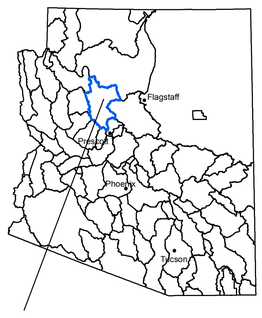
Summary of Water Level Changes

ARIZONA GROUNDWATER BASINS AND SUB-BASINS



BIG CHINO SUB-BASIN

Introduction

Depth to water (DTW) measurements were taken at 123 wells in the Big Chino sub-basin by personnel of the Arizona Department of Water Resources (ADWR) in at least 2 of the last 3 basin sweeps conducted in 1999, 2004, and 2009 (measurements were taken between February and May of each year). DTW below land surface ranged from less than one foot to more than 700 feet for wells in the Big Chino sub-basin. Location and water level change for these wells are shown on sheets 1 (1999 to 2009) and 2 (1999 to 2004 and 2004 to 2009). Sheet 3 also includes DTW information for each well and hydrographs for 12 wells throughout the sub-basin measured in all three years. Only 48 of the 123 wells had DTW measurements taken during all three basin sweep years. Throughout the sub-basin water levels show an overall decline from 1999 to 2004 and an overall rise from 2004 to 2009 resulting in relatively unchanged water levels from 1999 to 2009 in most areas of the sub-basin. Table 1 (sheet 3) shows the measured wells for each time period.

1999 – 2004

Between 1999 and 2004, DTW increased (> 2 feet water level decline) in 59 wells, remained unchanged (+/- 2 feet) in 26 wells, and decreased (> 2 feet water level rise) in 8 wells. The water level changes ranged from a decline of approximately 30 feet in the southeastern portion of the sub-basin in the Mint Wash area to a rise of approximately 13 feet at a well along the mountain front in the Upper Big Chino Wash area. The average water level change for all wells within the Big Chino sub-basin was a decline of about 5 feet with the greatest water level declines located within the Upper Big Chino and Mint Wash areas.

2004 – 2009

Between 2004 and 2009, DTW increased (> 2 feet water level decline) in 8 wells, remained unchanged (+/- 2 feet) in 28 wells, and decreased (> 2 feet water level rise) in 34 wells. The water level changes ranged from a decline of approximately 37 feet in the southeastern portion of the sub-basin in the Mint Wash area to a rise of approximately 21 to 22 feet in wells located in the Upper Big Chino area and Turkey Creek area. The average water level change for all wells within the Big Chino sub-basin was a rise of about 3 feet with most of the wells located in the Upper Big Chino area showing a rise in water levels.

1999 – 2009

Between 1999 and 2009, DTW increased (> 2 feet water level decline) in 12 wells, remained unchanged (+/- 2 feet) in 24 wells, and decreased (> 2 feet water level rise) in 20 wells. The water level changes ranged from a decline of approximately 67 feet in the southeastern portion of the sub-basin in the Mint Wash area to a rise of approximately 30 feet in the Turkey Creek area. The majority of the remaining areas within the sub-basin show relatively unchanged water levels with some small water level rises in the Upper Big Chino area and some small water level declines in the Lower Big Chino, Middle Big Chino, and Williamson Valley areas. The average water level change for all wells within the Big Chino sub-basin was +/- 1 foot from 1999 to 2009.

Upper Big Chino area

The Upper, Middle, and Lower Big Chino areas and Williamson Valley area typically have wells located within the basin-fill aquifer of the sub-basin (Schwab, 1995). Water levels in the Upper Big Chino area declined significantly between 1999 and 2004 and rose significantly between 2004 and 2009 (Sheet 2). The majority of wells in the central portion (along Big Chino Wash) of the Upper Big Chino area have water level declines from 11 to 20 feet from 1999 to 2004 followed by water level rises from 11 to 20 feet from 2004 to 2009 (Hydrographs B and E) resulting in a relatively unchanged water level from 1999 to 2009 (Sheet 3). Many of the remaining wells along the outer portions of the Upper Big Chino area have water level declines of 3 to 10 feet from 1999 and 2004 and rises of 3 to 10 feet from 2004 to 2009 with similar unchanged water levels from 1999 to 2009.

Fluctuations in water levels within this area may be attributed to changes in recharge (drought) as seen in fluctuations in stream flow along the Verde River and Williamson Valley Wash (Hydrographs H and J). No significant flood events are seen between 1996 and 2004 indicating drought conditions while a large flood event was seen in both hydrographs in 2005 and a smaller flood event in 2008. Many of the wells in the Upper Big Chino area are reported as being drilled into the volcanic or alluvial sub-units of the basin-fill aquifer and exhibit or reflect water level changes that coresond, at least in part, with varying climatic conditions. Another possible explanation for the water level declines in 2004 followed by a water level rise in 2009 are seasonal variations in the groundwater pumping of agricultural wells in the region. As noted previously by Schwab (1995), this area consists of a narrow strip of farmland in which water levels are influenced by irrigation practices and this area has continued to be irrigated (Tadayon, 2005). Well pumpage from 1999 until 2004 was reported at approximately 46,000 acre-feet (average 9,200 acre-feet/year) within the Big Chino sub-basin (Yavapai County WAC, 2004). Many of the wells in this area began having water levels measured semi-annually following 2004 and show fluctuations in water levels between 2004 and 2009 (Hydrographs B and E) indicating that water levels taken in 2004 may have been influenced by groundwater withdrawals. Note that well data in table 1 (sheet 3) show many water levels measured in April of 2004 while most water levels in 1999 and 2009 were measured in February and March. Wells along the edge of the basin-fill aquifer in the Upper Big Chino area show little to no decline or water level rises from 1999 to 2009 as shown in hydrographs A, C, and D. Some of these wells are reported as being drilled into water-bearing Paleozoic carbonate and sedimentary rock units that outcrop around the margins and/or underlying the younger basin-fill deposits (Hydrograph D).

Middle Big Chino, Lower Big Chino, and Williamson Valley areas

The majority of wells in the Middle Big Chino, Lower Big Chino, and Williamson Valley areas show water level declines between 3 and 10 feet from 1999 to 2004 and essentially unchanged water levels (+/- 2 feet) from 2004 to 2009 (Sheet 2). Overall from 1999 to 2009, several wells show small water level declines with the remaining water levels unchanged (Sheet 1). In the Middle Big Chino area, water levels were generally unchanged within the Playa deposits (Hydrograph F) while small water level declines were observed in the central and western portions of the basin-fill aquifer (Hydrograph G) where water levels are generally lower (Flora and Davis, 2009).

In the Lower Big Chino area, most of the wells show declining water levels from 1999 to 2004 and continued overall small water level declines through 2009 (Hydrographs H and I). Several wells in the southern and central portions of the Williamson Valley area show relatively unchanged water levels while wells located along the margins of the basin-fill aquifer (Hydrograph J) show small water level declines indicating a gradual decline in water levels in this region as well. Most of the wells located in the Middle and Lower Big Chino areas and the Williamson Valley area are drilled into alluvial deposits of the basin-fill aquifer (Schwab, 1995).

