

Sproul Creek Summer 2023 & 2024 Streamflow Monitoring



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Introduction

SRF and project partners have been monitoring streamflow in Sproul Creek since 2015. In May 2023, the project team completed a Sproul Creek Flow Enhancement Implementation Plan (https://www.calsalmon.org/sites/default/files/files/Sproul_Cr_FEIP.pdf). SRF continued streamflow monitoring with support from the McLean Foundation. This report focuses on streamflow monitoring results for 2023 and 2024 low flow seasons.

Location

Sproul Creek is an important salmonid-bearing tributary to the South Fork Eel River. The South Fork Eel River is one of five priority watersheds selected for flow enhancement projects in California by the State Water Resources Control Board (SWRCB) and the California Department of Fish and Wildlife (CDFW) as part of the California Water Action Plan (SWRCB 2019). Sproul Creek is a critical tributary to the South Fork Eel River that supports Coho and Chinook salmon (*Oncorhynchus tshawytscha*) and steelhead.

Four streamflow sites were monitored in 2023 and 2024; Lower Mainstem Sproul (LMS), South Fork Sproul (SFS), West Fork Sproul (WFS), and La Doo Creek (Table 1).

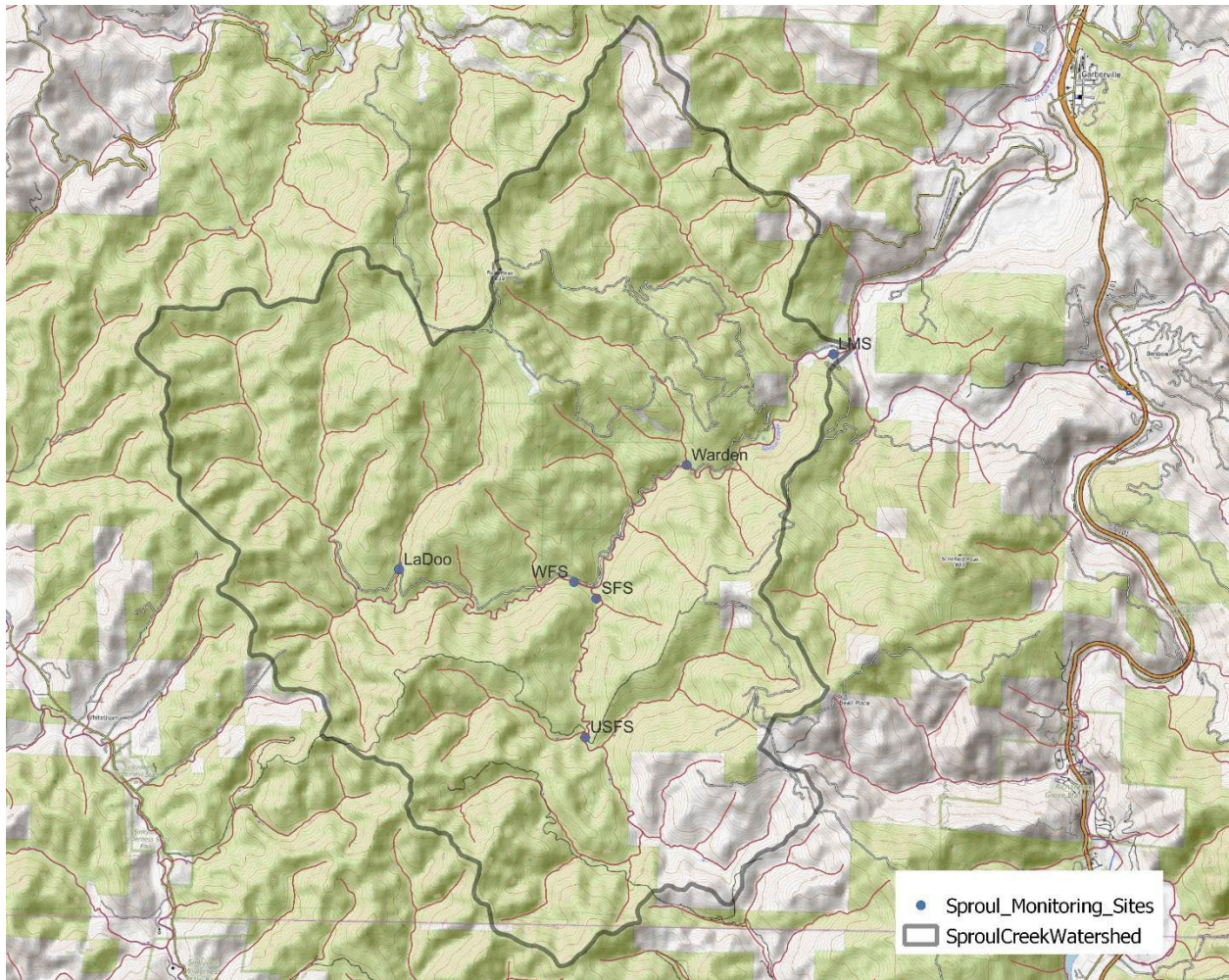


Figure 1. Map Sproul Creek streamflow monitoring sites.

Table 1. Sproul Creek streamflow monitoring sites.

Site Description	Station Name	River Mile upstream of mouth	Drainage Area (mi ²)	Years of Operation
Lower Mainstem Sproul	LMS	0.15	23.95	2015–2024
South Fork Sproul	SFS	4.23	6.92	2015–2024
Upper South Fork Sproul	USFS	5.72	4.95	2015–2022
West Fork Sproul	WFS	4.24	8.46	2015–2022
Little Sproul	LS	0.52	3.9	2016, 2019–2022
Warden	Warden	2.47	1.58	2021
La Doo	La Doo	6.89	1.44	2021-2024

Streamflow

The SRF streamflow monitors made eight spot visits in 2023 and four spot visits in 2024. The spot visits included measurements of streamflow and temperature. There were water level data loggers installed at each monitoring site. The spot measurements were used to make rating curves for each site with a water level data logger (Figure 3, Figure 5, Figure 8, Figure 10, Figure 13, Figure 13, Figure 15, Figure 18, Figure 20). The modeled equations from the rating curves were used to predict streamflow at 15-minute intervals (Figure 4, Figure 6, Figure 9, Figure 11, Figure 14, Figure 16, Figure 19, Figure 21). In 2023 the water level loggers were installed May 18, 2023, and removed October 24, 2023. In 2024, water level loggers were installed May 30, 2024, and removed on November 18, 2024. Both 2023 and 2024 were average flow years and each site had continuous flow throughout the dry season.

