DATA REPORT: SPROUL CREEK WYs 2017-18 STREAMFLOW GAGING

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The purpose of this data report is to present streamflow and water temperature data, along with the supporting information used to develop stage-discharge rating curves and discharge estimates. Water temperature data is presented along with temperature thresholds from the 1999 United States EPA publication: South Fork Eel River Total Maximum Daily Loads for Sediment and Temperature.

- Three Sproul Creek gaging sites were initiated in 2015: Lower Mainstem Sproul [LMS], West Fork Sproul [WFS], and South Fork Sproul [SFS].
- Two new streamflow gaging sites were installed in 2016 within reaches used for a California Trout instream flow study (Upper Mainstem Sproul [UMS] and Upper South Fork Sproul [USF]). A third gaging site was initiated at West Branch of South Fork Sproul Creek [WBSF].
- The six primary gaging sites monitored in 2017-18 thus include:
 - LMS: Lower Mainstem Sproul Creek (24 mi²)
 - UMS: Upper Mainstem Sproul Creek (17 mi²)
 - WFS: West Fork Sproul Creek (8.5 mi²)
 - SFS: South Fork Sproul Creek (7.1 mi²)
 - USF: Upper South Fork Sproul Creek (5.0 mi²)
 - WBSF: West Branch of South Fork Sproul Creek (1.1 mi²)

All CalTrout gages used Onset Corp. Model U20-001-01 Water Level Loggers, recording water depth and temperature at 15-minute intervals. These loggers are unvented, so ambient pressure transducers were deployed in two locations for atmospheric pressure adjustment: at the West Fork Sproul gage site and at the Lower Mainstem Sproul gage site. The lone CEMAR gage installed at the Lower Mainstem Sproul site from 2015-16 was an In-Situ Level TROLL 500 (vented), also recording water depth and temperature at 15 minute intervals.

Discharge measurements were collected at these six gaging sites from 2015-2018 for development of stage-discharge rating curves (see Figure 1 for locations). Discharge measurements from 2015 were available for three of the five gages (LMS, WFS, SFS). Of these three, Lower Mainstem Sproul Creek (LMS) discharge measurements from 2015 and 2016 were combined into a single rating curve applicable to both years, whereas West Fork and South Fork (WFS and SFS) each have two separate rating curves

(one for 2015, one for 2016). The rating curves for West Fork and South Fork (WFS and SFS) are based on different datums for each year, and differences between years are not representative of a rating curve shift.

At the Lower Mainstem site (LMS), two independent water level loggers were deployed from May 26, 2015 to August 10, 2016. The water level logger owned by CEMAR was operated from April 15, 2016 to August 10, 2016; while the CalTrout water level logger was deployed from May 26, 2015 to November 22, 2016 (last download). The corresponding water levels recorded by these two gages differed by an average of 0.00724 ft during the time of overlap. Readings from the two gages tracked one another well; over time, the difference between readings had a slope of less than 0.0000001 (R²=0.0625).

The CalTrout water level logger memory was exceeded from March 27, 2016 to April 6, 2016 at the three sites continued from 2015 (LMS, WFS, SFS). This was due to the inaccessibility of the loggers during high flows. At the Lower Mainstem (LMS) site, the water level from the CEMAR gage was used to fill in missing data. At the West and South Fork sites (WFS, SFS) a linear equation assuming a steady drop in water surface elevation was used to interpolate between known water levels on March 27 and April 6, 2016.

The rating curve and streamflow measurements are focused on the mid-lower part of the hydrograph. Rating curves developed for this study are not relevant for high winter flows, and appear to overestimate streamflow for a given gage height. If better estimates of winter flow are needed, a basintranfer equation could be used to estimate peak streamflow on Sproul based on Bull Creek. A point could then be added to the rating curve using the Sproul Creek gage height corresponding to the peak flow estimate. Rating curve equations for 2016 and 2017-18 are applied to calendar year for simplicity, although a better transition point could be determined (i.e. during a storm peak).

The spreadsheets submitted with this data report contain the essential parts of this analysis, and data plotted specific for this project. It was not practical to submit data plots of all other years to you in excel format. These additional plots are all included in this data report. All of the data needed to make any additional plots is included in the provided spreadsheets.

