

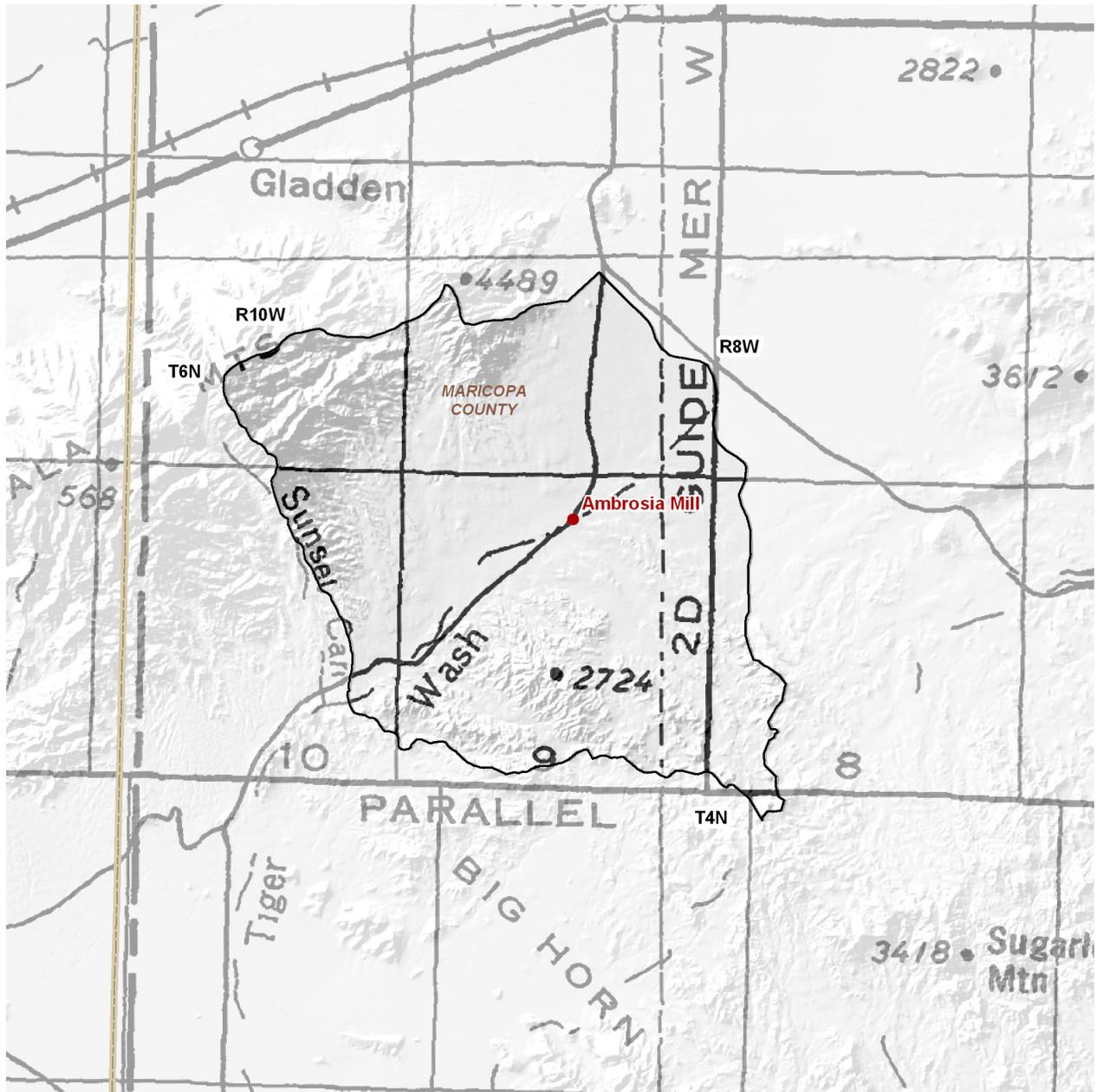
Section 7.9 Tiger Wash Basin



7.9.1 Geography of the Tiger Wash Basin

The Tiger Wash Basin, located in the northeastern part of the planning area is 74 square miles in area, the smallest basin in the planning area and the state. Geographic features and principal places are shown on Figure 7.9-1. The basin is characterized by a valley bordered by mountain ranges. Vegetation types include Lower Colorado River Valley and Arizona uplands Sonoran desertscrub and a small amount of southwestern interior chaparral near the northwestern basin boundary. (See Figure 7.0-9)

