Comprehensive Agreement No. 1

Eleventh Annual Report

FY24
(July 1, 2023 – June 30, 2024)

BIG CHINO SUB-BASIN
WATER MONITORING PROJECT
PRESCOTT - PRESCOTT VALLEY - SRP

Prepared by:

CITY OF PRESCOTT ARIZONA

PRESCOTT VALLEY

SRP®

10/22/2024

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Introduction

The eleventh annual report documents activities that occurred during the July 1, 2023, to June 30, 2024, timeframe for both the Monitoring and Modeling Committees (Committees) established by Comprehensive Agreement #1 (CA#1). This contractual agreement was scheduled to be an eight-year project with all Parties contributing a total of $5.6 million dollars to monitor, model, and document the hydrology of the Big Chino Sub-basin and the headwaters of the Upper Verde River. Although it was expected the overall project would result in a completed groundwater flow model by this time, the work continues and now appears to be approaching completion.

Since late 2012, the Committees have worked to implement the Data Collection and Monitoring Plan (DCMP) for the purpose of developing an improved numerical groundwater flow model of the Big Chino Sub-basin as described in the exhibits attached to CA#1 (City Contract No. 2013-058). Monitoring continues for this project in an effort to better characterize the hydrology of the Big Chino Sub-basin and provide support for modeling efforts. Few monitoring contracts from the 2012-2020 timeframe remain active, but those that are active continue to yield additional high-quality data for the modeling project. Earlier annual reports contain detailed information related to those earlier monitoring contracts and results. Only active monitoring contracts are presented in this annual report.

Groundwater modeling work commenced with Golder Associates Inc., now known as WSP USA, Inc. (WSP) in February 2017. The project is outlined in City Contract No. 2017-246 and its amendments. This portion of the project has been as intensive as the monitoring contracts. Modeling project delays continued through the FY24 fiscal year, and these delays are discussed in this report. This report provides greater focus on the modeling contract and its associated activities.

The overall report is comprised of the following sections:

- Project background
- Fiscal Year 2024 (FY24) accomplishments
- Financial summaries
- Updates on monitoring and modeling activities required to fully execute CA#1 objectives.

Background

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

CA#1 evolved over two years of discussions among Prescott, Prescott Valley, and SRP ("the Parties") to implement a plan consistent with the February 11, 2010, Agreement in Principle (AIP), City Contract No. 2010-128. The AIP resolved longstanding differences pertaining to water rights in the Big Chino Sub-basin, set forth a framework for future agreements, ended litigation between the Parties regarding plans to pump groundwater from the Big Chino Sub-basin as authorized by Arizona Revised Statutes - §45-555, and required the Communities to mitigate their impact from Big Chino Sub-basin water withdrawals on the flow in the Upper Verde River.

CA#1 established a program for enhanced water monitoring and modeling of groundwater flows in the Big Chino, confirmed rights to water arising from within the Prescott Active Management Area, and achieved a mutual agreement by all the Parties not to challenge those rights. CA#1 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 the DCMP (City Contract No. 2013-058, Exhibit 4) 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.
- Collect data that may be used to distinguish groundwater pumping from the Big Chino Water Ranch from natural system variability and the impacts of groundwater pumping by others.
- 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.

The primary objective of the numerical groundwater flow model is to, "...develop a multilayered numerical groundwater flow model of the Big Chino Sub-basin and surrounding area that can inform resource managers about potential effects of groundwater pumping on the potentiometric surface, evapotranspiration, stream baseflow, and spring discharge" (Source: City Contract No. 2013-058, Exhibit 3). Further, the specific objectives are as follows:

- Test the validity of alternative conceptual flow-system models using iterative recalibration of a specified region in the Northern Arizona Regional Groundwater Flow Model.
- Define and collect the hydrogeologic data needed to discern between ambiguous conceptual models tested during the first objective.
- Conduct a model-based analysis of stream and spring discharge depletion that may result from groundwater pumping at identified locations and specified amounts in the Big Chino Sub-basin and from changes in climate conditions.
- Determine the proportional impacts to groundwater levels and discharge to surface water sources caused by various sources of pumping in the Big Chino Sub-basin.
- Use the model to select three or more locations for monitoring wells that could be used in conjunction with the model, as alert or action indicators for alternative management of groundwater resources in the Big Chino Sub-basin.

Note these objectives were part of the original CA#1, Exhibit 3 where the USGS would be the lead investigator. The work was ultimately completed through a competitive process where WSP (then known as Golder) was selected.

Summary of FY24 Accomplishments

Meetings

Monthly meetings of the Monitoring and Modeling Committees continued. Those monthly meetings frequently included WSP, and the Specialized Technical Consultants (STCs), (i.e., LRE Water and Matrix New World Engineering) to discuss the draft numerical groundwater flow model. The dates of those meetings that included WSP and the STCs are specified below.

Meetings – WSP Focused

- The Parties with the Draft Technical Memorandum Number 9 from WSP on July 5, 2023. The memo covered updates to the recharge framework that WSP was planning to include in the final model. This draft memo was never finalized by WSP.
- WSP presented their proposed recharge and surface water runoff model framework to the Parties and STCs on July 19, 2023. There was some discussion on WSP's Technical Memo 9 regarding the Path Forward agreement from FY23 as well. The STCs later shared their comments on Technical Memorandum Number 9 with WSP on July 25, 2023.
- The Parties, STCs, and WSP met to discuss hydraulic conductivity and calibration point issues on September 13, 2023, during the regular monthly meeting.

- WSP presented the model recharge and calibration process they were proposing to use to the Parties and STCs on November 9, 2023.
- The Parties, STCs, and WSP met to discuss updating PEST and Groundwater Vistas model files in anticipation of beginning the calibration process on December 13, 2023. The overall final recharge concept was also discussed. The STCs received files to analyze and comment upon shortly thereafter. Model calibration started after approval was given by the Parties to WSP on January 2, 2024.
- The Parties, STCs, and WSP met several times to discuss progress on model calibration. These meetings were held to apprise the Parties and STCs of progress on the model and discuss potential solutions to roadblocks that WSP encountered during the calibration process. These were also excellent opportunities to ask pertinent questions about model assumption that WSP was placing on the model. These calibration meetings were held on the following dates:
    - January 22, 2024
    - February 14, 2024 (during regular monthly meeting)
    - March 5, 2024
    - March 25, 2024
    - April 10, 2024 (during regular monthly meeting)
    - May 8, 2024 (during regular monthly meeting)
- The Parties, STCs, and WSP met as part of the monthly Modeling Committee meeting on June 12, 2024, to discuss the final model calibration runs completed on the Big Chino Sub-basin model. As of this date the model was declared fully calibrated by WSP. The draft model report was shared with the Parties and STCs the week of July 15, 2024.

Note that, until December 2023, the project's main contact was Mr. Adam Finch, WSP Vice President, Commercial Management. In December the Parties were informed that management of the project had moved to David Carr, Vice President/Hydrogeologist at WSP. The project continued to be supported by WSP scientific staff Joanna Moreno, Richard Simms, and Sylvain Gagne, with consultant Betsy Semmens of BAS Groundwater Consulting performing subcontracting work.

Meetings – Principal Focused

- On October 18, 2023, the project held a meeting of the Principals identified in the CA#1 contract. Those Principals were City of Prescott Manager Katie Gregory, Town of Prescott Valley Manager Gilbert Davidson, and SRP Director of Water Rights and Contracts Zack Heim. Each Parties' Technical Representative attended in-person, and the Specialized Technical Consultants joined virtually to address model questions.

Executed Documents or Coordinated Activities

- City Contract No. 2017-246

  Contract Allowance Authorization No. 4 – Hydrogeological Modeling Services for Big Chino Sub-basin Groundwater Flow Model dated January 31, 2023, was fully executed on May 4, 2023. Contract Allowance Authorization No. 5 was fully executed on July 2, 2024. In early FY25, Contact Amendment No. 7 was executed extending the project date to November 14, 2024; followed by Contract Amendment No. 8 which added funds in the amount of $17,880.51.

- USGS JFA 24ZFJFA00411900
  A fixed cost agreement with the USGS was executed for the continued monitoring of Williamson Valley Wash gauge (09502800) from October 1, 2023, through September 30, 2024.

Public Information

- City of Prescott website:
  https://www.prescott-az.gov/water-sewer/water-management/big-chino-water-ranch-project/
- Town of Prescott Valley website:
  https://www.prescottvalley-az.gov/1662
- SRP website:
  https://www.watershedconnection.com/projects/big-chino.aspx that includes an overview of the CA#1 Monitoring and Modeling program and Flowtography, https://www.watershedconnection.com/projects/flowtography.aspx

Reports Completed

- Big Chino Sub-basin Water Monitoring Project, July 1, 2023 – June 30, 2024 (**Appendix I**)

Financial Summary

In accordance with CA#1, the Parties funded the project with annual contributions to an account managed by the City of Prescott. All monies were paid into this project as of FY19.

The overall monitoring project account balance and FY24 expenditures as of June 30, 2024, were $580,300.07 and $190,680.87, respectively. Similarly, the overall modeling project account balance and FY24 expenditures as of June 30, 2024, were $62,591.92 and $118,326.25,

respectively. Most remaining CA#1 funds now reside in the monitoring portion of the budget, as the modeling funds have been used at a higher rate in recent years, but the modeling budget can continue to be infused with the funds remaining within the monitoring budget as needs arise. Over the course of the project $386,936.48 has been transferred from the monitoring funds to the modeling funds. These overall project funds have limited encumbrances with ongoing contracts, but those encumbrances are not reflected above nor in the values shown in **Table 1**. A detail of expenditures for FY24 only is shown in **Table 1**.

Table 1 – Contract Expenditures in FY24

Contractor Name, Number	Description	Amount
SRP, Contract No. 2022-154[1] (formerly 2014-001, 001A1, and 001A2)	New Stream Gages (Flowtography and weather equipment)	$88,185.87
SRP, Contract No. 2022-154[1] (formerly 2014-001)	Existing Stream Gage (Headwaters)	$18,145.00
SRP, Contract No. 2022-154[1] (formerly 2014-001)	Existing Monitoring Well (Gipe)	$0
USGS, 24ZFJFA00411900[2]	Surface Water Gauging (Williamson Valley Wash)	$84,350.00
ADWR IGA Contract No. 2020-136	Installation of monitoring equipment and data collection	$0
	Monitoring Total	**$ 190,680.87**
Golder Associates (WSP), Contract No. 2017-246 with Amendment 1-8, and Contract Allowance Authorizations[3]	Modeling Contract	$118,326.00
	Modeling Total	**$ 118,326.25**
	Combined Total	**$309,007.12**

Note: these expenditures are broken down by the original financial accounts structure that identified costs by the descriptions shown.

1 On June 23, 2022, the City and SRP executed a new agreement that maintained equipment sites that may become longer-term data collection points. As equipment fails it will only be repaired/replaced according to the contract.

2 City entered a new Fixed Cost Agreement (24ZFJFA00411900) for ongoing operation of the Williamson Valley Wash gauge (station number 09502800) for one-year, October 1, 2023, to September 30, 2024. NOTE: Charges related to the gauge totaled $35,725. The remainder of $48,625 was a result of the USGS determining past due fees that had not been delivered to the City for payment during the period of Contract No. 2014-160.

3 See section Executed Documents or Coordinated Activities for details.

As a result of overall project savings, funds are available for ongoing expenses in the near-term, subject to the Parties consensus for use. Future contributions may be necessary if additional work is planned and approved by the CA#1 Parties.

Monitoring Project – Equipment

Since the commencement of the project, the Parties and their STCs have worked with ADWR, USGS, Yavapai County Flood Control District, and others to develop a network of monitoring equipment in the Big Chino Sub-basin. This equipment, and the resulting data inventory, supports the development and testing of the groundwater flow model.

No new equipment was installed in FY24 except where needed to replace broken or missing equipment (as per Contract No. 2022-154) due to run-off events. Existing data collection types are listed below, and their basic details are shown in maps, figures, and tables in the appendices.

- Streamflow Monitoring – See **Appendix I** for SRP's Big Chino Sub-basin Water Monitoring Project, July 1, 2023 – June 30, 2024, Annual Report for CA#1 Monitoring Committee. Additional references are made to this report's equipment in **Appendices II and III, Figures 4-6**.
- Groundwater Level Monitoring – See **Appendix II** for tabular information and **Appendix III, Figures 1-3** for figures showing location and basic data.
- Weather Monitoring – See **Appendix II** for tabular information and **Appendix III, Figures 7-8** for figures showing locations and basic data.
- Crop Survey and Estimated Crop Water Use – See **Appendix III, Figures 9-1 to 9-5**.

Monitoring Project – Analytical Results and Data Collected

The results of data collection and data interpretation efforts are provided in separate reports and databases produced and managed by each responsible agency, as detailed below. One of the duties of the CA#1 Monitoring Committee is to coordinate and monitor these data collection and reporting efforts to produce results that are useful for the groundwater modeling and monitoring purposes outlined in CA#1. A brief explanation of active contracts or in-kind efforts are documented below.

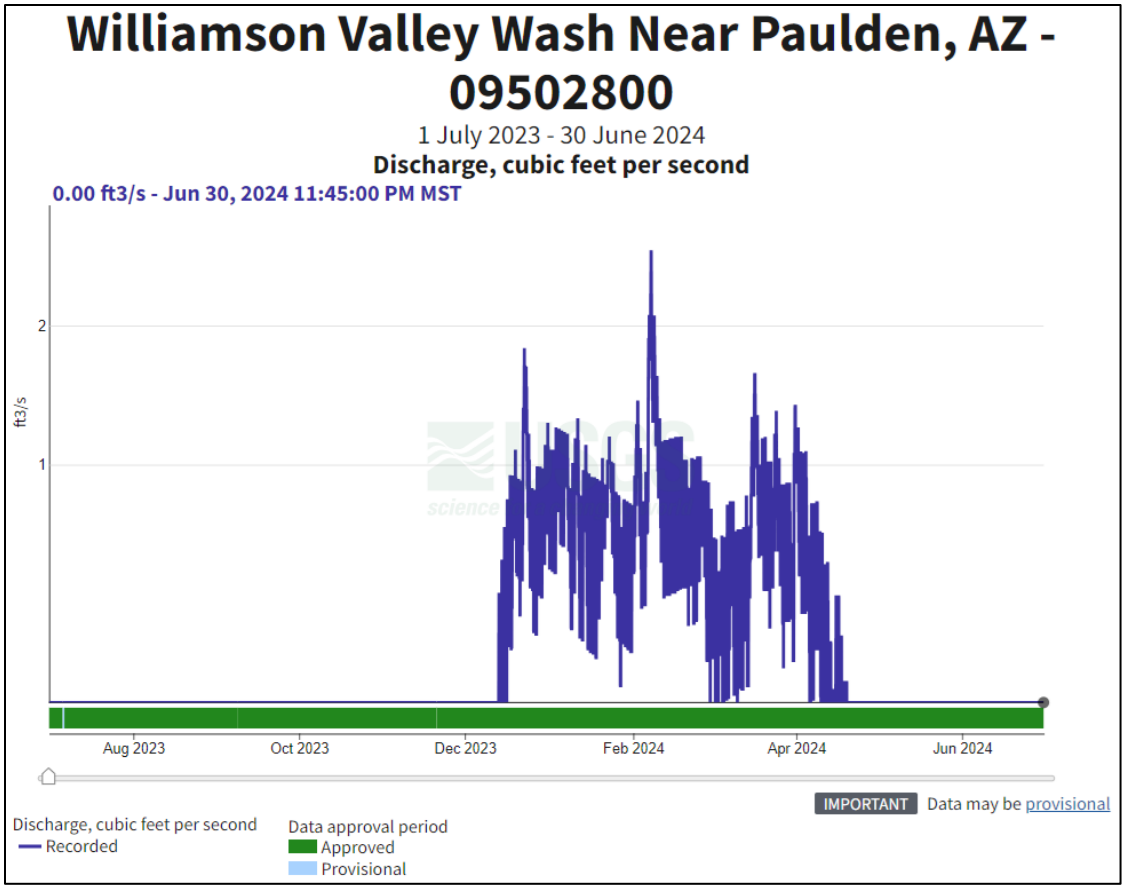
<u>Streamflow Monitoring</u> – monitoring of streamflow in the Big Chino Sub-basin is conducted by SRP Aquifer Management and Data Analytics, and USGS under contract with the CA#1 project. The USGS also maintains other stream gauges in the area, but those efforts are outside of the CA#1 contract. Further, flow stage data is collected by Yavapai County Flood Control District (YCFCD) for their flood warning purposes, and several new locations were installed that were

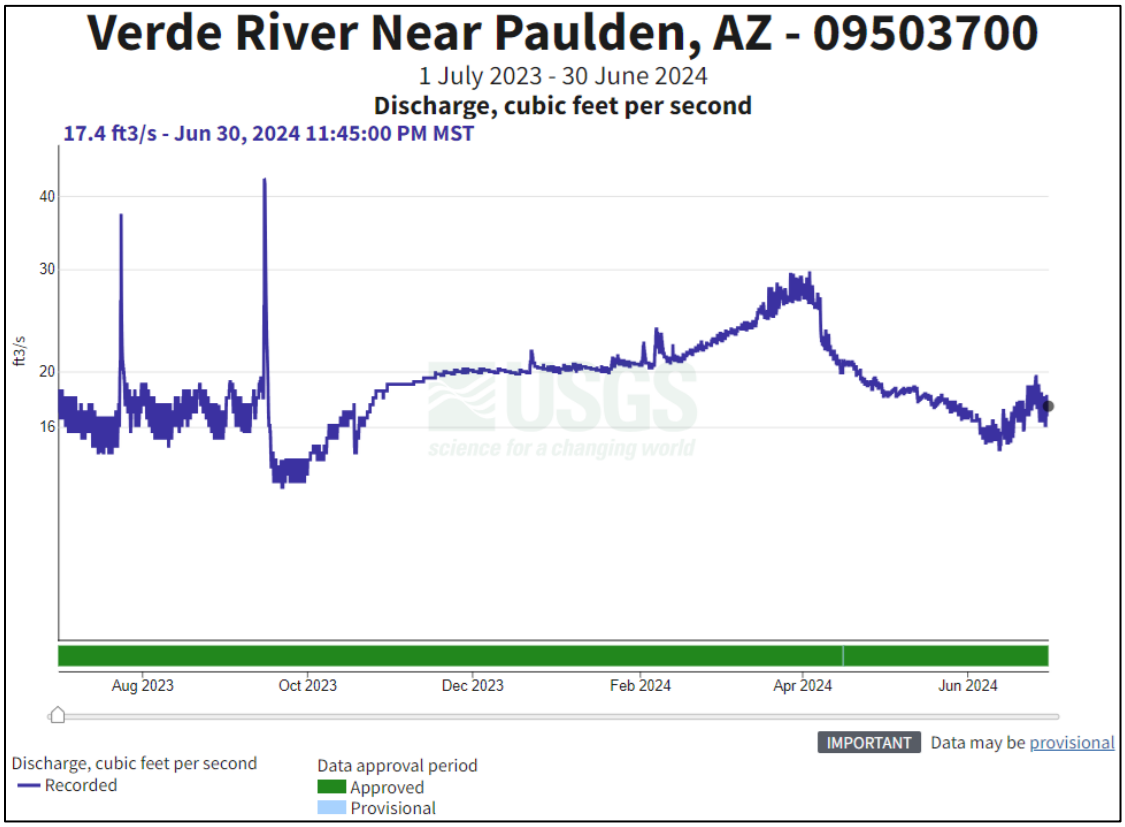
deemed beneficial to both YCFCD and CA#1 needs. The Parties appreciated that YCFCD assumed the cost of these gauges.