Mint Wash area

Significant declines in water levels within wells in the Mint Wash area occurred from 1999 to 2004 and continued to significantly decline from 2004 to 2009 (Sheet 2). Hydrograph L shows water levels declining approximately 67 feet from 2004 to 2009 (Sheet 1) while other wells in the area show moderate water level declines from 2004 to 2009 (Hydrograph K). All the wells located in this area have an overall declining trend in water levels since 1999. Several of the wells in this area are drilled into volcanic or alluvial sub-units of the basin-fill aquifer and granite at greater depths. Water level declines in the Mint Wash area may be related to climatic conditions as well as the overall water demand of numerous domestic wells tapping a limited aquifer system.

Coconino Plateau, Turkey Creek, and Walnut Creek areas

The Coconino Plateau (area north of Interstate 40), Turkey Creek, and Walnut Creek areas have wells located in higher elevation mountainous regions, streambeds in upper parts of the watershed, or along mountain fronts. These wells are typically located in recharge areas (Blasch et al 2005) and are typically not located in the central portion of the basin-fill aquifer (Schwab, 1995). The Coconino Plateau area northeast of Big Black Mesa within the sub-basin has limited water level data available, but the few wells located in that area show little to no change in water levels between 1999 and 2009 (Sheet 1). The aquifer in this area differs from the basin-fill aquifer in that most wells are completed within the water-bearing Paleozoic carbonate and sedimentary units of the Coconino Plateau area as described by Schwab (1995), Bills et al (2005), and Blasch et al (2005).

The Turkey Creek area has several wells with both declining and rising water levels from 1999 to 2004 but only rising water levels from 2004 to 2009 (Sheet 2). Overall, water levels rose in the Turkey Creek area from 1999 to 2009 (Sheet 1) but data are limited to only a few wells ranging from a 10 to 22 feet rise in water levels. The Walnut Creek area shows relatively unchanged water levels from 1999 to 2004, however no data are available from 2004 to 2009 (Sheet 2) in this area.

Conclusions

The hydrographs for selected wells in the Big-Chino sub-basin have limited historical water level information prior to 1999 but indicate minimal overall water level change in the basin-fill aquifer from 1999 to 2009.

A few wells show small water level rises in the Upper Big Chino area while a few wells show small water level declines in the Middle and Lower Big Chino areas. Several of the hydrographs in the Upper Big Chino area indicate a significant decline between 1999 and 2004 followed by a fluctuation in water levels and overall rise in water levels through 2009 while hydrographs in the Lower Big Chino area and Williamson Valley area show a slow but continuous decline in water levels during the time period from 1999 to 2009. Drought impacts from 1999 through 2004 are believed to be reflected in the majority of hydrographs within the Big Chino sub-basin. This is illustrated on Hydrographs H and J where groundwater levels reflect the changes in stream discharge for nearby USGS stream gages along the Verde River (Paulden) and Williamson Valley Wash respectively. Just as large precipitation and runoff events, such as floods of early 2005 are reflected in these recent hydrographs (water level rise), so are the effects of long-term drought on water-level trends (water level decline).

The Hydrographs for wells in the Big Chino sub-basin indicate two types of water level change. Many hydrographs that have steep water level declines and rises may indicate areas dominated by variable recharge or seasonal pumping effects while hydrographs with more consistent declining water level trends indicate areas where withdrawals exceed the effect of local recharge. Wells in the Mint Wash area indicate that this area has the greatest overall decline in water levels within the sub-basin from 1999 to 2009.

References

Bills, D.J., Flynn, M.E., and Monroe, S.A., 2005, Hydrogeology of the Coconino Plateau and Adjacent Areas, Coconino and Yavapai Counties, Arizona; U.S. Geological Survey Water Resources Investigations Report 2005-5222, 101 p.

Blasch, K. W., Hoffmann, J.P., Graser, L.F., Bryson, J.R., and Flint, A.L., 2006, Hydrogeology of the Upper and Middle Verde River Watersheds, Central Arizona; U.S. Geological Survey, Scientific Investigations Report 2005 – 5198, p. 102.

Flora, S. and Davis, T., 2009. Water Level Changes in Big Chino Sub-Basin, Arizona, 1999-2004; Arizona Department of Water Resources Water Level Change Map Series Report Number 2, April 2009, p. 2.

Schwab, K.J., 1995, Maps showing Groundwater Conditions, Spring 1992, in the Big Chino Sub-Basin of the Verde River Basin Coconino and Yavapai Counties, Arizona-1992; Arizona Department of Water Resources Hydrologic Map Series Report Number 28, November 1995, p. 2.

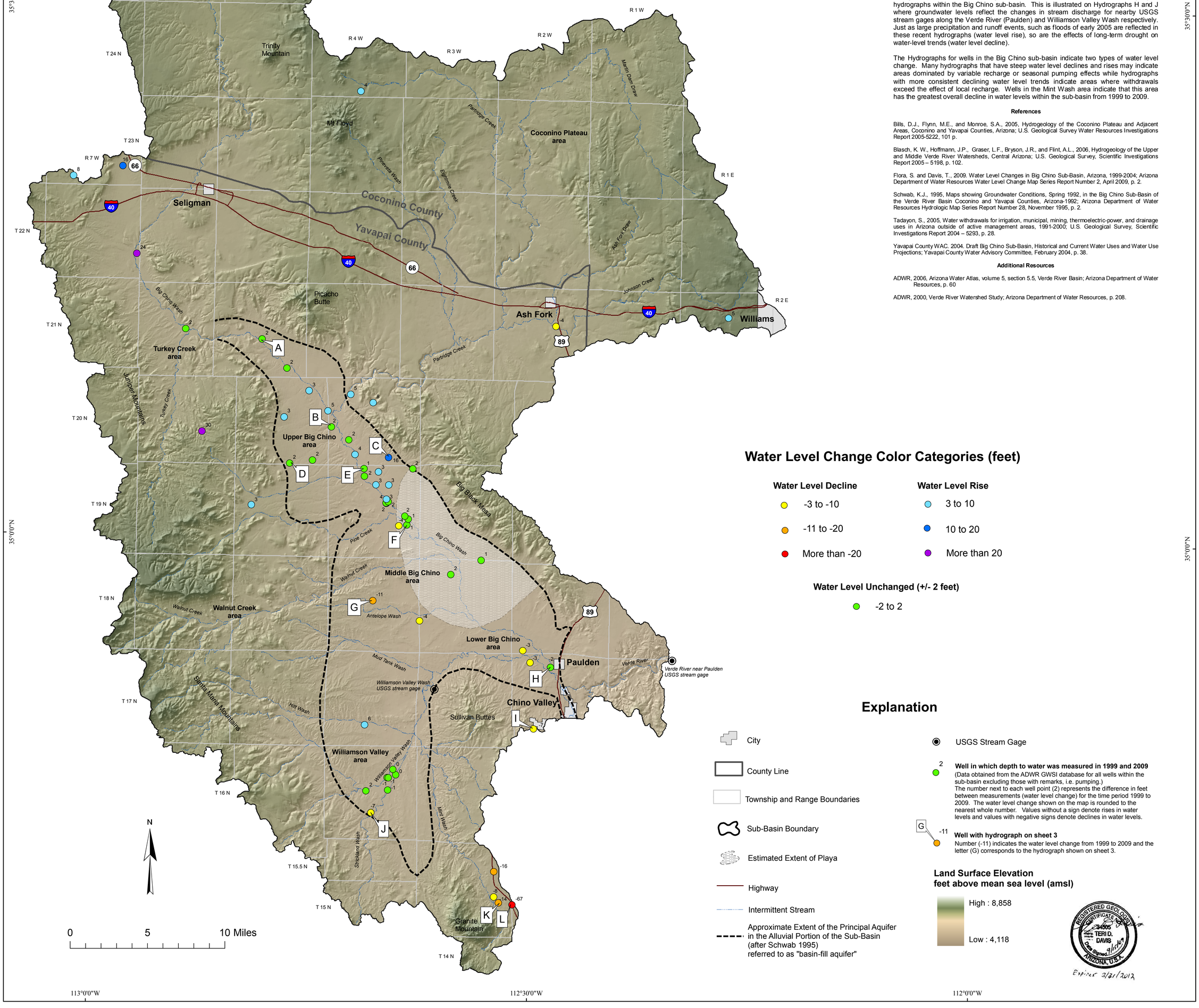
Tadayon, S., 2005, Water withdrawals for irrigation, municipal, mining, thermoelectric-power, and drainage uses in Arizona outside of active management areas, 1991-2000; U.S. Geological Survey, Scientific Investigations Report 2004 – 5293, p. 28.