- Principal geographic features shown on Figure 7.9-1 are:
 - Tiger Wash in the center of the basin
 - Harquahala Mountains in the northern portion of the basin and the Big Horn Mountains in the southern portion of the basin with the highest point at 2,724 feet.
 - The lowest point is approximately 1,950 feet where Tiger Wash exits the basin southeast of Ambrosia Mill.



Base Map: USGS 1:500,000, 1981

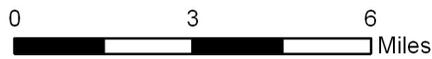


Figure 7.9-1
Tiger Wash Basin
Geographic Features

City, Town or Place ●

7.9.2 Land Ownership in the Tiger Wash Basin

Land ownership, including the percentage of ownership by category, for the Tiger Wash Basin is shown in Figure 7.9-2. The principal feature of land ownership in this basin is the large proportion of U.S. Bureau of Land Management lands. 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 7.0.4. Land ownership categories are discussed below in the order of largest to smallest percentage in the basin.

U.S. Bureau of Land Management

- 97.4% of the land is federally owned and managed by the Lower Sonoran Field Office of the U.S. Bureau of Land Management.
- This basin contains 8,700 acres of the 23,000 acre Harquahala Mountains Wilderness. (see Figure 7.0-12)
- Land use includes grazing, resource conservation and recreation.

State Trust Land

- 2.3% of the land is held in trust for the public schools under the State Trust Land system.
- Primary land use is grazing.

Private

- 0.3% of the land is private.
- Land uses include domestic and grazing.

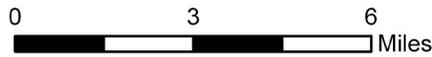
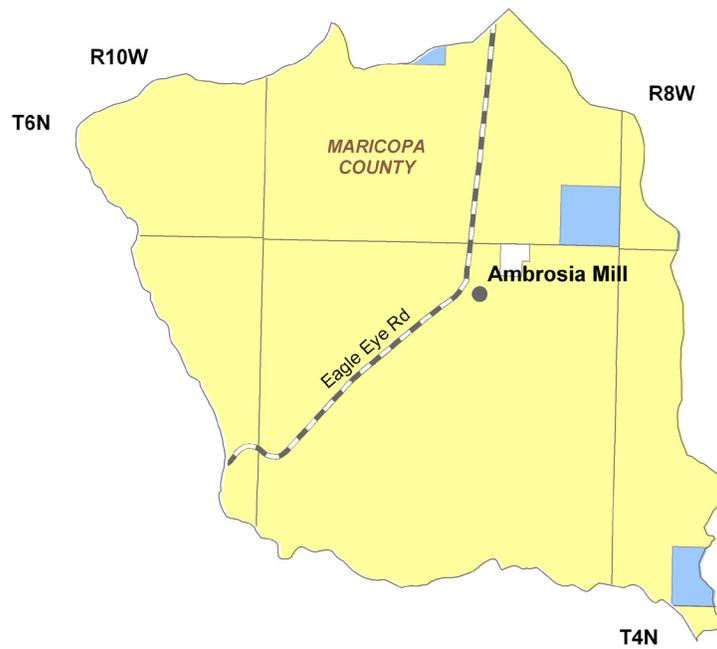


Figure 7.9-2
Tiger Wash Basin
Land Ownership

Land Ownership
(Percentage in Basin)

- U.S. Bureau of Land Management (97.4%) 
- State Trust (2.3%) 
- Private (0.3%) 
- Major Road 
- City, Town or Place 