Each Spreadsheet contains

- A tab of datalogger content- straight water temperature and sensor depth (raw data) from the Hobo download for the entire period that the gage was/is operational (loggers are still deployed). In addition to the raw datalogger data are two colums of calculated values- 1) gage height (where an offset value is applied to the sensor depth) and 2) streamflow in cubic feet/sec (where the gage height is used as input into the rating curve equation). This tab contains some metadata on gage location, etc.
- A tab of offsets, and related dates. These values are used to adjust and fix the datalogger sensor depth to the gage height
- A tab of stream discharge measurements in table form, which are used to develop stage-discharge rating curves
- A plot of the stage-discharge rating curve and related equations
- A plot of water elevation (ft), water temperature (F), and streamflow (cfs) a deliverable product for this project

With these provided elements, it is the intent that any hydrologist could replicate the analysis herein.



Figure 1. Sproul Creek watershed map showing location of five primary gaging stations, and secondary gaging sites.

Table 1. Lower Mainstem Sproul Creek 2015-2018 stream discharge measurements. Table formatadapted from standard USGS 9-207 form.

	Time (GMT - 07:00 /		Streamflow	Pin Elev (ft below top of	Staff Plate	Gage Height	
Date	PDT)	Hydrologist	(cfs)	pin)	(ft)	(ft)	Notes
4/17/2015	13:00	Darren Mierau	14			1.45	
6/26/2015	12:00	Darren Mierau	0.83			0.75	
7/16/2015	12:00	Darren Mierau	0.26			0.64	
8/12/2015	10:29	Darren Mierau	0.02			0.38	
3/29/2016	12:00	Darren Mierau	85.26	0.74		2.50	
4/6/2016	17:10	Darren Mierau	41.09	1.29		1.95	datalogger downloaded
4/27/2016	17:00	Darren Mierau	23.93	1.58		1.66	datalogger downloaded
5/4/2016	10:00	Matt Metheny	18.51	1.74		1.50	
5/11/2016	16:27	Matt Metheny	13.03	1.88	1.38	1.38	1.36 using pin, staff plate in
5/25/2016	16:08	Matt Metheny	11.65	2.00	1.24	1.24	1.24 using pin
5/31/2016	16:24	Darren Mierau	7.553	2.08	1.15	1.15	1.16 using pin
6/16/2016	16:40	Matt Metheny	5.093		1.04	1.04	
7/1/2016	12:00	Darren Mierau	3.233		0.87	0.87	datalogger downloaded
7/7/2016	16:16	Matt Metheny	1.511		0.82	0.82	
7/28/2016	16:10	Matt Metheny	0.317		0.66	0.66	
8/5/2016	15:38	Darren Mierau	0.204		0.61	0.61	
8/17/2016	15:29	Matt Metheny	0.056		0.54	0.54	
10/6/2016	13:00	Darren Mierau	0.081		0.54	0.54	
11/2/2016	17:15	Darren Mierau	125.6		2.76	2.76	datalogger downloaded
7/18/2017	12:13	Darren Mierau	2.545		0.9	0.9	
10/18/2017	15:14	Matt Metheny	0.06		0.5	0.5	
10/22/2017	12:37	Matt Metheny	1.944		0.87	0.87	Pivot point
10/23/2017	16:33	Matt Metheny	1.722		0.86	0.86	
10/25/2017	15:17	Matt Metheny	0.94		0.75	0.75	
11/1/2017	15:12	Matt Metheny	0.72		0.735	0.735	
11/11/2017	13:48	Matt Metheny	7.143		1.07	1.07	
11/18/2017	14:41	Matt Metheny	9.241		1.12	1.12	
1/10/2018	14:56	Matt Metheny	61.2		2.09	2.09	
1/15/2018	14:06	Matt Metheny	41.2		1.85	1.85	
2/11/2018	15:31	Matt Metheny	35.6		1.73	1.73	



Figure 2. Lower Mainstem Sproul Creek 2015-2016 Rating Curve.



Figure 3. Lower Mainstem Sproul Creek 2017-2018 Rating Curve.



Figure 4. Lower Mainstem Sproul Creek 2015 Hydrograph.



Figure 5. Lower Mainstem Sproul Creek 2016 Hydrograph.



Figure 6. Lower Mainstem Sproul Creek 2017 Hydrograph.



Figure 7. Lower Mainstem Sproul Creek 2015 water temperature and discharge plot.