Yavapai County WAC. 2004. Draft Big Chino Sub-Basin, Historical and Current Water Uses and Water Use Projections; Yavapai County Water Advisory Committee, February 2004, p. 38.

Additional Resources

ADWR, 2006, Arizona Water Atlas, volume 5, section 5.5, Verde River Basin; Arizona Department of Water Resources, p. 60

ADWR, 2000, Verde River Watershed Study; Arizona Department of Water Resources, p. 208.



Water Level Change Color Categories (feet)

Water Level Decline

- -3 to -10
- -11 to -20
- More than -20

Water Level Rise

- 3 to 10
- 10 to 20
- More than 20

Water Level Unchanged (+/- 2 feet)

- -2 to 2

Explanation

- City
- County Line
- Township and Range Boundaries
- Sub-Basin Boundary
- Estimated Extent of Playa
- Highway
- Intermittent Stream
- Approximate Extent of the Principal Aquifer in the Alluvial Portion of the Sub-Basin (after Schwab 1995) referred to as "basin-fill aquifer"
- USGS Stream Gage
- **Well in which depth to water was measured in 1999 and 2009** (Data obtained from the ADWR GWSI database for all wells within the sub-basin excluding those with remarks, i.e. pumping.) The number next to each well point (2) represents the difference in feet between measurements (water level change) for the time period 1999 to 2009. The water level change shown on the map is rounded to the nearest whole number. Values without a sign denote rises in water levels and values with negative signs denote declines in water levels.
- **Well with hydrograph on sheet 3** Number (-11) indicates the water level change from 1999 to 2009 and the letter (G) corresponds to the hydrograph shown on sheet 3.

Land Surface Elevation feet above mean sea level (amsl)

High : 8,858

Low : 4,118

REGISTERED GEOLOGIST CERTIFICATE NO. 24405 TERI D. DAVIS Date Signed 9/15/09 ARIZONA, U.S.A. Expires 3/31/2012

