WALLA WALLA BASIN
WATERSHED COUNCIL

Streamflow Monitoring in the Walla Walla Basin

2025 Water Year

FINAL REPORT

Submitted: March 2025

In Cooperation with:

STATE OF OREGON WATER RESOURCES DEPARTMENT WRD

BONNEVILLE POWER ADMINISTRATION

OWEB Oregon Watershed Enhancement Board

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Abstract

This project monitors streamflow at 22 locations in the Walla Walla River, its tributaries, distributaries, and spring-fed creeks in the Oregon portion of the watershed in Umatilla County near Milton-Freewater. Data is publicly available at www.wwbwc.org. Long-term stream gauge monitoring helps us understand patterns in watershed health. Data collection and sharing allows WWBWC and basin partners to design better projects, manage projects adaptively, and track outcomes.

Data collection and analysis for this monitoring project follow the study plan, sample design, and protocols documented in BPA's MonitoringResources.org database and in WWBWC's Sample and Analysis Plan approved by Oregon Department of Environmental Quality.

Introduction

Since 2002, the Walla Walla Basin Watershed Council (WWBWC) has collected flow data for the Walla Walla Basin and currently monitors 22 sites in Oregon on the Walla Walla River, its tributaries, distributaries, and spring-fed creeks. Data from current and historical monitoring sites is available on WWBWC's Streamflow Monitoring Page (www.wwbwc.org/streamflow). Ten of the current sites are telemetered for near real-time reporting. Twelve stand-alone monitoring sites are instrumented with data loggers we download quarterly for data processing and online publishing.

Long-term stream gauge monitoring helps Walla Walla Basin partners understand patterns in watershed health. WWBWC uses streamflow data to inform project designs and track outcomes. The primary objectives of this project are to:

- Document status and describe streamflow trends of Walla Walla River, tributaries, the Little Walla Walla River system, and spring-fed creeks.
- Support data-driven watershed assessment, habitat restoration, and outcomes tracking.

Streamflow Monitoring Area

The Walla Walla basin covers an area of approximately 1,760 square miles. It lies on the western side of the Blue Mountains, about 70 miles west of where the border between Oregon and Washington meets the Idaho border (Figure 1). The Walla Walla River flows westerly from its headwaters in the Blue Mountains into the Walla Walla Valley. The river then heads north with a portion of the flow being diverted into the Little Walla Walla River, a distributary network hydraulically connected to springs on the valley floor (Figure 2). Page 28 of the Walla Walla Water 2050 Strategic Plan (WDOE, 2021) summarizes current condition of the Little Walla Walla River and alluvial aquifer as follows:
"The LWWR was once a system of meandering and spring-fed branches of the Walla Walla River; however, through water management efforts and agricultural diversions, distributaries and branches were modified to facilitate farming. Today, the overall impact of these systematic changes to LWWR surface flows—along with increased groundwater pumping for agricultural irrigation use—has led to declines in

the natural recharge of the shallow alluvial aquifer and significantly reduced downstream spring branch flows."

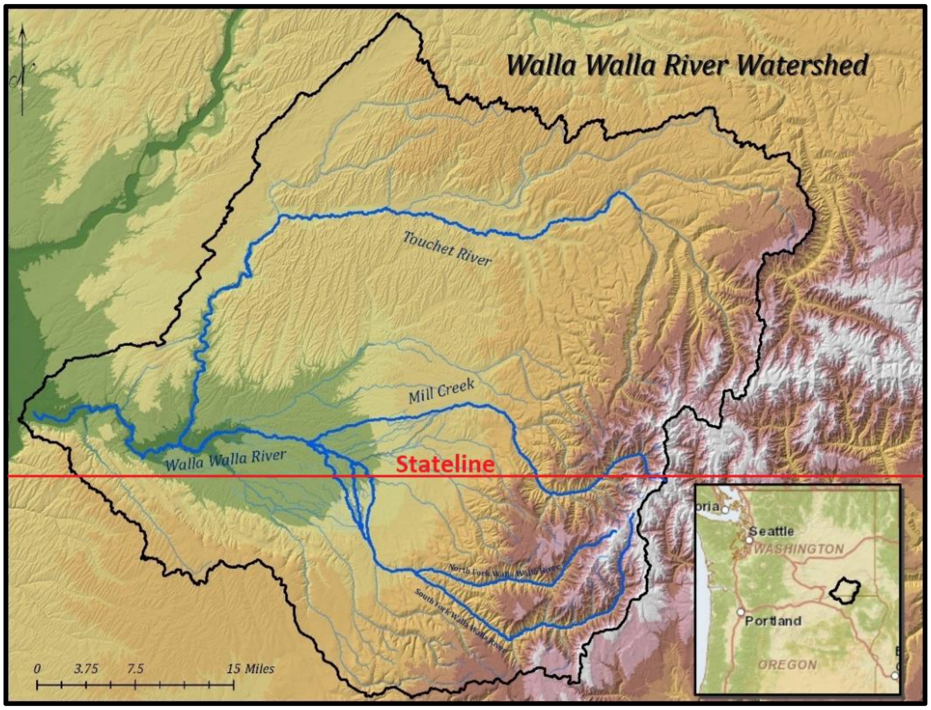

Figure 1. The Walla Walla Basin, a bi-state watershed

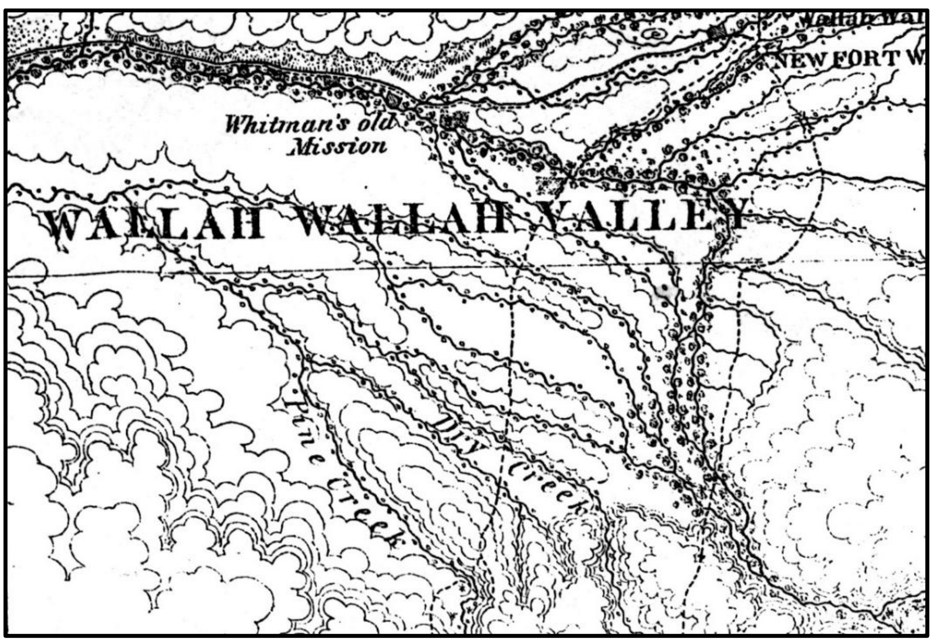

Figure 2. Historical Map of the Walla Walla Basin showing the Pine and Dry Creek subwatersheds and a network of distributary channels.

Monitoring Sites

Figure 3 shows a map of current streamflow monitoring site locations, and Table 2 lists site numbers, names, and types. Sites can be grouped into four categories: Walla Walla River, tributaries, Little Walla Walla River system, and spring creeks emerging from the alluvial aquifer northwest of Milton-Freewater.

Historical data from WWBWC's decommissioned monitoring sites is available online at https://wwbwc.org/index.php/decomm-s.

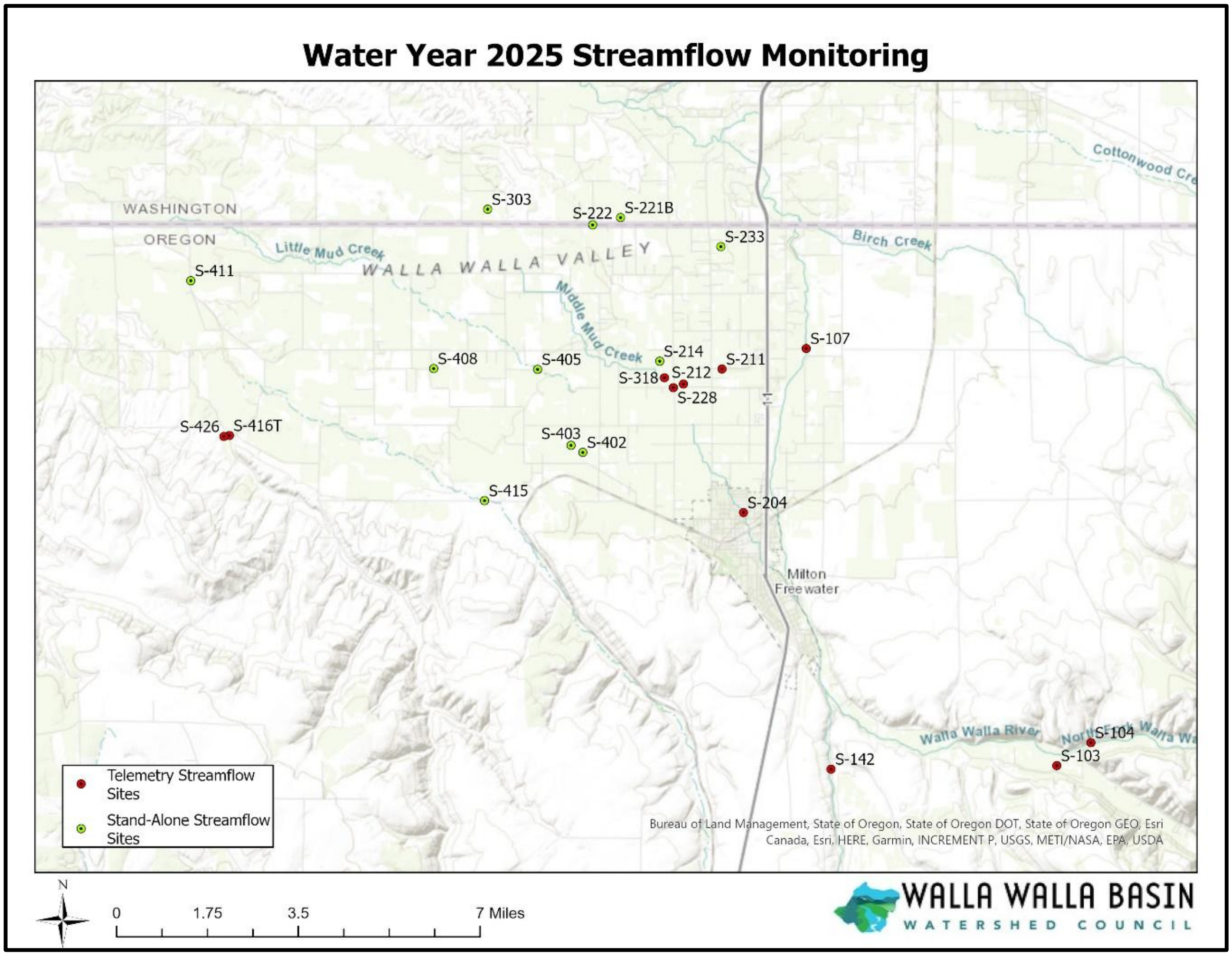

Figure 3. Map showing stream flow sites monitored during WY2025. Telemetered sites reporting near real-time data are shown by red points. Green points indicate stand-alone monitoring sites downloaded and updated online quarterly.

