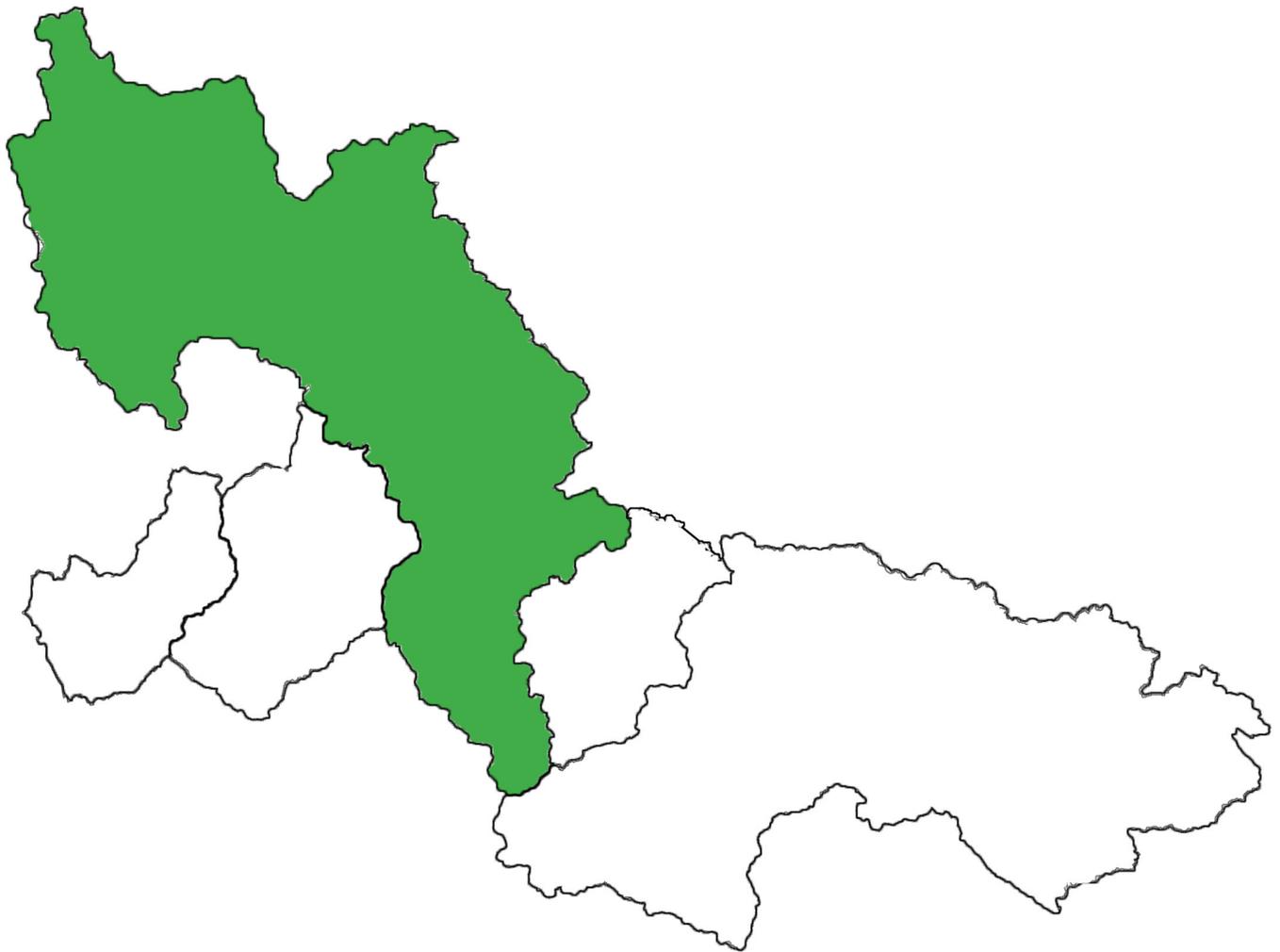


Section 5.5

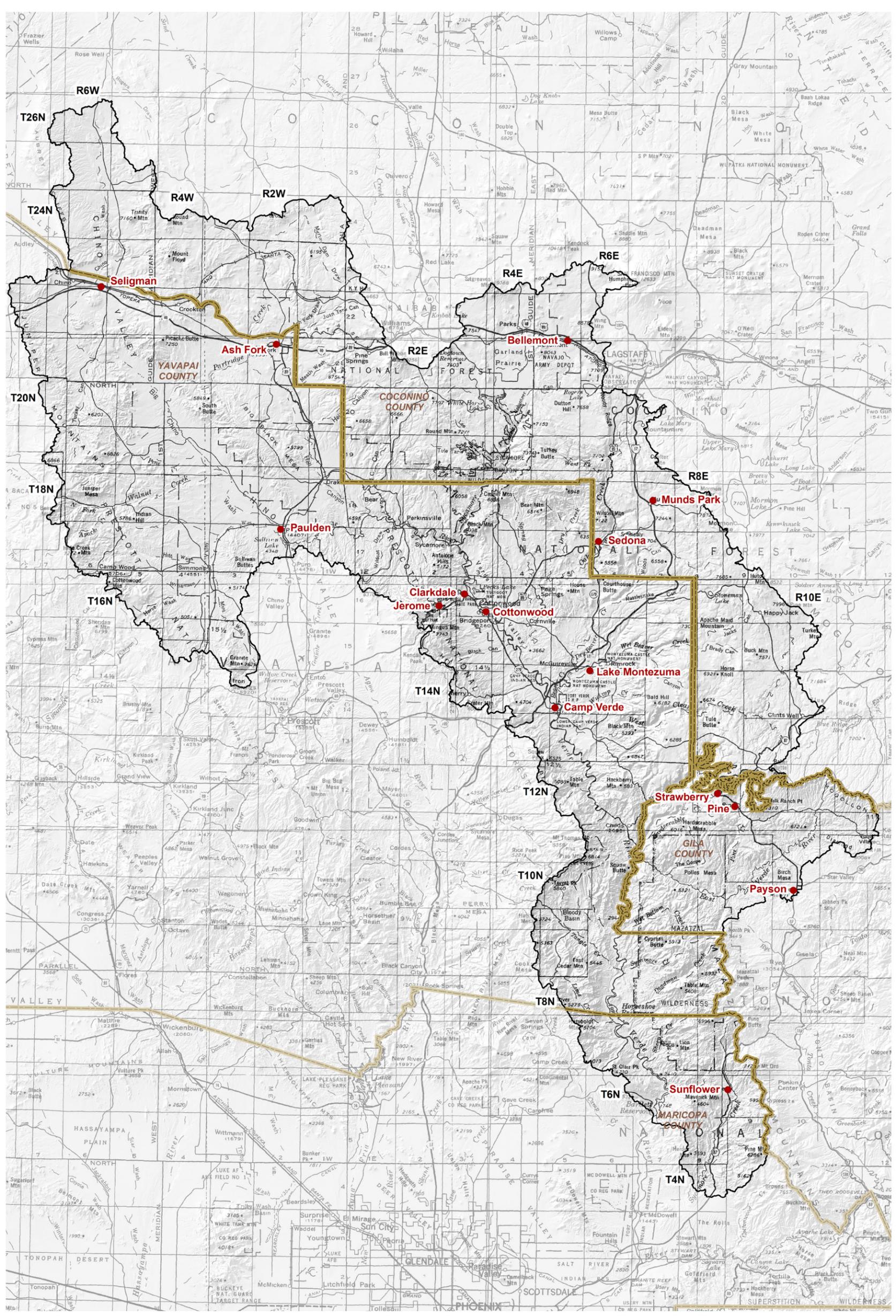
Verde River Basin



5.5.1 Geography of the Verde River Basin

The Verde River Basin, located in the northern and central part of the planning area is the largest basin in the planning area at 5,661 square miles. Geographic features and principal communities are shown on Figure 5.5-1. The basin is characterized by mid-elevation mountain ranges and valleys with high elevation areas along its north central boundary. Vegetation types include Arizona upland Sonoran desertscrub, semi-desert and plains and Great Basin grasslands, interior chaparral, Great Basin conifer woodland, montane conifer forests and a very small area of Rocky Mountain subalpine conifer forest in the vicinity of Humphreys Peak. (see Figure 5.0-10) Riparian vegetation is found along streams including mixed broadleaf and mesquite along the Verde River and mixed broadleaf along other streams such as West Clear Creek, Wet Beaver Creek and Oak Creek.

- Principal geographic features shown on Figure 5.5-1 are:
 - Verde River beginning from south of Paulden and running southeast through the basin and the communities of Clarkdale, Cottonwood and Camp Verde
 - Notable tributaries to the Verde River include Sycamore Creek, Oak Creek, Wet Beaver Creek, West Clear Creek, Fossil Creek and East Verde River
 - Big Chino Wash entering the basin at the northernmost basin boundary and exiting south of Paulden
 - Horseshoe Reservoir on the Verde River northwest of Sunflower and Bartlett Reservoir on the Verde west of Sunflower. Bartlett Reservoir is also the lowest point in the basin at 1,700 feet.
 - Chino Valley in the northwestern portion of the basin, extending from Seligman to Paulden
 - Verde Valley in the center of the basin around Clarkdale and Cottonwood
 - Mogollon Rim along the east central basin boundary
 - Mazatzal Mountains in the southeastern portion of the basin
 - Humphreys Peak, the highest point in the basin at 12,633 feet, on the north central basin boundary northeast of Bellemont



0 3 6
Miles



Figure 5.5-1
Verde River Basin
Geographic Features



Base Map: USGS 1:500,000, 1981

COUNTY 
City, Town or Place 

5.5.2 Land Ownership in the Verde River Basin

Land ownership, including the percentage of ownership by category, for the Verde River Basin is shown in Figure 5.5-2. Principal features of land ownership in this basin are the large contiguous parcels of forest service lands and the relatively large portion of private land. A description of land ownership data sources and methods is found in Volume 1, Appendix A. More detailed information on protected areas is found in Section 5.0.4. Land ownership categories are discussed below in the order of largest to smallest percentage in the basin.

National Forest

- 71.3% of the land is federally owned and managed by the United States Forest Service (USFS).
- Forest lands in the basin are part of the Prescott, Kaibab, Coconino and Tonto National Forests.
- The basin contains approximately 434,000 acres in eleven wilderness areas. The 57,916-acre Sycamore Canyon Wilderness is located in the Prescott, Kaibab and Coconino National Forests. There are five Coconino National Forest wilderness areas and four Prescott National Forest wilderness areas. Most of the 250,053-acre Mazatzal Wilderness in the Tonto National Forest is located in the southern part of the basin. (see Figure 5.0-13 and Table 5.0-3)
- There are numerous small private in-holdings in all forests.
- Land uses include recreation, grazing and timber production.

Private

- 20.2% of the land is private.
- The majority of the private land in the basin is in a checkerboard pattern in the northwestern portion of the basin. There are also parcels of private land in the vicinity of Cottonwood, Camp Verde, Sedona and other communities.
- Land uses include domestic, commercial, mining, farming and ranching.

State Trust Land

- 7.4% of the land in this basin is held in trust for the public schools and many other beneficiaries under the State Trust Land system.
- The majority of state land is located in a checkerboard pattern in the northwestern portion of the basin interspersed with private lands. State lands are also located in the vicinity of Cottonwood and south of the Navajo Army Depot.
- Primary land use is grazing.

U.S. Military

- 0.7% of the land is federally owned and operated by the U.S. Military as the Navajo Army Depot located in the vicinity of Bellemont in the northeastern portion of the basin.
- Land uses include National Guard training and army equipment storage.

Indian Reservation

- 0.2% of the land is under ownership of the Yavapai Apache Tribe.

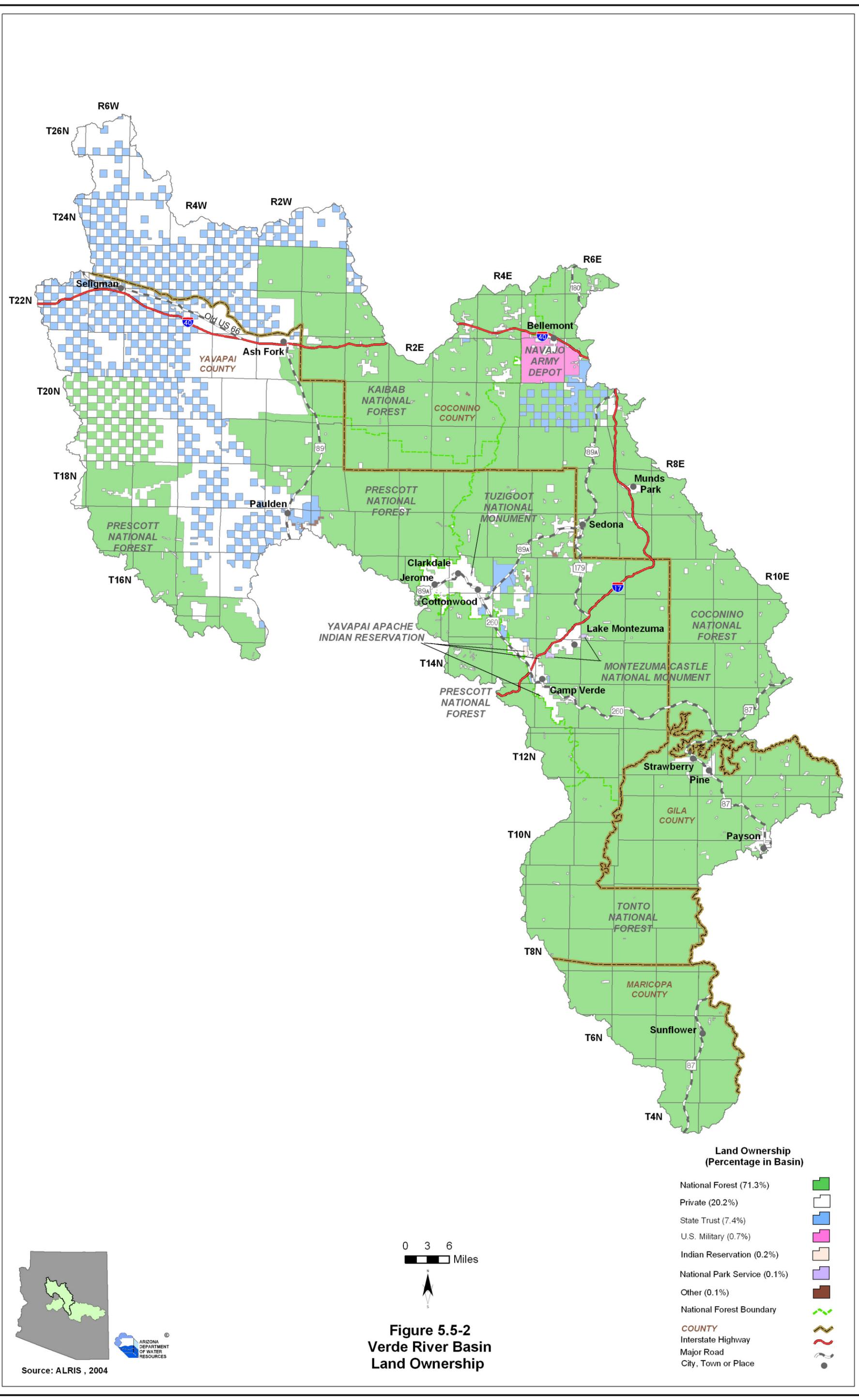
- Tribal lands are composed of five separate parcels located in the vicinity of Camp Verde.
- Land uses include domestic and commercial.

National Park Service (NPS)

- 0.1% of the land is federally owned and managed by the NPS as the Montezuma Castle National Monument located near Interstate 17 in the center of the basin and the Tuzigoot National Monument east of Clarkdale.
- Land uses include cultural preservation and recreation.

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

- 0.1% of the land is owned and managed by the Arizona Game and Fish Department as the Upper Verde River Wildlife Area located in the vicinity of Paulden.
- Land uses include wildlife preservation and recreation.



5.5.3 Climate of the Verde River Basin

Climate data from NOAA/NWS Co-op Network, AZMET and SNOTEL/Snowcourse stations are compiled in Table 5.5-1 and the locations are shown on Figure 5.5-3. Figure 5.5-3 also shows precipitation contour data from the Spatial Climate Analysis Service (SCAS) at Oregon State University. The Verde River Basin does not contain Evaporation Pan stations. More detailed information on climate in the planning area is found in Section 5.0.3. A description of the climate data sources and methods is found in Volume 1, Appendix A.

NOAA/NWS Co-op Network

- Refer to Table 5.5-1A
- There are 18 NOAA/NWS Co-op network climate stations in the basin. The average monthly maximum temperature occurs in July at all stations and ranges between 84.5°F at Childs and 63.7°F at Happy Jack R.S. The average monthly minimum temperature occurs in January or December and ranges between 27.5°F at Happy Jack R.S. and 45.6°F at Childs.
- Highest average seasonal rainfall occurs at most stations in the summer (July-September) and the lowest in the spring (April-June). For the period of record used, the highest annual rainfall is 28.46 inches at Junipine and the lowest is 10.55 inches at Cottonwood.

AZMET

- Refer to Table 5.5-1C
- There is one AZMET station in the basin at Payson at 4,849 feet and reported an average annual evapotranspiration of 61.26 inches.

SNOTEL/Snowcourse

- Refer to Table 5.3-1D
- There are 14 SNOTEL/Snowcourse stations in the basin. Five stations have been discontinued.
- The highest average monthly snowpack at most stations is in March.

SCAS Precipitation Data

- See Figure 5.5-3
- Additional precipitation data shows rainfall as high as 38 inches in the southern portion of the basin north of Pine and as low as 10 inches in the Big Chino Valley in the vicinity of Paulden.

Table 5.5-1 Climate Data for the Verde River 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
Ashfork 6N	5,310	1902-1987 ¹	74.0/Jul	36.1/Jan	1.91	1.42	5.37	3.98	12.69
Beaver Creek R.S.	3,820	1971-2000	80.8/Jul	43.1/Dec	5.25	1.63	5.75	4.08	16.71
Childs	2,650	1971-2000	84.5/Jul	45.6/Dec	6.67	1.56	6.40	4.90	19.53
Cottonwood	3,380	1949-1977 ¹	82.2/Jul	43.1/Jan	2.15	1.25	3.76	3.40	10.55
Happy Jack R.S.	7,480	1971-2000	63.7/Jul	27.5/Jan	10.05	2.96	7.92	6.60	27.53
Jerome	4,950	1971-2000	78.7/Jul	41.4/Jan	6.11	2.23	7.26	4.15	19.75
Junipine	5,130	1948-1982 ¹	74.4/Jul	39.0/Jan	10.69	3.25	6.92	7.60	28.46
Montezuma Castle N.M.	3,180	1971-2000	81.9/Jul	42.5/Dec	4.13	1.45	5.49	3.42	14.49
Natural Bridge	4,610	1893-1972	76.8/Jul	40.9/Jan	7.34	2.35	8.30	6.16	24.17
Oak Creek Canyon	5,080	1971-2000	73.4/Jul	39.2/Jan	11.14	2.99	7.48	6.84	28.45
Payson	4,910	1971-2000	75.4/Jul	39.9/Jan	7.35	2.18	7.20	5.34	22.01
Payson 12 NNE	5,510	1952-1976 ¹	70.6/Jul	36.0/Jan	7.15	3.03	9.12	8.93	28.24
Payson R.S.	4,850	1893-1974 ¹	73.1/Jul	36.3/Jan	4.01	1.88	5.70	7.57	19.14
Sedona R.S.	4,220	1971-2000	80.3/Jul	43.5/Jan	6.73	2.23	5.49	4.56	19.01
Seligman	5,250	1971-2000	73.5/Jul	37.1/Jan	3.67	1.41	5.13	2.61	12.82
Seligman 13 SSW	5,240	1962-1982 ¹	73.8/Jul	35.1/Jan	3.89	1.21	4.94	3.02	13.06
Tuzigoot	3,470	1971-2000	83.1/Jul	44.8/Dec	3.51	1.19	5.29	2.75	12.74
Walnut Creek	5,090	1971-2000	72.1/Jul	36.0/Dec	5.16	1.45	5.73	3.45	15.79

Source: WRCC, 2005

Notes:

¹ Average 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 (in feet)	Period of Record	Average Annual Reference Evapotranspiration, in inches (Number of years to calculate averages)
Payson	4,849	2003 - current	61.26 (4)

Source: Arizona Meteorological Network, 2007

D. SNOTEL/Snowcourse:

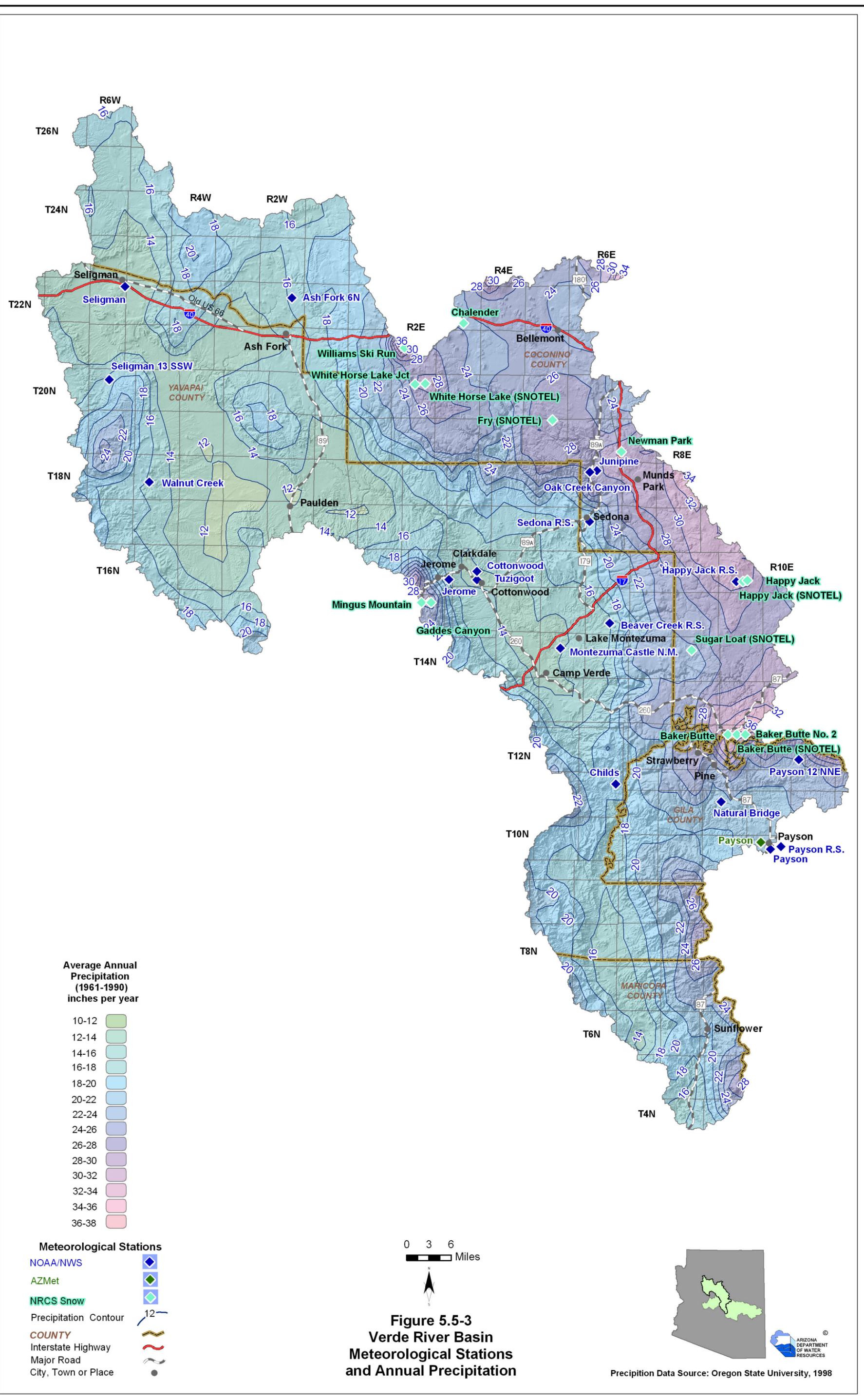
Station Name	Elevation (in feet)	Period of Record	Average Snowpack, at Beginning of the Month, as Inches Snow Water Content (Number of measurements to calculate average)					
			Jan.	Feb.	March	April	May	June
Baker Butte	7,300	1966 - 1999 (discontinued)	2.4 (32)	5.2 (34)	6.3 (34)	4.5 (34)	12.1 (1)	0 (0)
Baker Butte No. 2	7,700	1972 - current	3.9 (32)	7.6 (35)	11.4 (35)	12.7 (35)	12.1 (1)	0 (0)
Baker Butte SNOTEL	7,300	1966 - current	2.2 (39)	4.6 (41)	5.8 (41)	3.9 (41)	0.7 (25)	0 (24)
Chalender	7,100	1947 - current	1.3 (32)	2.5 (60)	2.8 (60)	1.3 (60)	0.2 (1)	0 (0)

Table 5.5-1 Climate Data for the Verde River Basin (Cont)

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
Fry SNOTEL	7,200	1983 - current	2.6 (24)	4.6 (24)	5.9 (24)	2.2 (24)	0 (24)	0 (24)
Gaddes Canyon	7,600	1954 - 1989 (discontinued)	2.6 (10)	4.0 (36)	5.4 (36)	5.1 (35)	0 (0)	0 (0)
Happy Jack	7,630	1951 - current	1.9 (31)	3.4 (51)	4.1 (52)	2.5 (49)	6.6 (1)	0 (0)
Happy Jack SNOTEL	7,630	2000 - current	1.5 (7)	3.0 (7)	4.0 (7)	1.6 (7)	0 (7)	0 (7)
Mingus Mountain	7,100	1947 - 1989 (discontinued)	0.5 (10)	1.2 (42)	0.7 (40)	0.3 (40)	0 (1)	0 (0)
Newman Park	6,750	1963 - current	1.1 (33)	2.2 (44)	2.2 (44)	0.8 (44)	0.3 (1)	0 (0)
Sugar Loaf SNOTEL	6,120	1983-1999 (discontinued)	0.1 (16)	0.3 (16)	0.5 (15)	0 (16)	0 (17)	0 (17)
White Horse Lake Jct	7,180	1967 - 1999 (discontinued)	1.4 (25)	3.1 (31)	3.8 (33)	2.1 (33)	0.9 (33)	0 (0)
White Horse Lake SNOTEL	7,180	1967 - current	1.7 (33)	3.5 (38)	4.8 (40)	2.5 (40)	0.2 (27)	0 (24)
Williams Ski Run	7,720	1967 - current	2.8 (23)	5.8 (50)	8.2 (40)	8.6 (39)	0 (0)	0 (0)

Source: Natural Resources Conservation Service, 2006



5.5.4 Surface Water Conditions in the Verde River Basin

Streamflow data, including average seasonal flow, average annual flow and other information is shown in Table 5.5-2. Flood ALERT equipment and SRP low-flow gages in the basin are shown in Table 5.5-3. Reservoir and stockpond data, including maximum storage or maximum surface area, are shown in Table 5.5-4. The location of streamflow gages identified by USGS number, flood ALERT equipment, SRP gages, USGS runoff contours and large reservoirs are shown on Figure 5.3-4. Descriptions of stream, reservoir and stockpond data sources and methods are found in Volume 1, Appendix A.

Streamflow Data

- Refer to Table 5.5-2.
- Data from 36 stations located at 22 watercourses are shown in the table and on Figure 5.5-4.
- The average seasonal flow at all stations but one is highest in the winter (January-March) and lowest at most stations in the summer (July-September).
- The largest annual flow recorded is 1,583,014 acre-feet in 1993 at the Verde River below Tangle Creek above Horseshoe Dam station and the smallest was seven acre-feet in 1964 at the East Fork Sycamore Creek near Sunflower station
- Seventeen streams in this basin have a mean annual flow of over 10,000 acre-feet. One river, Verde River, has a mean annual flow of over 100,000 acre-feet.

Flood ALERT Equipment

- Refer to Table 5.5-3.
- As of October 2005 there were 41 stations in the basin.

Salt River Project (SRP) Low-Flow Gages

- Refer to Table 5.5-3B
- There are four SRP low-flow gages in this basin. These gages are a project of SRP, Prescott National Forest and Arizona Game and Fish, designed to provide real-time information to the public about the Verde River streamflow.

Reservoirs and Stockponds

- Refer to Table 5.5-4.
- The basin contains 13 large reservoirs. The largest, Bartlett, has a maximum storage of 178,186 acre-feet.
- Surface water is stored or could be stored in 59 small reservoirs in the basin.
- There are 2,328 registered stockponds in this basin.

Runoff Contour

- Refer to Figure 5.5-4.
- Average annual runoff is 0.1 inches per year, or 5.33 acre-feet per square mile, in the northwestern portion of the basin and 1 inch, or 53.3 acre-feet per square mile, in the southwestern portion of the basin. Average annual runoff increases to five inches per year, or 266.5 acre-feet per square mile, in the west central portion of the basin.

