

**Comprehensive Agreement #1
SRP/Prescott/Prescott Valley
Monitoring/Modeling Committee
FY14 Annual Report
(October 2012 – June 30, 2014)¹**

Introduction

In a joint meeting of the City of Prescott and the Town of Prescott Valley on September 19, 2012, their Councils unanimously approved a comprehensive water monitoring and groundwater modeling agreement with Salt River Project and the Salt River Valley Water Users' Association (SRP) regarding the City's Big Chino Water Ranch Project. The agreement, (Comprehensive Agreement #1 (CA#1)), was authorized by SRP's Board on September 10, 2012.

CA#1 evolved over two years of discussions among Prescott, Prescott Valley and SRP to implement a plan described as follows, consistent with the February 11, 2010, Agreement in Principle among the same parties which resolved longstanding differences pertaining to water rights in the Big Chino sub-basin, set forth a framework for future agreements, and ended litigation regarding plans to pump groundwater from the Big Chino Sub-basin as authorized by Arizona state law.

CA#1 set forth a program for enhanced water monitoring and modeling of groundwater flows in the Big Chino, confirmed the parties' rights to water arising from within the Prescott Active Management Area, and achieved a mutual agreement by all parties not to challenge those rights. This is a long term commitment to construct, implement and maintain the monitoring and modeling program, with the parties sharing in the long term cost.

The goals of data collection and monitoring plan are to:

- Improve the understanding of the hydrologic relationship between groundwater and surface water in the Upper Verde River area.
- Act as an early warning system for the Upper Verde Springs.

¹ This initial report of the Monitoring Committee covers progress since execution of CA#1 through June 30, 2014. Future reports will cover events during the preceding fiscal year.

- Collect data that may be used to distinguish groundwater pumping from the Big Chino Water Ranch from the impacts of groundwater pumping by others, and natural system variability.
- Develop the ability to relate regional groundwater and surface water observations to future groundwater model calibration and verification.
- Determine if additional data are needed.
- Provide data for development of a numerical groundwater flow model.

Summary of Accomplishments

Meetings

- Monthly meetings of the Monitoring and Modeling Committee
- Multi-agency meetings – three (2/13/13, 8/26/13 and 7/9/14)
- Multi-agency fieldtrips for ephemeral stream flow monitoring equipment – two (4/10-11/13 and 5/14-15/13)

Executed Documents or Coordinated Activities

- Coordination with USGS and ADWR to collect and analyze crop survey data (9/6/13)
- Coordination with Yavapai County Flood Control to locate, install and maintain weather station (8/7/13)
- Executed Independent Contractor Agreement for Big Chino Sub-Basin Ephemeral Stream flow Monitoring Contract with SRP (8/28/13)
- Big Chino Sub-Basin Ephemeral Stream flow Monitoring Contract Supplement with SRP (11/12/13)
- Executed Special Use Permit (3/13/14) and Amendment (7/18/14) with Prescott National Forest for three gage sites
- Executed Right of Way permit with Yavapai County (6/9/14)
- Executed three Private Land Access Agreements for four gage sites (various dates)
- Executed Joint Funding Agreement with the USGS for Geophysical investigations and Gravity Monitoring (3/25/2014)
- Application pending with Arizona State Land Department for land access by USGS personnel for geophysical investigations. (6/20/2014)

Contract Requirements

- All start-up requirements have been met as set forth by CA#1
- All parties designated a representative (October 2012)
- All parties obtained approval by formal resolution to allocate the cost of developing and implementing the Monitoring Plan (September – December 2012)
- All parties made agreed initial monetary contributions for the Monitoring Plan (December 2012)

- The Monitoring and Modeling Committee developed and adopted a set of procedural guidelines (4/3/13)

Public Information

- Presentations
 - Arizona Municipal Utilities Leadership Institute – Kornrump (4/25/13)
 - Upper Verde River Watershed Protection Coalition – Graser (6/26/13)
- City of Prescott website – updated to include Agreement in Principle and CA#1 information (9/17/13)

Accounting/Budget

In accordance with CA#1, in particular Exhibit 5, the parties funded the project with initial startup contributions and then yearly contributions. For the time period of this annual report, the budget is shown in Table 1.

Table 1 – Contract Budget

Entity	Startup Contribution	Year 1 Contribution
City of Prescott	\$4,296	\$239,097
Town of Prescott Valley	\$3,644	\$202,857
Salt River Project*	\$351,550	\$220,646

*Per contract, the SRP contributed “catch-up” monies related to monitoring expenses already incurred by the other parties at start up. Total SRP contributions to date are actually \$749,800 due to budget availability. SRP contributions will be reduced in future years accordingly.

The project account balance and expenditures as of June 30, 2014, were \$1,129,404.93 and \$70,787.81, respectively. A detail of expenditures is shown in Table 2. At the date of this annual report, the parties are in the second year of the work plan which requires preparation for drilling of both shallow and deep monitor wells (see CA#1, Exhibit 4). Monitor well drilling along with the commencement of modeling activities will significantly drawdown the total balance of the capital account which is not explicitly shown.

Table 2 – Contract Expenditures

Description	Amount	Payment Date
New Stream Gages	\$51,287.81	1/10/2014
USGS Services	\$19,500.00	6/30/2014
Total	\$70,787.81	

Monitoring Projects

CA#1 was executed with the knowledge of existing monitoring in the sub-basin, and new equipment required for groundwater modeling purposes. Although not all data collection to date is reflected in this annual report, basic information is provided for equipment that was identified as existing/new and related to CA#1 for budget purposes.

Existing Monitoring

From December 2005 to May 2007, the drilling of six (6) wells was attempted; five (5) were completed successfully. These new wells and one (1) existing well were intended for water level monitoring. Both ADWR and USGS monitor these wells with either continuous data recorders or with a less frequent manual well sounder. The hydrographs for these wells are shown in Attachment 1. Since 2008, SRP has maintained a continuous recording transducer in the Gipe well located north of Paulden. The hydrograph for this well is also shown in Attachment 2.

In April 2005 SRP, in cooperation with Arizona Game and Fish Commission, installed the Campbell Ranch Low-flow gage. The data can be viewed at http://www.watershedmonitor.com/siteDetail.aspx?dbNm=stratos&statn_id=VerdeHeadWtr&kw=WW_MidVerde. Campbell Ranch hydrographs are also provided in Attachment 2.

New Monitoring

On December 17, 2014, SRP personnel installed stream-flow monitoring equipment in the Upper Big Chino Wash. During this day, over 1,600 pounds of equipment and

tools were hauled to the Upper Big Chino Wash site via helicopter. Once at the site, 2-3 man teams dug holes, mixed/poured concrete, hoisted poles, wired and calibrated instrumentation (transducers and cameras) and surveyed the newly installed equipment. This was the first of nine (9) monitoring site installations included in the Big Chino Stream-flow Monitoring Agreement approved as part of CA #1. Additional monitoring sites are located on the Upper Big Chino Wash below Partridge Creek, Lower Big Chino Wash, Walnut Creek (low-flow site), Upper Walnut Creek at Bridge, Lower Walnut Creek, Pine Creek, Upper Williamson Valley Wash, and Lower Williamson Valley Wash. As of July 1, 2014, eight (8) of the nine (9) sites had been equipped and were operational. The low flow site on Walnut Creek will be installed in fall 2014. Table 3 summarizes the equipment, status, installation date and comments. See Attachment 3 for a map showing the site locations and pictures of the installations.