Table 1. WY2025 Monitoring site numbers, names, and coordinates. Site type is shown by the following codes: WWR = Walla Walla River, Trib = tributary, LWWR = Little Walla Walla River system, Spring = spring creek.

Site #	Site Name	Type	Latitude	Longitude
S-103	South Fork Walla Walla River near mouth	Trib	45.89605	-118.30674
S-104	North Fork Walla Walla River near mouth	Trib	45.90050	-118.29725
S-107	Walla Walla River at Tum-A-Lum Bridge	WWR	45.97679	-118.37646
S-142	Couse Creek at RM 1.1	Trib	45.89538	-118.36957
S-204	HBDIC Diversion at the Frog	LWWR	45.94506	-118.39394
S-211	East Branch Crockett	LWWR	45.97283	-118.39991
S-212	West Branch West Crockett	LWWR	45.96992	-118.41067
S-214	West Little Walla Walla River at Winesap	LWWR	45.97435	-118.41723
S-221	Walsh-Lewis Creek at Stateline	Spring	46.00083	-118.42439
S-222	West Little Walla Walla River at Stateline	Spring	46.00070	-118.43591
S-228	Ford Ditch at Appleton Road	LWWR	45.96922	-118.41345
S-233	Big Spring at Stateline Road	Spring	45.99827	-118.40155
S-303	Mud Creek at Stateline Road	Spring	46.00374	-118.46511
S-318	FVWUA Diversion	LWWR	45.97113	-118.41591
S-402	Johnson Recharge Inflow	LWWR	45.95671	-118.43863
S-403	Johnson Recharge Outflow	LWWR	45.95807	-118.44192
S-405	Little Mud Creek	Spring	45.97276	-118.45122
S-408	Johnson Creek	Spring	45.97292	-118.48014
S-411	Swartz Creek	Spring	45.98992	-118.54774
S-415	Dry Creek	Trib	45.94736	-118.46599
S-416	Pine Creek	Trib	45.95990	-118.53700
S-426	HBDIC diversion from Pine Creek	Trib	45.95978	-118.53853

Methods

Data collection and analysis for this monitoring project followed the study plan, sample design, and protocols documented in BPA's MonitoringResources.org database and in WWBWC's Sample and Analysis Plan approved by Oregon Department of Environmental Quality[1].

Near Real-Time Monitoring Sites

Ten stream flow sites were telemetered for near real-time data reporting during the 2025 water year. Figure 4 shows an example of a near real-time monitoring site. WWBWC used electronic sensors and data loggers manufactured by Campbell Scientific to record gauge height at 15-minute intervals. These stage measurements were relayed to the WWBWC office using radio telemetry and then processed through customized rating equations (see details below) to produce discharge values that were published hourly online.

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[1] 2024, Oregon Department of Environmental Quality. Sampling and Analysis Plan: Volunteer Water Quality Monitoring - Hydrological Trend Monitoring in the Walla Walla Basin. https://wwbwc.org/images/Monitoring/SOP/DEQ24-VOL-0014-SAP_FINAL.pdf

Monitoring staff visited the near real-time sites every two weeks to measure stage and visually inspect equipment. Manual discharge measurements were taken every six weeks using a SonTek FlowTracker Handheld Acoustic Doppler Velocimeter, OTT MF Pro flow meter, Marsh-McBirney Flo-Mate 2000 flow meter, or Price AA current meter (Figure 5).

Figure 4. At this near real-time monitoring site on the South Fork Walla Walla River (S-107), a cabled sensor secured to a boulder collects water level data. A communication cable transmits the information to a data logger and radio housed in the gauge box. Using radio telemetry, water level data was sent to the WWBWC office to be processed and published online.

Figure 5. Staff performing a high flow bridge measurement on Walla Walla River at Tum-A-Lum Bridge (S-107) using a Price AA current meter and AquaCalc Pro Plus.

Stand-Alone Flow Monitoring Sites

During Water Year 2025, WWBWC operated twelve stand-alone streamflow monitoring sites equipped with Solinst Levelogger 5 pressure transducers programmed to log water level data every 15 minutes. Figure 6 shows an example of data logger deployment in a perforated PVC stilling well anchored to a t-post in the off-center of the channel.

A monitoring technician visited the stand-alone sites every three months to read the staff gauge and take a manual discharge measurement. Also, during the quarterly visit, field staff downloaded data from the logger, conducted site maintenance (for example, remove weeds or other debris), and took photographs.

Most of WWBWC's streamflow monitoring sites have been surveyed with survey-grade Magellan GPS units, providing accurate coordinates and elevations for mapping and analysis.

Figure 6. At this stand-alone monitoring site on the West Little Walla Walla River (S-222), a staff gauge and perforated PVC stilling well enclose a suspended pressure transducer.

Data Processing and Analysis

Data was stored and processed using Aquatic Informatics AQUARIUS Time-Series software (www.aquaticinformatics.com). Water height recorded by data loggers was plotted with manual stage readings from a staff plate or laser level and reference points. Offset and drift corrections were applied using Time-Series tools. All data corrections were documented within the software and annually reviewed for approval. An explanation of data gaps can be found in Appendix A.

Customized stage-discharge relationship equations were developed using the AQUARIUS rating curve tool. The tool utilized a logarithmic plot of stage and discharge measurements to produce a rating equation describing the relationship (Figure 7). Based on that equation, a rating table was created to calculate discharge values for each datum in the logger file and produce a continuous discharge signal for the monitoring period (Figures 8-9). Rating curves were shifted to reflect channel changes, typically caused by high water events and/or seasonal vegetation growth. Figure 9 shows Walla Walla River flow data calculated by processing stage values through the rating curve equation created for that site. Discharge values higher than manual measurements were produced by the rating equation and were included in the hydrograph but cannot be considered as accurate as values within the range of points used to generate the curve. Manual flow measurements were plotted with the calculated flow data allowing viewers to see which rating-derived flow values exceed those measurements.

For additional details about data processing and analysis, see WWBWC's 2018 Standard Operating Procedure, Version 1.3.

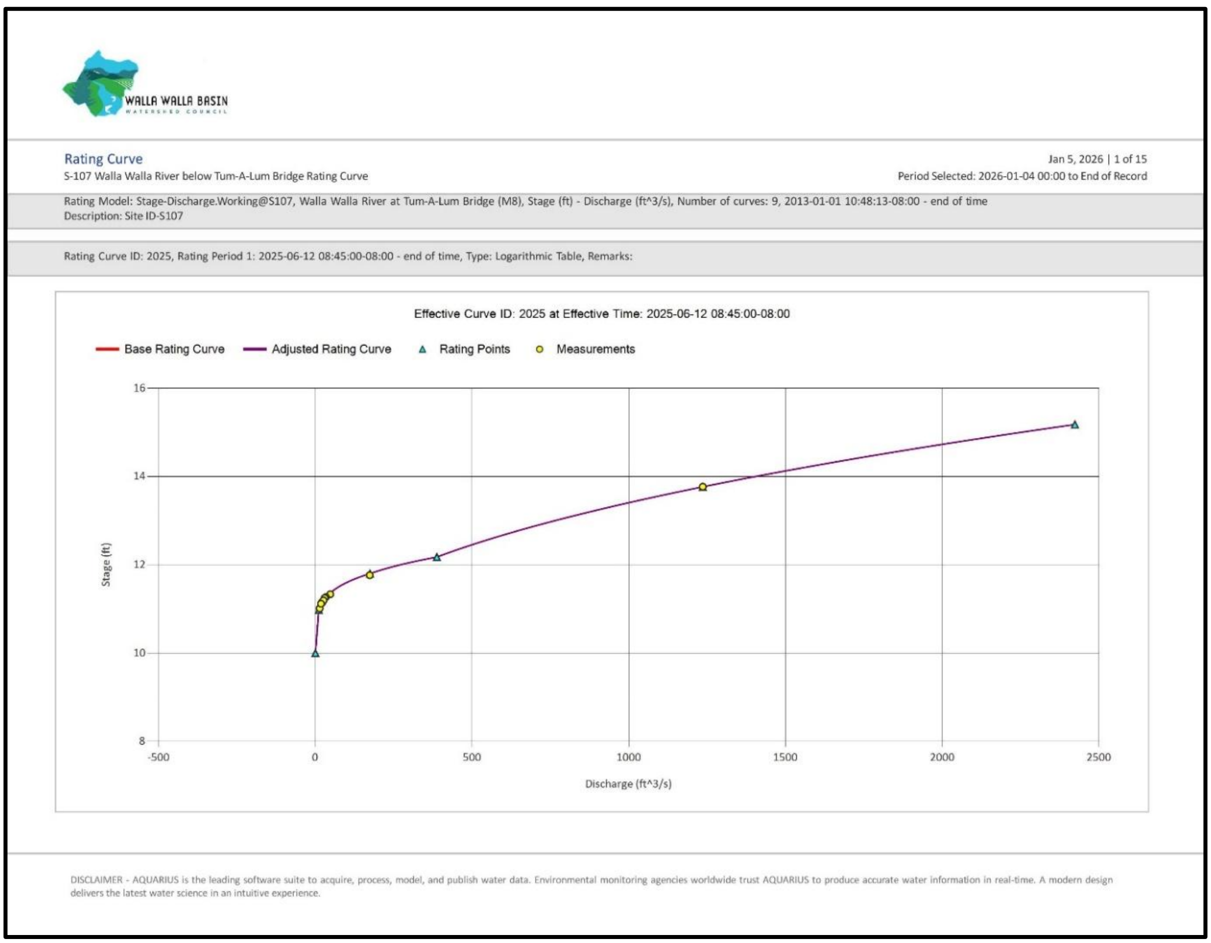

Figure 7. Rating Curve for the Walla Walla River below Tum-A-Lum Bridge (S-107). Yellow dots represent manual discharge measurements. Blue triangles show rating points.