Table 5.5-2 Streamflow Data for the Verde River 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	
9403990	Dogtown Wash above Dogtown Reservoir near Williams	4.7	NA	2/1964-5/1965 (discontinued)	No statistics run; less than 3 years of data								1
9502800	Williamson Valley Wash near Paulden	255	4,455	3/1965-current (real time)	64	7	10	19	770 (2002)	2,064	5,199	22,959 (1980)	20
9503700	Verde River near Paulden	2,507	4,117	7/1963-current (real time)	46	16	16	19	16,511 (2002)	20,783	30,743	156,015 (1993)	39
9503720	Hell Canyon near Williams	15	6,750	8/1965-9/1972 (discontinued)	49	6	8	37	123 (1967)	1,444	2,316	5,017 (1966)	6
9503800	Volunteer Wash near Bellemont	131	6,820	8/1965-9/1972 (discontinued)	59	7	1	33	61 (1967)	1,792	2,709	6,719 (1966)	6
9504000	Verde River near Clarkdale	3,503	3,500	6/1915-current (real time)	50	16	14	20	54,529 (2002)	104,279	128,062	458,393 (1993)	40
9504420	Oak Creek near Sedona	233	4,169	10/1981-current (real time)	54	18	10	17	22,587 (2002)	46,298	58,873	164,776 (1993)	21
9504430	Oak Creek at Sedona	233	4,169	10/1981-9/1995 (discontinued)	58	16	9	18	24,108 (1989)	53,792	67,074	165,067 (1993)	13
9504500	Oak Creek near Cornville	355	3,470	7/1940-current (real time)	50	20	9	21	21,357 (1956)	51,402	61,972	182,440 (1978)	56
9505000	Verde River at Camp Verde	4,214	NA	1/1913-3/1920 (discontinued)	55	20	12	14	149,139 (1913)	309,138	305,312	545,879 (1916)	7
9505200	Wet Beaver Creek near Rimrock	111	4,020	10/1961-current (real time)	55	22	8	15	5,489 (1977)	18,176	23,659	64,667 (1993)	33
9505220	Rocky Gulch near Rimrock	1	6,750	10/1985-9/1994 (discontinued)	66	25	4	6	62 (1989)	210	215	376 (1991)	4
9505250	Red Tank Draw near Rimrock	48	3,920	4/1957-9/1978 (discontinued)	58	16	4	22	33 (1963)	3,183	4,666	22,304 (1965)	20
9505300	Rattlesnake Canyon near Rimrock	25	4,870	6/1957-9/1980 (discontinued)	59	22	2	17	101 (1963)	4,345	5,763	21,652 (1965)	22
9505350	Dry Beaver Creek near Rimrock	142	3,694	10/1960-current (real time)	61	21	3	15	253 (1996)	21,978	31,271	105,727 (1978)	42
9505500	Beaver Creek at Camp Verde	433	NA	12/1912-3/1920 (discontinued)	64	21	6	9	26,715 (1913)	64,072	70,274	132,488 (1915)	6
9505550	Verde River below Camp Verde	4,653	3,045	11/1971-11/1981 (discontinued)	42	24	7	27	67,620 (1977)	192,578	267,706	603,073 (1978)	7

Table 5.5-2 Streamflow Data for Verde River Basin (Cont)

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	
9505800	West Clear Creek near Camp Verde	241	3,630	12/1964-current (real time)	54	20	8	18	11,152 (2002)	34,542	45,858	133,245 (1993)	38
9506000	Verde River near Camp Verde	5,009	2,874	4/1934-current (real time)	59	17	11	14	99,934 (2002)	222,679	299,621	990,650 (1993)	24
9507600	East Verde River near Pine	6	5,400	9/1961-9/1971 (discontinued)	26	32	24	19	521 (1963)	10,208	8,860	16,507 (1968)	9
9507700	Webber Creek above West Fork Webber Creek near Pine	5	5,530	7/1959-9/1974 (discontinued)	37	36	7	20	478 (1967)	1,814	1,876	4,547 (1965)	14
9507800	West Fork Webber Creek near Pine	4	NA	7/1959-9/1965 (discontinued)	51	36	4	9	181 (1963)	348	586	1,115 (1962)	5
9507900	Webber Creek below WF Webber Creek near Pine	10	NA	7/1959-9/1965 (discontinued)	46	40	6	9	557 (1963)	1,050	1,775	3,424 (1960)	5
9507950	East Verde River near Payson	272	NA	7/1961-9/1965 (discontinued)	50	33	16	2	4,684 (1964)	10,425	9,211	12,544 (1962)	3
9507980	East Verde River near Childs	331	2,500	9/1961-current (real time)	59	16	10	15	1,499 (2002)	34,036	46,674	208,558 (1993)	38
9508000	Verde River below East Verde River near Childs	5,606	2,400	6/1934-5/1941 (discontinued)	67	13	9	11	258,525 (1939)	395,733	444,220	733,574 (1937)	6
9508300	Wet Bottom Creek near Childs	36	2,320	10/1967-current (real time)	71	6	5	18	87 (2002)	8,471	10,182	37,864 (1978)	35
9508500	Verde River below Tangle Creek above Horseshoe Dam	5,858	2,029	8/1945-current (real time)	51	17	11	20	131,073 (2002)	294,733	409,875	1,583,014 (1993)	57
9509000	Verde River at Bartlett Reservoir near Cave Creek	6,065	NA	10/1938-12/1945 (discontinued)	48	25	11	16	245,428 (1942)	381,536	434,387	1,036,012 (1941)	7
9510070	West Fork Sycamore Creek above McFar Canyon near Sunflower	5	4,380	10/1966-5/1986 (discontinued)	60	12	4	24	27 (1971)	623	816	2,121 (1983)	10
9510080	West Fork Sycamore Creek near Sunflower	10	4,000	10/1961-9/1974 (discontinued)	54	13	6	26	50 (1971)	923	1,573	4,503 (1973)	12
9510100	East Fork Sycamore Creek near Sunflower	4	4,140	10/1961-5/1986 (discontinued)	69	13	4	14	7 (1964)	308	678	2,302 (1980)	22
9510150	Sycamore Creek near Sunflower	52	3,308	10/1961-9/1976 (discontinued)	47	14	6	34	297 (1964)	2,881	5,476	18,244 (1965)	14
9510170	Camp Creek near Sunflower	3	1,309	8/1963-9/1966 (discontinued)	No statistics run; less than 3 years of data							2	

Table 5.5-2 Streamflow Data for Verde River Basin (Cont)

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	
9510180	Rock Creek near Sunflower	15	2,052	3/1963-9/1972 (discontinued)	44	7	12	38	109 (1971)	999	1,227	4,474 (1965)	8
9510200	Sycamore Creek near Fort McDowell	164	1,759	12/1960-current (real time)	70	11	3	17	41 (2002)	8,290	19,584	111,493 (1993)	42

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 5.5-3 Flood ALERT Equipment in the Verde River Basin

A. ALERT gages

Station ID	Station Name	Station Type	Install Date	Responsibility
105	Metz Mountain	Precipitation	7/14/1994	Yavapai County FCD
110	Woody Mountain	Precipitation	7/12/1993	Yavapai County FCD
115	Kelly Pocket	Precipitation	7/13/1993	Yavapai County FCD
120	Red Hill	Precipitation	7/3/1993	Yavapai County FCD
125	Small Tank	Precipitation	7/2/1993	Yavapai County FCD
130	Coyote Park	Precipitation	7/11/1993	Yavapai County FCD
135	Bear Seep	Precipitation	7/14/1993	Yavapai County FCD
140	Munds Park	Precipitation/Stage	7/9/1993	Yavapai County FCD
145	Pumphouse Wash	Precipitation/Stage	11/12/1997	Yavapai County FCD
150	Sedona Airport	Weather Station	7/2/1993	Yavapai County FCD
155	West Fork Oak Creek	Precipitation/Stage	11/12/1997	Yavapai County FCD
160	Oak Creek @ Tlaquepaque	Precipitation/Stage	11/12/1997	Yavapai County FCD
165	ADOT Rim Camp	Precipitation	7/9/1993	Yavapai County FCD
175	Dry Creek Levee	Precipitation/Stage	8/28/2001	Yavapai County FCD
180	Merry-Go-Round	Precipitation	3/23/2005	Yavapai County FCD
185	Chick Road Detention Pond	Precipitation/Stage	12/15/2000	Yavapai County FCD
193	Mingus Mountain Repeater	Repeater/Weather Station	8/22/1997	Yavapai County FCD
240	Jacks Point	Precipitation	7/27/2004	Yavapai County FCD
250	Jacks Canyon	Precipitation	7/19/2004	Yavapai County FCD
260	House Mountain	Precipitation	7/14/2004	Yavapai County FCD
370	Summit Mountain	Precipitation	5/6/1997	Yavapai County FCD
375	Happy Jack	Precipitation	5/6/1997	Yavapai County FCD
410	Walnut Creek @ Williamson Valley Rd	Precipitation/Stage	8/27/2001	Yavapai County FCD
415	Sycamore Point	Precipitation	8/28/2001	Yavapai County FCD
420	White Hills	Precipitation	7/15/2004	Yavapai County FCD
425	Yavapai County Verde Roads Yard	Precipitation	11/19/1997	Yavapai County FCD
430	Cottonwood Public Works Yard	Weather Station	8/21/2001	Yavapai County FCD
460	Apache Maid	Precipitation	4/17/2000	Yavapai County FCD
465	Buck Mountain	Precipitation	7/13/2000	Yavapai County FCD
470	Lee Butte	Precipitation	12/4/2000	Yavapai County FCD
485	Cedar Flat	Precipitation	8/1/2001	Yavapai County FCD
490	Calloway Butte	Precipitation	4/28/2000	Yavapai County FCD

Table 5.5-3 Flood ALERT Equipment in the Verde River Basin (Cont)

A. ALERT gages

Station ID	Station Name	Station Type	Install Date	Responsibility
495	Baker Butte	Precipitation	8/29/2001	Yavapai County FCD
3800	Hyde Mountain Repeater	Repeater/Precipitation	4/13/2005	Yavapai County FCD
3805	Williamson Valley Fire Department	Precipitation	6/16/2005	Yavapai County FCD
3825	Big Chino Wash @ SR 89	Precipitation/Stage	4/1/2005	Yavapai County FCD
3850	Bill Williams Repeater	Repeater/Precipitation	9/20/2005	ADWR
4940	Humboldt Mountain Repeater	Repeater/Weather Station	7/14/1981	Maricopa County FCD
4950	Seven Springs	Precipitation	11/12/1981	Maricopa County FCD
5890	Horseshoe Lake	Weather Station	9/11/2000	Maricopa County FCD
5910	Bartlett Lake	Weather Station	8/31/2000	Maricopa County FCD

Source: ADWR 2005c

Notes:

FCD = Flood Control District

ADWR = Arizona Department of Water Resources

B. SRP Low Flow Gages

Map Key	Station Name	GaugeType	Install Date	Upper Flow Limit (cfs)
a	Verde Headwaters/Campbell Ranch	Critical Depth Flume	4/2004	100
b	Verde at Black Bridge	Radar based level sensor	9/2001	150
c	Verde Falls	Low Flow Gage	6/2001 (destroyed spring 2004 and reinstalled summer 2006)	150
d	Bubbling Ponds	Low Flow Gage	NA	NA

Source: SRP, 2008

Notes:

NA = Not available at this time

Table 5.5-4 Reservoirs and Stockponds in the Verde 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 ¹	JURISDICTION
1	Barlett	Bureau of Reclamation	178,186	R,S	Federal
2	Horseshoe	Bureau of Reclamation	131,500	I,S	Federal
3	Hells Canyon Tank (Hell Canyon)	AZ Dept. of Transportation	1,545	P	State
4	Wineglass Ranch	AZ Land Dept	1,226	P	State
5	Railroad Embankment	Atchison, Topeka, & Santa Fe RR	1,000	C	State
6	Padre Reservoir (Pan Dam)	Atchison, Topeka, & Santa Fe RR	760	O	State
7	Canyon Mouth	Atchison, Topeka, & Santa Fe RR	600	O	State

B. Other Large Reservoirs (50 acre surface area or greater)²

MAP KEY	RESERVOIR/LAKE NAME (Name of dam, if different)	OWNER/OPERATOR	MAXIMUM SURFACE AREA (acres)	USE ¹	JURISDICTION
8	Rogers ³	Coconino NF	1,134	P	Federal
9	Stoneman	Coconino NF	220	P	Federal
10	Unnamed ⁴	AZ Land Dept.	94	P	State
11	Little Red Lake ⁴	Private	85	P	Landowner
12	Horse ⁴	Kaibab NF	83	P	Federal
13	Duck	Kaibab NF	50	P	Federal

Source: Compilation of databases from ADWR & others

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

Total number: 27

Total maximum storage: 3,592 acre-feet

D. Other Small Reservoirs (between 5 and 50 acres surface area)²

Total number: 32

Total surface area: 496 acres

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

Total number: 2,328 (from water right flings)

Notes:

NA = Not applicable

¹C=flood control; F=fish & wildlife pond; I=irrigation; O=other; P=fire protection, stock or farm pond

R=recreation; S=water supply

²Capacity data not available to ADWR

³Intermittent Lake

⁴Dry 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
- SRP Low Flow Gage
- County
- Interstate Highway
- Major Road
- City, Town or Place

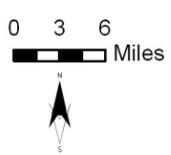


Figure 5.5-4
Verde River Basin
Surface Water Conditions



Stream Data Source: ALRIS, 2005



5.5.5 Perennial/Intermittent Streams and Major Springs in the Verde River Basin

Major and minor springs with discharge rates and date of measurement, and the total number of springs in the basin are shown in Table 5.5-5. The locations of major springs and perennial and intermittent streams are shown on Figure 5.5-5. Descriptions of data sources and methods for intermittent and perennial reaches and springs are found in Volume 1, Appendix A.

- Perennial streams are located throughout most of the basin and include the Verde River, Oak Creek, Fossil Creek, East Verde Creek, West Clear Creek, Wet Beaver Creek, Deadman Creek and Sycamore Creek. These streams are perennial for all or most of their length.
- Intermittent streams are found throughout the basin except for the northwestern portion of the basin.
- There are 102 major springs with a measured discharge of 10 gallons per minute (gpm) or greater at any time, the largest number reported in any groundwater basin in Arizona. The largest discharge rate of 21,647 gpm was measured at Fossil Creek spring.
- Springs with measured discharge of 1 to 10 gpm are not mapped but coordinates are given in Table 5.2-5B. There are 83 minor springs in this basin.
- Listed discharge rates may not be indicative of current conditions. Many of the measurements were taken during or prior to 1981.
- The total number of springs, regardless of discharge, identified by the USGS varies from 493 to 571, depending on the database reference.

Table 5.5-5 Springs in the Verde River Basin

A. Major Springs (10 gpm or greater):

Map Key	Name	Location		Discharge (in gpm) ¹	Date Discharge Measured
		Latitude	Longitude		
1	Fossil Creek (multiple)	342523	1113423	21,647	During or prior to 2001
2	Big Chino	345107	1122546	8,941	During or prior to 1997
3	Bubbling Pond	344625	1115403	3,879	5/20/1968
4	Buckhorn	343340	1113108	1,000- 3,750 ²	5/28/1959
5	Unnamed	345327	1120815	2,917	7/4/1991
6	Page	344542	1115318	2,693	1/20/1975
7	Summers	345250	1120358	2,100	10/12/2003
8	Wet Beaver	344116	1113433	850-1,350 ²	10/28/1999
9	Parson	345410	1120349	1,600	11/27/1999
10	Webber Canyon	341923	1112003	996	During or prior to 2002
11	Montezuma Well	343856	1114503	916	During or prior to 1990
12	Cold	342058	1111547	830	11/11/1952
13	Unnamed	345838	1114507	749	During or prior to 1949
14	Haskell	344407	1120357	600	10/24/1958
15	Lower Newell ³	344438	1115332	520	2/4/1959
16	Duff	345234	1121727	449	During or prior to 1997
17	Sullivan Lake	345148	1122636	448	During or prior to 1997
18	Grotto	341859	1112026	340	5/15/1952
19	Bonito ³	342410	1111238	330	11/19/1999
20	Lolo-Mai	344631	1115403	300	7/10/1974
21	Sterling # 1	350130	1114420	300	10/12/2003
22	Tree Root	344627	1115405	264	7/9/1952
23	Dude	342925	1111351	250	11/18/1999
24	Blue	343125	1114959	230	6/11/1981
25	Upper Parsnip ³	342616	1112543	230	11/9/1999
26	Unnamed ³	341935	1114515	220	4/21/1976
27	Unnamed ³	343135	1115015	220	11/6/1980
28	Spring Creek	344633	1115511	207	10/12/2003
29	Pieper Hatchery	342602	1111527	200	10/12/2003
30	Chase ³	342557	1111740	200	11/11/1999
31	Unnamed ³	343138	1115035	190	6/9/1981
32	Spider John	345300	1120422	15-180 ²	10/27/1999
33	Thompson Pasture	345436	1114335	177	2/14/1952
34	Big	341854	1112037	175	5/15/1952
35	Turtle Pond	344627	1115404	160	12/10/1952
36	Clover	343021	1112145	123 ⁵	4/26/2003
37	Indian Gardens	345439	1114336	115	2/14/1952

Table 5.5-5 Springs in the Verde River Basin (Cont)

A. Major Springs (10 gpm or greater):

Map Key	Name	Location		Discharge (in gpm) ¹	Date Discharge Measured
		Latitude	Longitude		
38	Sheepshead Canyon	344448	1115557	111	3/1/1974
39	Bear	343259	1112548	100	5/27/1959
40	Tonto Bridge	341918	1112716	100	10/12/2003
41	Burned house ^{3,4}	342257	1111700	100	10/18/1952
42	Unnamed	343122	1114959	90	11/6/1980
43	Beaverhead	344251	1114701	85	6/4/1974
44	Unnamed	342221	1111709	75	10/18/1952
45	Unnamed	345316	1120734	75	6/8/1977
46	Walker Creek ³	343847	1114111	75	7/10/1959
47	Banjo Bill	345739	1114509	75 ⁵	3/6/1974
48	Unnamed	351313	1114958	64	8/2/1978
49	Unnamed	351320	1115033	60	8/9/1949
50	Page area # 1	344634	1115405	60	7/10/1974
51	Ellison Headwater	342333	1110913	60	12/1/1999
52	Gravel Plant ³	344605	1120235	60	10/29/1958
53	Landon	350726	1114238	60	8/29/1979
54	Walnut	344423	1120801	52	5/10/1978
55	Unnamed	345106	1129358	50	During or prior to 1965
56	Unnamed	345832	1114546	50	8/18/1949
57	Unnamed	351324	1115045	50	8/9/1949
58	Brown	342439	1114721	50	2/3/1959
59	Pine Flat	350040	1114411	50	10/4/2002
60	Sherwood	345908	1114450	50	1/20/2000
61	Unnamed	340735	1115116	45	5/12/1976
62	Big	350929	1120448	40	6/11/1997
63	Ellison	342330	110959	40	12/1/1999
64	Twin (multiple)	344132	1120619	40	5/10/1978
65	Clear Creek # 1	343138	1113925	30	11/17/1999
66	Lelani	345905	1114443	30	During or prior to 1949
67	Geronimo	350440	1115649	10-30 ^{2,5}	During or prior to 2001
68	North Sycamore ³	342521	1111908	30	1/12/1999
69	Sheep Bridge Hot (multiple)	340441	1114223	26	6/13/2002
70	Cave	345955	1114423	25	1/20/2000
71	Lolami	345937	1114437	25	8/17/1949
72	Woods	345211	1113723	25	12/13/1960
73	Hummingbird	345903	1114450	25	8/18/1949
74	Lo	350913	1115857	24	7/24/2002

Table 5.5-5 Springs in the Verde River Basin (Cont)

A. Major Springs (10 gpm or greater):

Map Key	Name	Location		Discharge (in gpm) ¹	Date Discharge Measured
		Latitude	Longitude		
75	Catfish	343112	1115003	22	6/11/1981
76	Sterling # 2	350130	1114423	21 ⁵	8/13/1949
77	Sterling # 3	350130	1114421	20	8/13/1949
78	Hutch # 1	341232	1115311	20	6/12/2002
79	Hutch # 2	341229	1115306	20	6/12/2002
80	LX	341005	1115005	20	6/13/2002
81	Stone Camp	340704	1115105	20	7/6/2002
82	Zig Zag # 1	341040	1114734	20	6/13/2002
83	Mine	342903	1115107	20	1/27/1982
84	Poison	350802	1115828	20 ⁵	8/31/1949
85	Pivot Rock	342927	1112351	20 ⁵	12/2/1999
86	Parsnip	342600	1112553	20 ⁵	11/9/1999
87	Clear Creek # 3	343222	1113730	20	11/17/1999
88	Clear Creek # 2	343141	1113919	15	11/17/1989
89	Unnamed	345745	1114604	15	During or prior to 1951
90	Pyle Ranch	342215	1111009	15	12/1/1999
91	Soda	343845	1114429	15	2/6/1959
92	Unnamed ³	343120	1115001	13	11/6/1980
93	Little	351812	1115724	12	6/6/1979
94	Verde Hot	342119	1114233	12	6/20/2002
95	Unnamed	341126	1114730	10	7/7/1976
96	Bunker Hill	345900	1115524	10	9/20/1962
97	Frey Ranch	344635	1115413	10	7/10/1974
98	Lindberg/Fulton	350629	1114313	10	7/8/1952
99	Washington Park	342526	1111600	10	10/18/1952
100	Washington	342603	1111619	10 ⁵	10/1/1999
101	Gray	350736	1115743	10 ⁵	9/20/1962

B. Minor Springs (1 to 10 gpm):

Name	Location		Discharge (in gpm) ¹	Date Discharge Measured
	Latitude	Longitude		
Unnamed	343131	1115002	9	11/6/1980
Babe's Hole	350421	1115623	8	8/10/2002
Bull Pen	343214	1114145	7	10/10/1959
Lower Lo	350906	1115854	6	10/24/2001
Cottontail	344337	1115538	5	6/9/1977

Table 5.5-5 Springs in the Verde River Basin (Cont)

B. Minor Springs (1 to 10 gpm):

Name	Location		Discharge (in gpm) ¹	Date Discharge Measured
	Latitude	Longitude		
Maxwell	351657	1114746	5	6/5/1978
Unnamed	345202	1122523	5	5/2/1977
Storm Seep	350107	1123053	5	4/19/2001
Hackberry # 2	342558	1114122	5	5/31/2002
Wet Prong	342431	1114350	5	6/21/2002
Big	343228	1113724	5	11/19/1999
Unnamed	352017	1114328	5	8/17/1978
Lockwood	350248	1115147	5 ⁶	9/20/1960
Irving High	342426	1113611	5 ⁶	11/15/1999
Irving Low	342417	1113640	5 ⁶	5/24/1978
Hance	343336	1114420	4	5/27/1981
Frizell Ranch	344443	1115511	4	2/6/1959
Picnic	340941	1114957	4	6/13/2002
Turkey	322436	1112307	4	7/27/2002
North Pasture	340750	1115127	3	6/14/2002
Red rock	342214	1112402	3	7/22/1946
Dripping (multiple)	342327	1112603	3	7/20/1946
Unnamed	351354	1115136	3	8/2/1978
Spitz	351537	1115823	3	6/1/1978
Oak	342102	1112822	3	08/1946
Sycamore #1B	342825	1114232	3	6/7/2002
Cottonwood	343102	1115215	3	12/13/1977
Lee	345605	1125506	2	4/20/2001
Russell	343709	1114536	2	10/12/2003
Quail	344015	1120258	2	7/11/2002
Phroney	342631	1114134	2	6/10/2000
Sycamore #1A	342830	1114230	2	6/7/2002
Sycamore # 2	342754	1114249	2	6/7/2002
Zig Zag # 2	341041	1114733	2	6/13/2002
Pine	345759	1125413	2	4/20/2001
Ash	340459	1115214	2	5/12/1976
Beaver Creek ³	344044	1114108	2	4/20/1978
Buzzard	350026	1114943	2	9/20/1962
West Twin	351006	1121326	2	9/30/1976
Little Hutch # 1	341232	1115316	2	6/12/2002
Little Hutch # 2	341231	1115317	2	6/12/2002
Sheep	345458	1113214	2	6/24/2002
Unnamed ³	343030	1115410	2	7/10/1959

Table 5.5-5 Springs in the Verde River Basin (Cont)

B. Minor Springs (1 to 10 gpm):

Name	Location		Discharge (in gpm) ¹	Date Discharge Measured
	Latitude	Longitude		
Powell	343454	1120445	2	4/20/1978
Goat Camp	343748	1120141	2	4/18/1978
Hogpen	344552	1120603	2	5/4/1978
Unnamed	345606	1124002	2	7/15/1969
Surprise	343614	1123242	2	4/19/2001
Log	343606	1120420	2	6/29/2002
Rosalida	351030	1120341	2	6/11/1997
Cherry 361b	343625	1120038	2	7/11/2002
Tappen	351057	1114655	2	9/6/1949
McGee	342522	1111601	2	10/18/1952
Unnamed	344208	1120530	2	5/10/1978
Mud	350654	1121111	1	4/30/2003
Black	350802	1114117	1	8/1/1949
Baker	350115	1141729	1	12/2/1999
Railroad	350807	1115734	1	11/2/2001
Pine	342242	1112323	1	8/11/2002
Pfau	343622	1120012	1	7/11/2002
Trail Jct.	335838	1114021	1	7/18/2002
Kelsey	350432	1115605	1	8/6/2002
Hackberry # 1	342603	1114117	1	10/12/2003
Fuller/Strawberry	342436	1112833	1	7/24/1946
Dripping (multiple)	342328	1112306	1	10/11/2002
Unnamed	343154	1115035	1	10/28/1981
North Mine	342916	1115113	1	1/27/1982
Fourty Four	342905	1112217	1	1/19/2000
Unnamed	343425	1114352	1	5/27/1981
Holly	344501	1115502	1	3/1/1974
Bell Rock	344752	1114552	1	4/25/1974
Dorsey	350316	1115640	1	8/11/1949
Grassy Meadow	350014	1114402	1	8/17/1949
Aspen	350738	1114707	1	6/22/1978
Buck	351120	1120240	1	During or prior to 11/2004
Garland	351116	1115949	1	During or prior to 11/2004
Huffer	342756	1112315	1	12/2/1999
Strawberry Hollow	342346	1112814	1	7/24/1946
Chasm	342643	1114942	1	7/1/2002
Rock Top	345109	1113253	1	6/27/2002
Cottonwood ^{3,4}	342248	1112840	1	7/24/1946
Unnamed ^{3,4}	350633	1114929	1	During or prior to 1946

Table 5.5-5 Springs in the Verde River Basin (Cont)

B. Minor Springs (1 to 10 gpm):

Name	Location		Discharge (in gpm) ¹	Date Discharge Measured
	Latitude	Longitude		
Fisher (tank)	351022	1114531	1	8/18/1949

Source: Compilation of databases from ADWR & others

**C. Total number of springs, regardless of discharge, identified by USGS
(see ALRIS, 2005a and USGS, 2006a): 493 to 571**

Notes:

¹Most recent measurement identified by ADWR

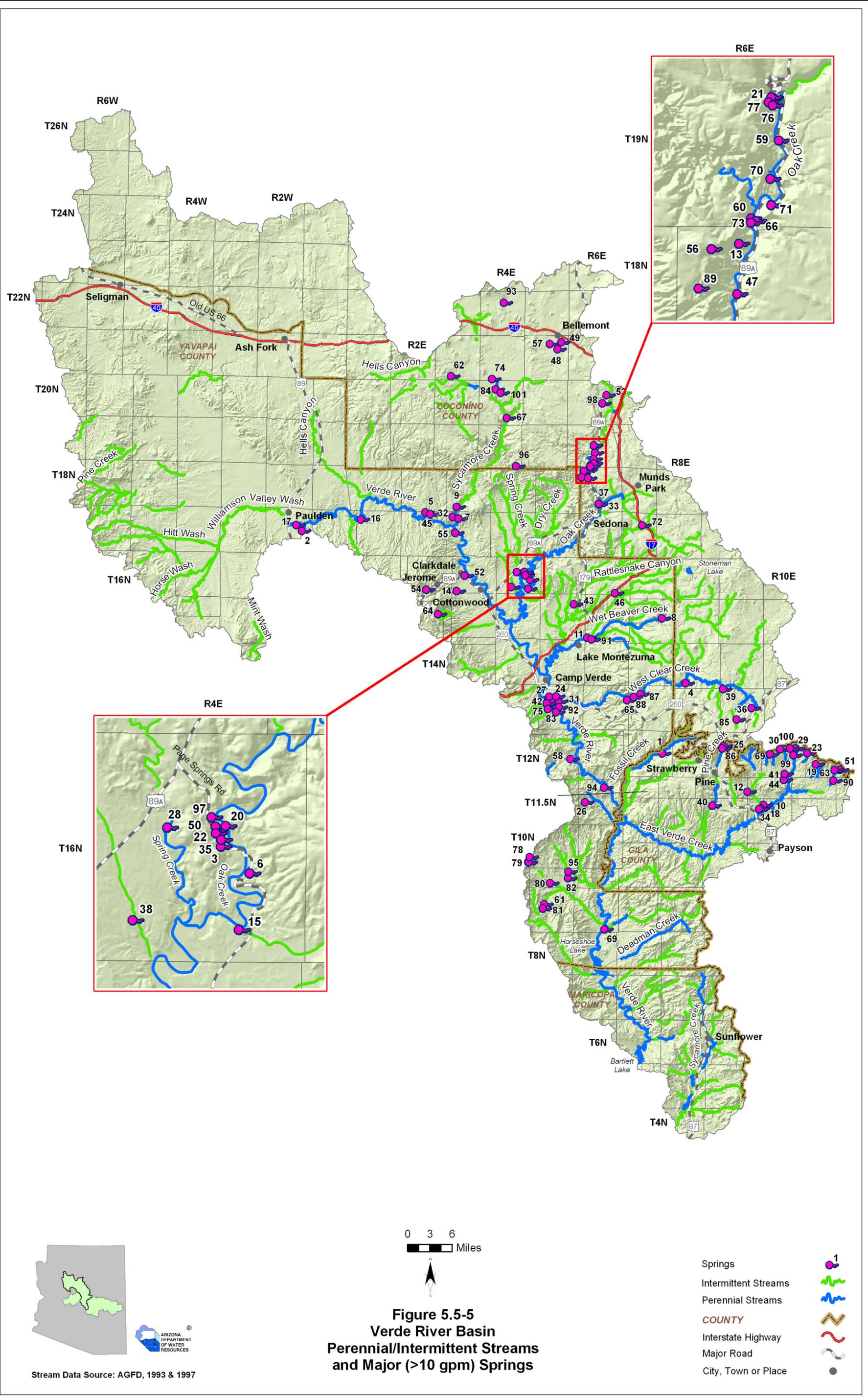
²Discharge is expressed as a range

³Spring is not displayed on current USGS topo maps

⁴Location approximated by ADWR

⁵Discharge measurements vary. Shown is greatest measured discharge;
most recent measurement < 10 gpm

⁶Discharge measurements vary. Shown is greatest measured discharge;
most recent measurement < 1 gpm



5.5.6 Groundwater Conditions of the Verde River 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 5.5-6. Figure 5.5-6 shows aquifer flow direction and water-level change between 1990-1991 and 2003-2004. In the Verde Valley and Big Chino sub-basins few wells were measured in 1990-1991. Figures 5.5-6A and 5.5-6B show water level changes in these sub-basins measured in other years. Figure 5.5-7 contains hydrographs for selected wells shown on Figure 5.5-6. Figure 5.5-8 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 5.5-6 and Figures 5.5-6 and 5.5-6 A and B.
- Major aquifers in the basin include the Verde formation, the C and R aquifers, recent stream alluvium, basin fill and igneous and metamorphic rock.
- The basin contains three sub-basins, Big Chino, Verde Valley and Verde Canyon.
- Flow direction is generally from the north to the south following the Verde River.

Well Yields

- Refer to Table 5.5-6 and Figure 5.5-8.
- As shown on Figure 5.5-8, well yields in this basin range from less than 100 gallons per minute (gpm) to greater than 2,000 gpm.
- One source of well yield information, based on 262 reported wells, indicates that the median well yield in this basin is 260 gpm.

Natural Recharge

- Refer to Table 5.5-6.
- Natural recharge estimates range from 107,000 acre-feet per year (AFA) to more than 138,000 AFA.
- Natural recharge in the Big Chino Sub-basin is from runoff along the mountain fronts and the major washes. Recharge estimates for the sub-basin range from 30,300 to 31,770 AFA. Recharge in the Verde Valley Sub-basin is principally from infiltration of precipitation in the higher elevations and is estimated at 167,470 acre-feet per year (Blausch et al., 2006).

Water in Storage

- Refer to Table 5.5-6.
- Storage estimates for this basin range from 13 million acre-feet (maf) to 28 maf to a depth of 1,200 feet. Estimates for portions of the basin are shown in Table 5.5-6.

Water Level

- Refer to Figures 5.5-6 and 5.5-6A and B. Water levels are shown for wells measured in 2003-2004.
- The Department annually measures 130 index wells in this basin. Hydrographs for 20 index wells, one automated well (P) and three other wells are shown in Figure 5.5-7. Index well hydrographs are: B-J, L-N and Q-X.

- There are eight ADWR automated groundwater level monitoring devices in this basin.
- These data show the deepest recorded water level in the basin is 1,375 feet in the vicinity of Strawberry. There are two wells in the basin where the depth to water is only one foot, located southwest of Paulden and south and east of Bellemont.

Table 5.5-6 Groundwater Data for the Verde River Basin

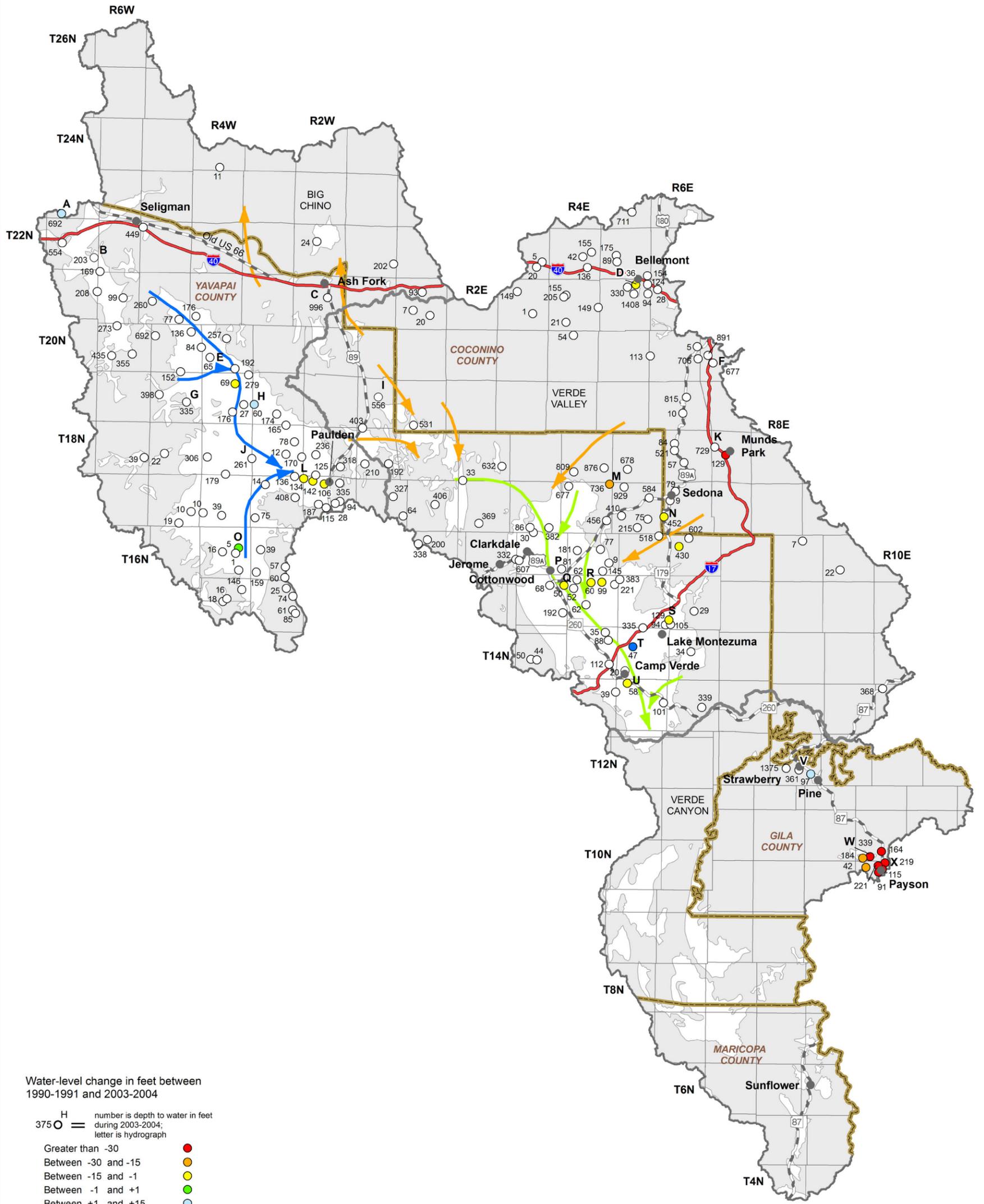
Basin Area, in square miles: 5,661		
Major Aquifer(s):	Name and/or Geologic Units	
	Recent Stream Alluvium	
	Basin Fill with Interbedded Volcanic Rock	
	Sedimentary Rock (Verde Formation)	
	Sedimentary Rock (C and R Aquifers)	
	Igneous and Metamorphic Rock	
Well Yields, in gal/min:	Range 10-2,908 Median 102 (55 wells measured)	Measured by ADWR (GWSI) and/or USGS
	Range 1-5,500 Median 260 (262 wells reported)	Reported on registration forms for large (>10-inch) diameter wells (Wells55)
	10-1000	ADWR (1994b)
	Range 0-2,500	Anning and Duet (1994)
Estimated Natural Recharge, in acre-feet/year:	167,470 (average for Verde Valley Sub-basin during 1990 - 2003) ¹	Blasch and others (2006)
	30,300 (average for Big Chino Sub-basin during 1990 - 2003) ²	Blasch and others (2006)
	31,770 (Big Chino Sub-basin during 1996 and 1997) ³	ADWR (2000)
	1,826 (Town of Payson only)	Southwest Groundwater Consultants (1998)
	>138,000	ADWR (1994b)
	107,000	Freethey and Anderson (1986)
Estimated Water Currently in Storage, in acre-feet:	6,800,000 (portion of Upper Big Chino Sub-basin)	Southwest Groundwater Consultants (2005)
	10,000,000 (Big Chino Sub-basin to 1,200 feet)	McGavock (2003)
	9,230 (Pine/Strawberry area) ⁴	ADWR (1996)
	28,000,000 (to 1,200 feet)	ADWR (1990)
	13,000,000 (to 1,200 feet)	Freethey and Anderson (1986)
	>22,000,000	Arizona Water Commission (1975)
Current Number of Index Wells: 130		
Date of Last Water-level Sweep: 2009 (269 wells measured)		

¹ Includes 19,300 AF of incidental and artificial recharge.