NORTH AMERICAN DATUM 1983 HARN

ARIZONA DEPARTMENT OF WATER RESOURCES

HYDROLOGY DIVISION

WATER LEVEL CHANGES IN BIG CHINO SUB-BASIN, ARIZONA 1999 - 2009

By
Stephen Flora, Teri Davis, and Frank Corkhill

September 2009

For data go to:
https://gisweb.azwater.gov/waterresourcedata/

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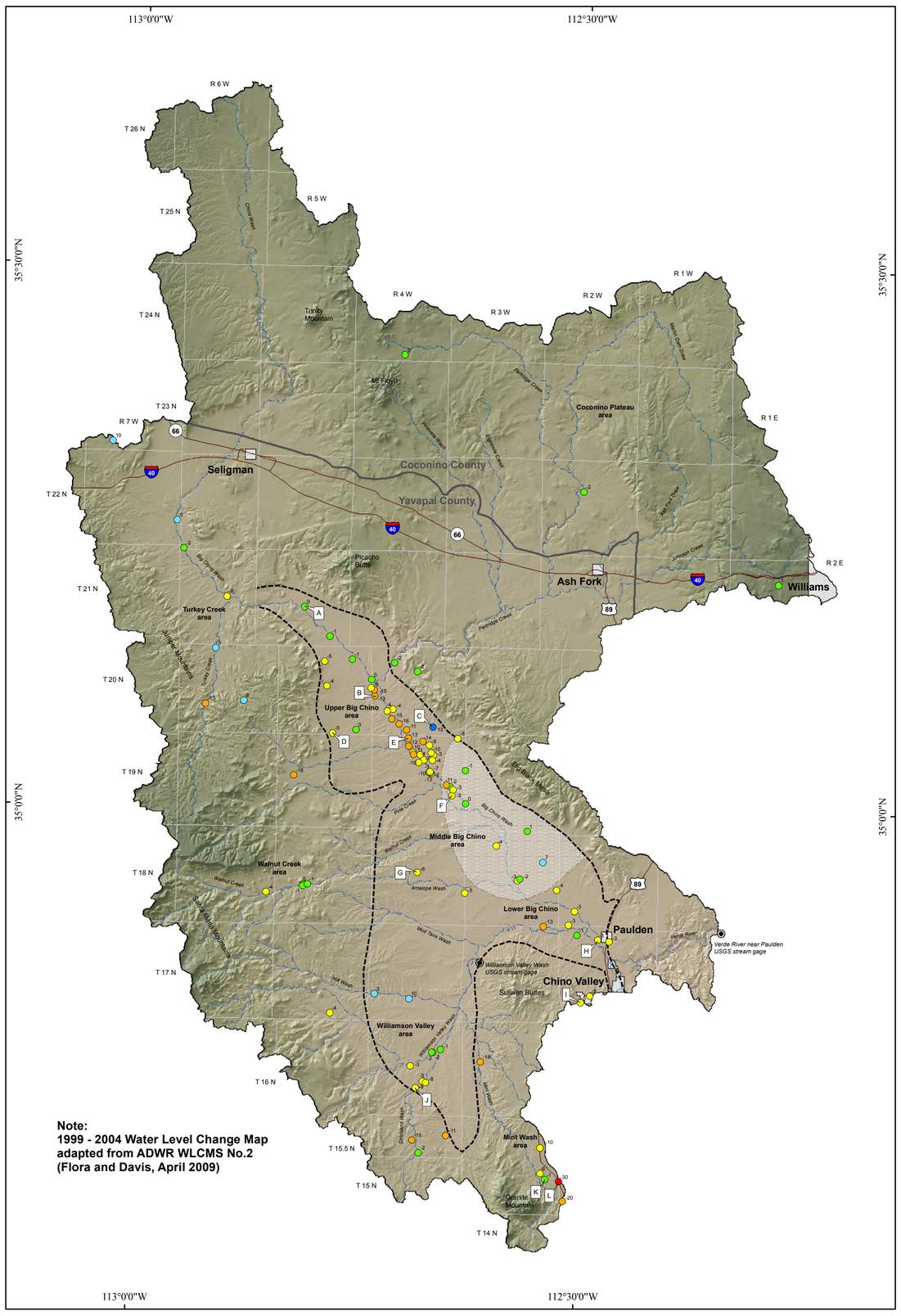
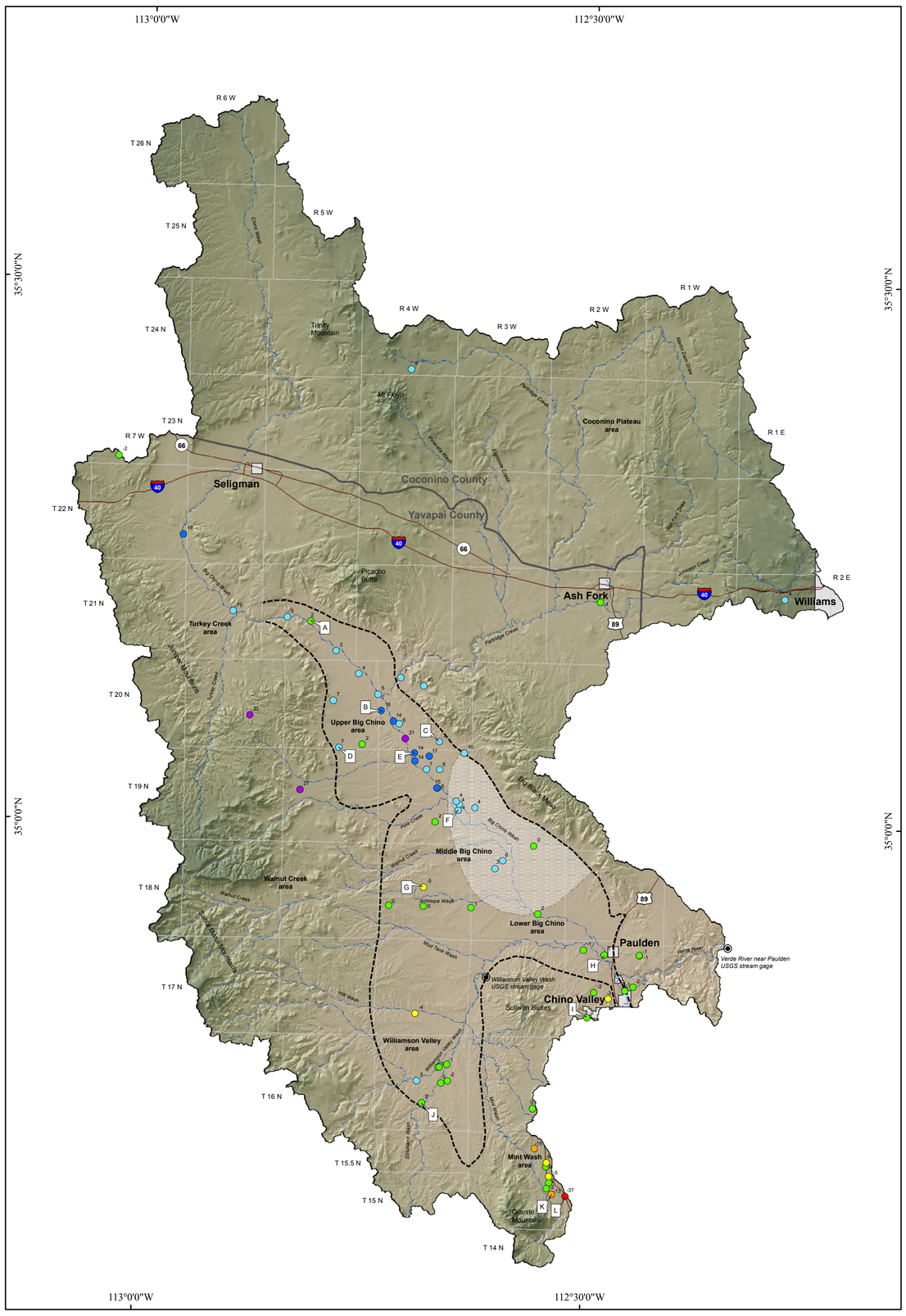
ADWR Information Services
3550 North Central Avenue
Phoenix, AZ 85012
(602) 771-8627
www.azwater.gov

WATER LEVEL CHANGES 1999 - 2004



Note:
1999 - 2004 Water Level Change Map adapted from ADWR WLCMS No.2 (Flora and Davis, April 2009)

WATER LEVEL CHANGES 2004 - 2009



Explanation

- City
- County Line
- Sub-Basin Boundary
- Estimated Extent of Playa
- Township and Range Boundaries
- Highway
- Intermittent Stream
- Approximate Extent of the Principal Aquifer in the Alluvial Portion of the Sub-Basin (after Schwab 1995) referred to as "basin-fill aquifer"
- USGS Stream Gage
- -12 **Well in which depth to water was measured for both years**
  (Data obtained from the ADWR GWSI database for all wells within the sub-basin excluding those with remarks, i.e. pumping.)
  The number next to each well point (-12) represents the difference in feet between measurements (water level change) for the given time period.
  The water level change shown on the map is rounded to the nearest whole number. Values without a sign denote rises in water levels and values with negative signs denote declines in water levels.
- G -6 **Well with hydrograph shown on sheet 3**
  Number (-6) indicates the water level change between years and the letter (G) corresponds to the hydrograph shown on sheet 3.