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Rating Curve

S-107 Walla Walla River below Tum-A-Lum Bridge Rating Curve

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Period Selected: 2026-01-04 00:00 to End of Record

Rating Model: Stage-Discharge.Working@S107, Walla Walla River at Tum-A-Lum Bridge (M8), Stage (ft) - Discharge (ft^3/s), Number of curves: 9, 2013-01-01 10:48:13-08:00 - end of time
Description: Site ID-S107

Rating Curve ID: 2025, Rating Period 1: 2025-06-12 08:45:00-08:00 - end of time, Type: Logarithmic Table, Remarks:

Base — Discharge (ft^3/s) — Effective Curve ID: 2025 at Effective Time: 2025-06-12 08:45:00-08:00

Stage (ft)	0	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
10	0.00	0.11	0.22	0.329	0.439	0.549	0.659	0.769	0.879	0.988
10.1	1.10	1.21	1.32	1.43	1.54	1.65	1.76	1.87	1.98	2.09
10.2	2.20	2.31	2.42	2.53	2.64	2.75	2.86	2.97	3.08	3.19
10.3	3.29	3.40	3.51	3.62	3.73	3.84	3.95	4.06	4.17	4.28
10.4	4.39	4.50	4.61	4.72	4.83	4.94	5.05	5.16	5.27	5.38
10.5	5.49	5.60	5.71	5.82	5.93	6.04	6.15	6.26	6.37	6.48
10.6	6.59	6.70	6.81	6.92	7.03	7.14	7.25	7.36	7.47	7.58
10.7	7.69	7.80	7.91	8.02	8.13	8.24	8.35	8.46	8.57	8.68
10.8	8.79	8.90	9.01	9.12	9.23	9.34	9.45	9.56	9.66	9.77
10.9	9.88	9.99	10.1	10.2	10.3	10.4	10.5	10.7	10.8	11.3
11	11.8	12.3	12.9	13.4	14.0	14.6	15.3	15.9	16.6	17.3
11.1	18.0	18.8	19.5	20.3	21.1	22.0	22.8	23.7	24.7	25.6
11.2	26.6	27.6	28.7	29.8	30.9	32.0	33.2	34.4	35.7	36.9
11.3	38.3	39.6	41.0	42.5	43.9	45.5	47.0	48.6	50.3	52.0
11.4	53.7	55.5	57.4	59.2	61.2	63.2	65.2	67.3	69.4	71.6
11.5	73.9	76.2	78.6	81.0	83.5	86.0	88.7	91.3	94.1	96.9
11.6	99.8	103	106	109	112	115	119	122	125	129
11.7	132	136	140	144	148	152	156	160	165	169
11.8	173	178	182	186	190	195	199	204	208	213
11.9	218	223	228	233	238	243	248	254	259	265
12	270	276	282	288	294	300	306	313	319	326
12.1	332	339	346	353	360	367	375	382	389	392
12.2	396	400	404	408	412	415	419	423	427	431
12.3	435	439	443	447	451	456	460	464	468	472
12.4	476	480	485	489	493	497	502	506	510	515

Figure 8. Rating table for the Walla Walla River below Tum-A-Lum Bridge (S-107).

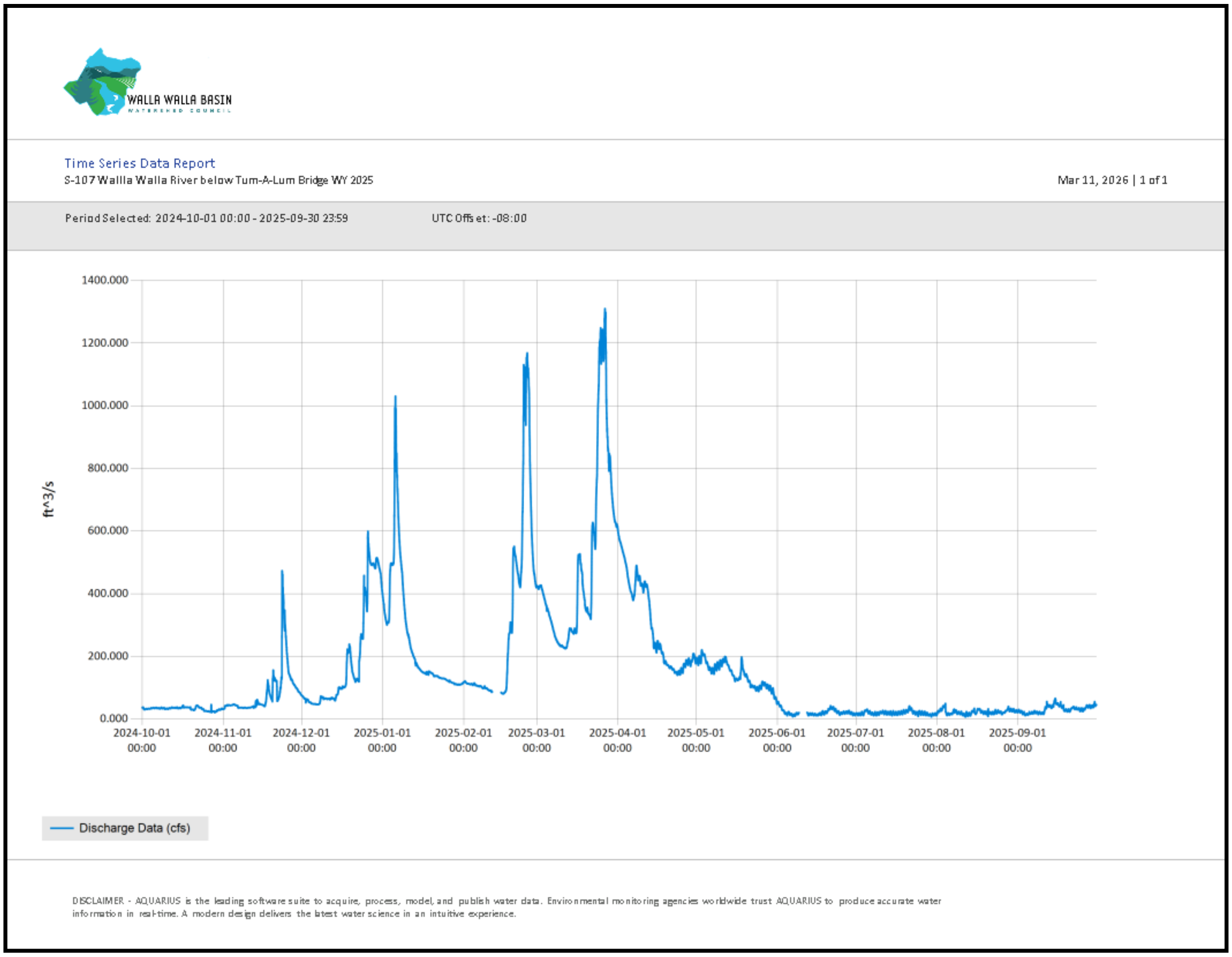

Figure 9. Walla Walla River below Tum-A-Lum Bridge (S-107) flow data computed by processing stage data through the rating curve shown in Figure 7.

The Johnson Recharge inflow and outflow sites have concrete flumes used to calculate flow rates at those locations.

At sites instrumented with non-vented pressure transducers, water level data was corrected to account for atmospheric pressure. Using AQUARIUS Time-Series, barometric pressure collected by one of the transducers located throughout the valley (Figure 10) was subtracted from stage data to produce a corrected signal showing water levels without the influence of atmospheric pressure.

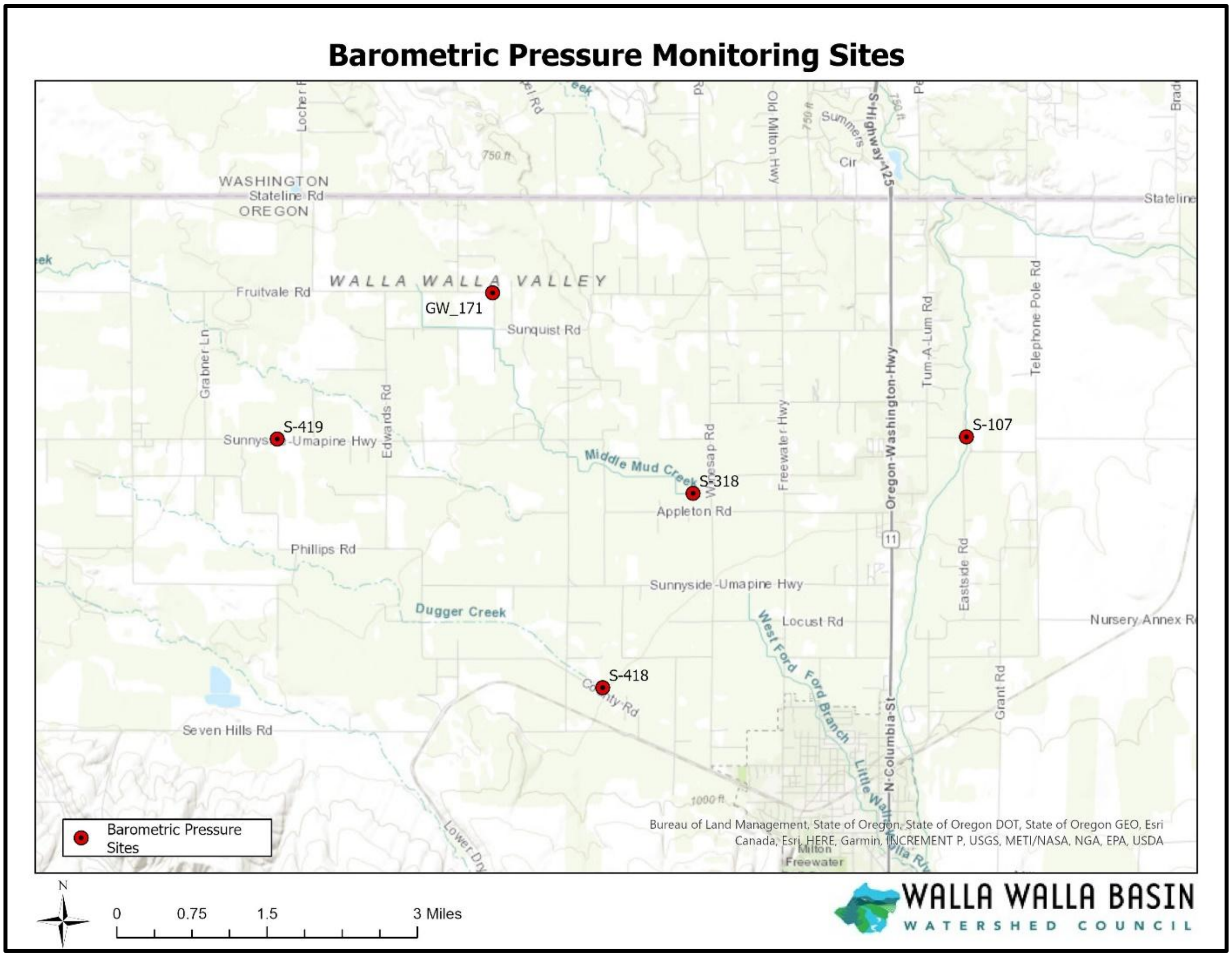

Figure 10. Map showing barometric pressure transducer locations in the Walla Walla Basin.

