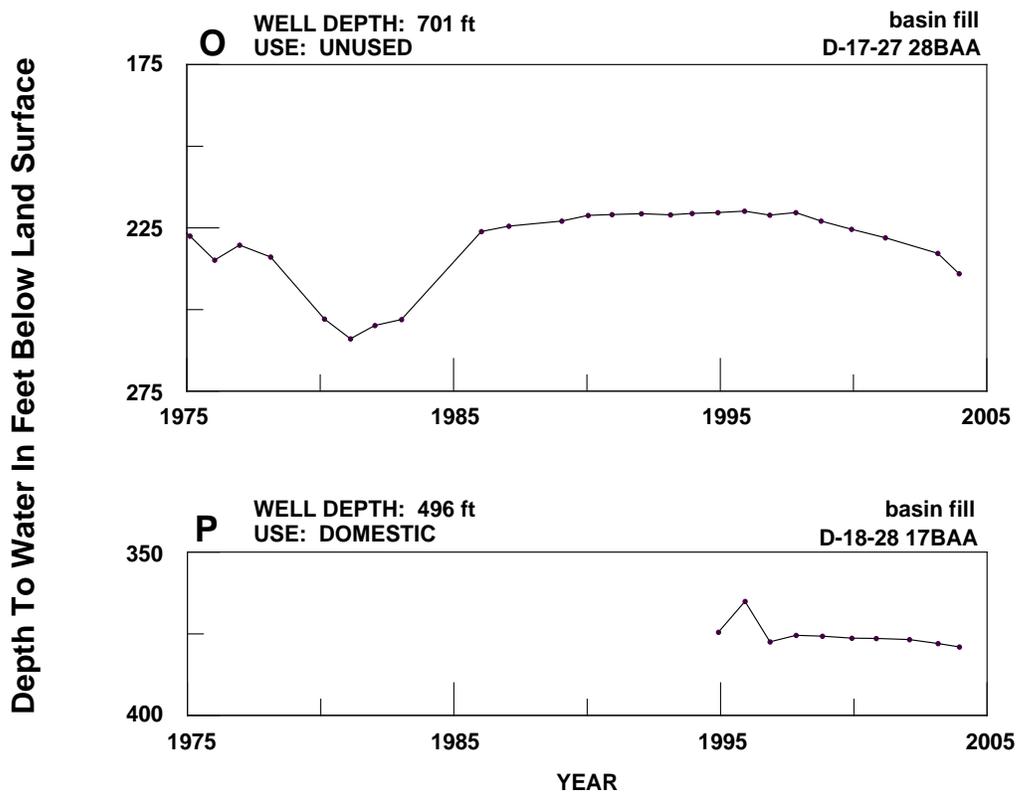
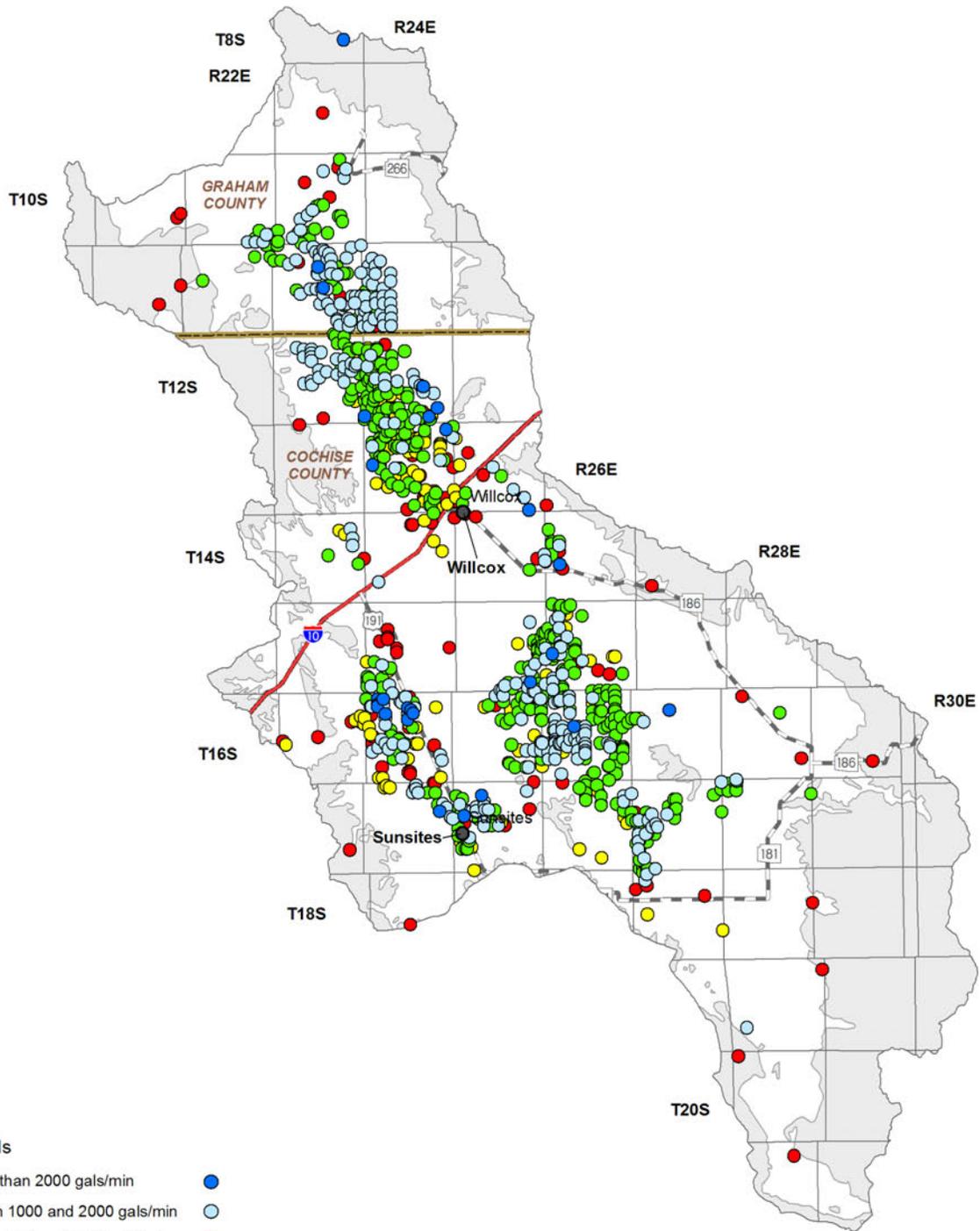


Figure 3.14-7 (Cont)
Willcox Basin
Hydrographs Showing Depth to Water in Selected Wells





Well Yields

- Greater than 2000 gals/min ●
- Between 1000 and 2000 gals/min ●
- Between 500 and 1000 gals/min ●
- Between 100 and 500 gals/min ●
- Less than 100 gals/min ●

- Consolidated Crystalline & Sedimentary Rocks
- Unconsolidated Sediments
- COUNTY**
- Interstate Highway
- Major Road
- City, Town or Place

0 3 6
Miles



**Figure 3.14-8
Willcox Basin
Well Yields**



3.14.7 Water Quality of the Willcox Basin

Sites with parameter concentrations that have equaled or exceeded drinking water standard(s) (DWS), including location and parameter(s) are shown in Table 3.14-7A. There are no data on impaired lakes and streams in this basin. Figure 3.14-9 shows the location of exceedences keyed to Table 3.14-7A. All community water systems are regulated under the Safe Drinking Water Act and treat water supplies to meet drinking water standards. Not all parameters were measured at all sites; selective sampling for particular constituents is common. A description of water quality data sources and methods is found in Volume 1, Appendix A.

Well, Mine or Spring sites that have equaled or exceeded drinking water standards (DWS)

- Refer to Table 3.14-7A.
- Seventy-three sites have parameter concentrations that have equaled or exceeded DWS.
- Frequently equaled or exceeded parameters include arsenic and fluoride
- Other parameters commonly equaled or exceeded in the sites measured in this basin were radionuclides, nitrates, beryllium, antimony and total dissolved solids.

Table 3.14-7 Water Quality Exceedences in the Willcox Basin¹

A. Wells, Springs and Mines

Map Key	Site Type	Site Location			Parameter(s) Concentration has Equaled or Exceeded Drinking Water Standard (DWS) ²
		Township	Range	Section	
1	Spring	10 South	24 East	1	F, Rad
2	Well	12 South	24 East	27	F
3	Well	12 South	24 East	31	F
4	Well	12 South	24 East	31	As
5	Well	12 South	24 East	32	NO3
6	Well	12 South	25 East	36	NO3
7	Well	13 South	24 East	5	As, F
8	Well	13 South	24 East	21	As
9	Well	13 South	24 East	27	As
10	Well	13 South	25 East	8	As, F
11	Well	13 South	25 East	12	F, NO3
12	Well	13 South	25 East	12	Rad
13	Well	13 South	25 East	17	As, F
14	Well	13 South	25 East	19	As, F
15	Well	13 South	25 East	21	As, F
16	Well	13 South	25 East	21	As, F
17	Well	13 South	25 East	29	As, F
18	Well	13 South	25 East	31	As, F
19	Well	14 South	23 East	10	Rad
20	Well	14 South	23 East	12	F
21	Well	14 South	23 East	12	F
22	Well	14 South	23 East	15	F
23	Well	14 South	24 East	1	Rad
24	Well	14 South	24 East	3	As, F
25	Well	14 South	24 East	3	F
26	Well	14 South	24 East	8	NO3
27	Well	14 South	24 East	14	As, F
28	Well	14 South	24 East	15	F
29	Well	14 South	24 East	17	As, Pb
30	Well	14 South	24 East	31	F
31	Well	14 South	25 East	19	F
32	Well	14 South	26 East	18	Pb
33	Well	14 South	26 East	18	NO3
34	Well	14 South	26 East	18	As
35	Well	14 South	26 East	25	Rad
36	Well	14 South	27 East	32	Rad
37	Well	15 South	23 East	26	NO3
38	Well	15 South	24 East	6	As, F
39	Well	15 South	24 East	20	TDS
40	Well	15 South	24 East	21	As, F
41	Well	15 South	25 East	13	NO3
42	Well	15 South	25 East	13	NO3
43	Well	16 South	24 East	4	Be
44	Well	16 South	24 East	5	Be
45	Well	16 South	24 East	5	Be
46	Well	16 South	24 East	10	Be
47	Well	16 South	24 East	10	Be
48	Well	16 South	24 East	10	Be
49	Well	16 South	24 East	36	F