² Includes 4,300 AF of incidental and artificial recharge.

³ Includes 8,010 AF of incidental recharge.

⁴ This figure has been refuted as an overestimation by Morrison Maierle (2003).



Water-level change in feet between 1990-1991 and 2003-2004

- H number is depth to water in feet during 2003-2004; letter is hydrograph
- 375 ○ =
- Greater than -30 ●
- Between -30 and -15 ●
- Between -15 and -1 ●
- Between -1 and +1 ●
- Between +1 and +15 ●
- Between +15 and +30 ●
- Greater than +30 ●
- Change Data Not Available ○

- Generalized Flow Direction
- Verde Formation and Quaternary Alluvial Aquifers →
 - "Basin Fill" Aquifer →
 - "Carbonate" Aquifer →

- Sub-Basin Boundary ~~~~~
- Consolidated Crystalline & Sedimentary Rocks [shaded box]
- Unconsolidated Sediments [white box]
- COUNTY [dashed line]
- Interstate Highway [thick red line]
- Major Road [thin red line]
- City, Town or Place ●

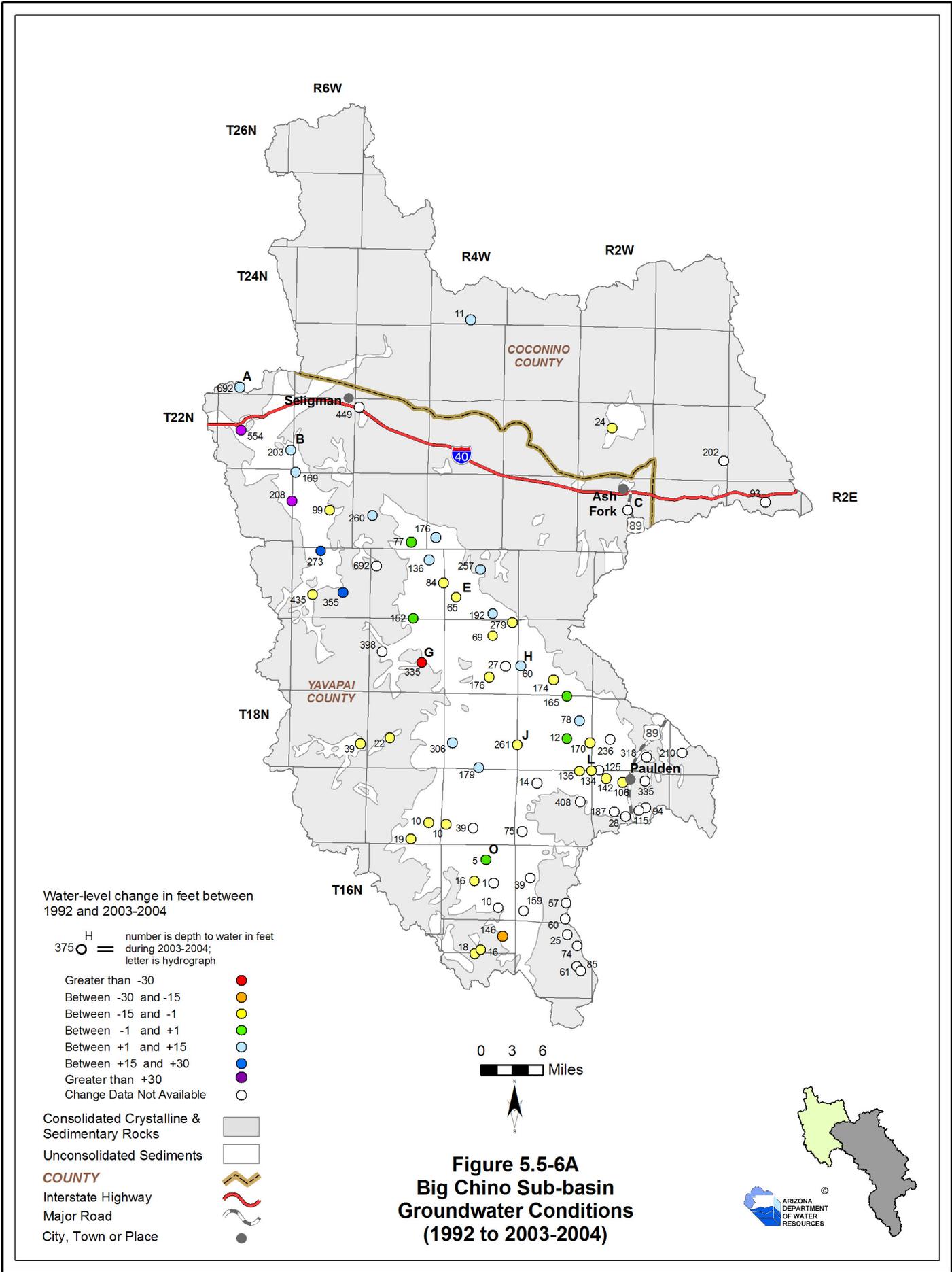
Note: Quaternary alluvial aquifer is immediately adjacent to the Verde River and generally less than 1 mile wide (Blasch and others, 2005)

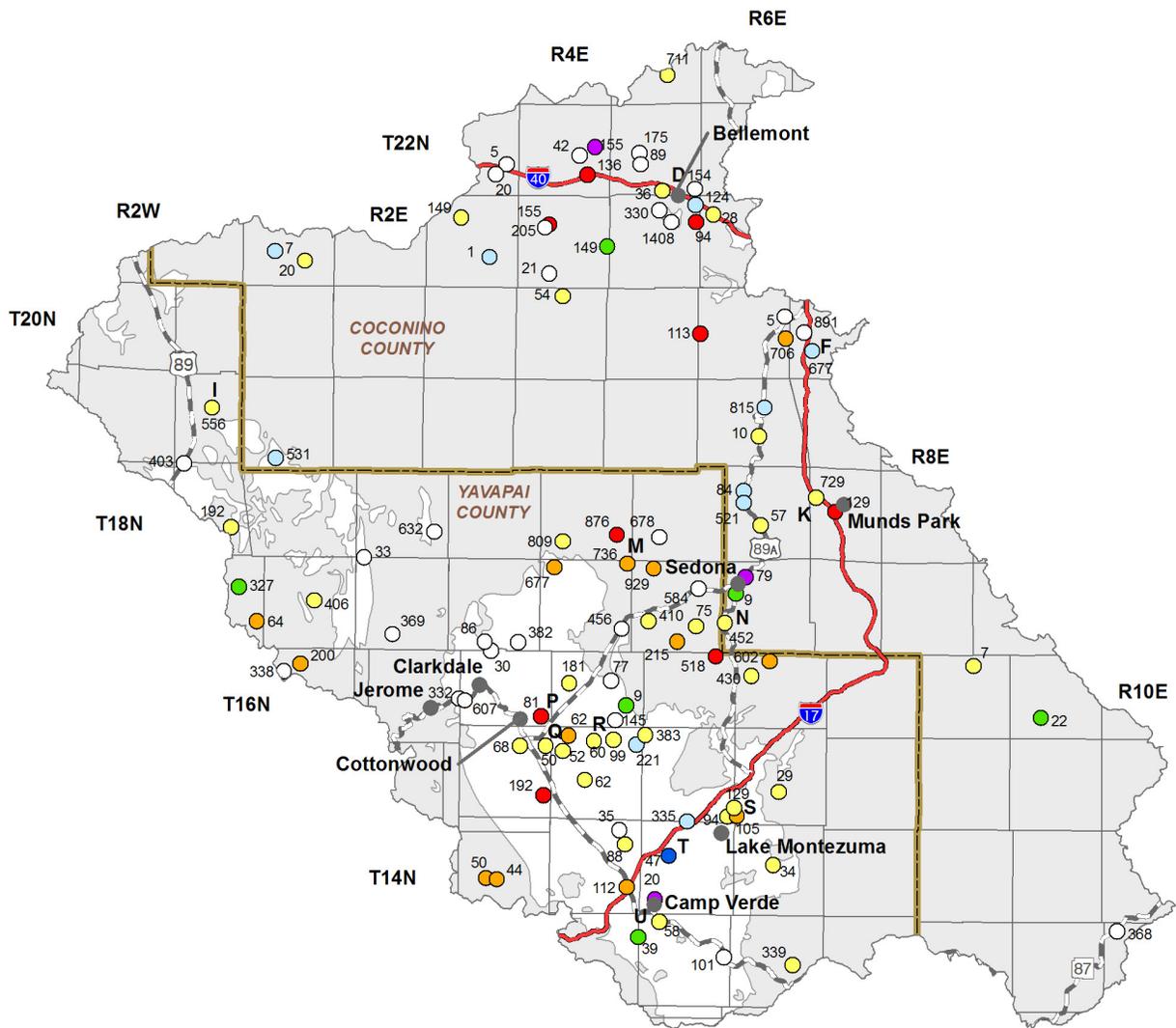
0 3 6 Miles



Figure 5.5-6
Verde River Basin
Groundwater Conditions







Water-level change in feet between 1994 and 2003-2004

- H number is depth to water in feet
- 375 ○ during 2003-2004;
- letter is hydrograph
- Greater than -30 ● (red)
- Between -30 and -15 ● (orange)
- Between -15 and -1 ● (yellow)
- Between -1 and +1 ● (light green)
- Between +1 and +15 ● (blue)
- Between +15 and +30 ● (dark blue)
- Greater than +30 ● (purple)
- Change Data Not Available ○ (white)

- Consolidated Crystalline & Sedimentary Rocks [grey box]
- Unconsolidated Sediments [white box]
- COUNTY [dashed line]
- Interstate Highway [red line with blue shield]
- Major Road [black line]
- City, Town or Place [black dot]

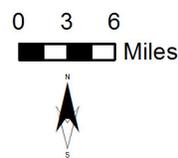


Figure 5.5-6B
Verde Valley Sub-basin
Groundwater Conditions
(1994 to 2003-2004)



**Figure 5.5-7
Verde River Basin
Hydrographs Showing Depth to Water in Selected Wells**

Depth To Water In Feet Below Land Surface

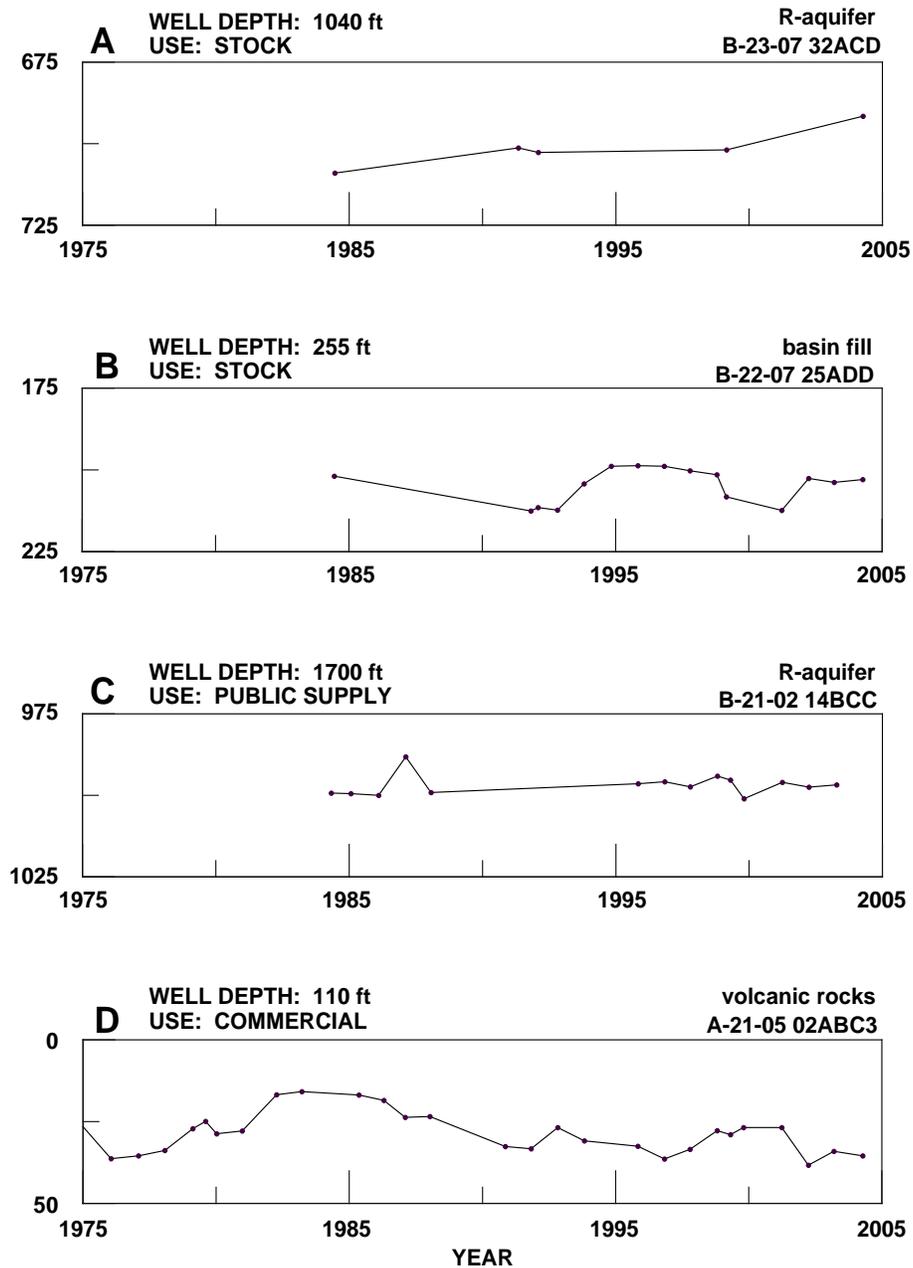


Figure 5.5-7 (Cont)
Verde River Basin
Hydrographs Showing Depth to Water in Selected Wells

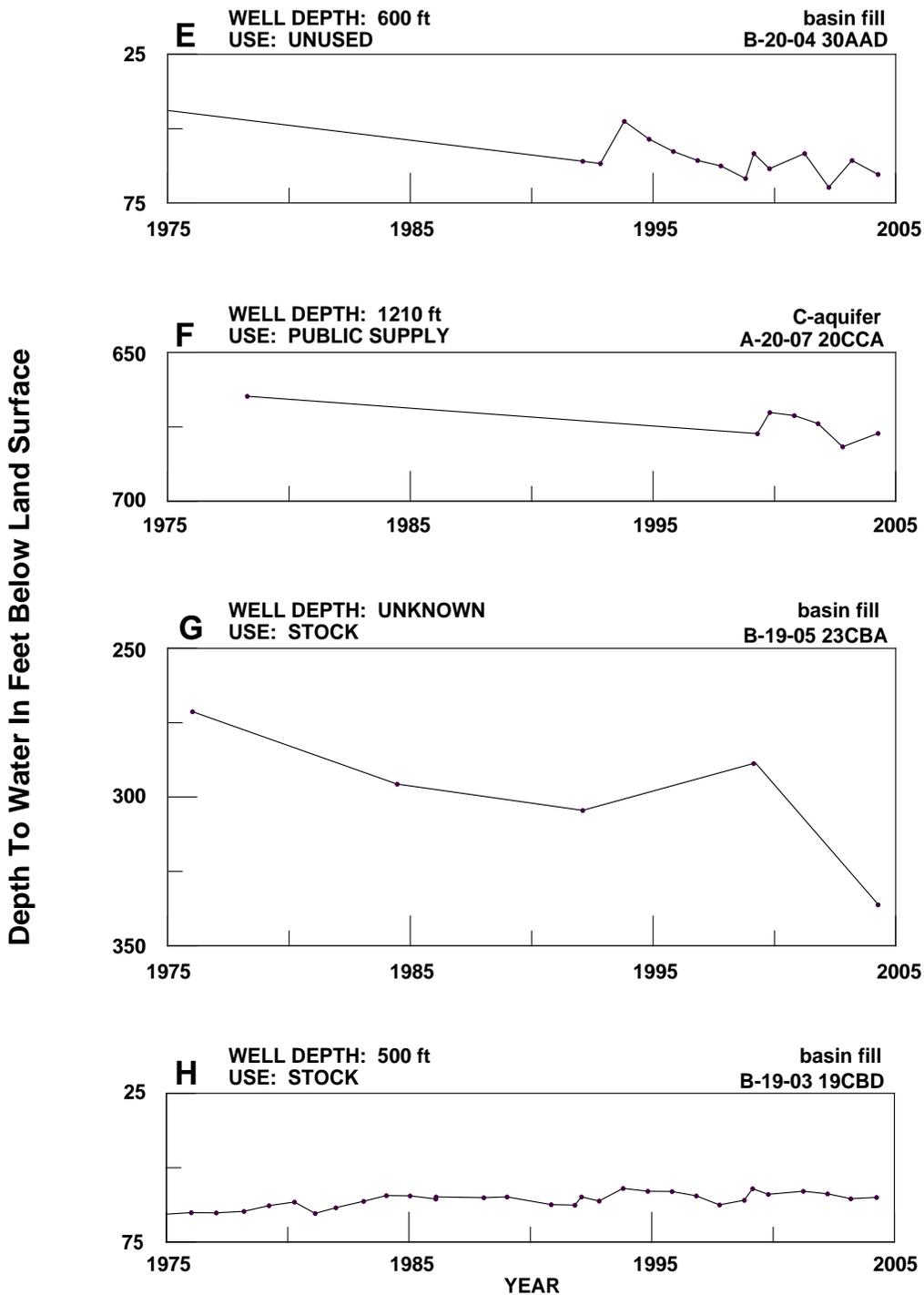


Figure 5.5-7 (Cont)
Verde River Basin
Hydrographs Showing Depth to Water in Selected Wells

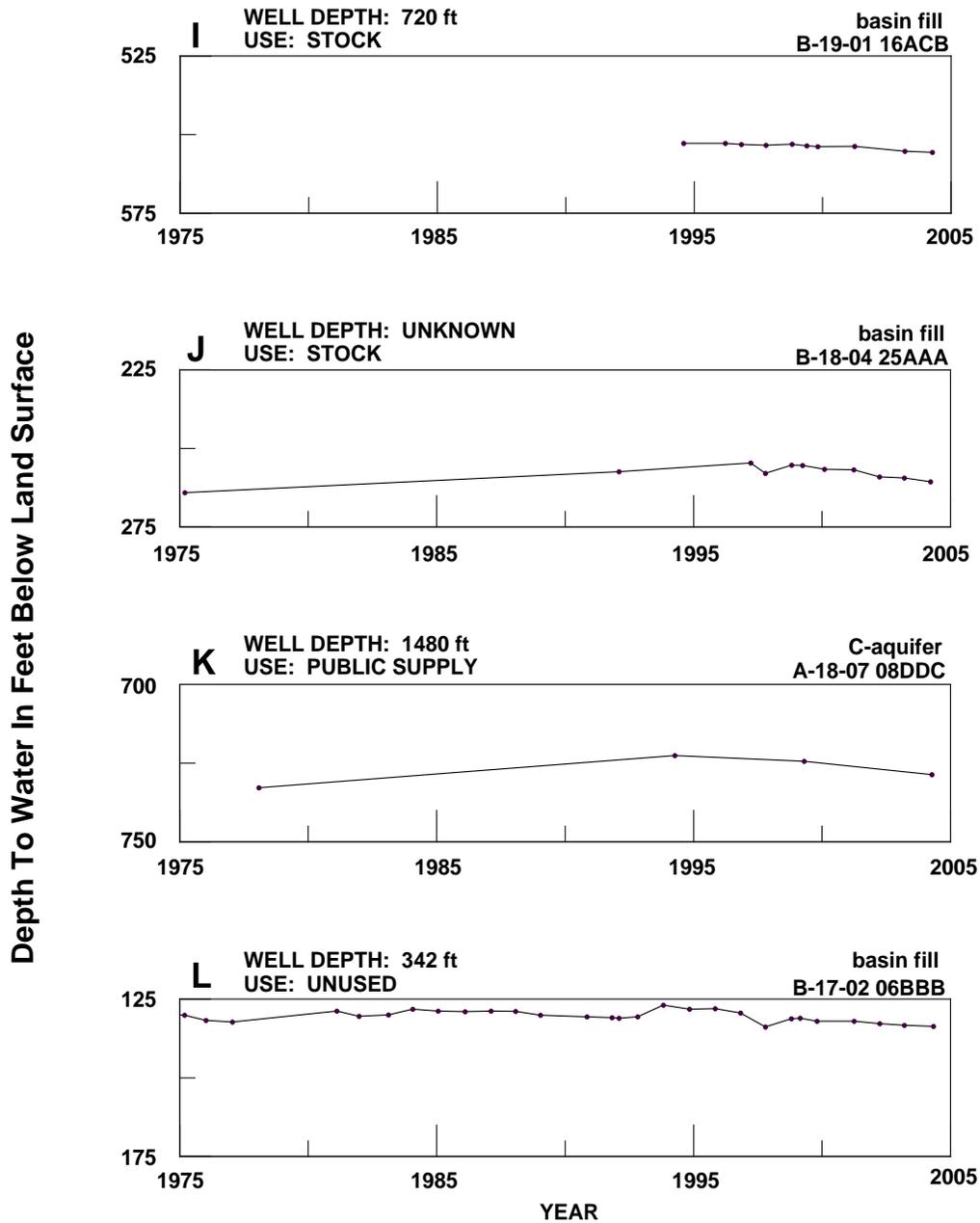


Figure 5.5-7 (Cont)
Verde River Basin
Hydrographs Showing Depth to Water in Selected Wells

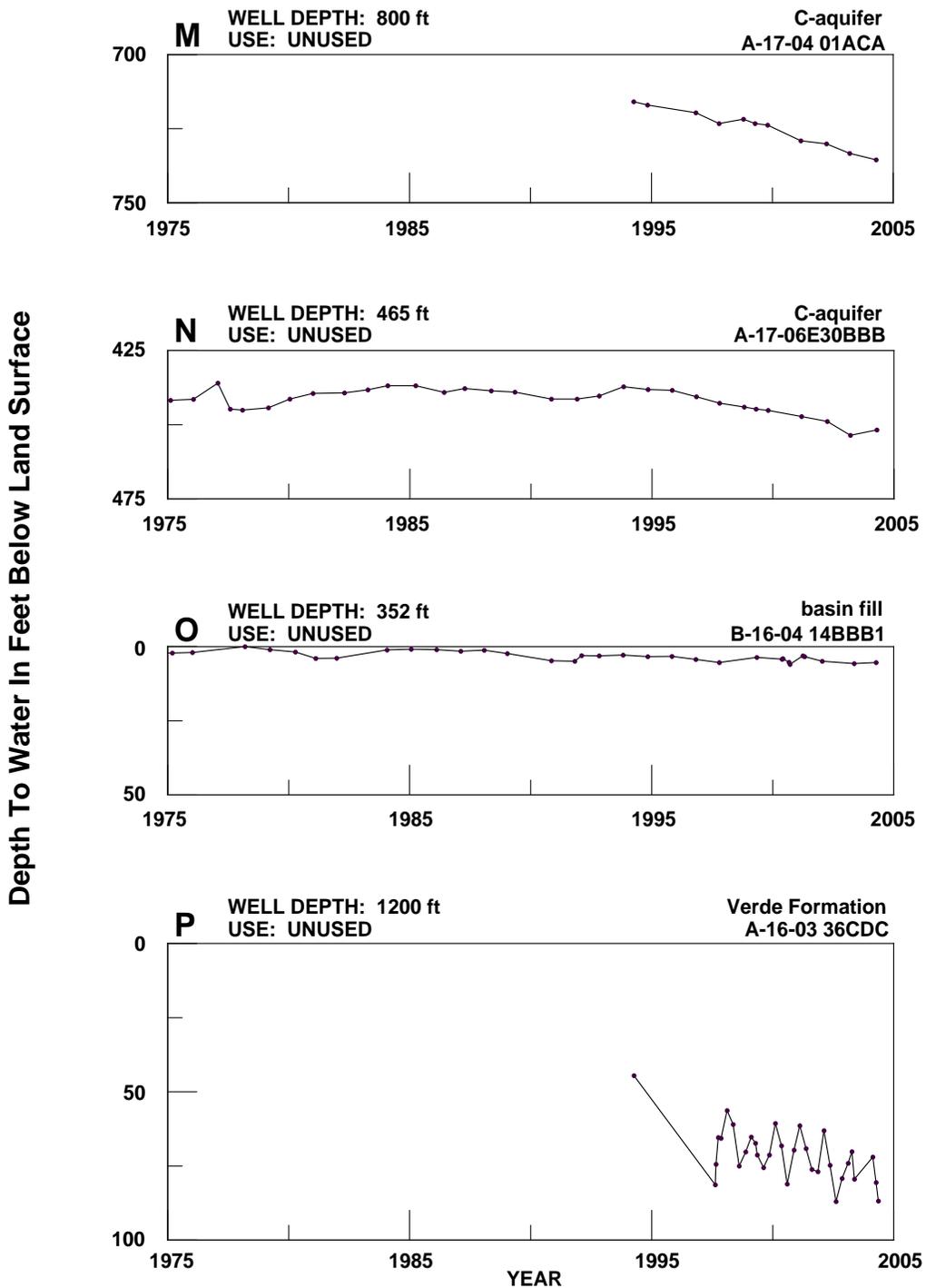


Figure 5.5-7 (Cont)
Verde River Basin
Hydrographs Showing Depth to Water in Selected Wells

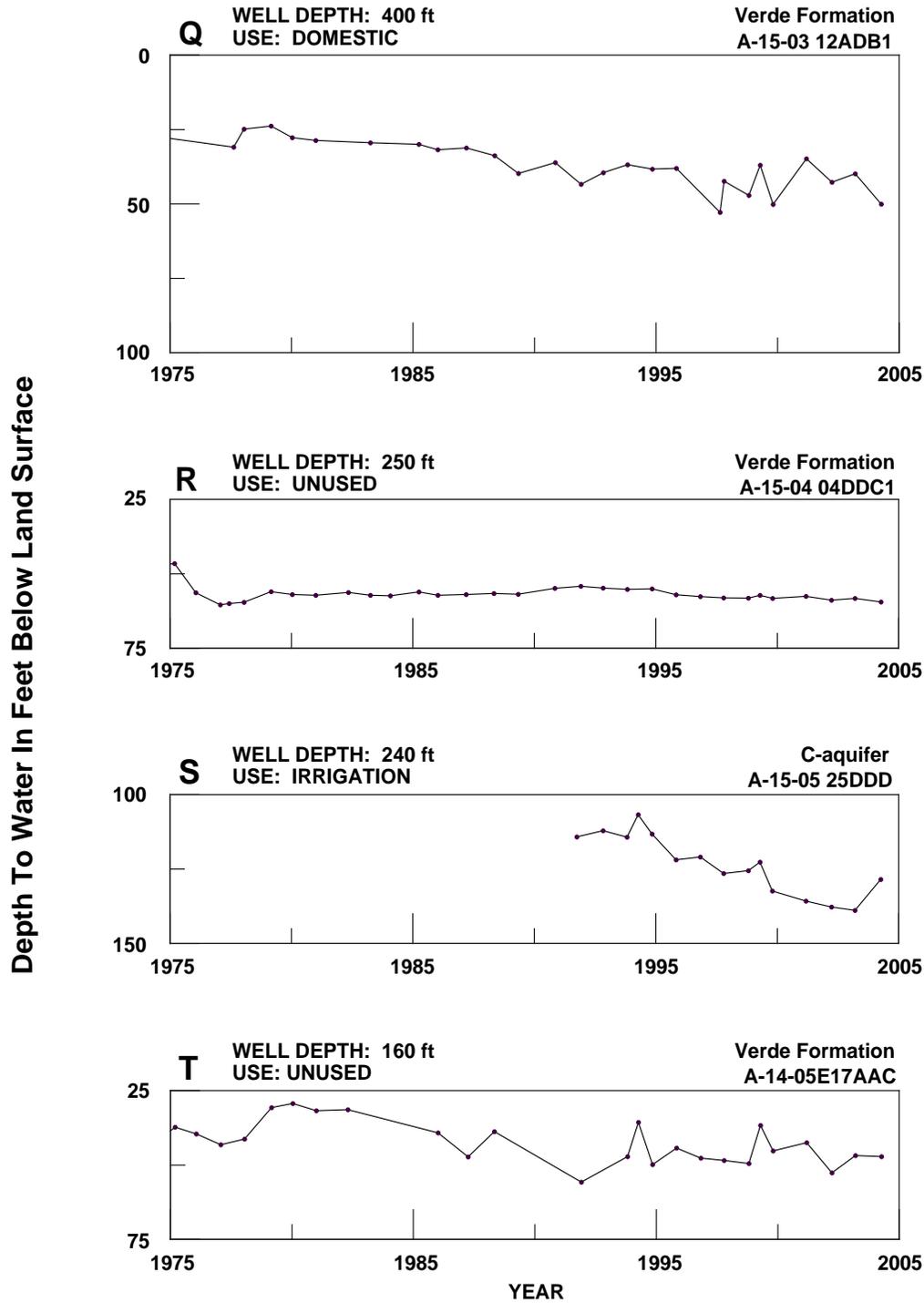


Figure 5.5-7 (Cont)
Verde River Basin
Hydrographs Showing Depth to Water in Selected Wells