An essential part of our quality assurance plan is data grading and approval. We graded data in AQUARIUS Time-Series based on a scale from "Excellent" to "Unusable," which also includes grades such as "Estimated Good," "Dry," "Flooded," and "Undefined." Below is an overview of our grading procedure:

- Water level data imported from data loggers received an "estimated" grade (typically "Estimated Very Good" unless degraded conditions such as seasonal vegetation exist) until our yearly review and approval of data.
- Manual staff gauge readings were graded based on site conditions. When the gauge could be easily read, the data point was rated "Excellent" or "Very Good." If water turbulence or other conditions made accurate reading difficult, the data point was rated "Good," "Fair," "Poor," or "Unusable."
- Manual discharge measurements taken with a FlowTracker or MF Pro meter were graded based on the built-in quality control reports of the flow meter as well as professional judgment. We graded the measurement as follows:
    - Overall uncertainty <2%, grade = Excellent
    - Overall uncertainty 2-5%, grade = Very Good
    - Overall uncertainty 5-10%, grade = Good
    - Overall uncertainty 10-20%, grade = Fair

    - Overall uncertainty >20%, grade = Poor
- Manual discharge measurements taken with the Marsh-McBirney Flo-Mate were graded based on measurement conditions.
- Discharge signals produced through the rating curve were graded based on the quality of stage data in addition to the fit of the rating curve and site conditions.

Results

Walla Walla River Summer Base Flow

In large part, summertime base flow in the Walla Walla River is supplied by basalt groundwater springs in the upper watershed. The South Fork Walla Walla River (S-103) contributes the large majority of summertime water supply. During WY2025, flow ranged from 85 to 97 cfs during July, August, and September, with the lowest daily median flow of 85.0 cfs occurring on 08/12/2025 (Figure 11). Summer low flow for the South Fork Walla Walla River in 2025 was the lowest in the last eight years (Figure 12). There were 107 days in water year 2025 when the daily median flow was under 95 cfs on the South Fork Walla Walla River. Table 2 shows the lowest daily median flow values with corresponding dates at the South Fork Walla Walla River gauge site during the last nine summers. Additional years of data are needed to determine if base flow is indeed trending downward.

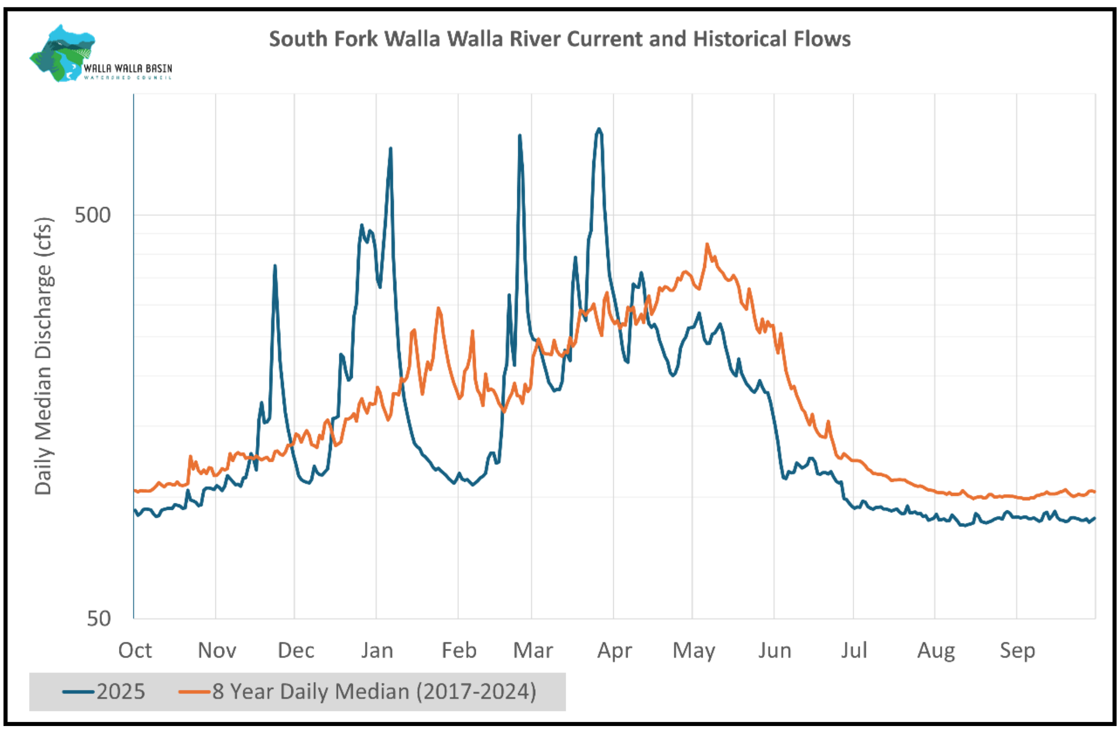

Figure 11. Logarithmic plot of daily median discharge in the South Fork Walla Walla River near Confluence (S-103) 2025 Water Year Discharge.

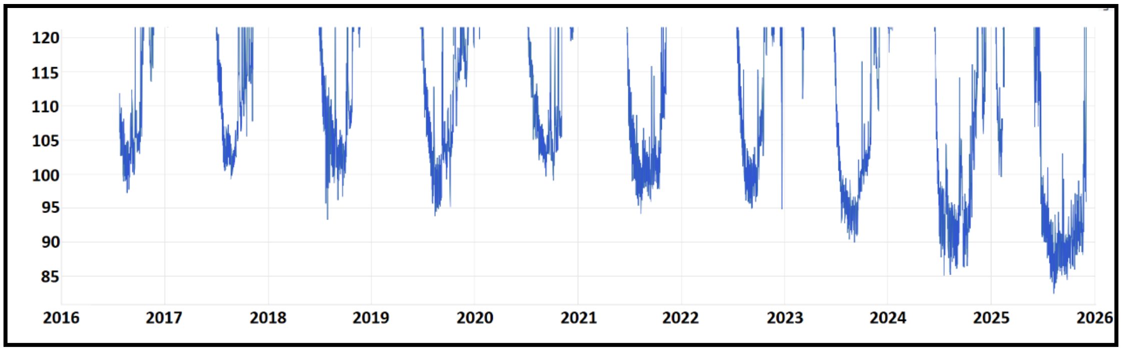

Figure 12. Daily median discharge at the South Fork Walla Walla River near Confluence (S-103) during the low flow summer months of water years 2016-2025. Base flow rates during the last three summers were notably lower than the previous 7 years.

Table 2. Lowest daily median flow rates in the South Fork Walla Walla River near the Forks confluence (S-103) during water years 2016-2025.

S-103 Lowest Daily Median Flow		
Water Year	**Date**	**Flow**
2016	08/21/2016	99.78 cfs
2017	08/29/2017	100.85 cfs
2018	09/05/2018	98.86 cfs
2019	08/15/2019	96.27 cfs
2020	09/10/2020	101.44 cfs
2021	08/12/2021	96.97cfs
2022	09/10/2022	97.93 cfs
2023	08/20/2023	92.75 cfs
2024	07/19/2024	88.40 cfs
2025	08/12/2025	85.02 cfs

The North Fork Walla Walla River (S-104) had daily median base flow ranging from 3 to 7 cfs during July, August, and September (Figure 13).

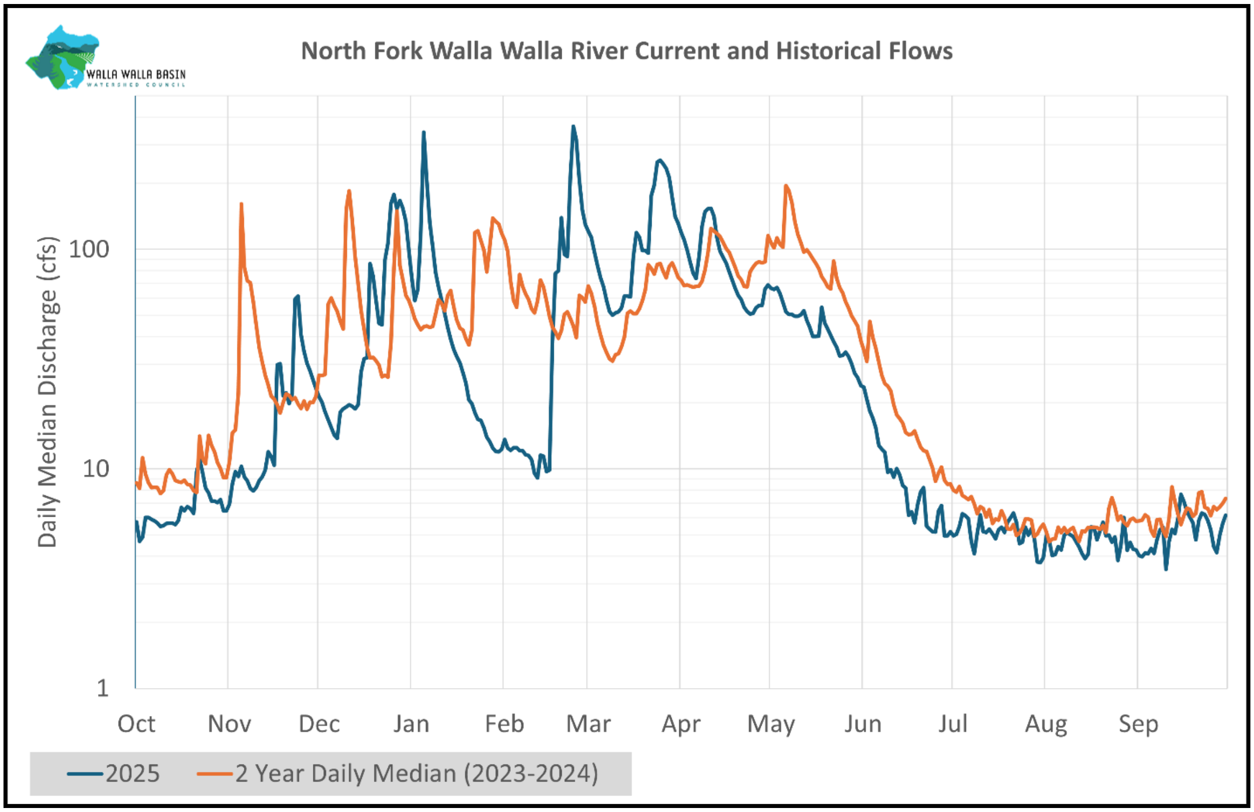

Figure 13. Logarithmic plot of daily median discharge in the North Fork Walla Walla River near Confluence (S-104) 2025 Water Year Discharge.