Table 3.14-7 Water Quality Exceedences in the Willcox Basin (Cont)¹

A. Wells, Springs and Mines

Map Key	Site Type	Site Location			Parameter(s) Concentration has Equaled or Exceeded Drinking Water Standard (DWS) ²
		Township	Range	Section	
50	Well	16 South	25 East	9	F
51	Well	16 South	25 East	10	Sb, NO3
52	Well	16 South	25 East	18	F
53	Well	16 South	25 East	18	F
54	Well	16 South	25 East	23	NO3
55	Well	16 South	26 East	23	F
56	Well	16 South	26 East	24	F
57	Well	16 South	26 East	24	F
58	Well	16 South	26 East	25	F
59	Well	16 South	26 East	26	F
60	Well	16 South	26 East	35	F
61	Well	16 South	29 East	26	F, Rad
62	Well	17 South	25 East	9	NO3
63	Well	17 South	25 East	9	As
64	Well	17 South	25 East	23	F
65	Well	17 South	26 East	6	F
66	Well	17 South	26 East	11	F
67	Well	17 South	26 East	25	F
68	Well	17 South	27 East	19	F
69	Well	17 South	27 East	19	F
70	Well	17 South	27 East	30	F
71	Well	17 South	29 East	12	F, Rad
72	Well	18 South	25 East	5	As
73	Well	18 South	26 East	1	F

Source: Compilation of databases from ADWR & others

B. Lakes and Streams

Map Key	Site Type	Site Name	Length of Impaired Stream Reach (in miles)	Area of Impaired Lake (in acres)	Designated Use Standard	Parameter(s) Exceeding Use Standard
None identified by ADWR at this time						

Notes:

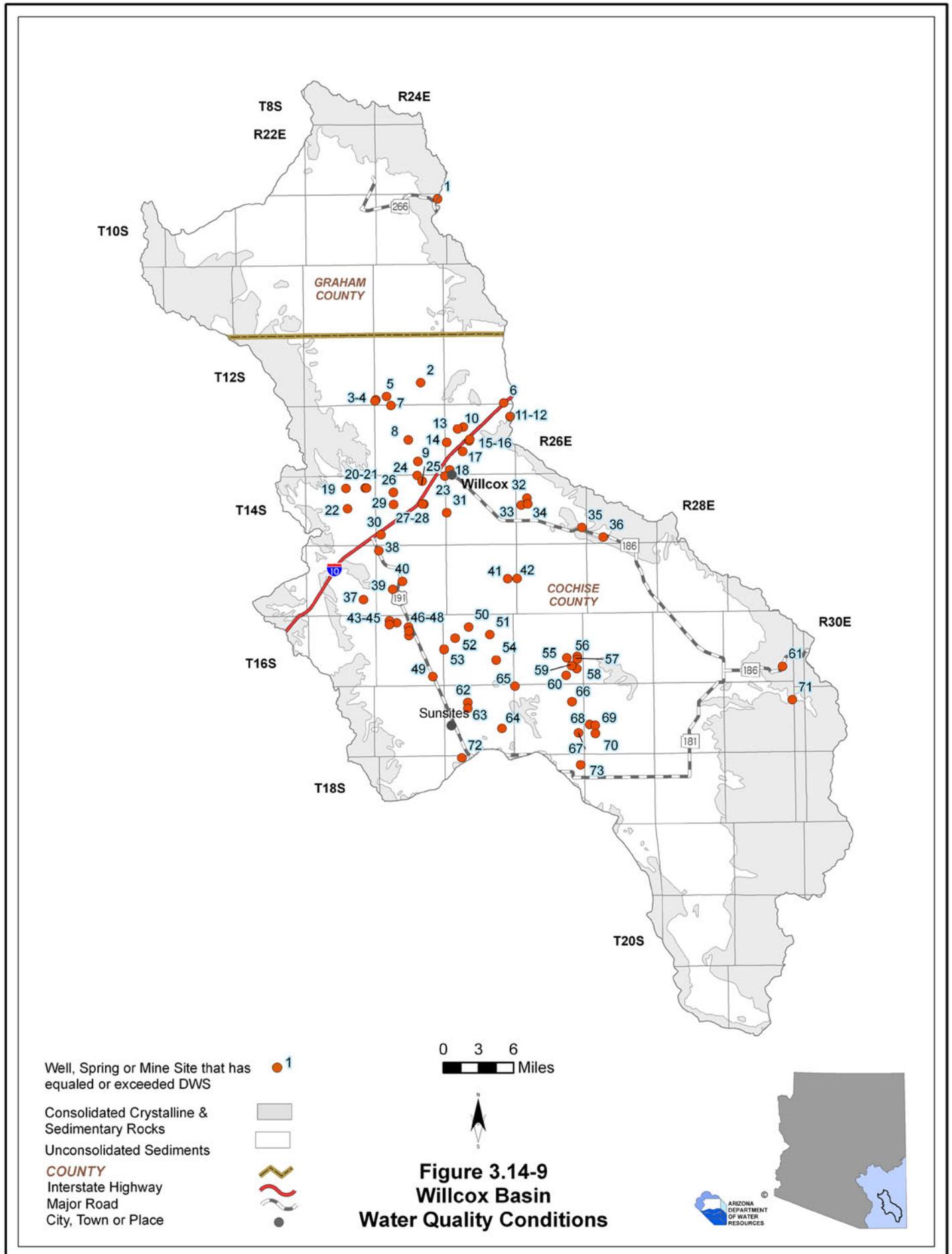
Because of map scale, feature locations may appear different than the location indicated on the table

¹ Water quality samples collected between 1981 and 2004.

² Sb = Antimony
As = Arsenic
Be = Beryllium
F= Fluoride
Pb = Lead
NO3 = Nitrate

Rad = One or more of the following radionuclides - Gross Alpha, Gross Beta, Radium, and Uranium

TDS = Total Dissolved Solids



3.14.8 Cultural Water Demands in the Willcox Basin

Cultural water demand data including population, number of wells and the average well pumpage and surface water diversions by the municipal, industrial and agricultural sectors are shown in Table 3.14-8. Effluent generation including facility ownership, location, population served and not served, volume treated, disposal method and treatment level is shown on Table 3.14-9. Figure 3.14-10 shows the location of demand centers. A description of cultural water demand data sources and methods is found in Volume 1, Appendix A. More detailed information on cultural water demands is found in Section 3.0.7.

Cultural Water Demands

- Refer to Table 3.14-8 and Figure 3.14-10.
- Population has increased by about 3,000 residents from 1980 to 2000.
- Total groundwater use decreased from 1971 to 1990 and has increased from 1991 to 2003 due to agricultural pumpage, with an average of 176,300 acre-feet pumped per year in the period from 2001-2005.
- All surface water diversions are for municipal demand at Fort Grant, a state prison at the end of Highway 266, with less than 300 acre-feet diverted from 1991 – 2005.
- Over 90% of all water use in this basin is for agriculture.
- Agricultural demand has increased from 1991 with an average of 167,400 acre-feet of water pumped per year in the period from 2001-2005.
- Agricultural demand is widely distributed throughout the Sulphur Springs Valley down the center of the basin.
- This basin contains both the most overall groundwater demand in the planning area and the most groundwater demand for agriculture.
- Most high intensity municipal and industrial demand is found near Willcox.
- Low intensity municipal and industrial demand is located near Willcox and along Highway 191.
- Approximately 90% of municipal water supply is groundwater.
- There is one large active mine, Johnson Camp Mine, west of Interstate 10.
- There is one power plant, the Apache Station Generation Plant, in the vicinity of Highway 191. This is the only power plant in the planning area.
- As of 2005 there were 3,150 registered wells with a pumping capacity of less than or equal to 35 gallons per minute and 1,873 wells with a pumping capacity of more than 35 gallons per minute.

Effluent Generation

- Refer to Table 3.14-9.
- There are three wastewater treatment facilities in the basin.
- Almost 4,000 people are served by these facilities.
- More than 500 acre-feet of effluent per year are generated in this basin.
- One facility, the Willcox Wastewater Treatment Plant, discharges wastewater for golf course/turf irrigation.

Table 3.14-8 Cultural Water Demands in the Willcox Basin¹

Year	Estimated and Projected Population	Number of Registered Water Supply Wells Drilled		Average Annual Demand (in acre-feet)						Data Source
				Well Pumpage			Surface-Water Diversions			
				Q ≤ 35 gpm	Q > 35 gpm	Municipal	Industrial	Agricultural	Municipal	
1971										
1972										
1973										
1974										
1975										
1976										
1977										
1978										
1979										
1980	9,064									
1981	9,135									
1982	9,206									
1983	9,277									
1984	9,347									
1985	9,418									
1986	9,489									
1987	9,560									
1988	9,631									
1989	9,702									
1990	9,773									
1991	10,031									
1992	10,289									
1993	10,547									
1994	10,805									
1995	11,063									
1996	11,321									
1997	11,580									
1998	11,838									
1999	12,096									
2000	12,354									
2001	12,656									
2002	12,957									
2003	13,259									
2004	13,560									
2005	13,862									
2010	15,369									
2020	16,973									
2030	18,237									
WELL TOTALS:		3,150	1,873							

Notes:

NR - Not reported

¹ Does not include evaporation losses from stockponds and reservoirs, or effluent.

² Includes all wells through June 1980.