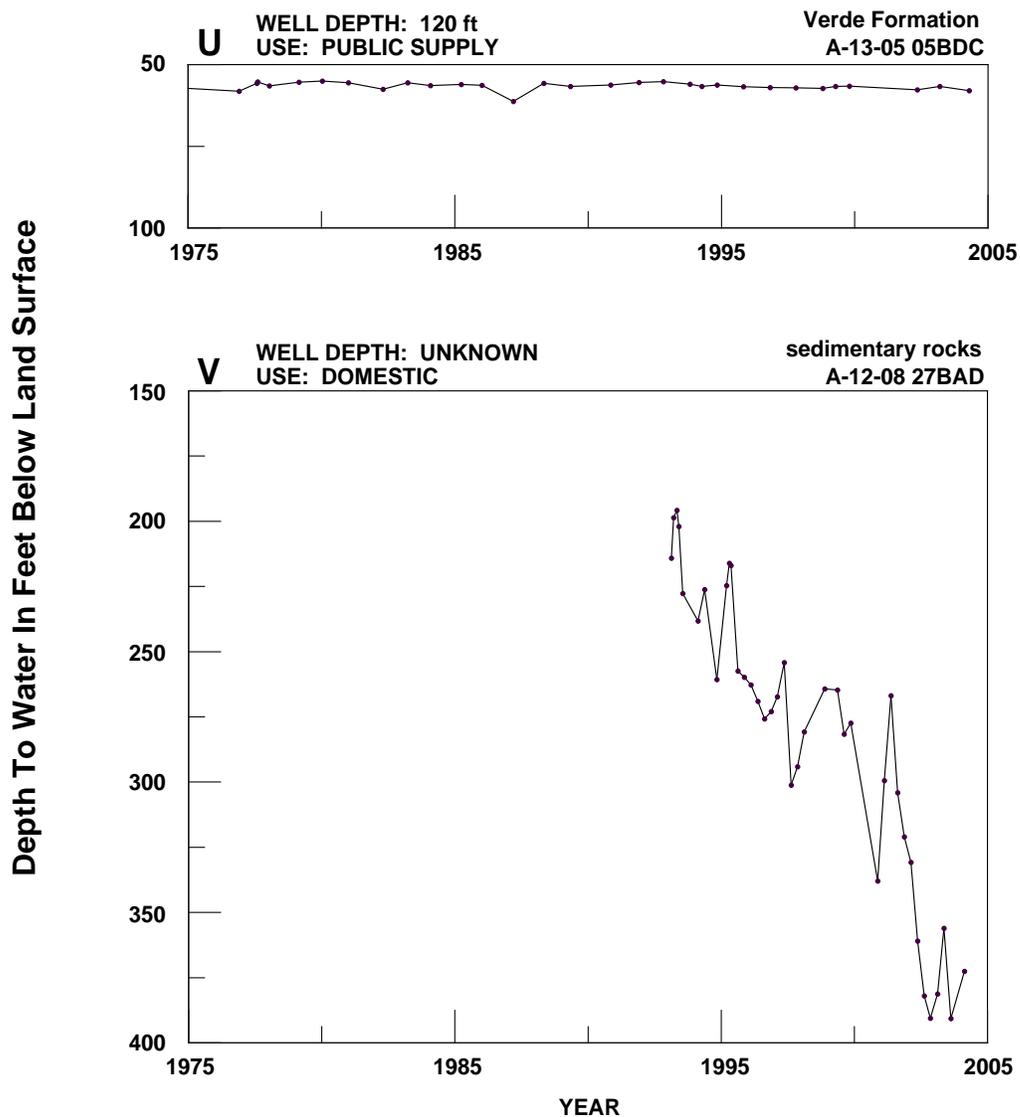
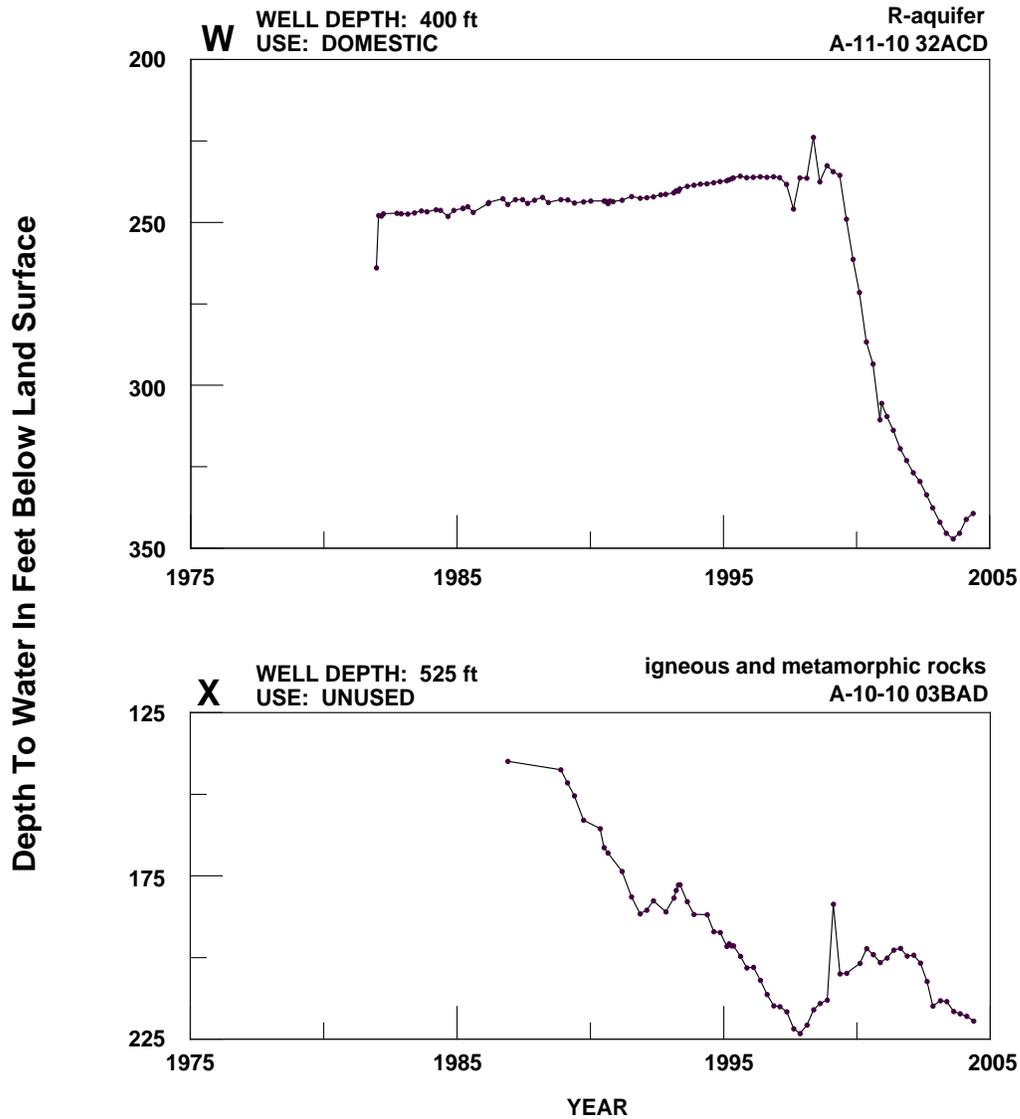
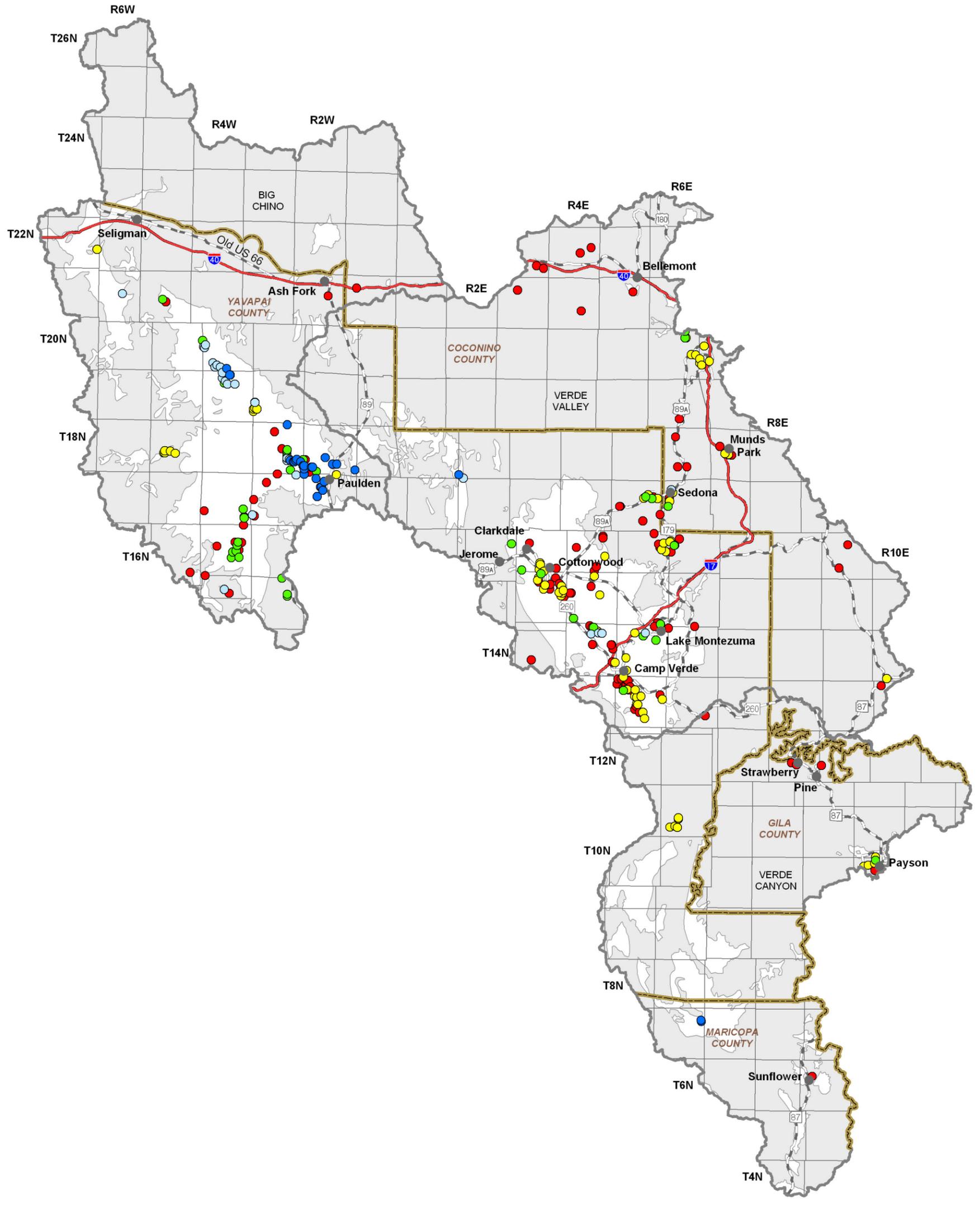


Figure 5.5-7 (Cont)
Verde River Basin
Hydrographs Showing Depth to Water in Selected Wells





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

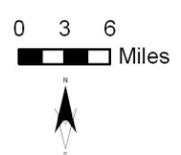
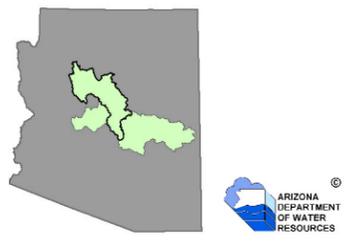


Figure 5.5-8
Verde River Basin
Well Yields



5.5.7 Water Quality of the Verde River Basin

Wells, springs and mine sites with parameter concentrations that have equaled or exceeded drinking water standard(s), including location and parameter(s) are shown in Table 5.5-7A. Impaired lakes and streams with site type, name, length of impaired reach, area of impaired lake, designated use standard and parameter(s) exceeded is shown in Table 5.5-7B. Figure 5.5-9 shows the location of water quality occurrences keyed to Table 5.5-7. 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 5.5-7A.
- Four hundred and twenty-nine sites have parameter concentrations that have equaled or exceeded drinking water standards
- The parameter most frequently equaled or exceeded in the sites measured was arsenic.
- Many of the wells in the Payson area equaled or exceeded the standards for arsenic, beryllium, cadmium, lead, semi-volatile organic compounds and selenium.
- Other parameters equaled or exceeded in this basin include fluoride, nitrates and total dissolved solids.

Lakes and Streams with impaired waters

- Refer to Table 5.5-7B.
- Water quality standards were exceeded in three lakes in the basin and five stream reaches on three streams.
- Three stream reaches, totaling 37.5 miles, on the Verde River exceeded the water quality standard for turbidity.
- Whitehorse Lake and Pecks Lake exceeded the standard for dissolved oxygen and Stoneman Lake exceeded the and pH standard.
- East Verde River, Oak Creek, Verde River, Pecks Lake and Stoneman Lake are part of the ADEQ water quality improvement effort called the Total Maximum Daily Load (TMDL) program. Final TMDL reports have been completed for the lakes and all impaired reaches except for East Verde River which is under investigation.
- Whitehorse Lake is not part of the TMDL program at this time.

Effluent Dependent Reaches

- Refer to Figure 5.5-9
- There are three effluent dependent reaches. American Gulch near Payson, Bitter Creek near Jerome and Jacks Canyon Wash south of Sedona.

Table 5.5-7 Water Quality Exceedences in the Verde River Basin¹

A. Wells, Springs and Mines

Map Key	Site Type	Site Location			Number of Sampling Sites	Parameter(s) Concentration has Equaled or Exceeded Drinking Water Standard (DWS) ²
		Township	Range	Section		
1	Well	21 North	4 East	5	1	NO3
2	Well	19 North	1 East	33	1	As
3	Well	18 North	1 East	36	1	As
4	Spring	18 North	3 East	8	1	Cd
5	Spring	17 North	1 East	7	1	As
6	Spring	17 North	3 East	5	1	As
7	Well	17 North	3 East	33	1	As
8	Well	17 North	4 East	15	2	NO3
9	Well	17 North	5 East	11	1	As, Pb
	Well	17 North	5 East	11	1	Cd
10	Well	17 North	5 East	12	1	As
11	Well	17 North	5 East	13	1	As
12	Well	17 North	5 East	15	1	As, Cd
13	Well	17 North	5 East	19	1	As
14	Well	17 North	5 East	25	1	As, Cd, Pb
15	Well	17 North	5 East	26	2	Pb
16	Well	17 North	5 East	29	1	As
17	Well	17 North	5 East	35	1	As
18	Well	17 North	6 East	8	1	Cu
19	Well	17 North	6 East	19	1	As
20	Well	16 North	2 East	24	1	As
21	Spring	16 North	2 East	34	1	As
22	Well	16 North	3 East	21	1	As
23	Spring	16 North	3 East	22	1	As
	Well	16 North	3 East	22	1	As
24	Well	16 North	3 East	27	1	As
25	Well	16 North	3 East	28	2	As
26	Well	16 North	3 East	29	1	As
27	Well	16 North	3 East	30	1	As
28	Well	16 North	3 East	33	3	As
	Well	16 North	3 East	33	1	As, Be
29	Well	16 North	3 East	34	4	As
	Well	16 North	3 East	34	1	As, Cd
30	Well	16 North	3 East	35	1	As
31	Well	16 North	4 East	11	1	As
32	Spring	16 North	4 East	23	1	As
33	Well	16 North	4 East	27	2	As
34	Well	16 North	4 East	34	1	As
35	Well	16 North	4 East	35	1	As
36	Well	16 North	5 East	11	1	As
37	Well	16 North	5 East	13	1	As
38	Well	16 North	5 East	14	1	As
39	Well	16 North	6 East	8	1	As
40	Well	16 North	6 East	9	1	As
41	Well	16 North	6 East	13	1	As
42	Well	16 North	6 East	17	1	As
43	Well	16 North	6 East	18	3	As
44	Spring	15 North	2.5 East	13	1	As
45	Well	15 North	3 East	4	2	As
46	Well	15 North	3 East	5	2	As
47	Well	15 North	3 East	11	2	As
48	Well	15 North	3 East	12	6	As
49	Well	15 North	3 East	13	7	As
50	Well	15 North	4 East	2	2	As
51	Well	15 North	4 East	3	6	As
	Well	15 North	4 East	3	1	Pb
52	Well	15 North	4 East	4	2	As
53	Well	15 North	4 East	6	1	As
54	Well	15 North	4 East	9	1	As
55	Well	15 North	4 East	10	1	As

Table 5.5-7 Water Quality Exceedences in the Verde River Basin (Cont)¹

A. Wells, Springs and Mines

Map Key	Site Type	Site Location			Number of Sampling Sites	Parameter(s) Concentration has Equaled or Exceeded Drinking Water Standard (DWS) ²
		Township	Range	Section		
56	Well	15 North	4 East	15	1	As
	Well	15 North	4 East	15	1	Pb
57	Well	15 North	4 East	18	4	As
58	Well	15 North	4 East	19	2	As
59	Well	15 North	4 East	21	1	As, Pb
60	Well	15 North	4 East	22	1	As
61	Well	15 North	4 East	31	1	As
62	Well	15 North	4 East	33	1	As
63	Well	15 North	5 East	20	1	As
64	Well	15 North	5 East	24	1	Pb
65	Well	15 North	5 East	34	1	As
66	Well	15 North	5 East	35	1	As
67	Well	15 North	5 East	36	8	As
68	Well	15 North	6 East	29	1	As
69	Spring	15 North	6 East	31	1	As, Pb
	Well	15 North	6 East	31	1	As
70	Spring	14 North	3 East	5	1	As
71	Spring	14 North	3 East	14	1	As
72	Well	14 North	3 East	21	1	NO3
73	Well	14 North	4 East	2	1	As
74	Well	14 North	4 East	3	4	As
	Well	14 North	4 East	3	1	As, Se
75	Well	14 North	4 East	11	1	As, Pb
	Well	14 North	4 East	11	2	As
76	Well	14 North	4 East	12	1	As
77	Well	14 North	4 East	13	10	As
78	Well	14 North	4 East	14	1	As, TDS
	Well	14 North	4 East	14	3	As
79	Well	14 North	4 East	24	1	As
	Well	14 North	4 East	24	1	As, Cd
80	Well	14 North	5 East	1	5	As
81	Well	14 North	5 East	2	9	As
82	Well	14 North	5 East	4	2	As
83	Well	14 North	5 East	17	1	As, Pb
84	Well	14 North	5 East	18	2	As
85	Well	14 North	5 East	19	7	As
	Well	14 North	5 East	19	1	As, Se
86	Well	14 North	5 East	31	3	As
87	Well	14 North	5 East	32	6	As
	Well	14 North	5 East	32	1	As, Pb
88	Well	13 North	4 East	12	1	As
89	Well	13 North	5 East	4	1	As, NO3
90	Well	13 North	5 East	5	8	As
91	Well	13 North	5 East	6	20	As
	Well	13 North	5 East	6	1	As, Pb
	Well	13 North	5 East	6	1	As, TDS
92	Well	13 North	5 East	7	28	As
	Well	13 North	5 East	7	2	As, Pb
	Well	13 North	5 East	7	1	As, TDS
	Well	13 North	5 East	7	1	F
93	Well	13 North	5 East	8	17	As
	Well	13 North	5 East	8	1	As, Pb
94	Well	13 North	5 East	9	3	As
	Well	13 North	5 East	9	1	As, Pb
95	Well	13 North	5 East	12	1	As
96	Well	13 North	5 East	13	1	As
97	Well	13 North	5 East	15	2	As
	Well	13 North	5 East	15	1	TDS

Table 5.5-7 Water Quality Exceedences in the Verde River Basin (Cont)¹

A. Wells, Springs and Mines

Map Key	Site Type	Site Location			Number of Sampling Sites	Parameter(s) Concentration has Equaled or Exceeded Drinking Water Standard (DWS) ²
		Township	Range	Section		
98	Well	13 North	5 East	16	4	As
	Spring	13 North	5 East	16	1	As, Pb
99	Well	13 North	5 East	17	7	As
100	Well	13 North	5 East	20	1	As
101	Well	13 North	5 East	21	1	TDS
	Well	13 North	5 East	21	3	As
102	Well	13 North	5 East	27	4	As
103	Well	13 North	5 East	28	8	As
	Well	13 North	5 East	28	1	As, Pb
	Well	13 North	5 East	28	1	TDS
104	Well	13 North	5 East	34	3	As
105	Well	13 North	6 East	29	1	As
106	Spring	12 North	6 East	11	2	As
107	Well	12 North	8 East	26	4	As
108	Well	11.5 North	10 East	35	1	As
109	Spring	11 North	6 East	10	1	As, TDS
110	Well	10 North	10 East	3	1	As, Be, Cd, Pb, Organics, Se
111	Well	10 North	10 East	4	5	As, Be, Cd, Pb, Organics, Se
	Well	10 North	10 East	4	4	Organics
	Well	10 North	10 East	4	1	NO3
	Well	10 North	10 East	4	1	As
112	Well	10 North	10 East	8	1	As
	Well	10 North	10 East	8	1	Pb
113	Well	10 North	10 East	9	1	As, Organics
	Well	10 North	10 East	9	1	Pb
	Well	10 North	10 East	9	1	As, NO3
	Well	10 North	10 East	9	3	As, Be, Cd, Pb, Se
	Well	10 North	10 East	9	43	As, Be, Cd, Pb, Organics, Se
	Well	10 North	10 East	9	1	As, Be, Cd, Pb, Organics, NO3, Se
	Well	10 North	10 East	9	16	Organics
	Well	10 North	10 East	9	3	As
114	Well	10 North	10 East	10	3	As, Be, Cd, Pb, Organics, Se
	Well	10 North	10 East	10	1	As
	Well	10 North	10 East	10	1	As, NO3
	Well	10 North	10 East	10	1	As, Be, Cd, Pb, Se
115	Well	6 North	7 East	28	1	F
116	Well	22 North	7 West	8	1	As
117	Well	22 North	7 West	25	1	NO3
118	Well	19 North	4 West	4	1	As
119	Well	19 North	4 West	10	1	As
120	Well	18 North	1 West	6	2	NO3
121	Well	18 North	2 West	27	2	As
122	Well	18 North	3 West	11	1	As
123	Well	18 North	3 West	25	1	As
124	Spring	18 North	6 West	27	1	As
125	Well	17 North	2 West	2	1	As
126	Well	17 North	2 West	3	2	As
127	Well	17 North	2 West	4	1	As
128	Well	17 North	2 West	9	1	As
129	Well	17 North	2 West	15	1	As
130	Well	17 North	2 West	22	1	As
131	Spring	17 North	4 West	8	1	As

Source: Compilation of databases from ADWR & others

Table 5.5-7 Water Quality Exceedences in the Verde River Basin (Cont)¹

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 ³	Parameter(s) Exceeding Use Standard ²
a	Stream	East Verde River - Ellison Creek to American Gulch	20	NA	A&W	Se
b	Stream	Oak Creek - Slide Rock State Park	1	NA	FBC	E. coli
c	Lake	Pecks Lake	NA	95	A&W	DO
d	Lake	Stoneman Lake ⁴	NA	14	A&W	pH
e	Stream	Verde River - Beaver Creek to HUC boundary	0.5	NA	A&W	Turbidity/Suspended sediment concentration
f	Stream	Verde River - Oak Creek to Beaver Creek	13	NA	A&W	Turbidity/Suspended sediment concentration
g	Stream	Verde River - West Clear Creek to Fossil Creek	24	NA	A&W	Turbidity/Suspended sediment concentration
h	Lake	Whitehorse Lake	NA	41	A&W	DO

Source: ADEQ 2005e

Notes:

¹ Water quality samples collected between 1975 and 2004.

²As = Arsenic

Be = Beryllium

Cd = Cadmium

DO = Dissolved oxygen

F= Fluoride

Pb = Lead

NO₃ = Nitrate

Organics = One or more of several volatile and semi-volatile organic compounds and pesticides

pH = Measurement of acidity or alkalinity

Se = Selenium

TDS = Total Dissolved Solids

³A&W = Aquatic and Wildlife

FBC = Full Body Contact

⁴Lake has been dry or nearly dry since 2002

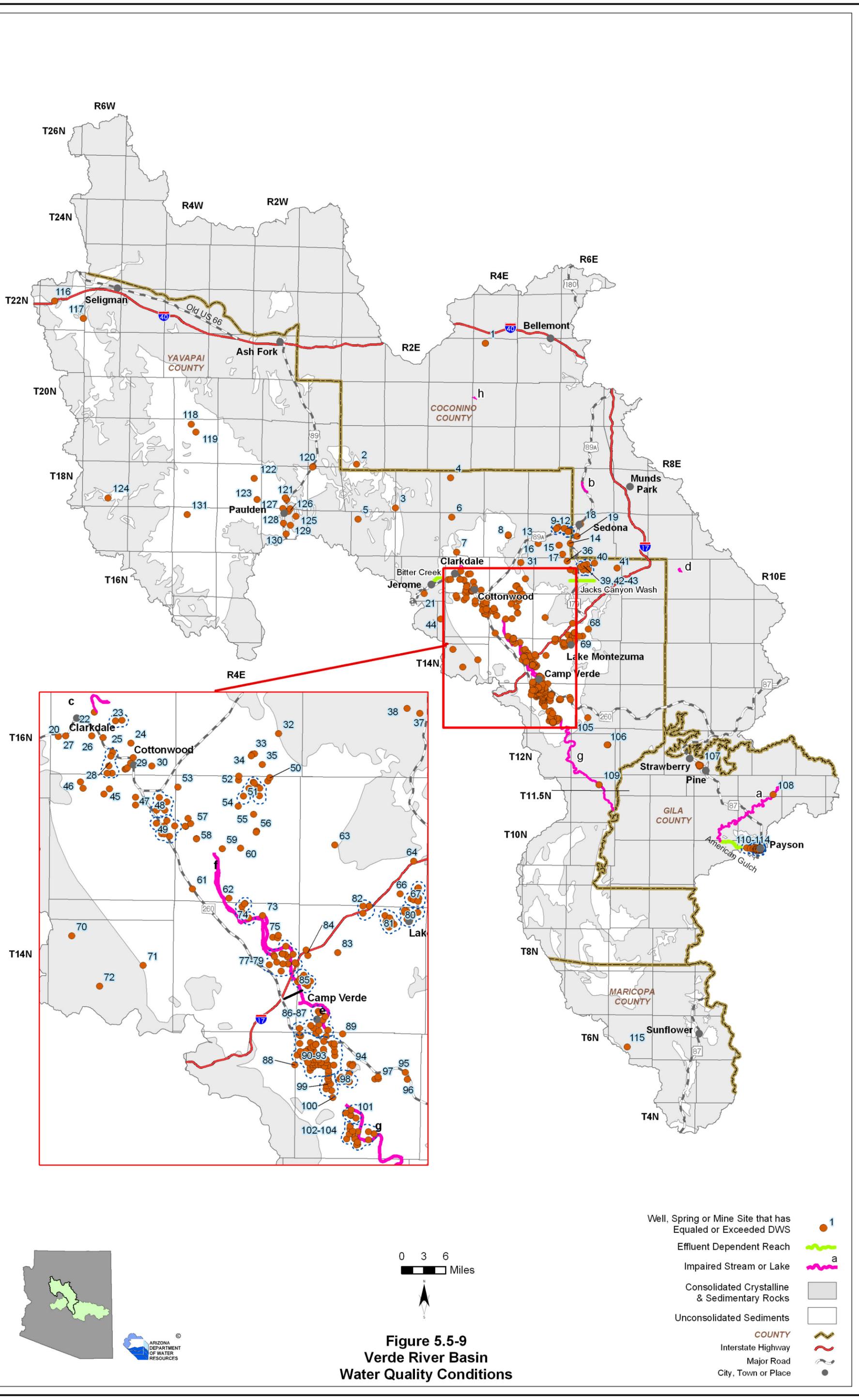


Figure 5.5-9
Verde River Basin
Water Quality Conditions

- Well, Spring or Mine Site that has Equaled or Exceeded DWS ● 1
- Effluent Dependent Reach ~
- Impaired Stream or Lake ~ a
- Consolidated Crystalline & Sedimentary Rocks
- Unconsolidated Sediments
- COUNTY ~
- Interstate Highway ~
- Major Road ~
- City, Town or Place ●

5.5.8 Cultural Water Demand in the Verde River 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 5.5-8. Effluent generation including facility ownership, location, population served and not served, volume treated, disposal method and treatment level is shown in Table 5.5-9. Figure 5.5-10 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 demand is found in Section 5.0.7.

Cultural Water Demand

- Refer to Table 5.5-8 and Figure 5.5-10.
- Population in this basin has more than doubled from 36,049 in 1980 to 89,309 in 2000.
- In general, groundwater use has increased since 1971, from an average of 16,000 AFA in 1971-1975 to an average of 29,500 AFA in 2001-2005.
- Total surface water diversions in this basin have decreased slightly from 18,000 AFA in 1971-1990 to 17,400 AFA in 2001-2005.
- Municipal groundwater demand has increased from an average of 7,200 AFA in 1991-1995 to 15,200 AFA in 2001-2005. Municipal surface water demand is about 600 AFA.
- Industrial groundwater use has increased slightly from 3,100 AFA in 1991-1995 to 3,200 AFA in 2001-2005. Industrial surface water use has remained a constant 800 AFA during this time.
- Groundwater use for irrigation has increased from 8,100 AFA in 1991-1995 to 11,100 AFA in 2001-2005. Most of the surface water use in the basin is for irrigation with 11,500 AFA in 1991-1995 and 16,000 AFA in 2001-2005. The majority of the agricultural use is found along the Verde River.
- Municipal and industrial demand centers are found primarily in the central portion of the basin.
- There are two large mines, Clarkdale Cement and the closed United Verde copper mine, and two small mines or quarries located in the vicinity of Clarkdale and Jerome. An additional small mine or quarry is located north of Sunflower.
- As of 2005 there were 11,093 registered wells with a pumping capacity of less than or equal to 35 gpm and 1,659 wells with a pumping capacity of more than 35 gpm.

Effluent Generation

- Refer to Table 5.5-9.
- There are 27 wastewater treatment facilities in this basin.
- Information on population served was available for 16 facilities and information on effluent generation was available for 17 facilities. These facilities serve over 44,000 full-time residents and generate almost 6,200 acre-feet of effluent per year.
- Of the 13 facilities with information on the effluent disposal method: five discharge to evaporation ponds; five discharge for golf or turf irrigation; six discharge to a watercourse; five discharge for irrigation; and two use other forms of effluent disposal. In Payson, treated effluent is delivered to a 10.5 acre recreational lake where it is stored to irrigate turf and recharges the aquifer. The Kachina Village WWTP discharges effluent to a wetland that is a wildlife area open to the public.

Table 5.5-8 Cultural Water Demand in the Verde 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	Industrial	Agricultural			
1971		3,746 ²	704 ²	16,000			18,000			ADWR (1994a)		
1972												
1973												
1974												
1975												
1976												
1977												
1978		16,000			18,000							
1979												
1980	36,049	1,437	265	19,000			18,000					
1981	38,093											
1982	40,137											
1983	42,181											
1984	44,225											
1985	46,269											
1986	48,313			1,009	168	33,000			18,000			
1987	50,357											
1988	52,401											
1989	54,445											
1990	56,489											
1991	59,771	1,188	170			10,000	3,100	8,100	600	800	11,500	USGS (2007) ADWR (2008b) ADWR (2008c) ADWR (2005a)
1992	63,053											
1993	66,335											
1994	69,617											
1995	72,899											
1996	76,181											
1997	79,463			1,830	170	12,000	3,200	8,400	600	800	12,500	
1998	82,745											
1999	86,027											
2000	89,309											
2001	91,827	1,883	182			15,200	3,200	11,100	600	800	16,000	
2002	94,345											
2003	96,862											
2004	99,380											
2005	101,898											
2010	114,487											
2020	138,296											
2030	155,456											
WELL TOTALS:		11,093	1,659									

Notes:

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

² Includes all wells through 1980.