High Flow Events

During water year 2025, the Walla Walla River had three high-flow events over 1,000 cfs (Figure 9). The highest occurred on 03/27/2025 with a peak of approximately 1,300 cfs measured at Tum-A-Lum Bridge (S-107). The peak was a modeled prediction based on a manual high flow bridgeboard measurement of 1,040 cfs taken on 02/24/2025. The previous years' peak flow events are shown below in Table 3.

Table 3. Peak flow in the Walla Walla River at Milton-Freewater (S-105) and below Tum-A-Lum Bridge (S-107) during water years 2017-2025.

Peak Flow in the Walla Walla River near Milton-Freewater			
Water Year	**Site of Peak Flow**	**Date of Peak Flow**	**Peak Flow**
2017	S-105	3/16/2017	2,000 cfs
2018	S-105	2/4/2018	4,000 cfs
2019	S-105	4/10/2019	4,000 cfs
2020	S-105	2/7/2020	9,000 cfs
2021	S-105	12/21/2020	1,400 cfs
2022	S-107	6/13/2022	2,800 cfs
2023	S-107	11/5/2022	1,400 cfs
2024	S-107	01/23/2024	1,100 cfs
2025	S-107	03/27/2025	1,300 cfs

Walla Walla River Bypass Flow

For many years WWBWC monitored summertime flow in the Walla Walla River below Nursery Bridge to allow the irrigation districts to track bypass flow and modify diversion rates to maintain minimum instream flow rates below the Little Walla Walla diversion. WWBWC discontinued monitoring in 2024 when the Oregon Water Resources Department (OWRD) began posting flow calculations below Nursery Bridge using flow rates from the Walla Walla River at Milton-Freewater gauge and subtracting water diverted at the Little Walla Walla Diversion, the Eastside Diversion, and seepage (Station ID 14012410 https://apps.wrd.state.or.us/apps/sw/hydro_near_real_time/display_hydro_graph.aspx?station_nbr=14012410).

WWBWC maintains one Walla Walla River monitoring site, which is located about 2.4 miles downstream of Nursery Bridge. During the 2025 water year, the Walla Walla River below Tum-A-Lum Bridge (S-107) had daily median base flow ranging from 11 to 54 cfs during July, August, and September, with the lowest daily median flow of 11.6 cfs occurring on 07/29/2025 (Figure 14). Similarly to several tributary data sets for this year, flow in the Walla Walla River dropped off earlier in the spring compared with previous years.

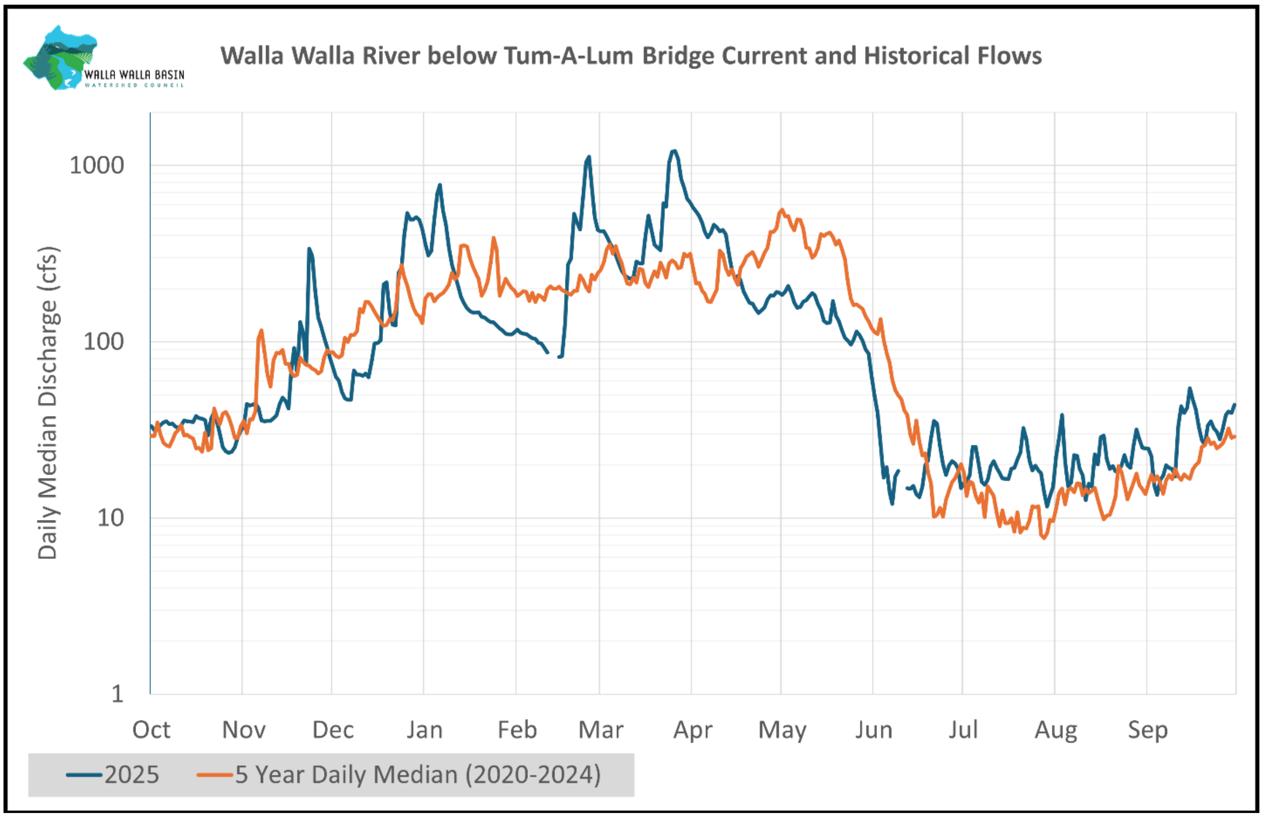

Figure 14. Logarithmic plot of daily median discharge in the Walla Walla River below Tum-A-Lum Bridge (S-107) 2025 Water Year Discharge.

Tributaries

Tributary monitoring in 2025 included the North Fork Walla Walla River, Couse Creek, Dry Creek, and Pine Creek. Couse, Dry, and Pine Creeks originate in the mid-elevations of the Blue Mountains and have similar annual hydrographs. These historic steelhead streams have reaches with perennial, spring-fed flow and seasonally dry reaches. Snow melt and runoff events produce annual peaks above 100 cfs. In 2025, Couse Creek peaked at just over 100 cfs (Figure 15). The peaks at Dry Creek at Seven Hills Road and Pine Creek at Schubert Road were near 150 cfs and 130 cfs respectively (Figures 16 and 17). The high peaks for Couse, Dry, and Pine Creeks are modeled predictions because the highest manual discharge measurements for the 2025 water year were 93 cfs, 108 cfs, and 84 cfs, respectively. The annual flow volumes produced in these three subwatersheds are comparable. Couse Creek, Dry Creek and Pine Creek produced 8,200 acre-feet, 9,400 acre-feet, and 6,800 acre-feet respectively in water year 2025. Compared with historical data, annual flow volumes in WY 2025 in all three tributaries were above average with Couse Creek at 121%, Dry Creek at 156%, and Pine Creek at 120% of the historical median.

Flow data from Walla Walla River tributaries informs restoration actions at multiple current instream habitat enhancement projects including a multiphase floodplain restoration site on the North Fork Walla Walla River and two low-tech, process-based restoration reaches on Couse Creek. WWBWC is currently conducting a watershed assessment and action plan for the Dry Creek/Lower Pine Creek subwatershed. Flow information helps inform potential restoration opportunities and treatment techniques.

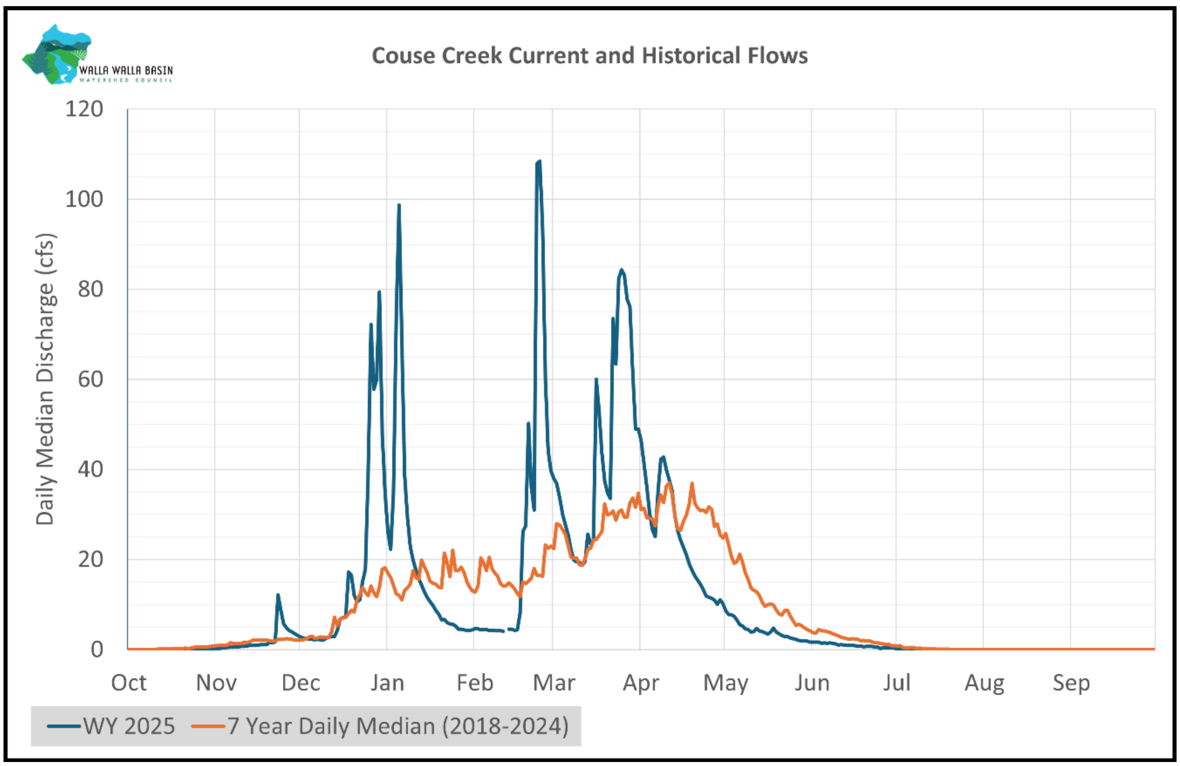

Figure 15. Couse Creek at River Mile 1.1 (S-142) 2025 Daily Median Water Year Discharge.