N

0 5 10 20 Miles

Water Level Change Color Categories (feet)

Water Level Decline	Water Level Rise
- 3 to -10	3 to 10
-11 to -20	11 to 20
More than -20	More than 20

Water Level Unchanged (+/- 2 feet)

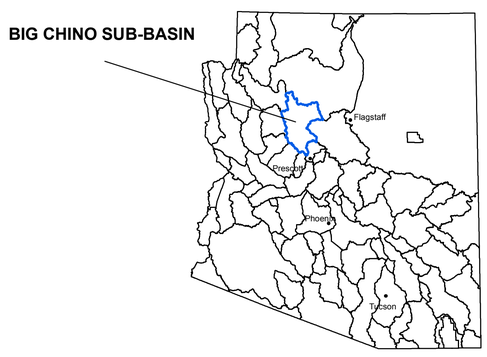
-2 to 2

Land Surface Elevation feet above mean sea level (amsl)

High : 8,858

Low : 4,118

ARIZONA GROUNDWATER BASINS AND SUB-BASINS



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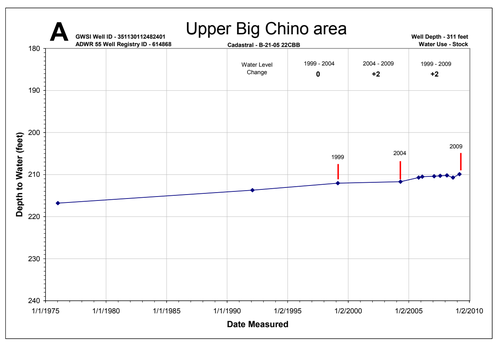
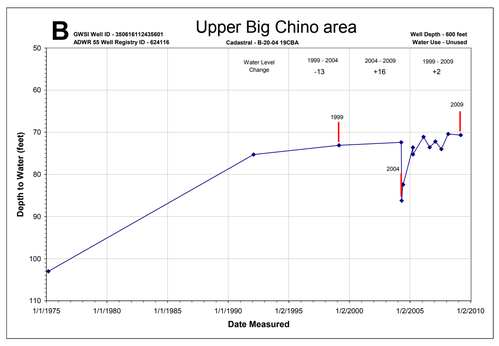
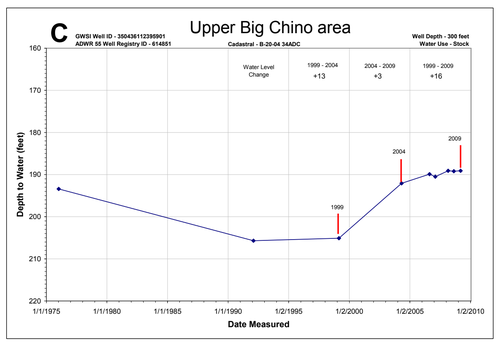
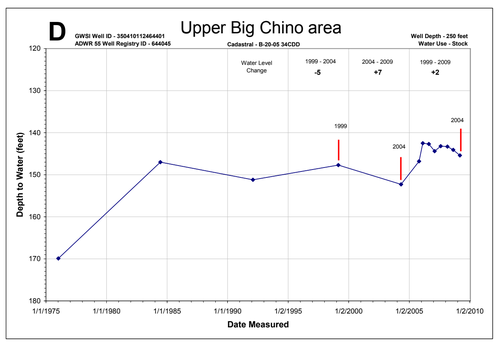
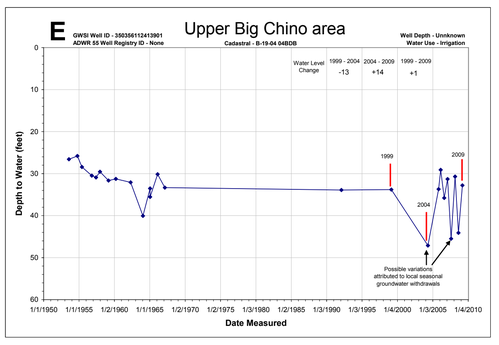
ADWR Groundwater Monitoring Sites Hydrographs