Table 5.5-9 Effluent Generation in the Verde River 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/Landscape	Wildlife Area	Discharged to Another Facility	Infiltration Basins	Other			
American Gulch	Northern Gila County SD	Payson	8,000	2,240	X		X	Payson, Chaparral & Rim			X		Adv. Trt II & Nutrient Removal	200	2004
American Ranch WWTF	NA	Prescott	NA												
Big Park ID	Yavapai County	Sedona	2,500	224			X						Secondary	NA	1999
Camp Verde WWTF	Camp Verde SD	Camp Verde	2,500	195		X							Secondary	7,400	2000
Camp Navajo	National Guard	Bellemont	NA												
Clarkdale WWTF	Clarkdale	Clarkdale	1,920	291		X	X						Secondary	1,600	2004
Cottonwood WWTF	Cottonwood	Cottonwood	8,500	1,008			X						Adv. Trt. I	1,000	2002
Crimson View WWTP	NA	Sedona	NA												
Cross Creek Ranch WWTF	NA	Sedona	NA												
Flagstaff Meadows	Private	Bellemont	365	64	X								Secondary	NA	2007
Forest Highlands Wastewater Reclamation Co.	Private	Forest Highlands	NA	48				Forest Highlands					NA		2002
Inscription Canyon Ranch	Private	Prescott	NA												
Jerome WWTF	Jerome	Jerome	400	56	Bitter Creek								Secondary	40	2004
Kachina Village WWTP	Kachina Village ID	Kachina Village	5,000	426		X			X				Secondary	NA	2001
Lolo Mai Springs	Private	NA	420	34	X							X	Secondary	NA	2001
Lost Canyon WWTF	Private	Resort	NA												
Munds Park/Kay Blackman WWTP	Pinewood SD	Munds Park	1,500-5,000	147	Munds Creek			Pinewood					Adv. Trt. I & Nutrient Removal	2,000	2007
Oak Creek Property Owners	Private	Oak Creek	29	1								X	NA		2007
Pine Creek Domestic WWTF	Private	Pine	NA												
Portal Pine Creek WWTP	NA	Strawberry/Pine	NA												

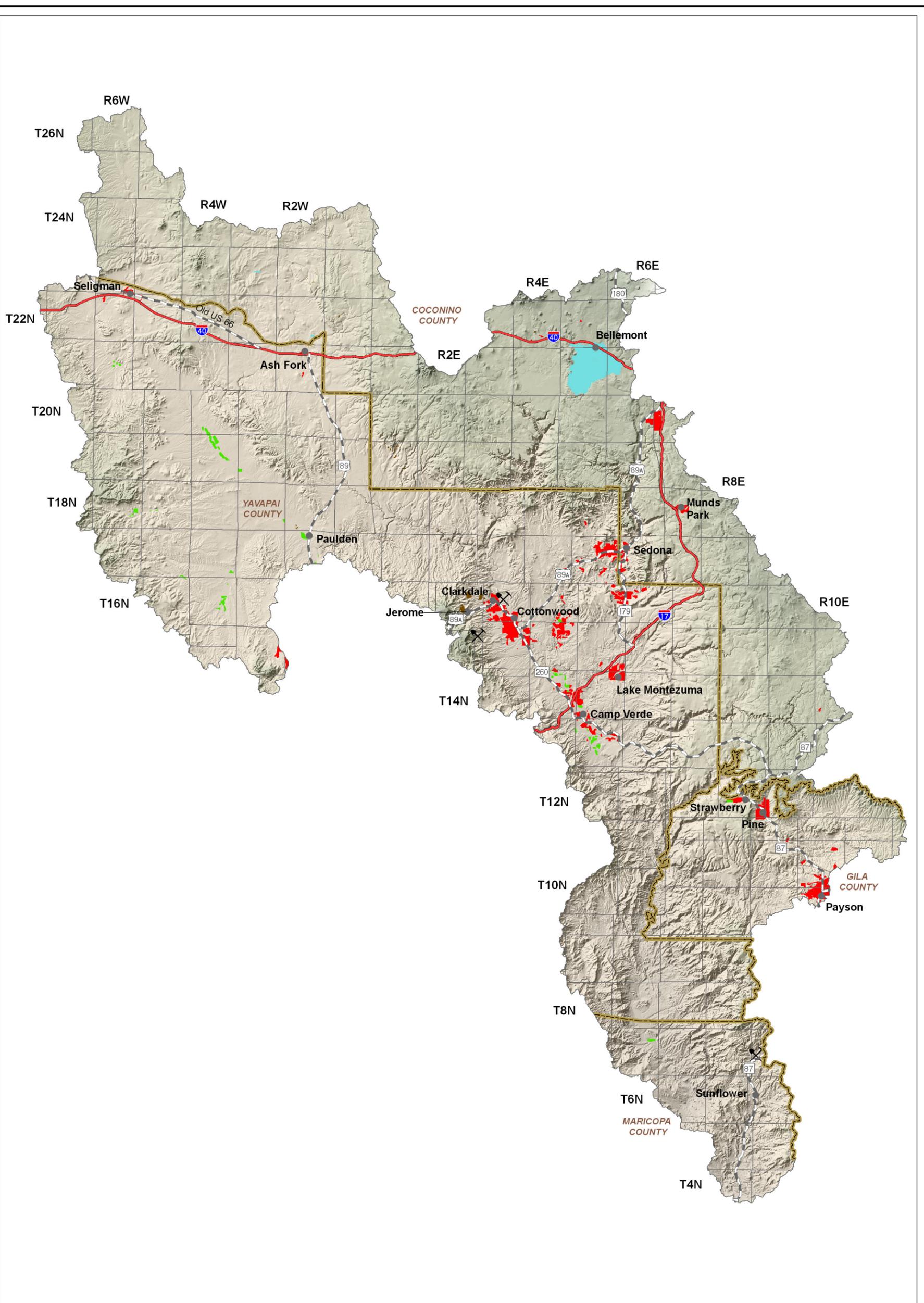


Table 5.5-9 Effluent Generation in the Verde River Basin (Cont)

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	Discharged to Another Facility	Infiltration Basins	Other				
Sedona Venture WWTF	Private	Sedona	272	50	Unnamed tributary to Oak Cr.									NA	NA	2007
Sedona WWTF	Sedona	Sedona	12,420	1,344		X	X		X					Adv. Trt. II & Nutrient Removal	2,500	2001
Seligman WWTF	Yavapai County SD	Seligman	84	9		X								Secondary	324	2004
Seven Canyons of Sedona	Private	Sedona	37	10				Seven Canyons						Secondary	NA	2007
Thunder Mountain Ranch WWTP	Private	Sedona	NA		NA											
Valley Vista Estates WWTP	Private	Oak Creek	NA		NA											
Verde Santa Fe	Private	Cornville	928	70				X						Secondary	NA	2006
Total			44,875 to 48,375	6,217												

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
 WWTF: Waste Water Treatment Facility
 WWTP: Waste Water Treatment Plant
 WRP: Water Reclamation Plant
 SD: Sanitation District
 ID: Improvement District



Demand Centers

- Agriculture
- M&I - High Intensity
- M&I - Low Intensity
- Large Mine
- Small Mine \ Quarry
- COUNTY
- Interstate Highway
- Major Road
- City, Town or Place

0 3 6
Miles



Figure 5.5-10
Verde River Basin
Cultural Water Demand



Primary Data Source: USGS National Gap Analysis Program, 2004



5.5.9 Water Adequacy Determinations in the Verde River 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 5.5-10A and B for water reports and analysis of adequate water supply. Designated water provider information is shown in Table 5.5-10C with date of application, date the designation was issued and projected or annual estimated demand. Figure 5.5-11 shows the general locations of subdivisions and designated providers for the entire basin. Figures 5.5-11A-C show the location of subdivisions and designated providers in each sub-basin 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.

- Four hundred and thirty-one water adequacy determinations have been made in this basin through December 2008.
- One hundred and thirty-three determinations of inadequacy have been made.
- The most common reason for an inadequacy was because the applicant did not submit the necessary information and/or the available hydrologic data were insufficient to make a determination.
- There are 11 Analysis of Adequate Water Supply applications for a total of 10,000 lots.
- There are five designated water providers with a total projected or annual estimated demand of 2,281 acre-feet.
- The number of lots receiving a water adequacy determination, by county, are:

County	Number of Subdivision Lots	Number of Lots Determined to be Adequate	Percent Adequate
Coconino County	5,600	4,828	86%
Gila County	>5,743	>1,294	~24%
Maricopa County	20	20	100%
Yavapai County	>20,996	>18,419	~88%

Table 5.5-10 Adequacy Determinations in the Verde River Basin¹

A. Water Adequacy Reports

Map Key	Sub-Basin	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	Verde Valley	540 Jordan Road	Coconino	17 North	6 East	8	8	53-500828	Adequate		11/15/1982	Arizona Water Company - Sedona
2	Verde Valley	Aerie I and Aerie II	Yavapai	17 North	5 East	5, 8	74	53-401588	Adequate		7/6/2005	Aerie Conservancy
3	Verde Canyon	Alpine Ridge	Gila	11 North	10 East	34	7	53-500260	Inadequate	A1, A2	1/12/1982	Town of Payson
4	Verde Canyon	Alpine Village #1	Gila	11 North	10 East	33	312	53-500261	Inadequate	A1, A2	7/16/1985	Town of Payson
5	Verde Valley	Amigos Rancheros	Yavapai	17 North	5 East	29	105	53-500267	Inadequate	B	8/20/1987	NA
6	Verde Valley	Anasazi	Coconino	17 North	6 East	7	11	53-500269	Adequate		5/1/1981	Arizona Water Company - Sedona
7	Big Chino	Antelope Lakes #1	Yavapai	18 North	2 West	27	22	53-300068	Adequate		11/6/1995	co-op water system
8	Big Chino	Antelope Lakes #2	Yavapai	18 North	2 West	27	655	53-500271	Adequate		2/19/1997	Antelope Lakes Water Company, Inc.
9	Big Chino	Antelope Lakes #3	Yavapai	18 North	2 West	28	44	53-500273	Adequate		3/14/1988	Dry Lot Subdivision
10	Verde Valley	Arena del Loma Estates	Yavapai	14 North	5 East	19	11	53-300031	Adequate		7/28/1995	Dry Lot Subdivision
11	Big Chino	Arizona Homes # 3	Coconino	22 North	1 East	22	NA	NA	Adequate		6/7/1973	Northwest Water Company
12	Big Chino	Arizona Homes # 4	Coconino	22 North	1 East	22	NA	NA	Adequate		4/8/1977	Northwest Water Company
13	Verde Valley	Arnold Terrace	Yavapai	14 North	5 East	31	18	53-500297	Adequate		7/9/1974	Camp Verde Water System
14	Verde Valley	Arroyo Roble Resort	Coconino	17 North	6 East	8	92	53-500299	Adequate		5/18/1983	Arizona Water Company - Sedona
15	Verde Valley	Arroyo Seco (1991)	Yavapai	17 North	5 East	10	46	53-500300	Adequate		7/12/1991	Arizona Water Company - Sedona
16	Verde Valley	Arroyo Sienna	Yavapai	17 North	6 East	18	12	53-400647	Adequate		2/12/2002	Arizona Water Company - Sedona
17	Verde Valley	Aspen Shadows	Yavapai	16 North	3 East	34	36	53-300478	Adequate		7/22/1998	City of Cottonwood
18	Verde Valley	Back'O Beyond Ranch	Coconino	17 North	6 East	30	80	53-300211	Adequate		10/23/1996	Arizona Water Company - Sedona
19	Verde Valley	Beaver Creek Acres	Yavapai	14 North	5 East	11	36	53-401502	Adequate		1/20/2005	Dry Lot Subdivision
20	Verde Valley	Beaver Creek Golf Club	Yavapai	14 North	5 East	1, 2	137	53-401848	Adequate		10/18/2005	Arizona Water Company - Rimrock
22	Verde Valley	Beaver Creek Preserve	Yavapai	15 North	5 East	26	101	53-402203	Adequate		8/4/2006	Arizona Water Company - Rimrock
23	Verde Valley	Beaver Creek Villas	Yavapai	14 North	5 East	1	25	53-402205	Adequate		7/27/2006	Arizona Water Company - Rimrock
24	Verde Canyon	Beaver Valley Estates	Gila	12 North	10 East	35	8	53-500312	Inadequate	A1, A2	3/5/1986	Beaver Valley Water Company
25	Verde Valley	Bell Rock Vista	Yavapai	16 North	6 East	18	6	53-500315	Adequate		6/15/1989	Big Park Water Company
26	Verde Valley	Bella Terra on Oak Creek	Yavapai	17 North	5 East	26, 27	106	53-401631	Adequate		3/1/2005	Arizona Water Company - Sedona
27	Verde Valley	Bella Vista	Yavapai	17 North	5 East	13	7	53-401746	Adequate		6/21/2005	Oak Creek Water Company
28	Verde Valley	Bent River Village	Yavapai	16 North	3 East	28	12	53-700476	Adequate		5/7/2008	Bent River Village HOA
29	Verde Canyon	Bison Cove Condominiums	Gila	10 North	10 East	3	46	53-700296	Inadequate	A1	5/21/2007	Town of Payson
30	Verde Canyon	Bison Cove Condominiums - Phase 2	Gila	10 North	10 East	3	162	53-700355	Inadequate	A1	6/26/2007	Town of Payson
31	Verde Valley	Black Hill Industrial Park	Yavapai	16 North	3 East	33	24	53-500337	Adequate		5/13/1987	City of Cottonwood
32	Verde Valley	Black Hills Estates	Yavapai	16 North	3 East	32	66	53-500338	Adequate		6/20/1974	City of Cottonwood
33	Verde Valley	Black Hills Estates #2	Yavapai	16 North	3 East	32	80	53-500339	Adequate		10/31/1981	City of Cottonwood
34	Verde Valley	Black Hills Terrace	Yavapai	16 North	3 East	32, 33	18	53-500341	Adequate		5/8/1980	City of Cottonwood
35	Verde Canyon	Bonita Creek	Gila	12 North	11 East	32	38	53-500348	Inadequate	A1	6/6/1975	Dry Lot Subdivision
36	Verde Canyon	Bonita Pines Condominiums	Gila	10 North	10 East	3	26	53-500039	Inadequate	A1	11/20/2006	Town of Payson
37	Verde Valley	Boynton Canyon Ranch	Yavapai	18 North	5 East	20, 29	12	53-500350	Adequate		6/27/1980	Homeowners Association Wells
38	Verde Valley	Butler Subdivision	Yavapai	14 North	5 East	30	9	53-500372	Inadequate	C	3/25/1980	Dry Lot Subdivision
39	Verde Valley	Butterfield Plaza	Yavapai	16 North	5 East	13	46	53-500374	Adequate		6/6/1983	Big Park Water Company

Table 5.5-10 Adequacy Determinations in the Verde River Basin (Cont)¹

A. Water Adequacy Reports

Map Key	Sub-Basin	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						
40	Verde Valley	Camp Verde Acres	Yavapai	13 North	5 East	34	53	53-500386	Adequate		6/24/1981	Dry Lot Subdivision
41	Verde Valley	Camp Verde Townsite, Block 7	Yavapai	14 North	5 East	31	5	53-500387	Adequate		10/4/1993	Camp Verde Water System
42	Verde Valley	Canyon Mesa Country Club	Yavapai	16 North	6 East	18	109	53-500390	Adequate		8/27/1984	Big Park Water Company
43	Verde Valley	Canyon Mesa Country Club #2	Yavapai	16 North	6 East	18	44	53-500391	Adequate		12/12/1985	Big Park Water Company
44	Verde Valley	Canyon Mesa Country Club #3	Yavapai	16 North	6 East	18	20	53-400072	Adequate		5/21/1999	Big Park Water Company
45	Verde Canyon	Canyon River Ranch Subdivision	Gila	10 North	9 East	17	116	53-700322	Inadequate	A1	5/23/2007	Dry Lot Subdivision
46	Verde Valley	Canyon Shadows	Yavapai	17 North	5 East	1	21	53-500393	Adequate		7/7/1980	Arizona Water Company - Sedona
47	Verde Valley	Casa Bonita	Yavapai	17 North	5 East	12	22	53-500402	Adequate		4/17/1981	Arizona Water Company - Sedona
48	Verde Valley	Casa Del Sol Condominiums	Yavapai	16 North	3 East	34	28	53-400548	Adequate		8/14/2001	City of Cottonwood
49	Verde Valley	Casa Del Sol Condominiums - South	Yavapai	16 North	3 East	34	52	53-401223	Adequate		4/7/2004	City of Cottonwood
50	Verde Valley	Castle Rock Plaza	Yavapai	16 North	5 East	13	4	53-500423	Adequate		12/18/1985	Big Park Water Company
51	Verde Valley	Castle Rock Plaza #2	Yavapai	16 North	5 East	13	6	53-500424	Adequate		9/20/1982	Big Park Water Company
52	Verde Valley	Cathedral Rock Ranchos	Yavapai	17 North	5 East	35, 36	99	53-500425	Adequate		9/1/1981	Dry Lot Subdivision
53	Verde Valley	Cathedral View #2	Yavapai	16 North	6 East	18	15	53-500426	Adequate		7/19/1991	Big Park Water Company
54	Verde Valley	Cave View Estates	Yavapai	13 North	5 East	11	13	53-400595	Adequate		11/1/2001	Verde Lake Water Corp.
55	Verde Valley	Cedar Ridge	Yavapai	17 North	5 East	11	49	53-500428	Adequate		12/26/1978	Arizona Water Company - Sedona
56	Verde Canyon	Cedar Ridge Phase 1	Gila	11 North	10 East	32	8	53-401441	Inadequate	A1	10/21/2004	Town of Payson
57	Verde Canyon	Cedar Ridge Phase 2	Gila	11 North	10 East	32	14	53-401615	Inadequate	A1	1/18/2005	Town of Payson
58	Verde Canyon	Cedar Ridge Phase 3	Gila	11 North	10 East	32	6	53-401918	Inadequate	A1	1/3/2006	Town of Payson
59	Verde Valley	Chapel View	Yavapai	17 North	6 East	30	17	53-500447	Adequate		8/21/1973	Arizona Water Company - Sedona
61	Verde Canyon	Cimmaron Pines	Gila	12 North	9 East	30	64	53-500456	Inadequate	A1	7/6/1982	E & R Water Company
62	Verde Valley	Circle C Ranch	Yavapai	14 North	4 East	24	6	53-700321	Inadequate	A1	6/5/2007	Dry Lot Subdivision
63	Verde Valley	Clarkdale Palisades	Yavapai	16 North	3 East	29	53	53-500463	Adequate		4/17/1975	City of Cottonwood
64	Verde Valley	Clarkdale Palisades #3	Yavapai	16 North	3 East	29	84	53-500464	Adequate		9/26/1975	City of Cottonwood
65	Verde Valley	Clarkdale Palisades #4	Yavapai	16 North	3 East	29	112	53-500465	Adequate		8/25/1975	City of Cottonwood
66	Verde Valley	Cliffs Unit 2 South, The	Yavapai	14 North	5 East	31	30	53-400433	Adequate		12/5/2000	Camp Verde Water System
67	Verde Valley	Cliffs Unit Two North, The	Yavapai	14 North	5 East	31	29	53-300164	Adequate		7/23/1996	Camp Verde Water System
68	Verde Valley	Cliffs, The	Yavapai	14 North	5 East	31	42	53-500474	Adequate		9/2/1994	Camp Verde Water System
69	Verde Valley	Coffee Pot Lodge	Yavapai	17 North	5 East	1	27	53-500480	Adequate		2/10/1984	Arizona Water Company - Sedona
70	Verde Valley	Copper Gate Business Park	Yavapai	16 North	3 East	33	32	53-700477	Adequate		5/27/2008	City of Cottonwood
71	Verde Valley	Copper Vista Estates	Yavapai	17 North	5 East	13	42	53-500506	Adequate		7/6/1979	Oak Creek Water Company
72	Verde Valley	Cor D'Amor	Yavapai	17 North	5 East	15	43	53-402003	Adequate		4/25/2006	Arizona Water Company - Sedona
73	Verde Canyon	Cottage Creek Subdivision	Gila	10 North	10 East	3	11	53-402191	Inadequate	A1	8/3/2006	Town of Payson
74	Verde Valley	Cottages at Coffee Pot, The	Yavapai	17 North	5 East	1	37	53-500515	Adequate		6/27/1986	Arizona Water Company - Sedona
75	Verde Valley	Cottonwood Airpark	Yavapai	16 North	3 East	33	18	53-500516	Adequate		7/19/1985	City of Cottonwood
76	Verde Valley	Cottonwood Business Park	Yavapai	16 North	3 East	34	10	53-500517	Adequate		10/9/1981	City of Cottonwood
77	Verde Valley	Cottonwood Commons/Cottonwood Square	Yavapai	15 North	3 East	2	178	53-400318	Adequate		6/1/2000	City of Cottonwood

Table 5.5-10 Adequacy Determinations in the Verde River Basin (Cont)¹

A. Water Adequacy Reports

Map Key	Sub-Basin	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						
78	Verde Valley	Cottonwood Highlands Condominiums	Yavapai	15 North	3 East	3	12	53-700335	Adequate		6/25/2007	City of Cottonwood
79	Verde Valley	Cottonwood Ranch	Yavapai	16 North	3 East	32, 33	627	53-300096	Adequate		5/13/1996	City of Cottonwood
80	Verde Valley	Cottonwood Springs	Yavapai	15 North	3 East	17, 20	420	53-500519	Adequate		8/4/1980	Quail Springs Ranch Water Company
81	Verde Valley	Country Estates #3	Yavapai	13 North	5 East	7	19	53-500525	Inadequate	C	12/4/1973	Dry Lot Subdivision
82	Verde Valley	Country Estates #4	Yavapai	13 North	5 East	7	14	53-500526	Inadequate	C	3/14/1984	Dry Lot Subdivision
83	Verde Valley	Courthouse Butte Estates	Yavapai	17 North	5 East	27	16	53-500530	Adequate		6/15/1979	Community well
84	Verde Valley	Crestview	Yavapai	15 North	3 East	3	91	53-300022	Adequate		6/16/1995	City of Cottonwood
85	Verde Valley	Crestview Phase 3	Yavapai	15 North	3 East	3	40	53-400345	Adequate		7/19/2000	City of Cottonwood
86	Verde Valley	Crimson View	Yavapai	17 North	5 East	11	91	53-300088	Adequate		2/29/1996	Arizona Water Company - Sedona
87	Verde Valley	Cross Creek Ranch	Yavapai	17 North	5 East	33	84	53-400694	Adequate		4/9/2003	Cross Creek Ranch Community Association
88	Verde Valley	Diamond Creek Ranch	Yavapai	13 North	5 East	8	27	53-400199	Inadequate	C	11/2/1999	Dry Lot Subdivision
89	Verde Valley	Diamond Creek Ranch North	Yavapai	13 North	5 East	8	22	53-401353	Inadequate	C	6/10/2004	NA
90	Verde Valley	Distant Drums	Yavapai	17 North	5 East	9	6	53-500592	Adequate		2/6/1976	Arizona Water Company - Sedona
91	Verde Valley	Doodlebug #2	Coconino	17 North	6 East	19	42	53-500593	Adequate		4/15/1974	Arizona Water Company - Sedona
92	Verde Canyon	Eagle Glen Townhouses	Gila	12 North	8 East	36	57	53-500594	Inadequate	A1	2/16/1984	E & R Water Company
93	Verde Valley	Eagle Rock Subdivision	Yavapai	17 North	5 East	11	26	53-401545	Adequate		2/2/2005	Arizona Water Company - Sedona
94	Verde Canyon	East Tyler Condominiums	Gila	11 North	10 East	27	18	53-500043	Inadequate	A1	1/17/2007	Town of Payson
95	Verde Valley	Edgewater Condominiums	Yavapai	16 North	3 East	34	13	53-700521	Adequate		9/2/2008	City of Cottonwood
96	Verde Valley	Elk Creek at Simonton Ranch	Yavapai	14 North	4 East	36	87	53-500056	Adequate		5/18/2007	Camp Verde Water System
97	Verde Valley	Elk Creek at Simonton Ranch	Yavapai	14 North	5 East	31	87	53-500056	Adequate		5/18/2007	Camp Verde Water System
98	Verde Canyon	Elusive Acres	Gila	12 North	10 East	20	30	53-500611	Inadequate	A1, A2	3/22/1988	United Utilities Company
99	Verde Valley	Equestrian Estates	Yavapai	14 North	4 East	14	44	53-401613	Adequate		4/20/2005	Camp Verde Water System
100	Verde Valley	Estrella Noche Ranch (1999)	Yavapai	17 North	4 East	1, 36	10	53-300591	Adequate		1/14/1999	Homeowners Association Wells
101	Verde Valley	Fairfield Sedona	Yavapai	17 North	5 East	11, 14	114	53-400109	Adequate		8/2/1999	Arizona Water Company - Sedona
102	Verde Valley	Fairway Oaks	Yavapai	16 North	5 East	13	8	53-500634	Adequate		1/7/1987	Big Park Water Company
103	Verde Canyon	Fairway Oaks Estates replat	Gila	10 North	10 East	5, 6	23	53-500635	Inadequate	A1, A2	3/10/1983	Town of Payson
104	Verde Canyon	Falcon Lookout Phase One	Gila	11 North	10 East	33	19	53-402271	Inadequate	A1	10/27/2006	Town of Payson
105	Verde Canyon	Falcon View	Gila	11 North	10 East	33	57	53-300027	Inadequate	A2	10/3/1995	Town of Payson
106	Verde Valley	Flagstaff Meadows I	Coconino	21 North	5 East	1	220	53-401478	Inadequate	A1	8/17/2004	Homeowners Association Wells
107	Verde Valley	Flagstaff Meadows Townhomes	Coconino	21 North	5 East	1	105	53-401477	Inadequate	A1	8/17/2004	Undetermined
108	Verde Valley	Flagstaff Meadows Unit II	Coconino	21 North	5 East	1	87	53-401174	Inadequate	A1	2/4/2004	Utility Source LLC
109	Verde Valley	Flagstaff Meadows Unit III	Coconino	21 North	5 East	1	274	53-700301	Adequate		6/21/2007	Utility Source LLC
110	Verde Valley	Foothill Terrace	Yavapai	16 North	3 East	29	140	53-500638	Adequate		5/5/1983	City of Cottonwood
111	Verde Valley	Foothills North	Yavapai	17 North	5 East	3, 7	21	53-500661	Adequate		2/20/1979	Arizona Water Company - Sedona
112	Verde Valley	Foothills South	Yavapai	17 North	5 East	10	64	53-500667	Adequate		6/18/1974	Arizona Water Company - Sedona
113	Verde Valley	Foothills South #2 Amended	Yavapai	17 North	5 East	15	100	53-500668	Adequate		12/22/1982	Arizona Water Company - Sedona

Table 5.5-10 Adequacy Determinations in the Verde River Basin (Cont)¹

A. Water Adequacy Reports

Map Key	Sub-Basin	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						
114	Verde Valley	Foothills South Unit 4	Yavapai	17 North	5 East	15	8	53-401826	Adequate		9/8/2005	Arizona Water Company - Sedona
115	Verde Valley	Foothills South, Phase 3	Yavapai	17 North	5 East	15	25	53-401029	Adequate		9/18/2003	Arizona Water Company - Sedona
116	Verde Valley	Forest Highlands Unit Five	Coconino	20 North	7 East	18	170	53-300321	Adequate		8/22/1997	Forest Highlands Water Company
117	Verde Canyon	Forest Park	Gila	10 North	10 East	4	10	53-500670	Inadequate	A1, A2	8/11/1988	Town of Payson
118	Verde Canyon	Forest Park #1-3	Gila	10 North	10 East	4	28	53-500672	Inadequate	A1, A2	5/20/1980	United Utilities Company
119	Verde Valley	Forrest Ranch #1	Coconino	22 North	4 East	13, 24	10	53-500676	Inadequate	A1, A2	1/13/1987	Dry Lot Subdivision
120	Verde Canyon	Four Seasons North	Gila	11 North	10 East	34	48	53-500687	Inadequate	A2, A3	5/18/1983	Town of Payson
121	Verde Valley	FoxBoro Ranch Estates	Coconino	17 North	7 East	10	57	53-401577	Adequate		2/10/2005	Water Improvement District
122	Verde Canyon	Frontier Condominiums	Gila	10 North	10 East	4	42	53-300091	Inadequate	A1, A2	11/16/1996	Town of Payson
123	Verde Canyon	Frontier Cove	Gila	10 North	10 East	4	9	53-700367	Inadequate	A1	7/11/2007	Town of Payson
125	Verde Canyon	Frontier Townhouses	Gila	10 North	10 East	9	8	53-500690	Inadequate	A2	6/17/1980	United Utilities Company
126	Verde Valley	Gateway Commercial Complex Unit 1	Yavapai	14 North	4 East	23, 24	8	53-401794	Adequate		8/4/2005	Camp Verde Water System
127	Verde Valley	Golden Heights	Yavapai	14 North	4 East	12, 13	44	53-500717	Adequate		7/17/1980	Camp Verde Water System
128	Verde Canyon	Green Valley Estates	Gila	10 North	10 East	8	14	53-400849	Inadequate	A1, A2	11/25/2002	Town of Payson
129	Verde Canyon	Greenfaire	Gila	10 North	10 East	8	11	53-500761	Inadequate	A1, A2, C	10/27/1994	Town of Payson
130	Verde Canyon	Greenfaire Unit Two	Gila	10 North	10 East	8	8	53-300216	Inadequate	A1	10/30/1996	Town of Payson
131	Verde Valley	Grey Fox Ridge	Yavapai	16 North	3 East	28	99	53-401907	Adequate		2/2/2006	City of Cottonwood
133	Verde Canyon	Guevremont	Gila	12 North	8 East	21	10	53-500767	Inadequate	A1	7/17/1984	E & R Water Company
134	Verde Valley	Harmony Heights North	Yavapai	17 North	5 East	11	45	53-500775	Adequate		1/18/1978	Arizona Water Company - Sedona
135	Verde Valley	Haskell Springs	Yavapai	16 North	3 East	32	150	53-300011	Adequate		5/24/1995	City of Cottonwood
136	Big Chino	Headwaters Ranch Country Club	Yavapai	17 North	2 West	2	1,385	53-500778	Adequate		6/18/1993	E & R Water Company
137	Verde Canyon	Hidden Pines Phase II	Gila	12 North	8 East	25	18	53-500784	Inadequate	A1	8/8/1996	Williamson Waterworks, Inc.
138	Verde Canyon	Hidden Pines	Gila	12 North	8 East	25	49	53-500786	Inadequate	A1, A2	10/19/1995	Williamson Waterworks, Inc.
139	Verde Valley	Hidden Springs	Yavapai	16 North	3 East	31	10	53-402120	Adequate		7/7/2006	Clarkdale Municipal Water Utility
140	Verde Valley	Highland Estates #2	Yavapai	16 North	5 East	11	47	53-500790	Adequate		11/1/1979	Little Park Water Company
141	Verde Valley	Hillcrest Villa	Yavapai	15 North	3 East	2	10	53-500794	Adequate		3/22/1994	City of Cottonwood
142	Verde Valley	Hinch Springs Estates	Yavapai	13 North	5 East	11	33	53-401737	Adequate		6/28/2005	Verde Lake Water Corp.
143	Big Chino	Holiday Lake Estates	Yavapai	18 North	2 West	33, 34	1,543	53-300240	Inadequate	A1,B	2/7/1997	Abra Water Company, Inc.
145	Verde Valley	Homestead at Camp Verde, The (2000)	Yavapai	14 North	4 East	25, 30, 31, 36	165	53-400441	Adequate		12/18/2000	Camp Verde Water System
146	Verde Valley	Homestead at Simonton Ranch	Yavapai	14 North	4 East	25, 30	52	53-402060	Adequate		5/29/2007	Camp Verde Water System
147	Verde Canyon	Homestead, The	Gila	12 North	8 East	30	25	53-500803	Inadequate	A1	1/18/1984	E & R Water Company
148	Verde Canyon	Hunt Ranch #01	Gila	12 North	8 East	20	8	53-500810	Inadequate	A1	7/21/1993	E & R Water Company
149	Verde Valley	Hyatt Pinon Point/The Y Project	Coconino	17 North	6 East	7	109	53-400946	Adequate		5/16/2003	Arizona Water Company - Sedona
150	Verde Valley	Indian Cliffs	Coconino	17 North	6 East	30	41	53-500813	Adequate		9/15/1992	Arizona Water Company - Sedona
151	Verde Valley	Indian Lakes #2	Yavapai	14 North	5 East	11	46	53-700282	Inadequate	A1	9/25/2007	Dry Lot Subdivision
152	Big Chino	Inscription Canyon Ranch	Yavapai	16 North	3 West	27, 28	323	53-300021	Adequate		11/15/1995	ICR Water Users Association
153	Big Chino	Inscription Canyon Ranch Unit Five	Yavapai	16 North	3 West	27, 28	46	53-400551	Adequate		9/14/2001	ICR Water Users Association
154	Verde Valley	J.D. Stump Subdivision	Yavapai	14 North	5 East	2	8	53-500818	Adequate		9/27/1988	Dry Lot Subdivision