Table 3 – Stream-flow Monitoring Equipment

Name	Installed (Y/N)	Completion Date	Comments
Big Chino Wash below Partridge Creek	Y	6/26/2014	
Lower Big Chino Wash	Y	5/21/2014	
Lower Walnut Creek at Charney Property	Y	6/10/2014	
Lower Williamson Valley Wash	Y	5/22/2014	
Partridge Creek	N/A	Cancelled	Site has been cancelled
Pine Creek	Y	5/19/2014	
Upper Big Chino Wash	Y	1/16/2014	
Upper Walnut Creek at Bridge	Y	6/26/2014	
Upper Walnut Creek at Forest Service	N		Installation Fall 2014
Williamson Valley Wash at XU Ranch	Y	6/12/2014	

Other Data Collection Efforts

Before the start of the CA#1 monitoring program, the Yavapai County Water Advisory Committee (WAC) maintained a number of monitoring sites within the Big Chino Sub-basin under a Joint Funding Agreement with the USGS. The WAC was

dissolved by action of the Yavapai County Board of Supervisors on July 7, 2014. Prescott and Prescott Valley, as charter members of the WAC, agreed to continue the WAC's data collection efforts within the Big Chino sub-basin with some of the funding that would typically have been used for WAC membership dues. This data collection effort primarily involves about eleven (11) gravity stations, several previously mentioned wells, and a USGS stream gage on Williamson Valley Wash (USGS 09502800 Williamson Valley Wash near Paulden, AZ). Some isotope and/or noble gas sampling have also been a part of this effort. The contract period for this activity with the USGS expires on September 30, 2014. In the upcoming year, the Monitoring Committee and USGS will evaluate these monitoring efforts and likely continue with part or all of the monitoring stations.

On March 25, 2014, a joint funding agreement was executed with the USGS for geophysics and gravity science. Extensive work has been done to confirm equipment location placement and secure needed permits/approvals. One technique to be explored is termed passive seismic, and this was employed during the annual report timeframe. No data from any of the techniques was available at the annual report deadline.

The USGS, under contract with the ADWR, conducted a crop survey in the Big Chino Sub-basin during the summer of 2013. The results are shown in Table 4, and depicted in Attachment 4. Approximately 52% of the formally irrigated lands were being cropped in 2013 (1,715 acres). The estimated total water withdrawn to serve these lands was 3,229 acre feet for summer 2013.

Table 4 – 2013 Crop Survey

Crop	Map Area				Total
	Upper Big Chino	Paulden	Williamson Valley	Walnut Creek	
Alfalfa	103.4	0.0	20.1	0.0	123.5
Corn	374.1	0.0	0.0	0.0	374.1
Grass	38.1	121.2	722.7	52.4	934.5
Oats	81.5	0.0	0.0	0.0	81.5
Sod	0.0	79.3	0.0	0.0	79.3
Timothy Grass	122.0	0.0	0.0	0.0	122.0
Total Acres	719.2	200.5	742.9	52.4	1715.0
Withdrawals (acre feet)	1439.0	376.0	1320.8	93.3	3229.1
No Crop Evident	1085.1	180.2	284.2	55.6	1605.1

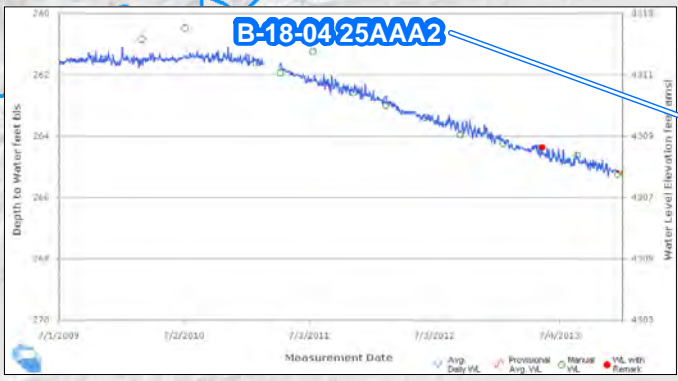
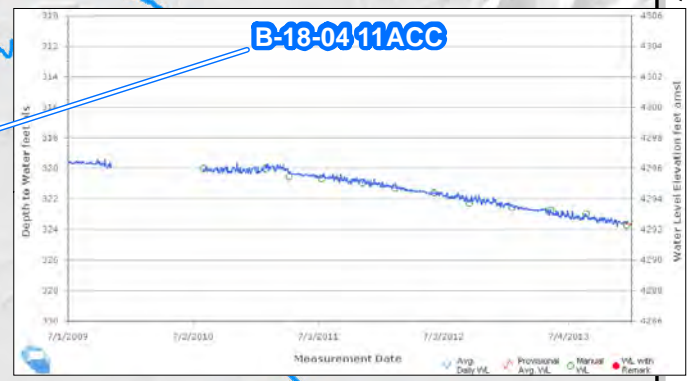
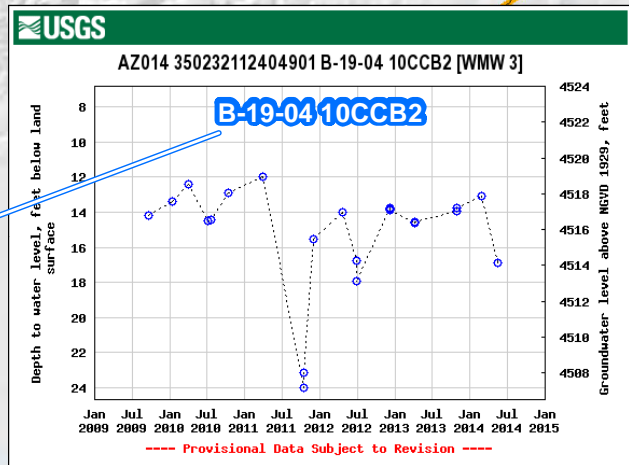
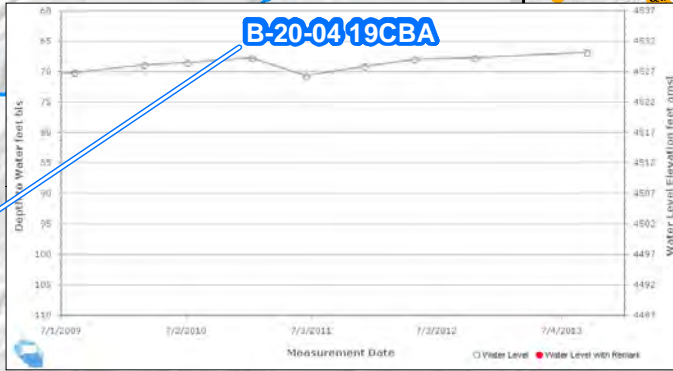
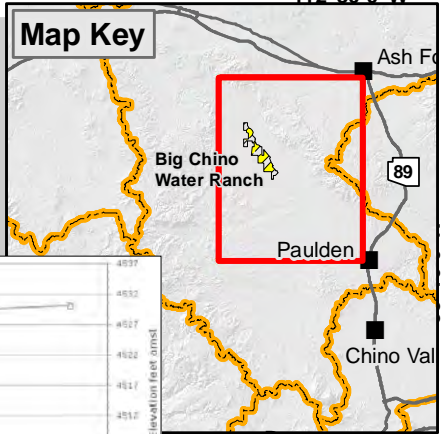
Conclusions

During FY15, the Committee will move forward with developing requests for proposal to drill shallow monitor wells, monitor the progress of the USGS geophysical study, assist with access permits for gravity stations as necessary, complete the installation of the low flow gage on Walnut Creek, and provide seasonal summaries of stream flow data.

The project remains within budget and on schedule, and is beginning to generate initial data. It is important to note that the schedule has been reviewed carefully to effectively and efficiently sequence and deploy equipment. It should be noted that the ephemeral streamflow installations was moved up in the 8-year period to provide a longer period of record for modeling uses The Committee will similarly adjust the Monitoring Plan as technology improves, new knowledge is gained, and where additional cost efficiencies can be achieved.