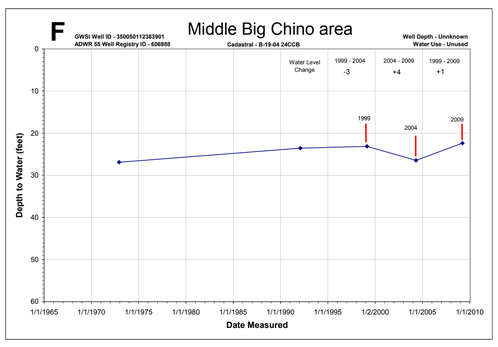


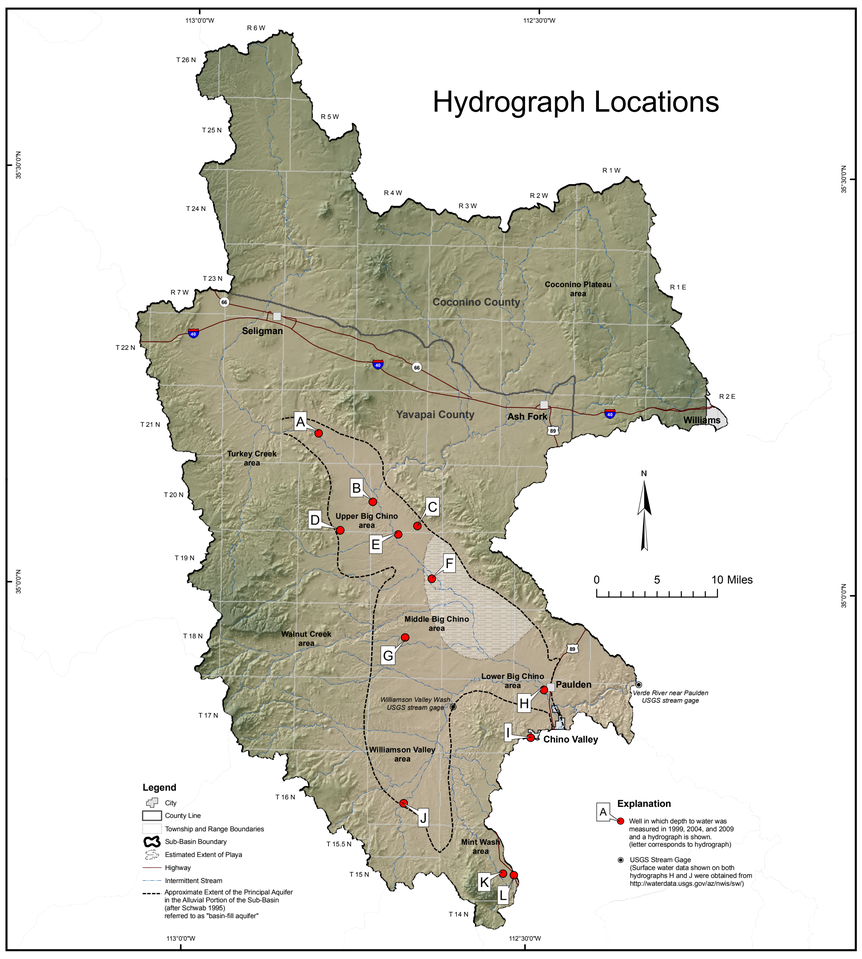


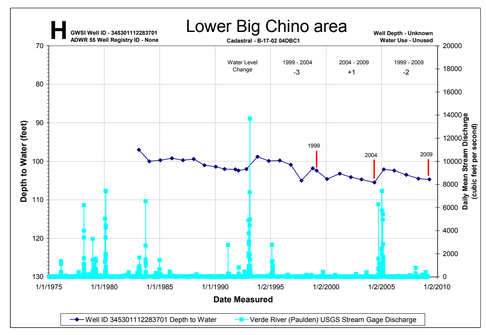


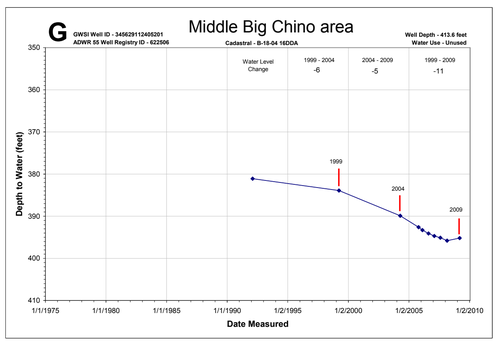


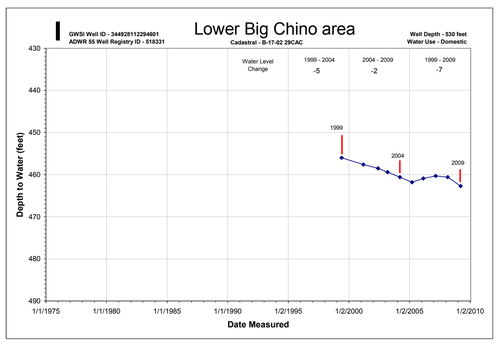


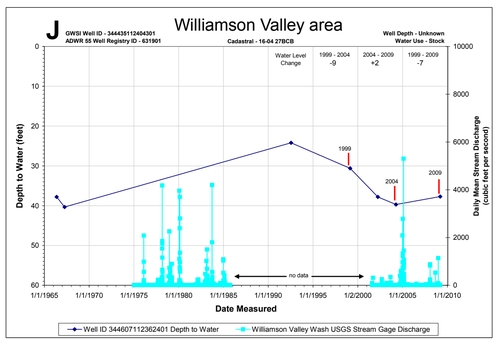


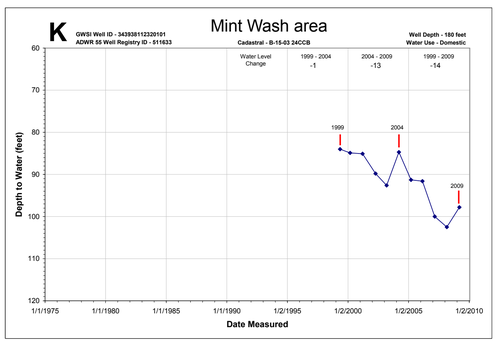












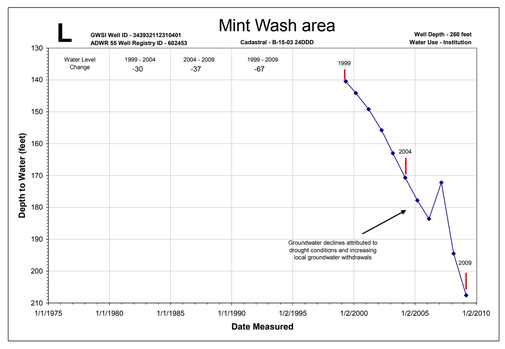


Table 1 - Depth to Water (DTW), Water Level Elevation (WLE), and Water Level Change (in feet) for wells located in the Big Chino Sub-Basin measured in 1999, 2004, and 2009.