Table 5.5-10 Adequacy Determinations in the Verde River Basin (Cont)¹

A. Water Adequacy Reports

Map Key	Sub-Basin	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						
155	Verde Valley	John Gardiner's Enchantment Resort (2000)	Yavapai	18 North	5 East	20, 29	19	53-400266	Adequate		2/28/2000	Boynton Canyon Enchantment Homeowners Association
156	Verde Valley	Jordan Meadows #2	Yavapai	13 North	5 East	7	10	53-500823	Inadequate	A1	2/24/1976	Dry Lot Subdivision
157	Verde Valley	Jordan Meadows #3	Yavapai	13 North	5 East	7	6	53-500824	Inadequate	A1	3/26/1979	Dry Lot Subdivision
158	Verde Valley	Jordan Park Glen	Coconino	17 North	6 East	6	20	53-500825	Adequate		12/6/1991	Arizona Water Company
159	Verde Valley	Jordan Park Ridge	Coconino	17 North	6 East	5	39	53-500826	Adequate		12/29/1993	Arizona Water Company - Sedona
160	Verde Valley	Jordan Road Condominiums	Coconino	17 North	6 East	5	4	53-500827	Adequate		4/30/1981	Arizona Water Company - Sedona
161	Verde Valley	Jordan Road Condominiums B	Coconino	17 North	6 East	8	9		Adequate		6/14/2002	Arizona Water Company - Sedona
162	Verde Valley	Juniper Meadows	Yavapai	17 North	5 East	29	42	53-500830	Adequate		5/7/1992	Juniper Meadows Water Users'
163	Verde Valley	Junipine Oak Creek (1986)	Coconino	18 North	6 East	5, 8	18	53-500833	Adequate		3/21/1986	Junipine Community Property Owners Association
164	Verde Valley	Kachina Village	Coconino	20 North	7 East	20	3,000	53-500834	Adequate		8/25/1975	Flagstaff, City of
165	Big Chino	Kaibab Knolls Estates Unit 17	Coconino	22 North	2 West	17	12	53-500073	Inadequate	A1	1/30/2007	Dry Lot Subdivision
166	Verde Valley	Kindra Heights	Yavapai	16 North	3 East	28	21	53-401150	Adequate		1/28/2004	City of Cottonwood
167	Verde Valley	Kinsey Estates Two at Western Hills	Yavapai	17 North	5 East	11	9	53-401603	Adequate		3/30/2005	Arizona Water Company - Sedona
168	Verde Valley	Kinsey Estates at Western Hills	Yavapai	17 North	5 East	11	9	53-401397	Adequate		9/15/2004	Arizona Water Company - Sedona
169	Verde Valley	Koch Ranch Estates (2005)	Yavapai	15 North	4 East	15	35	53-401913	Adequate		12/1/2005	Dry Lot Subdivision
170	Verde Valley	La Barranca	Yavapai	16 North	6 East	17, 18	76	53-300502	Adequate		9/8/1998	Big Park Water Company
171	Verde Valley	Lakeside Townhouses	Yavapai	14 North	5 East	2	10	53-500891	Adequate		5/27/1983	Arizona Water Company - Rimrock
172	Verde Valley	Las Estancias	Yavapai	14 North	4 East	14	26	53-400398	Adequate		10/25/2000	Camp Verde Water System
173	Verde Valley	Las Oficinas Office Building	Yavapai	17 North	5 East	12	6	53-500896	Adequate		10/22/1984	Arizona Water Company - Sedona
174	Verde Valley	Las Piedras	Yavapai	16 North	5 East	24	152	53-300413	Adequate		5/18/1998	Big Park Water Company
				16 North	6 East	19						
175	Verde Valley	Les Springs	Coconino	17 North	6 East	7, 18	106	53-500904	Adequate		8/28/1985	Arizona Water Company - Sedona
176	Verde Valley	Loma Sinagua Townhomes	Yavapai	15 North	3 East	2	195	53-300084	Adequate		1/10/1996	City of Cottonwood
177	Big Chino	Long Meadow Ranch - Unit 3	Yavapai	16 North	3 West	19	6	53-401596	Inadequate	A1	12/29/2004	Dry Lot Subdivision
179	Verde Canyon	Longhorn Condominiums	Gila	10 North	10 East	4	14	53-700234	Inadequate	A1	6/15/2007	Town of Payson
180	Verde Valley	Los Abridados Timeshare	Coconino	17 North	6 East	18	175	NA	Adequate		12/9/1988	Arizona Water Company
181	Verde Valley	Los Lomas	Yavapai	17 North	5 East	15	32	53-500920	Adequate		11/9/1982	Arizona Water Company - Sedona
182	Verde Canyon	Lovett Place	Gila	11 North	10 East	28	18	53-300113	Inadequate	A2	3/15/1996	Town of Payson
183	Verde Valley	Lucky Canyon Estates	Yavapai	13 North	4 East	1	6	53-401490	Inadequate	A1	12/8/2004	Dry Lot Subdivision
184	Verde Valley	Maine Townsite	Coconino	22 North	4 East	26	9	53-500931	Inadequate	A2, A3	7/29/1977	Dry Lot Subdivision
185	Big Chino	Malapai Ridge Estates	Yavapai	17 North	2 West	9	25	53-500932	Adequate		1/15/1988	Dry Lot Subdivision
186	Verde Canyon	Manzanita Hills Phase 4	Gila	10 North	10 East	5	19	53-400739	Inadequate	A1	6/18/2002	Town of Payson
187	Verde Canyon	Manzanita Hills #1	Gila	10 North	10 East	5	11	53-500934	Inadequate	A1, A2, C	1/17/1995	Town of Payson
188	Verde Canyon	Manzanita Hills #2	Gila	11 North	10 East	5	22	53-500935	Inadequate	A1, A2, C	1/18/1995	Town of Payson
189	Verde Valley	Manzanita Hills #2	Coconino	17 North	6 East	5	16	53-500936	Adequate		4/15/1974	Arizona Water Company - Sedona
190	Verde Canyon	Manzanita Hills #3	Gila	10 North	10 East	5	7	53-300461	Inadequate	A1	5/15/1998	Town of Payson
191	Verde Canyon	Manzanita Hills Phase Five	Gila	11 North	10 East	32	8	53-400905	Inadequate	A1	3/31/2003	Town of Payson

Table 5.5-10 Adequacy Determinations in the Verde River Basin (Cont)¹

A. Water Adequacy Reports

Map Key	Sub-Basin	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						
192	Verde Canyon	Manzanita Hills Phase Six	Gila	10 North	10 East	5	14	53-500007	Inadequate	A1	10/24/2006	Town of Payson
193	Verde Canyon	Manzanita Woods	Gila	11 North	10 East	32	6	53-300462	Inadequate	A1	5/15/1998	Town of Payson
194	Verde Valley	Maybelle Estates	Yavapai	13 North	5 East	6	5	53-500939	Adequate		10/11/1974	Camp Verde Water System
195	Verde Canyon	Mazatzal Mountain Air Park, Unit 4	Gila	11 North	10 East	31, 32	41	53-700436	Inadequate	A1	11/1/2007	Town of Payson
196	Verde Canyon	Mazatzal Mountain Air Park, Unit3 Phase 1	Gila	11 North	10 East	32	12	53-401032	Inadequate	A1	9/3/2003	Town of Payson
197	Verde Canyon	Mazatzal Mountain Airpark #01	Gila	11 North	10 East	32	26	53-300173	Inadequate	A1, A2	8/23/1996	Town of Payson
198	Verde Canyon	Mazatzal Moutain Air Park, Unit 2, Phase 2	Gila	11 North	10 East	32	14	53-400805	Inadequate	A1	9/17/2002	Town of Payson Water Department
199	Verde Valley	Mel Glo Estates #2	Yavapai	15 North	4 East	3	8	53-500951	Inadequate	C	2/25/1976	Dry Lot Subdivision
200	Verde Canyon	Mesa Del Caballo Tracts, plats 3, 5 & 6	Gila	11 North	10 East	23, 24	12	53-400038	Inadequate	A1, C	3/26/1999	Brooke Utilities
201	Verde Valley	Mesa Verde Estates	Yavapai	14 North	5 East	19, 30	16	53-500968	Inadequate	C	4/15/1980	Dry Lot Subdivision
202	Verde Valley	Mesquite Hills	Yavapai	15 North	3 East	4, 5	425	53-402009	Adequate		1/11/2007	City of Cottonwood
203	Verde Valley	Mesquite Springs	Yavapai	15 North	3 East	3	64	53-401689	Adequate		7/14/2005	City of Cottonwood
204	Verde Valley	Millwood Estates	Yavapai	13 North	5 East	8	30	53-401948	Inadequate	A1	2/1/2006	Dry Lot Subdivision
206	Verde Valley	Mingus Panorama Estates	Yavapai	16 North	4 East	35	69	53-700263	Adequate		3/9/2007	Mingus Panorama Estates HOA
207	Verde Valley	Mingus Shadows	Yavapai	16 North	3 East	29	122	53-500978	Adequate		5/21/1982	City of Cottonwood
208	Verde Valley	Mingus View Estates	Yavapai	16 North	3 East	32	70	53-500979	Adequate		1/13/1994	City of Cottonwood
209	Big Chino	Mint Creek Ranch	Yavapai	15 North	3 West	2, 11	74	53-500981	Adequate		11/29/1993	Dry Lot Subdivision
210	Verde Valley	Mission Hills	Yavapai	17 North	5 East	12	81	53-500989	Adequate		9/26/1980	Arizona Water Company - Sedona
211	Verde Canyon	Mogollon Village	Gila	10 North	10 East	4	42	53-401668	Inadequate	A1	3/29/2005	Town of Payson
212	Verde Valley	Morning Sun Condominiums	Yavapai	17 North	5 East	13	74	53-501016	Adequate		12/31/1987	Oak Creek Water Company
213	Verde Valley	Mountain Estates	Yavapai	13 North	4 East	1	15	53-401186	Adequate		2/2/2004	Camp Verde Water System
214	Verde Valley	Mountain Gate	Yavapai	16 North	3 East	19, 20	606	53-401660	Adequate		6/3/2005	City of Cottonwood
215	Verde Valley	Mountain Rose Ranch	Coconino	21 North	3 East	3	32	53-400914	Inadequate	A1, A2, A3	4/17/2003	Individual Wells
216	Verde Valley	Mountain View Ranchos	Yavapai	15 North	4 East	11	47	53-501034	Adequate		3/26/1979	Dry Lot Subdivision
217	Verde Canyon	Mountain-Aire Condominiums	Gila	11 North	10 East	34	4	53-501041	Inadequate	A1, A2	6/14/1982	Ponderosa Utility Corporation
218	Verde Canyon	Mountain-Aire Condominiums #3	Gila	11 North	10 East	34	8	53-501042	Inadequate	A1, A2	9/10/1985	Town of Payson
219	Verde Valley	Mountainaire #5	Coconino	20 North	7 East	28	22	53-501040	Adequate		7/29/1983	Town of Payson
220	Verde Valley	Mountainaire Meadows	Coconino	20 North	7 East	28	20	53-501043	Adequate		5/5/1983	Ponderosa Utility Corporation
221	Verde Valley	Mystic Hills	Coconino	17 North	6 East	19	144	53-501045	Adequate		9/15/1992	Arizona Water Company
222	Verde Valley	Nepenthe	Yavapai	17 North	5 East	14	182	53-300083	Adequate		1/16/1996	Arizona Water Company
223	Big Chino	Nighthawk Ridge	Yavapai	17 North	2 West	29	188	53-700463	Adequate		4/29/2008	Town of Chino Valley
224	Verde Valley	Nizhoni Village	Yavapai	16 North	5 East	13	40	53-501049	Adequate		11/7/1980	Big Park Water Company
225	Big Chino	North Arrow Ranch	Yavapai	15 North	3 West	2	25	53-401930	Adequate		1/25/2006	Dry Lot Subdivision
226	Verde Valley	North Slopes #3, Lots 33-55	Yavapai	17 North	5 East	3	23	53-300258	Adequate		7/3/1997	Arizona Water Company - Sedona
227	Verde Valley	Northeast Industries Commercial Complex	Yavapai	14 North	5 East	5	28	53-402092	Inadequate	A1	9/11/2006	Camp Verde Water System
228	Verde Valley	Northern Shadows	Yavapai	17 North	5 East	12	36	53-501054	Adequate		7/18/1983	Arizona Water Company - Sedona
229	Verde Valley	Northview	Yavapai	17 North	5 East	13	121	53-501058	Adequate		11/29/1973	Oak Creek Water Company
230	Verde Canyon	Northwoods	Gila	11 North	10 East	34	72	53-300199	Inadequate	A1, A2	11/8/1996	Town of Payson

A. Water Adequacy Reports

Table 5.5-10 Adequacy Determinations in the Verde River Basin (Cont¹)

Map Key	Sub-Basin	Subdivision Name	County	Location			No. of Lots	ADWR File No. ²	ADWR Adequacy Determination	Reason(s) for Inadequacy ³	Date of Determination	Water Provider at the Time of Application
				Township	Range	Section						
231	Verde Valley	Oak Bend #2	Yavapai	15 North	4 East	10, 15	12	53-501059	Adequate		2/4/1988	Dry Lot Subdivision
232	Verde Valley	Oak Creek Country Club Est #2	Yavapai	16 North	5 East	13	40	53-501060	Adequate		11/23/1981	Arizona Water Company - Sedona
233	Verde Valley	Oak Creek Country Club Est #3	Yavapai	16 North	5 East	23, 24	58	53-501061	Adequate		11/23/1981	Arizona Water Company - Sedona
234	Verde Valley	Oak Creek Country Club Estates	Yavapai	16 North	5 East	13	63	53-501062	Adequate		2/6/1980	Arizona Water Company - Sedona
235	Verde Valley	Oak Creek Estates	Yavapai	16 North	5 East	13	136	53-501063	Adequate		6/3/1981	Big Park Water Company
236	Verde Valley	Oak Creek Palisades	Yavapai	16 North	4 East	35	15	53-501064	Inadequate	A1	8/26/1973	Dry Lot Subdivision
237	Verde Valley	Oak Creek Valley #1, 3	Yavapai	16 North	4 East	34	135	53-501065	Adequate		6/21/1977	Oak Creek Water Company
238	Verde Valley	Oak Creek Valley #2	Yavapai	16 North	4 East	34	50	53-501066	Adequate		8/8/1979	Oak Creek Water Company
239	Big Chino	Old Highway 89 Estates	Yavapai	17 North	2 West	22	8	53-700422	Inadequate		10/18/2007	Dry Lot Subdivision
240	Verde Valley	Orchards #2	Cocoonino	17 North	6 East	6	34	53-501066	Adequate		8/30/1974	Arizona Water Company - Sedona
241	Verde Valley	Palisades	Cocoonino	17 North	6 East	18	86	53-501092	Adequate		10/17/1978	Arizona Water Company - Sedona
242	Verde Valley	Panorama	Yavapai	16 North	3 East	19, 30	22	53-501098	Adequate		10/30/1975	City of Cottonwood
243	Verde Valley	Papago Highlands (1974)	Yavapai	17 North	5 East	10, 15	192	53-501103	Adequate		9/23/1974	Arizona Water Company - Sedona
244	Verde Canyon	Paradise Heights	Gila	10 North	10 East	8, 9	16	53-401022	Inadequate	A1	9/3/2003	Town of Payson
245	Verde Canyon	Paradise Heights Phase Two	Gila	10 North	10 East	9	20	53-401547	Inadequate	A1	11/16/2004	Town of Payson
246	Verde Valley	Park Place Condominium	Yavapai	17 North	5 East	15	88	53-401834	Adequate		11/14/2005	Arizona Water Company - Sedona
247	Verde Valley	Parks Pile	Cocoonino	22 North	4 East	26	26	53-501125	Inadequate	A2, A3	9/20/1975	Dry Lot Subdivision
248	Big Chino	Paullen Farms	Yavapai	17 North	2 West	4	15	53-501128	Adequate		3/4/1992	Dry Lot Subdivision
249	Verde Canyon	Payson Industrial Park	Gila	10 North	10 East	4	13	53-501129	Inadequate	D	11/8/1988	Town of Payson
250	Verde Canyon	Payson Meadows	Gila	11 North	10 East	27, 28	32	53-501130	Inadequate	A1, A2	8/7/1986	Town of Payson
251	Verde Canyon	Payson Pines	Gila	11 North	10 East	28	127	53-300364	Inadequate	A1	9/30/1997	Town of Payson
252	Verde Canyon	Payson Pines Unit Two	Gila	11 North	10 East	28	22	53-400740	Inadequate	A1	6/29/2002	Town of Payson
253	Verde Canyon	Payson Townsite (Map 64 GCR); ROS 3121 - Parcels A - E and ROS 3235 - Parcels A1 -D1	Gila	10 North	10 East	4	9	53-700363	Inadequate	A1	6/26/2007	Town of Payson
254	Verde Valley	Pebble Rock	Yavapai	13 North	5 East	5	10	53-401538	Adequate		3/7/2005	NA
255	Verde Valley	Pecan Acres	Yavapai	16 North	3 East	35	28	53-501134	Adequate		5/9/1979	City of Cottonwood
256	Verde Valley	Penny Acres #2	Yavapai	15 North	3 East	1, 2	8	53-501141	Adequate		7/27/1978	Dry Lot Subdivision
257	Verde Valley	Piedras Del Rojo Condominiums	Yavapai	17 North	5 East	15	18	53-401864	Adequate		11/14/2005	Arizona Water Company - Sedona
258	Verde Canyon	Pine Aite	Gila	10 North	10 East	3	12	53-501149	Inadequate	A1, A2	3/18/1980	United Utilities Company
259	Verde Canyon	Pine Mountain Acres	Gila	12 North	9 East	30	32	53-501151	Inadequate	A1, A2, B	11/26/1974	Dry Lot Subdivision
260	Verde Valley	Pinewood Fairway Condos #1	Cocoonino	18 North	7 East	15	44	53-501168	Inadequate	A1	1/29/1979	Arizona Water Company
261	Verde Valley	Pinewood Fairway Condos #2	Cocoonino	18 North	7 East	15	18	53-501169	Inadequate	A1	4/26/1979	Arizona Water Company
262	Verde Valley	Pinewood Fairway Condos #3	Cocoonino	18 North	7 East	15	20	53-501170	Inadequate	A1	5/14/1981	Arizona Water Company
263	Verde Valley	Pinewood Fairway Condos #4	Cocoonino	18 North	7 East	15	8	53-501171	Inadequate	A1	6/8/1981	Arizona Water Company
264	Verde Valley	Pinewood Fairway Condos #5	Cocoonino	18 North	7 East	15	18	53-501172	Inadequate	A1	11/25/1981	Arizona Water Company
265	Verde Valley	Pinewood Fairway Condos #5	Cocoonino	18 North	7 East	15	20	53-501173	Inadequate	A1	12/9/1981	Arizona Water Company
266	Verde Valley	Pinon Valley Estates	Yavapai	16 North	6 East	18	8	53-501190	Adequate		8/9/1993	Big Park Water Company
267	Verde Valley	Pinon Woods	Yavapai	16 North	6 East	18	129	53-501191	Adequate		8/15/1983	Big Park Water Company
268	Verde Valley	Pinon Woods #2	Yavapai	16 North	6 East	18	28	53-501192	Adequate		4/5/1993	Big Park Water Company

Table 5.5-10 Adequacy Determinations in the Verde River Basin (Cont)¹

A. Water Adequacy Reports

Map Key	Sub-Basin	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						
269	Verde Valley	Pinon Woods Unit III	Yavapai	16 North	6 East	18	70	53-300005	Adequate		3/30/1995	Big Park Water Company
270	Verde Valley	Playa del Rio	Yavapai	14 North	4 East	13, 14	183	53-501200	Adequate		5/13/1987	Camp Verde Water System
271	Verde Valley	Plaza West, The	Yavapai	17 North	5 East	11	33	53-501201	Adequate		11/8/1984	Arizona Water Company - Sedona
272	Verde Valley	Poco Diablo Villas	Coconino	17 North	6 East	19	18	53-501202	Adequate		10/11/1974	Arizona Water Company - Sedona
273	Verde Valley	Poco Diablo Villas #2	Coconino	17 North	6 East	19	33	53-501203	Adequate		9/28/1978	Arizona Water Company - Sedona
274	Verde Canyon	Ponderosa Heights - Phase 1	Gila	11 North	10 East	27	20	53-700454	Inadequate	A1	1/3/2008	Town of Payson
275	Verde Valley	Ponderosa Paradise #2	Coconino	16 North	8 East	16	6	53-501204	Inadequate	D	8/21/1989	Stoneman Lake Water Company
276	Verde Valley	Ponderosa Shadows	Coconino	22 North	4 East	28	13	53-700386	Inadequate	A1	8/9/2007	Dry Lot Subdivision
277	Verde Canyon	Portal #3, Pine Canyon	Gila	12 North	8 East	24	192	53-501206	Adequate		10/23/81	Myers Water Company
278	Verde Canyon	Portal (Canyon Shadows)	Gila	12 North	8 East	25	NA	53-501207	Adequate		7/17/1973	developer-supplied
279	Verde Canyon	Portal Pine Creek Canyon #2	Gila	12 North	8 East	25	208	53-501208	Adequate		8/12/1976	Myers Water Company
280	Verde Canyon	Portal Pine Creek Canyon #3	Gila	12 North	8 East	24	198	53-501209	Adequate		10/23/1981	Myers Water Company
281	Verde Canyon	Portal Pine Creek Canyon #4, Phase 1	Gila	12 North	8 East	25	73	53-501210	Inadequate	A1,A2	7/19/1994	Williamson Water Works
282	Verde Canyon	Portal at Pine Creek Canyon #4, Phase 2	Gila	12 North	8 East	25	7	53-400396	Inadequate	A1	9/22/2000	Pine Creek Canyon Domestic Water Improvement Dist.
283	Verde Valley	Quail Canyon	Yavapai	15 North	3 East	15, 22	59	53-401819	Adequate		9/8/2005	Quail Canyon Domestic Water Improvement District
284	Verde Valley	Quail Springs Ranches	Yavapai	15 North	2 East	15	16	53-501238	Inadequate	A2	3/25/1975	Dry Lot Subdivision
285	Verde Valley	Rainbow Subdivision	Yavapai	16 North	3 East	34	5	53-501245	Adequate		1/6/1988	Cottonwood Water Works, Inc.
286	Verde Valley	Ranch Acres	Yavapai	14 North	5 East	30, 31	75	53-501246	Adequate		10/26/1973	Camp Verde Water System
287	Big Chino	Ranch at Hidden Valley, The	Yavapai	17 North	2 West	29	56	53-400349	Inadequate	A2	8/21/2000	Dry Lot Subdivision
288	Verde Valley	Rancho Shangri La	Coconino	18 North	5 East	21	20	53-501271	Adequate		8/19/1981	Rancho del Oro
289	Verde Valley	Rancho del Oro	Yavapai	18 North	6 East	27	437	53-501256	Adequate		4/1/1981	Shangri La Property Owners Association
290	Big Chino	Ravencrest	Yavapai	18 North	2 West	19, 30	29	53-400573	Adequate		9/11/2001	Dry Lot Subdivision
291	Verde Valley	Red Rock Cove	Yavapai	17 North	5 East	13	6	NA	Adequate		1/22/1982	Big Park Water Company
292	Verde Valley	Red Rock Vista	Yavapai	16 North	5 East	23	6	53-501291	Adequate		3/21/1994	Arizona Water Company - Sedona
294	Verde Valley	Retreat on Oak Creek	Yavapai	17 North	5 East	27, 34	38	53-700261	Adequate		4/23/2007	Oak Creek Domestic Water Improvement District
295	Verde Valley	Ridge at Sedona, The (1985)	Yavapai	16 North	5 East	24	19	53-501294	Adequate		2/28/1985	Arizona Water Company - Sedona
296	Verde Valley	Ridge at Sedona, The (1997)	Yavapai	16 North	5 East	24	8	53-300360	Adequate		10/10/1997	Arizona Water Company - Sedona
297	Verde Valley	Ridge on Sedona Golf Resort, The	Yavapai	16 North	5 East	24	106	53-300330	Adequate		7/5/1997	Arizona Water Company - Sedona
298	Verde Canyon	Rim Golf Club, The	Gila	11 North	10 East	1, 36	317	53-300426	Adequate		4/21/1998	Town of Payson
299	Verde Canyon	Rim Ranch	Gila	11 North	10 East	32	20	53-300547	Inadequate	A1	10/19/1998	Town of Payson
300	Verde Canyon	Rim Ridge Estates Phase I	Gila	10 North	10 East	3	14	53-700560	Inadequate	A1	8/27/2008	Town of Payson
301	Verde Valley	Rim Rock Heights	Yavapai	15 North	5 East	36	36	53-400653	Adequate		2/26/2002	Dry Lot Subdivision
302	Verde Valley	Rim Shadows	Yavapai	17 North	5 East	1	32	53-501298	Adequate		7/7/1980	Arizona Water Company - Sedona
303	Big Chino	Rimrock #1	Yavapai	17 North	2 West	14, 15, 23	35	53-300008	Adequate		5/26/1995	Dry Lot Subdivision
304	Big Chino	Rimrock #2	Yavapai	17 North	2 West	23	52	53-300079	Adequate		12/8/1995	Dry Lot Subdivision

Table 5.5-10 Adequacy Determinations in the Verde River Basin (Cont)¹

A. Water Adequacy Reports

Map Key	Sub-Basin	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						
305	Big Chino	Rimrock North	Yavapai	17 North	2 West	15	35	53-300329	Adequate		7/30/1997	Dry Lot Subdivision
306	Verde Valley	Rio Bonito Ranch	Yavapai	16 North	4 East	34	33	53-401892	Adequate		7/13/2006	Dry Lot Subdivision
307	Verde Valley	Rio Verde Condominiums	Yavapai	16 North	3 East	34	12	53-501319	Adequate		11/17/1981	City of Cottonwood
308	Verde Valley	Rio Verde Ranchos	Yavapai	13 North	5 East	6	34	53-501321	Inadequate	C	3/17/1989	Dry Lot Subdivision
309	Verde Valley	River Ranch Estates	Yavapai	14 North	4 East	3	18	53-300144	Adequate		6/28/1996	Dry Lot Subdivision
310	Verde Valley	Rivers View Estates	Yavapai	14 North	5 East	30, 31	15	53-402077	Adequate		3/22/2007	Camp Verde Water System
311	Verde Valley	Rylie Heights	Yavapai	16 North	3 East	28	16	53-401990	Adequate		6/21/2006	City of Cottonwood
312	Verde Valley	Saddlerock Homes	Yavapai	17 North	5 East	13	116	53-501351	Adequate		9/11/1978	Oak Creek Water Company
313	Verde Valley	San Carlos Condominiums	Yavapai	17 North	5 East	12	40	53-501357	Adequate		7/24/1980	Oak Creek Water Company
314	Verde Valley	San Patricio Estates	Yavapai	17 North	5 East	12	40	53-501364	Adequate		9/26/1975	Arizona Water Company - Sedona
315	Big Chino	Santa Fe Industrial Sites	Yavapai	18 North	2 West	34	200	53-501371	Adequate		4/11/1994	Abra Water Co.
316	Verde Valley	Sawmill Cove	Yavapai	15 North	3 East	2	36	53-501375	Adequate		1/18/1994	City of Cottonwood
317	Verde Valley	Sawmill Gardens Patio Homes	Yavapai	15 North	3 East	2	59	53-501376	Adequate		11/13/1985	City of Cottonwood
318	Verde Valley	Schuerman Estates	Yavapai	17 North	5 East	26	2	53-501377	Adequate		1/27/1976	Dry Lot Subdivision
319	Verde Canyon	Secluded Homesites	Gila	12 North	9 East	31	19	53-501380	Inadequate	A1	3/28/1980	Dry Lot Subdivision
320	Verde Valley	Sedona At Seven Canyons, Unit II	Yavapai	18 North	5 East	27	20	53-401110	Adequate		10/17/2003	Arizona Water Company - Sedona
321	Verde Valley	Sedona Gardens	Yavapai	17 North	5 East	15	18	53-501381	Adequate		11/23/1981	Arizona Water Company - Sedona
322	Verde Valley	Sedona Golf Resort 1	Yavapai	16 North	5 East	24	19	53-300071	Adequate		12/4/1995	Arizona Water Company - Sedona
323	Verde Valley	Sedona Golf Resort 2	Yavapai	16 North	5 East	24	94	53-300148	Adequate		6/11/1995	Arizona Water Company - Sedona
324	Verde Valley	Sedona Golf Resort, Phase 2	Yavapai	16 North	5 East	23, 24	192	53-300401	Adequate		3/31/1998	Arizona Water Company - Sedona
325	Verde Valley	Sedona Golf Resort, Rst Hotel	Yavapai	16 North	5 East	24	225	53-300340	Adequate		8/25/1997	Arizona Water Company - Sedona
326	Verde Valley	Sedona Heights	Yavapai	17 North	5 East	12	16	53-300273	Adequate		3/25/1997	Arizona Water Company - Sedona
327	Verde Valley	Sedona National Golf Club	Yavapai	18 North	5 East	29, 30, 31	20	53-400606	Adequate		11/1/2001	Arizona Water Company - Sedona
328	Verde Valley	Sedona San Carlos	Yavapai	17 North	5 East	12	40	53-501382	Adequate		9/24/1990	Oak Creek Water Company
329	Verde Valley	Sedona Seven Canyons Units I, II, and III	Yavapai	18 North	5 East	27	118	53-400907	Adequate		8/28/2003	Seven Canyons Water Company
330	Verde Valley	Sedona Summit II, Phase 3	Yavapai	17 North	5 East	15	39	53-400124	Adequate		8/24/1999	Arizona Water Company - Sedona
331	Verde Valley	Sedona Vista Estates	Coconino	17 North	6 East	7	12	53-501383	Adequate		8/21/1980	Arizona Water Company - Sedona
332	Verde Valley	Seven Canyons of Sedona	Yavapai	18 North	5 East	27	300	53-300262	Adequate		10/29/1997	NA
333	Verde Valley	Seven Vistas	Coconino	17 North	6 East	30	9	53-700221	Adequate		9/24/2007	Arizona Water Company - Sedona
334	Verde Valley	Shadow Rock	Yavapai	17 North	5 East	1	34	53-501386	Adequate		3/21/1980	Arizona Water Company - Sedona
335	Verde Valley	Shadowbrook Condominium	Yavapai	17 North	5 East	11	54	53-501387	Adequate		2/22/1988	Arizona Water Company - Sedona
336	Verde Valley	Sierra Verde Estates	Yavapai	13 North	5 East	15, 16	30	53-501404	Inadequate	C	4/12/1982	Dry Lot Subdivision
337	Verde Valley	Silver Springs #1	Yavapai	15 North	3 East	3	8	53-501412	Adequate		11/12/1980	City of Cottonwood
338	Verde Valley	Silver Springs Development	Yavapai	15 North	3 East	3	48	53-501413	Adequate		10/29/1986	City of Cottonwood
339	Verde Valley	Silver Springs Garden Homes	Yavapai	15 North	3 East	3	26	53-501414	Adequate		7/11/1994	City of Cottonwood
340	Verde Valley	Silver Springs Terrace #1	Yavapai	15 North	3 East	3	22	53-501415	Adequate		4/7/1981	City of Cottonwood

Table 5.5-10 Adequacy Determinations in the Verde River Basin (Cont)¹

A. Water Adequacy Reports

Map Key	Sub-Basin	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						
341	Verde Valley	Silverado at Simonton Ranch	Yavapai	14 North	4 East	25, 36	252	53-401916	Adequate		11/14/2005	Camp Verde Water System
342	Verde Valley	Sky Line Estates	Coconino	17 North	6 East	17	11	53-501418	Adequate		6/21/1991	Arizona Water Company - Sedona
343	Verde Canyon	Sky Park Industrial	Gila	11 North	10 East	32	64	53-501419	Inadequate	A1,A2	12/29/1983	Town of Payson
344	Verde Valley	Skyline Estates	Yavapai	15 North	3 East	3	34	53-401481	Adequate		12/13/2004	City of Cottonwood
345	Verde Valley	Sleepy Hollow Townhomes	Yavapai	14 North	5 East	32	20	53-700284	Inadequate	A1	4/25/2007	Camp Verde Water System
346	Verde Valley	Solair Estates	Yavapai	15 North	4 East	11	42	53-501429	Adequate		10/23/1979	Dry Lot Subdivision
347	Verde Valley	Solair Estates #1	Yavapai	15 North	4 East	11	12	53-501430	Adequate		4/28/1983	E & R Water Company
348	Verde Canyon	Solitude Pines #1,2,5	Gila	12 North	9 East	31	255	53-501431	Inadequate	A1	9/11/1985	E & R Water Company
349	Verde Canyon	Solitude Trails	Gila	12 North	9 East	31	73	53-501432	Inadequate	A1	9/28/1994	E & R Water Company
350	Verde Canyon	Solitude Trails Unit Four	Gila	12 North	9 East	31	10	53-300580	Adequate		8/16/1999	Solitude Trails Domestic Water Improvement District
351	Verde Canyon	Spirit Ridge Equestrian Estates	Gila	11 North	10 East	27	5	53-401614	Inadequate	NA	1/12/2005	Town of Payson
353	Verde Valley	Spring Creek Ranch Phase 1	Yavapai	16 South	4 East	22	15	53-500024	Adequate		11/6/2006	Spring Creek Ranch Domestic Water Improvement District
354	Verde Valley	Spring Creek Ranch Phase 1	Yavapai	16 North	4 East	21	15	53-500024	Adequate		11/6/2006	Spring Creek Ranch Domestic Water Improvement District
355	Verde Valley	Spring Creek Ranch Phases 2, 3, 4	Yavapai	16 North	4 East	15, 21, 22	83	53-700248	Adequate		2/21/2007	Spring Creek Ranch Domestic Water Improvement District
356	Verde Valley	Starlight Village #2	Yavapai	15 North	3 East	3	32	53-501456	Adequate		1/16/1981	City of Cottonwood
357	Verde Canyon	Stone Creek at Payson	Gila	10 North	10 East	4, 5	130	53-400061	Inadequate	A1	4/21/1999	Town of Payson
358	Verde Valley	Stoneridge	Yavapai	14 North	5 East	31	54	53-400904	Adequate		7/21/2003	Camp Verde Water System
359	Verde Canyon	Strawberry Creek Foothills	Gila	12 North	8 East	20	96	53-501461	Adequate		3/13/1980	Myers Water Company
360	Verde Canyon	Strawberry Hollow	Gila	12 North	8 East	26	72	53-401908	Adequate		3/17/2006	Strawberry Hollow DWID
361	Verde Canyon	Strawberry Mountain Shadows #2,3	Gila	12 North	8 East	35	134	53-501462	Adequate		3/31/1977	E & R Water Company
362	Verde Canyon	Strawberry Mountain Shadows #4	Gila	12 North	9 East	35	264	53-501463	Inadequate	A1	2/11/1981	E & R Water Company
363	Verde Canyon	Strawknolls #4 amended	Gila	12 North	8 East	22	8	53-501464	Inadequate	C	11/12/1982	Arizona Water Company
364	Verde Canyon	Streams at Payson, The #1	Gila	10 North	10 East	4	72	53-501465	Inadequate	A1,A2	9/6/1985	Town of Payson
365	Verde Valley	Sun Dance Townhouses	Yavapai	16 North	5 East	13	58	53-501478	Adequate		2/28/1980	Big Park Water Company
366	Big Chino	Sundown Acres unit 2	Yavapai	15 North	3 West	24	8	53-501496	Adequate		12/16/1974	Dry Lot Subdivision
367	Verde Valley	Sunrise Cliffs	Yavapai	17 North	5 East	1	6	53-501506	Adequate		8/21/1986	Arizona Water Company - Sedona
368	Verde Valley	Sunset Hills	Yavapai	17 North	5 East	19	76	53-501516	Adequate		3/21/1974	Big Park Water Company
369	Verde Valley	Sunset Plaza	Yavapai	17 North	5 East	11	8	53-501519	Adequate		5/14/1976	Arizona Water Company - Sedona
370	Verde Valley	Sunup Ranch	Yavapai	16 North	5 East	14	16	53-401418	Adequate		9/15/2004	Arizona Water Company - Sedona
371	Verde Valley	Swinging Bridge Estates	Yavapai	16 North	4 East	34	8	53-501530	Adequate		6/12/1979	Dry Lot Subdivision
372	Verde Valley	Sycamore Farms	Yavapai	16 North	3 East	35	17	53-501531	Adequate		1/1/1979	Cottonwood Water Works, Inc.
373	Verde Valley	Sycamores II, The	Yavapai	14 North	5 East	1	6	53-501532	Adequate		8/26/1983	Arizona Water Company
374	Big Chino	Talking Rock Ranch	Yavapai	16 North	3 West	15, 16, 22	198	53-400519	Adequate		8/17/2001	ICR Water Users Association
375	Big Chino	Talking Rock Ranch Phase 26	Yavapai	16 North	3 West	33, 34	38	53-401355	Adequate		9/8/2004	ICR Water Users Association, Inc.