Attachment 1
Big Chino Water Ranch
Well Hydrographs

Groundwater Monitoring Big Chino Monitoring Plan



- ADWR GWSI Wells
- Creeks & Washes
- Big Chino Water Ranch
- Groundwater Sub-basin (ADWR)



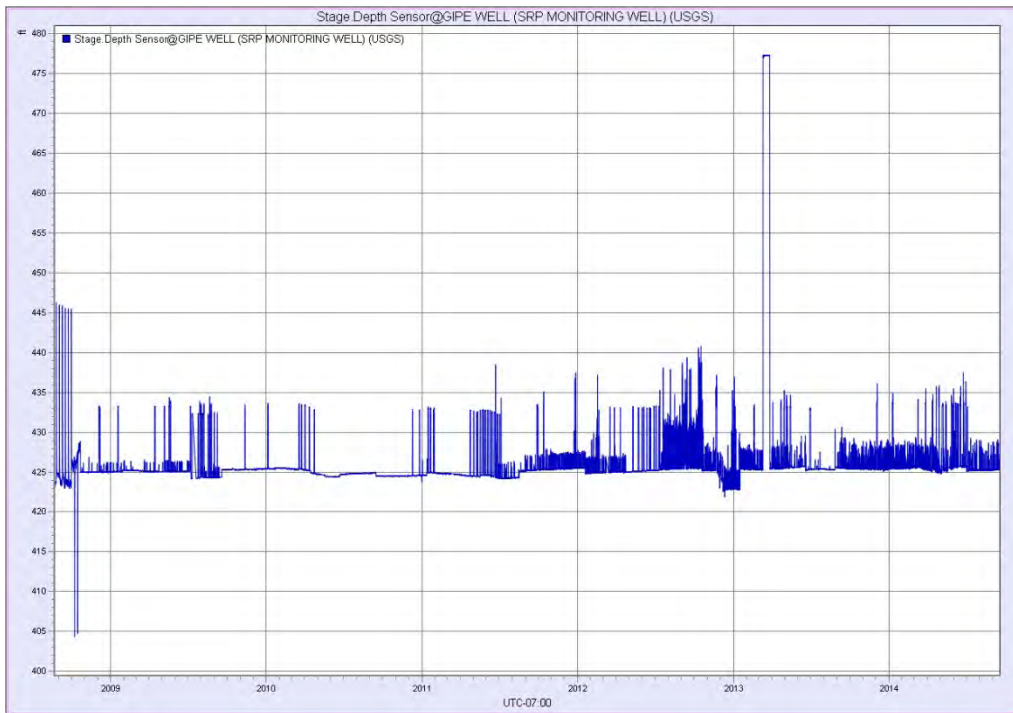
Map Courtesy of
SNP
bigchino_wellhydrographs.mxd 9/29/2014

Attachment 2

Gipe Well

Campbell Ranch Stream Gage

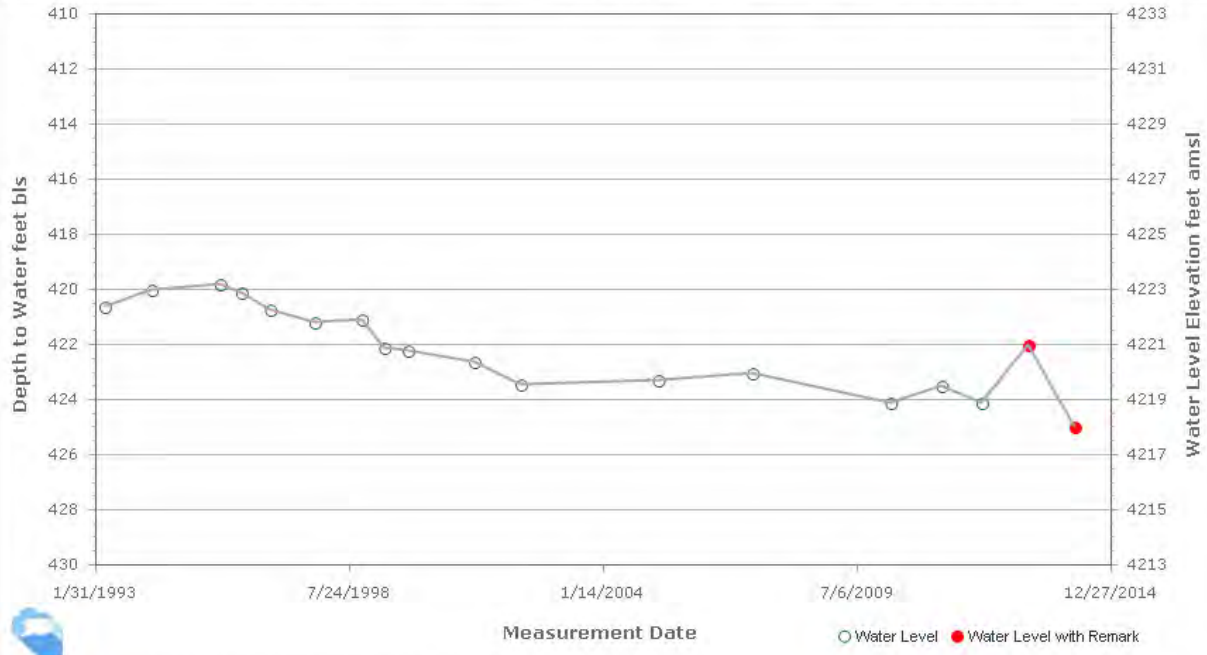
Gipe Well



SRP Transducer Data – Depth to Water (Gipe Well) **Provisional Data**

Arizona GroundWater Monitoring Site Hydrograph

Local ID	Site ID	Registry ID	Latitude NAD27	Longitude NAD27	Alt. (ft amsl)	Water Use	Well Depth (ft)	Case Dia. (in)	Drill Date	Latest WL Date	DTW (ft)	WL Elev. (ft)
B-18-01 17AAA	345653112223701	511557	34° 56' 57.7"	112° 22' 34.6"	4643	STOCK	620	8	6/30/1985	3/8/2012	424.1	4218.9