- Efforts by SRP
  SRP Aquifer Management and Data Analytics collects streamflow data and other information at ten (10) locations in the Big Chino Sub-basin under the previously noted contract with the Parties. During July 2023-June 2024, flows were observed at some locations. The complete FY24 report is attached as **Appendix I**. The annual hydrographs are in **Appendix III**.

- Efforts by USGS
  The USGS operates several stream gauges in the Big Sub-basin. The Williamson Valley Wash near Paulden, AZ gauge (station number 09502800) is funded through the CA#1 program (renewed annually), and the Verde River near Paulden, AZ gauge (station number 09503700) is funded through a separate program with SRP, the USFS, and the USGS. In 2017, USGS installed the Big Chino Wash at Paulden, AZ gauge (station number 09502830). Streamflow records for these sites are maintained by the USGS in their online database, https://waterdata.usgs.gov/az/nwis/current/?type=flow.
  Site locations for the first two gauges are shown on **Appendix III, Figure 4**.

- Efforts by YCFCD
  YCFCD collects flow stage data at four (4) locations in the Big Chino Sub-basin: Ashfork Draw at I-40 (ID 3868), Partridge Creek at I-40 (ID 3873), Big Chino Wash at Highway 89 (ID 3828), and Walnut Creek at Walnut Creek Bridge (ID 410). The CA#1 Committee and SRP Aquifer Management and Data Analytics evaluated these sites for their usefulness in converting flood stage data into streamflow records. Of the listed sites only the Walnut Creek Bridge stage data has been used for calculating streamflow.


Williamson Valley Wash Near Paulden, AZ - 09502800
1 July 2023 - 30 June 2024
Discharge, cubic feet per second
0.00 ft3/s - Jun 30, 2024 11:45:00 PM MST
ft3/s
2
1
Aug 2023
Oct 2023
Dec 2023
Feb 2024
Apr 2024
Jun 2024
IMPORTANT Data may be provisional
Discharge, cubic feet per second
Recorded
Data approval period
Approved
Provisional


Verde River Near Paulden, AZ - 09503700
1 July 2023 - 30 June 2024
Discharge, cubic feet per second
17.4 ft3/s - Jun 30, 2024 11:45:00 PM MST
ft3/s
40
30
20
16
Aug 2023
Oct 2023
Dec 2023
Feb 2024
Apr 2024
Jun 2024
IMPORTANT Data may be provisional
Discharge, cubic feet per second
Recorded
Data approval period
Approved
Provisional

Groundwater Monitoring – Groundwater level monitoring efforts continued to be completed through traditional water level monitoring efforts (index lines and basin sweeps) by the Arizona Department of Water Resources (ADWR). ADWR annually collects water levels at select wells (Index lines) in the project area as part of their Basic Data program and basin-wide sweeps that are generally scheduled every five (5) years. The last "sweep" of the Big Chino Sub-basin occurred during February through May 2022. The Parties hold a contract with ADWR, IGA Contract No. 2020-136, for additional measurements at the new monitoring wells that were drilled as part of CA#1 (generally identified with "MW-4b to 4g"). This IGA remains in effect until June 30, 2024. The CA#1 Parties are negotiating a new contract for FY25.

Climate and Weather Monitoring – The CA#1 Parties reference other agencies that collect and make climate assessments. Those are listed in **Appendix II, Climate Monitoring, Publicly Accessible Repositories for Climate Data**. Efforts to track specific weather stations, both installed with CA#1 funds or in partnerships with other agencies, are listed in **Appendix II, Climate Monitoring, Existing Weather Stations in the Big Chino Sub-basin**. These weather stations are also shown in **Appendix III, Figures 7-8**. During FY24 the accumulated precipitation in the CA#1 study area ranged from approximately 0.2 inches to 15.4 inches.

Crop Surveys and Estimated Crop Water Use – The USGS and ADWR have had a longstanding contract to conduct crop surveys in what ADWR determines to be critical basins for observation. The Big Chino Sub-basin is not a location that is monitored every year. As such, the USGS, in contract with SRP, conducts crop surveys in the Big Chino Sub-basin. The results for 2023 are shown in **Table 2** and illustrated in **Appendix III, Figures 9-1 through 9-5**. Each year the CA1 Parties seek the compiled data for inclusion in their annual report. The basic conclusions that can be drawn from 2023 data include:

- Approximately 25% of the irrigable lands that were surveyed were being irrigated in 2023 (982 acres cropped).
- Approximately 2,093 acre-feet were calculated based on consumptive use to irrigate this year's cropping pattern.
- Approximately 2.1 acre-feet of water was used per crop acre.

Table 2 – 2023 Crop Survey (Acres Irrigated)

Crops	Upper Big Chino	Paulden	Walnut Creek	Williamson	Turkey Canyon	Total
ALFALFA	0	0	3	0	9	12
GRASS	0	54	55	574	0	683
GRAIN	0	0	0	0	0	0
PASTURE	0	0	59	143	0	202
SOD	0	60	0	0	0	60
VEGETABLE	0	25	0	0	0	25
Total Crop Acres	**0**	**139**	**117**	**717**	**9**	**982**
No Crop Evident	**1849**	**338**	**124**	**607**	**88**	**3006**
Calculated Consumptive Use (acre-feet)	**0**	**227**	**194**	**1639**	**33**	**2093**

Modeling Project

Groundwater flow modeling was identified in Exhibit 5 of the CA#1 contract to be an intensive 3-year, $1.2 M effort to develop a defensible computerized groundwater flow model of the Big Chino Sub-basin. In early 2017, City Contract No. 2017-246 with WSP was executed.

The contract and its amendments are listed in **Table 3**. Original cost estimates were generated based on 2007 costs which remained in place when the CA#1 contract was executed in 2012, and increased costs have been addressed in subsequent contract amendments, which are also shown in **Table 3**. Other conditions addressed in the amendments include greater than expected volume of data sets, extended completion dates for monitoring contracts, increased review, increased coordination between WSP and the STCs, challenges related to attempting to develop and test three (3) draft conceptual models, and administrative changes needed as Golder became/was acquired by WSP.

When the original contract is compared to the current contract amendment, the project timeline overall has been extended by 4 years and required additional funding. Based on Amendment 7, the project completion date is November 14, 2024.

Table 3 – Contracts and Associated Costs of the CA1 Project

Contract No.	Date Executed	Amount	Completion Date
2017-246	2/28/2017	$1,149,300.00	3/31/2020
2017-246A1	12/5/2019	$277,460.00	12/31/2020
2017-246A2	1/5/2021	$0	9/22/2021
2017-246A3	7/1/2021	$241,959.00	7/15/2022
2017-246A4	7/20/2021	$0	8/30/2022
2017-246A5	9/8/2022	$0	4/30/2023
2017-246A6	5/4/2023	$0	7/18/2024
2017-246A7	7/4/2024	$0	11/14/2024
2017-246A8	7/18/2024	$17,880.51	11/14/2024
Final Cost		**$1,686,599.51**	**Anticipated FY25**

Conclusions

Activities for the FY24 project year transitioned from resolving recharge aspects of the groundwater flow model to model calibration. Completion deadlines were reset from July/August 2024 to November 2024. Project billing from WSP resumed with Billing No. 58 dated February 21, 2024.

Project monitoring activities will continue through the coming fiscal year. The CA1 parties remain in contract with SRP and USGS. The contract with ADWR is being updated and expected to be executed before the end of calendar year 2024.

The project's financial position remains strong and cost savings measures continue to be assessed and taken when possible. Communication among the Parties, with their STCs, and with the relevant contracted agencies (e.g., ADWR, USGS, etc.) will continue as planned or as needs arise.

Future work includes both the monitoring and modeling components of CA#1. The existing monitoring contracts will continue but will need assessment as those contracts expire or data collection is no longer needed at those sites. As model development is finalized, the Parties and STCs will begin planning for model uncertainty analysis and scenario development. The Parties technical representatives plan to reestablish a timetable and the documents for regular presentation to the CA#1 Principals.

APPENDIX I

Big Chino Sub-basin

Water Monitoring Project

July 1, 2023 – June 30, 2024

Annual Report

BIG CHINO SUB-BASIN WATER MONITORING PROJECT

July 1, 2023, through June 30, 2024, Annual Report
for CA1 Monitoring Committee

SRP Data Analytics
September 16, 2024

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Introduction

This report has been developed for the CA1 Monitoring Committee as part of the Big Chino Sub-Basin Water Monitoring project (city Contract No. 2022-154, A1 and A2) in collaboration with the City of Prescott, Town of Prescott Valley, and Salt River Project (SRP).

For this report, the 2024 monitoring period refers to July 1, 2023, through June 30, 2024. A summary of flow events observed during the period is contained within this report.

Seasonal Flow Summary

Surface water flow was observed at each site during the 2024 monitoring period. The following are details observed:

- No flow was observed at Lower Walnut Creek at Charney Property and Lower Williamson Valley Wash in the sub-basin.
- Nine (9) flow events were observed at the Upper Big Chino Wash site, the most observed at a site in the sub-basin for the reporting period.
    - One (1) flow event observed at the Upper Big Chino Wash site exceeded the channel rating.
    - The flow event resulting in the highest flow volume occurred on 7/24/2023 at Upper Big Chino Wash. The channel rating was exceeded during the event. The approximate flow observed for the event was 9,221 acre-feet (AF).
    - There was an estimated 14,951 AF observed at the Upper Big Chino Wash site, the largest total estimated flow volume observed during the 2024 monitoring period at a single site.
- Of the sites where flow was observed, the lowest total acre-feet was observed at the Pine Creek. 1,473 AF were observed there.

Flow event details including event start date, an estimate of the magnitude of flow, and the locations where surface water flow was observed are shown in Table 1 and Figure 1.

Table 1. Big Chino Sub-Basin July 1, 2023, through June 30, 2024, Flow Event Summaries Including the Estimated Total Acre-Feet (AF)

Start Date[1]	Upper Big Chino Wash (UBCW)	Big Chino Wash below Partridge Creek (BCWPC)[2]	Pine Creek (PC)	Upper Walnut Creek at Bridge (UWCB)[2]	Lower Walnut Creek at Charney Property (LWCCP)	Williamson Valley Wash at XU Ranch (WVWXU)	Lower Williamson Valley Wash (LWVW)	Lower Big Chino Wash (LBCW)[2]	Sullivan Dam (SD)[3]
07/23/2023	11	Yes	-	Yes	-	-	-	No	No
07/24/2023	9,221	Yes	-	Yes	-	-	-	No	No
07/28/2023	951	Yes	1,468	Yes	-	-	-	No	No
07/31/2023	4,616	Yes	-	Yes	-	-	-	No	No
08/10/2023	7	No	-	No	-	-	-	No	No
08/12/2023	9	Yes	-	No	-	-	-	No	No
08/15/2023	5	No	-	Yes	-	-	-	No	No
08/18/2023	52	No	-	Yes	-	-	-	No	No
08/31/2023	-	No	2	Yes	-	-	-	No	No
09/13/2023	79	No	< 1	Yes	-	49	-	Yes	Yes
09/14/2023	-	No	3	Yes	-	-	-	Yes	No
02/08/2024	-	No	-	Yes	-	6,779	-	No	No
03/15/2024	-	No	-	Yes	-	4,221	-	No	No
Total AF	**14,951**		**1,473**		**0**	**11,049**	**0**		

[1] Flow events may start just prior to the date indicated or continue into the following day.
[2] This is a camera only site. A 'Yes' or 'No' will indicate whether flow was present on that date.
[3] The Sullivan Dam weir crest is not rated for discharge measurement estimates. If 'Yes' is notes, spill was observed over the crest of the dam. See Location page for stage details.

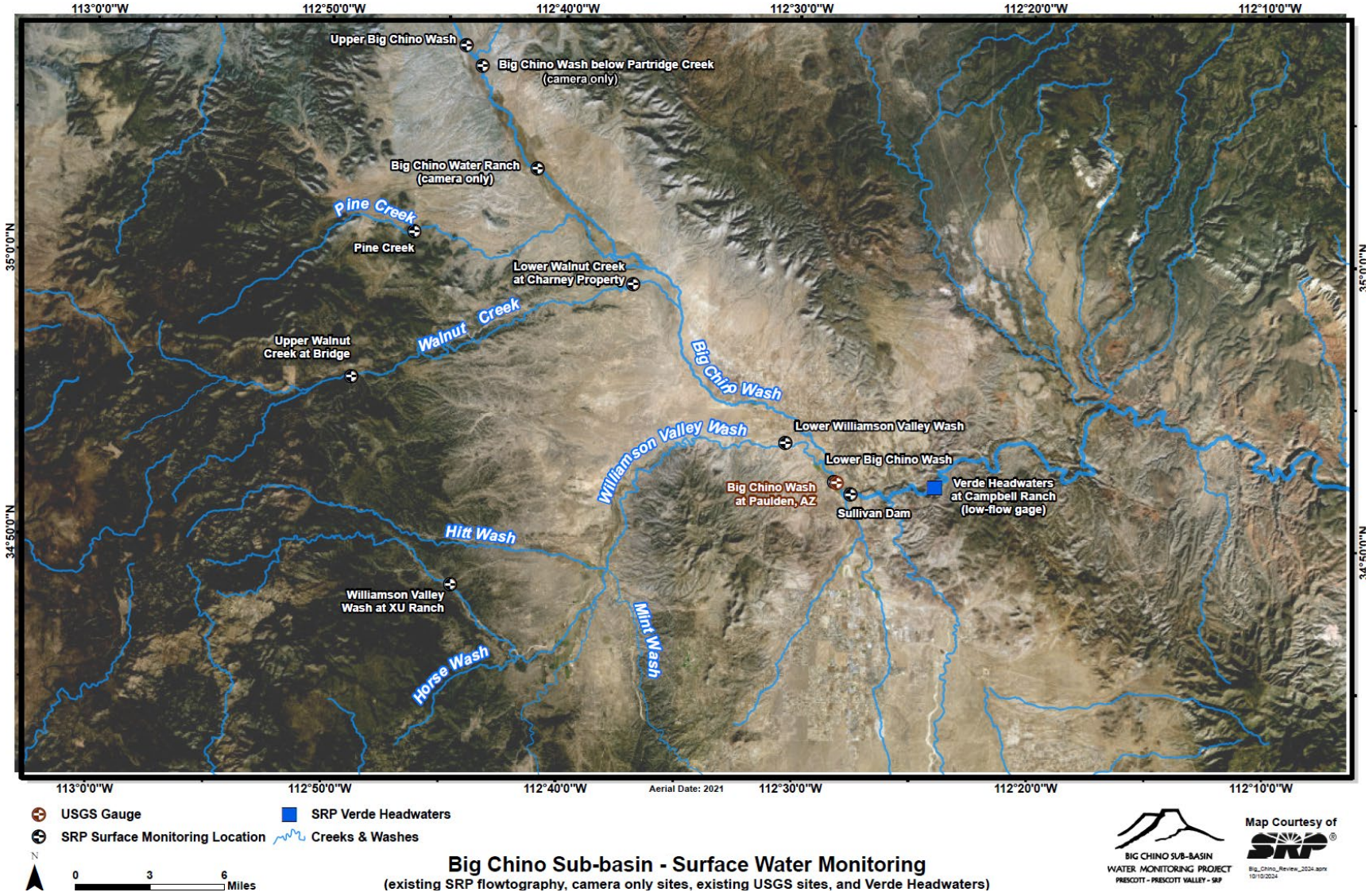


Figure 1. Big Chino Sub-Basin Map

Location Summaries

Upper Big Chino Wash (UBCW)

Nine (9) events with measurable flow were observed at UBCW. Some highlights of those events are as follows:

- The longest lasting flow event started on 7/28/2023 and lasted for approximately 29.25 hours.
- The highest estimated discharge occurred during the flow event starting on 7/24/2023. There was an estimated peak flow of 938 cfs. This flow exceeded the channel rating, was the only flow event where the flow exceeded the rating. The total estimated flow volume for this event was approximately 9,221 AF, the highest of all flow events at the site for the 2024 period.