Source: ALRIS, 2004

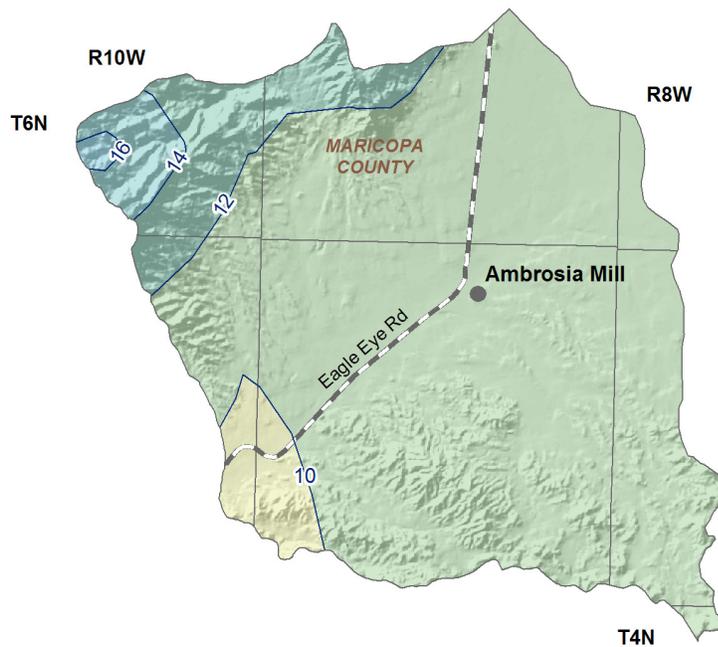


7.9.3 Climate of the Tiger Wash Basin

The Tiger Wash Basin does not contain NOAA/NWS, Evaporation Pan, AZMET or SNOTEL/Snowcourse stations. Figure 7.9-3 shows precipitation contour data from the Spatial Climate Analysis Service (SCAS) at Oregon State University. More detailed information on climate in the planning area is found in Section 7.0.3. A description of the climate data sources and methods is found in Volume 1, Appendix A.

SCAS Precipitation Data

- See Figure 7.9-3
- Average annual rainfall is as high as 18 inches along the northwestern tip of the basin and as low as eight inches in the southwestern portion of the basin.



Precipitation Data Source: Oregon State University, 1998

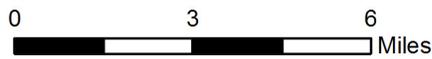
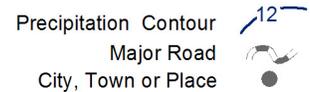
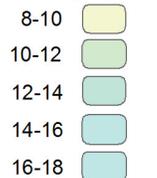


Figure 7.9-3
Tiger Wash Basin
Meteorological Stations
and Annual Precipitation

Average Annual Precipitation (1961-1990)
inches per year



7.9.4 Surface Water Conditions in the Tiger Wash Basin

Flood ALERT equipment in the basin is shown in Table 7.9-1 and Figure 7.9-4. Reservoir and stockpond data, including maximum storage or maximum surface area, are shown in Table 7.9-2. There are no streamflow data or USGS runoff contour data available for this basin. Descriptions of stream, reservoir and stockpond data sources and methods are found in Volume 1, Appendix A.

Flood ALERT Equipment

- Refer to Table 7.9-1
- As of October 2005 there was one station in this basin.

Reservoirs and Stockponds

- Refer to Table 7.9-2.
- There are no large or small reservoirs and nine registered stockponds in this basin.

Table 7.9-1 Flood ALERT Equipment in the Tiger Wash Basin

Station ID	Station Name	Station Type	Install Date	Responsibility
5130	Upper Tiger Wash	Precipitation	11/1/1981	Maricopa County FCD

Notes:

FCD = Flood Control District

Table 7.9-2 Reservoirs and Stockponds in the Tiger Wash Basin

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

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

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

MAP KEY	RESERVOIR/LAKE NAME <i>(Name of dam, if different)</i>	OWNER/OPERATOR	MAXIMUM SURFACE AREA (acres)	USE	JURISDICTION
None identified by ADWR at this time					