Often Sproul Creek has a fast recession of flow in the spring and then steady minimal flows starting in mid-August. Some years there are mid-dry-season rain events that can help bring up the base flows until rain events in the fall. In both 2023 and 2024 there were rain events in August and then a couple in the fall before the loggers were removed for the wet season.

Salmonids are sensitive to water temperature. The 1999 United States EPA publication: South Fork Eel River Total Maximum Daily Loads for Sediment and Temperature rates temperatures over 66°F inadequate habitat for salmonids. Lower Mainstem Sproul was over 66°F June to August in 2023 and 2024. The other monitoring sites stayed under 66°F except for West Fork Sproul and South Fork Sproul briefly went over 66°F in July 2024.



Figure 2. Picture of Lower Mainstem Sproul 6/14/2023.

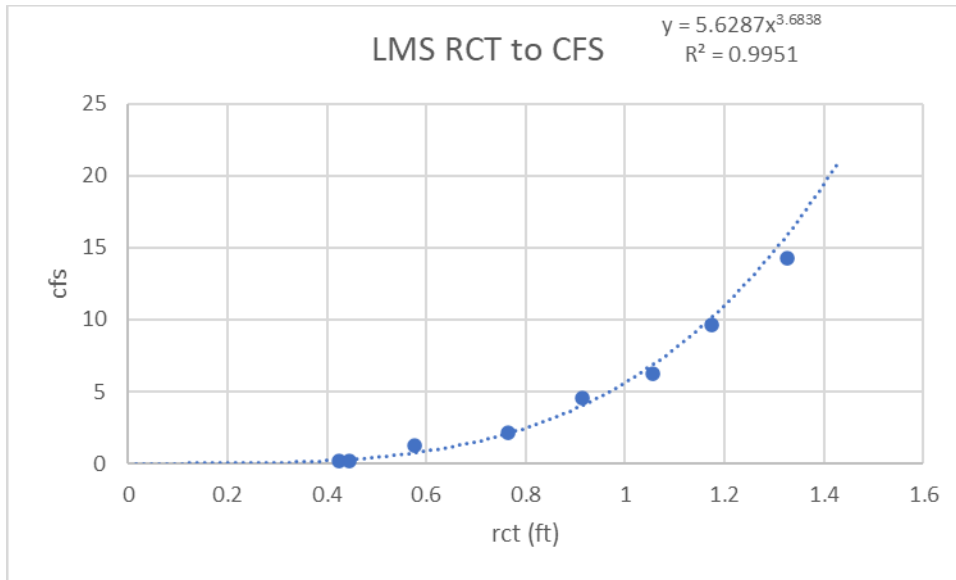


Figure 3. Riffle Crest Thalweg Depth (RCT) to flow (cfs) rating curve for Lower Mainstem Sproul, 2023.

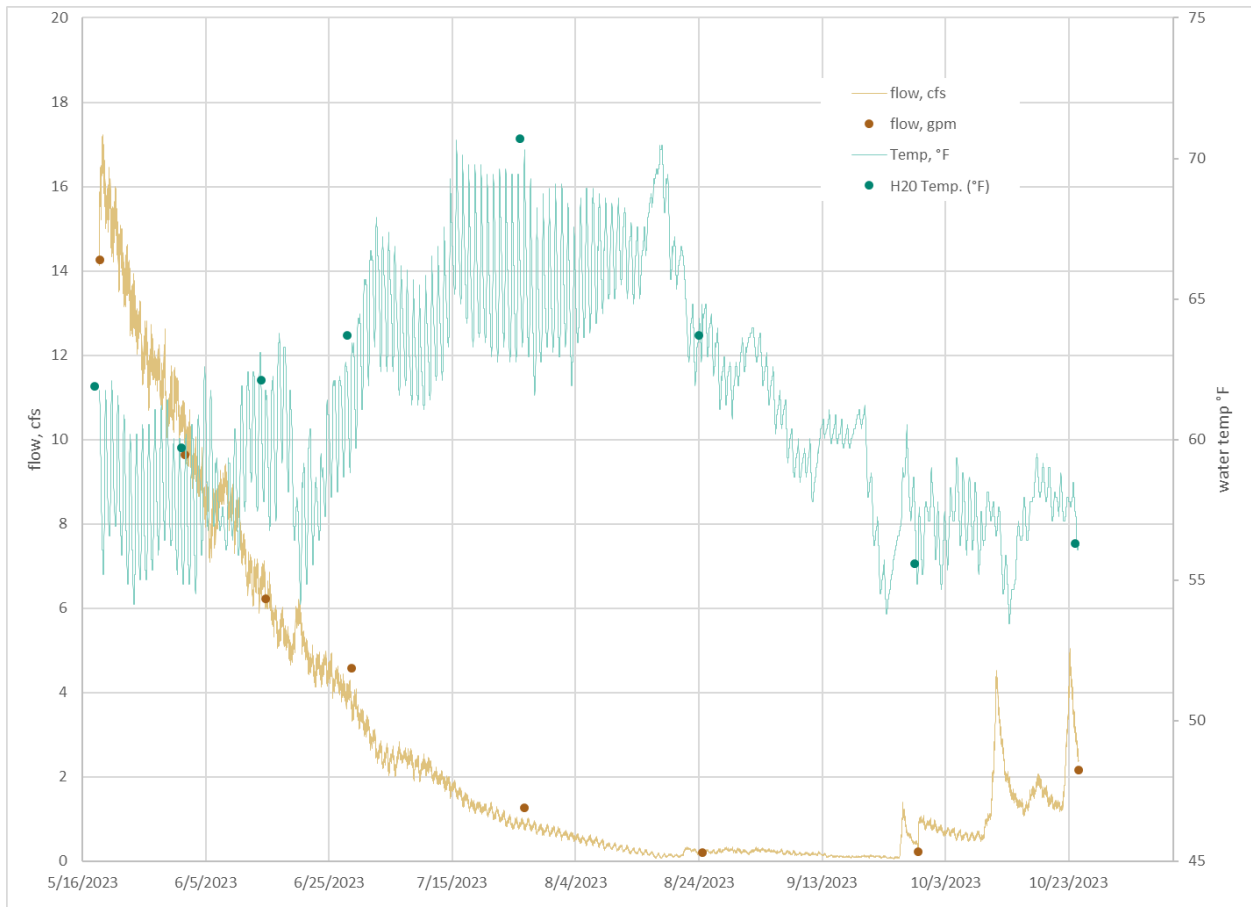


Figure 4. Fifteen-minute intervals and spot measurement for flow (cfs) and temperature (°F) at Lower Mainstem Sproul, 2023.