Flow event data including duration and estimated flow volume for the 2024 monitoring period are outlined in Table 2 and Figures 2 and 3, and image data from the site can be seen in Figure 4.

Table 2. UBCW July 1, 2023, through June 30, 2024, Flow Events

Start Date	Start Time[4]	Duration (hours)[5]	Peak Stage (feet)	Peak Discharge (cfs)[6]	Total Volume (AF)
07/23/2024	16:30	2.5	0.4	2.0	11
07/24/2024	16:15	17	4.2	938*	9,221*
07/28/2023	12:30	29.25	1.1	43	951
07/31/2023	16:00	26.5	2.2	298	4,616
08/10/2023	20:00	2.25	0.4	2	7
08/12/2023	12:15	3.25	0.3	1	9
08/15/2023	15:15	3.75	0.3	<1	5
08/18/2023	22:00	13.75	0.4	2	52
09/13/2023	16:45	19.5	0.5	6	79
Total		**117.75**			**14,951**

The UBCW site was visited four (4) times during the 2024 monitoring period. All site visits were related to routine quarterly maintenance and data collection.

[4] Start times are approximate and actual start times are within ±15 minutes of the noted time. Events may also continue into the following day(s).
[5] Flow event duration is based on discharge calculated using the existing rating.
[6] An asterisk near a peak discharge value indicates that the flow exceeded the rating for the channel during this flow event.

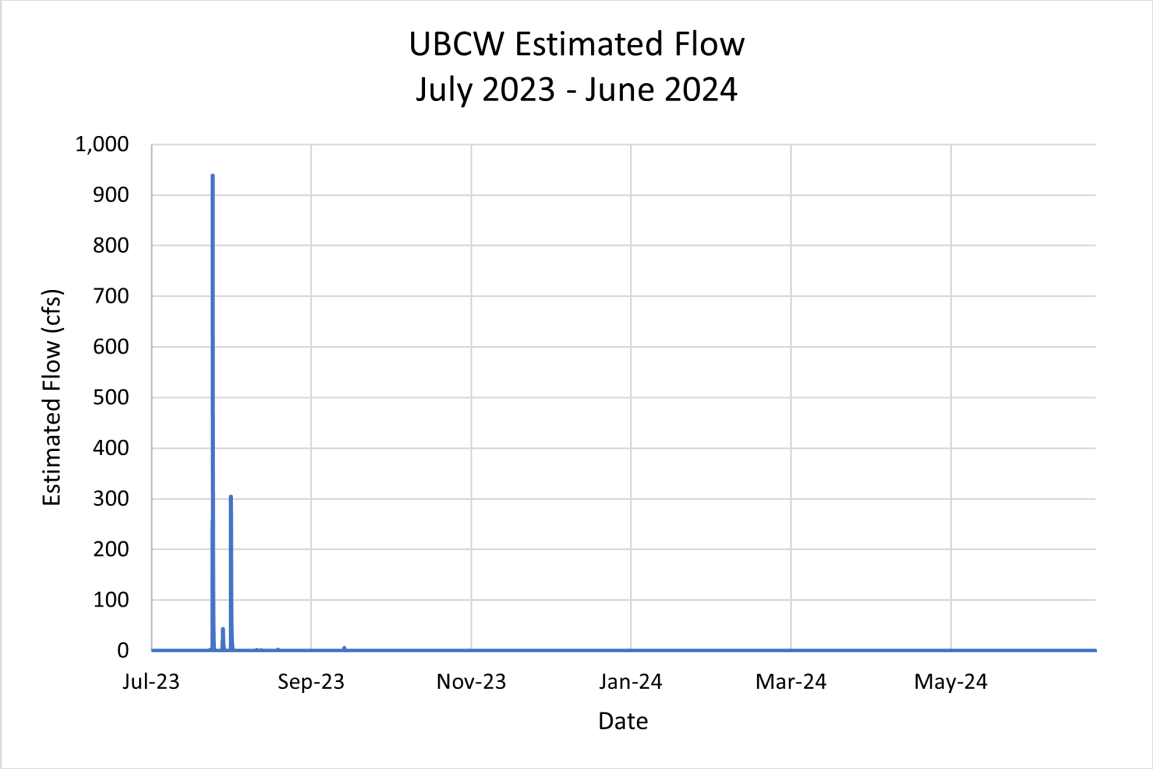


Figure 2. UBCW July 1, 2023, through June 30, 2024, Annual Flow Events

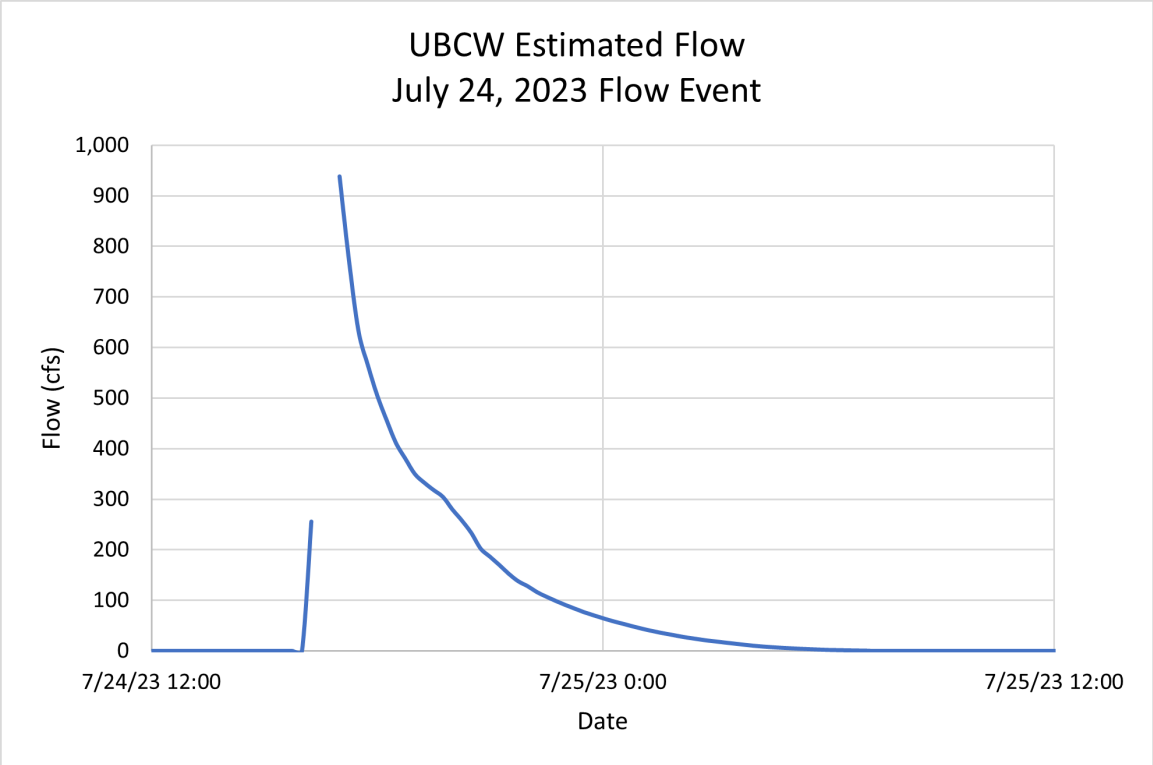


Figure 3. UBCW July 2023 High Flow Event

UBCW at the start of the 2024 monitoring period

UBCW at the end of the 2024 monitoring period

UBCW at the peak of the 07/24/2023 flow event

Figure 4. UBCW Image Data

Big Chino Wash below Partridge Creek (BCWPC)

Five (5) flow events were observed at BCWPC. This site is a camera only site, there are no estimates of flow observed. Flow event duration for events observed during the 2024 monitoring period are outlined in Table 3, and image data from the site can be seen in Figure 5.

Table 3. BCWPC July 1, 2023, through June 30, 2024, Flow Events

Start Date	Start Time [7]	Duration (hours) [8]	Peak Stage (feet)	Peak Discharge (cfs)	Total Volume (AF)
07/23/2023	18:45	2.5			
07/24/2023	16:30	6.75			
07/28/2023	15:30	3.00			
07/31/2023	19:15	7.25			
08/12/2023	15:00	3.25			
Total		**22.75**			

The BCWPC site was visited six (6) times during the 2023 monitoring period. In addition to routine quarterly maintenance and data collection, the following adjustments were made at the site:

- The camera pole was repaired, and the camera was reinstalled at the site.
- Camera issues were troubleshot and resolved at the site.

[7] Start times are approximate and actual start times are within ±15 minutes of the noted time. Events may also continue into the following day(s).

[8] Flow event duration is based on discharge calculated using the existing rating.

BCWPC at the start of the 2024 monitoring period

BCWPC at the end of the 2024 monitoring period

BCWPC at the peak of the 07/24/2023 flow event

Figure 5. BCWPC Image Data

Big Chino Water Ranch (BCWR)

The BCWR site is a camera only site. There were no days where flow from the Big Chino Wash was observed to exceed the channel and flow into the valley below the camera. The BCWR site was visited four (4) times during the 2024 monitoring period. All site visits were for routine maintenance and data collection.

BCWR site images for the reporting period can be seen in Figure 6.

BCWR at the start of the 2024 monitoring period

BCWR at the end of the 2024 monitoring period

BCWR during the 07/28/2023 precipitation event

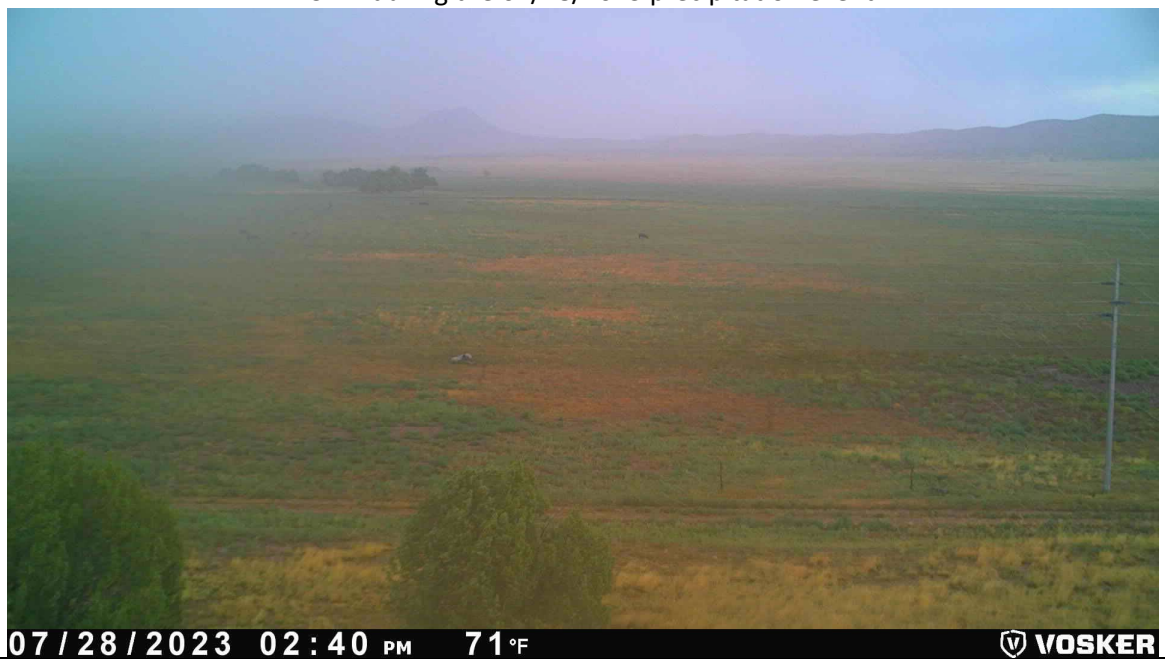


Figure 6. BCWR Image Data

Pine Creek (PC)

Four (4) flow events with measurable flow were observed at PC. Some highlights of those events are as follows:

- The flow event starting on 07/28/2023 was the longest lasting, lasting approximately 71.25 hours. That flow event had an estimated peak discharge of 367 cfs, the highest discharge observed at the site for the 2024 monitoring period and the largest estimated flow volume at 1,468 AF, nearly 100% of the total flow observed at the site for the reporting period.
- None of the four (4) events observed at the site exceeded the channel rating.

Flow event data including duration and estimated flow volume for the 2024 monitoring period are outlined in Table 4 and Figures 7 and 8, and image data from the site can be seen in Figure 9.

Table 4. PC July 1, 2023, through June 30, 2024, Flow Events

Start Date	Start Time [9]	Duration (hours) [10]	Peak Stage (feet)	Peak Discharge (cfs)	Total Volume (AF)
7/28/2023	16:45	71.25	2.4	367	1,468
8/31/2023	17:30	0.5	0.1	1	2
9/13/2023	16:15	0.5	0.1	<1	< 1
9/14/2023	14:30	1.5	0.1	1	3
Total		**74.25**			**1,473**

The PC site was visited four (4) times during the 2024 monitoring period. All site visits were related to routine quarterly maintenance and data collection.

[9] Start times are approximate and actual start times are within ±15 minutes of the noted time. Events may also continue into the following day(s).

[10] Flow event duration is based on discharge calculated using the existing rating.

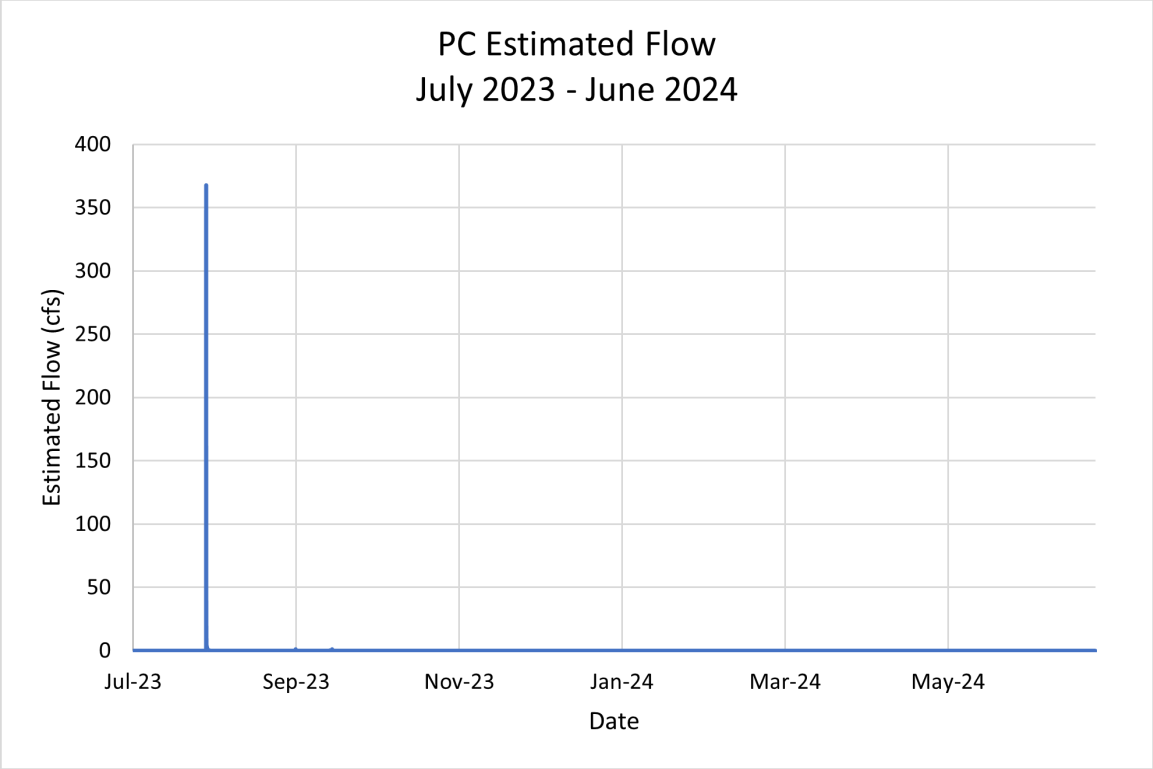


Figure 7. PC July 1, 2023, through June 30, 2024, Annual Flow Events

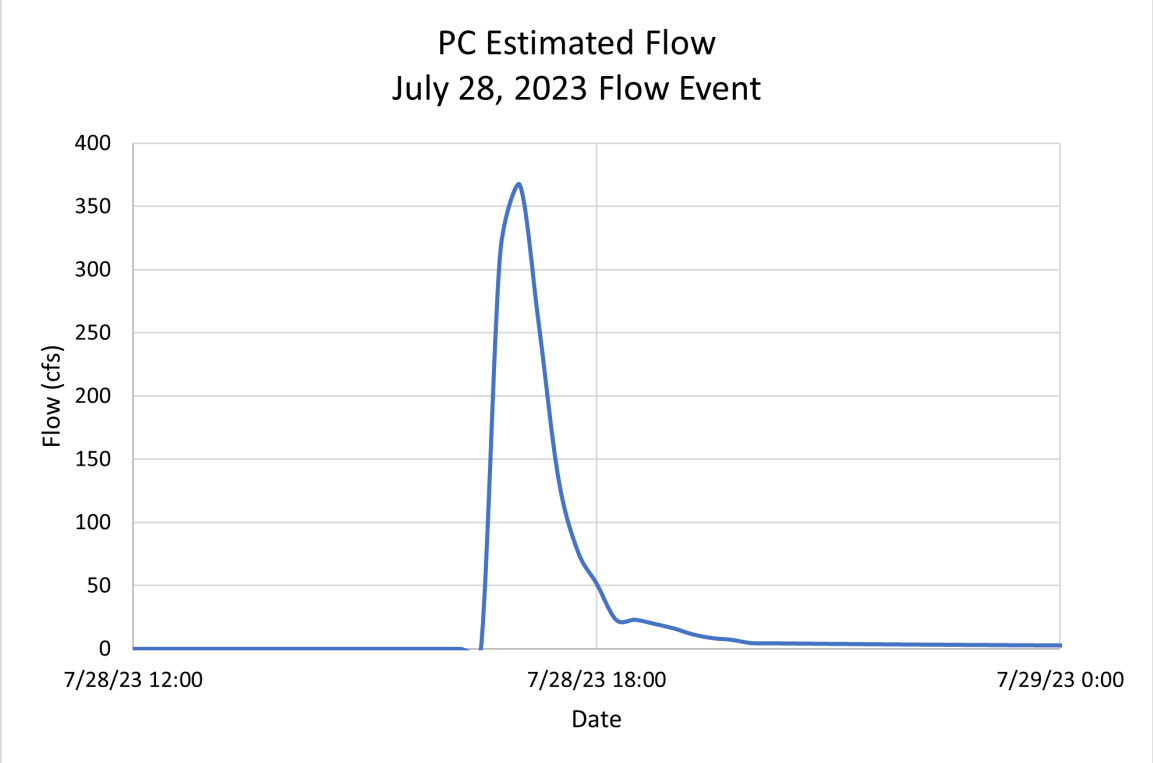


Figure 8. PC July 2023 High Flow Event

PC at the start of the 2024 monitoring period

PC at the end of the 2024 monitoring period

PC at the peak of the 07/28/2023 flow event

Figure 9. PC Image Data

Upper Walnut Creek at Bridge (UWCB)

The UWCB site is a camera only site. The UWCB site was visited four (4) times during the 2024 monitoring period. All site visits were for routine maintenance and data collection.