Table 5.5-10 Adequacy Determinations in the Verde River Basin (Cont)¹

A. Water Adequacy Reports

Map Key	Sub-Basin	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						
376	Big Chino	Talking Rock Ranch Phase 27	Yavapai	16 North	3 West	22	38	53-401175	Adequate		2/18/2004	ICR Water Users Associations, Inc.
377	Big Chino	Talking Rock Ranch Phase 8	Yavapai	16 North	3 West	22	80	53-401206	Adequate		2/18/2004	ICR Water Users Association, Inc.
378	Big Chino	Talking Rock Ranch Phase 9	Yavapai	16 North	3 West	15, 22	107	53-401417	Adequate		9/8/2004	ICR Water Users Association
379	Big Chino	Talking Rock Ranch Phase IV a	Yavapai	16 North	3 West	19	10	53-400758	Adequate		7/30/2002	ICR Water Users Association
380	Big Chino	Talking Rock Ranch Phase Va&Vb& Phase VI	Yavapai	16 North	3 West	15, 22	73	53-400831	Adequate		10/8/2002	ICR Water Users Association
381	Big Chino	Talking Rock Ranch Phases 10, 12, & 13	Yavapai	16 North	3 West	15, 16	235	53-401870	Adequate		12/1/2005	ICR Water Users Association
383	Big Chino	Talking Rock Ranch Phases II and III	Yavapai	16 North	3 West	15, 22	127	53-400675	Adequate		3/7/2002	ICR Water Users Association
384	Verde Canyon	Terra Pine	Gila	12 North	8 East	36	30	53-501540	Adequate		1/2/1980	E & R Water Company
385	Verde Valley	The Condos at Jordan Road	Coconino	17 North	6 East	8	9	53-400722	Adequate		6/14/2002	Arizona Water Company - Sedona
387	Verde Valley	The Highlands	Yavapai	16 North	3 East	29, 32	240	53-402110	Adequate		6/16/2006	Clarkdale Municipal Water Utility
388	Verde Valley	The Preserve at Oak Creek	Coconino	17 North	6 East	8	158	53-500009	Adequate		4/18/2007	Arizona Water Company - Sedona
389	Verde Valley	The Villas on Elm	Yavapai	15 North	3 East	2	110	53-401483	Adequate		12/1/2004	City of Cottonwood
390	Verde Valley	Thunder Mountain Ranch	Yavapai	17 North	5 East	10, 11	100	53-300070	Adequate		11/21/1995	Arizona Water Company - Sedona
391	Verde Valley	Thunder Mountain Ranch 2	Yavapai	17 North	5 East	10	43	53-300509	Adequate		9/1/1998	Arizona Water Company - Sedona
392	Verde Valley	Thunder Ridge	Yavapai	15 North	5 East	25	230	53-300118	Adequate		7/12/1996	Dry Lot Subdivision
393	Verde Valley	Thunderbird Hills South #2	Yavapai	17 North	5 East	14	16	53-501543	Adequate		10/15/1975	Arizona Water Company - Sedona
394	Verde Valley	Tierra Sienna Condominiums	Yavapai	17 North	5 East	13	32	53-501556	Adequate		11/25/1987	Oak Creek Water Company
395	Verde Valley	Tierra Verde	Yavapai	17 North	5 East	14	9	53-401976	Adequate		4/24/2006	Arizona Water Company - Sedona
396	Verde Valley	Tierra Verde Estates II	Yavapai	15 North	3 East	4	10	53-402222	Adequate		9/1/2006	City of Cottonwood
397	Verde Valley	Tierra Verde Subdivision	Yavapai	15 North	3 East	3	39	53-300586	Adequate		12/22/1998	City of Cottonwood
398	Verde Valley	Tierra del Arte	Yavapai	17 North	5 East	14	6	53-401985	Adequate		5/17/2006	Arizona Water Company - Sedona
399	Verde Canyon	Timber Ridge Estates II	Gila	10 North	10 East	4	22	53-300147	Inadequate	A2	5/22/1996	Town of Payson
400	Verde Canyon	Town & Country Estates	Gila	10 North	10 East	3	19	53-400231	Inadequate	A1, C	1/26/2000	Town of Payson
401	Verde Valley	Town Homes at Flagstaff Meadows	Coconino	21 North	5 East	1	105	53-401224	Inadequate	A1	3/15/2004	Utility Source, LLC
402	Verde Canyon	Trailwood #1	Gila	10 North	10 East	4	104	53-501578	Inadequate	A1, A2	4/14/1994	Town of Payson
403	Verde Canyon	Trailwood #2	Gila	10 North	10 East	4	86	53-501579	Inadequate	A1, A2, C	12/7/1994	Town of Payson
404	Verde Canyon	Trailwood #3	Gila	10 North	10 East	4	123	53-300028	Inadequate	A2	7/26/1995	Town of Payson
405	Verde Valley	Two Ponds Estates	Yavapai	14 North	4 East	12	4	53-501588	Adequate		7/24/1980	Dry Lot Subdivision
406	Verde Valley	Valley Shadows	Yavapai	17 North	5 East	14	158	53-501600	Adequate		3/21/1974	Arizona Water Company - Sedona
407	Verde Valley	Valley View Estates	Yavapai	16 North	3 East	17	28	53-300469	Inadequate	A1	6/17/1998	Dry Lot Subdivision
408	Big Chino	Valley View Ranch	Yavapai	16 North	3 West	20, 29, 32	126	53-700220	Adequate		6/26/2007	Tipeji Domestic Water Improvement District
409	Verde Valley	Ventana Vista	Yavapai	15 North	3 East	15	69	53-501608	Inadequate	B, C	1/18/1994	Cordes Lakes Water Company
410	Verde Valley	Verde Cliffs	Yavapai	14 North	5 East	31	208	53-401354	Inadequate	D	7/21/2004	Camp Verde Water System
411	Verde Valley	Verde Monterey	Yavapai	15 North	3 East	11	14	53-501609	Adequate		10/1/1984	Cordes Lakes Water Company
412	Verde Valley	Verde Outpost	Yavapai	14 North	5 East	31	28	53-501610	Adequate		3/12/1980	Camp Verde Water System

Table 5.5-10 Adequacy Determinations in the Verde River Basin (Cont)¹

A. Water Adequacy Reports

Map Key	Sub-Basin	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						
413	Verde Valley	Verde Park	Yavapai	13 North	5 East	9, 16	59	53-501611	Inadequate	C	1/26/1982	Dry Lot Subdivision
414	Verde Valley	Verde Ranchettes	Yavapai	15 North	4 East	17	17	53-501612	Adequate		2/4/1985	Dry Lot Subdivision
415	Verde Valley	Verde Santa Fe (1997)	Yavapai	15 North	4 East	6	103	53-300257	Adequate		2/21/1997	Verde Santa Fe Water Company
416	Verde Valley	Verde Valley Business Park	Yavapai	14 North	4 East	15	23	53-401142	Adequate		1/12/2004	Camp Verde Water System
417	Verde Valley	Verde Village #6	Yavapai	15 North	3 East	10, 11	19	53-300170	Adequate		9/6/1996	Cordes Lakes Water Company
418	Verde Valley	Verde West Acres #2	Yavapai	14 North	4 East	14	16	53-501613	Inadequate	C	6/9/1975	Dry Lot Subdivision
419	Verde Valley	Village Park	Yavapai	16 North	6 East	18	25	53-501634	Adequate		9/10/1980	Big Park Water Company
420	Verde Valley	Villages Estates	Yavapai	16 North	5 East	13, 14	25	53-401469	Adequate		12/3/2004	Arizona Water Company - Sedona
421	Verde Valley	Vista Grande Ranch	Yavapai	15 North	3 East	3	48	53-300488	Adequate		7/22/1998	City of Cottonwood
422	Verde Valley	Vista Montana	Yavapai	17 North	5 East	12	60	53-501650	Adequate		4/8/1981	Arizona Water Company - Sedona
423	Verde Canyon	Walnut Glen	Gila	12 North	8 East	29	29	53-501663	Adequate		12/12/1974	E & R Water Company
424	Verde Valley	Water's Edge At Simonton Ranch	Yavapai	14 North	5 East	30, 31	10	53-700347	Adequate		7/13/2007	Camp Verde Water System
425	Verde Valley	Western Hills	Yavapai	17 North	5 East	2, 11	79	53-501668	Adequate		8/15/1977	Arizona Water Company - Sedona
426	Verde Valley	Western Hills #2	Yavapai	17 North	5 East	11	63	53-501669	Adequate		6/12/1979	Arizona Water Company - Sedona
427	Verde Canyon	Western Manor	Gila	11 North	10 East	33, 34	26	53-501671	Inadequate	A1, A2	12/27/1974	United Utilities Company
428	Verde Valley	Westward	Yavapai	17 North	5 East	2, 11	25	53-501673	Adequate		3/25/1980	Arizona Water Company - Sedona
429	Big Chino	Whispering Canyon	Yavapai	16 North	3 West	33, 34	400	53-400580	Adequate		3/7/2002	ICR Water Users Association
430	Verde Canyon	Whitney Ranch Estates	Maricopa	6 North	9 East	7	20	53-300033	Adequate		8/19/1997	Whitney Ranch Estates Property Owners' Association
431	Verde Valley	Wild Turkey Townhouses #2	Yavapai	16 North	5 East	13	82	53-501683	Adequate		12/26/1978	Big Park Water Company
432	Verde Canyon	Wildwood	Gila	10 North	10 East	5	99	53-501687	Inadequate	A1, A2	7/20/1983	Town of Payson
433	Verde Valley	Wilma Overal Property	Yavapai	17 North	5 East	27	5	53-501691	Adequate		8/10/1989	Dry Lot Subdivision
434	Big Chino	Wineglass Estates	Yavapai	18 North	2 West	19	67	53-700374	Adequate		9/11/2007	Dry Lot Subdivision
435	Big Chino	Wineglass Lake Estates	Yavapai	18 North	3 West	13	117	53-501696	Inadequate	A1	10/15/1993	Dry Lot Subdivision
436	Verde Canyon	Wonder Valley	Gila	11 North	10 East	11	8	53-501700	Adequate		8/22/1975	Co-op water system
437	Verde Canyon	Woodhill #1-8	Gila	11 North	10 East	33	396	53-501701	Inadequate	A2, C	5/31/1995	Town of Payson
438	Verde Canyon	Woodland Meadows #1 (amended)	Gila	10 North	10 East	4, 5	102	53-501702	Inadequate	A1, A2	1/6/1981	Town of Payson
439	Verde Canyon	Woodland Meadows #2	Gila	10 North	10 East	4, 5	91	53-501703	Inadequate	A1, A2	11/9/1982	Town of Payson
440	Verde Canyon	Woodland Meadows #3	Gila	10 North	10 East	4	84	53-501704	Inadequate	A1, A2	6/20/1984	Town of Payson
441	Verde Canyon	Woodland Meadows #4	Gila	10 North	10 East	4, 5	24	53-501705	Inadequate	A1, A2	4/12/1988	Town of Payson

B. Analysis of Adequate Water Supply

Map Key	Sub-basin	Subdivision Name	County	Location			No. of Lots	ADWR File No. ²	Date of Determination	Water Provider at the Time of Application
				Township	Range	Section				
21	Verde Valley	Beaver Creek Preserve	Yavapai	15 North	5 East	26	101	43-401859	11/7/2005	Arizona Water Company - Rimrock
60	Big Chino	Chino Grande	Yavapai	19 North	3 West	18	6,016	43-402044	3/11/2008	NA
				19 North	4 West	1, 3, 4, 10, 11, 13, 14, 15				
				20 North	4 West	3, 5, 7, 8, 9, 15, 17, 18, 19, 21, 23, 25, 27, 29, 30, 33, 35				

Table 5.5-10 Adequacy Determinations in the Verde River Basin (Cont)¹

B. Analysis of Adequate Water Supply

Map Key	Sub-basin	Subdivision Name	County	Location			No. of Lots	ADWR File No.	Date of Determination	Water Provider at the Time of Application
				Township	Range	Section				
124	Big Chino	Frontier Ranch	Yavapai	17 North	2 West	19	450	43-700433	3/19/2008	NA
132	Verde Valley	Groves Property	Yavapai	16 North	4 East	23	40	43-700352	8/10/2007	NA
144	Verde Valley	Homestead at Camp Verde, The (1999)	Yavapai	14 North	4 East	25, 36	393	43-400183	12/22/1999	Camp Verde Water System
				14 North	5 East	30, 31				
178	Big Chino	Long Meadow Ranch	Yavapai	16 North	3 West	19	994	43-700418	11/24/2008	Undetermined
				16 North	4 West	14, 23, 24, 26				
205	Verde Valley	Mingus Panorama Estates	Yavapai	16 North	4 East	35	69	43-402259	9/11/2006	Undetermined
293	Verde Valley	Retreat on Oak Creek	Yavapai	17 North	5 East	27, 34	42	43-700209	4/19/2007	Undetermined
352	Verde Valley	Spring Creek Ranch	Yavapai	16 North	4 East	15, 21, 22	98	43-402086	8/11/2006	Undetermined
382	Big Chino	Talking Rock Ranch Phases 2-8	Yavapai	16 North	3 West	11, 15, 16, 17, 21, 22, 28, 33	1,557	43-400556	12/20/2001	ICR Water Users Association
386	Verde Valley	The Highlands	Yavapai	16 North	3 East	29, 32	240	43-401910	1/20/2006	Undetermined

C. Designated Adequate Water Supply

Map Key	Basin	County	Designation No.	Projected or Annual Estimated Demand (af/yr)	Date Application Received	Date Application Issued	Year of Projected or Annual Demand
a	American Ranch DWID	Yavapai	40-400437.0000	108	1/11/2000	3/14/2002	2010
b	Big Park Water Company	Yavapai	40-400325.0000	1,005	1/2/2000	6/30/2000	2010
c	Camp Verde Water System	Yavapai	40-700446.0000	622.2	11/6/2007	4/15/2008	2017
d	Little Park Water Company	Yavapai	40-400324.0000	42.8	4/21/2000	10/30/2000	2010
e	Verde Santa Fe Water Company	Yavapai	40-400876.0000	503	1/17/2003	5/23/2003	2010

Source: ADWR 2008a

Notes:

¹Each 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

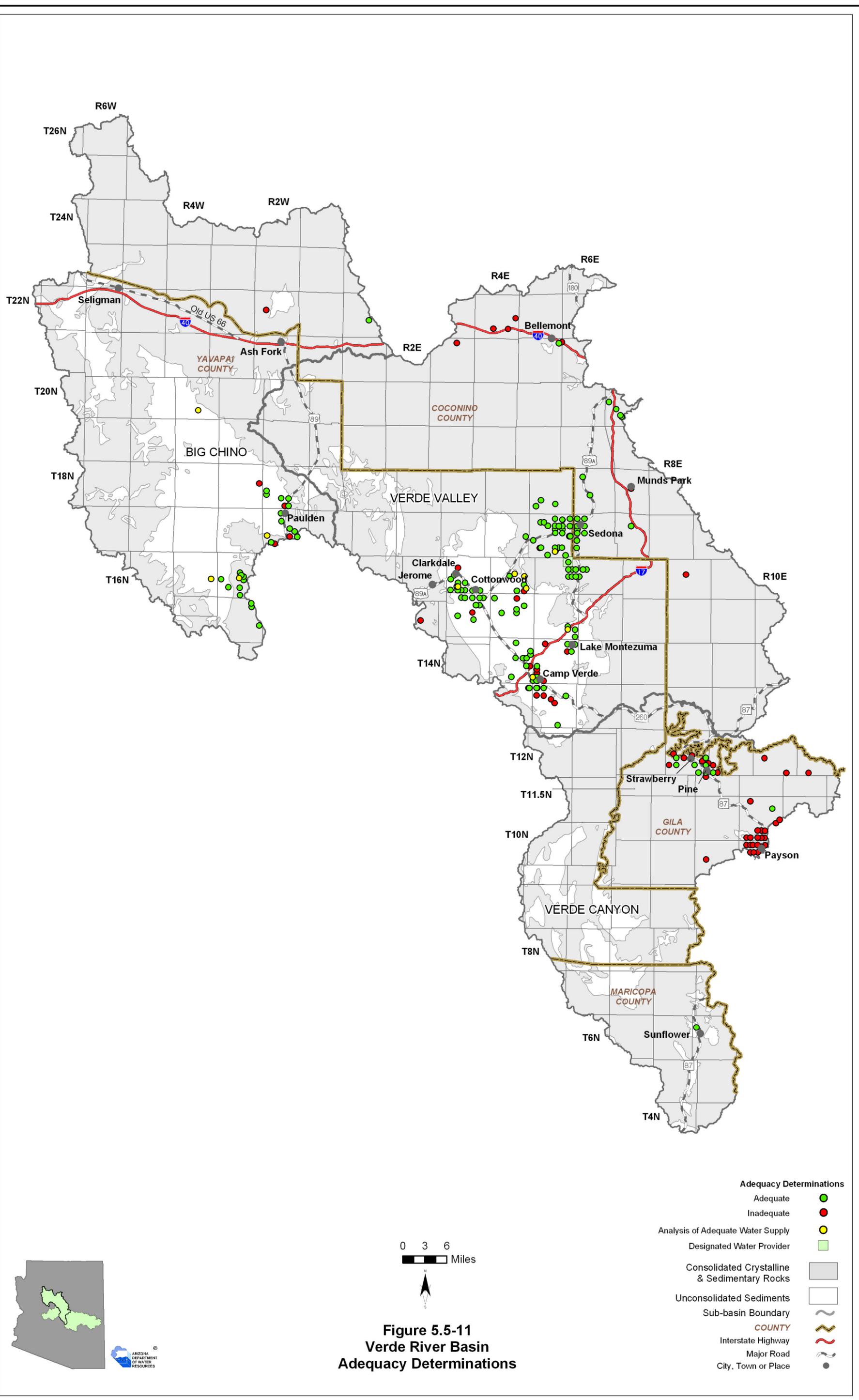
- 1) Insufficient Data (applicant chose not to submit necessary information, and/or available hydrologic data insufficient to make determination)
- 2) Insufficient Supply (existing water supply unreliable or physically unavailable; for groundwater, depth-to-water exceeds criteria)
- 3) Insufficient Infrastructure (distribution system is insufficient to meet demands or applicant proposed water hauling)

B. 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)

C. Water Quality

D. Unable to locate records

NA = Data not available to ADWR



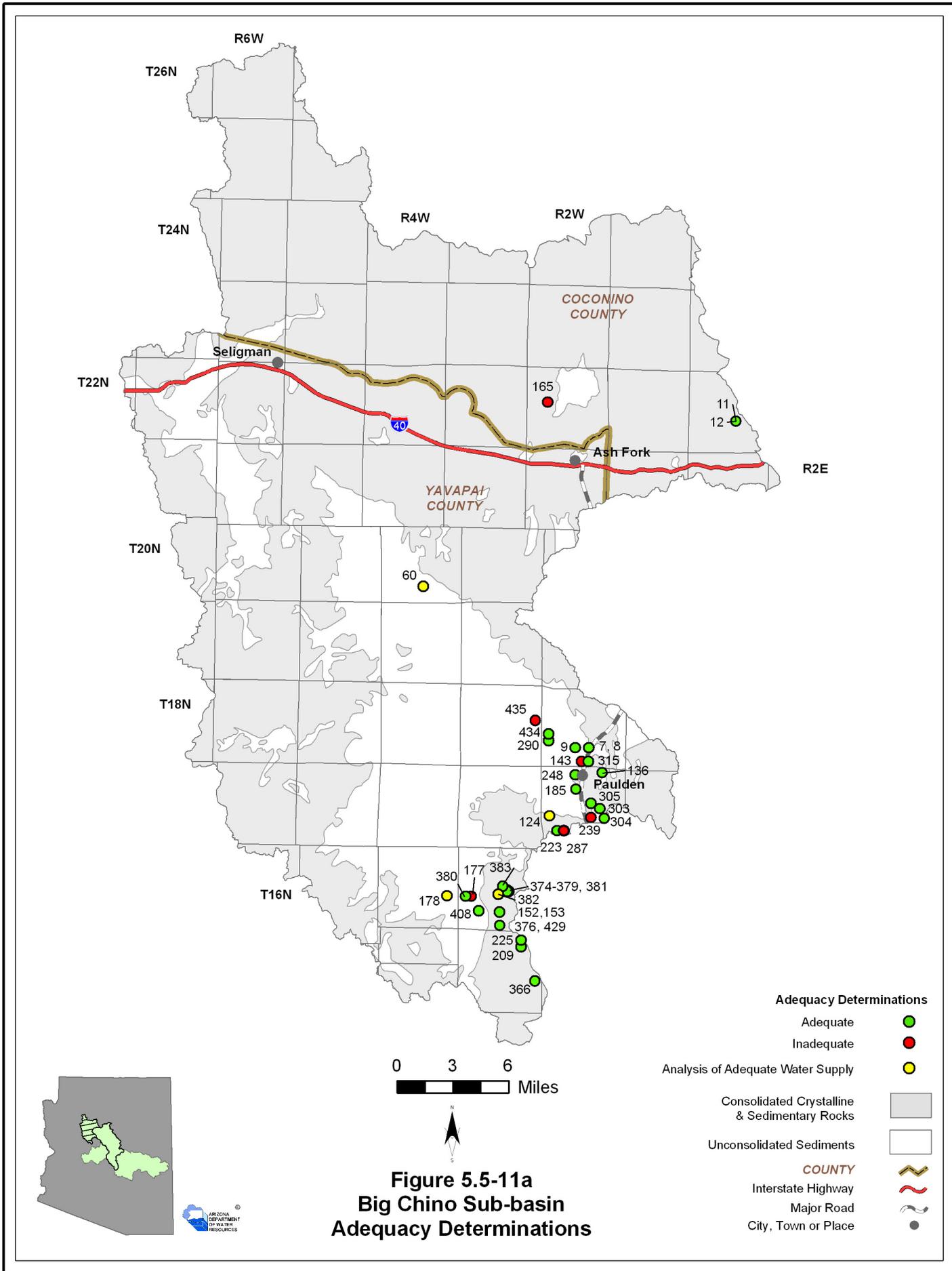
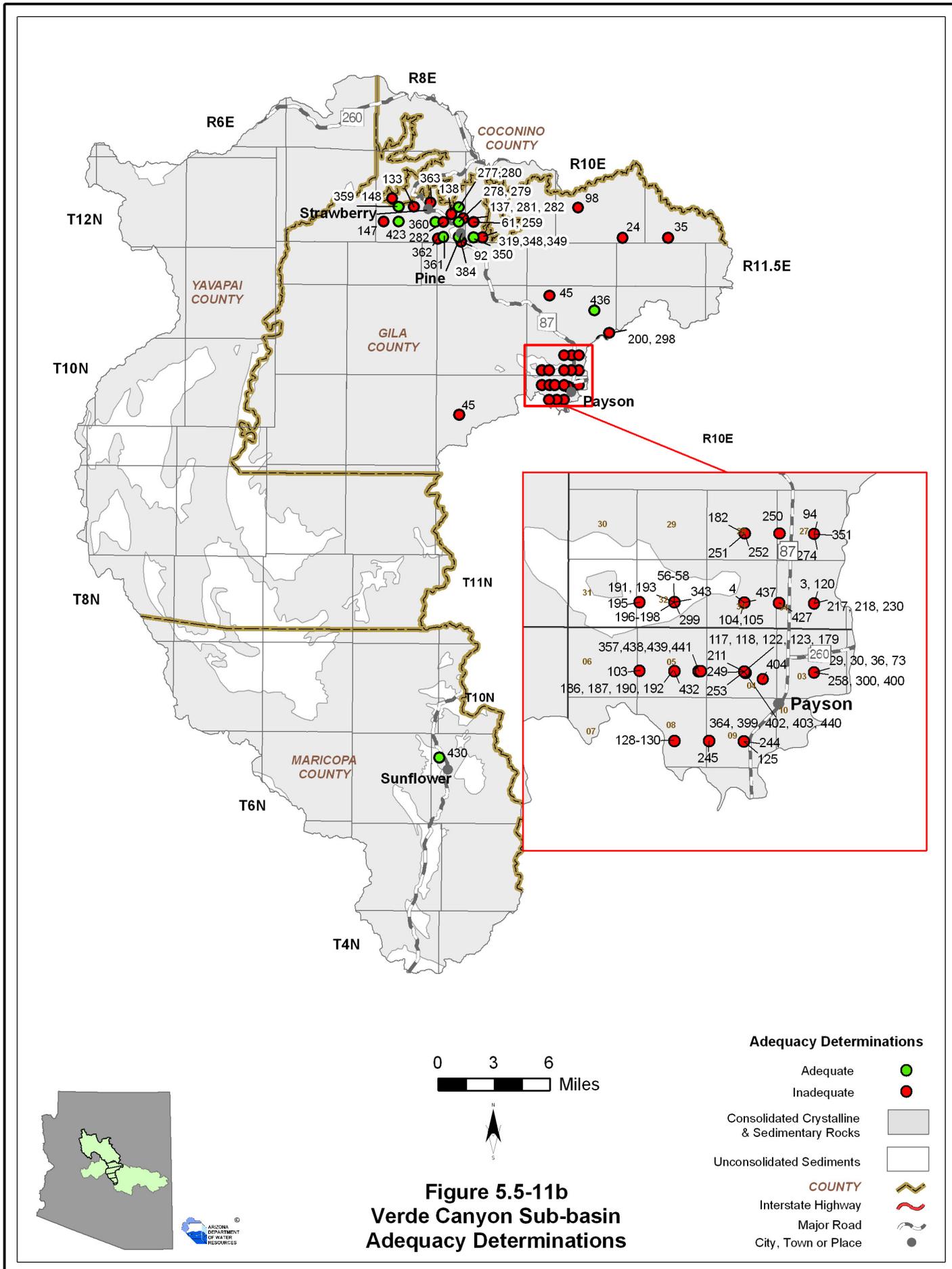


Figure 5.5-11a
Big Chino Sub-basin
Adequacy Determinations



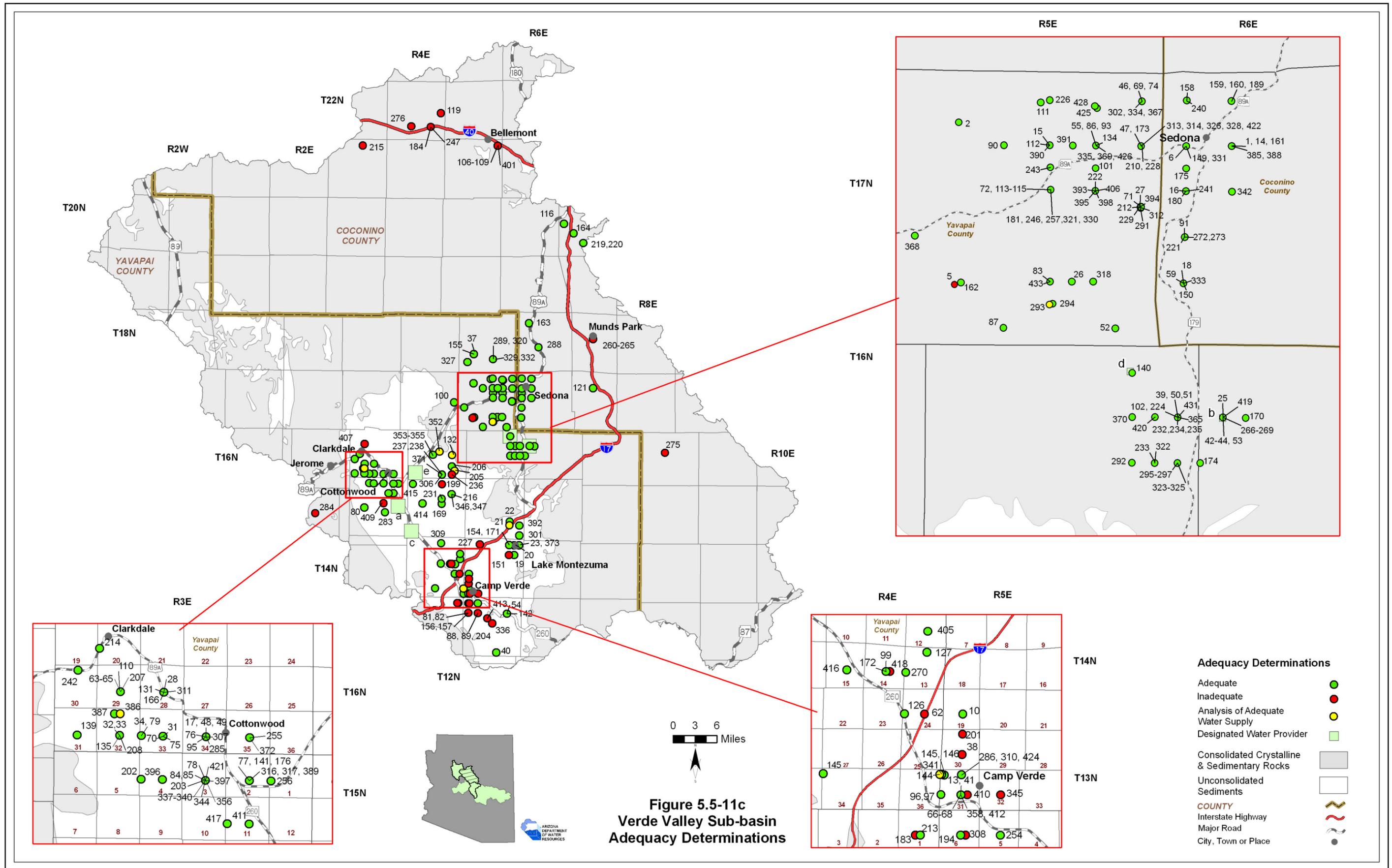


Figure 5.5-11c
Verde Valley Sub-basin
Adequacy Determinations

Verde River Basin

References and Supplemental Reading

References

A

- Anning, D.W. and N.R. Duet, 1994, Summary of ground-water conditions in Arizona, 1987-90, USGS Open-file Report 94-476.
- Arizona Corporation Commission (ACC), 2005, Annual reports, Private Sewer companies, 1990 to 2005: ACC Utilities Division. (Effluent Generation Table)
- Arizona Department of Economic Security (DES), 2005, Workforce Informer: Data file, accessed August 2005, <http://www.workforce.az.gov>. (Cultural Water Demand Table)
- Arizona Department of Environmental Quality, 2005a, ADEQWATP: Data file, received May 2005. (Effluent Generation Table)
- _____, 2005b, ADEQWWTP: Data file, received August 2005. (Effluent Generation Table)
- _____, 2005c, Azurite: Data file, received September 2005. (Effluent Generation Table)
- _____, 2005d, Effluent dependent waters: GIS cover, received December 2005. (Water Quality Map)
- _____, 2005e, Impaired lakes and reaches: GIS cover, received January 2006. (Water Quality Map and Table)
- _____, 2005f, WWTP and permit files: Miscellaneous working files, received July 2005. (Effluent Generation Table)
- _____, 2004a, Water quality exceedences by watershed: Data file, received June 2004. (Water Quality Map and Table)
- _____, 2004b, Water quality exceedences for drinking water providers in Arizona: Data file, received September 2004. (Water Quality Map and Table)
- Arizona Department of Water Resources (ADWR), 2008a, Assured and adequate water supply applications: Project files, ADWR Hydrology Division.
- _____, 2008b, Industrial demand outside of the Active Management Areas 1991-2007: Unpublished analysis by ADWR Office of Resource Assessment Planning.
- _____, 2008c, Municipal surface water demand outside of the Active Management Areas 1991-2007: Unpublished analysis by ADWR Office of Resource Assessment Planning.
- _____, 2006, Statement of claimants filed by the Indian tribes or the United States on their behalf in the Gila and Little Colorado River adjudications: Data files, ADWR Office of Planning and Adjudications Support.
- _____, 2005a, Agricultural Surface Water Use Estimates: Unpublished analysis, ADWR Office of Resource Assessment Planning.
- _____, 2005b, Automated recorder sites: Data files, ADWR Basic Data Unit.
- _____, 2005c, Flood warning gages: Database, ADWR Office of Water Engineering.
- _____, 2005d, Groundwater Site Inventory (GWSI): Database, ADWR Hydrology Division.
- _____, 2005e, Inspected dams: Database, ADWR Office of Dam Safety. (Reservoirs and Stockponds Table)
- _____, 2005f, Non-jurisdictional dams: Database, ADWR Office of Dam Safety. (Reservoirs and Stockponds Table)

- _____, 2005g, Registry of surface water rights: ADWR Office of Water Management. (Reservoirs and Stockponds Table)
- _____, 2005h, Wells55: Database.
- _____, 2002, Groundwater quality exceedences in rural Arizona from 1975 to 2001: Data file, ADWR Office of Regional Strategic Planning. (Water Quality Map and Table)
- _____, 2000, Verde River watershed study, 473 pp.
- _____, 1996, Water supplies in the Payson, Pine Strawberry area: Information packet from ADWR, April 1996, 2 pp.
- _____, 1994a, Arizona Water Resources Assessment, Vol. I, Inventory and Analysis.
- _____, 1994b, Arizona Water Resources Assessment, Vol. II, Hydrologic Summary.
- _____, 1990, Draft outline of basin profiles for the state water assessment: ADWR Statewide Planning Division, Memorandum to L. Linser, January, 16, 1990.
- Arizona Game and Fish Department (AGFD), 1997 & 1993, Statewide riparian inventory and mapping project: GIS cover.
- Arizona Land Resource Information System (ALRIS), 2005a, Springs: GIS cover, accessed January 2006 at <http://www.land.state.az.us/alris/index.html>.
- _____, 2005b, Streams: GIS cover, accessed 2005 at <http://www.land.state.az.us/alris/index.html>.
- _____, 2004, Land ownership: GIS cover, accessed in 2004 at <http://www.land.state.az.us/alris/index.html>.
- Arizona Meteorological Network (AZMET), 2007, Arizona climate stations: Pan evaporation data, accessed December 2007 at <http://www.ag.arizona.edu/azmet/locate.html>.
- Arizona Water Commission, 1975, Summary, Phase I, Arizona State Water Plan, Inventory of resource and uses.