Figure 8. Lower Mainstem Sproul Creek 2016 water temperature and discharge plot.



Figure 9. Lower Mainstem Sproul Creek 2017 water temperature and discharge plot.



Figure 10. Lower Mainstem Sproul Creek 2017-2018 water temperature, water elevation and discharge plot.

	Time (GMT -			Pin Elev Field Reading (ft		
	07:00			below	Arbitrary	
	/		Streamflow	top of	Pin Elev	
Date	PDT)	Hydrologist	(cfs)	pin)	(ft)	Notes
4/14/2016	16:00	Matt Metheny	21.39	0.30	1.70	
4/27/2016	11:19	Darren Mierau	21.07	0.32	1.68	
5/5/2016	15:23	Matt Metheny	12.66	0.42	1.58	
5/25/2016	9:50	Darren Mierau	7.13	0.63	1.37	
5/31/2016	12:20	Darren Mierau	5.64	0.70	1.30	
6/16/2016	13:45	Matt Metheny	3.17	0.82	1.18	
6/30/2016	12:16	Matt Metheny	1.78	0.93	1.07	
7/6/2016	9:45	Matt Metheny	1.37	1.00	1.00	pivot point
7/27/2016	10:00	Matt Metheny	0.27	1.14	0.86	
8/17/2016	14:01	Matt Metheny	0.04	1.31	0.69	
10/20/2016	11:04	Matt Metheny	5.34	0.69	1.31	
11/2/2016	15:40	Darren Mierau	89.97	-0.53	2.53	
11/3/2016	14:10	Matt Metheny	67.08	-0.28	2.28	
11/4/2016	12:51	Matt Metheny	50.40	-0.11	2.11	
11/22/2016	14:11	Darren Mierau	80.39	-0.42	2.42	data downloaded
11/30/2016	11:00	Matt Metheny	116.20	-0.66	2.66	
4/28/2017	13:03	Matt Metheny	58.71	-0.16	2.16	
5/4/2017	13:08	Matt Metheny	36.62	0.13	1.87	
6/1/2017	13:05	Matt Metheny	10.38	0.62	1.38	
6/27/2017	19:15	Matt Metheny	4.33	0.82	1.19	
7/12/2017	14:56	Matt Metheny	2.55	0.98	1.02	data downloaded
8/13/2017	14:03	Matt Metheny	0.45	1.25	0.75	pivot point
8/27/2017	14:56	Matt Metheny	0.08	1.33	0.67	
9/27/2017	13:31	Matt Metheny	0.04	1.33	0.67	data downloaded
10/22/2017	9:52	Matt Metheny	1.30	1.05	0.95	
1/10/2018	12:37	Matt Metheny	53.42	0.00	2.00	data downloaded
2/11/2018	14:04	Matt Metheny	27.02	0.36	1.64	data downloaded

Table 2. Upper Mainstem Sproul Creek 2016-18 stream discharge measurements. Adapted from standard USGS 9-207 form.



Figure 11. Upper Mainstem Sproul Creek 2016-2018 rating curves.



Figure 12. Upper Mainstem Sproul Creek 2016 hydrograph.



Figure 13. Upper Mainstem Sproul Creek 2017 hydrograph.



Figure 14. Upper Mainstem Sproul Creek 2016 water temperature and discharge plot.



Figure 15. Upper Mainstem Sproul Creek 2016 water temperature and discharge plot.



Figure 16. Upper Mainstem Sproul Creek 2017-2018 water temperature, water elevation and discharge plot.