UWCB site images for the reporting period can be seen in Figure 10.

UWCB at the start of the 2024 monitoring period

UWCB at the end of the 2024 monitoring period

UWCB at the peak of the 09/13/2023 flow event

Figure 10. UWCB Image Data

Lower Walnut Creek at Charney Property (LWCCP)

Zero (0) events with measurable flow were observed at LWCCP.

Flow event data including duration and estimated flow volume for the 2024 monitoring period are outlined in Table 5 and Figure 11, and image data from the site can be seen in Figure 12.

Table 5. LWCCP July 1, 2023, through June 30, 2024, Flow Events

Start Date	Start Time [11]	Duration (hours) [12]	Peak Stage (feet)	Peak Discharge (cfs)	Total Volume (AF)
n/a	n/a	n/a	n/a	n/a	n/a
Total		**n/a**			**n/a**

The LWCCP site was visited five (5) times during the 2024 monitoring period. In addition to routine quarterly maintenance and data collection, the following adjustments were made at the site:

- The whip event gage and pressure transducer were replaced due to damage.
- New cross-section survey performed after event gage installed.

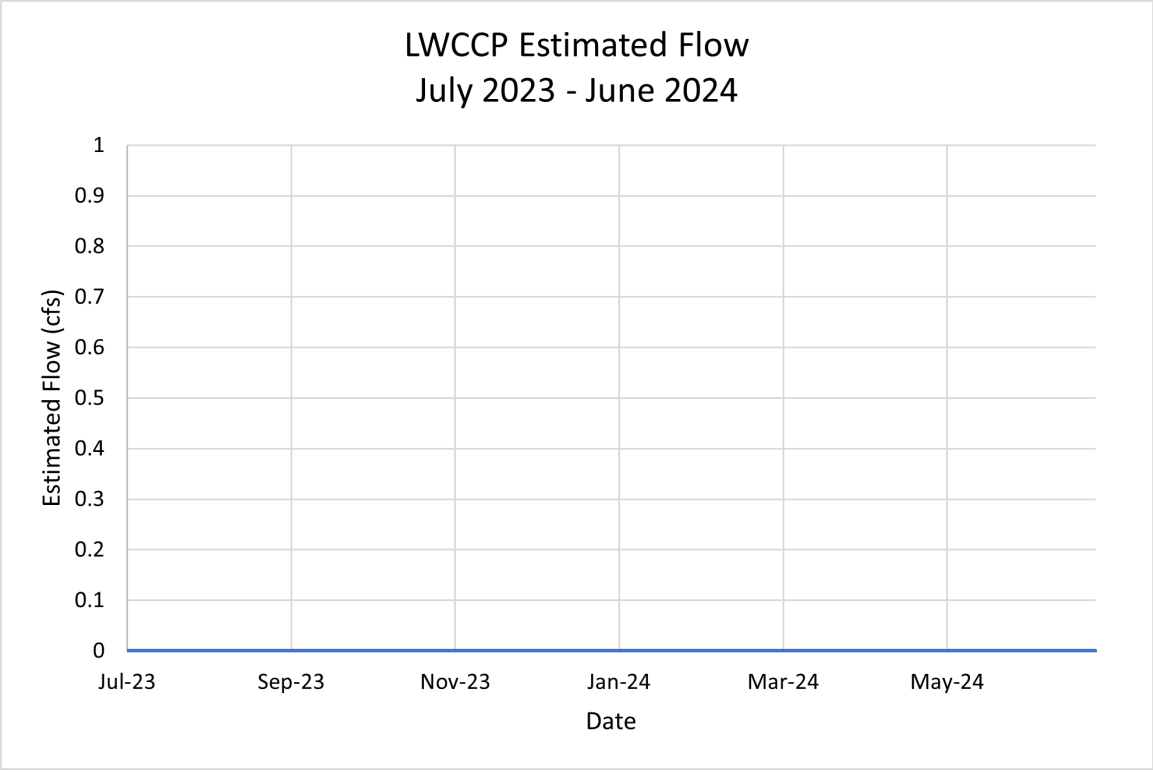


Figure 11. LWCCP July 1, 2023, through June 30, 2024, Annual Flow Events

[11] Start times are approximate and actual start times are within ±15 minutes of the noted time. Events may also continue into the following day(s).

[12] Flow event duration is based on discharge calculated using the existing rating.

LWCCP at the start of the 2024 monitoring period

LWCCP at the end of the 2024 monitoring period

Figure 12. LWCCP Image Data

Williamson Valley Wash at XU Ranch (WVWXU)

Three (3) events with measurable flow were observed at WVWXU. Some highlights of those events are as follows:

- The flow event starting on 03/15/2023 was the longest lasting, lasting approximately 760.75 hours, almost 32 consecutive days.
- The flow event starting on 02/08/2023 had an estimated peak discharge of 25 cfs, the highest discharge observed at the site for the 2024 monitoring period. This flow event also had the largest estimated flow volume at 6,779 AF, 61% of the total flow observed at the site for the reporting period.
- Zero (0) of the three (3) events observed at the site exceeded the channel rating.

Flow event data including duration and estimated flow volume for the 2024 monitoring period are outlined in Table 6 and Figures 13 and 14, and image data from the site can be seen in Figure 15.

Table 6. WVWXU July 1, 2023, through June 30, 2024, Flow Events

Start Date	Start Time [13]	Duration (hours) [14]	Peak Stage (feet)	Peak Discharge (cfs)	Total Volume (AF)
9/13/2023	22:00	3	0.5	17	49
2/8/2024	15:00	569	0.6	25	6,779
3/15/2024	7:30	760.75	0.5	13	4,221
Total		**1,332.75**			**11,049**

The WVWXU site was visited a total of six (6) times during the 2024 monitoring period. In addition to routine quarterly maintenance and data collection, the following adjustments were made at the site:

- Event gage replaced with a whip event gage and pressure transducer replaced due to damage.
- New cross-section survey performed after event gage installed.

[13] Start times are approximate and actual start times are within ±15 minutes of the noted time. Events may also continue into the following day(s).

[14] Flow event duration is based on discharge calculated using the existing rating.

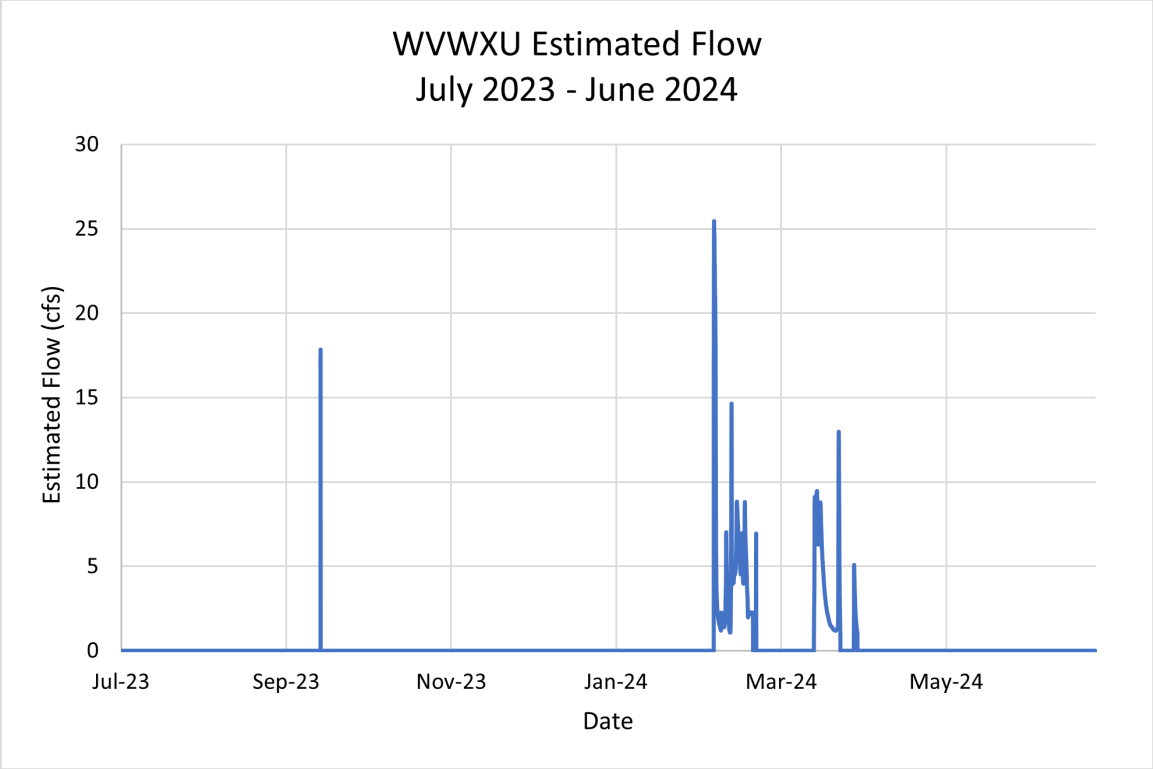


Figure 13. WVWXU July 1, 2023, through June 30, 2024, Annual Flow Events

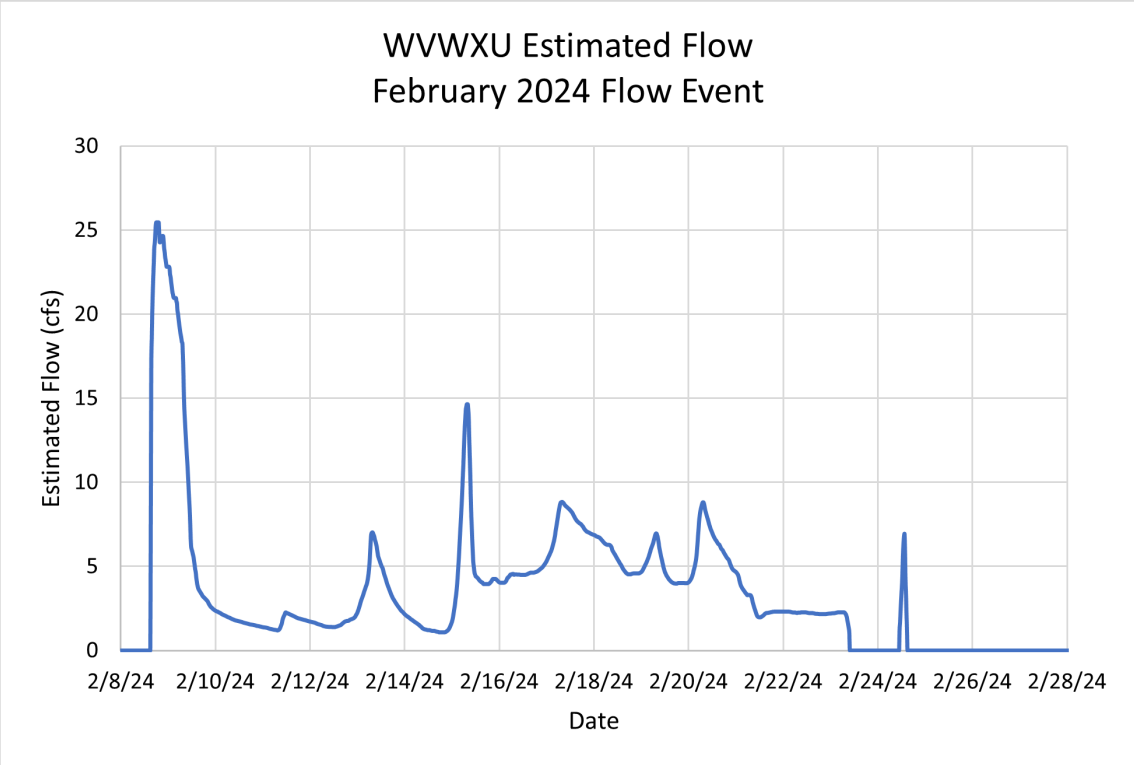


Figure 14. WVWXU February 2024 High Flow Event

WVWXU at the start of the 2024 monitoring period

WVWXU at the end of the 2024 monitoring period

WVWXU during the flow event starting on 02/08/2024.

Figure 15. WVWXU Image Data

Lower Williamson Valley Wash (LWVW)

Zero (0) events with measurable flow were observed at LWVW.

Flow event data including duration and estimated flow volume for the 2024 monitoring period are outlined in Table 7 and Figure 16, and image data from the site can be seen in Figure 17.

Table 7. LWVW July 1, 2023, through June 30, 2024, Flow Events

Start Date	Start Time[15]	Duration (hours)[16]	Peak Stage (feet)	Peak Discharge (cfs)	Total Volume (AF)
n/a	n/a	n/a	n/a	n/a	n/a
Total		**n/a**			**n/a**

The LWVW site was visited five (5) times during the 2024 monitoring period. In addition to routine quarterly maintenance and data collection, the following adjustments were made at the site:

- Event gage replaced with a whip event gage and pressure transducer replaced due to damage.
- New cross-section survey performed after event gage installed.

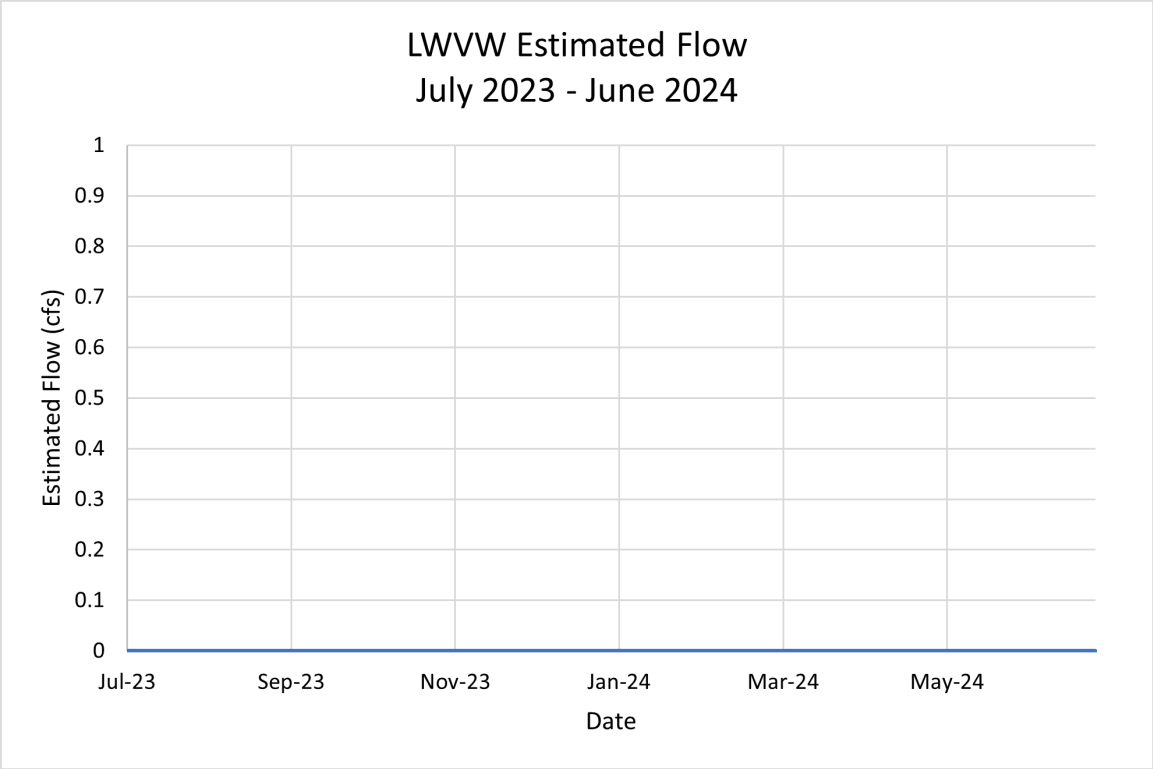


Figure 16. LWVW July 1, 2023, through June 30, 2024, Annual Flow Events

[15] Start times are approximate and actual start times are within ±15 minutes of the noted time. Events may also continue into the following day(s).