Source: Compilation of databases from ADWR & others

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

Total number: 0

Total maximum storage: 0 acre-feet

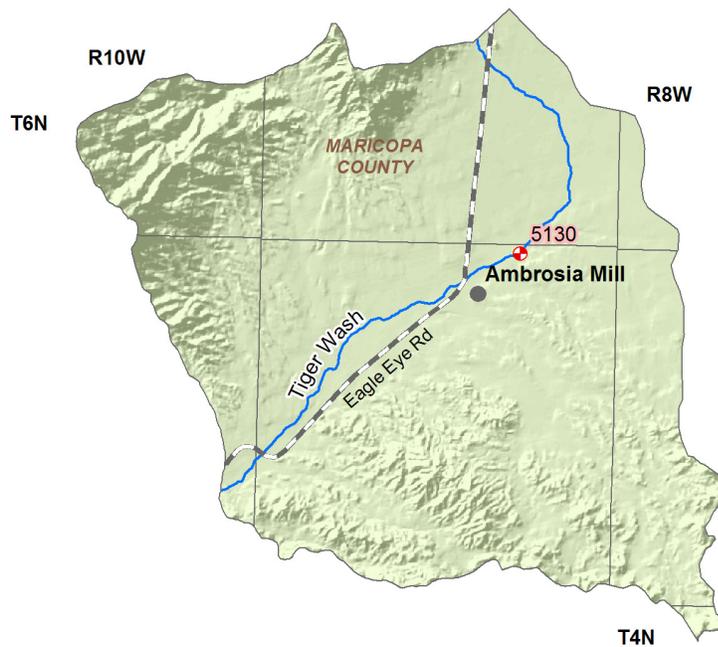
D. Other Small Reservoirs (between 5 and 50 acres surface area)

Total number: 0

Total surface area: 0 acres

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

Total number: 9



Stream Data Source: ALRIS, 2005b

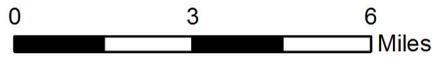


Figure 7.9-4
Tiger Wash Basin
Surface Water Conditions

Stream Channel (width of line reflects stream order)
Flood ALERT Equip. & Station ID
Major Road
City, Town or Place



7.9.5 Perennial/Intermittent Streams and Major Springs in the Tiger Wash Basin

The total number of springs in the basin are shown in Table 7.9-3. The location of an intermittent stream is shown on Figure 7.9-5. Descriptions of data sources and methods for intermittent and perennial reaches and springs are found in Volume 1, Appendix A.

- There are no perennial streams and one intermittent stream, Browns Canyon Wash.
- There are no major or minor springs in the basin.
- The total number of springs, regardless of discharge, identified by the USGS is three.

Table 7.9-3 Springs in the Tiger Wash Basin

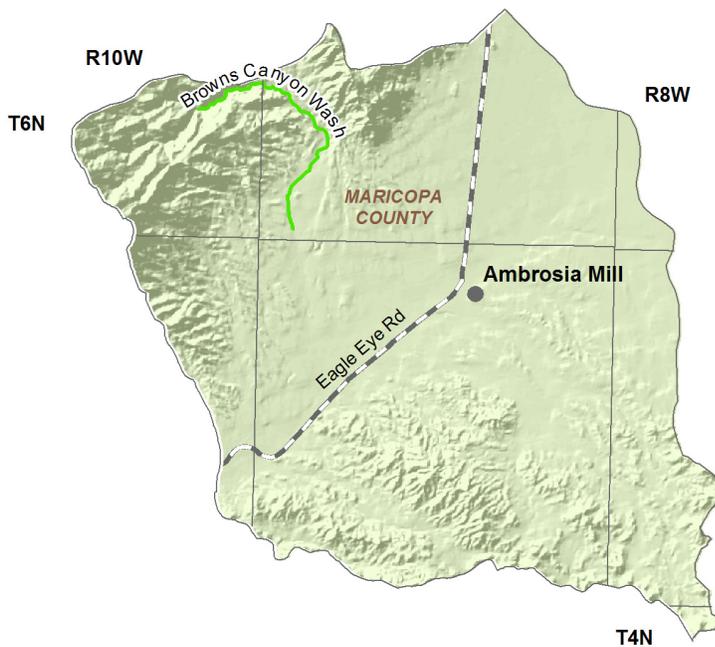
A. Major Springs (10 gpm or greater):