Table 3. Upper	South Fork Sproul	Creek 2016-18 stream discharge measurements.
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	Time (GMT - 07:00			Pin Elev Field Reading (ft below	Arbitrary	Gage	
Date	/ PDT)	Hydrologist	Streamflow (cfs)	top of pin)	Pin Elev (ft)	Height (ft)	Notes
4/6/2016	11:00	Darren Mierau	9.19	0	10	1.81	
4/12/2016	13:27	Darren Mierau	5.95	0.104	9.895833	1.71	
5/11/2016	11:18	Darren Mierau	3.029	0.28	9.72	1.53	
5/24/2016	10:35	Matt Metheny	2.193	0.34	9.66	1.47	
5/30/2016	11:20	Darren Mierau	1.558	0.37	9.63	1.44	
5/31/2016	10:10	Darren Mierau	1.493	0.37	9.63	1.44	
6/15/2016	11:00	Darren Mierau	1.171	0.46	9.54	1.35	
6/24/2016	9:30	Darren Mierau	0.755	0.5	9.5	1.30	
7/7/2016	10:40	Matt Metheny	0.418			1.21	
7/28/2016	10:30	Matt Metheny	0.124			1.07	
8/5/2016	13:00	Darren Mierau	0.032			1.00	outlier
8/17/2016	11:19	Matt Metheny	0.026			0.91	
11/3/2016	11:14	Matt Metheny	22.7			2.05	
11/4/2016	10:34	Matt Metheny	18.88			1.91	
10/28/2016	10:48	Darren Mierau	19.84			2.03	
10/27/2016	11:15	Matt Metheny	44			2.82	outlier
11/22/2016	10:12	Darren Mierau	23.44			2.13	outlier
4/28/2017	10:20	Darren Mierau	16.21			1.92	
4/30/2017	11:57	Darren Mierau	13.51			1.85	
7/12/2017	10:57	Matt Metheny	0.643	0.7		1.13	
8/13/2017	10:37	Matt Metheny	0.099			1.00	
8/27/2016	9:45	Matt Metheny	0.076			0.98	
4/28/2017	10:20	Matt Metheny	16.21			1.92	
4/30/2017	11:57	Matt Metheny	13.51			1.85	
7/12/2017	10:57	Matt Metheny	0.643			1.13	
8/13/2017	10:37	Matt Metheny	0.099			1.00	
8/27/2017	9:45	Matt Metheny	0.076			0.98	
9/27/2017	10:20	Matt Metheny	0.041			0.96	
3/11/2018	11:49	Matt Metheny	19.1			2.01	



Figure 17. Upper South Fork Sproul Creek 2016-18 rating curves. Green data points were not used in the regressions.



Figure 18. Upper South Fork Sproul Creek 2016 hydrograph.



Figure 19. Upper South Fork Sproul Creek 2017 hydrograph.



Figure 20. Upper South Fork Sproul Creek (USF) 2016 water temperature and discharge plot.



Figure 21. Upper South Fork Sproul Creek (USF) 2017 water temperature and discharge plot.



Figure 22. Upper South Fork Sproul Creek 2017-2018 water temperature, water elevation and discharge plot.

Table 4. South Fork Sproul Creek (SFS) 2016-2018 stream discharge measurements. Adapted from standard USGS 9-207 form.

				Pin Elev		
				Field		
	Time			Reading		
	(GMT -			(ft below	Gage	
	07:00 /		Streamflow	top of	Height	
Date	PDT)	Hydrologist	(cfs)	pin)	(ft)	Notes
4/6/2016	15:30	Darren Mierau	13.37	-0.70	1.70	
4/27/2016	14:10	Darren Mierau	6.9	-0.57	1.57	datalogger downloaded
5/4/2016	14:45	Matt Metheny	5.051	-0.50	1.50	
5/24/2016	15:50	Matt Metheny	2.591	-0.39	1.39	
6/16/2016	11:14	Matt Metheny	1.119	-0.22	1.22	
6/24/2016	14:00	Darren Mierau	0.925	-0.17	1.17	datalogger downloaded
7/7/2016	15:01	Matt Metheny	0.539	-0.10	1.10	pivot point
7/28/2016	15:00	Matt Metheny	0.071	0.05	0.95	
11/3/2016	13:14	Matt Metheny	29.9	-1.12	2.12	
9/27/2017	12:00	Matt Metheny	0.033	0.06	0.94	datalogger downloaded
10/22/2017	12:32	Matt Metheny	0.636	-0.13	1.13	
11/1/2017	14:22	Matt Metheny	0.13	-0.08	1.08	
11/11/2017	10:36	Matt Metheny	1.532	-0.18	1.18	
11/18/2017	12:10	Matt Metheny	2.833	-0.23	1.23	pivot point, data downloaded
1/10/2018	12:46	Matt Metheny	18.3	-0.76	1.76	datalogger downloaded
1/15/2018	13:07	Matt Metheny	13.18	-0.64	1.64	
2/11/2018	14:27	Matt Metheny	8.942	-0.51	1.51	datalogger downloaded
3/11/2018	14:11	Matt Metheny	26.37	-0.85	1.85	



Figure 23. South Fork Sproul Creek 2015, 2016, and 2017-18 rating curves.