			1999			2004			2009			WATER LEVEL CHANGE		
CADASTRAL	WELL ID	HYDROGRAPH	Date	DTW	WLE	Date	DTW	WLE	Date	DTW	WLE	1999 - 2004	2004 - 2009	1999 - 2009
B-15-02 31BBD	343827112304801		5/20/1999	166	5114	3/18/2004	186	5094				-20		
B-15-03 24DDD	**343932112310401**	**L**	**5/4/1999**	**140**	**5050**	**3/15/2004**	**171**	**5019**	**3/9/2009**	**208**	**4982**	**-30**	**-37**	**-67**
B-15-03 24CCB	**343938112320101**	**K**	**5/7/1999**	**84**	**5036**	**3/15/2004**	**85**	**5035**	**3/12/2009**	**98**	**5022**	**-1**	**-13**	**-14**
B-15-03 23ADC	343957112322001		5/11/1999	55	5030	3/15/2004	61	5024	3/16/2009	63	5022	-6	-2	-8
B-15-03 23AAA	344017112321101					3/15/2004	18	5012	3/11/2009	18	5012		0	
B-15-03 14DAD	344038112321101					3/18/2004	56	5018	3/11/2009	61	5014		-5	
B-15H04 34CBD	344101112403101		2/25/1999	14	4888	4/7/2004	16	4886				-2		
B-15-03 14AAB	344110112322201					3/18/2004	55	4995	3/4/2009	57	4993		-2	
B-15-03 11DDB	344122112322201		5/24/1999	65	4996	3/17/2004	74	4986	3/17/2009	80	4980	-10	-6	-16
B-15H04 28DDC	344141112405701		2/25/1999	68	4797	4/7/2004	82	4783				-15		
B-15H04 26DAA	344158112384201		2/25/1999	134	4662	4/7/2004	146	4650				-11		
B-15-03S02CCB	344210112330901					3/17/2004	25	4965	3/16/2009	40	4950		-15	
B-16-03 27ADD	344422112332001					4/8/2004	57	5033	3/10/2009	57	5033		0	
B-16-04 27BCB	**344435112404301**	**J**	**2/25/1999**	**31**	**4651**	**4/6/2004**	**40**	**4642**	**3/18/2009**	**38**	**4644**	**-9**	**2**	**-7**
B-16-04 22DCD	344453112400701		2/25/1999	17	4637	4/6/2004	25	4629				-8		
B-16-04 22CDD1	344457112400901		2/25/1999	15	4635	4/6/2004	19	4631				-5		
B-16-04 23BBA	344544112393401					4/5/2004	1	4624	4/20/2009	2	4623		0	
B-16-04 16DCD	344549112410901		5/5/1999	13	4630	4/7/2004	16	4628	4/20/2009	11	4632	-3	5	2
B-16-04 14DCD	344550112390401					4/5/2004	6	4615	4/20/2009	8	4613		-2	
B-16-04 14CCB	344552112394001		5/5/1999	9	4621				4/20/2009	10	4620			-1
B-16-03 17CBA2	344607112362401		5/10/1999	20	4622	3/18/2004	39	4603				-18		
B-16-04 14BBB2	344636112394301		5/5/1999	5	4608	4/6/2004	7	4606	4/20/2009	6	4607	-2	2	-1
B-16-04 14BBB1	344636112394401		5/5/1999	4	4609	4/6/2004	5	4608	4/20/2009	5	4608	-2	1	-1
B-16-04 14ABB	344645112390801		5/5/1999	1	4605	4/7/2004	1	4604	4/20/2009	1	4604	-1	1	0
B-16-04 11CAA	344703112392201		5/5/1999	9	4592				4/20/2009	9	4592			0
B-17-05 34DBA	344841112463701		3/2/1999	14	4861	4/26/2004	19	4856				-4		
B-17-02 29CAC	**344928112294601**	**I**	**5/27/1999**	**456**	**4294**	**3/17/2004**	**461**	**4289**	**3/19/2009**	**463**	**4287**	**-5**	**-2**	**-7**
B-17-04 28DBC	344931112411801		5/6/1999	48	4614	4/5/2004	39	4624	4/20/2009	42	4620	10	-4	6
B-17-04 30BDD	344947112433901		5/6/1999	13	4715	4/26/2004	10	4718				3		
B-17-02 29ADC	344950112291101		5/28/1999	230	4375	3/17/2004	234	4371				-4		
B-17-02 21ACC	345030112282301					3/17/2004	115	4365	3/18/2009	118	4362		-3	
B-17-02 20ABD	345048112292201					3/17/2004	187	4280	3/20/2009	188	4279		-2	
B-17-02 22ABB	345056112271601					3/17/2004	28	4348	3/20/2009	29	4346		-1	
B-17-02 14CCA	345109112264401					3/17/2004	94	4296	3/18/2009	95	4295		-2	
B-17-02W02DCC2	345255112261901					3/17/2004	319	4246	3/18/2009	320	4245		-1	
B-17-02W02DCC1	345256112261901					3/17/2004	325	4245	3/18/2009	326	4244		-1	
B-17-02S04DBC1	**345301112283701**	**H**	**2/24/1999**	**102**	**4260**	**5/11/2004**	**106**	**4257**	**4/24/2009**	**105**	**4257**	**-3**	**1**	**-2**
B-17-02S03CCD	345302112275601		2/23/1999	160	4270	4/27/2004	163	4267				-3		
B-17-02 05CBA	345312112300801		2/22/1999	141	4257	4/29/2004	142	4256	3/19/2009	144	4255	-1	-1	-3
B-17-03 01BBB	345337112321901		2/23/1999	122	4273	4/29/2004	136	4259				-13		
B-18-02 31DCA	345351112303601		2/22/1999	122	4263				3/19/2009	125	4260			-3
B-18-02 31DCC	345351112303901		2/22/1999	122	4262	4/29/2004	125	4259				-3		
B-18-02 32BBB	345434112301601		2/22/1999	125	4258	4/28/2004	128	4255				-3		
B-18-03 26BDB1	345507112330901					5/12/2004	141	4264	3/19/2009	139	4266		2	
B-18-06W25BAA	345519112510201		3/2/1999	35	5185	4/28/2004	39	5181				-4		
B-18-04 25AAA1	345525112374501		3/26/1999	255	4318	3/19/2004	261	4312	3/16/2009	259	4314	-5	1	-4
B-18-04 21DDD	345530112405501					4/12/2004	290	4496	3/9/2009	289	4497		0	
B-18-04 19DDC	345533112431001					3/19/2004	306	4581	3/9/2009	306	4581		0	
B-18-05 20DBD1	345540112483701		3/26/1999	23	5067	4/6/2004	25	5066				-1		
B-18-03 24DDA	345542112312801		2/23/1999	165	4270	4/29/2004	170	4266				-4		
B-18-05 21CBC	345546112481301		3/26/1999	21	5039	4/6/2004	21	5039				-1		
B-18-05 20DAC	345548112483101		3/26/1999	23	5053	4/6/2004	22	5053				0		
B-18-03 22BAC	345609112340901		2/23/1999	13	4405	5/10/2004	16	4402				-3		
B-18-03 22ABB1	345615112340301		2/23/1999	14	4404	5/3/2004	16	4402				-2		
B-18-04 16DDA	**345629112405201**	**G**	**3/26/1999**	**384**	**4336**	**4/12/2004**	**390**	**4330**	**3/9/2009**	**395**	**4325**	**-6**	**-5**	**-11**
B-18-03 11DDD	345710112322901		2/23/1999	85	4435	4/29/2004	78	4442				7		
B-18-03 08ACC1	345740112361001					5/10/2004	57	4433	4/30/2009	54	4436		3	
B-18-03 04CCC	345807112353301		2/23/1999	21	4437	4/30/2004	24	4433	4/30/2009	19	4438	-4	6	2
B-18-03 03AAA	345856112333201		2/23/1999	165	4465	4/29/2004	165	4466	5/4/2009	165	4465	1	0	1
B-19-04 27DBA	350009112401201					3/19/2004	176	4376	3/16/2009	175	4378		2	
B-19-03 30BCB2	350026112374301		2/25/1999	27	4465	4/28/2004	27	4465				0		
B-19-04 23DCB	350046112391201		2/24/1999	32	4467				3/27/2009	36	4463			-4