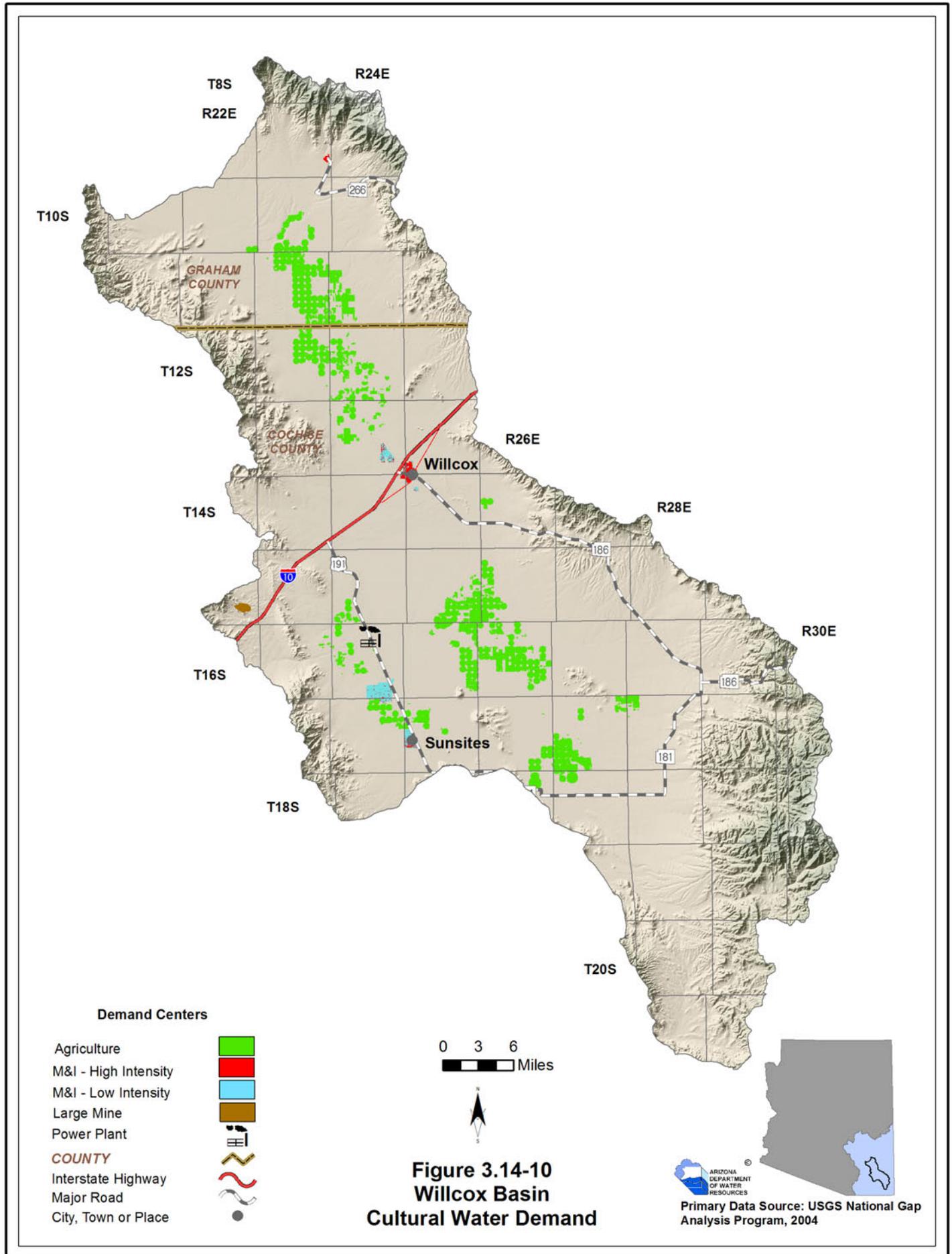
Table 3.14-9 Effluent Generation in the Willcox Basin

Facility Name	Ownership	City/Location Served	Population Served	Volume Treated/Generated (acre-feet/year)	Disposal Method							Current Treatment Level	Population Not Served	Year of Record
					Water-course	Evaporation Pond	Irrigation	Golf Course/Turf Irrigation	Wildlife Area	Industrial Use	Discharge to Another Facility			
Clear Springs Utility WWTP	Clear Springs Utility Co	Clear Springs	512	47		X							NA	2003
Rip Griffin Truck/Travel Center	Private	Willcox												
Willcox WWTP	Town of Willcox	Willcox	3,355	504		X			Twin Lakes				Secondary	2000
Total			3,867	551										

Source: Compilation of databases from ADWR & others

Notes:

- Year of Record is for the volume of effluent treated/generated
- NA: Data not currently available to ADWR
- WWTP: Wastewater Treatment Plant



3.14.9 Water Adequacy Determinations in the Willcox Basin

Water adequacy determination information including the subdivision name, location, number of lots, adequacy determination, reason for the inadequacy determination, date of determination and subdivision water provider are shown in Table 3.14-10A. Designated water provider information is shown in Table 3.14-10B with date of application, date the designation was issued and projected or annual estimated demand. Figure 3.14-11 shows the locations of subdivisions and designated providers keyed to the Table. A description of the Water Adequacy Program is found in Volume 1, Appendix C. Adequacy determination data sources and methods are found in Volume 1, Appendix A.

- All lots receiving an adequacy determination are in Cochise County. Twenty water adequacy determinations for 1,577 lots have been made in this basin through December 2008. Nine hundred and eighty-nine lots, or 62%, were determined to be adequate
- All determinations of inadequacy were because the applicant chose not to submit necessary information and/or available hydrologic data was insufficient to make a determination and poor water quality.
- There is one designated water provider, Empirita Water Company, with a projected or annual estimated demand of 1,923 acre-feet.

Table 3.14-10 Adequacy Determinations in the Willcox Basin¹

Map Key	Subdivision Name	County	Location			No. of Lots	ADWR File No. ²	ADWR Adequacy Determination	Reason(s) for Inadequacy Determination ³	Date of Determination	Water Provider at the Time of Application
			Township	Range	Section						
1	Arizona Bell Country Club # 3	Cochise	13 South	25 East	15	154		Adequate	03/11/74	Hidden Valley Water Company	
2	Arizona Sunsties	Cochise	17 South	25 East	18, 19	102		Adequate	07/22/82	Clear Springs Water Company	
3	Arizona Sunsties # 1	Cochise	16 South	24 East	33	NA	22-300064	Inadequate	03/14/86	Dry Lot Subdivision	
4	Arizona Sunsties # 2	Cochise	17 South	24 East	4, 9, 10, 15, 16	65		Inadequate	01/12/83	Dry Lot Subdivision	
5	Arizona Sunsties # 3 Blks 330-428	Cochise	17 South	24 East	21, 27, 28, 33, 34	23	22-300354	Inadequate	09/03/87	Dry Lot Subdivision	
6	Arizona Sunsties # 4	Cochise	17 South	24 East	1, 13, 14, 22, 23, 24, 25, 26, 35	216		Inadequate	01/12/83	Dry Lot Subdivision	
7	Arizona Sunsties # 5	Cochise	17 South	25 East	31	35		Inadequate	01/12/83	Dry Lot Subdivision	
8	Arizona Sunsties # 6	Cochise	16 South	25 East	22, 23, 26, 27, 28	211		Inadequate	01/12/83	Dry Lot Subdivision	
9	Arizona Sunsties # 7	Cochise	16 South	24 East	4, 9, 10	NA		Inadequate	01/12/83	Dry Lot Subdivision	
10	Arizona Sunsties # 8	Cochise	17 South	25 East	30	12		Inadequate	01/12/83	Dry Lot Subdivision	
11	Branding Iron Estates	Cochise	13 South	24 East	11	46		Adequate	11/14/78	Dry Lot Subdivision	
12	Foremost Subdivision	Cochise	17 South	25 East	9	50	22-400198	Adequate	11/10/89	Dry Lot Subdivision	
13	Stronghold Mobile Estates	Cochise	17 South	24 East	14	NA		Inadequate	11/10/82	Dry Lot Subdivision	
14	Sunny Acres of Arizona # 1, 2	Cochise	16 South	26 East	31	466		Adequate	10/11/74	Dry Lot Subdivision	
15	Sunsite Heights Block 22	Cochise	17 South	25 East	19	45		Adequate	12/15/78	Clear Springs Water Company	
16	Sunsite Heights Blocks 6 & 8	Cochise	17 South	25 East	19	6		Adequate	05/27/84	Clear Springs Water Company	
17	Sunsite Townhouses # 1A	Cochise	17 South	25 East	19	45		Adequate	12/17/78	Clear Springs Water Company	
18	Sunsites Ranches	Cochise	18 South	24 East	14, 22, 24	26	22-300037	Inadequate	07/28/85	Dry Lot Subdivision	
19	Treasuredate Heights	Cochise	17 South	25 East	19	45		Adequate	12/15/78	Clear Springs Water Company	
20	Twin Peaks	Cochise	14 South	26 East	18	30		Adequate	05/12/80	Dry Lot Subdivision	

B. Designated Adequate Water Supply

Map Key	Water Provider Name	County	Designation No.	Projected or Annual Estimated Demand (af/yr)	Date Application Received	Date Application Issued	Year of Projected or Annual Demand
a	City of Willcox	Cochise	41-900017.0001	1,923	6/10/2008	Pending	NA

Source: ADWR 2008a

Notes:

¹ Each determination of the adequacy of water supplies available to a subdivision is based on the information available to ADWR and the standards of review and policies in effect at the time the determination was made. In some cases, ADWR might make a different determination if a similar application were submitted today, based on the hydrologic data and other information currently available, as well as current rules and policies.

² Prior to February 1995, ADWR did not assign file numbers to applications for adequacy. Between 1995-2006 all applications for adequacy were given a file number with a 22 prefix. In 2006 a 53 prefix was assigned to all water adequacy reports and applications regardless of their issue date.

³ A. Physical/Continuous

1) Insufficient Data (applicant chose not to submit necessary information, and/or available hydrologic data insufficient to make determination)

2) Insufficient Supply (existing water supply unavailable or physically unavailable for groundwater, depth-to-water exceeds criteria)

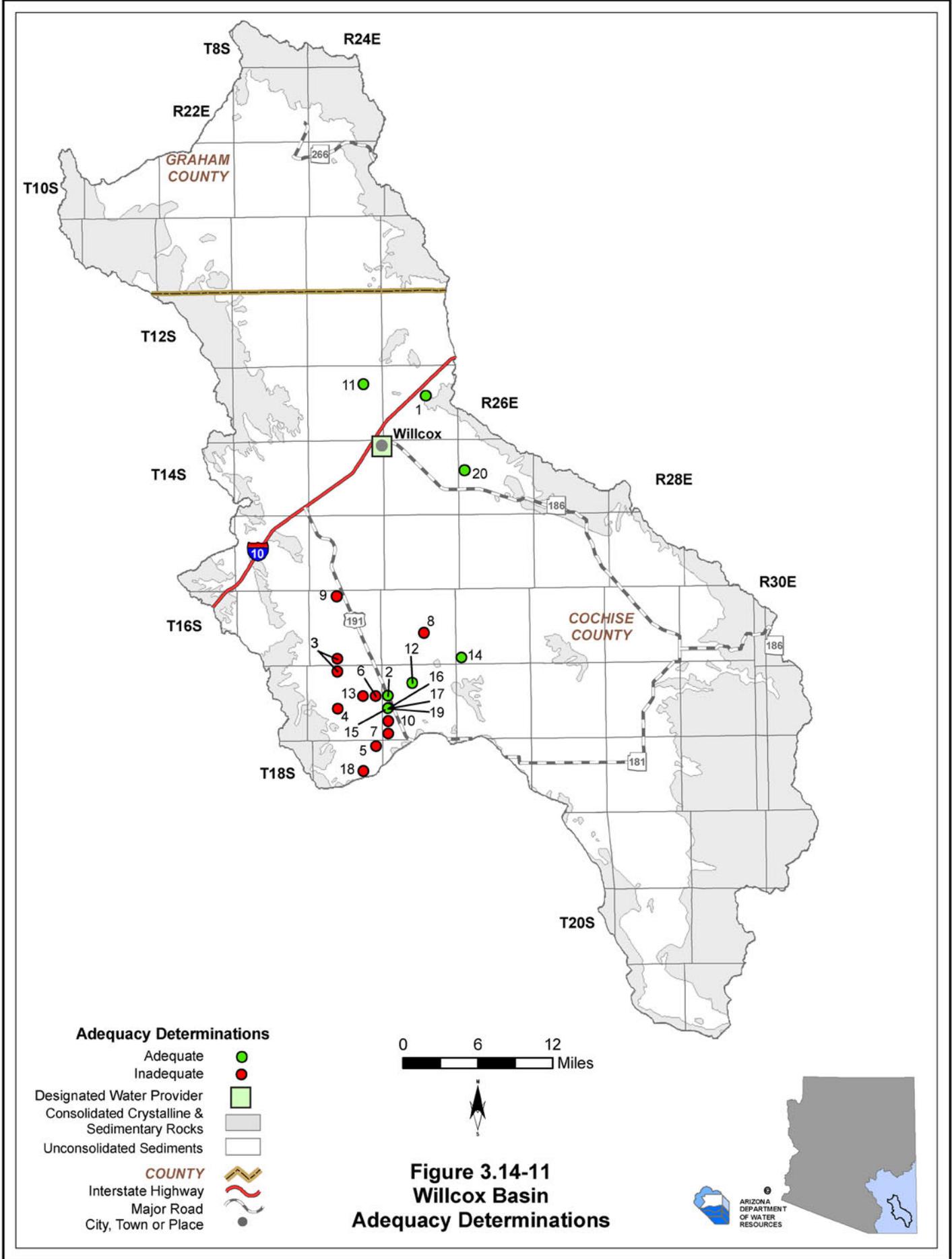
3) Insufficient Infrastructure (distribution system is insufficient to meet demands or applicant proposed water hauling)