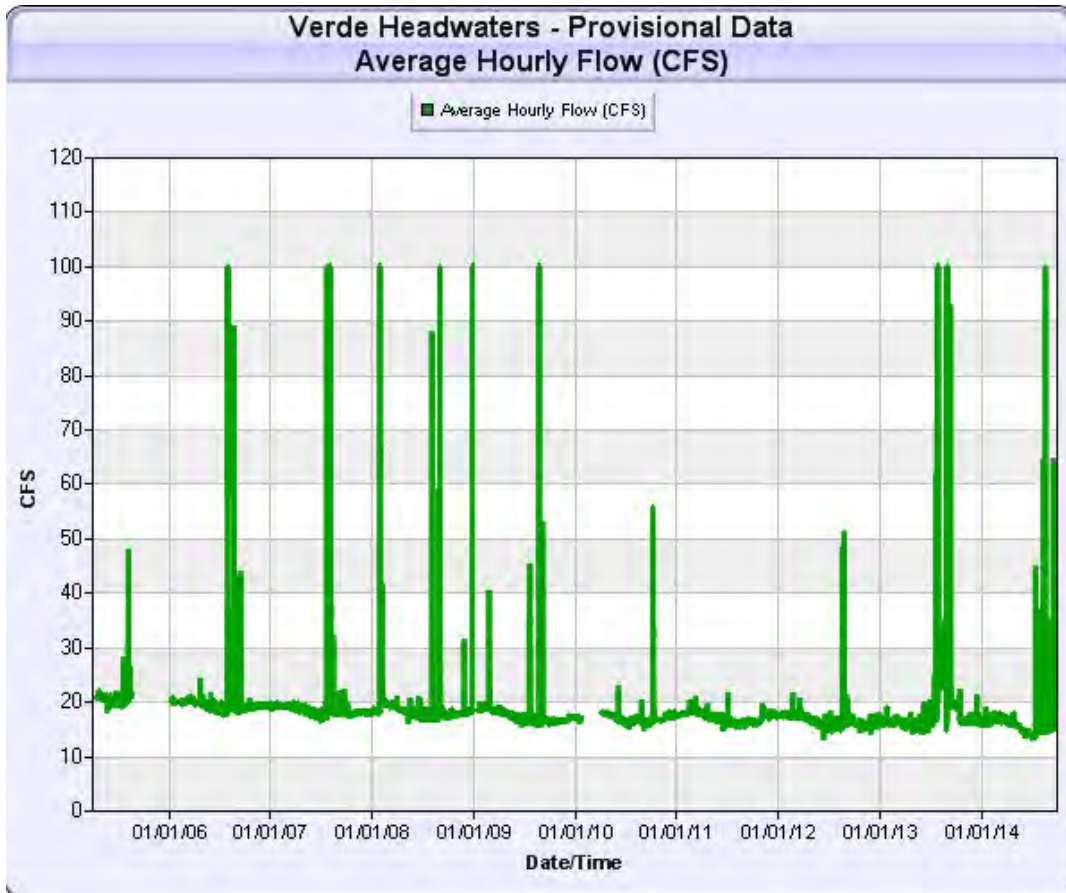


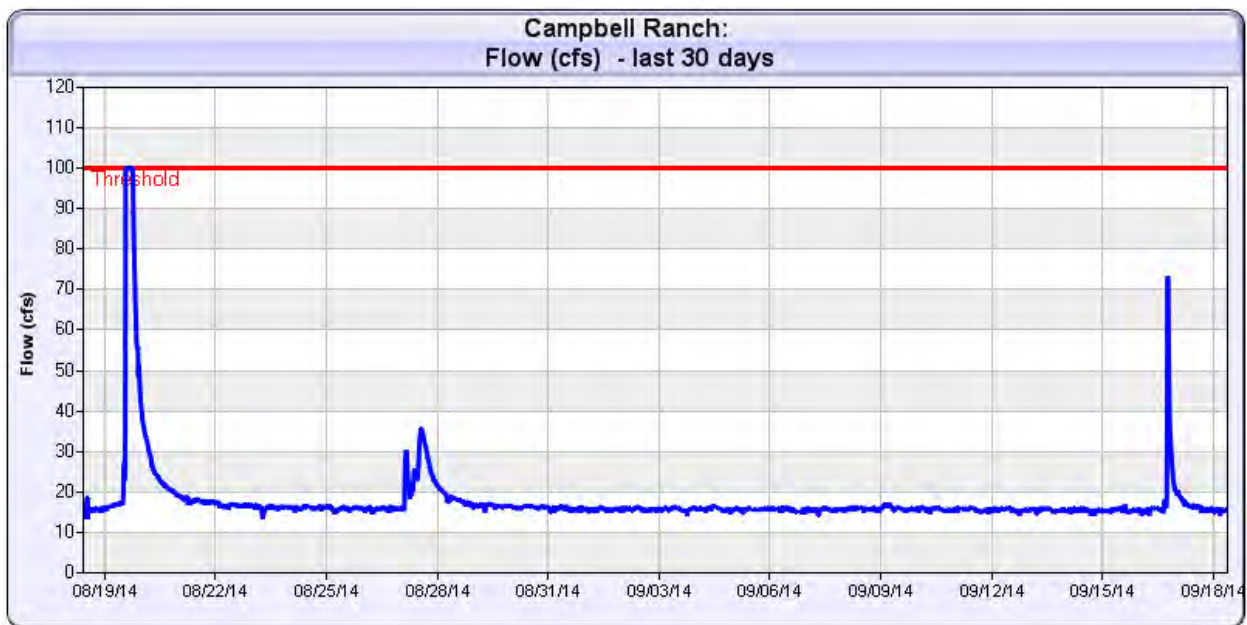
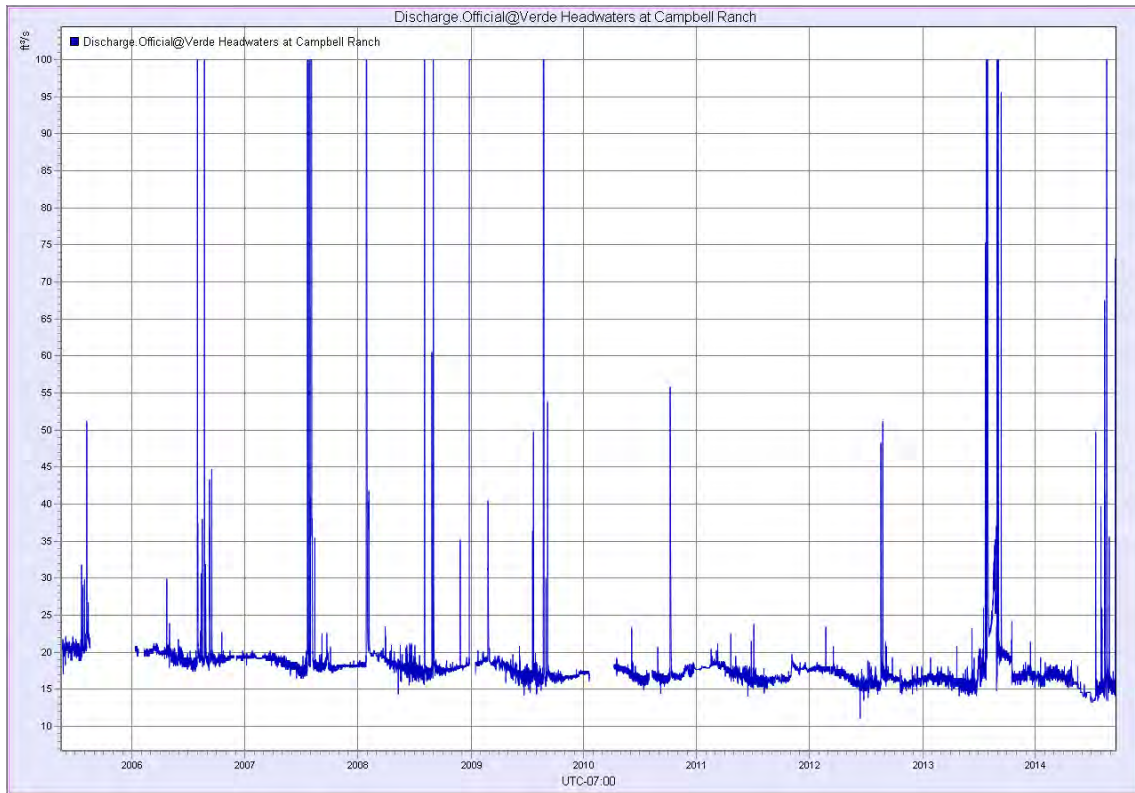
GWSI is ADWR's technical database of well locations, construction data, and water levels.