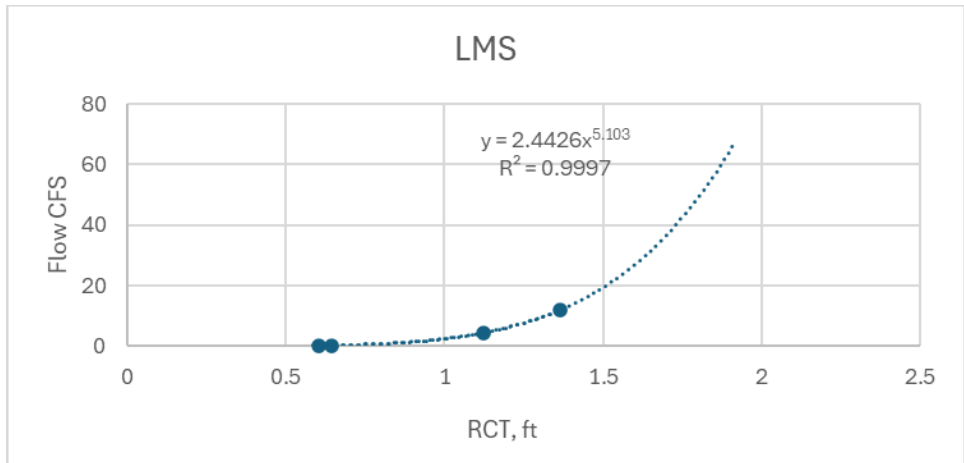


Figure 5. Riffle Crest Thalweg Depth (RCT) to flow (cfs) rating curve for Lower Mainstem Sproul, 2024.

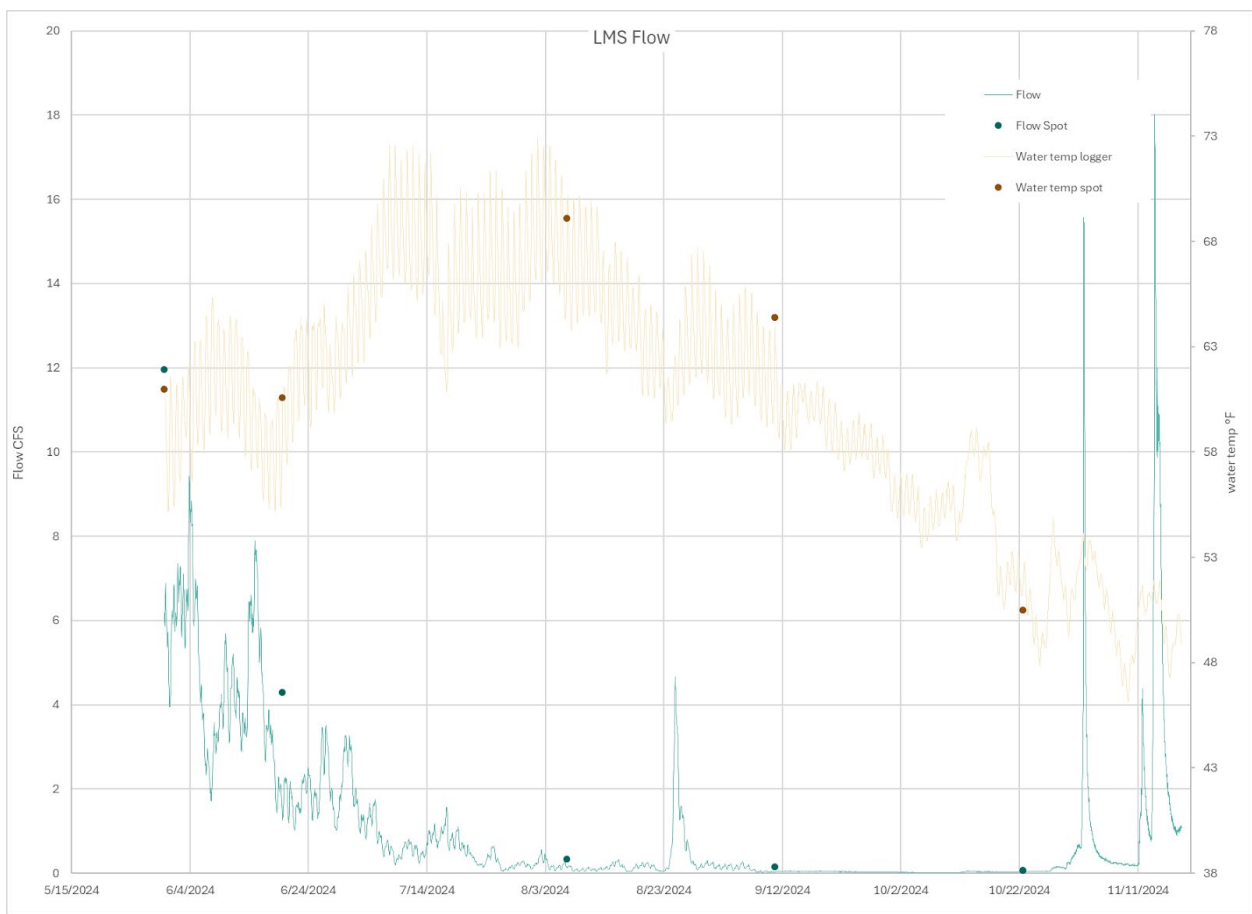


Figure 6. Fifteen-minute intervals and spot measurement for flow (cfs) and temperature (°F) at Lower Mainstem Sproul, 2024.



Figure 7. Picture of West Fork Sproul 6/14/23.

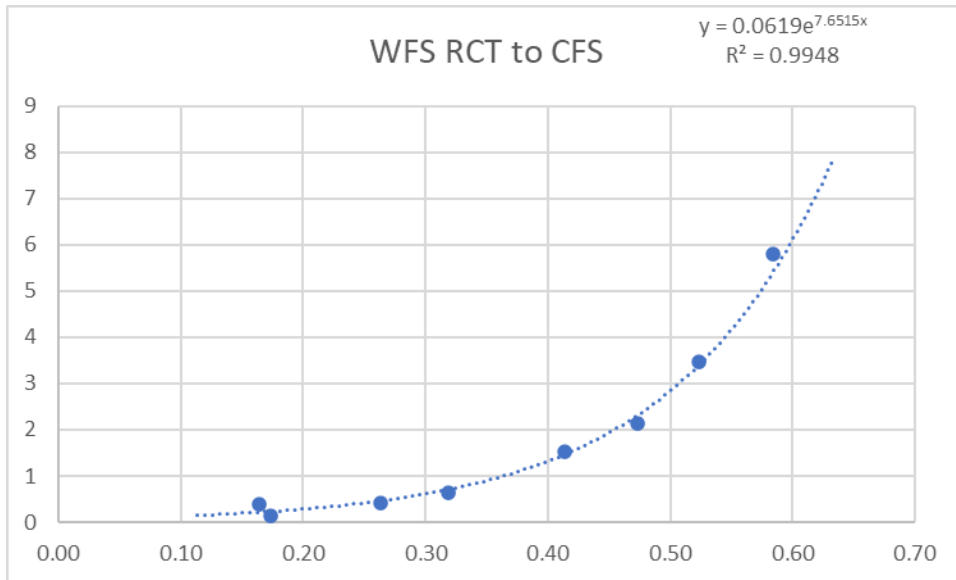


Figure 8. West Fork Sproul rating curve dry season 2023.