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

B. Minor Springs (1 to 10 gpm):

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

C. Total number of springs, regardless of discharge, identified by USGS (see ALRIS, 2005a and USGS, 2006a): 3



Stream Data Source: AGFD, 1993 & 1997

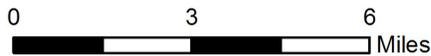


Figure 7.9-5
Tiger Wash Basin
Perennial/Intermittent Streams
and Major (>10 gpm) Springs

Intermittent Stream
Major Road
City, Town or Place



7.9.6 Groundwater Conditions of the Tiger Wash Basin

Major aquifers, well yields, estimated water in storage, number of index wells and date of last water-level sweep are shown in Table 7.9-4. Figure 7.9-6 shows aquifer flow direction. Data on water-level change between 1990-1991 and 2003-2004 was not available for this basin. Figure 7.9-7 contains hydrographs for selected wells shown on Figure 7.9-6. 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 7.9-4 and Figure 7.9-6.
- The major aquifer in this basin is basin fill.
- Groundwater flow is to the northeast and southwest away from the center of the basin.

Well Yields

- Refer to Table 7.9-4.
- The only well yield data available within the basin indicates a well yield range from dry to 500 gallons per minute (gpm).

Natural Recharge

- Refer to Table 7.9-4.
- The natural recharge estimate for this basin is less than 1,000 acre-feet per year (AFA).

Water in Storage

- Refer to Table 7.9-4.
- Storage estimates range from 700,000 acre-feet to 2.0 million acre-feet to a depth of 1,200 feet.

Water Level

- Refer to Figure 7.9-6.
- The Department annually measures two index wells in this basin. Hydrographs for these index wells are shown on Figure 7.9-7.

Table 7.9-4 Groundwater Data for the Tiger Wash Basin

Basin Area, in square miles:	74	
Major Aquifer(s):	Name and/or Geologic Units	
	Basin Fill	
Well Yields, in gal/min:	769** (1 well measured)	Measured by ADWR (GWSI) and/or USGS
	N/A	Reported on registration forms for large (>10-inch) diameter wells (Wells55)
	N/A	ADWR (1994b)
	Range 0-500	Anning and Duet (1994)
Estimated Natural Recharge, in acre-feet/year:	<1,000	Freethy and Anderson (1986)
Estimated Water Currently in Storage, in acre-feet:	700,000 (to 1,200 ft)	ADWR (1990)
	1,000,000 ¹ (to 1,200 ft)	Freethy and Anderson (1986)
	2,000,000 (to 1,200 ft)	Arizona Water Commission (1975)
Current Number of Index Wells:	2	
Date of Last Water-level Sweep:	2004 (5 wells measured)	

** well located just outside basin boundary in Phoenix AMA

¹Predevelopment Estimate

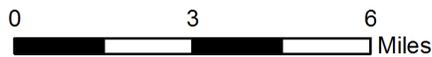
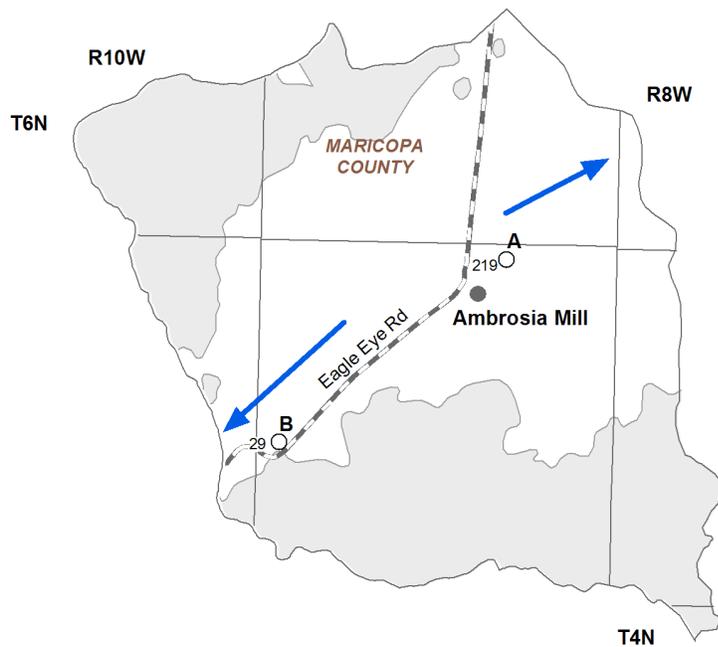