[16] Flow event duration is based on discharge calculated using the existing rating.

LWVW at the start of the 2024 monitoring period

LWVW at the end of the 2024 monitoring period

Figure 17. LWVW Image Data

Lower Big Chino Wash (LBCW)

The LBCW site is a camera only site.

The USGS Big Chino Wash at Paulden, AZ stream gage is about 0.15 river miles downstream of LBCW, on the other side of the road overpass. Flow data for the USGS site can be seen in Figure 18, and image data from the LBCW site can be seen in Figure 19.

The LBCW site was visited five (5) times during the 2024 monitoring period. In addition to routine quarterly maintenance and data collection, the following adjustments were made at the site:

- Camera replaced.

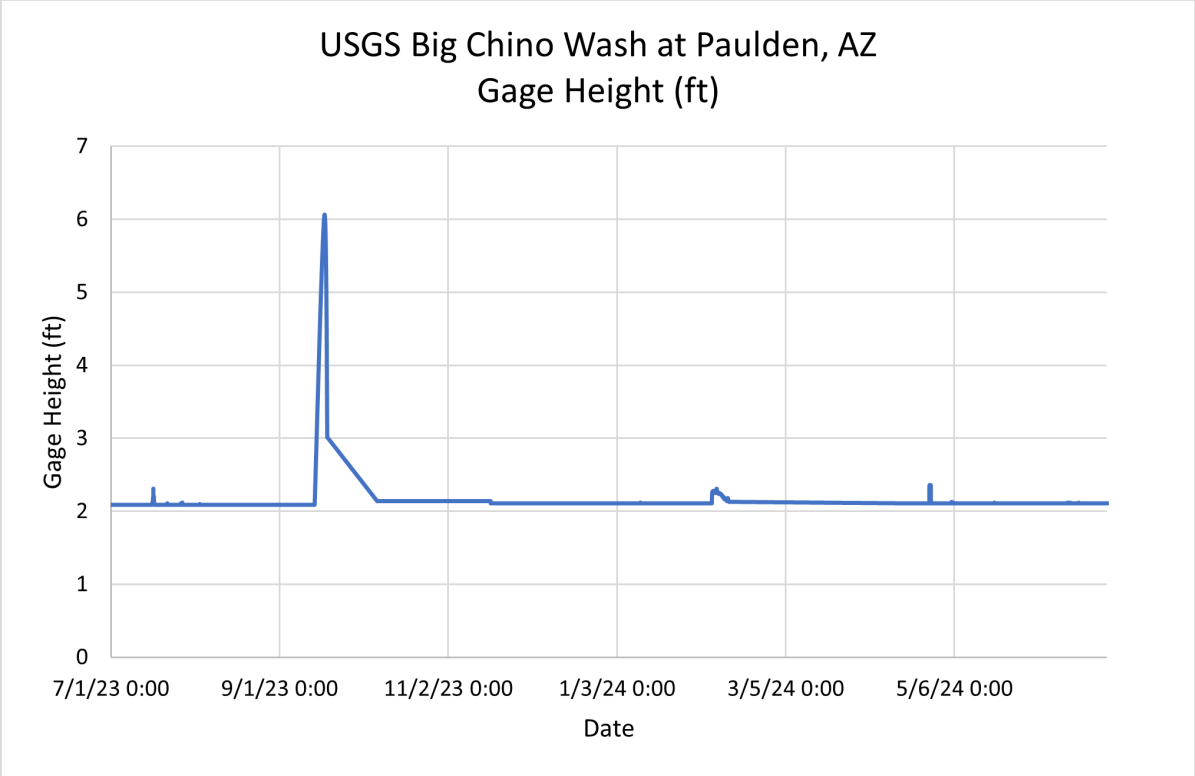


Figure 18. USGS Big Chino Wash at Paulden, AZ July 1, 2023, through June 30, 2024, Annual Flow Events

LBCW at the start of the 2024 monitoring period

LBCW at the end of the 2024 monitoring period

LBCW at the start of the 09/14/2023 flow event

Figure 19. LBCW Image Data

Sullivan Dam (SD)

One (1) event with flow was observed at SD. Stage data including start time, duration, and peak stage for the 2024 monitoring period are outlined in Table 8 and figure and image data from the site can be seen in Figure 20.

Flow event data including duration and estimated flow volume for the 2024 monitoring period are outlined in Table 8 and Figures 20 and 21, and image data from the site can be seen in Figure 22.

Table 8. SD July 1, 2023 through June 30, 2024, Flow Event

Start Date	Start Time [17]	Duration (hours) [18]	Peak Stage (feet)	Start Date	Start Time
9/14/2023	14:30	25	0.26’	9/14/2023	14:30

The SD site was visited four (4) times during the 2024 monitoring period. All site visits were related to routine quarterly maintenance and data collection.

[17] Start times are approximate and actual start times are within ±15 minutes of the noted time. Events may also continue into the following day(s).

[18] Flow event duration is based on discharge calculated using the existing rating.

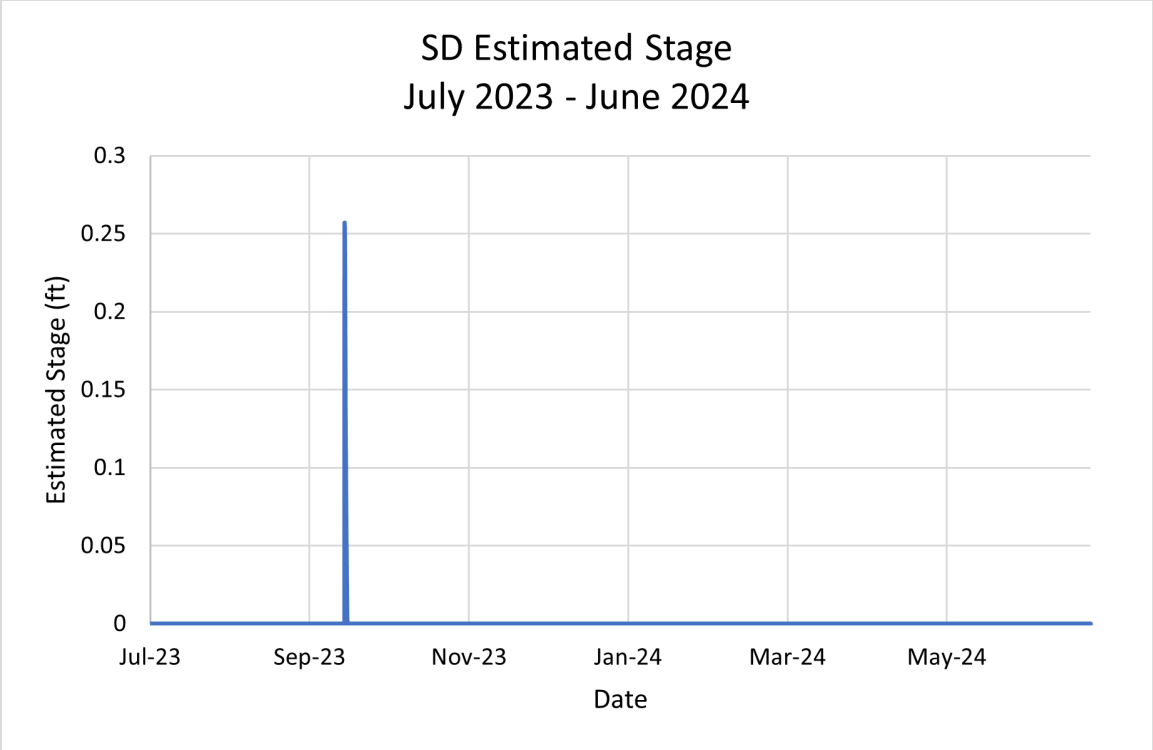


Figure 20. SD July 1, 2023, through June 30, 2024, Annual Flow Events

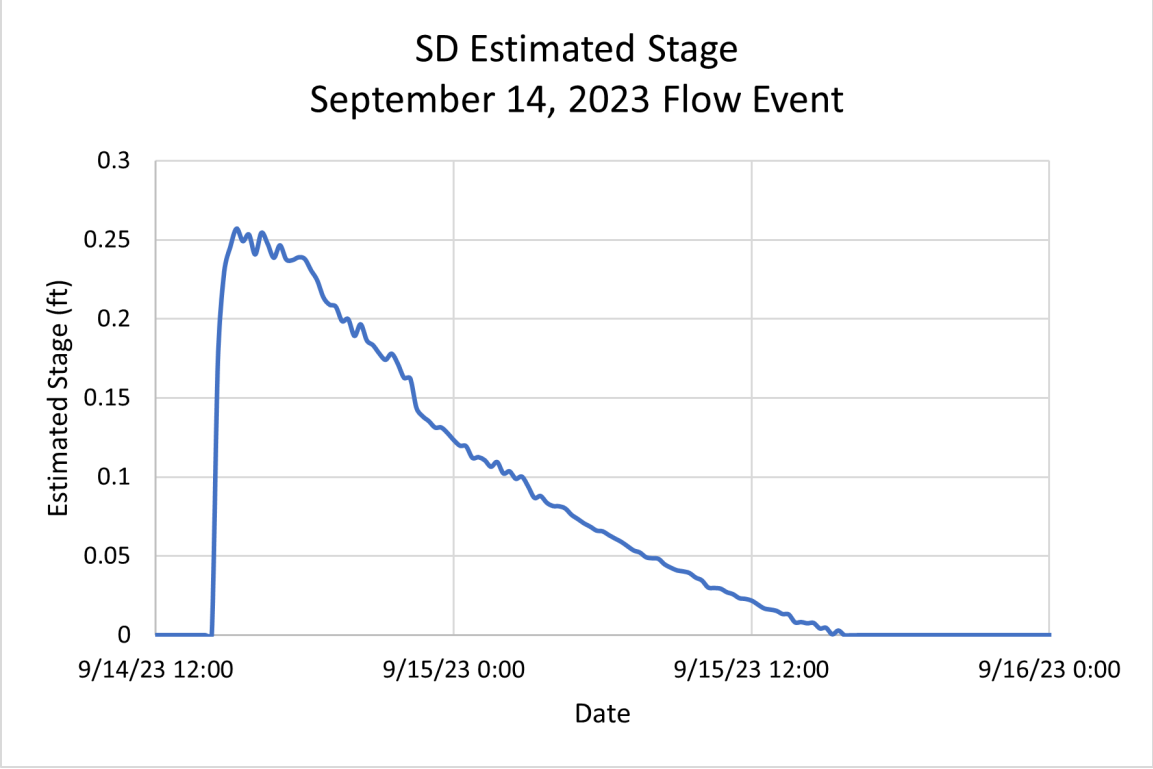


Figure 21. SD September 2023 High Flow Event

SD at the start of the 2024 monitoring period

SD at the end of the monitoring period

SD at the start of the 09/14/2023 flow event

Figure 22. SD Image Data

Verde Headwaters at Campbell Ranch (VHCR)

Continuous flow measurement at the VHCR site was not possible during the 2024 monitoring period following the March 2023 flow events that changed the channel conditions both upstream and downstream of the flume. Between June 2023 and October 2023, several attempts to move debris from the flow channel downstream of the weir were made, however, the weir remained submerged.

On April 5, 2024, a ground and LiDAR survey were completed at the site to develop a HEC-HMS 2D model of the area upstream of the flume to about 1,300 feet downstream. The model created, identified four (4) areas of concern including two sand bars, a large wood debris pile, and a beaver dam, all downstream of the flume. With the assistance of SRP Environmental Biological and Cultural Resource Services and the United States Army Core of Engineers, a proposal to move the debris while remaining compliant with existing permits is currently under review.

The USGS Verde River near Paulden, AZ stream gage is approximately six (6) river miles downstream of VHCR. Flow event data including peak flow data for the 2023 monitoring period are outlined in Table 9 and Figures 23-26, and image data from VHCR can be seen in Figure 27.

Table 9. VHCR July 1, 2023 through June 30, 2024, Flow Events

Start Date	VHCR (cfs)	USGS Verde River near Paulden, AZ (cfs)
8/8/2022	-	37
8/10/2022	-	44

The VHCR site was visited thirteen (13) times during the 2024 monitoring period. In addition to routine quarterly maintenance and data collection, the following adjustments were made at the site:

- Twelve (12) current meter measurements were performed to verify flow at the site and calibrate the equipment.
- Manual debris was removed from the channel downstream of weir.

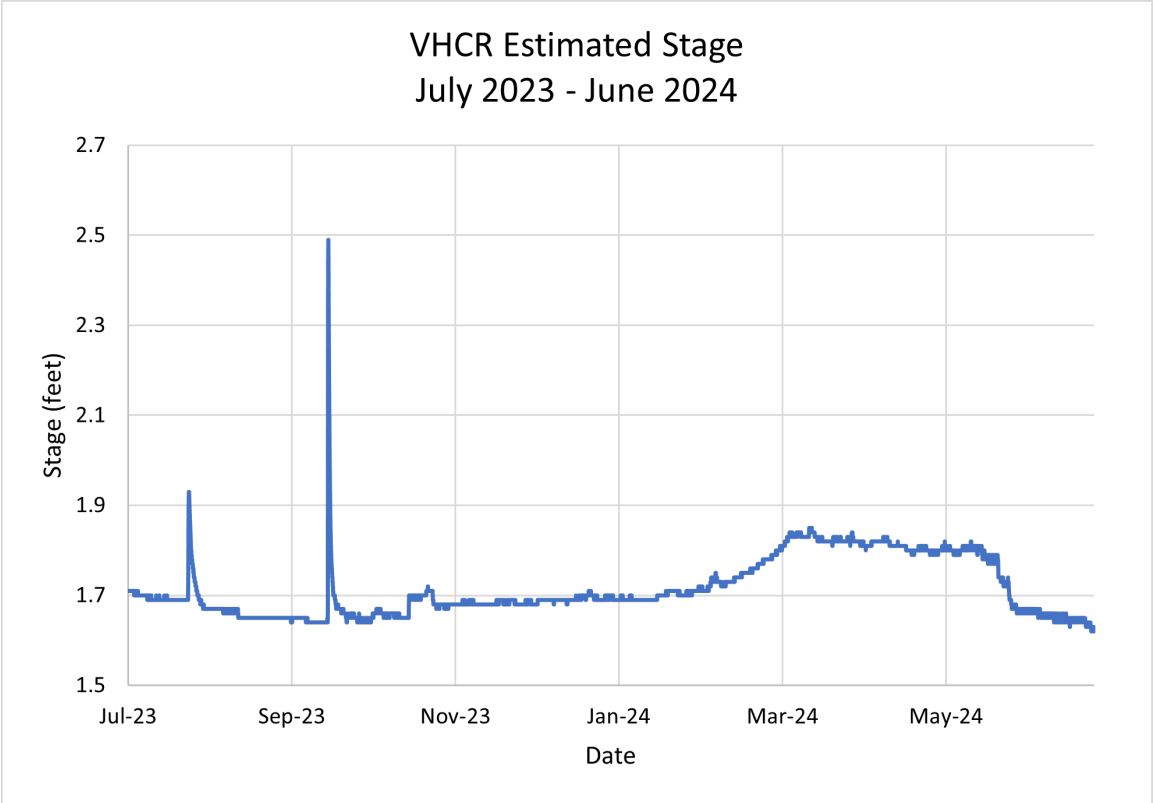


Figure 23. VHCR July 1, 2023, through June 30, 2024, Annual Events, Estimated Stage