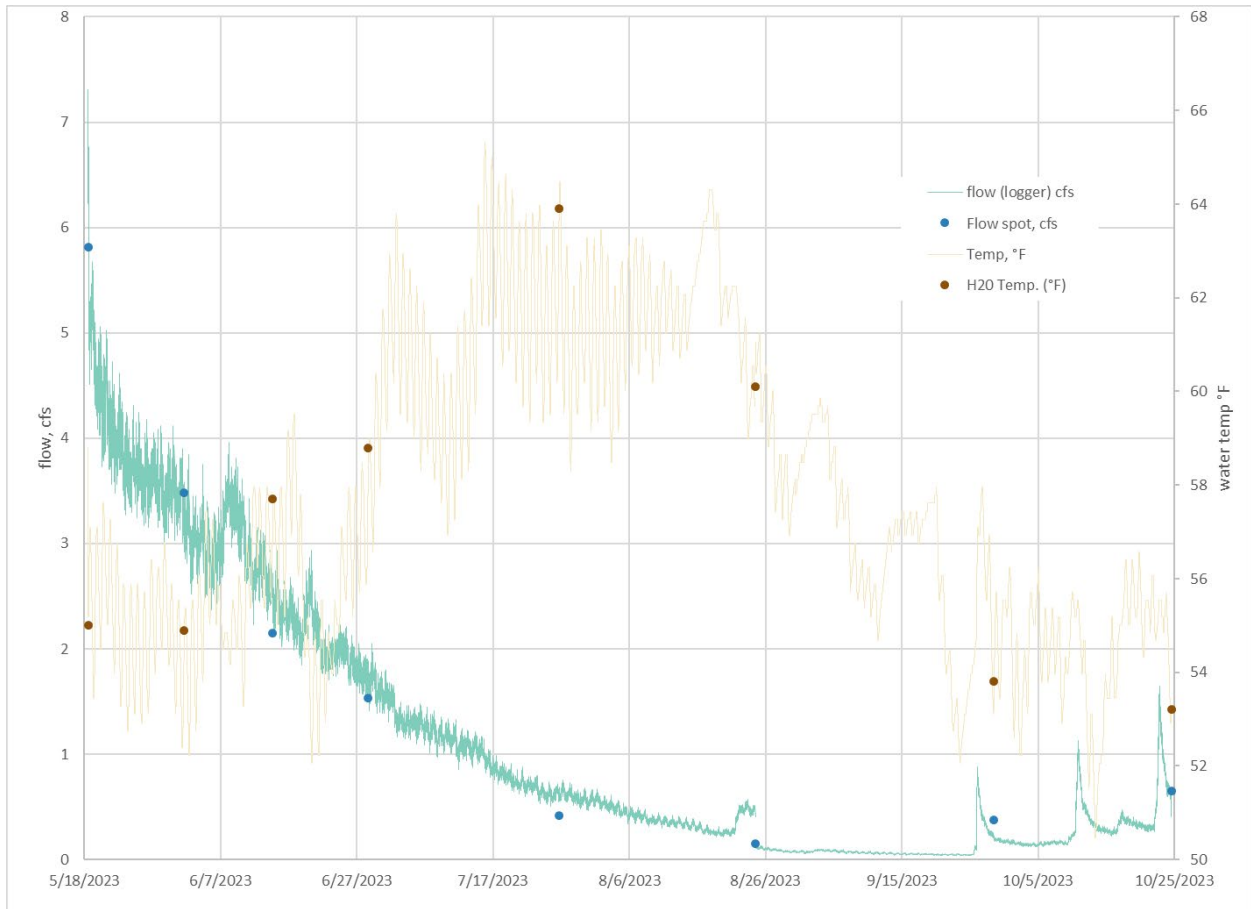


Figure 9. West Fork Sproul flow and water temperature dry season 2023.

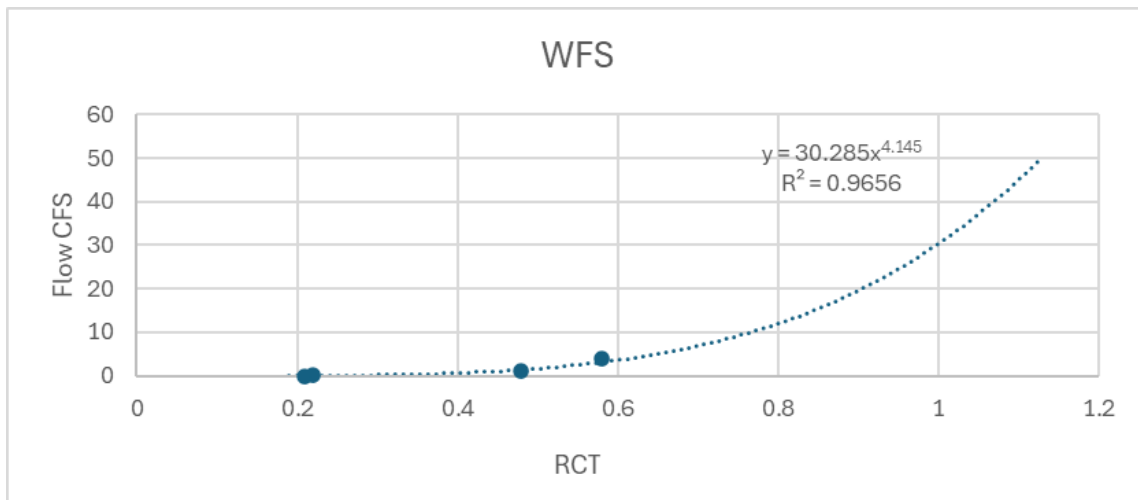


Figure 10. West Fork Sproul rating curve for riffle crest to flow (cfs), dry season 2024.