B. Water Quality

1) Legal (applicant failed to demonstrate a legal right to use the water or failed to demonstrate the provider's legal authority to serve the subdivision)

D. Unable to locate records

NA= Data not currently available to ADWR



WILLCOX BASIN

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ACRONYMS AND ABBREVIATIONS

ADEQ	Arizona Department of Environmental Quality
ADMMR	Arizona Department of Mines and Mineral Resources
ADWR	Arizona Department of Water Resources
AEPCO	Arizona Electric Power Cooperative
af	Acre-feet
AGFD	Arizona Game and Fish Department
ALERT	Automated Local Evaluation in Real Time
ALRIS	Arizona Land Resource Information System
ANP	Apache Nitrogen Products Inc.
AMA	Active Management Area
ASARCO	American Smelting and Refining Company
AWPF	Arizona Water Protection Fund
AZMET	Arizona Meteorological Network
BLM	United States Bureau of Land Management
BOR	United States Bureau of Reclamation
CAP	Central Arizona Project
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CLIMAS	Climate Assessment for the Southwest
DES	Arizona Department of Economic Security
DNT	Dinitoglycerine
DOD	United States Department of Defense
ENSO	El Niño-Southern Oscillation
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FCD	Flood Control District
GIS	Geographic Information System
GRIC	Gila River Indian Community
gpcd	Gallons per capita per day
gpd	Gallons per day
gpm	Gallons per minute
GVID	Gila Valley Irrigation District
GWSI	Groundwater Site Inventory System
INA	Irrigation Non-expansion Area
LUST	Leaking Underground Storage Tank
MHP	Mobile Home Park
M&I	Municipal and Industrial
NHD	National Hydrography Dataset
NOAA	National Oceanic and Atmospheric Administration
NPS	United States National Park Service
NRCD	Natural Resources Conservation District
NRCS	Natural Resources Conservation Service
NWIS	National Water Information System
NWR	National Wildlife Refuge
NWS	National Weather Service

Pan ET	Pan Evapotranspiration
PDO	Pacific Decadal Oscillation
PCC	Program Certificate Conveyence
PWUA	Pomerene Water Users Association
SDID	Saint David Irrigation District
SNOTEL	SNOpack TELemetry
SPRNCA	San Pedro Riparian National Conservation Area
SX/EW	Solvent extraction/electrowinning
TDS	Total Dissolved Solids
TNC	The Nature Conservancy
TMDL	Total Maximum Daily Load
TNT	Trinitroglycerin
USFS	United States Forest Service
USFWS	Unites States Fish and Wildlife Service
USGS	United States Geological Survey
USPP	Upper San Pedro Partnership
UVD	Upper Valley Districts
VRP	Voluntary Remediation Program
WIFA	Water Infrastructure Finance Authority
WQARF	Water Quality Assurance Revolving Fund
WRCC	Western Regional Climate Center
WWTF	Wastewater Treatment Facility
WWTP	Wastewater Treatment Plant

APPENDIX A

APPENDIX A
Arizona Water Protection Fund Projects
In the Southeastern Arizona Planning Area through Fiscal Year 2008

SOUTHEASTERN ARIZONA PLANNING AREA			
Groundwater Basin	AWPF Grant #	Project Title	Project Category
Aravaipa Canyon	96-0014	Klondyke Tailings Response Strategy Analysis (RSA)	Research
Cienega Creek	95-016	Refinement of Geologic Model, Lower Cienega Basin, Pima County, Arizona	Research
Cienega Creek	96-0006	Hydrogeologic Investigation of Groundwater Movement and Sources of Base Flow to Sonoita Creek and Implementation of Long-Term Monitoring Program	Research
Cienega Creek	96-0020	Cienega Creek Stream Restoration	Stream Restoration & Revegetation
Cienega Creek	97-034	Oak Tree Gully Stabilization	Upland Channel Restoration
Cienega Creek	98-049	Empire/Cienega/Empirita Fencing Project	Fencing
Cienega Creek	99-068	Lower Cienega Creek Restoration Evaluation Project	Research
Cienega Creek	99-090	Redrock Riparian Improvement	Fencing & Water Developments
Douglas	98-066	Hay Mountain Watershed Rehabilitation	Watershed Restoration
Duncan Valley	95-014	Gila Box Riparian and Water Quality Improvement Project	Fencing & Upland Water Developments
Duncan Valley	08-155	Restoration of the Gila River at Apache Grove	Stream Restoration
Lower San Pedro	97-035	Watershed Improvement to Restore Riparian and Aquatic Habitat on the Muleshoe Ranch CMA	Fencing & Watershed Restoration
Lower San Pedro	97-040	Bingham Cienega Riparian Restoration Project	Revegetation
Lower San Pedro	97-044	San Pedro River Preserve Riparian Habitat Restoration Project	Habitat Restoration
Lower San Pedro	99-069	Riparian and Watershed Enhancements on the A7 Ranch – Lower San Pedro River	Fencing & Upland Water Developments

SOUTHEASTERN ARIZONA PLANNING AREA (Cont)			
Groundwater Basin	AWPF Grant #	Project Title	Project Category
Lower San Pedro	07-142	Reduction of Erosion and Sedimentation along the Lower San Pedro River Through Hydrologic Restoration of Modified Ephemeral Washes	Habitat & Stream Restoration
Lower San Pedro	00-109	Lower San Pedro Watershed Project	Feasibility Study
Lower San Pedro	00-111	Cooperative Grazing Management for Riparian Improvement on the San Pedro	Fencing & Upland Water Developments
Morenci	99-077	Blue Box Crossing	Channel Restoration
Morenci	00-102	Upper Eagle Creek Restoration on East Eagle Allotment: 4 Drag Ranch	Fencing & Upland Water Developments
Morenci	05-129	Georges Lake Riparian Restoration Project	Fencing & Habitat Protection
Morenci	06-135	Double Circle Ranch Riparian Fencing Project	Fencing
Morenci	07-145	Kaler Ranch Erosion Control Project, Phase II	Habitat Stream Protection
Safford	96-0012	Eagle Creek Watershed and Riparian Stabilization	Fencing & Upland Water Developments
Safford	96-0018	San Carlos Spring Protection Project	Fencing
Safford	96-0015	Abandonment of an Artesian Geothermal Well	Habitat Protection
Safford	97-028	Creation of a Reference Riparian Area in the Gila Valley – Discovery Park	Habitat Restoration
Safford	97-036	Stable Isotopes as Tracers of Water Quality Constituents in the Upper Gila River	Research
Safford	98-052	Tritium as a Tracer of Groundwater Sources and Movement in the Upper Gila River Drainage	Research
Safford	98-054	Fluvial Geomorphology Study and Demonstration Projects to Enhance and Restore Riparian Habitat on the Gila River from the New Mexico Border	Research
Safford	99-086	Abandonment of Gila Oil Syndicate Well #1	Habitat Protection
Safford	00-099	Gila Reference Riparian Area, Discovery Park	Revegetation
San Rafael	97-045	Santa Cruz Headwaters Project	Fencing & Upland Water Developments

SOUTHEASTERN ARIZONA PLANNING AREA (Cont)			
Groundwater Basin	AWPF Grant #	Project Title	Project Category
San Rafael	99-096	Upper Santa Cruz Watershed Restoration	Fencing & Upland Water Developments
Upper San Pedro	95-009	Regeneration and Survivorship of Arizona Sycamore	Research
Upper San Pedro	95-005	Preservation of the San Pedro River Utilizing Effluent Recharge	Constructed Wetland
Upper San Pedro	95-015	San Pedro Riparian National Conservation Area Watershed Rehabilitation/ Restoration Project	Revegetation & Upland Channel Restoration
Upper San Pedro	95-018	Autecology and Restoration of Sporobolus Wrightii Riparian Grasslands in Southern Arizona	Research
Upper San Pedro	95-020	Teran Watershed Enhancement	Upland Channel Restoration
Upper San Pedro	96-0013	Happy Valley Riparian Area Restoration Project	Fencing
Upper San Pedro	96-0001	San Pedro Riparian National Conservation Area Watershed Protection and Improvement Project	Fencing
Upper San Pedro	97-027	Lyle Canyon Allotment Restoration Project	Fencing & Upland Water Developments
Upper San Pedro	99-070	Lyle Canyon Allotment Riparian Area Restoration Project --- Phase 2	Fencing & Upland Water Developments
Upper San Pedro	08-151	Test of Riparian Recovery Following Cessation of Groundwater Pumping	Research
Willcox	03-116	Cottonwood Creek Restoration	Upland Channel Restoration