Figure 7.9-6
Tiger Wash Basin
Groundwater Conditions

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

375 ^H ○ = number is depth to water in feet
during 2003-2004;
letter is hydrograph

Change Data Not Available ○

Generalized Flow Direction →

Consolidated Crystalline
& Sedimentary Rocks

Unconsolidated Sediments

Major Road
City, Town or Place

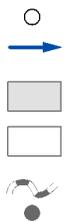
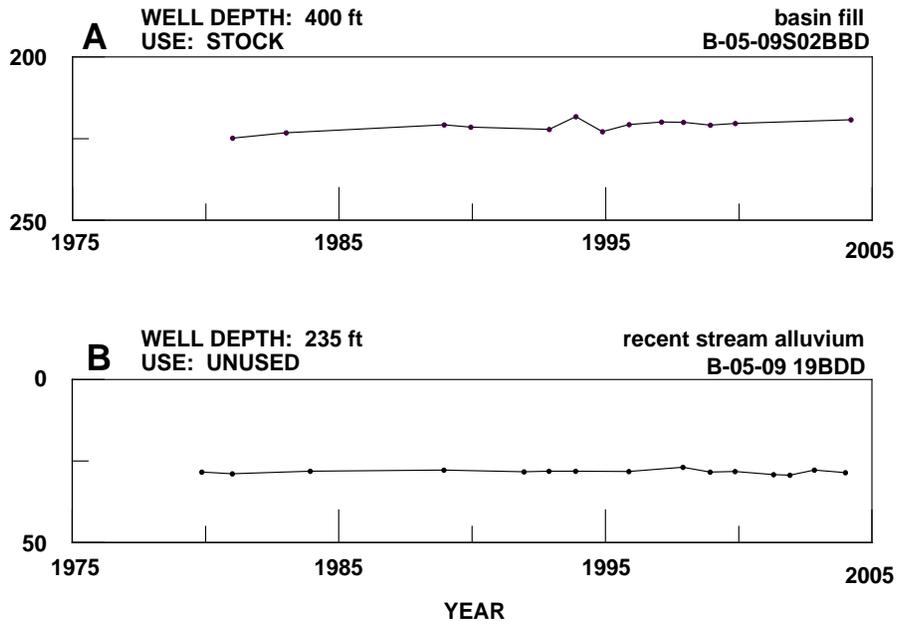


Figure 7.9-7
Tiger Wash Basin
Hydrographs Showing Depth to Water in Selected Wells

Depth To Water In Feet Below Land Surface



7.9.7 Water Quality of the Tiger Wash 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 7.9-5A. There are no impaired lakes or streams in this basin. Figure 7.9-8 shows the location of water quality occurrences keyed to Table 7.9-5. 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 7.9-5A.
- Two wells have parameter concentrations that have equaled or exceeded drinking water standards.
- The parameters exceeded were nitrate and arsenic.

Table 7.9-5 Water Quality Exceedences in the Tiger Wash Basin¹

A. Wells, Springs and Mines

Map Key	Site Type	Site Location			Parameter(s) Concentration has Equaled or Exceeded Drinking Water Standard (DWS) ²	
		Township	Range	Section		
1	Well	5 North	9 West	2	NO3	
2	Well	5 North	9 West	19	As	

Source: Compilation of databases from ADWR & others

B. Lakes and Streams

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

Notes:

¹ Water quality samples collected between 1984 and 2001.