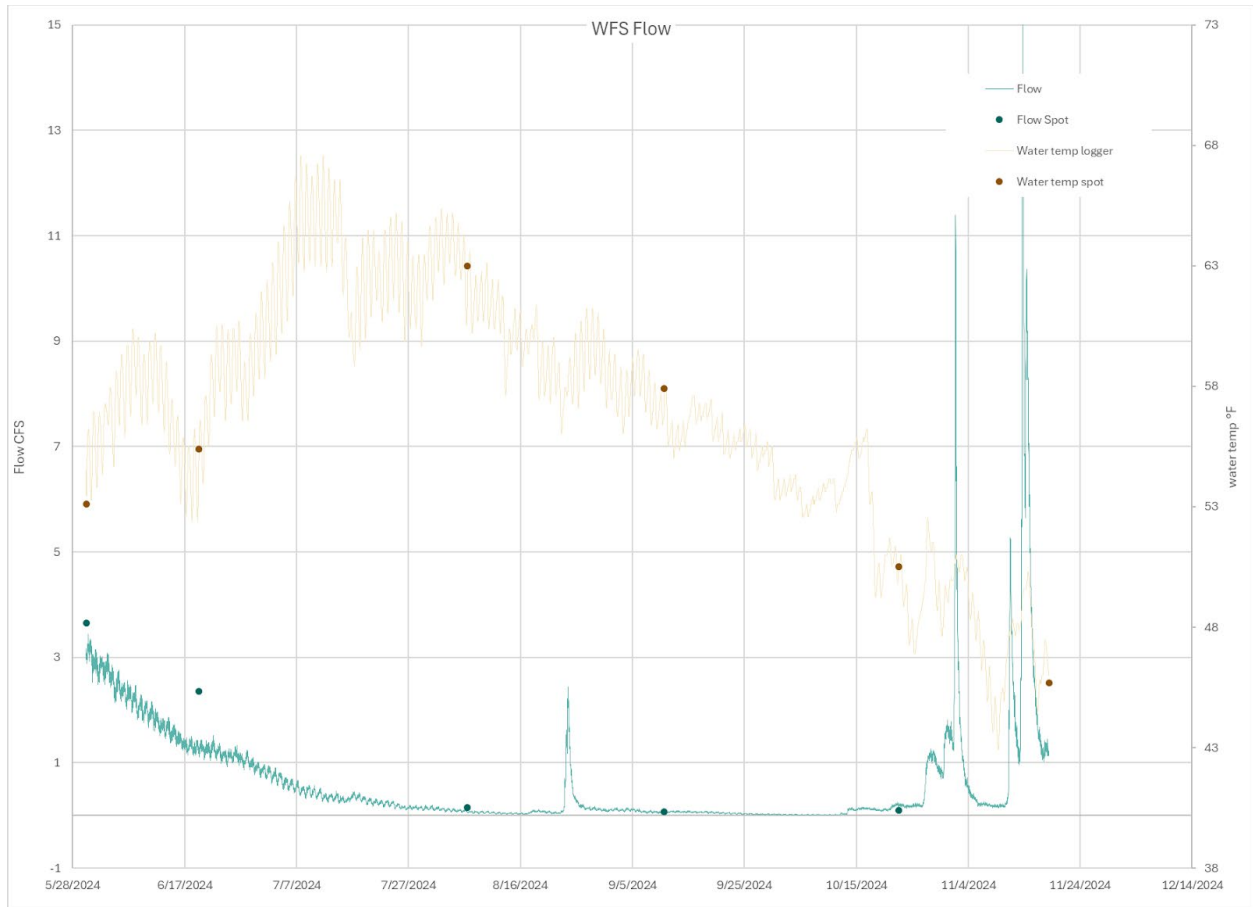


Figure 11. West Fork Sproul flow and water temperature dry season 2024.



Figure 12. Picture of La Doo Creek 6/14/23.

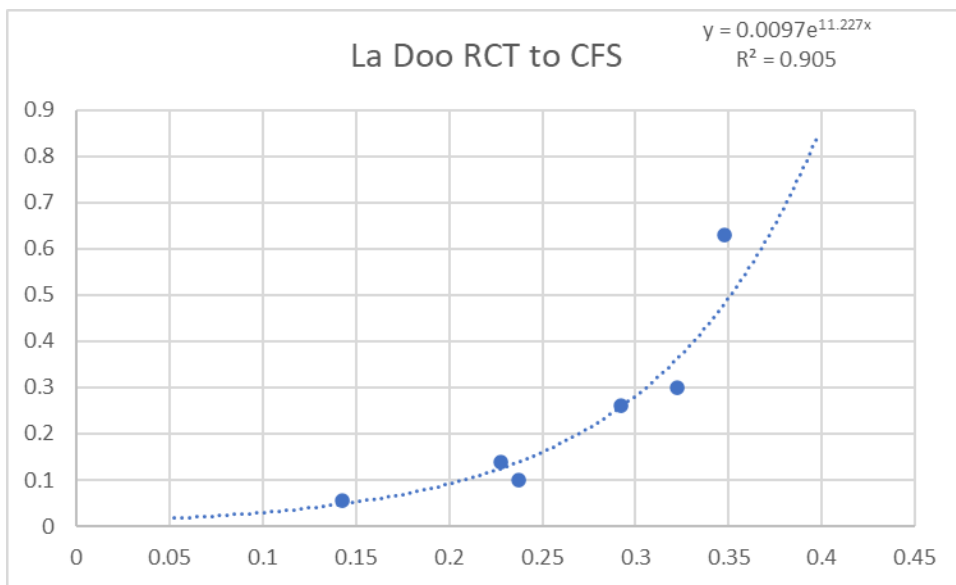


Figure 13. La Doo rating curve dry season 2023.