Created on 3/18/2014

ADWR GWSI Depth to Water (DTW) Data for Gipe Well

Verde Headwaters at Campbell Ranch

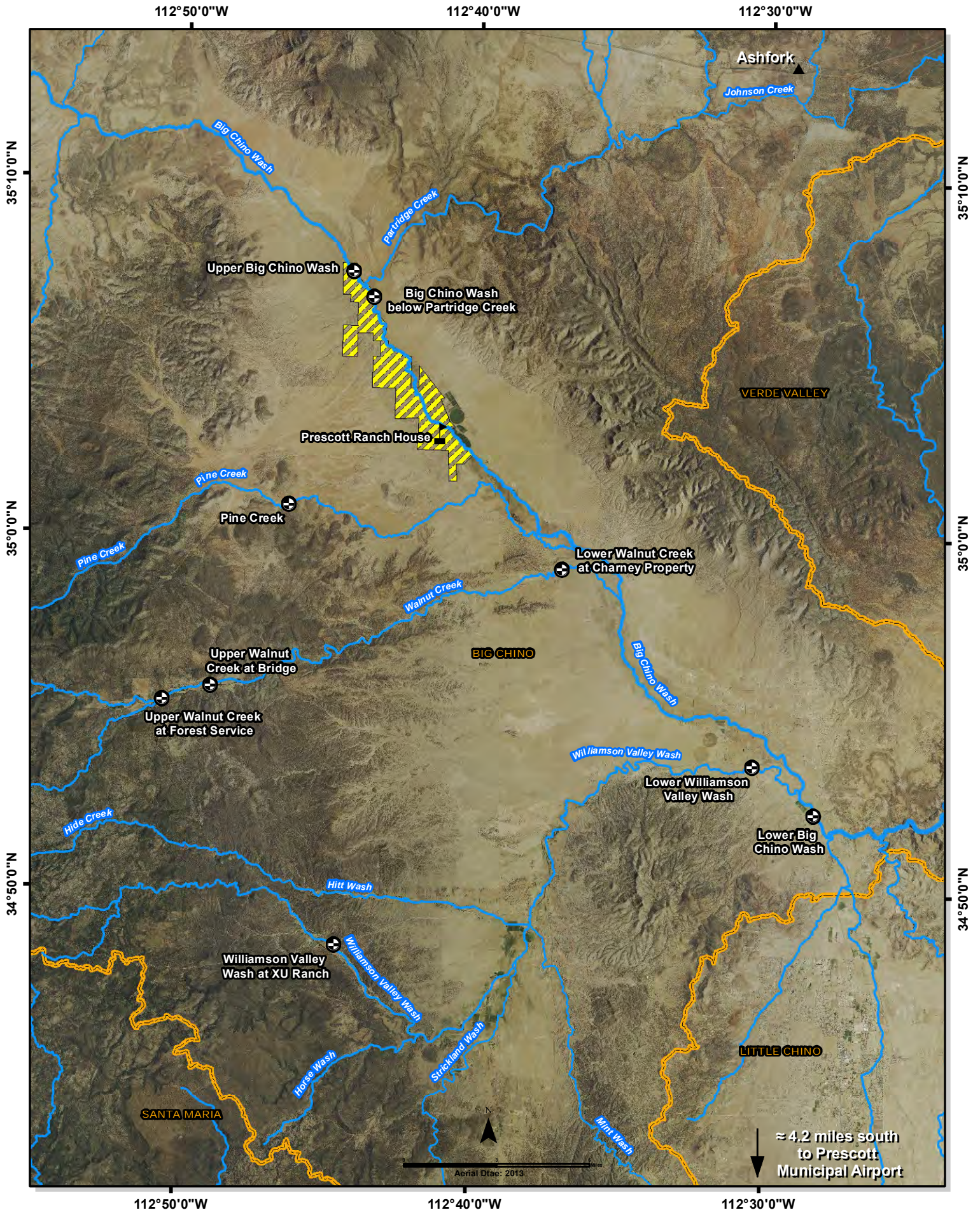







Provisional data – subject to change

Attachment 3

Big Chino Ephemeral Stream Flow Gage Sites



-  Surface Water Monitoring Location
-  Big Chino Water Ranch
-  Groundwater Sub-basin (ADWR)

**Big Chino Sub-basin
Water Monitoring Project
Stream Monitoring**



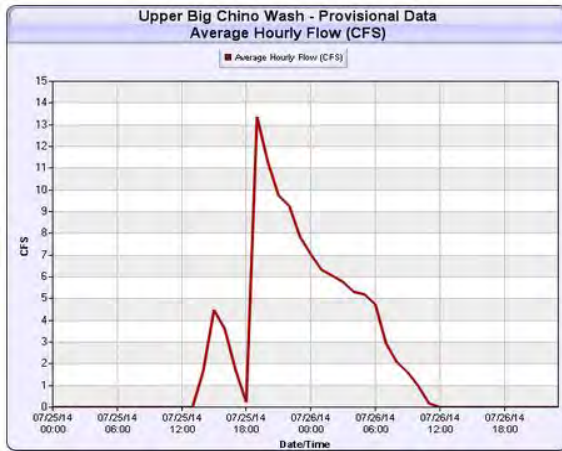
↓ ≈ 4.2 miles south
to Prescott
Municipal Airport

Upper Big Chino Wash



Site installation completed on 1/16/2014.

Sample Event from 7/25/2014 through 7/26/2014 (Provisional Data):



Peak of event at 7:19 pm on 7/25/2014



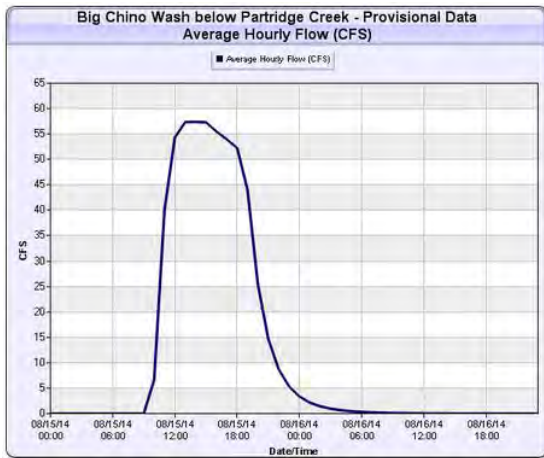
Date	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Mean	Min	Max	TTL																									
	00:59	01:59	02:59	03:59	04:59	05:59	06:59	07:59	08:59	09:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	CFS	CFS	CFS	AF																									
7/25/14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.66	4.47	3.60	1.72	0.23	13.37	11.29	9.75	9.26	7.84	2.63	0.00	14.76	5.22																									
7/26/14	7.04	6.32	6.05	5.76	5.31	5.19	4.73	2.93	2.07	1.61	0.97	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.01	0.00	7.42	3.98																								
Totals:																											0.00	14.76	9.20																								

Big Chino Wash below Partridge Creek



Site installation completed on 6/26/2014.

Sample Event from 8/15/2014 through 8/16/2014 (Provisional Data):



Peak of event at 2:23 pm on 8/15/2014.

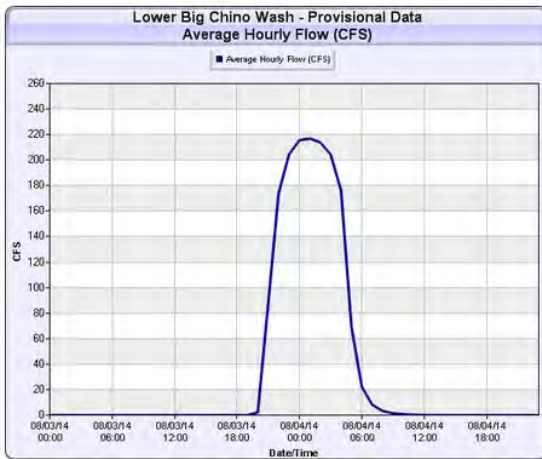
Date	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Mean CFS	Min CFS	Max CFS	TTL AF	
8/15/14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.61	40.02	54.32	57.37	57.38	57.31	55.51	53.95	52.27	44.04	25.46	14.73	8.75	5.35	22.21	0.00	58.08	44.06	
8/16/14	3.36	2.16	1.43	0.96	0.65	0.45	0.31	0.22	0.16	0.11	0.08	0.06	0.04	0.03	0.02	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.42	0.00	4.18	0.83
Totals:																										0.00	58.08	44.89	

Lower Big Chino Wash



Site installation completed on 5/21/2014.

Sample Event from 8/3/2014 8/4/2014 (Provisional Data):



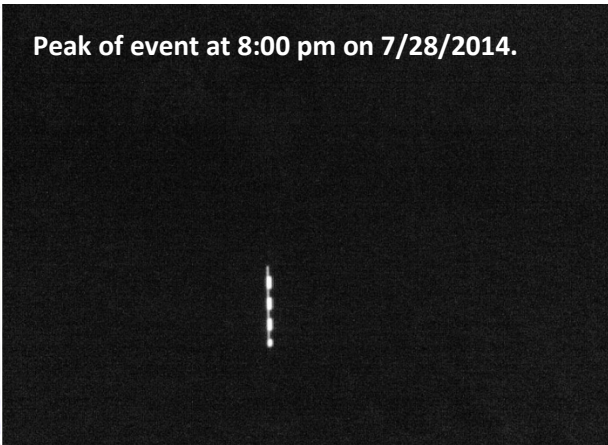
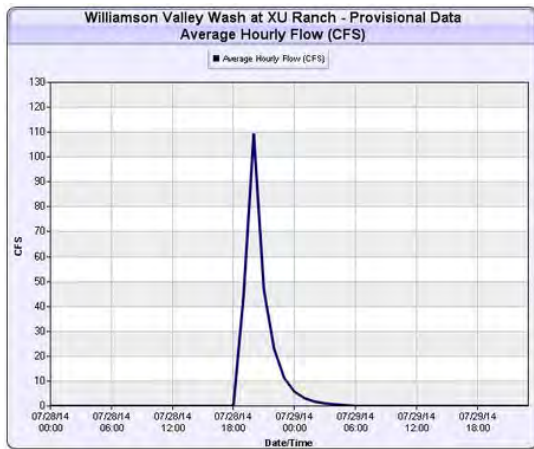
Date	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Mean CFS	Min CFS	Max CFS	TTL AF	
8/3/14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.18	87.45	173.92	204.45	19.50	0.00	212.38	38.68	
8/4/14	215.54	216.88	213.91	204.33	176.18	69.30	22.11	8.11	3.26	1.38	0.60	0.26	0.11	0.05	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	47.17	0.00	217.45	93.56
Totals:																									0.00	217.45	132.24		

Williamson Valley Wash at XU Ranch



Site installation completed on 6/12/2014.