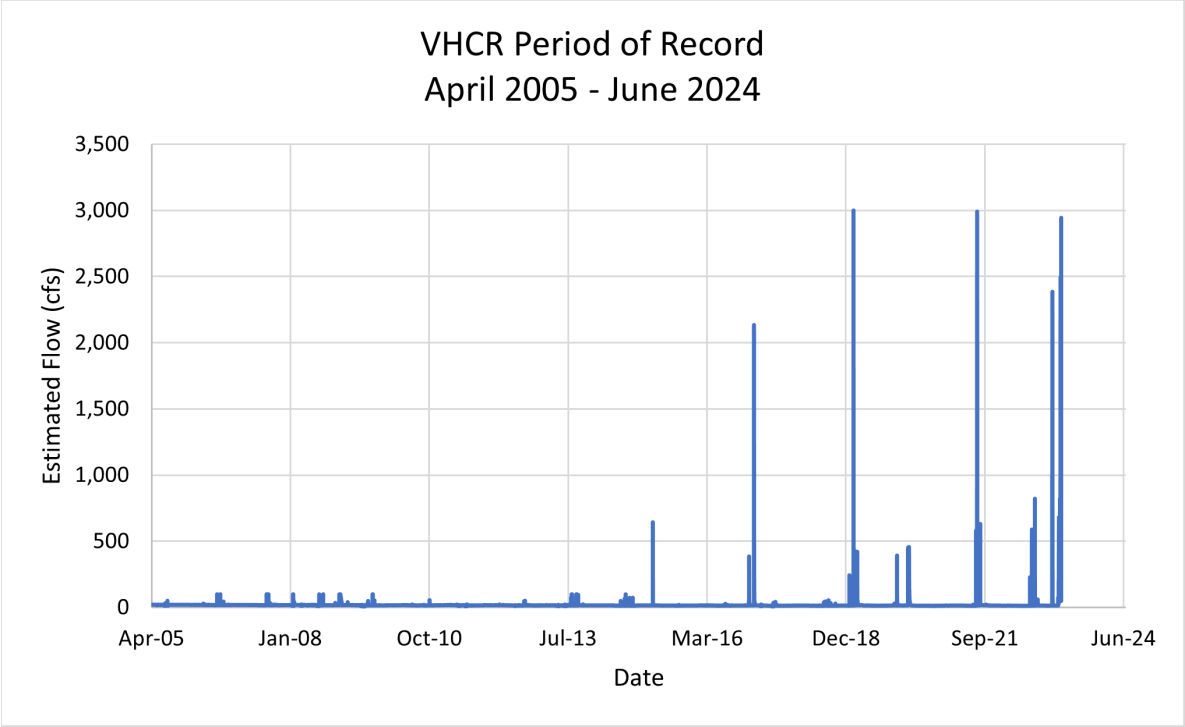


Figure 24. VHCR April 2005 through June 2024 Period of Record

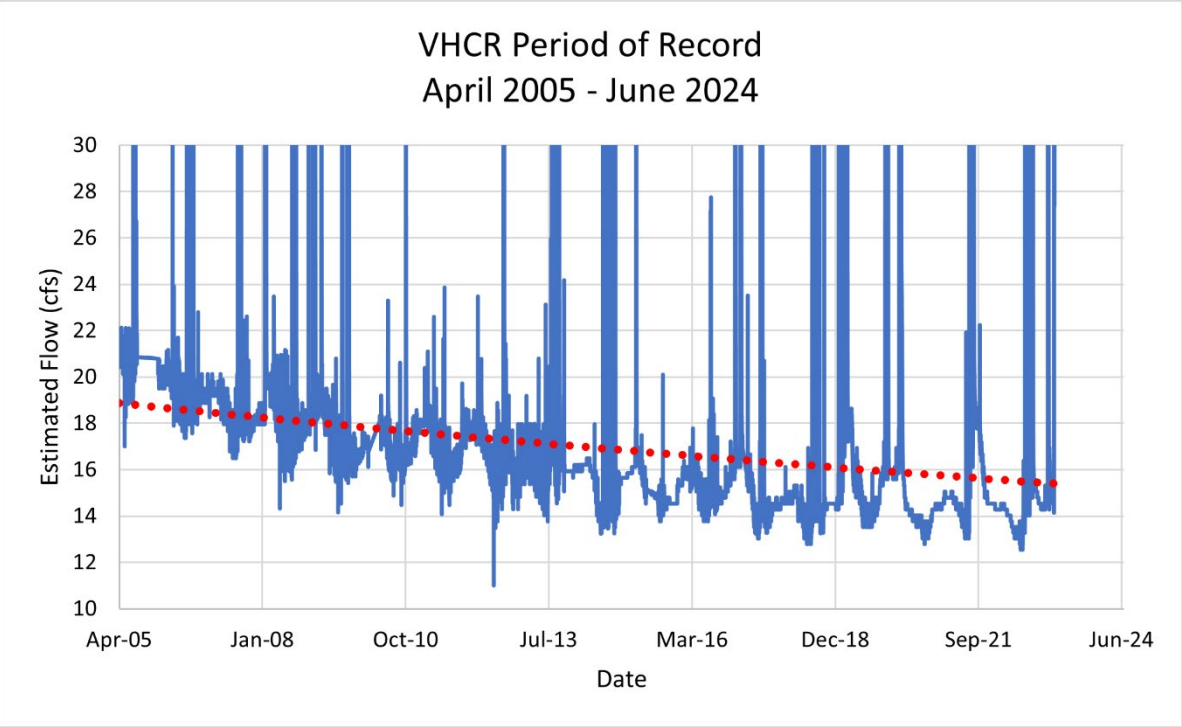


Figure 25. VHCR April 2005 through June 2024 Period of Record (Zoomed in with Trendline)

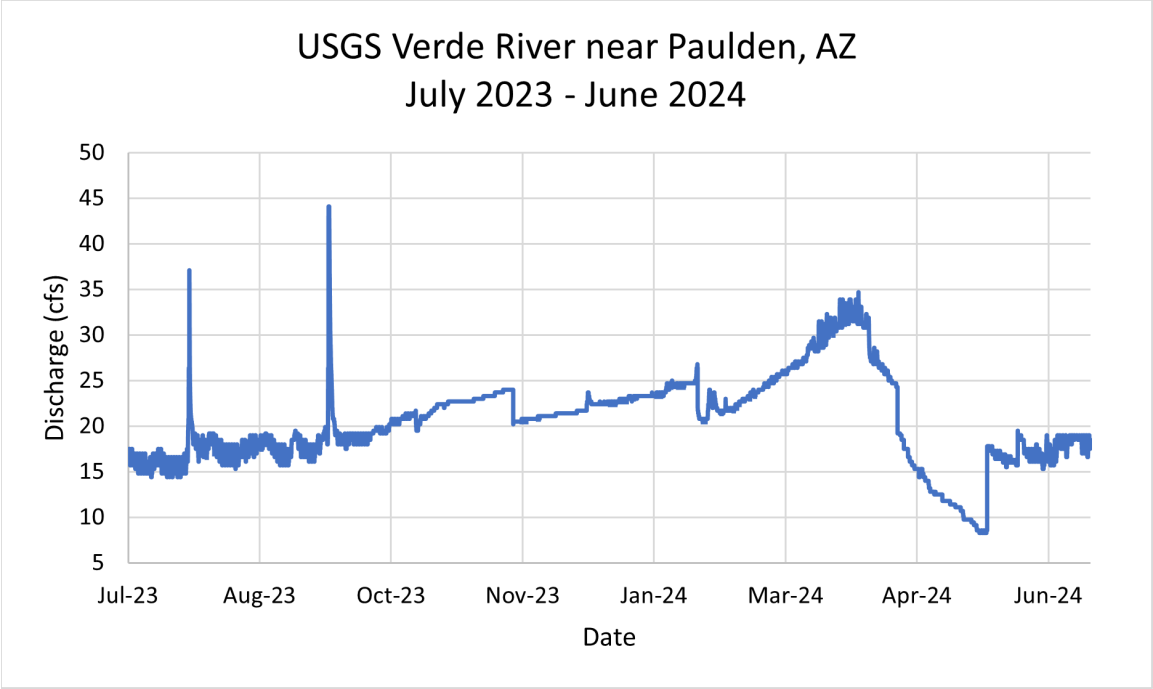


Figure 26. USGS Verde River near Paulden, AZ July 1, 2023, through June 30, 2024, Annual Flow Events

VHCR at the start of the 2024 monitoring period

VHCR at the end of the 2024 monitoring period

VHCR at the start of the 09/14/2023 flow event

Figure 27. VHCR Image Data

Summary

A summary of the flow events observed in the sub-basin during the 2024 monitoring period are outlined below:

- Flow was observed at all but two (2) Flowtography® sites within the sub-basin. Those two sites being the Lower Walnut Creek at Charney property and Lower Williamson Valley Wash sites.
- Eleven (11) flow events were observed across the sub-basin because of monsoon related precipitation events, resulting in a total estimated flow volume of 16,473 AF.
- Two (2) flow events were observed across the sub-basin because of winter precipitation and runoff events, resulting in a total estimated flow volume of 11,000 AF.
- The largest estimated total flow volume for a single flow event was observed at UBCW with a total estimated flow volume of 9,221 AF. Peak discharge measured during this flow event was 938 cfs, but the flow exceeded the channel rating for approximately 45 minutes.
- Water spilled over Sullivan Dam for approximately 25 hours.
- The total estimated flow volume observed in the sub-basin at all sites combined for the reporting period was approximately 27,472 AF.

SRP Water Measurement continues to maintain the sites and process pressure transducer data and SRP Flowtography® image data collected at monitoring locations.

The data presented in this report are provisional and reflect the best available data when it was prepared.

APPENDIX II

Summaries of Data Collection Equipment

Established Monitoring Efforts

Groundwater Level Monitoring

Well Name	ADWR 55 number	Land Owner	Cadastral	Depth (ft bgs)	Perforated Interval (ft bgs)	Water Level (ft bgs)	Data Repository
MW-4b1	228266	USDA Forest Service	B(18-01) 28BCD	460	340-460	320	GWSI
MW-4b2	228265	USDA Forest Service	B(18-01) 19 ADC	520	420-520	400	GWSI
MW-4b3	228262	Arizona State Land Department	B(18-01) 31 CCD	480	380-480	360	GWSI
MW-4d	228472	Arizona State Land Department	B(17-02) 11ABA	450	280-340 (LCS); 330-450 (PVC)	310	GWSI
MW-4e	228263	Arizona State Land Department	B(17-02) 12CBD	340	240-340	225	GWSI
MW-4g	921236	Southwest Land & Cattle LLC (dba K Larson)	B(18-03) 26ACC	1400	1000-1400	142	GWSI
BMW-2	921256	Kieckhefer, J.I.	B(18-04) 01ABD	2000	1600-2000	180	GWSI
Glidden	631886	USDA Forest Service	B(18-01) 27ABD	230	150-219	192.4	GWSI
HR-2	527679	Civitan Foundation	B(17-02) E02DCA	500	Not cased	328.3	GWSI
MW-4f.1 (Patton)[1]	803378	Southwest Land and Cattle Co.	B(18-03) 26BDD	92	25 to 60 and 80 to 90	15.5 to 18.3	GWSI
MW-4f.2 (Johnson)[1]	557247	Southwest Land and Cattle Co.	B(18-03) 26BDB1	320	37 to 320	119.4 to 141.8	GWSI

Well Name	ADWR 55 number	Land Owner	Cadastral	Depth (ft bgs)	Perforated Interval (ft bgs)	Water Level (ft bgs)	Data Repository
WMW-1(Pump 7)[2]	624116	City of Prescott	B(20-04) 19CBA	600	unk	66.2 to 103	GWSI
WMW-2 (200' N of Pump 3)[2]	210660	City of Prescott	B(20-04) 33CBD2	100-160 and 310-400	0-420	30	NWIS and GWSI
WMW-3 (1000' SE of Pump 12)[2]	210659	City of Prescott	B(19-04) 10CCB2	670	614-654	14 to 29	NWIS and GWSI
BMW-3	905773	Kieckhefer	B(18-04) 01ACA2	1000' casing	499-999	155 (2008)	GWSI
BMW-1 (previously named BH-1)[2]	200027	Kieckhefer	B(18-04) 11ACC	490	290-490	315.6 (2007)	GWSI
BCMW-1	211839	City of Prescott	B(18-04) 25AAA2	737	300-620	261.2 (2008)	GWSI
Paulden South (PZ3)[3]	524078	City of Prescott	B(17-02S) 04DCB3	170	130-170	108 (2019)	GWSI

[1]Southwest Groundwater Consultants, January 4, 2017

[2]Southwest Groundwater Consultant, December 23, 2004

[3]Not shown in Appendix III, Maps and Figures

Stream flow Monitoring

Stream flow Monitoring Sites Funded By/Established Under CA#1

Name	Completion Date	Comments
Verde Headwaters at Campbell Ranch	4/2005	https://streamflow.watershedconnection.com/?location=Campbell%20Ranch&project=
Williamson Valley Wash Near Paulden, AZ	1965-1985 2002-Current	USGS Gage 09502800
Big Chino Wash below Partridge Creek	6/26/2014	SRP
Lower Big Chino Wash	5/21/2014	SRP
Lower Walnut Creek at Charney Property	6/10/2014	SRP
Lower Williamson Valley Wash	5/22/2014	SRP
Pine Creek	5/19/2014	SRP
Upper Big Chino Wash	1/16/2014	SRP
Upper Walnut Creek at Forest Service	10/1/2014	SRP - Displaced and removed
Williamson Valley Wash at XU Ranch	6/12/2014	SRP
Upper Walnut Creek at Bridge	6/26/2014	SRP - Camera only
Big Chino Water Ranch	8/26/2015	SRP -Camera only, basin conditions
Sullivan Dam	5/25/2016	SRP -Stage gage/transducer installed 10/12/2017

Climate Monitoring

Publicly Accessible Repositories for Climate Data

Agency Name	Data Portal
YCFCD	https://www.yavapaiaz.gov/Resident-Services/Flood-Control
USGS Arizona	http://waterdata.usgs.gov/az/nwis/rt
NWS-HADS - Camp Wood – CPWA3 - Ashfork – ASFA3	https://hads.ncep.noaa.gov/ https://hads.ncep.noaa.gov//cgi-bin/hads/interactiveDisplays/displayMetaData.pl?table=dcp&nesdis_id=CE2280DC https://hads.ncep.noaa.gov//cgi-bin/hads/interactiveDisplays/displayMetaData.pl?table=dcp&nesdis_id=F001D610
Historic Climatic Data	http://www.wrcc.dri.edu/summary/climsmaz.html

Existing Weather Stations in the Big Chino Sub-basin[1]

Station Name	Responsible Agency	Data Collected
Granite Basin	YCFCD	Precipitation
Walnut Creek	YCFCD	Precipitation/Stage
Big Chino Wash @ SR 89	YCFCD	Precipitation/Stage
CYFD @ Outer Loop Rd	YCFCD	Precipitation
Hyde Mountain	YCFCD	Precipitation
Williamson Valley FD	YCFCD	Precipitation
Seligman Airport	YCFCD	Precipitation/Weather
Ash Fork Draw @ I-40	SRP	Precipitation/Stage
Partridge Creek @ I-40	YCFCD	Precipitation/Stage
Crookton	YCFCD	Precipitation
Big Chino Water Ranch	YCFCD	Precipitation/Weather
Williamson Valley Wash near Paulden, AZ	USGS	Precipitation/Stage/Flow
Verde River @ Perkinsville	USGS	Precipitation/Stage/Flow
Camp Wood Rain Near Bagdad CPWA3	National Weather Service	Precipitation
Ashfork 12 NW ASFA3	National Weather Service	Precipitation
Limestone Canyon	YCFCD	Precipitation
Verde River near Paulden, AZ	USGS	Precipitation/Stage/Flow
George Wood Canyon	SRP	Precipitation/Weather

[1] Not all the weather stations are included in Appendix III Figures.

APPENDIX III

Figures

112°40'0"W 112°30'0"W 112°20'0"W

35°0'0"N

WMW-1
WMW-2
WMW-3
BMW-1
BMW-2
BMW-3
BCMW-1
MW-4f.2
MW-4g
MW-4f.1
PZ-3
HR2
MW-4d
MW-4e
MW-4b3
MW-4b2
MW-4b1
Glidden

Pine Creek
Big Chino Wash
Walnut Creek
Williamson Valley Wash
Verde River
Hell Canyon
Rattlesnake Wash
Grindstone Wash
MC Canyon
Bear Canyon

Area Detail

MW-4f.2 (Johnson)
MW-4g
MW-4f.1 (Patton)

112°40'0"W 112°30'0"W Aerial Date: 2021 112°20'0"W

Monitor Well

Creeks & Washes

N

0 1 2 Miles

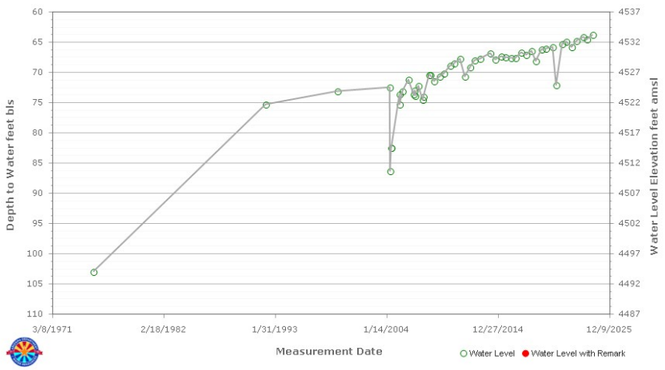
Figure 1
Big Chino Sub-basin Groundwater Monitoring

BIG CHINO SUB-BASIN WATER MONITORING PROJECT
PRESCOTT - PRESCOTT VALLEY - SRP

Map Courtesy of SRP®

Big_Chino_Review_2024.aprx
10/15/2024

WMW-1



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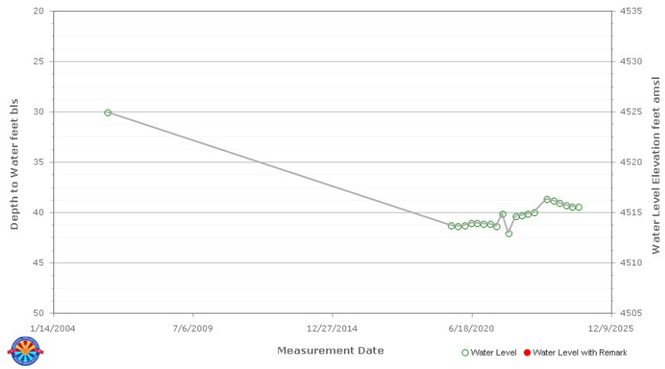