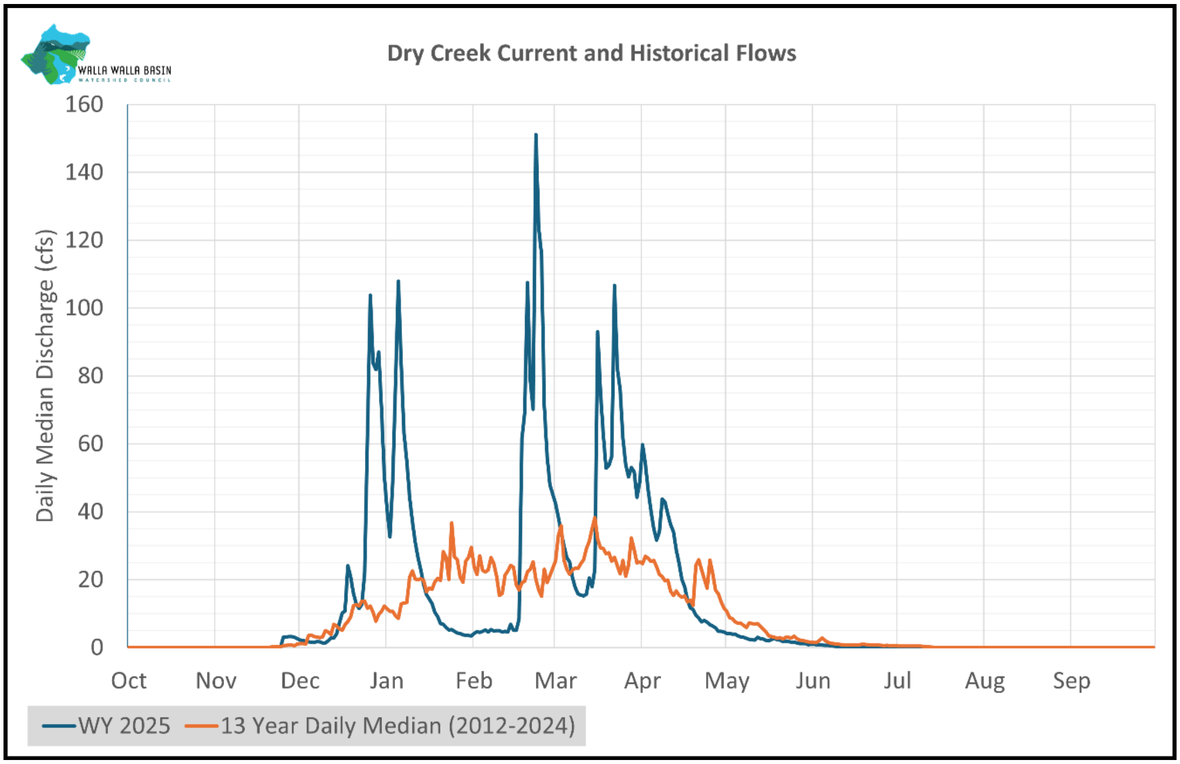

Figure 16. Dry Creek at Seven Hills Road (S-415) 2025 Daily Median Water Year Discharge.

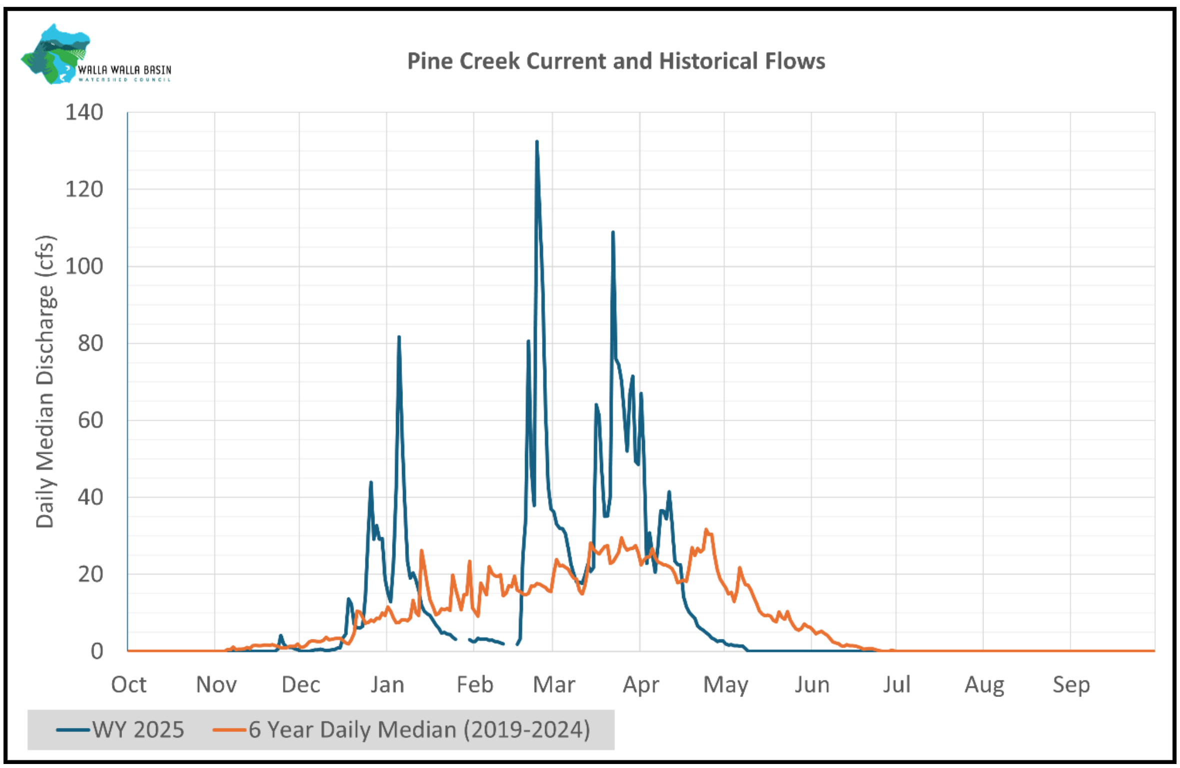

Figure 17. Pine Creek at Schubert Road (S-416T) 2025 Daily Median Water Year Discharge.

Walla Walla Basin Springs

Tracking flow rates and volumes from springs that emerge from the alluvial aquifer helps WWBWC and basin partners track aquifer trends. During WY2025, WWBWC produced continuous flow data for seven springs (Figures 18-24). Using discharge data to calculate annual volume in acre-feet showed that five springs produced less flow in 2025 compared with previous years. Walsh Creek and the West Little Walla Walla River had higher annual volumes compared with previous years. However, these two spring creeks receive irrigation tail water upstream of our monitoring sites, so annual volumes are affected not only by aquifer conditions but by irrigation management. Johnson Creek annual volume in 2025 was only 34% of the historical average. Reduced spring production overall was likely impacted by multiple years of drought in the Walla Walla Basin, reduced aquifer recharge, and increased groundwater withdrawals.

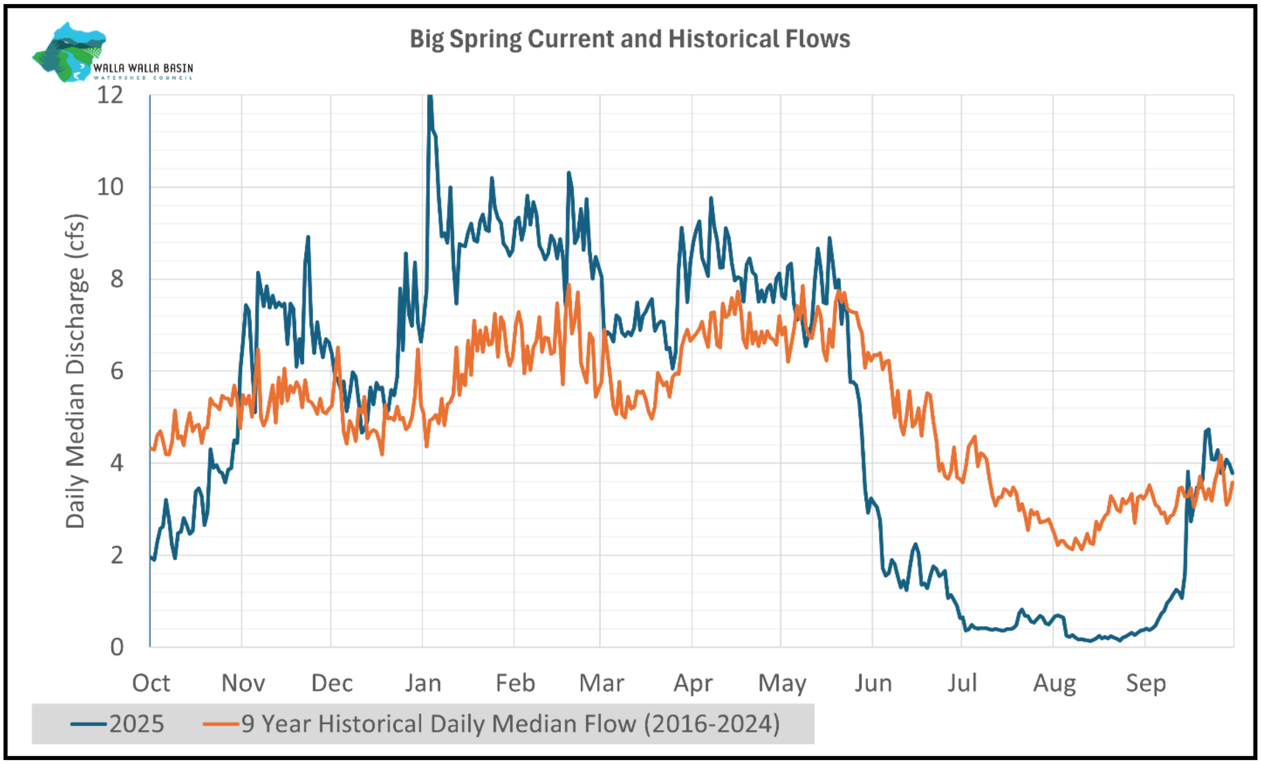

Figure 18. Big Spring at Stateline Road (S-233) 2025 Daily Median Water Year Discharge.