Sample Event from 7/28/2014 through 7/29/2014 (Provisional Data):



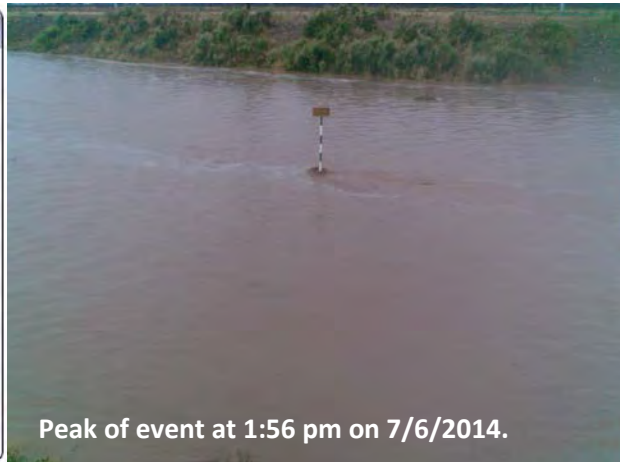
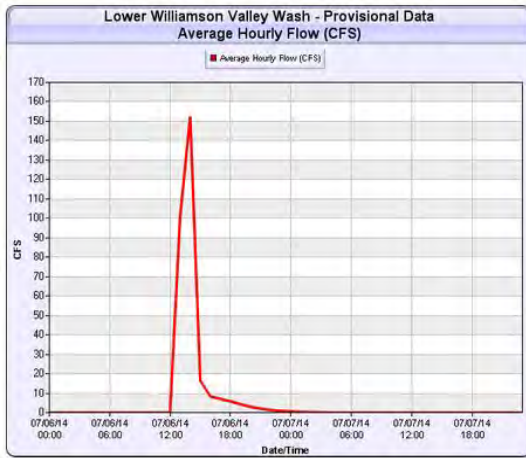
Date	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Mean	Min	Max	TTL
	CFS																							CFS	CFS	CFS	AF	
7/28/14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	44.31	109.22	46.68	23.02	11.19	9.77	0.00	179.12	19.37
7/29/14	5.75	3.11	1.75	1.02	0.61	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.52	0.00	7.79	1.04
Totals:																							0.00	179.12	20.41			

Lower Williamson Valley Wash



Site installation completed on 5/22/2014.

Sample Event from 7/6/2014 through 7/7/2014 (Provisional Data):



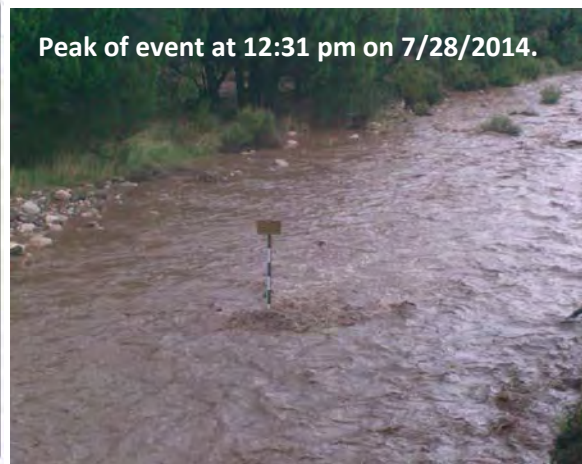
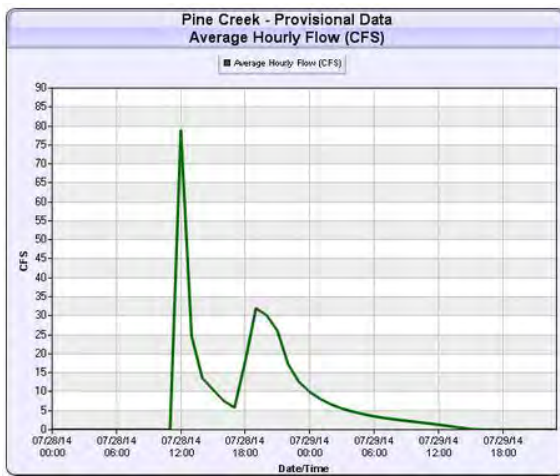
Date	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Mean CFS	Min CFS	Max CFS	TTL AF
7/6/14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.90	152.38	16.52	8.33	7.06	5.77	4.29	2.98	1.99	1.29	0.82	12.60	0.00	281.10	24.99
7/7/14	0.52	0.33	0.20	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05	0.00	0.65	0.10
Totals:																									0.00	281.10	25.08	

Pine Creek



Site installation completed on 5/19/2014.

Sample Event from 7/6/2014 through 7/7/2014 (**Provisional Data**):



Date	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Mean	Min	Max	TTL	
	00:59	01:59	02:59	03:59	04:59	05:59	06:59	07:59	08:59	09:59	10:59	11:59	12:59	13:59	14:59	15:59	16:59	17:59	18:59	19:59	20:59	21:59	22:59	23:59	CFS	CFS	CFS	AF	
7/28/14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	78.91	24.66	13.58	10.56	7.57	5.83	18.00	31.98	30.13	26.03	17.21	12.59	11.54	0.00	127.87	22.90	
7/29/14	9.93	8.09	6.64	5.57	4.76	4.07	3.51	3.05	2.66	2.32	2.00	1.67	1.31	0.92	0.51	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.38	0.00	11.07	4.72
Totals:																											0.00	127.87	27.62

Upper Walnut Creek at Forest Service



Site not yet installed.

Upper Walnut Creek at Bridge



Site installation completed on 6/26/2014.



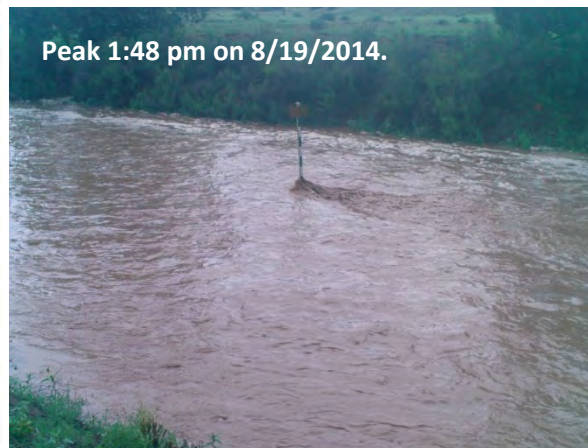
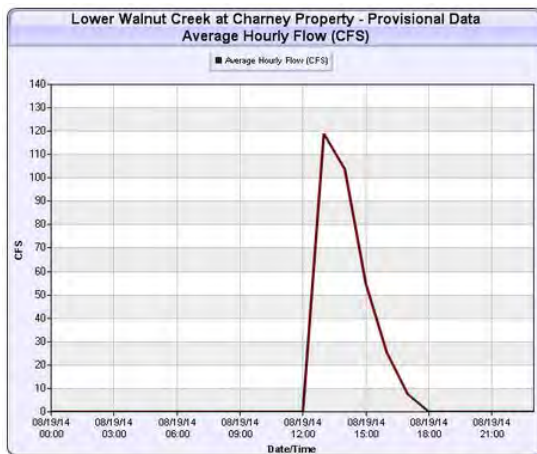
Flowtography only at this site.

Lower Walnut Creek at Charney Property



Site installation completed on 6/10/2014.