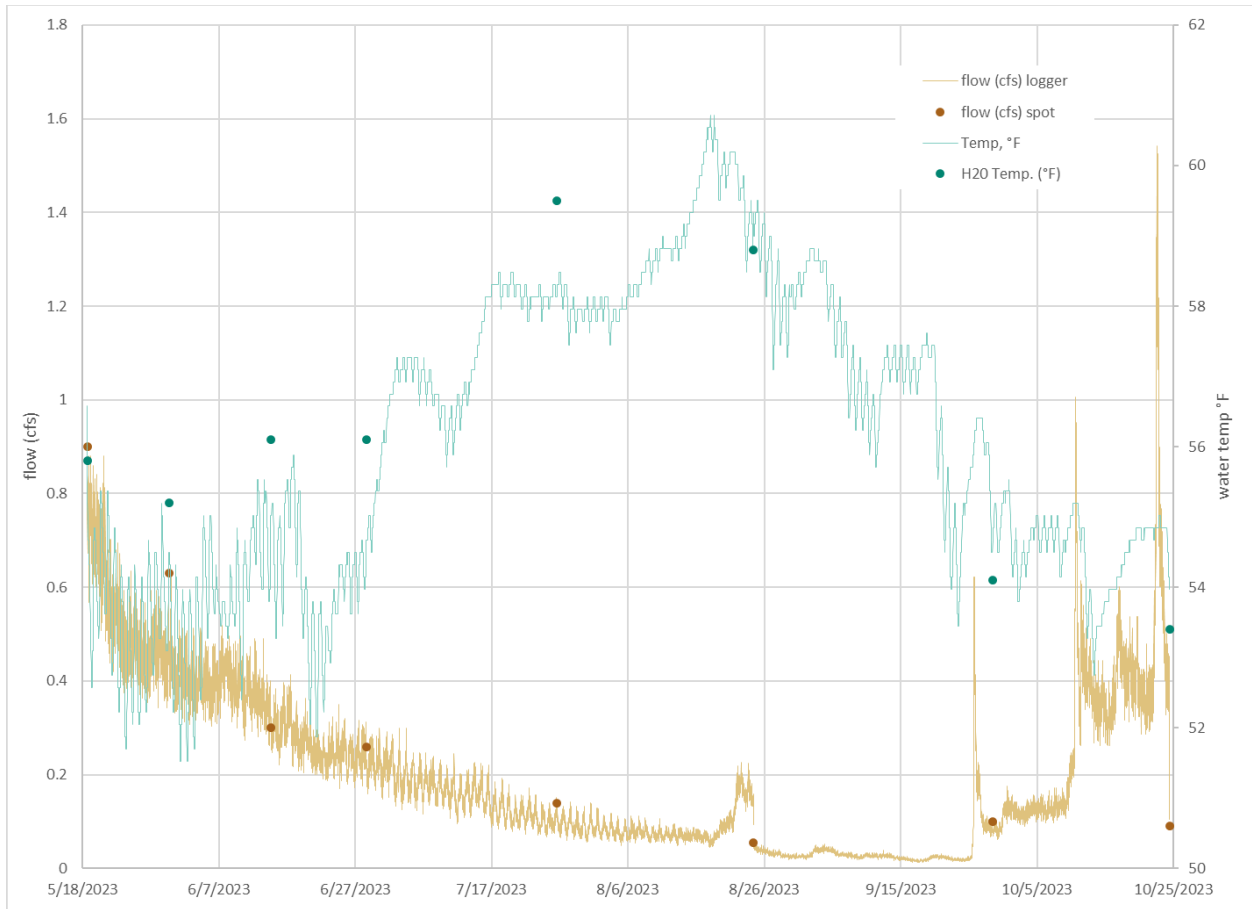


Figure 14. La Doo streamflow (cfs) and temperature (°F) dry season 2023.

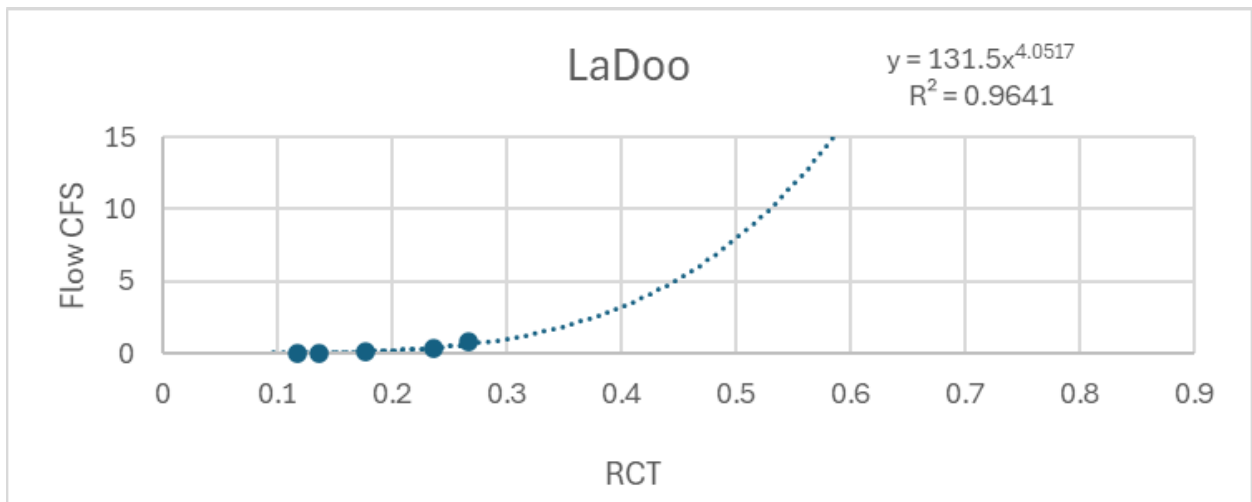


Figure 15. La Doo rating curve dry season 2024.