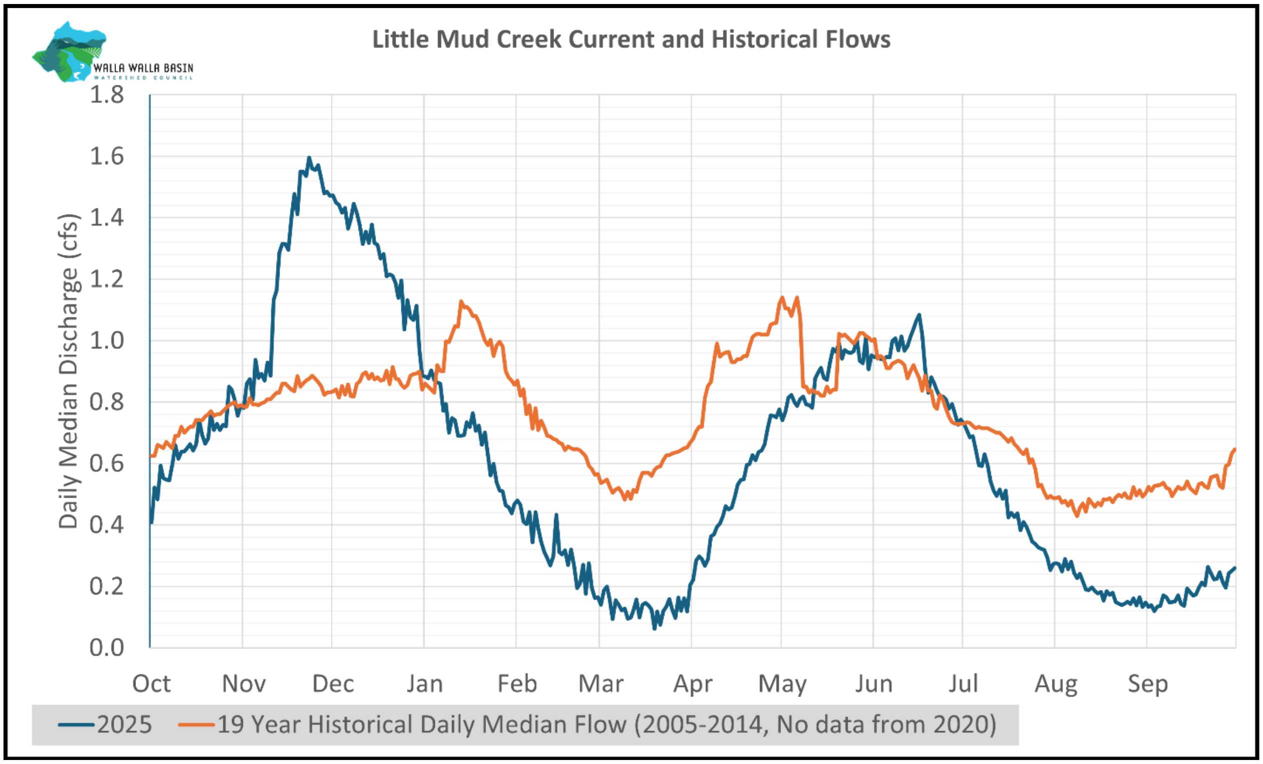

Figure 19. Little Mud Creek at Brown Lane (S-405) 2025 Daily Median Water Year Discharge.

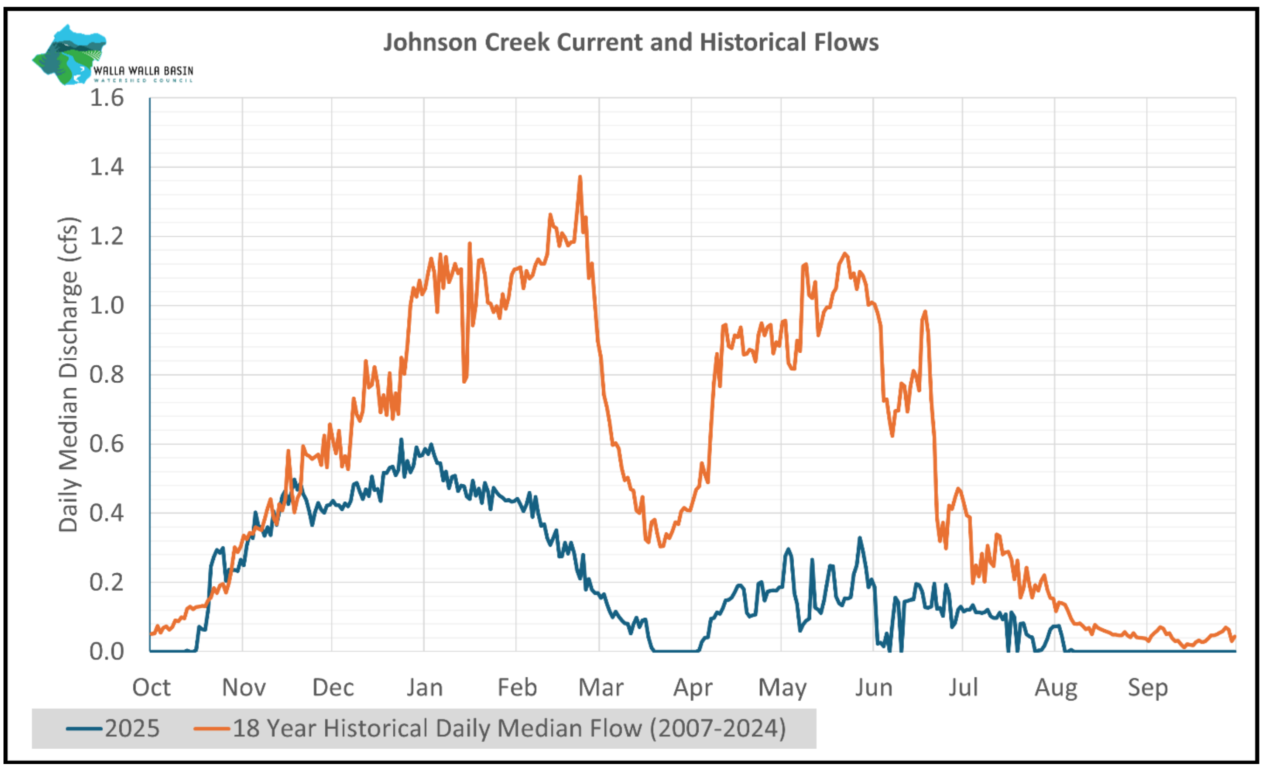

Figure 20. Johnson Creek at Philips Road (S-408) 2025 Daily Median Water Year Discharge.

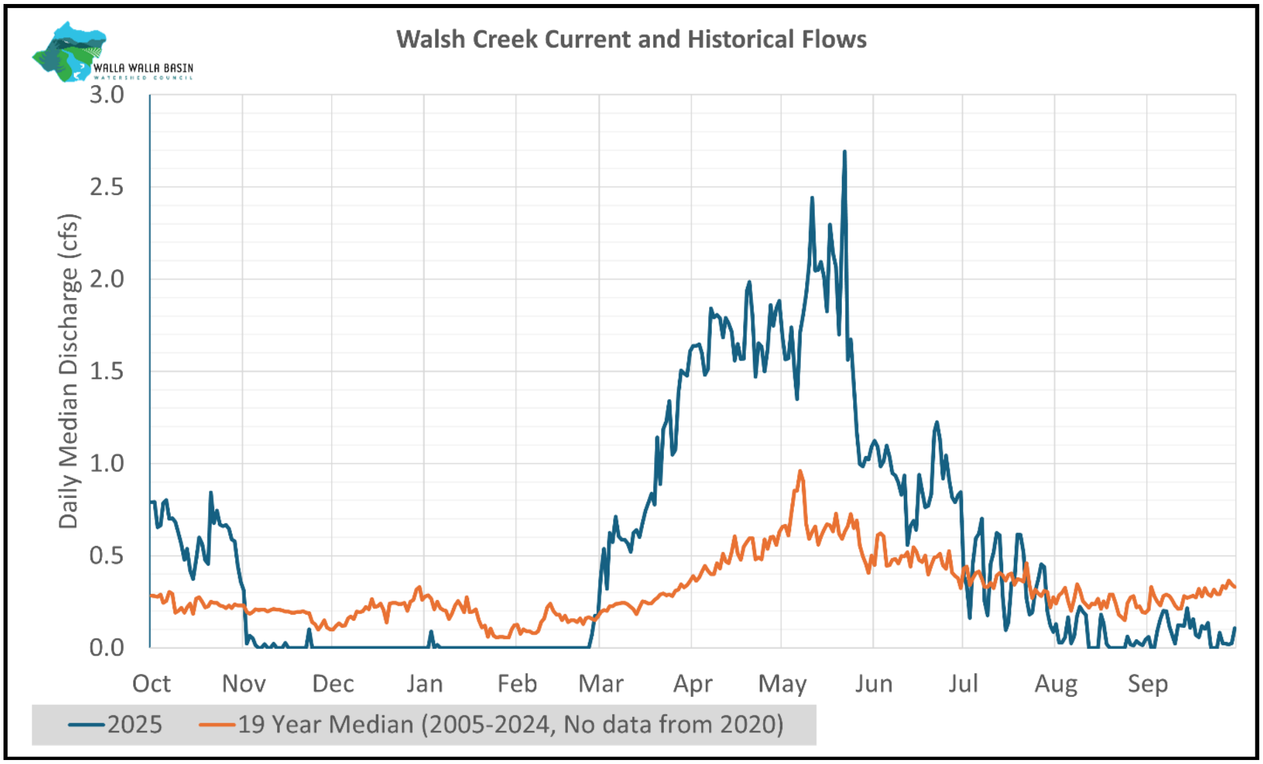

Figure 21. Walsh Creek at Stateline Road (S-221B) 2025 Daily Median Water Year Discharge.