			1999			2004			2009			WATER LEVEL CHANGE		
CADASTRAL	WELL ID	HYDROGRAPH	Date	DTW	WLE	Date	DTW	WLE	Date	DTW	WLE	1999 - 2004	2004 - 2009	1999 - 2009
B-19-04 24CCB	**350050112383901**	**F**	**2/24/1999**	**23**	**4474**	**4/28/2004**	**26**	**4471**	**3/27/2009**	**22**	**4475**	**-3**	**4**	**1**
B-19-03 19CBD	350059112373101					4/5/2004	60	4470	3/11/2009	56	4474		4	
B-19-04 24ACD	350109112383401		2/24/1999	24	4476	4/28/2004	27	4473	3/27/2009	23	4477	-3	4	1
B-19-04 23AAD	350119112384801		2/24/1999	22	4476	4/28/2004	23	4475	3/27/2009	20	4478	-2	4	2
B-19-04 23AAC3	350124112390101		2/24/1999	19	4483	4/28/2004	30	4472				-11		
B-19-05 17CBC	350148112491901		2/22/1999	380	4922	4/28/2004	398	4904	3/10/2009	377	4925	-18	21	3
B-19-04 15ADC2	350201112400501		2/24/1999	20	4492	4/28/2004	23	4490	3/27/2009	16	4496	-3	6	4
B-19-04 15ADC1	350202112400501		2/24/1999	14	4498	4/28/2004	27	4485	3/27/2009	12	4500	-13	15	2
B-19-04 15ACD1	350203112400901		2/24/1999	20	4492	4/28/2004	30	4482				-10		
B-19-04 15ACD2	350206112401201		2/24/1999	20	4492	4/28/2004	23	4489				-2		
B-19-04 15ADA	350207112395701		2/24/1999	13	4499				3/27/2009	11	4501			2
B-19-04 15ACA	350207112400701		2/24/1999	22	4490	4/28/2004	29	4483				-7		
B-19-04 13AAD	350213112374501		2/24/1999	127	4481	4/6/2004	128	4480				-1		
B-19-04 15AAC	350216112400501		2/24/1999	18	4494				3/27/2009	15	4497			3
B-19-04 10CCB1	350237112405601		2/24/1999	22	4509	4/27/2004	32	4499				-10		
B-19-04 10CAB	350245112403401		2/24/1999	22	4499	4/7/2004	29	4492				-7		
B-19-04 10DAA	350247112400001		2/24/1999	51	4506	4/5/2004	54	4502				-4		
B-19-04 10BCB	350302112404801		2/23/1999	23	4506	4/7/2004	28	4501	3/11/2009	21	4508	-4	7	3
B-19-04 10ADA	350303112395601		2/24/1999	66	4504	4/5/2004	69	4501	3/11/2009	63	4507	-3	6	3
B-19-04 09ABC	350304112411601		2/23/1999	25	4504	4/27/2004	36	4493				-10		
B-19-04 09ABD3	350305112411601		2/24/1999	25	4504	4/27/2004	36	4493				-11		
B-19-04 10AAC	350311112400501		2/24/1999	61	4502	4/6/2004	71	4492				-10		
B-19-04 04CAC	350332112413701		2/23/1999	28	4520	4/27/2004	40	4507	3/11/2009	26	4521	-12	14	2
B-19-04 03DBD	350336112401401		2/23/1999	71	4503	4/26/2004	79	4494				-9		
B-19-04 03BCD	350341112403901		2/23/1999	52	4508	4/27/2004	66	4494	3/11/2009	49	4511	-14	17	3
B-19-04 04BDB	**350356112413901**	**E**	**2/23/1999**	**34**	**4515**	**4/27/2004**	**47**	**4502**	**3/11/2009**	**33**	**4516**	**-13**	**14**	**1**
B-19-04 01BAD3	350359112381501		2/24/1999	271	4504	4/6/2004	279	4496	3/11/2009	269	4506	-8	10	2
B-20-05 35DAD	**350401112464401**	**D**	**2/23/1999**	**148**	**4782**	**4/29/2004**	**152**	**4778**	**3/10/2009**	**145**	**4785**	**-5**	**7**	**2**
B-20-05 35DAD	350423112451101		2/23/1999	194	4636	4/29/2004	194	4636	3/10/2009	192	4638	0	2	2
B-20-04 33CBD1	350426112414601		2/23/1999	37	4512	4/27/2004	49	4501				-11		
B-20-04 34ADC	**350436112395901**	**C**	**2/23/1999**	**205**	**4489**	**4/27/2004**	**192**	**4502**	**3/11/2009**	**189**	**4505**	**13**	**3**	**16**
B-20-04 32ACA	350443112421701		2/23/1999	46	4513	4/27/2004	62	4497	3/12/2009	42	4517	-16	21	4
B-20-04 32BBA	350500112424601		2/23/1999	54	4534	4/27/2004	69	4519				-15		
B-20-04 30ADD	350527112430301		2/23/1999	41	4529	4/7/2004	45	4525				-4		
B-20-04 29BDC	350533112424201		2/23/1999	51	4521	4/7/2004	56	4516	3/11/2009	49	4523	-4	6	2
B-20-04 30AAD	350535112432701					4/7/2004	65	4506	3/11/2009	52	4520		14	
B-20-06 29BAC	350542112552101		2/25/1999	422	4993	4/29/2004	435	4980				-13		
B-20-06 22DDC	350554112524801		2/25/1999	364	5256	4/29/2004	355	5265	3/12/2009	334	5286	8	22	30
B-20-04 19CBA	**350616112435601**	**B**	**2/23/1999**	**73**	**4524**	**4/27/2004**	**86**	**4511**	**3/12/2009**	**71**	**4526**	**-13**	**16**	**2**
B-20-04 19BBC	350637112435901		2/23/1999	68	4522	4/27/2004	83	4507				-15		
B-20-05 24AAA	350645112441201		2/23/1999	75	4526	4/27/2004	84	4517				-9		
B-20-05 15CCC	350647112471101		2/23/1999	186	4809	4/28/2004	190	4804	3/10/2009	182	4812	-4	7	3
B-20-05 13DAA	350709112441101		2/23/1999	78	4528	4/27/2004	77	4529	3/12/2009	73	4533	0	5	5
B-20-04 09DDC	350740112410701		2/22/1999	255	4640	4/26/2004	257	4638	3/11/2009	247	4648	-2	10	8
B-20-05 09ADD	350805112471801		2/23/1999	111	4784	4/28/2004	116	4779				-5		
B-20-04 08BDD	350806112423801		2/22/1999	223	4542	4/26/2004	225	4540	3/11/2009	218	4547	-2	7	5
B-20-05 11ACA	350814112452701		2/23/1999	136	4542	4/28/2004	136	4542	3/11/2009	133	4546	-1	4	3
B-20-06 05DAD2	350847112544501		2/25/1999	277	4853	4/29/2004	273	4858				5		
B-21-05 35ACD	350932112470301		2/23/1999	76	4637	4/27/2004	77	4636	3/11/2009	74	4639	-1	3	2
B-21-05 20ACB	351120112502401					4/27/2004	260	4586	3/11/2009	257	4589		3	
B-21-05 22CBB	**351130112482401**	**A**	**2/23/1999**	**212**	**4585**	**4/27/2004**	**212**	**4585**	**3/11/2009**	**210**	**4587**	**0**	**2**	**2**
B-21-06 14CCD	351145112540001		2/24/1999	91	4844	4/27/2004	99	4836	3/12/2009	89	4846	-8	10	2
B-21-02 14BCC	351207112283701		4/21/1999	995	4115				3/9/2009	999	4111			-4
B-21-02 15BAA	351227112291701					4/6/2004	963	4101	3/9/2009	964	4100		-1	
A-21-01 10CBB	351243112165101		4/21/1999	94	6446	4/8/2004	93	6447	3/10/2009	89	6451	1	4	5
B-22-06 32CDD	351417112565901		2/24/1999	166	4862	4/27/2004	169	4859				-2		
B-22-07W25ADD	351552112572901		2/24/1999	208	4888	4/7/2004	203	4873	3/9/2009	184	4892	5	19	24
B-22-02 16ABA	351746112300801		2/23/1999	21	5174	4/5/2004	24	5171				-2		
B-23-07 32ACD	352008113015601		2/24/1999	702	4940	4/7/2004	692	4950	3/11/2009	694	4948	10	-2	8
B-23-07 26DDA	352045112583401		2/24/1999	369	4838				3/9/2009	353	4854			16
B-24-04 34CBC	352517112421701		2/23/1999	11	6058	4/8/2004	11	6058	3/12/2009	7	6062	0	5	4

ARIZONA DEPARTMENT OF WATER RESOURCES

HYDROLOGY DIVISION

WATER LEVEL CHANGES IN BIG CHINO SUB-BASIN, ARIZONA 1999-2009

By
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September 2009

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