APPENDIX B

Appendix B: Community Water System Annual Reports and Submitted Plans

PCC	FACILITY	Basin	2006 Withdrawn	2006 Diverted	2006 Received	2006 Total Demand	2006 Delivered	2006 Delivered to	2007 Withdrawn	2007 Diverted	2007 Received	2007 Total Demand	2007 Delivered	2007 Delivered to
91-000518	ARAVAIPA WATER CO-ARAVAIPA	Aravaipa Canyon	10	10		20	10	CUSTOMER	10			10	10	CUSTOMER
91-000598	CASA ARROYO ASSN INC	Cienega Creek					6	CUSTOMER	5			5	5	CUSTOMER
91-000592	PATAGONIA WATER DEPT	Cienega Creek	140			140	139	CUSTOMER	128			128	129	CUSTOMER
91-000604	RED ROCK ACRES HOA	Cienega Creek	3			3	3	CUSTOMER	3			3	3	CUSTOMER
91-000602	ROLLING WHEELS MOBILE HOMES	Cienega Creek				NR						NR		
91-000591	SONOITA VALLEY WATER CO	Cienega Creek	7			7	7	CUSTOMER	9			9	7	CUSTOMER
91-000594	SONOITA WATER UTILITY	Cienega Creek				NR			15			15	11	CUSTOMER
91-000065	BISBEE DOUGLAS INTL APT	Douglas	375			375	375	CUSTOMER	401			401	401	CUSTOMER
91-000054	COCHISE COLLEGE PARK WATER ASSOC	Douglas				NR						NR		
91-000035	DOUGLAS WATER DEPT	Douglas	3,880			3,880	3,881	CUSTOMER				NR		
91-000038	ELFRIDA DOMESTIC WATER UTIL	Douglas				NR			56			56	56	CUSTOMER
91-000055	LACOSTA WATER USERS ASSOC	Douglas	1		1	2	1	CUSTOMER				NR		
91-000037	MCNEAL WC	Douglas				NR			6			6	6	CUSTOMER
91-000057	MONTE VISTA WATER CO LLC	Douglas				NR			10			10	10	CUSTOMER
91-000075	NAGO WATER CO LLC-BISBEE	Douglas	17			17	12	CUSTOMER	12			12	12	CUSTOMER
91-000081	NTM AVIATION	Douglas	28			28	28	CUSTOMER	34			34	34	CUSTOMER
91-000080	VISION QUEST LODGE MARY	Douglas				NR			2			2	2	CUSTOMER
91-000173	DUNCAN, TOWN OF	Duncan Valley	572			572	110	CUSTOMER	689			689	110	CUSTOMER
91-000178	TOWN OF DUNCAN-HUNTER WTR	Duncan Valley	56			56	15	CUSTOMER	61			61	15	CUSTOMER
91-000179	VALLEY VIEW MHP	Duncan Valley				NR						NR		
91-000176	VERDE LEE WATER CO	Duncan Valley				NR			65			65	63	CUSTOMER
91-000123	ASARCO-HAYDEN OPS	Lower San Pedro				NR			10,906		234	11,140	10,243/189	CUSTOMER/SYSTEM
91-000025	AZ WATER CO - SIERRA VISTA	Lower San Pedro	1,262			1,262	1,174	CUSTOMER/SYSTEM	1,314			1,314	1,241	CUSTOMER
91-000118	AZ WATER CO - WINKELMAN	Lower San Pedro	111			111	103/12	CUSTOMER/SYSTEM	128			128	112/13	CUSTOMER/SYSTEM
91-000529	BIDEGAIN WATER COMPANY	Lower San Pedro				NR						NR		

PCC	FACILITY	Basin	2006 Withdrawn	2006 Diverted	2006 Received	2006 Total Demand	2006 Delivered	2006 Delivered to	2007 Withdrawn	2007 Diverted	2007 Received	2007 Total Demand	2007 Delivered	2007 Delivered to
91-000589	BREEZEWAY TRAILER PARK	Lower San Pedro	4			4	4	CUSTOMER				NR		
91-000146	HAYDEN, TOWN OF	Lower San Pedro			78	78	78	CUSTOMER				NR		
91-000582	KEARNY, TOWN OF	Lower San Pedro	126	357		483	435/190	CUSTOMER/OTHER	462			462	411/184	CUSTOMER/OTHER
91-000583	KELVIN-SIMMONS CO-OP	Lower San Pedro	780			780	46	CUSTOMER	815			815	48	CUSTOMER
91-000525	MAMMOTH, TOWN OF	Lower San Pedro	240			240	240/6	CUSTOMER/OTHER	233			233	233	CUSTOMER
91-000579	SAGUARO MOBILE HOME PARK	Lower San Pedro				NR			2			2	2	CUSTOMER
91-000576	STEPHENS TRAILER PARK	Lower San Pedro	17			17	1	CUSTOMER	6,515			6,515	6,515	CUSTOMER
91-000015	ALPINE ESTATES WATER COM	Morenci				NR						NR		
91-000001	ALPINE WATER SYSTEM	Morenci				NR						NR		
91-000174	HELPS DODGE - MORENCI WATER & ELEC (CLIFTON)	Morenci	274	519		793	739	CUSTOMER				NR		
91-000175	HELPS DODGE - MORENCI WATER & ELEC (MAIN)	Morenci				NR						NR		
91-000170	ASH CREEK WATER COMPANY	Safford	27			27	27	CUSTOMER	24			24	24	CUSTOMER
91-000171	ASPC SAFFORD/FORT GRANT	Safford				NR						NR		
91-000027	BOWIE WID	Safford				NR						NR		
91-000169	CITY OF SAFFORD	Safford				NR			1,329	3,253		4,582	4,250/197890	CUSTOMER/SYSTEM/OTHER
91-000168	EDEN WATER COMPANY INC	Safford			70	70	53	CUSTOMER			71	71	61	CUSTOMER
91-000166	GRAHAM COUNTY UTILITIES	Safford	51			51	39	CUSTOMER	44			44	39	CUSTOMER
91-000167	GRAHAM COUNTY UTILITIES	Safford	416			416	333/62	CUSTOMER/SYSTEM	449			449	425/73	CUSTOMER/SYSTEM
91-000177	LOMA LINDA WATER CO	Safford	43			43	42	CUSTOMER	36			36	36	CUSTOMER
91-000045	SAN SIMON WATER IMPROVEME	Safford	40			40	39	CUSTOMER				NR		
91-000172	USDJ FRP FED CORR INST	Safford	122		1	123	124	CUSTOMER				NR		
91-000069	ANTELOPE RUN	Upper San Pedro	63			63	62	CUSTOMER				NR		
91-000073	ASHLEY'S MHP	Upper San Pedro	11			11	11	CUSTOMER				NR		
91-000024	AZ WATER CO - BISBEE	Upper San Pedro	1,131			1,131	936	CUSTOMER	1,094			1,094	913	CUSTOMER
91-000031	BELLA VISTA CITY	Upper San Pedro				NR			3,369			3,369	3,154	CUSTOMER

PCC	FACILITY	Basin	2006 Withdrawn	2006 Diverted	2006 Received	2006 Total Demand	2006 Delivered	2006 Delivered to	2007 Withdrawn	2007 Diverted	2007 Received	2007 Total Demand	2007 Delivered	2007 Delivered to
91-000028	BELLA VISTA SOUTH	Upper San Pedro				NR			183			183	176	CUSTOMER
91-000026	BENSON, CITY OF	Upper San Pedro	878			878	762/470	CUSTOMER/ OTHER	842			842	759/445	CUSTOMER/ OTHER
91-000030	CLOUD NINE WATER CO INC	Upper San Pedro	32			32	32	CUSTOMER	26			26	26	CUSTOMER
91-000078	DESERT WINDS MOBILE PARK	Upper San Pedro	6			6	6	CUSTOMER	6			6	6	CUSTOMER
91-000046	EAST SLOPE WATER COMPANY	Upper San Pedro	290			290	290	CUSTOMER				NR		
91-000039	HOLIDAY WATER COMPANY	Upper San Pedro	46			46	46	CUSTOMER				NR		
91-000079	HOLY TRINITY MONASTERY	Upper San Pedro	160			160	160	CUSTOMER	161			161	161	CUSTOMER
91-000040	HUACHUCA CITY	Upper San Pedro				NR			213			213	213	CUSTOMER
91-000041	INDIADA WATER COMPANY	Upper San Pedro					12	CUSTOMER				NR		
91-000077	KOKOPELLI SPRINGS	Upper San Pedro				NR						NR		
91-000062	MESCAL LAKES WATER SYSTEM	Upper San Pedro	91			91	85	CUSTOMER	67			67	85	CUSTOMER
91-000043	NACO WATER CO	Upper San Pedro	83			83	67	CUSTOMER	76			76	65	CUSTOMER
91-000034	NORTHERN SUNRISE WC - CORONADO	Upper San Pedro				NR			59			59	45	CUSTOMER
91-000063	NORTHERN SUNRISE WC - MUSTANG/ CRYSTAL	Upper San Pedro				NR			33			33	25	CUSTOMER
91-000064	NORTHERN SUNRISE WC - SIERRA SUNSET	Upper San Pedro				NR			10			10	7	CUSTOMER
91-000044	PALOMINAS WATER & SEWER C	Upper San Pedro	3			3	3	CUSTOMER				NR		
91-000033	POMERENE DOMESTIC WATER	Upper San Pedro	220			220	223	CUSTOMER	227			227	206	CUSTOMER
91-000058	PUEBLO DEL SOL WATER CO	Upper San Pedro	1,501			1,501	1,426	CUSTOMER	1,453			1,453	1,398	CUSTOMER