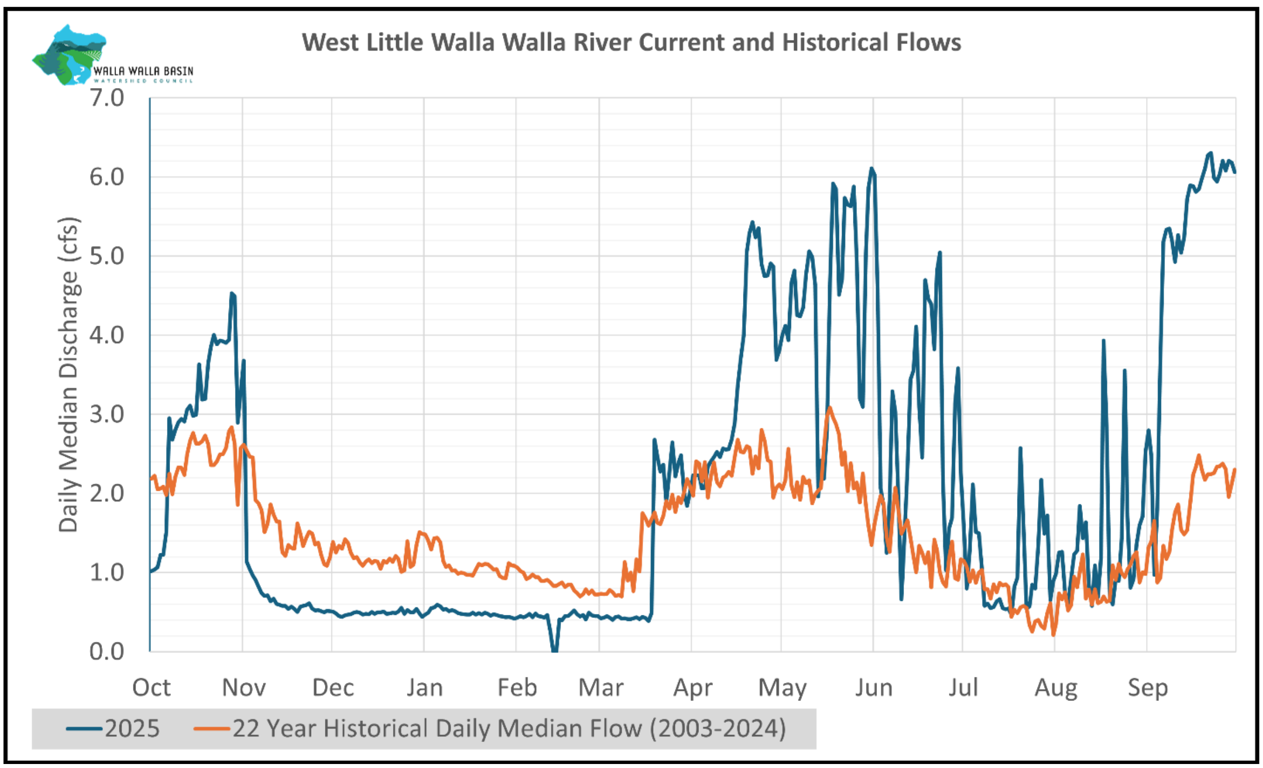

Figure 22. West Little Walla Walla River at Stateline Road (S-222) 2025 Daily Median Water Year Discharge.

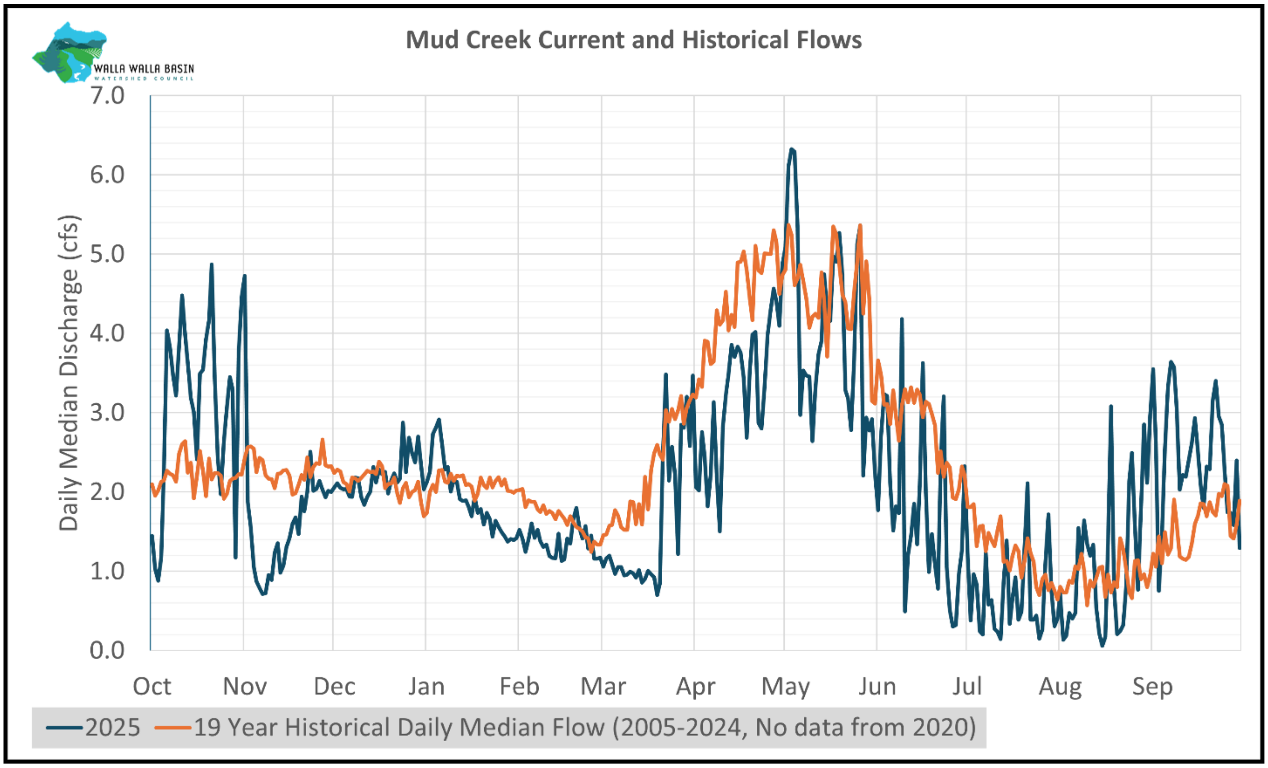

Figure 23. Mud Creek at Stateline Road (S-303) 2025 Daily Median Water Year Discharge.

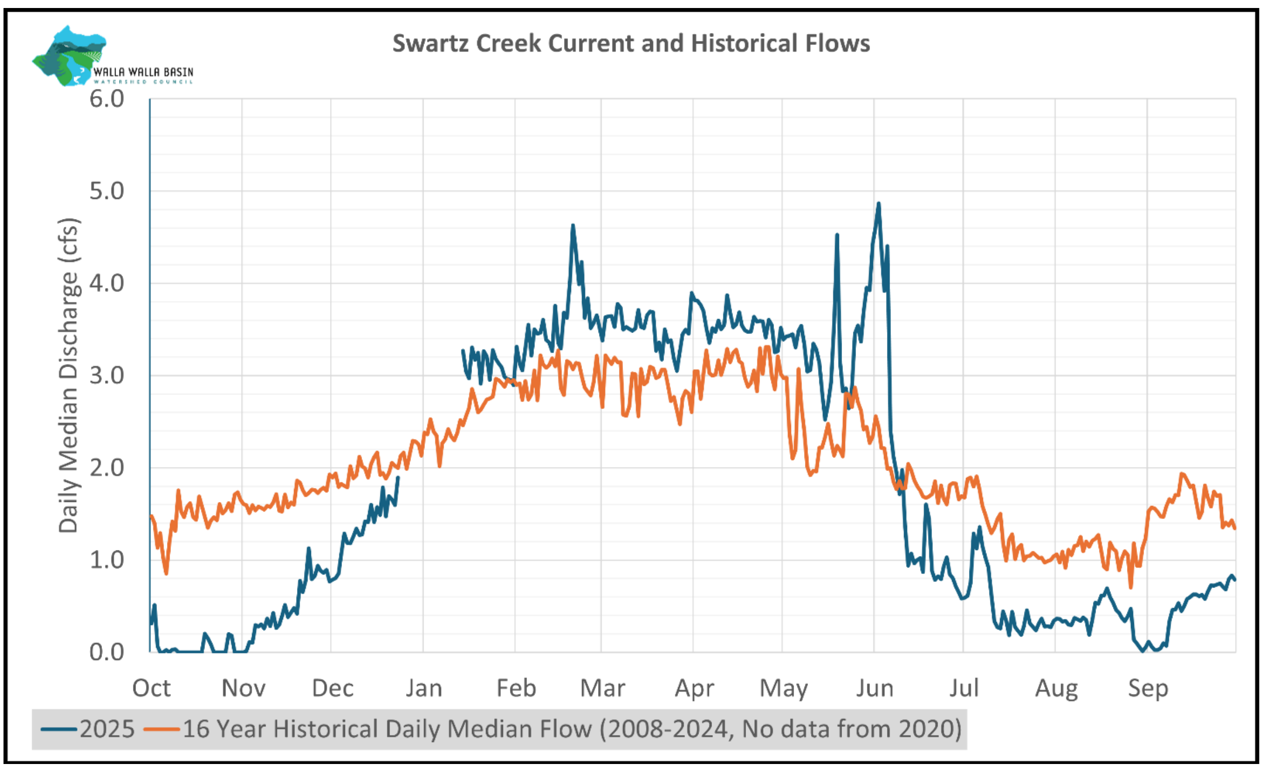

Figure 24. Swartz Creek at Umapine Highway (S-411) 2025 Daily Median Water Year Discharge.

Adaptive Management and Lessons Learned

Since the WWBWC began collecting streamflow data in 2002, numerous lessons have been learned. Key lessons include the importance of using appropriate instrumentation and technology; selecting optimal sites for data collection; conducting frequent site visits to obtain manual measurements and document current conditions; following established standard operating procedures; and regularly reviewing collected data for accuracy and completeness.

Without the support of the WWBWC's funding agencies, partners, and private landowners, this project would not have been possible. Their involvement and support are very much appreciated.

- Bonneville Power Administration
- Confederated Tribes of the Umatilla Indian Reservation
- Walla Walla River Irrigation District
- Fruitvale Water Users Association
- Hudson Bay District Improvement Company
- Oregon Watershed Enhancement Board
- Oregon Water Resources Department
- U.S. Fish & Wildlife Service
- U.S. Forest Service
- U.S. Geological Survey

APPENDIX A: Explanation of Data Gaps during the 2025 Water Year

Site ID	Site Name	Gap Dates	Explanation
S-103	South Fork Walla Walla River near confluence	02/12/25 – 02/13/25	Freezing occurred around the sensor, deleted data.
S-104	North Fork Walla Walla River near confluence	02/12/25 – 02/13/25	Freezing occurred around the sensor, deleted data.
S-107	Walla Walla River below Tum-A-Lum Bridge	02/12/25 – 02/15/25 06/09/25 – 06/12/25	Freezing occurred around the sensor, deleted data. Removed gauge and re-deployed it at a different location, about 100 feet upstream.
S-142	Couse Creek at River Mile 1.1	02/11/25 – 02/13/25	Freezing occurred around the sensor, deleted data.
S-204	HBDIC White Ditch at the Frog	05/31/25 – 07/09/25	Stilling pipe was clogged, stage data were inaccurate, deleted data.
S-402	Johnson Recharge Inflow	10/01/24 – 09/30/25	Seasonal gauge, only collected data for the recharge season.
S-403	Johnson Recharge Outflow	10/01/24 – 09/30/25	Seasonal gauge, only collected data for the recharge season.
S-411	Swartz Creek at Umapine Highway	12/23/24 – 01/14/25	Culvert was clogged downstream, stage data were inaccurate, deleted data.
S-416T	Pine Creek at Schubert Road	01/25/25 – 01/30/25 02/05/25 02/11/25 – 02/16/25	Freezing occurred around the sensor, deleted data. Freezing occurred around the sensor, deleted data. Freezing occurred around the sensor, deleted data.
S-426	HBDIC Ditch at Schubert Road	08/06/25 – 09/30/25	Sensor failure.