Figure 24. South Fork Sproul Creek 2015 hydrograph.



Figure 25. South Fork Sproul Creek 2016 hydrograph.



Figure 26. South Fork Sproul Creek 2017 hydrograph.



Figure 27. South Fork Sproul Creek 2015 water temperature and discharge plot.



Figure 28. South Fork Sproul Creek 2016 water temperature and discharge plot.



Figure 29. South Fork Sproul Creek 2017 water temperature and discharge plot.



Figure 30. South Fork Sproul Creek 2017-2018 water temperature, water elevation and discharge plot.

Table 5. West Fork Sproul Creek 2016 stream discharge measurements. Adapted from standard USGS 9-207 form.

	Time (GMT			Pin Elev Field Reading		
	- 07:00 /		Streamflow	(ft below top of	Gage Height	
Date	PDT)	Hydrologist	(cfs)	pin)	(ft)	Notes
6/9/2015	12:00	Manthorne	0.66	0.33	0.67	
7/16/2015	13:22	Darren Mierau	0.077	0.42	0.58	
10/28/2015	12:00	Darren Mierau	0.171	0.54	0.62	
4/6/2016	13:10	Randy Klein	18.53	-0.035	2.035	
4/27/2016	12:55	Darren Mierau	9.587	0.1	1.9	datalogger downloaded
5/4/2016	14:00	Matt Metheny	8.168	0.19	1.81	
5/25/2016	14:01	Darren Mierau	3.869	0.3	1.7	
6/24/2016	13:15	Darren Mierau	1.457	0.44	1.56	Pivot point, data downloaded
7/28/2016	15:00	Matt Metheny	0.229	0.59	1.41	
8/5/2016	12:00	Darren Mierau	0.099	0.64	1.36	
8/17/2016	13:11	Matt Metheny	0.021	0.76	1.24	
11/3/2016	13:54	Matt Metheny	26.14	-0.22	2.22	
9/27/2017	12:19	Matt Metheny	0.02	0.65	1.35	
10/22/2017	10:44	Matt Metheny	0.453	0.45	1.55	
11/1/2017	12:37	Matt Metheny	0.08	0.541	1.459	
11/11/2017	10:08	Matt Metheny	2.221	0.37	1.63	pivot point
11/18/2017	11:59	Matt Metheny	3.512	0.32	1.68	
1/10/2018	11:03	Matt Metheny	28.8	-0.16	2.16	
1/15/2018	11:23	Matt Metheny	17.35	0	2	
2/11/2018	13:41	Matt Metheny	12.13	0.125	1.875	
3/11/2018	13:42	Matt Metheny	35.32	-0.24	2.24	



Figure 31. West Fork Sproul Creek 2015, 2016, and 2017-18 rating curves.



Figure 32. West Fork Sproul Creek 2015 hydrograph.



Figure 33. West Fork Sproul Creek 2016 hydrograph.



Figure 34. West Fork Sproul Creek 2017 hydrograph.



Figure 35. West Fork Sproul Creek 2015 water temperature and discharge plot.



Figure 36. West Fork Sproul Creek 2016 water temperature and discharge plot.



Figure 37. West Fork Sproul Creek 2017 water temperature and discharge plot.



Figure 38. West Fork Sproul Creek 2017-2018 water temperature, water elevation and discharge plot.

Date		Time	Hydrologist	Streamflow (cfs)	pin elev. Field reading (ft below top of pin)	arbitrary gage height (ft)	Notes
	5/11/2016	11:00	Matt Metheny	0.614	•		no logger
	5/24/2016	11:00	Matt Metheny	0.546			no logger
	5/30/2016	11:00	Matt Metheny	0.365	1.18	0.82	no logger
	6/15/2016	10:40	Matt Metheny	0.208	1.21	0.79	no logger
	6/24/2016	9:40	Matt Metheny	0.127	1.23	0.77	no logger
	7/7/2016	11:00	Matt Metheny	0.098	1.293	0.71	logger installed
	7/28/2016	11:25	Matt Metheny	0.036	1.32	0.68	
	8/17/2016	12:45	Matt Metheny	0.005	1.40	0.60	
-	10/27/2016	13:29	Matt Metheny	11.94	0.33	1.67	
-	10/28/2016	10:56	Matt Metheny	3.815	0.80	1.20	
	11/3/2016	9:45	Matt Metheny	3.8	0.75	1.25	
	11/4/2016	10:30	Matt Metheny	2.835	0.84	1.16	
	4/28/2017	9:48	Matt Metheny	3.6	0.86	1.14	data downloaded
	7/12/2017	9:55	Matt Metheny	0.181	1.31	0.69	Pivot point
	8/13/2017	10:20	Matt Metheny	0.043	1.36	0.64	
	8/27/2017	10:23	Matt Metheny	0.008	1.43	0.57	
	9/27/2017	9:08	Matt Metheny	0.014	1.4	0.60	data downloaded
	3/11/2018	11:17	Matt Metheny	4.705	0.85	1.15	data downloaded