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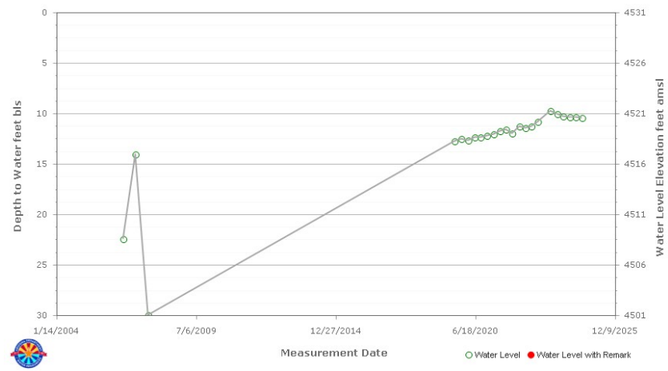
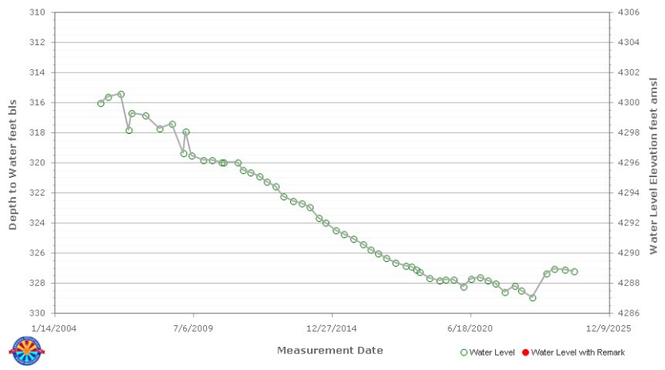


BMW-3

BMW-1



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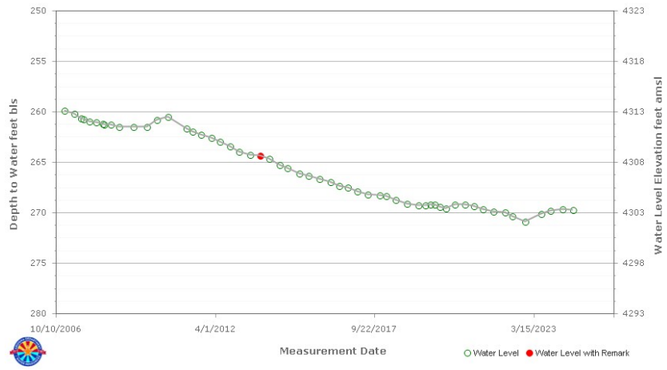

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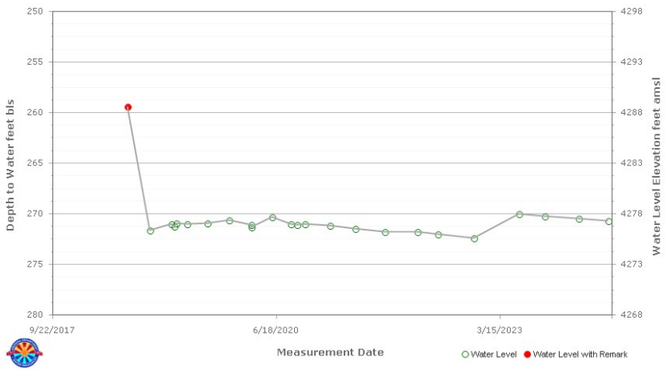
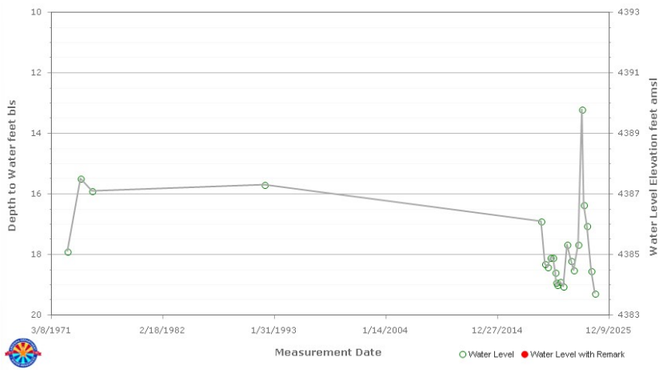


MW-4f1 (Patton)



MW-4f2 (Johnson)

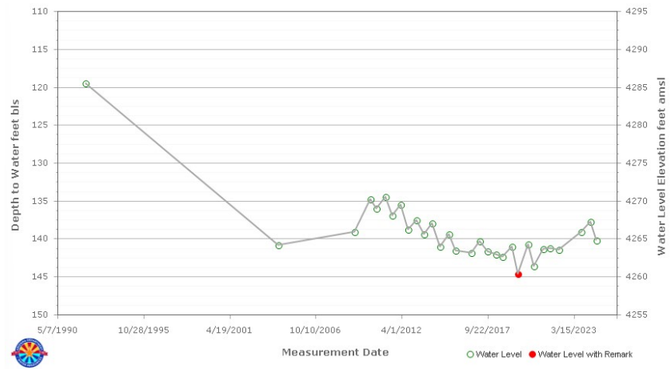


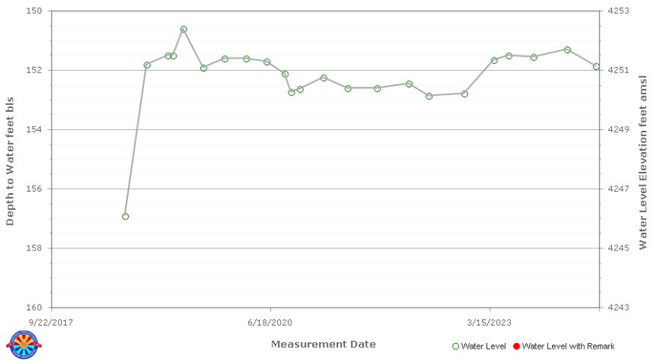
Figure 2
Big Chino Sub-basin Well Hydrographs

BIG CHINO SUB-BASIN
WATER MONITORING PROJECT
PRESCOTT - PRESCOTT VALLEY - SRP

Map Courtesy of SRP®

Big_Chino_Review_2024.aprx
10/15/2024

MW-4g



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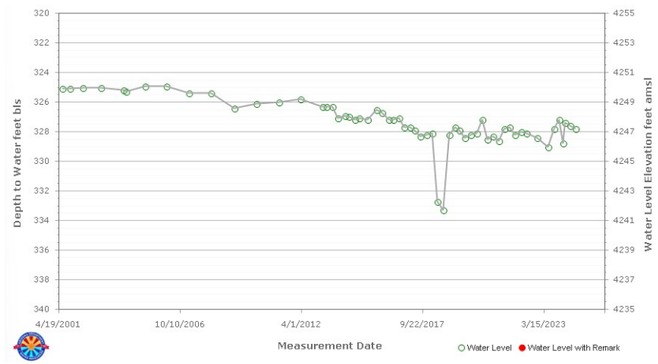

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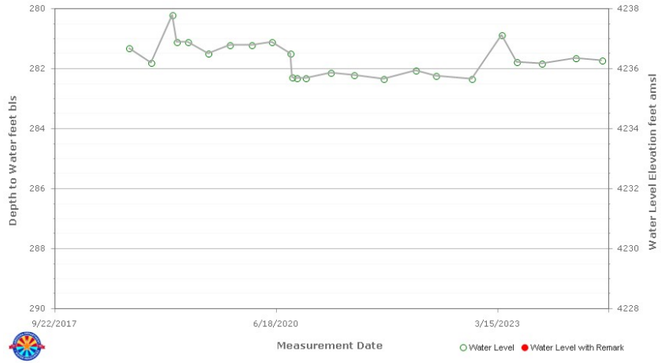

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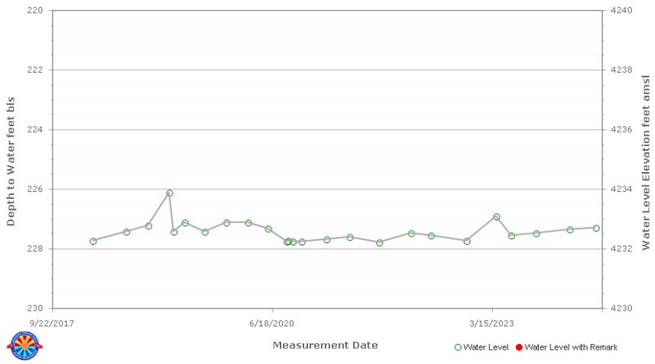

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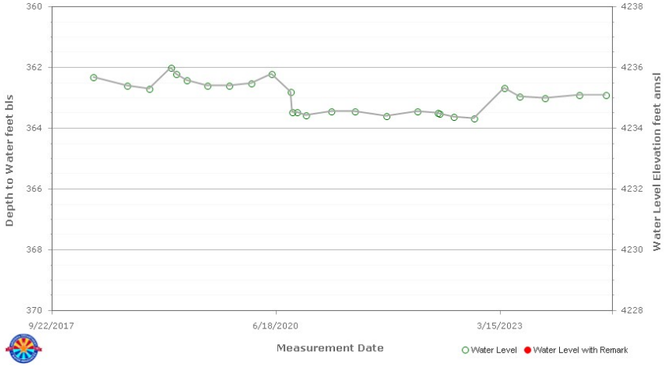

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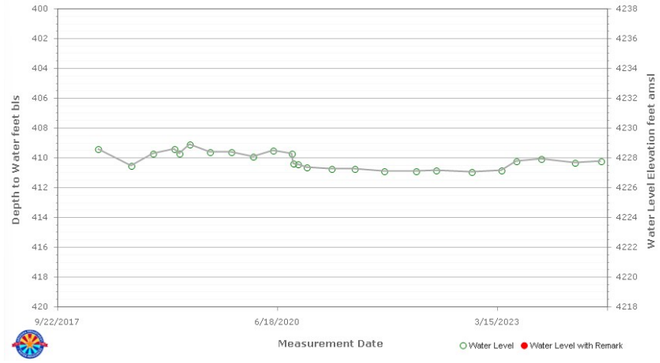

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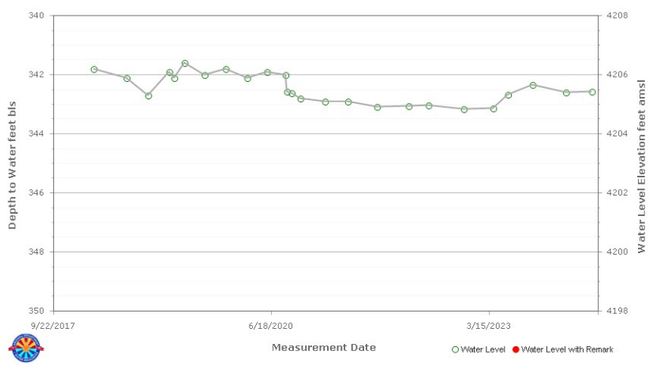


Glidden

PZ-3

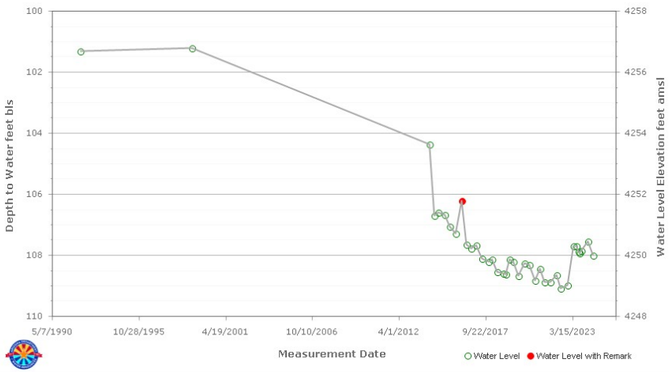


Figure 3
Big Chino Sub-basin Well Hydrographs

BIG CHINO SUB-BASIN
WATER MONITORING PROJECT
PRESCOTT - PRESCOTT VALLEY - SRP

Map Courtesy of SRP®

Big_Chino_Review_2024.aprx
10/15/2024

USGS Gauge

SRP Surface Monitoring Location

SRP Verde Headwaters

Creeks & Washes

N

0 3 6 Miles

Figure 4

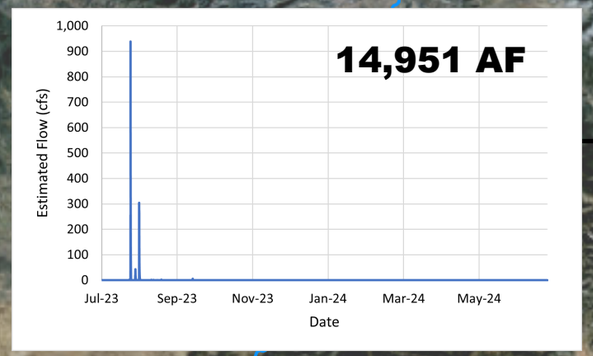
Big Chino Sub-basin - Surface Water Monitoring

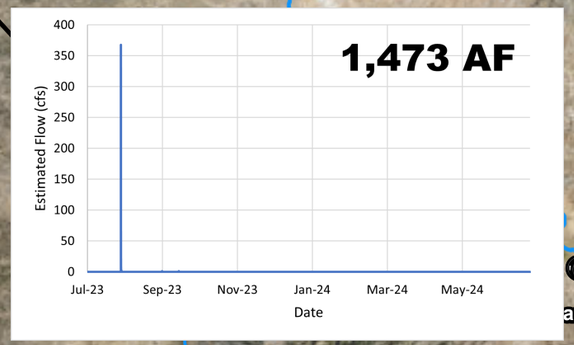
(existing SRP flowtography, camera only sites, existing USGS sites, and Verde Headwaters)

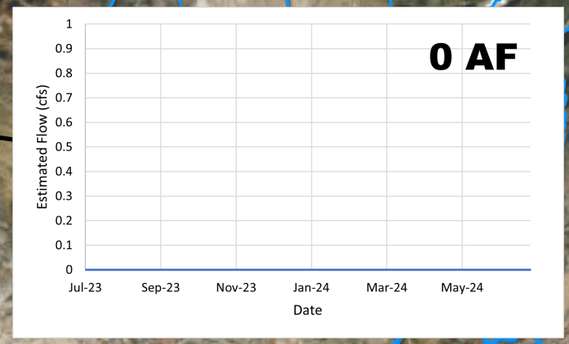
BIG CHINO SUB-BASIN
WATER MONITORING PROJECT
PRESCOTT - PRESCOTT VALLEY - SRP

Map Courtesy of SRP®

Big_Chino_Review_2024.aprx
10/15/2024







Creeks & Washes

SRP Surface Water Monitoring Location

SRP Verde Headwaters Gage

N

0 3 6 Miles

Figure 5
Big Chino Sub-basin - Surface Water Monitoring Northern Hydrographs

BIG CHINO SUB-BASIN WATER MONITORING PROJECT
PRESCOTT - PRESCOTT VALLEY - SRP

Map Courtesy of SRP®

Big_Chino_Review_2024.aprx
10/15/2024

113°0'0"W 112°50'0"W 112°40'0"W 112°30'0"W 112°20'0"W 112°10'0"W

35°10'0"N 35°0'0"N 34°50'0"N

Upper Big Chino Wash

Big Chino Wash below Partridge Creek

Big Chino Water Ranch (camera only)

Pine Creek

Pine Creek

Lower Walnut Creek at Charney Property

Walnut Creek

Big Chino Wash

Upper Walnut Creek at Bridge (camera only)

Upper Walnut Creek at Forest Service

Lower Williamson Valley Wash

Williamson Valley Wash

Lower Big Chino Wash (camera only)

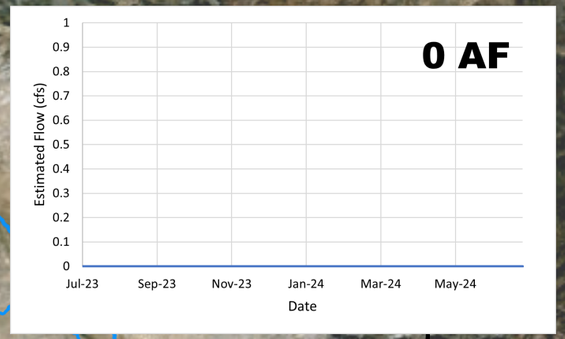
Sullivan Dam

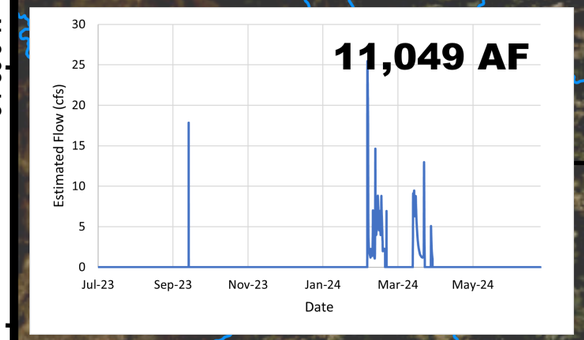
Verde Headwaters at Campbell Ranch (low-flow gage)

Hitt Wash

Williamson Valley Wash at XU Ranch

Horse Wash





Aerial Date: 2021

Creeks & Washes

SRP Surface Water Monitoring Location

SRP Verde Headwaters

N

0 3 6 Miles

Figure 6
Big Chino Sub-basin - Surface Water Monitoring Southern Hydrographs

BIG CHINO SUB-BASIN WATER MONITORING PROJECT
PRESCOTT - PRESCOTT VALLEY - SRP

Map Courtesy of SRP®

Big_Chino_Review_2024.aprx
10/15/2024

- Yavapai County Flood Control District Weather Station
- USGS Weather Station
- National Weather Service Hydrometeorological Automated Data System Station