² As = Arsenic

NO3 = Nitrate

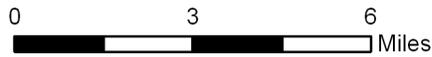
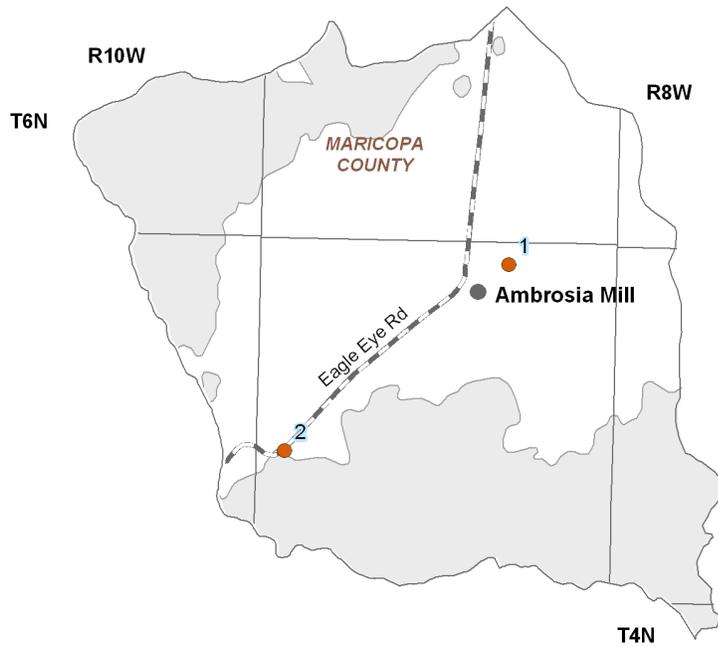


Figure 7.9-8
Tiger Wash Basin
Water Quality Conditions

- Well, Spring or Mine Site that has Equaled or Exceeded DWS ● 1
- Consolidated Crystalline & Sedimentary Rocks
- Unconsolidated Sediments
- Major Road
- City, Town or Place



7.9.8 Cultural Water Demands in the Tiger Wash 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 7.9-6. There is no recorded effluent generation in this basin. The USGS National Gap Analysis Program, the primary source of cultural demand map data, showed no demand centers for this basin. A description of cultural water demand data sources and methods is found in Volume 1, Appendix A. More detailed information on cultural water demands is found in Section 7.0.7.

Cultural Water Demands

- Refer to Table 7.9-6
- Population in this basin is very small, with less than ten residents in 2000.
- There are no recorded surface water uses. All groundwater use is for municipal (domestic) demand and has remained relatively constant since 1971.
- As of 2005 there were seven registered wells with a pumping capacity of less than or equal to 35 gpm and one well with a pumping capacity of more than 35 gpm.

Table 7.9-6 Cultural Water Demand in the Tiger Wash 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		6 ²	1 ²	<500			NR			ADWR (1994a)
1972										
1973										
1974										
1975										
1976										
1977		<500			NR					
1978										
1979										
1980	<10									
1981	<10	1	0	<500			NR			
1982	<10									
1983	<10									
1984	<10									
1985	<10									
1986	<10	0			NR					
1987	<10									
1988	<10									
1989	<10									
1990	<10									
1991	<10	0	0	<300	NR	NR	NR			USGS (2007)
1992	<10									
1993	<10									
1994	<10									
1995	<10									
1996	<10	0			NR					
1997	<10									
1998	<10									
1999	<10									
2000	<10	0	0	<300	NR	NR	NR			
2001	<10									
2002	<10									
2003	<10									
2004	<10	0			NR					
2005	<10									
2010	<10									
2020	<10									
2030	<10									
WELL TOTALS:		7	1							

¹ Does not include evaporation losses from stockponds and reservoirs.

² Includes all wells through 1980.

NR - Not reported

7.9.9 Water Adequacy Determinations in the Tiger Wash Basin

No water adequacy applications for the Tiger Wash Basin were filed with the Department as of December 2008. 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.

Tiger Wash Basin

References and Supplemental Reading

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