PCC	FACILITY	Basin	2006 Withdrawn	2006 Diverted	2006 Received	2006 Total Demand	2006 Delivered	2006 Delivered to	2007 Withdrawn	2007 Diverted	2007 Received	2007 Total Demand	2007 Delivered	2007 Delivered to
91-000071	SIERRA VISTA MH VILLAGE	Upper San Pedro	50			50	50	CUSTOMER	50			50	50	CUSTOMER
91-000032	SOUTHERN SUNRISE WC - COCHISE /HORSESHOE	Upper San Pedro			NR	NR			156			156	129	CUSTOMER
91-000042	SOUTHERN SUNRISE WC - MIRACLE VALLEY	Upper San Pedro			NR	NR			35			35	31	CUSTOMER
91-000047	SOUTHLAND UTL- GOLDEN ACRES	Upper San Pedro	153			153	153	CUSTOMER	160			160	161	CUSTOMER
91-000053	ST DAVID WATER	Upper San Pedro	212			212	197	CUSTOMER	213			213	200	CUSTOMER
91-000067	STRATMAN WATER COMPANY	Upper San Pedro	13			13	12	CUSTOMER	14			14	12	CUSTOMER
91-000048	SUE JUAN WC	Upper San Pedro	54			54	55	CUSTOMER	52			52	52	CUSTOMER
91-000076	SULGER WATER COMPANY 2	Upper San Pedro	3			3	3	CUSTOMER				NR		
91-000051	SUNIZONA WATER CO	Upper San Pedro			NR	NR			16			16	16	CUSTOMER
91-000070	SUNRISE MOBILE HOME PARK	Upper San Pedro			NR	NR						NR		
91-000049	TOMBSTONE, CITY OF	Upper San Pedro			NR	NR						NR		
91-000068	US ARMY-FORT HUACHUCA	Upper San Pedro			NR	NR			1,274			1,274	1,414/661	CUSTOMER/ OTHER
91-000072	WHETSTONE VILLAGE MOBILE	Upper San Pedro	11			11	11	CUSTOMER				0		
91-000052	WHETSTONE WD	Upper San Pedro					141	CUSTOMER	74			74	73	CUSTOMER
91-000056	WILLOW LAKES PROPERTY OWNERS ASSOCIATION	Upper San Pedro			NR	NR						NR		
91-000029	CLEAR SPRINGS	Willcox	168			168	135	CUSTOMER	131			131	116	CUSTOMER
91-000061	CLEAR SPRINGS UTILITY	Willcox	5			5	5	CUSTOMER	5			5	5	CUSTOMER
91-000050	WILCOX, CITY OF	Willcox			NR	NR			987			987	790/168	CUSTOMER/ OTHER

PCC = Program Certificate Conveyance (used as the community water system ID number)

**Community Water Systems that have submitted a plan to the
Department as of 12/2008**

PCC	NAME	Basin
91-000518	ARAVAIPA WATER CO-ARAVAIPA	Aravaipa Canyon
91-000591	SONOITA VALLEY WATER CO	Cienega Creek
91-000592	PATAGONIA WATER DEPT	Cienega Creek
91-000594	SONOITA WATER UTILITY	Cienega Creek
91-000598	CASA ARROYO ASSN INC	Cienega Creek
91-000604	RED ROCK ACRES HOA	Cienega Creek
91-000035	DOUGLAS WATER DEPT	Douglas
91-000065	BISBEE DOUGLAS INTL APT	Douglas
91-000075	NACO WATER CO LLC-BISBEE	Douglas
91-000081	NTM AVIATION	Douglas
91-000173	DUNCAN, TOWN OF	Duncan Valley
91-000176	VERDE LEE WATER CO	Duncan Valley
91-000178	TOWN OF DUNCAN-HUNTER WTR	Duncan Valley
91-000025	AZ WATER CO - SIERRA VISTA	Lower San Pedro
91-000118	AZ WATER CO - WINKELMAN	Lower San Pedro
91-000123	ASARCO-HAYDEN OPS	Lower San Pedro
91-000532	KEARNY, TOWN OF	Lower San Pedro
91-000533	KELVIN-SIMMONS CO-OP	Lower San Pedro
91-000569	BREEZEWAY TRAILER PARK	Lower San Pedro
91-000576	STEPHENS TRAILER PARK	Lower San Pedro
91-000579	SAGUARO MOBILE HOME PARK	Lower San Pedro
91-000174	PHELPS DODGE - MORENCI WATER & ELEC (CLIFTON)	Morenci
91-000175	PHELPS DODGE - MORENCI WATER & ELEC (MAIN)	Morenci
91-000167	GRAHAM COUNTY UTILITIES	Safford
91-000169	CITY OF SAFFORD	Safford
91-000166	GRAHAM COUNTY UTILITIES	Safford
91-000168	EDEN WATER COMPANY INC	Safford
91-000170	ASH CREEK WATER COMPANY	Safford
91-000171	ASPC SAFFORD/FORT GRANT	Safford
91-000177	LOMA LINDA WATER CO	Safford
91-000024	AZ WATER CO - BISBEE	Upper San Pedro
91-000026	BENSON, CITY OF	Upper San Pedro
91-000031	BELLA VISTA CITY	Upper San Pedro
91-000040	HUACHUCA CITY	Upper San Pedro
91-000058	PUEBLO DEL SOL WATER CO	Upper San Pedro
91-000028	BELLA VISTA SOUTH	Upper San Pedro
91-000030	CLOUD NINE WATER CO INC	Upper San Pedro
91-000032	SOUTHERN SUNRISE WC - COCHISE/HORSESHOE	Upper San Pedro
91-000033	POMERENE DOMESTIC WATER	Upper San Pedro
91-000034	NORTHERN SUNRISE WC - CORONADO	Upper San Pedro
91-000042	SOUTHERN SUNRISE WC - MIRACLE VALLEY	Upper San Pedro
91-000043	NACO WATER CO	Upper San Pedro
91-000044	PALOMINAS WATER & SEWER C	Upper San Pedro
91-000047	SOUTHLAND UTL-GOLDEN ACR	Upper San Pedro
91-000049	TOMBSTONE, CITY OF	Upper San Pedro
91-000051	SUNIZONA WATER CO	Upper San Pedro
91-000052	WHETSTONE WD	Upper San Pedro
91-000053	ST DAVID WATER	Upper San Pedro
91-000062	MESCAL LAKES WATER SYSTEM	Upper San Pedro

PCC	NAME	Basin
91-000063	NORTHERN SUNRISE WC - MUSTANG/CRYSTAL	Upper San Pedro
91-000064	NORTHERN SUNRISE WC - SIERRA SUNSET	Upper San Pedro
91-000067	STRATMAN WATER COMPANY	Upper San Pedro
91-000071	SIERRA VISTA MH VILLAGE	Upper San Pedro
91-000072	WHETSTONE VILLAGE MOBILE	Upper San Pedro
91-000073	ASHLEY'S MHP	Upper San Pedro
91-000076	SULGER WATER COMPANY 2	Upper San Pedro
91-000077	KOKOPELLI SPRINGS	Upper San Pedro
91-000079	HOLY TRINITY MONASTERY	Upper San Pedro
91-000050	WILLCOX, CITY OF	Willcox
91-000029	CLEAR SPRINGS	Willcox
91-000061	CLEAR SPRINGS UTILITY	Willcox

PCC = Program Certificate Conveyance (used as the community water system ID number)

APPENDIX C

APPENDIX C

SURFACE WATER RIGHT AND ADJUDICATION FILINGS

Surface water is defined in Arizona as “waters of all sources, flowing in streams, canyons, ravines or other natural channels, or in definite underground channels, whether perennial or intermittent, floodwaters, wastewaters, or surplus water, and of lakes, ponds and springs on the surface” (A.R.S. § 45-101).

In 1864, the first territorial legislature of Arizona adopted the doctrine of prior appropriation to govern the use of surface water. The doctrine is based on the tenet of “first in time, first in right” which means that the person who first puts the water to beneficial use acquires a right that is superior to later appropriators of the water. Since the population and water use were both relatively small at that time, no method was initially specified by the legislature for filing surface water right claims or granting rights. By the late 1800s, rapid development of irrigated agriculture combined with drought years had resulted in severe water shortages along the Salt and Gila Rivers. The territorial legislature responded in 1893 with a requirement that new water appropriations be posted at the point of diversion. However, until 1919, a person could acquire a surface water right simply by applying the water to beneficial use and recording a notice of appropriation at the state and country recorder’s office. There still was not a mechanism for granting surface water rights (ADWR, 1992).

On June 12, 1919, the state legislature enacted a surface water code. Now known as the Public Water Code, the law generally requires that a person apply for and obtain a permit in order to appropriate surface water. There is an exception for water use from the mainstem of the Colorado River, which requires a contract with the Secretary of the Interior. In addition, most persons claiming surface water rights prior to the code have been required to file a statement of claim under the Water Rights Registration Act of 1974, although the act did not provide a process for determining the validity of these claims. The legislature also enacted the Stockpond Registration Act in 1977 to recognize certain “unpermitted” stockponds constructed after 1919 that had not gone through the application process.

The Public Water Code provides that beneficial use shall be the basis, measure and limit to the use of water within the state. Beneficial uses are domestic (which includes the watering of gardens and lawns not exceeding one-half acre), municipal, irrigation, stockwatering, water power, recreation, wildlife including fish, nonrecoverable water storage, and mining uses (A.R.S. § 45-151(A)). The

quantity of water that is reasonable for a particular beneficial use depends on a number of factors, including the location of the use.

The Department maintains a registry of surface water right applications and claims filed in Arizona since the Public Water Code was enacted. Each filing is assigned a unique number with one of the following prefixes:

- “3R” – application to construct a reservoir filed before 1972;
- “4A” – application to appropriate surface water filed before 1972;
- “33” – application for permit to appropriate public water or construct a reservoir filed after 1972. In addition to surface water diversions and reservoirs, instream flow maintenance can be applied for and is defined as a surface water right that remains in-situ or “in-stream”, is not physically diverted or consumptively used, and is for maintaining the flow of water necessary to preserve wildlife, including fish, and/or recreation;
- “36” – statement of claim of rights to use public waters of the state. To make this claim, an applicant or predecessor-in-interest must have initiated a water use based on state law before March 17, 1995;
- “38” – claim of water right for a stockpond and application for certification filed for stockponds constructed after June 12, 1919 and before August 27, 1977. To file this claim and application, the stockpond should have been used exclusively for watering of livestock and/or wildlife, have a maximum capacity of 15 acre-feet, and not be subject to water rights litigation or protests prior to August 27, 1977;
- “39” – statement of claimant filed in *The General Adjudication of the Gila River System and Source* (Gila Adjudication) and *The General Adjudication of the Little Colorado River System and Source* (LCR Adjudication). As explained further below, the department maintains a separate registry of these filings on behalf of the Superior Court of Arizona; and,
- “BB” – decreed water rights determined through judicial action in state or federal court.

These filings specify the source of water, its point of diversion (POD) and place of use (POU), the type and quantity of water use, and date of first use or priority.

If, after moving through a number of administrative steps, an application to appropriate surface water or construct a reservoir (3R, 4A, or 33) is determined to be for beneficial use and not conflict with vested rights or be a menace to public safety or against the interests and welfare of the public, it may be approved and the applicant issued a permit to appropriate. The permit allows the permit holder to construct diversion works, as needed, and put the water to beneficial use. If the terms of the permit are met, the applicant can submit proof of appropriation through an application of

certification and may be issued a Certificate of Water Right (CWR). The CWR has a priority date that relates back to the date of application and is evidence of a perfected surface water right that is superior to all other surface water rights with a later priority date, but junior to all rights with an earlier (older) priority date. The CWR also specifies the extent and purpose of the right and may be subject to abandonment and forfeiture if not beneficially used. There are currently approximately 850 applications to appropriate pending with ADWR, and approximately 420 permits and over 7,000 certificates have been issued by ADWR or its predecessors.