Figure 7
Big Chino Sub-basin Area
Weather Stations

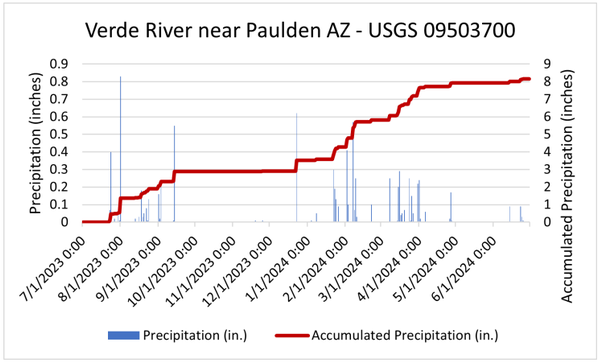
0 3 6 Miles

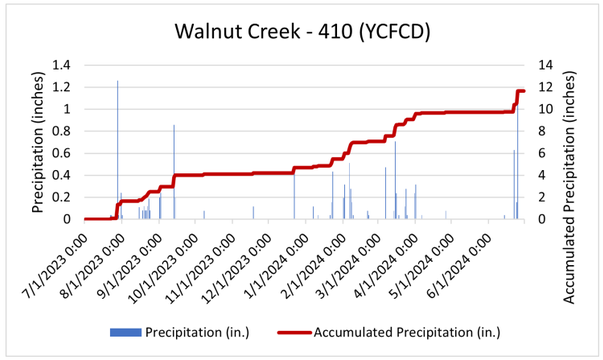
N

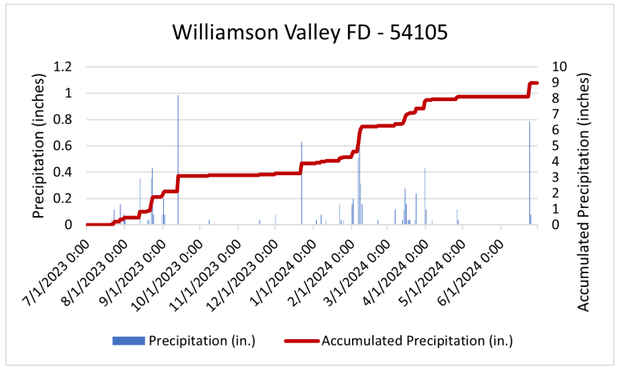
BIG CHINO SUB-BASIN
WATER MONITORING PROJECT
PRESCOTT - PRESCOTT VALLEY - SRP

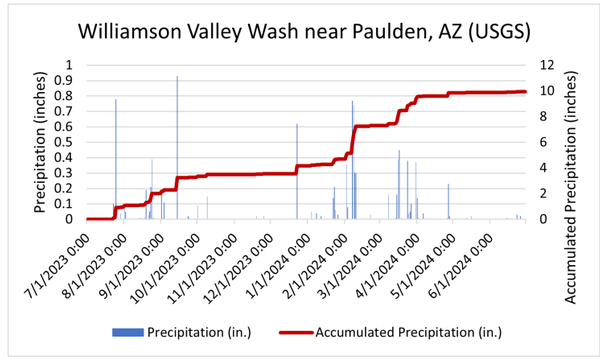
Map Courtesy of SRP®

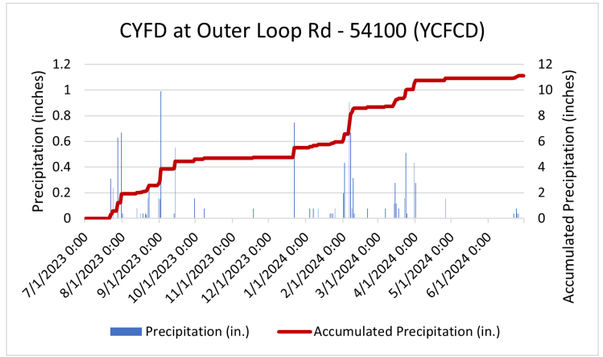
Big_Chino_Review_2024.aprx
10/15/2024

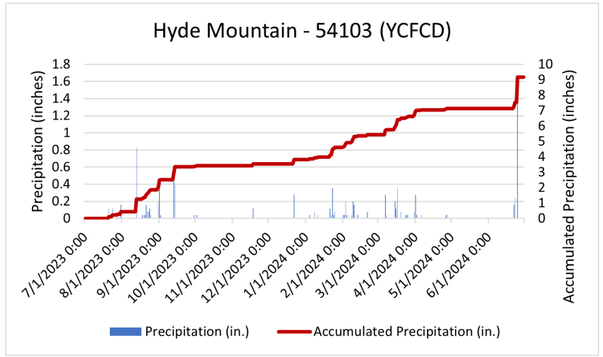


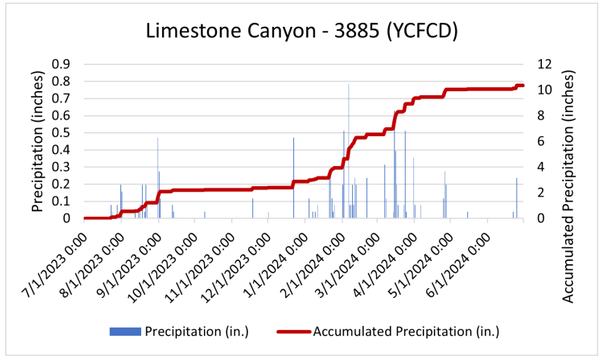


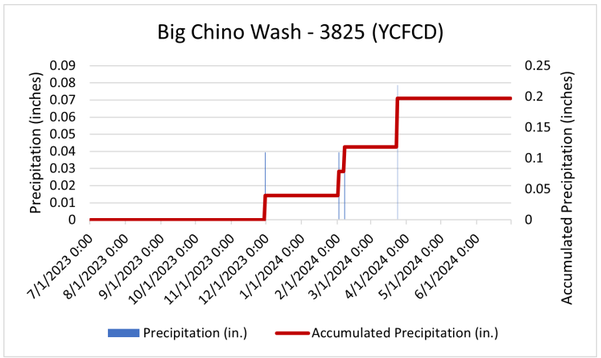


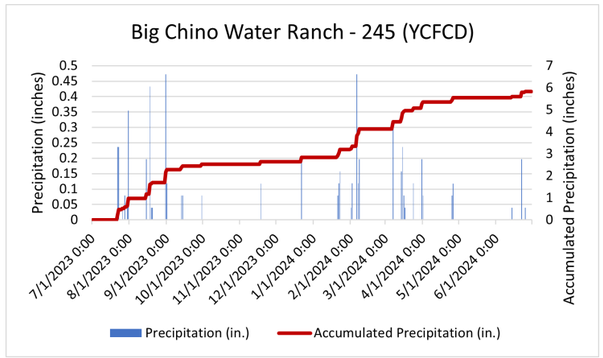


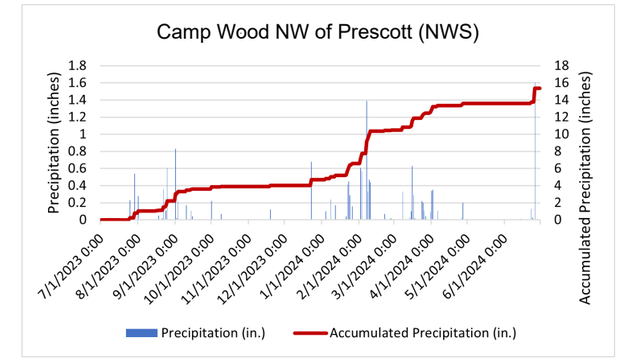












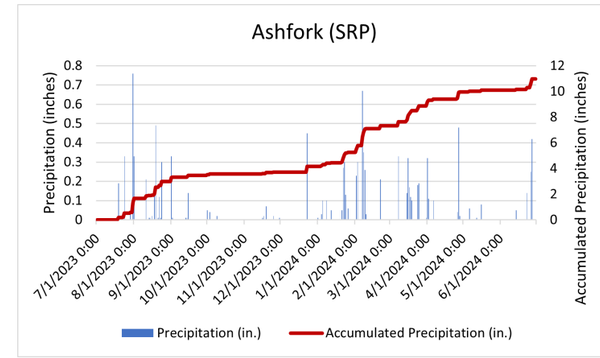


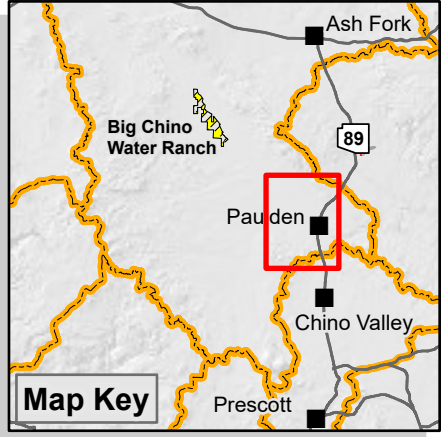
Figure 8
Big Chino Sub-basin Area
Weather Station Data (2023)

BIG CHINO SUB-BASIN
WATER MONITORING PROJECT
PRESCOTT - PRESCOTT VALLEY - SRP

Map Courtesy of SRP®

Big_Chino_Review_2024.aprx
10/15/2024

Figure 9-1: Big Chino Crop Survey 2023 at Paulden



112°30'0"W

34°50'0"N

Big Chino Wash

Williamson Valley Wash

89

Verde River

BIG CHINO

LITTLE CHINO

0 1 2 Miles

N

112°30'0"W

34°50'0"N

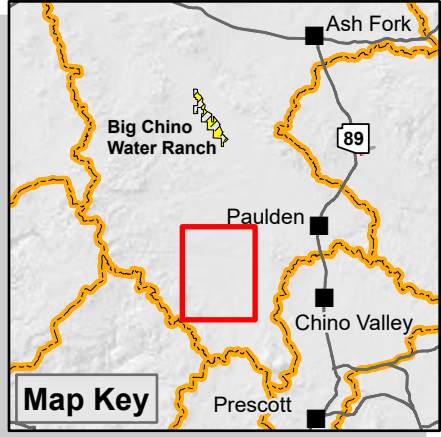
- Alfalfa
- Grain
- Grass
- Pasture
- Sod
- Vegetable
- No Crop Evident (Abandoned/Fallow)

BIG CHINO SUB-BASIN WATER MONITORING PROJECT
PRESCOTT - PRESCOTT VALLEY - SRP

Map Courtesy of SRP®

Big_Chino_Review_2024.mxd 10/15/2024

Figure 9-2: Big Chino Crop Survey 2023 at Williamson Valley



112°40'0"W

34°50'0"N

Hitt Wash

Williamson Valley Wash

Mint Wash

Horse Wash

Strickland Wash

0 1 2 Miles

N

112°40'0"W

34°50'0"N

Alfalfa
Grain
Grass
Pasture
Sod
Vegetable
No Crop Evident (Abandoned/Fallow)

BIG CHINO SUB-BASIN WATER MONITORING PROJECT
PRESCOTT - PRESCOTT VALLEY - SRP

Map Courtesy of SRP®

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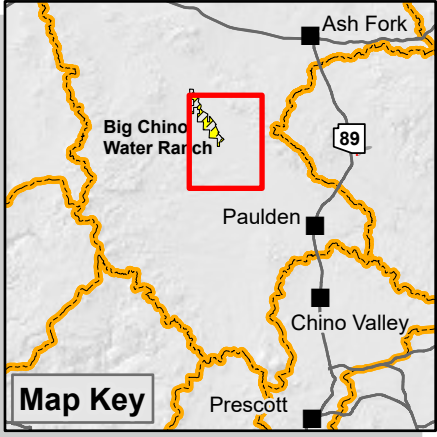
Figure 9-3: Big Chino Crop Survey 2023 at Upper Big Chino



112°40'0"W

35°0'0"N

Big Chino Wash

Pine Creek

Walnut Creek

0 1 2 Miles

N

Alfalfa
Grain
Grass
Pasture
Sod
Vegetable
No Crop Evident (Abandoned/Fallow)

BIG CHINO SUB-BASIN WATER MONITORING PROJECT
PRESCOTT - PRESCOTT VALLEY - SRP

Map Courtesy of SRP®

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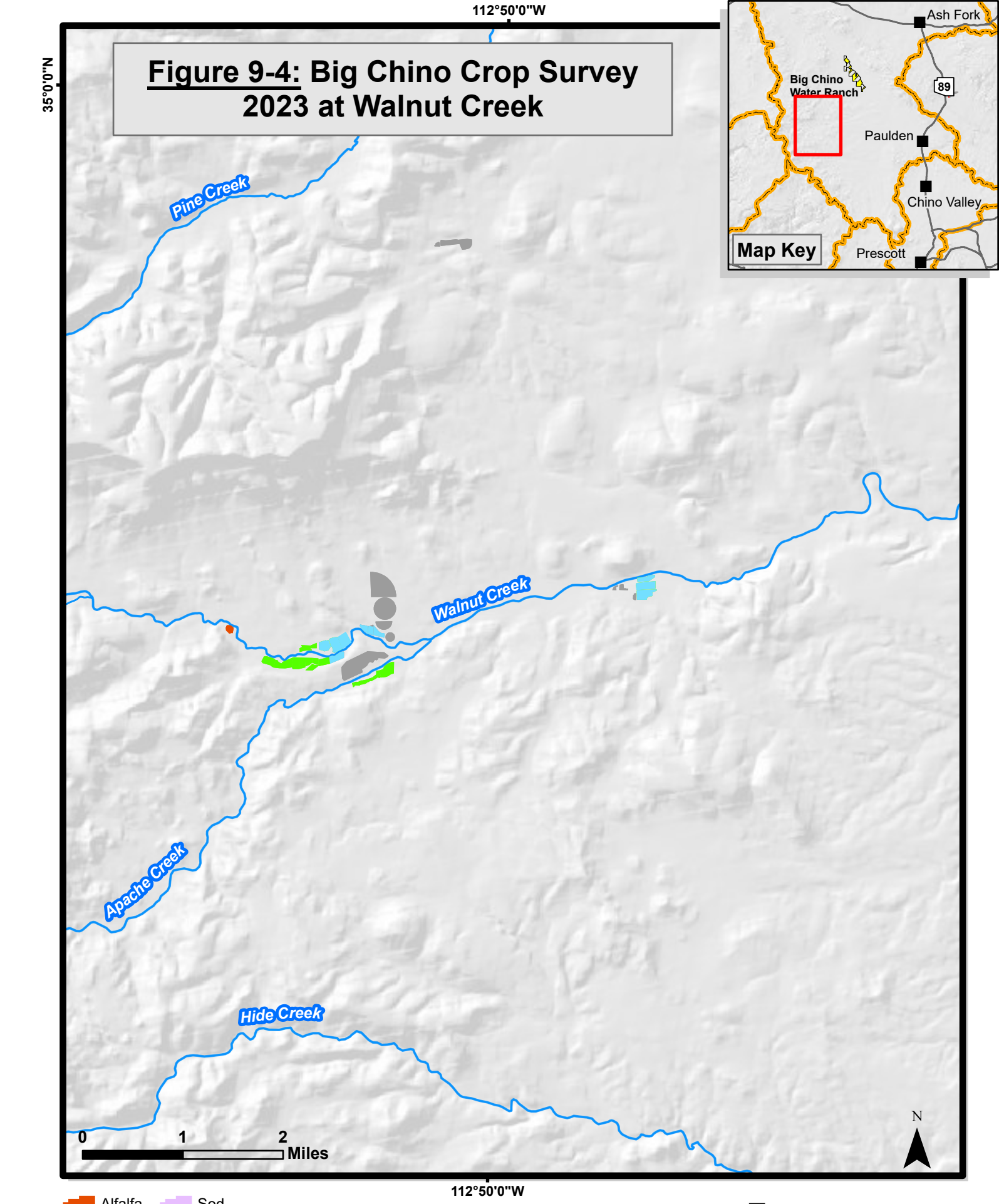
Figure 9-4: Big Chino Crop Survey 2023 at Walnut Creek



Alfalfa
Grain
Grass
Pasture
Sod
Vegetable
No Crop Evident (Abandoned/Fallow)

BIG CHINO SUB-BASIN WATER MONITORING PROJECT
PRESCOTT - PRESCOTT VALLEY - SRP

Map Courtesy of SRP®

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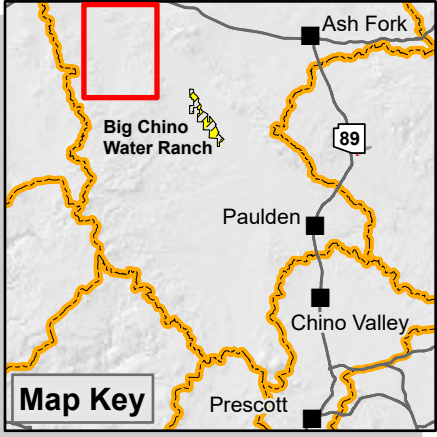
Figure 9-5: Big Chino Crop Survey 2023 at Turkey Canyon



Big Chino Wash

Turkey Canyon

Big Chino Wash

35°10'0"N

35°10'0"N

112°50'0"W

0 1 2 Miles

N

Alfalfa
Grain
Grass
Pasture
Sod
Vegetable
No Crop Evident (Abandoned/Fallow)

BIG CHINO SUB-BASIN
WATER MONITORING PROJECT
PRESCOTT - PRESCOTT VALLEY - SRP

Map Courtesy of SRP®

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