B

- Blasch, K., J. Hoffman, J. Bryson, A. Flint and L. Graser, 2006, Hydrologic investigations of the upper and middle Verde watersheds: USGS Scientific Investigations Report 2005-5198.

D

- Diroll, M. and D. Marsh, 2006, Status of water quality in Arizona-2004 integrated 305(b) assessment and 303(d) listing report: ADEQ report. (Water Quality Map and Table)

E

- Environmental Protection Agency (EPA), 2005, Surf Your Watershed: Facility reports, accessed April 2005 at http://oaspub.epa.gov/enviro/ef_home2.water. (Effluent Generation Table)
- _____, 2005, 2000 and 1996, Clean Watershed Needs Survey: datasets, accessed March 2005 at <http://www.epa.gov/owm/mtb/cwns/index.htm>. (Effluent Generation Table)

F

- Freethy, G.W. and T.W. Anderson, 1986, Predevelopment hydrologic conditions in the alluvial basins of Arizona and adjacent parts of California and New Mexico: USGS Hydrologic Investigations Atlas-HA664.

G

- Gebert, W.A., D.J. Graczyk and W.R. Krug, 1987, Average annual runoff in the United States,

1951-1980: GIS Cover, accessed March 2006 at <http://aa179.cr.usgs.gov/metadata/wrdmeta/runoff.htm>. (Surface Water Conditions Map)

M

McGavock, E., 2003 Big Chino Aquifer: Knowns, unknowns and conflicting interpretations: Errol L Montgomery & Assoc., Tri-City Water Forum, 2003, 4 pp.

N

Natural Resources Conservation Service (NRCS), 2006, SNOTEL (Snowpack Telemetry) stations: Data file, accessed December 2006 at <http://www3.wcc.nrcs.usda.gov/nwcc/sntlsites.jsp?state=AZ>.

_____, 2005, Snow Course stations: Data file, accessed December 2005 at <http://www.wcc.nrcs.usda.gov/nwcc/snow-course-sites.jsp?state=AZ>

O

Oregon State University, Spatial Climate Analysis Service (SCAS), 1998, Average annual precipitation in Arizona for 1961-1990: PRISM GIS cover, accessed in 2006 at www.ocs.orst.edu/prism.

S

Salt River Project (SRP), 2008, Low flow gages, accessed in 2008 at www.watershedmonitor.com

Southwest Groundwater Consultants Inc., 2005, Big Chino ranch hydrology study.

U

US Army Corps of Engineers, 2004 and 2005, National Inventory of Dams: Arizona Dataset, accessed November 2004 to April 2005 at <http://crunch.tec.army.mil/nid/webpages/nid.cfm> (Reservoirs and Stockponds Table)

United States Geological Survey (USGS), 2008 & 2005, National Water Information System (NWIS) data for Arizona: Accessed October 2008 at <http://waterdata.usgs.gov/nwis>.

_____, 2007, Water withdrawals for irrigation, municipal, mining, thermoelectric-power, and drainage uses in Arizona outside of the active management areas, 1991-2005: Data file, received November 2007.

_____, 2006a, National Hydrography Dataset: Arizona dataset, accessed at <http://nhd.usgs.gov/>.

_____, 2006b, Springs and spring discharges: Dataset, received November 2004 and January 2006 from USGS office in Tucson, AZ.

_____, 2004, Southwest Regional Gap analysis study- land cover descriptions: Electronic file, accessed January 2005 at <http://earth.gis.usu.edu/swgap>.

_____, 1981, Geographic digital data for 1:500,000 scale maps: USGS National Mapping Program Data Users Guide.

W

Western Regional Climate Center (WRCC), 2005, Pan evaporation stations: Data file accessed December 2005 at <http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwDI~GetCity~USA>.

_____, 2005, Precipitation and temperature stations: Data file, accessed December 2005 at <http://>

www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwDI~GetCity~USA.

Wirt, L., E. DeWitt, and V. Langenheim, eds., 2005, Geologic framework of aquifer units and groundwater flowpaths, Verde River headwaters, north central Arizona: USGS Open –file report 2004-1411. (Groundwater Conditions Map)

Supplemental Reading

Alam, J., 1997, Irrigation in the Verde Valley: A report on the irrigation diversion improvement project: Verde Natural Resource Conservation District, 96 pp.

Amentt, M.A., 2002, Hydrogeology and evapotranspiration of the herbaceous understory at a high-elevation riparian community, Hart Prairie, Arizona: Northern Arizona University, M.S. thesis, 170 pp.

Amentt, M., A.E. Springer and L. DeWald, 2000, Restoration of perched aquifer system through manipulation of transpiration at the watershed scale: Geol. Soc. Abstracts with Programs: v. 32, p. A-141.

Andersen, M., 2005, Assessment of water availability in the Lower Colorado River basin: in Conservation and Innovation in Water Management: Proceedings of the 18th annual Arizona Hydrological Society Symposium, Flagstaff, Arizona, September, 2005.

Anning, D.W., 2004, Effects of natural and human factors on stream water quality in central Arizona: USGS Water Resource Supplement Jan.-Feb.

_____, 2003a, Assessment of selected inorganic constituents in streams in the central basins study area, Arizona and northern New Mexico, through 1998: USGS Water Resource Investigations Report 03-4063.

_____, 2003b, Evaluation of low flow data from three streamflow gaging stations on the Upper Verde River, Arizona: in Sustainability Issues of Arizona's Regional Watersheds: Proceedings from the 16th annual Arizona Hydrological Society Symposium, September 2003, Mesa, Arizona.

_____, 1998, Sources of nitrogen and phosphorus in drainage basins of central Arizona: in Water at the Confluence of Science, Law, and Public Policy: Proceedings from the 11th annual Arizona Hydrological Society Symposium, September 1998, Tucson, Arizona, p. 8.

Arizona Department of Environmental Quality, 2001, TMDL report: Peck's Lake.

_____, 2001, Verde River TMDL for Turbidity.

_____, 2002, TMDL report: Stoneman Lake.

_____, 1999, TMDL report: Munds Creek - headwaters to Oak Creek.

_____, 1987, TMDL report: Oak Creek - headwaters to Verde River.

Arizona Department of Health Services, 1981, Arizona Water Quality Control Council
Unique Waters Policy: Arizona Department of Environmental Quality,
April 1981.

Arizona Rivers Coalition, 1991, Arizona rivers, life blood of the desert – a citizen’s proposal for
the protection of rivers in Arizona: March

Arizona State Parks, 1991, Verde River Corridor Project Final Report and Plan of Action.

Arizona Water Company, 2007a, System Water Plan: Pinewood Water System, Submitted to the
Arizona Department of Water Resources.

_____, 2007b, System Water Plan: Sedona Water System and Valley Vista Water System,
submitted to the Arizona Department of Water Resources.

Armour, C.L., D.A. Duff & W. Elmor, 1991, The effects of livestock grazing on riparian and
stream ecosystems: Fisheries, vol.16, no. 1.

Averitt, E. M., 1991, Verde River corridor environmental planning recommendations:
Department of Planning, College of Architecture and Environmental Design,
Arizona State University, Spring 1992.

_____, 1990, Verde River corridor - Clarkdale, an ecological inventory and analysis: Department
of Planning, College of Architecture and Environmental Design, Arizona State
University, April 1990.

Baker, M.B., 1999, History of watershed research in the central Arizona highlands: USDA Rocky
Mountain Research Station, Report GTR-29.

Baldys, S., 1990, Trend analysis of selected water-quality constituents in the Verde
River basin, central Arizona: USGS Water-Resources Investigations Report 90-4128.

Baldys, S. and H.W. Hjalmarson, 1994, Effects of controlled burning of chaparral on
stream flow and sediment characteristics, east fork Sycamore Creek, central Arizona:
USGS Water Investigations Report 93-4102, 33 pp.

Barnett, L.O. and R.H. Hawkins, 2002, Reconnaissance watershed analysis on the upper
and middle Verde watershed: School of Renewable Resources, University of Arizona,
116 pp.

- Big Park Water Company (Sedona, AZ), 2007, Water Supply Plan: Big Park Water Company and Little Park Water Company, Submitted to the Arizona Department of Water Resources.
- Black Canyon City Water Improvement District, 2006, System Water Plan, Submitted to the Arizona Department of Water Resources.
- Black and Vetch, 2006, Town of Payson Blue Ridge Reservoir Water Supply Pipeline and Treatment Plant.
- Black, C. H. Ajami, P. Guertin, L. Levick and K. Uhlman, 2005, NEMO Watershed Based Plan: Verde Watershed, available at www.ArizonaNEMO.org
- Bouchard and Associates, 1994, Fossil Creek hydrology and travertine geomorphology: Arizona Public Service Report.
- Breninger, J.O., 2002, Perceptions of water supply in the Pine Strawberry area: Pine – Strawberry Water Improvement District, August 2002, 10 p.
- Brooks, P, 2004, Recent findings on snow/vegetation impacts on runoff: in *The Value of Water: Proceedings from the 17th annual Arizona Hydrological Society Symposium*, September 2004, Tucson Arizona.
- BRW Inc., 1990, Camp Verde land use and transportation study: Final report, March 15.
- Bryson, J., 2004, Determination of groundwater flow paths by the use of geochemical Tracers - upper and middle Verde River watersheds, Arizona: in *The Value of Water: Proceedings from the 17th annual Arizona Hydrological Society symposium*, September 2004, Tucson Arizona.
- Byrkit, J. W., 1978, A log of the Verde: The taming of an Arizona river: *Journal of Arizona History*, vol. 19, no. 1, p. 31-54.
- Camp Verde Water System, Inc. 2006, System Water Plan, Submitted to the Arizona Department of Water Resources.
- Carpenter, T.L., 2001, The origin of isotopically anomalous waters of the Mogollon Rim region of Arizona: Arizona State University, M.S. thesis, 107 pp.
- Clifton, C., 1989, Effects of vegetation and land use on channel morphology: In *Practical Approaches to Riparian Resource Management, An Educational Workshop*, Bureau of Land Management publication.
- City of Cottonwood, 2006, Drought and Water Shortage Preparedness Plan, Chapter 13.16 Cottonwood Municipal Code.
- _____, 2003, Cottonwood General Plan: Water Resources Element, Adopted December 16, 2003.

- City of Sedona, 2002, Sedona Community Plan: Water Resources Element, Adopted December 10, 2002
- Coconino County, 2008, Kachina Village Area Plan Update, Approved by Coconino County Board of Supervisors May 20, 2008.
- _____, 1989, Oak Creek Canyon Area Plan, as amended, Approved by Coconino County Board of Supervisors June 1989.
- _____, 2001, Parks Area Plan, Approved by Coconino County Board of Supervisors September 17, 2001.
- Cook, E.A., et al., 1991, Verde River corridor - Environmental planning recommendations: Department of Planning, Arizona State University, Spring, 1991.
- Cordy, G.E., D.J. Gellenbeck, J.B. Gebler, D.W. Anning, A.L. Coes, R.J. Edmonds, J.A. Rees and H.W. Sanger, 2000, Water quality in the central Arizona basins, Arizona, 1995-1998: USGS Circular 1213.
- Corkhill, F., 2000, Report on the drilling of an exploratory borehole near Strawberry, Arizona: ADWR Hydrology section investigation for the Northern Gila County Water Plan Alliance, 33 p. 145.
- Darr, M., J., 1989, Hydrogeology of Oak Creek, Verde Valley Arizona: Northern University of Arizona, M. S. thesis.
- Dava and Associates, Inc., 2003, Yavapai County General Plan: Water Resources Element.
- Dent, C.L., 1999, The effects of ecosystem configuration on nutrient dynamics in a Sonoran Desert stream ecosystem: Arizona State University, Ph. D. dissertation, 267 pp.
- Deslauriers, E.C., 1977, Geophysics and hydrology of the lower Verde River valley, Maricopa County, Arizona: Arizona State University, M.S. thesis, 61 p.
- Enzel, Y., L.L. Ely, P.K. House, V.R. Baker and R.H. Webb, 1993, Paleoflood evidence for a natural upper bound to flood magnitudes in the Colorado River Basin: Water Resources Research, vol. 29, no. 7, p. 2287-2297.
- Flora, S., and A. Springer, 2003, Variability of discharge for selected springs in the Verde River watershed, central Arizona: Implications for regional hydrogeology: in Sustainability Issues of Arizona's Regional Watersheds: Proceedings from the 16th annual Arizona Hydrological Society Symposium, September 2003, Mesa, Arizona.
- _____, 2003a Summary table of physical parameters of middle Verde watershed springs: Department of Geology, Northern Arizona University, 1 pp.

- _____, 2003b, Implications for regional hydrogeology of an Arizona rural watershed based on spring discharge variability and recharge response: Geological Society of America Abstracts with Programs, v. 35.
- _____, 2002, Hydrogeological characterization of springs in the Verde River watershed, central Arizona: Geological Society of America Abstracts with Programs, v. 34, no. 6, p. 25.
- Garrett, L.G. and R. Petersen, 1996, Green Valley Park Groundwater Recharge Project: in Wanted: Water for Rural Arizona: Proceedings from the 9th annual Arizona Hydrologic Society Symposium, September 1996, p.107.
- Gavin, A.J., 1998, Hydrogeology and numerical simulation of a spring-dominated high-elevation riparian community, Hart Prairie, Arizona: Northern Arizona University, M.S. thesis, 177 pp.
- Gavin, A.J. and A.E. Springer, 1997, Conservation of a rare riparian community through hydrological restoration: Geological Society of America Abstracts with Programs, v. 29, p. 178.
- Gavin, A.J., A.E. Springer, L. DeWald, S. Silbert and E. Smith, 1996, Restoration of the volcanic hydrogeology of a critical high-elevation riparian community in Arizona: Geological Society of America, 28th annual meeting. Denver, CO, United States, Oct. 28-31, 1996, Abstracts with Programs - Geological Society of America. 28; 7, p. 347-348.
- Gebler, 2000, Organochloride compounds in streambed sediments and in biological tissue from streams and their relation to land use, central Arizona: USGS Water Resource Investigations Report 00-4041, 21 pp.
- Gellenbeck, D.J., and D.W. Anning, 2001, Occurrence and distribution of pesticides and volatile organic compounds in groundwater and surface water in central Arizona basins, 1996-1998, and their relation to land use: USGS Water Resources Investigations Report 01-4144, 107 pp.
- Geraghty, and Miller Inc, 1992, Water resources plan, town of Camp Verde, phase I- current management, legal framework and short and long term strategies: consultant report for town of Camp Verde, 68 pp .
- Goodwin, P.G., M. Olade and W. Ruddiman, 1996, Characterization and interim remediation of tetrachloroethene plume in the Payson Granite aquifer:in Wanted: Water for Rural Arizona: Proceedings from the 9th annual Arizona Hydrological Society Symposium, September 1996, p.115.
- Governor's Riparian Habitat Task Force, 1990, Streams and riparian resources: Final report and recommendations.

- Graybill, D.A., 1989, The reconstruction of prehistoric Salt River stream flow: in The 1982-1984 Excavations at Las Colinas: Environment and Subsistence: Arizona State Museum Archaeological Series No.162.
- Hanrahan, C., 1997, Modeling the Beaver Creek research watershed, Apache-Sitgreaves National Forests: University of Arizona, M.S. thesis.
- Hart, R.J., J.J. Ward, D.J. Bills and M.E. Flynn, 2002, Generalized hydrology and groundwater budget for the C aquifer, Little Colorado River basin, and parts of Verde and Salt River basin, Arizona and New Mexico: USGS Water Resources Investigations Report 02-4026, 47 pp.
- Hirschboeck, K.K., 2004, Using tree rings to determine the long-term record of synchronous extreme stream flow episodes in the Salt-Verde and upper Colorado River basins: in The Value of Water: Proceedings from the 17th annual Arizona Hydrological Society symposium, September 2004, Tucson Arizona.
- Jacobs, K.L., and L.S. Stitzer, 2006, Water supply and management in rural Arizona, in Arizona Water Policy: Management Innovations in an Urbanizing Arid Region, Resources for the Future Press.
- Jones, C., 2003, Public policy, cows, riparian areas, drought, sustainability and the Tonto National Forest: in Sustainability Issues and Arizona's Regional Watersheds: Proceedings from the 16th annual Arizona Hydrological Society Symposium, September 2003, Mesa, Arizona .
- Kaczmarek, M., 2003, Investigation of groundwater availability for the Pine-Strawberry Water Improvement District: Morrison Maierle Inc.
- Keadle, D.A., C.A. Brown, S. Eichberg, W.D. Musielak, T. Whitmer and K.L. Rall, 1999, Verde River watershed study: in Water Issues and Partnerships for Rural Arizona: Proceedings from the 12th annual Arizona Hydrological Society Symposium, September 1999, Pinetop, Arizona.
- Kelly, S., A. Springer and M. Vanderbilt, 1999, Recharge mechanisms for the Coconino-Schnebly Hill aquifer in the Lake Mary area, Coconino County, Northern Arizona: 12th Annual Symposium of the Arizona Hydrological Society, September 9-10, 1999, Pinetop, Arizona.
- Knauth, P. and M. Greebie, 1997, Stable isotope investigation of groundwater-surface water interactions in the Verde River headwaters area: Arizona Department of Water Resources Report
- Konieczki, A.D., J.G. Brown, and J.T. Parker, 2008, Hydrologic Data from the Study of Acidic Contamination in the Miami Wash-Pinal Creek Area, Arizona, Water Years 1997-2004: USGS Open File Report 2008-1273.

- Konieczki, A.D. and S.A. Leake, 1997, Hydrogeology and water chemistry of Montezuma well in Montezuma Castle National Monument and surrounding area, Arizona: USGS Water Resources Investigations Report 97-4156.
- Langenheim, V.E., E. DeWitt and L. Wirt, 2006, Geophysical framework based on analysis of aeromagnetic and gravity data, Upper and Middle Verde River watershed, Yavapai County, Arizona: USGS Scientific Investigations Report 2005-5278, 25 p.
- Leon, E., 2004, Numerical groundwater flow model of the Verde River headquarters area, Arizona: in *The Value of Water: Proceedings from the 17th annual Arizona Hydrological Society symposium*, September 2004, Tucson, Arizona.
- Lopez, S.M. and A.E. Springer, 2001a, Upper Verde Valley riparian area historical analysis: Department of Geology, Northern Arizona University, 18 pp.
- _____, 2001b, Assessment of human influence on riparian change in the Verde Valley, Arizona: Department of Geology, Northern Arizona University, 43 pp.
- Maguire, R., 2005, *An Analysis of the Water Budgets of Buckeye, Payson and Prescott Valley, Think AZ.*
- Mclaughlin, C., 2003, Evaporation as a nutrient retention mechanism in Sycamore Creek: Arizona: Arizona State University, M.S. thesis, 56 pp.
- McGavock, E., 2002, Water in the Verde River watershed: in *Water Transfers, Past, Present and Future: Proceedings from the 15th annual Arizona Hydrological Society Symposium*, September 2002, Flagstaff, Arizona.
- _____, 1996, Overview of groundwater conditions in the Verde Valley, Arizona: in *Wanted: Water for Rural Arizona: Proceedings from the 9th annual Arizona Hydrological Society Symposium*, September 1996, Prescott, Arizona, p. 65.
- Megdal, S., K. Mott Lacroix, and A. Schwarz, 2006, *Projects to Enhance Arizona's Environment: An Examination of their Functions, Water Requirements and Public Benefits*: University of Arizona, Water Resources Research Center.
- Manera, P.A., 1994, Geohydrologic evaluation of the Portal IV subdivision, Pine, Gila County, Arizona: Austin Myers Development Co., March 1994, 22 pp.
- Melis, T.S., 1990, Evaluation of Flood Hydrology on Twelve Drainage Basins in the Central Highlands Region of Arizona: An Integrated Approach: Northern Arizona University, M.S. thesis, 135 pp.
- Mondry, Z., 2002, Drought, storms, and stream flow and temperature observations from the Coconino and Prescott National Forests: in *Sustainability Issues of Arizona's*

- Regional Watersheds: Proceedings from the 15th annual Arizona Hydrological Society Symposium, September 2003, Mesa, Arizona.
- Moore, D., 1989, Opportunities for riparian ecosystem preservation in the Verde River Basin, Arizona: in *Headwaters' Hydrology: American Water Resources Association's Symposium*, June 1989, Missoula, MT.
- Navarro, L.F., A.E. Springer and S.P. Maslansky, 2000, Modeling sustainable yield in a semi-arid, shallow groundwater basin supporting riparian vegetation and perennial springs: *Geological Society of America, Abstracts with Programs*, 32 p. 141.
- Navarro, L.F., 2002, Characterization and ground-water flow modeling of the Mint Wash/Williamson Valley area, Yavapai County: Northern Arizona University, M.S. thesis, 158 pp.
- Navarro, L.F., A.E. Springer and S.P. Maslansky, 1999, Characterizing the impacts of the conversion of a semi-arid ground water basin from rural to suburban development: *Geological Society of America, Abstracts with Programs*, vol. 31, p. 351.
- Nemecek, E.A., 2003, Sustainability of Arizona's few remaining perennial streams: in *Sustainability Issues of Arizona's Regional Watersheds: Proceedings from the 16th annual Arizona Hydrological Society Symposium*, September 2003, Mesa, Arizona.
- Northern Arizona University, 2001, Proceedings, Verde watershed symposium-state of the watershed in 2001: Verde Watershed Research and Education Program, Center for Sustainable Environments.
- Ostenaar, D.A., U.S. Schimschal, C.E. King, J.W. Wright, R.B. Furgerson, H.C. Harrel and R.H. Throner, 1993, Big Chino Valley Groundwater Study: Bureau of Reclamation, Denver office, Geologic Framework Investigations, 31 pp.
- Oureshi, T. and L.A. Baker, 1994, Sources and implications of arsenic in the Salt and Verde river watersheds: in *Approaching the Millennium- Evolving Perspectives in Water Resources: Proceedings from the 7th annual Arizona Hydrological Society Symposium*, September 1994, Scottsdale, Arizona, p. 67.
- Oureshi, M.T.A., 1995, Sources of arsenic in the Verde River and the Salt River watersheds, Arizona: Arizona State University, M.S. thesis, 116 pp.
- Parker, J., Steinkampf, W. and Flynn, M., 2005, Hydrogeology of the Mogollon Highlands, central Arizona: USGS Scientific Investigations Report 2004-5294.
- Pearthree, P.A. 1996, Historical geomorphology of the Verde River: AZGS Open-File Report 96-13, 26 pp.

- _____, 1993, Geologic and geomorphic setting of the Verde River from Sullivan Lake to Horseshoe Reservoir: AZGS Open – File Report 93-4, 25 pp.
- Pedler, W. H. and M. Kennard, 1992, Hydro-physical logging: an advance wellbore technology for hydrologic and containment characterization of aquifers: in *Arizona Water 2000: Proceedings from the 5th annual Commission on the Arizona Environment and Arizona Hydrological Society Symposium*, September 1992, , p. 259-265. *Discusses Payson*
- Pierce, H.A., 2001, Structural controls on groundwater conditions and estimated aquifer properties near Bill Williams Mountain, Williams Arizona: USGS Water Resources Investigation Report 01- 4058.
- _____, 1996, Groundwater availability in the vicinity of Payson, Arizona-transition zone between the Colorado Plateau and Basin and Range: in *Wanted: Water for Rural Arizona: Proceedings from the 9th annual Arizona Hydrological Society Symposium*, September 1996, p.103.
- Pine Water Company, Inc., 2006, System Water Plan, Submitted to the Arizona Department of Water Resources.
- Ploughe, M. and C.M. Conway, 2002, Finding water in the cracks, Payson, Arizona: in *Water Transfers: Past, Present and Future: Proceedings from the 15th annual Arizona Hydrological Society Symposium*, September 2002, Flagstaff, Arizona.
- Raney, W., 1989, Verde Valley, a geological history: Plateau Vol. 60, No. 3.
- Reiboldt, A., C. Schlinger and A. Springer, 2002, Wastewater treatment plant effluent discharges in northern Arizona: Perennial flow as a successor to ephemeral flow in a fractured and faulted setting: in *Water Transfers: Past, Present and Future: Proceedings from the 15th annual Arizona Hydrological Society Symposium*, September 2002, Flagstaff, Arizona.
- Rice, S.E., 2007, Springs as indicators of drought: Physical and geochemical analyses in the middle Verde River watershed, Arizona: Northern Arizona University M.S. Thesis.
- Robertson, F.N., 1991, Geochemistry of groundwater in alluvial basins of Arizona and adjacent parts of Nevada, New Mexico and California: USGS Professional Paper 1406-C, 87 pp.
- Rogers, S.B., 1999, Geochemistry and Natural Attenuation of Acid Mine Drainage at the Iron King Mine, Cottonwood, Arizona: Northern Arizona University, M.S. thesis, 121 p.
- Rusinek, W., 1986, Battle for the Verde River: Water, power and politics in Arizona, 1890-1934: Arizona Historical Society Symposium, May 1987, Douglas, Arizona.
- Sayers, R.C., 1994, Potential impact of stream flow diversion on riparian vegetation: Fossil Creek, Arizona: Northern Arizona University, M. .S. thesis.

- Schlinger, C., 2003, Sediment transport evaluation for dam removal scenarios, Fossil Springs Diversion Dam, Arizona: in Sustainability Issues of Arizona's Regional Watersheds: Proceedings from the 16th annual Arizona Hydrological Society Symposium, September 2003, Mesa, Arizona.
- Schwab, K.J., 1995, Maps showing groundwater conditions in the Big Chino sub-basin of the Verde River Basin, Coconino and Yavapai Counties, Arizona, Arizona Department of Water Resources HMS No. 28 - 000243
- Sommerfield, M.R., P.V. Athey and B.C. Mueller, 1980, Impact of recreation on the water quality of the East Verde River: in Water Quality Monitoring and Management: Proceedings from the Arizona Water Resources Association Symposium, October 1980, Tucson, Arizona, p. 51-69.
- Springer, A.E. and D. Bills, 1998, Exploration for and ecological importance of shallow and deep ground-water around San Francisco Mountain: in Duebendorfer, E.M., ed., Geologic excursions in northern and central Arizona, p. 27-33.
- Steiner, F., et.al, 1991, Draft environmental impact statement, Central Arizona Project, Verde River water transfers, Yavapai County, Arizona: Arizona State University, Department of Planning.
- _____, 1990, Verde River Corridor-Clarkdale: Arizona State University, Department of Planning, December 1990.
- Sullivan, M.E., 1993, Functions and values of the Verde River riparian ecosystem and an assessment of adverse impacts to these resources: Supporting document for the initiation of the Verde River advance identification: USEPA, Region 9, March, 364 pp.
- Thornburg, T. and P. Tabor, 1991, Verde River corridor project, final report and plan of action: Arizona State Parks, June 1991.
- Town of Camp Verde, 2005, General Plan: Water Resources Element, Ratified by Voters March 8, 2005.
- Town of Payson Water Department, 2006, System Water Plan, Submitted to the Arizona Department of Water Resources.
- _____, 2006, Town of Payson Water Resources Management 2005 Status Report.
- _____, 2005, Town of Payson Water Resources Management 2005 Status Report.
- U.S. Bureau of Reclamation, 2003, Water Use Projections Verde Valley Arizona.
- _____, 2000, Appraisal level study of Water Delivery System Analyses: North Central Arizona Regional Water Supply Project.

- United States Congress, 1990, The Fort McDowell Indian Community Water Rights Settlement Act of 1990: 161st Congress, 2nd session, Senate committee on Indian Affairs, Report no. 101-479.
- U.S. Department of Agriculture, 1982, Verde River: Wild and Scenic River Study Report and Environmental Impact Statement: USFS, Southwestern Region, September 1982.
- U.S. Geological Survey, 2004, Aquifer framework and groundwater flow paths in the Big and Little Chino basin: Arizona Water Protection Fund Project 99-078.
- _____, 1991, Basin characteristics and stream flow statistics in Arizona as of 1989: USGS Water Resources Investigations Report 91-4041.
- U.S. Fish and Wildlife Service, 1991, Advance identification of functions and values of the Verde River, Arizona: Final Study Plan
- Verde Watershed Association and the USDA, 1996, Summary report, Verde Cooperative River Basin Study, Coconino, Gila, Maricopa, and Yavapai counties, Arizona, 34 pp.
- Verde Watershed Symposium, 2001, State of the Watershed in 2001: Proceedings, Cliff Castle Lodge and Conference Center, Camp Verde, Arizona.
- Webb, R.H., S.A. Leake, and R.M. Turner, 2007, The Ribbon of Green: Change in Riparian Vegetation in the Southwestern United States, University of Arizona Press.
- Weitzman, M., 2002, Geology and hydrology of the Payson, Strawberry, Diamond Ridge areas, Gila and Coconino counties, central Arizona: AZGS Bulletin CR-02-B, 17 pp.
- Whitmore, W., E.A. Cook and F. Steiner, 1991, Verde River visual assessment: Verde River Corridor Study, Tapico to Beasley Flat: Arizona State University, Department of Planning, draft report, May 1991.
- Wilkinson, R.W., 2000, Water resources of Bellemont Park, Coconino County, Arizona: Northern Arizona University, M.S. thesis, 263 pp.
- Wirt, L., 2004, Hydrogeologic Review of the Drake Cement Project, Yavapai County Arizona: USGS Open File Report 2004-1439.
- Wirt, L., and H.W. Hjalmarson, 2000, Sources of springs supplying base flow to the Verde River headwaters, Yavapai County, Arizona: USGS Open File Report 99-0378, 47 pp.
- _____, 1999, Geologic controls on groundwater movement, upper Verde River headwaters, Yavapai County, Arizona: in Water Issues and Partnerships for Rural Arizona: Proceedings from the 12th annual Arizona Hydrological Society Symposium, September 1999, Pinetop, Arizona.

- Wirt, L., 1992, The use of stable isotopes and water chemistry to determine movement of water in the upper Verde River basin, Yavapai County, Arizona: in *Protecting Riparian Systems-Meeting the Challenges of Urban Needs: Abstracts from the 6th annual meeting of the Arizona Riparian Council*, April 1992, Cottonwood Arizona, p. 16-17.
- Woodhouse, B.G, and M.E. Flynn, 2002, Investigation of the geology and hydrology of the upper and middle Verde River watershed of central Arizona: A project of the Rural Arizona Initiative, USGS Fact Sheet 059-02.
- Woodhouse, B.G., J.T.C. Parker, D.J. Bills and M.E. Flynn, 2000, USGS investigation of rural Arizona watersheds: Coconino Plateau, upper and middle Verde River, and Fossil Creek- East Verde River -Tonto Creek: in *Environmental Technologies for the 21st Century: Proceedings from the 13th annual Arizona Hydrological Society Symposium*, September 2000, Phoenix, Arizona, p. 97.
- Yavapai County Water Advisory Committee, 2004, Big Chino sub-basin historical and current water uses and water use projections: Draft, Feb.2004, 38 pp.