A CWR may also be issued based on a stockpond claim (38) if it is found that the facts stated in the claim are true and entitle the claimant to a water right for the stockpond. The priority date depends on the date that the owner of the stockpond filed the claim. If filed prior to March 17, 1996, the priority date is the date of construction. Otherwise, the priority date is the date of filing the claim. Regardless of the date, the CWR for a stockpond claim is junior to (a) Colorado River and other court decreed rights; (b) other rights acquired prior to June 12, 1919 and registered as a statement of claim; and (c) any other CWR issued pursuant to an application filed before August 27, 1977. To date, nearly 20,000 stockpond claims have been filed of which over 3,000 stockpond certificates have been issued by ADWR or its predecessors.

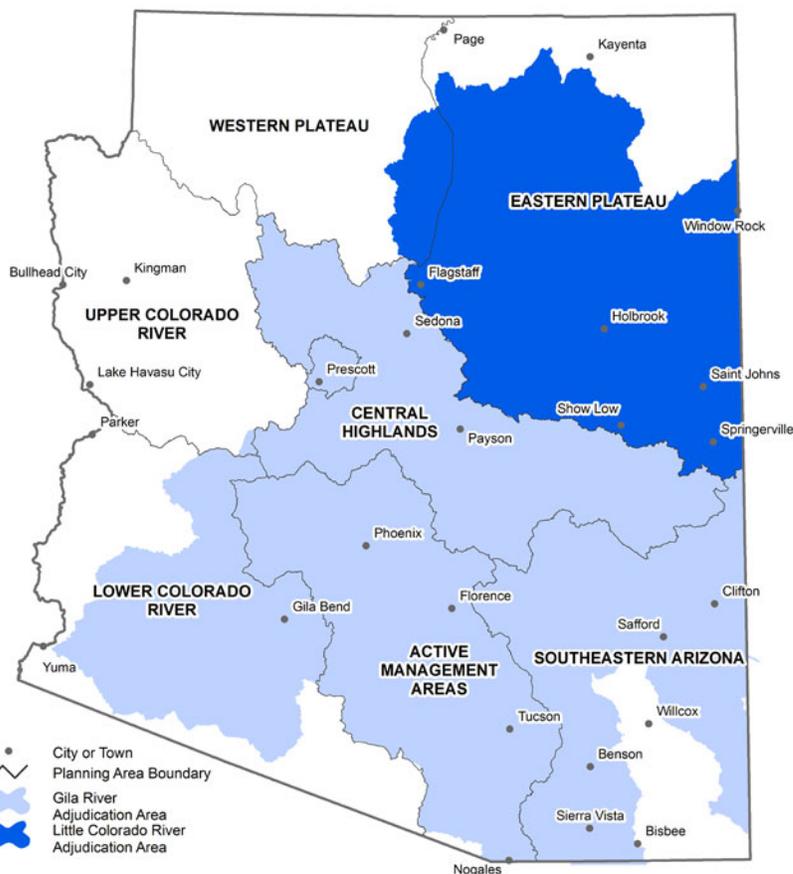
Unlike a CWR, the act of filing a statement of claim (36) does not in itself create a water right, nor does it constitute a judicial determination of the claim. Statements of claim are subject to challenge, but can be admitted “in evidence as a rebuttal presumption of the truth and accuracy of the information contained in the claim” (A.R.S. § 45-185). To date, nearly 30,000 statements of claim have been filed in Arizona.

In addition to the applications and claims described above, ADWR’s registry of surface water right filings includes several rights determined through judicial action in state or federal court. These ‘adjudications’, in which a water right is determined by court action, may be initiated when one or more water users seek to know how their rights compare to the rights of other water users and/or seek judicial relief from alleged interference with their rights by other water users. The court process establishes or confirms the validity of surface water rights and claims, determines whether these have been properly maintained over the years, and ranks them according to their priority. The result is a decree that may, in addition to establishing and confirming rights, specifies terms under which the decreed rights may be exercised if water shortages occur. Court decreed rights are considered the most valued or certain surface water rights because in the absence of abandonment or forfeiture, they are normally accepted as to their validity. More than 1,000 court-decreed rights are listed in ADWR’s registry and given the prefix “BB”. Although several surface water uses

have been decreed, many claims and rights established before and after statehood have still not been examined to see if they remain valid. In addition, many water rights established under federal law and claimed by Indian tribes and the United States have not been quantified or prioritized. To better manage water resources in the state, these diverse rights and claims have been jointed into large, comprehensive determinations.

Arizona currently has two general **Figure C-1 General Stream Adjudications in Arizona**

stream adjudications – the Gila Adjudication and the LCR Adjudication. (See Figure C-1) The purpose of these judicial proceedings is to determine the nature, extent, and priority of water rights across the entire river systems. In addition to confirming existing state-based surface water rights, the adjudications will quantify and prioritize reserved water rights for Indian and non-Indian federal lands. The latter include military bases, national parks and monuments, and national forests. The adjudications will also determine which wells are pumping appropriable underground water (subflow) and therefore are subject to the



jurisdiction of the court. The Gila and LCR Adjudications are being conducted in the Superior Court of Arizona in Maricopa and Apache Counties, respectively. ADWR provides technical, legal and administrative support to the adjudication court, as described in A.R.S. § 45-256.

The Gila Adjudication was initiated in 1974 when SRP filed a petition to determine the water rights in the Salt River Watershed above the Granite Reef Diversion. Since that time, the adjudication area has grown and now covers over 53,000 square miles. It is divided into 7 watersheds and includes 12 Indian reservations and over 24,000 parties. The LCR Adjudication was initiated by a petition filed by Phelps Dodge in 1978. This adjudication now covers 27,000 square miles and

includes 3 watersheds, 5 Indian reservations, and over 3,000 parties. A party is a person or entity that has filed one or more statement of claimant (SOC) in the adjudication.

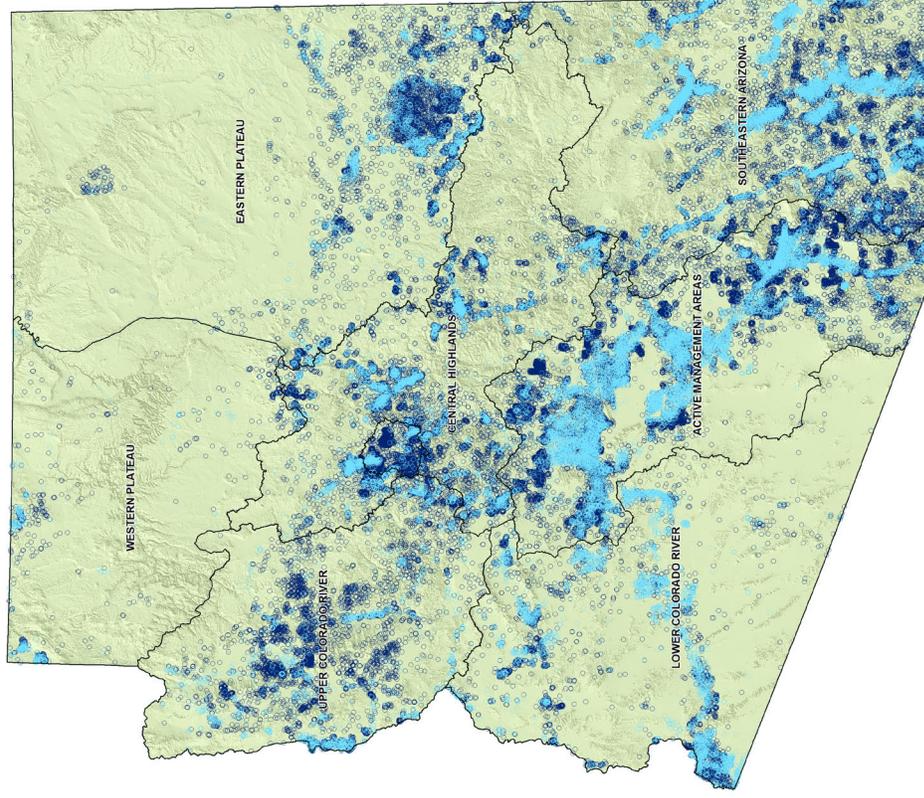
All parties who claim to have a water right within the river systems are required to file an SOC or risk the loss of their right. Well owners are also encouraged to file an SOC since the adjudication process may include water use from a well depending on the well's location relative to streams and other factors. However, a person does not obtain a right to use water by filing an SOC nor is an SOC a legal permit to use water. Rights to use water must be acquired in accordance with state or federal law.

Each year, ADWR sends summons to new surface water appropriators and well owners in the adjudication areas that direct them to file an SOC. In response, the number of SOCs filed in the adjudications continues to increase as new water uses are initiated. To date, nearly 81,000 SOCs have been filed in the Gila Adjudication and over 14,000 SOCs have been filed in the LCR Adjudication. ADWR maintains a separate registry of these adjudication filings on behalf of the Superior Court and assigns each a unique number with the prefix "39".