Table 6. West Branch of South Fork Sproul Creek 2016-2018 stream discharge measurements. Adapted from standard USGS 9-207 form.



Figure 39. West Branch of South Fork Sproul Creek 2016-18 stage-discharge rating curves.



Figure 40. West Branch of South Fork Sproul Creek 2016 hydrograph.



Figure 41. West Branch of South Fork Sproul Creek 2017 hydrograph.



Figure 42. West Branch of South Fork Sproul Creek 2016 temperature and discharge plot.



Figure 43. Lower Mainstem Sproul Creek 2017-2018 water temperature, water elevation and discharge plot.



Figure 44. Lower Mainstem Sproul Creek (LMS) staff gage and water level data logger location, visible in center of photo. Photo taken on November 30, 2016. Sproul Creek Road bridge is visible at top left.



Figure 45. Lower Mainstem Sproul Creek gaging site near South Fork Eel River (LMS) on May 31, 2016. Photo taken from upstream at a measured discharge of 7.553 cfs.



Figure 46. Upper Mainstem Sproul Creek (UMS) staff gage and water level data logger location, underneath blue flagging. Photo taken on November 30, 2016. Note that the gage is underwater.



Figure 47. Upper Mainstem Sproul Creek gaging site at CalTrout study site (UMS) on May 25, 2016. Photo taken from upstream at a measured discharge of 7.125 cfs.



Figure 48. Upper South Fork Sproul Creek (USF) staff gage and water level data logger location at CalTrout Study Site. Photo taken from downstream. Staff gage is visible in center of photo in white.



Figure 49. Upper South Fork Sproul Creek (USF) gaging site at CalTrout Study Site on April 6, 2016. Photo taken from upstream at a measured discharge of 9.19 cfs.



Figure 50. South Fork Sproul (SFS) Creek staff gage and data logger location, underneath orange arrow. Photo taken from downstream on March 29, 2016.



Figure 51. South Fork Sproul Creek (SFS) gaging site on November 3, 2016. Photo taken from upstream at a measured discharge of 29.9 cfs.



Figure 52. West Fork Sproul Creek (WFS) staff gage and water level data logger location (WFS), underneath orange arrow. Photo taken on April 27, 2016 from downstream.



Figure 53. West Fork Sproul Creek gaging site (WFS) on November 3, 2016. Photo taken from downstream at a measured discharge of 26.14 cfs.

Literature Cited

USEPA (U.S. Environmental Protection Agency). 1999b. South Fork Eel River total maximum daily loads for sediment and temperature. San Francisco, CA. December 1999.

CalTrout Hobo Dataloggers used for Sproul Creek Instream Flow Study and location codes

SN#1049940LMSLower Mainstem Sproul Creek near S.F. Eel @ Bruckenstein propertySN#10719479WFSWest Fork Sproul above confluence with South Fork Sproul, aka PT-1SN#10719478SFSSouth Fork Sproul above confluence with West Fork Sproul, aka PT-3SN#10886491UMSUpper Mainstem Sproul at CalTrout Study Site, below Dry Trib, aka PT-4SN#10151324USFUpper South Fork Sproul at CalTrout Study Site, below Cox Cr, aka WoodSN#10719480ambient air pressure at West Fork/South Fork confluence, aka PT-2SN#9667162ambient air temp. and relative humidity at West Fork/South Fork confluenceSN#10886493WBSFWest Branch of South Fork, aka PT-5SN#10886492ambient air pressure at Bruckenstein property, near S.F. Eel, aka PT-6