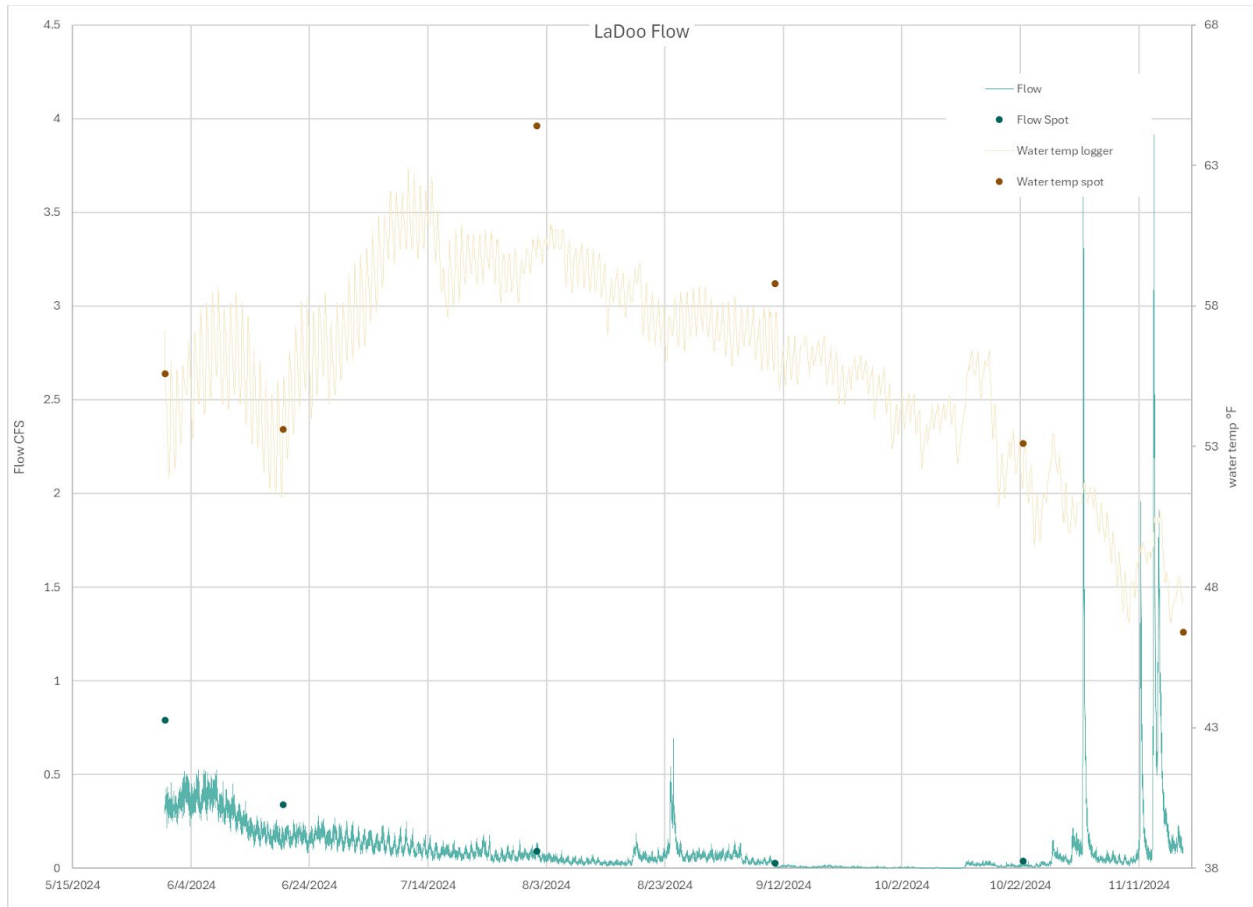


Figure 16. La Doo Creek flow and water temperature dry season 2024.



Figure 17. Picture of South Fork Sproul 6/14/23.

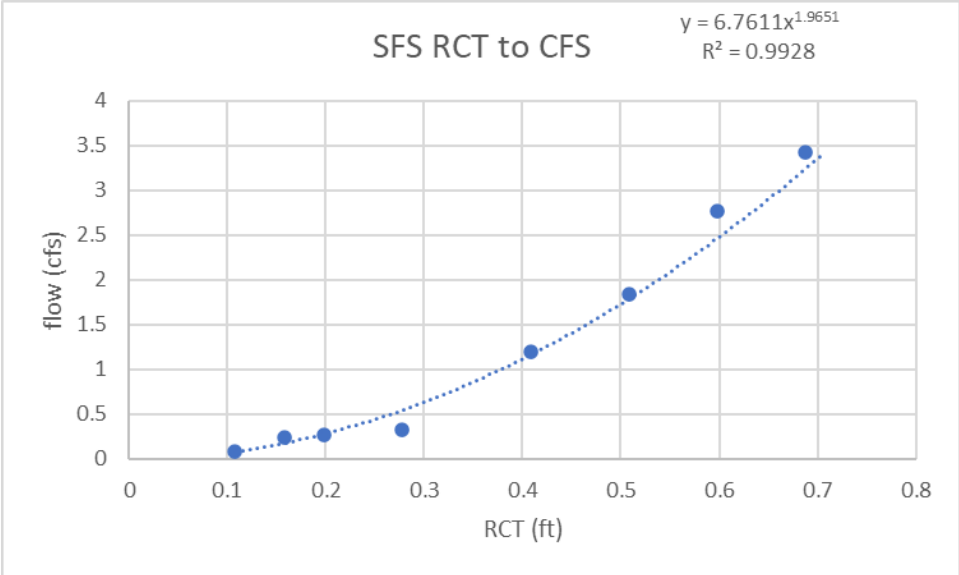


Figure 18. South Fork Sproul rating curve dry season 2023.