Sample Event on 8/19/2014 (Provisional Data):

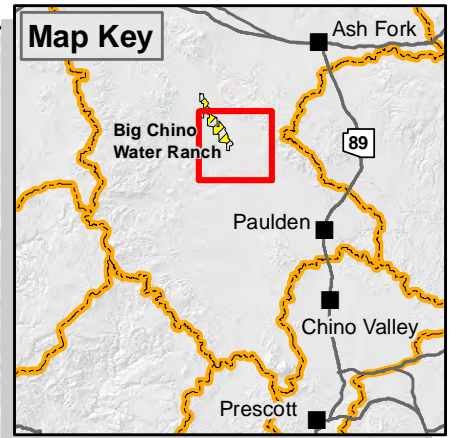


Date	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Mean	Min	Max	TTL
	CFS																							CFS	CFS	CFS	AF	
8/19/14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	118.93	103.73	54.77	25.32	7.51	0.00	0.00	0.00	0.00	0.00	0.00	12.93	0.00	219.04	25.64
Totals:																							0.00	0.00	219.04	25.64		

Attachment 4
FY 2013 Big Chino Sub-basin
Crop Survey

112°40'0"W

Big Chino 2013 Crop Survey Upper Big Chino



35°0'0"N

35°0'0"N

0 1 2 Miles

112°40'0"W

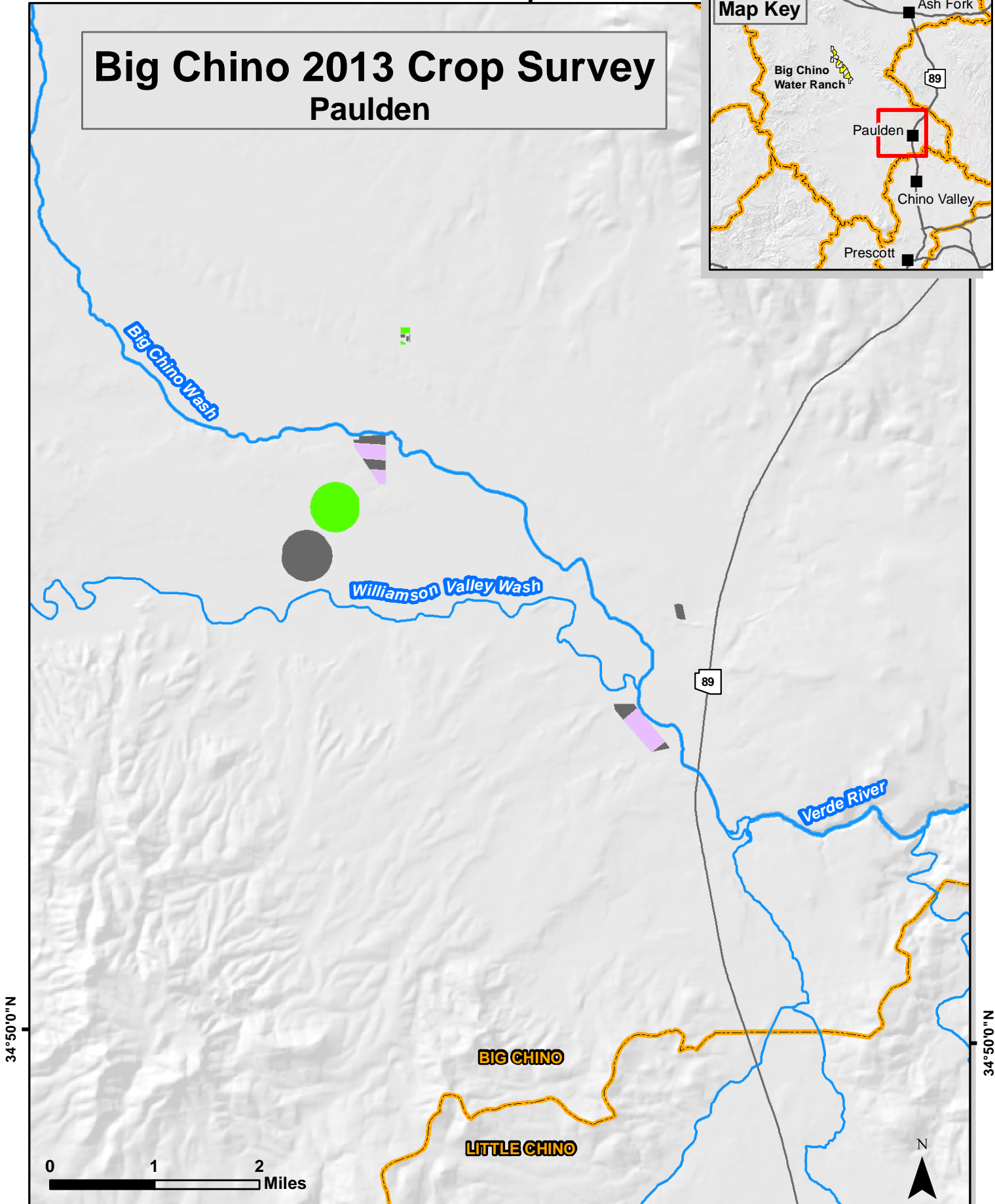
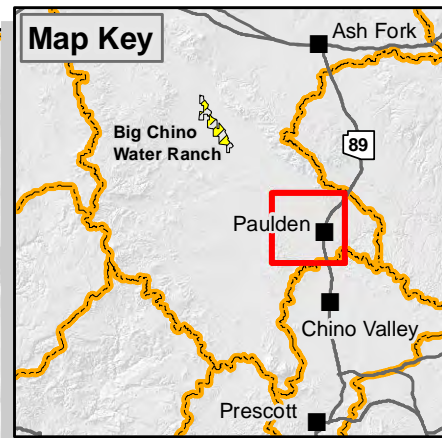
- Alfalfa
- Grass
- Sod
- No Crop Evident (Abandoned/Fallow)
- Corn
- Oats
- Timothy Grass
- Groundwater Sub-basin (ADWR)



Map Courtesy of
SNP
bigchino_cropsurvey.mxd 9/22/2014

112°30'0"W

Big Chino 2013 Crop Survey Paulden



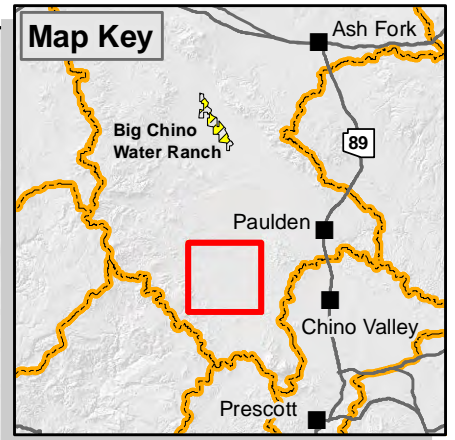
112°30'0"W

- Alfalfa
- Grass
- Sod
- No Crop Evident (Abandoned/Fallow)
- Corn
- Oats
- Timothy Grass
- Groundwater Sub-basin (ADWR)