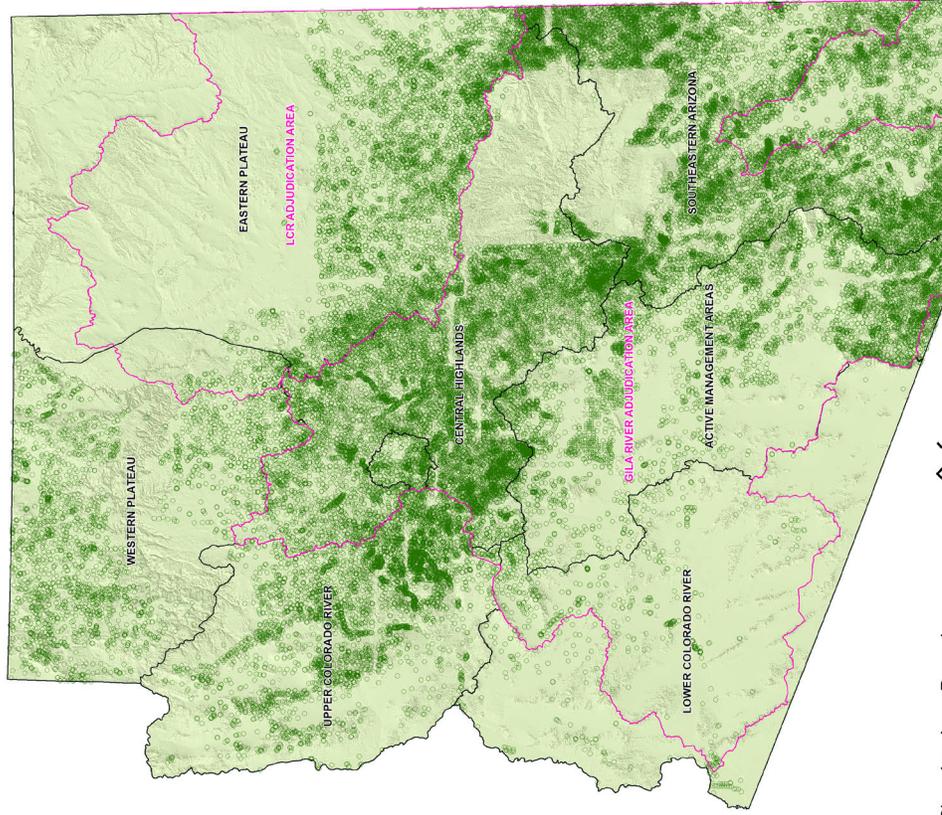
Table C-1 summarizes the number of surface water right and adjudication filings for each planning area. The table was generated by querying ADWR's surface water right and SOC registries in February 2009. Files are only counted in the table if they include sufficient locational information (Township, Range, and Section) to allow a POD and/or POU to be mapped within the planning area. If a file lists more than one POD or POU in a planning area, it is only counted once in the table for that planning area. However, no attempt was made to avoid counting multiple filings for the same POD/POU which can result if a landowner or lessee has two or more filings or if different applicants each have at least one filing. Since many SOCs list surface water right filings as their basis of claim, multiple filings are common and account, in part, for the large number of filings. Sorting through multiple filings is one of the challenges facing the Department and the adjudication courts. Results from the Department's investigation of surface water right and adjudication filings are presented in Hydrographic Survey Reports (HSRs).

Figure C-2 shows the location of surface water diversion points listed in the Department's surface water rights registry. The numerous points mapped reflect the relatively large number of stockponds and reservoirs that have been constructed across the state as well as diversions from streams and springs. Locations for registered wells, many of which are referenced as the basis of claim in SOCs, are also shown in Figure C-2. Instream flow filings are not shown as these filings do not have points of diversion.

Wells



Surface Water Point of Diversion



- Planning Area Boundary
- Wells**
 - Non-Exempt Well
 - Exempt Well
- Surface Water POD**
 - Surface Water Point of Diversion
- Adjudication Watershed Boundary

**Figure C-2
Registered Wells and Surface
Water Diversion Points in Arizona**

Table C-1 Count of surface water rights and adjudication filings by planning area¹

PLANNING AREA	TYPE OF FILING							TOTAL
	BB ²	3R ³	4A ³	33 ³	36 ⁴	38 ⁵	39 ⁶	
Eastern Plateau	134	163	196	373	3,289	3,275	12,099	19,529
Southeastern Arizona	483	395	716	898	8,288	6,415	19,288	36,483
Upper Colorado River	0	224	329	469	2,858	2,084	0	5,964
Central Highlands	1	287	625	897	8,517	3,928	25,443	39,698
Western Plateau	0	415	207	554	1,177	1,270	324	3,947
Lower Colorado River	0	26	48	86	355	304	2,323	3,142
Active Management Areas	1	269	341	687	4,072	2,913	27,134	35,417
Total	619	1,779	2,462	3,964	28,556	20,189	86,611	144,180

Notes:

- ¹ Based on a query of ADWR's surface water right and adjudication registries in February 2009. A file is only counted in this table if it provides sufficient information to allow a Point of Diversion (POD) and/or Place of Use (POU) to be mapped within the planning area. If a file lists more than one POD or POU in a given planning area, it is only counted once in the table for that planning area. Several surface water right and adjudication filings are not counted here due to insufficient locational information. However, multiple filings for the same POD/POU are counted.
- ² Court decreed rights; not all of these rights have been identified and/or entered into ADWR's surface water rights registry.
- ³ Application to construct a reservoir, filed before 1972 (3R); application to appropriate surface water, filed before 1972 (4A); and application for permit to appropriate public water or construct a reservoir, filed after 1972 (33).
- ⁴ Statement of claimant of rights to use public waters of the state, filed pursuant to the Water Rights Registration Act of 1974.
- ⁵ Claim of water right for a stockpond and application for certification, filed pursuant to the Stockpond Registration Act of 1977.
- ⁶ Statement of claimant, filed in the Gila or LCR General Stream Adjudications.

APPENDIX D

APPENDIX D: RURAL WATERSHED PARTNERSHIPS ISSUE SUMMARY (2008)

SOUTHEASTERN ARIZONA PLANNING AREA			
Watershed Partnership	Primary Participants	Projects & Accomplishments	Issues
Community Watershed Alliance/ Middle San Pedro Watershed	Cochise County Benson J-Six Mescal HOA St. David Irrigation District Pomerene Irrigation District Local Citizenry TNC ADWR ADEQ USGS USGS	<ul style="list-style-type: none"> • Cursory groundwater study completed. • AMA evaluation completed. • Active agricultural fields identified and surveyed • HSR completed • 7-year comprehensive groundwater study and numeric model development initiated. • Completed Watershed Based Plan • Obtained TRIF Grant to conduct groundwater age dating 	<ul style="list-style-type: none"> • Growth proposed in the Benson area • Limited groundwater data • Different perceptions of issues and goals within the area between Benson, irrigation districts, local citizenry, and the Upper San Pedro Partnership • Unable to get principle players to the table to discuss water • Unregulated lot splits • New arsenic drinking water standard • Limited funding resources for planning, projects, infrastructure and studies • ESA issues • Superfund site/poor quality groundwater conditions • Potential impact of adjudication court subflow definition • Limited funding resources for planning, projects, infrastructure and studies • Mandatory water adequacy required for all new subdivisions
	Local ranchers & special interest groups ADWR	<ul style="list-style-type: none"> • Stream Reconnaissance study completed. 	<ul style="list-style-type: none"> • Little or no groundwater data available • Unresolved Indian water rights settlements • Limited funding resources for planning, projects, infrastructure and studies
Eagle Creek Partnership			
Gila Watershed Partnership	Safford Pima Greenlee County Duncan ADWR AZG&F	<ul style="list-style-type: none"> • Fluvial Geomorphology Study • Completed water demand study • Capped several saline wells contributing to the degradation in water quality of the Gila River 	<ul style="list-style-type: none"> • Indian water rights settlement issues • Poor quality surface and groundwater • Growth associated with new Phelps Dodge mine and unregulated lot splits • ESA issues throughout the watershed, critical

SOUTHEASTERN ARIZONA PLANNING AREA

Watershed Partnership	Primary Participants	Projects & Accomplishments	Issues
	<p>ADEQ BLM USBOR</p> <p>Coop Extension USFS NRCS/RCD</p>	<ul style="list-style-type: none"> Resin bush eradication project completed. Obtained several DEQ 319 grants for Gila River related projects Initiated San Simon legacy database project Completed Watershed Based Plan Completed Point of Pines restoration project Awarded several Water Protection Fund grants 	<p>habitat designation, and mitigation efforts</p> <ul style="list-style-type: none"> Desire to maintain rural setting and especially maintaining agriculture at current or higher levels Lack of technical data on the groundwater system Invasive species issues impacting the surface water supply (tamarisk) Potential impacts of adjudication court subflow definition New arsenic drinking water standard Drought impacts on surface water supplies, agriculture and cattle ranching Numerous high hazard unsafe dams in area Limited funding resources for planning, projects, infrastructure and studies Regular flooding in the Duncan-Virden area
Lower San Pedro Watershed Partnership- Redington NRCD	<p>Redington Local ranchers ADWR</p> <p>Cascabel NRCD/RCD</p>	<ul style="list-style-type: none"> Watershed reconnaissance study completed. 	<ul style="list-style-type: none"> Unresolved adjudication and Indian water rights settlement issues Little or no groundwater data Opposition to government assistance in obtaining groundwater information Potential impacts of adjudication court subflow definition Limited funding resources for planning, projects, infrastructure and studies
Upper San Pedro Partnership	<p>Sierra Vista Cochise County City Bisbee TNC</p> <p>Ft. Huachuca Huachuca Tombstone Huachuca</p>	<ul style="list-style-type: none"> Comprehensive groundwater study Completed numeric groundwater model Decision Support System model completed. 	<ul style="list-style-type: none"> Impacts on endangered species Federal mandate to achieve sustainability by 2011 Lawsuits from environmental groups Anticipated growth Potential impacts on riparian regime by continuation of current pumping

SOUTHEASTERN ARIZONA PLANNING AREA

Watershed Partnership	Primary Participants	Projects & Accomplishments	Issues
<p>Audubon Bella Vista Water</p> <p>ADWR AACD State Land</p> <p>USF&W BLM USGS Coronado National Monument</p>	<p>ADEQ NRCD</p> <p>USFS USDA/ARS USBOR Coronado National Monument</p>	<ul style="list-style-type: none"> • San Pedro Riparian National Conservation Area Water Demand study • Recharge study of detention basins completed • Engineering design to transfer effluent from Huachuca City to Ft. Huachuca for treatment and recharge completed • Bisbee wastewater treatment plant for use by Turquoise Valley golf course completed. • Second iteration of water conservation & management plan completed. • Section 321 Report to Congress annually submitted. • Funded more than \$1,000,000 in conservation projects in watershed. • Conduct public outreach and educational forums • Completed Water Supply Appraisal study. • Introduced Congressional Bill to obtain authority to conduct feasibility study • Preliminary Upper San Pedro Water District formed 	<ul style="list-style-type: none"> • Political obstacles from potential water augmentation projects • Potential loss of Ft. Huachuca • Interbasin transfer prohibition • Potential impacts of adjudication court subflow definition • Pumping impacts by Mexico on the San Pedro River and downstream users • Unregulated lot splits • Limited funding resources for planning, projects, infrastructure and studies • High cost of augmentation projects • Mandatory water adequacy required for all new subdivisions
<p>Willcox Playa Watershed Group</p>	<p>Willcox Cochise County Cooperative Extension Local Citizenry</p>	<ul style="list-style-type: none"> • Initiated multiple year comprehensive groundwater study 	<ul style="list-style-type: none"> • Approximately 100,000+ ac-ft of groundwater overdraft annually • Potential for subsidence

SOUTHEASTERN ARIZONA PLANNING AREA			
Watershed Partnership	Primary Participants	Projects & Accomplishments	Issues
		<ul style="list-style-type: none"> Initiated the collection of relative gravity data 	<ul style="list-style-type: none"> Limited funding resources Increased agricultural production Little or no groundwater data Water quality concerns Mandatory water adequacy required for all new subdivisions