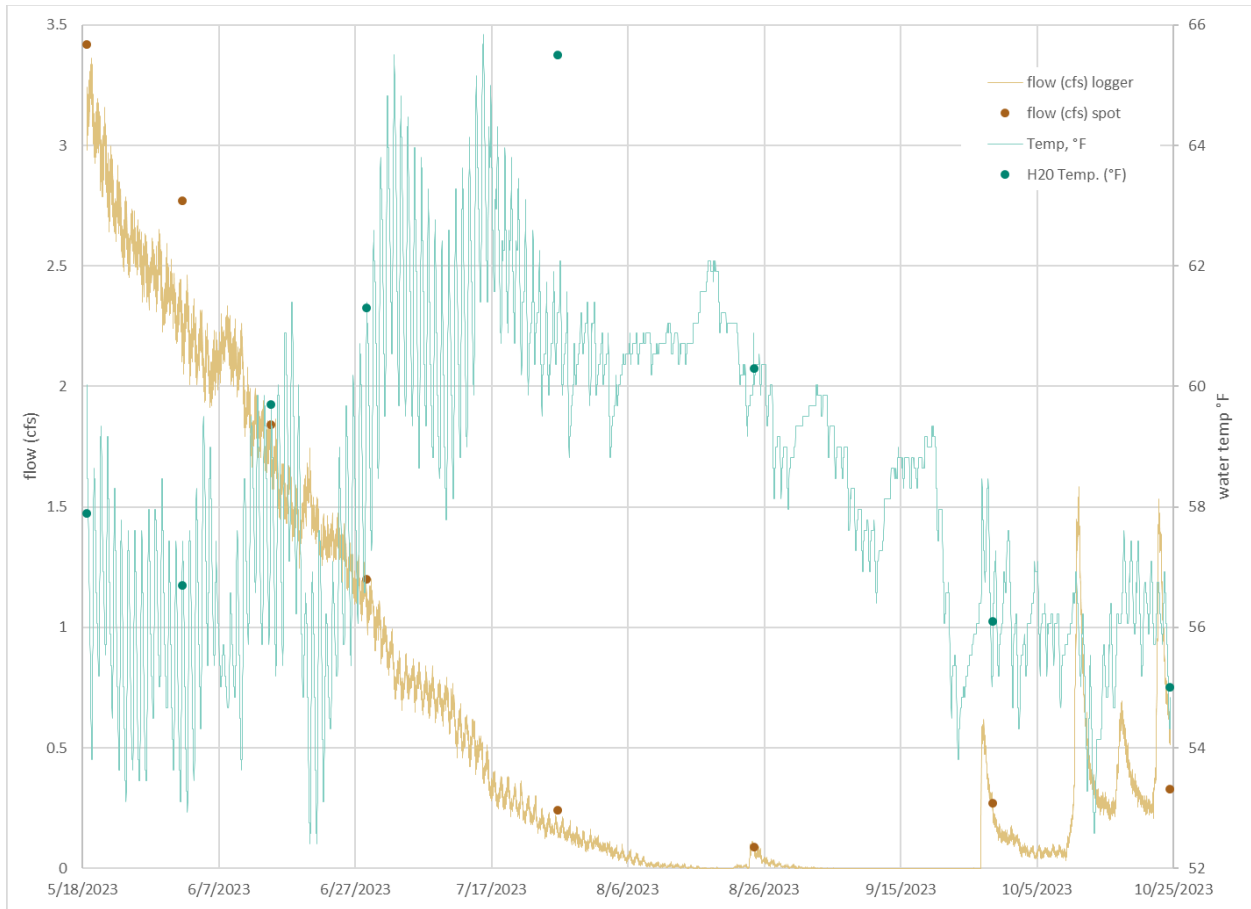


Figure 19. South Fork Sproul streamflow (cfs) and water temperature (°F) dry season 2023.

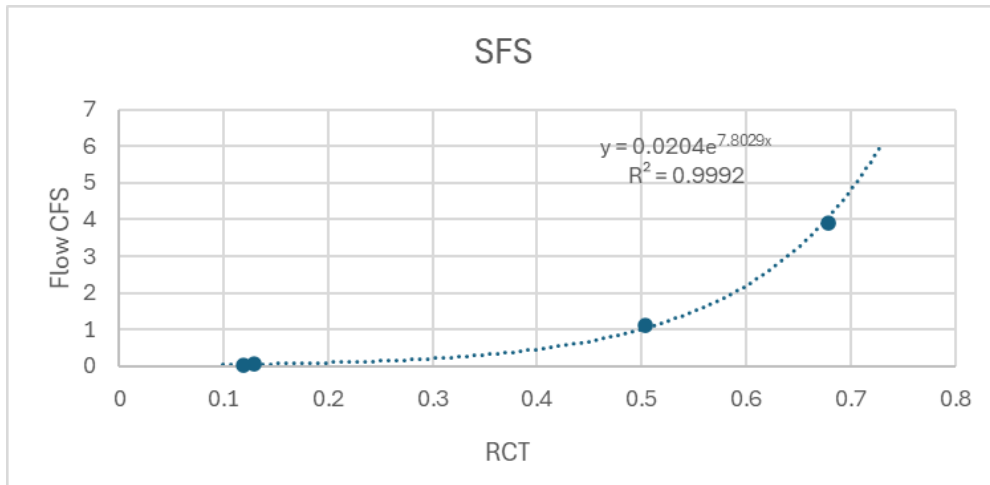


Figure 20. South Fork Sproul rating curve dry season 2024.

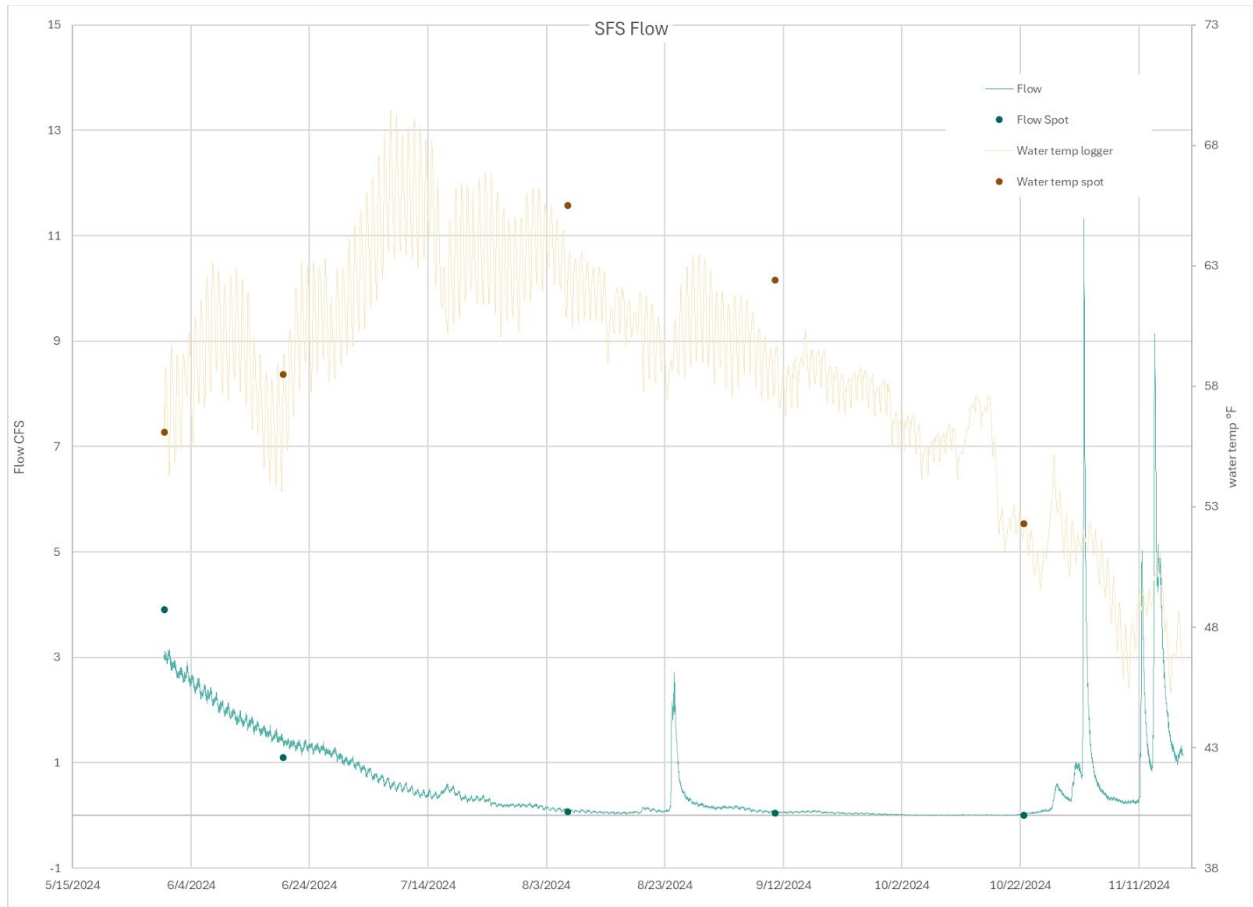


Figure 21. South Fork Sproul streamflow (cfs) and water temperature (°F) dry season 2024.