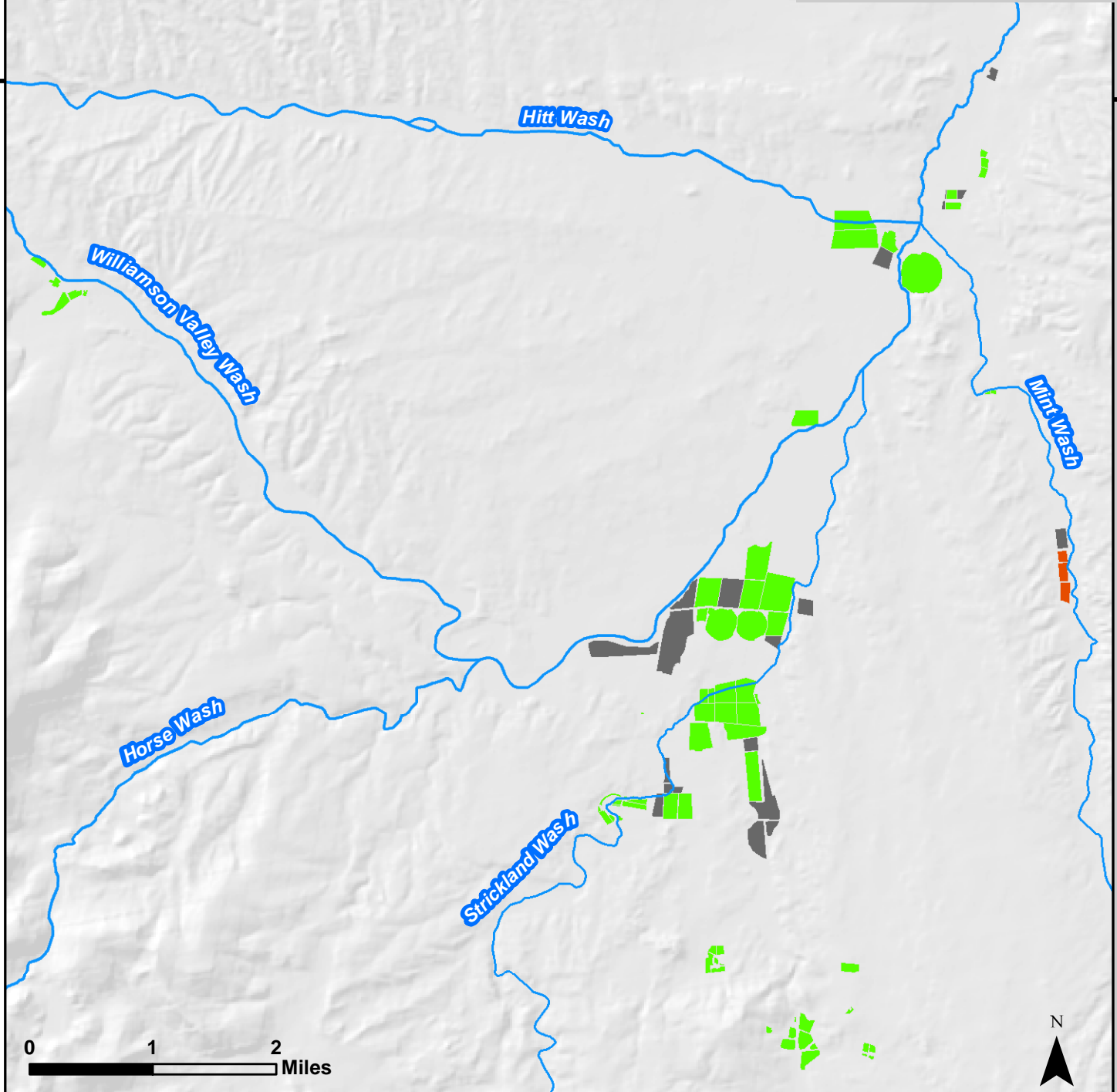
112°40'0"W

Big Chino 2013 Crop Survey Williamson Valley



34°50'0"N

34°50'0"N



112°40'0"W

-  Alfalfa
-  Grass
-  Sod
-  No Crop Evident (Abandoned/Fallow)
-  Corn
-  Oats
-  Timothy Grass
-  Groundwater Sub-basin (ADWR)

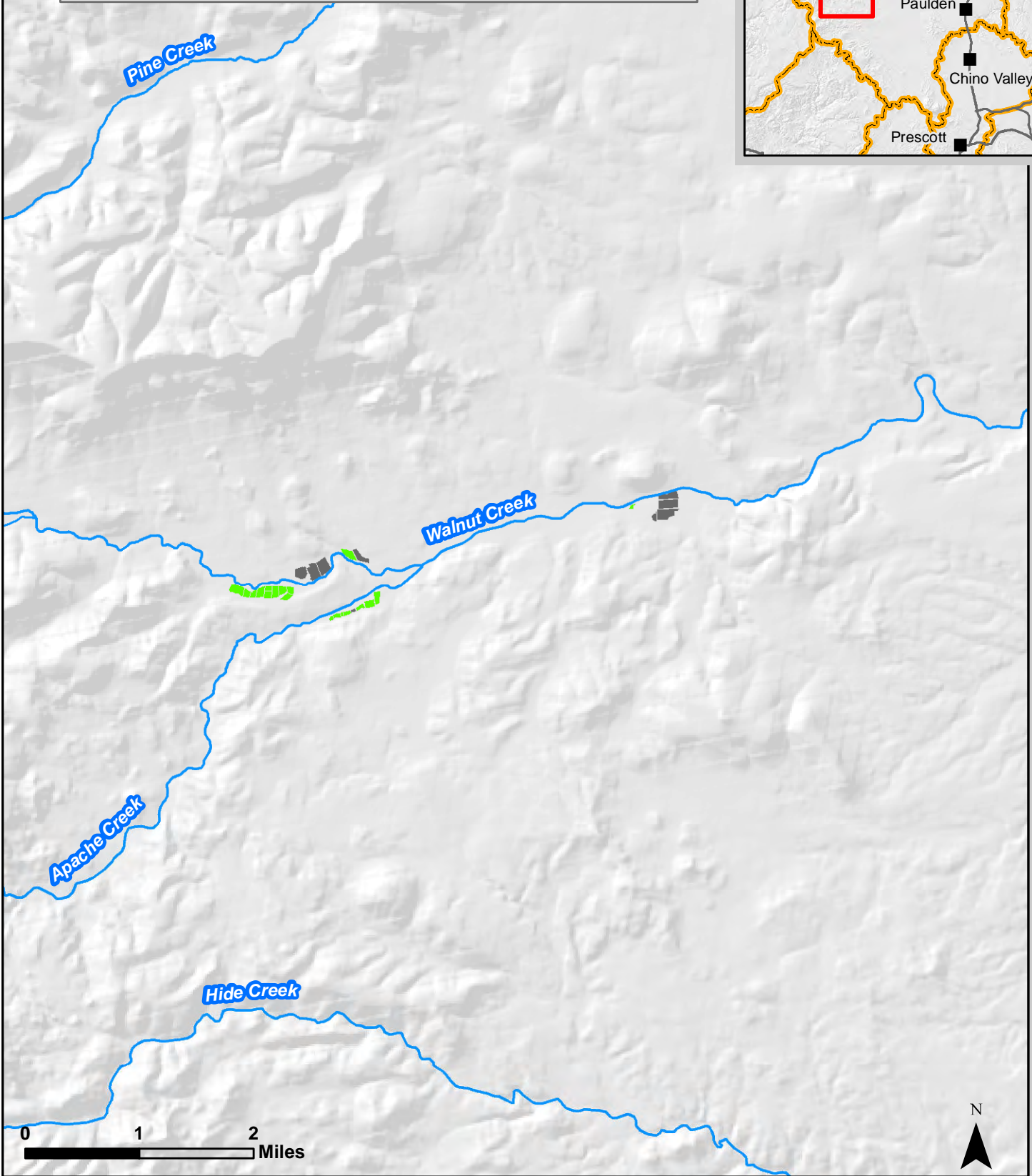
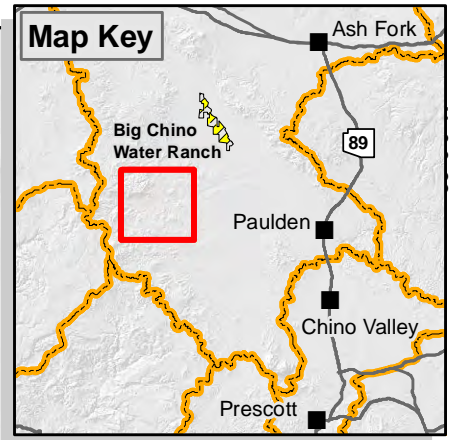


Map Courtesy of
SRP
bigchino_cropsurvey.mxd 9/22/2014

112°50'0"W

35°0'0"N

Big Chino 2013 Crop Survey Walnut Creek



112°50'0"W

- Alfalfa
- Grass
- Sod
- No Crop Evident (Abandoned/Fallow)
- Corn
- Oats
- Timothy Grass
- Groundwater Sub-basin (ADWR)



Map Courtesy of
SRP
bigchino_cropsurvey.mxd 9/22/2014